

movement works within the coincident slots of the conductor and pusher tubes on the movement changing its position, [or the drop movement may be provided at its upper end with top and bottom cross-slots leading into a longitudinal vertical slot instead of the conductor-tube. The pin for holding the movement in its projected or sheathed position is stationary with regard to the said movement, although the said pin has a slight lateral movement sufficient for the moving of it out of the locking-slots when the movement is required to fall].

“The pusher-tube with its helical or spiral slot is incapable of rotating by a vertical slot at the bottom of the tube engaging with a long stud or pin on the fixed conductor-tube.

“A coiled spring resting upon the top of the conductor-tube gives the return movement to the cap and its pusher-tube.

“The action of the pencil-case is as follows, on the nozzle of the movement being in its sheathed position with the pin of the movement within its sheathing-slot—on pressing vertically inwards the pusher-cap, the pusher-tube is lowered, and by its downward movement causes the upper part of the left-hand side of the helical, or inclined slot to act against the pin on the movement, [or the pin engaging with the movement], thereby forcing the said pin from the sheathing-slot into the *coincident helical* slots of the conductor and pusher tubes, [or into the slots of the movement and pusher tubes, as the case may be], and so freeing the pin and allowing the movement to fall out of its case the required distance by its own weight, which is fixed in this position by relaxing pressure on the sliding-cap by the right-hand side of the slot of the retiring pusher-tube forcing the pin *of the movement* into the cross locking-slot of the conductor-tube, [or into the cross locking-slot of the movement], thereby fixing the movement in its locked position.

“When it is required to sheath the nozzle of the movement within its case, it is only necessary to invert the pencil-case and again press the sliding-cap, which frees the pin from the locking-slot [either in the conductor-tube or in the movement] *and uncovers the helical slot of the pusher-tube*, and allows the movement to fall within its case, as herein first described, which is again fixed by ceasing to press the pusher-tube, which retires to its normal position, pressing the pin *of the movement* into the sheathing-slot, and holding the movement within its case.¹

“The top and bottom cross locking-slots may be on the movement itself, and the pin which fixes the movement may have a slight lateral motion, independent of the drop movement itself.

“The liberation and fixing of the pin which holds the movement in its respective locked and sheathed positions may be operated by changing the position or positions of the inclined slot or slots which work the locking or fixing pin, without materially affecting the principle and object of my invention, as the inclined sides of the helical, locking, and releasing slots acting in a vertical direction constitute the principle or essential points of my invention.

¹ The provisional specification ends here.

"The casing which covers the body of the pencil-case may be made to slide upon the other parts, or the other parts may be made to slide within the casing without materially altering the nature or essence of my invention."

In the specification the details of the invention are given and illustrated by means of drawings.¹ The letters signify the same parts throughout. The "drop movement" is the innermost tube, or lead-carrier, b , to which is attached the pin b^2 (Fig. 11), which projects through the slot d_2 in the fixed conductor-tube d . The pin projects further into the helical slot c_2 of the pusher tube c (Fig. 11). The slots d_2 and c_2 are of the same pitch throughout. At each end of the slot d_2 is a cross locking-slot d_3 . The pusher-tube c is pushed down by the cap c_3 , in which is a spring that forces the tube c back into its original position when the operation is over; it is guided in its motion by the pin c moving in the slot c_2 . The pencil-case is held vertically, the pin b_2 then resting (Fig. 2 and Fig. 10) in the cross-slot d_3 . On pushing down the pusher-tube c the side r of the slot c_2 sliding against the pin b_2 forces it out of the slot d_3 into the slots d_2 and c_2 (Fig. 3), which then coincide. The drop movement then falls, the pin b_2 dropping to the bottom of the slot d_2 (Fig. 4). On removing the pressure the spring restores the pusher-tube c to its original position, the side l of the slot c_2 sliding against the pin b_2 forces it into the locking-slot d_3 (Fig. 5), when the operation is finished. To restore the lead to its case the pencil is held vertically point upwards; the reverse operation is then similarly performed.

The second sheet of drawings showed another modification of the invention, in which the slots were not helical, but bow-shaped, the cross locking-slots being at opposite sides of the slot. The action, however, was the same as that described.

The third form of the invention was next described.—"Figs. 20 to 32, both inclusive, represent a pencil-case constructed according to my invention, in which the drop movement carrying the lead or other instrument is fixed and released by the inclined sides of a diagonal or helical slot, which alternately act upon a pin, as in the other arrangements, for releasing and fixing the said drop movement either in its closed or projected position.

"The same letters indicate the same parts in all the figures.

" a is the outer casing, and b is the drop movement, having at its upper end a longitudinal slot, b^2 , and cross locking slots, b^3 , b^4 ; the reverse side of the movement has a horizontal opening as shown in Fig. 30. The last-named slots are the same as hereinbefore described in the conductor-tube, the difference being that in the former case the slots remain stationary, while in the latter it falls with the movement. The conductor-tube c has a cross-slot, c^2 , on one side, and a hole, c^3 , on the other. The hole c^3 constitutes the fulcrum, on which the end of the pin d moves laterally. The slot c^2 limits the motion of the pin at its front or locking end in being moved into and out of

¹ The description is here summarized, but enough is given to illustrate the action of the invention as originally described and the improvement introduced into the complete specification which constituted the alleged disconformity.

FIG. 1

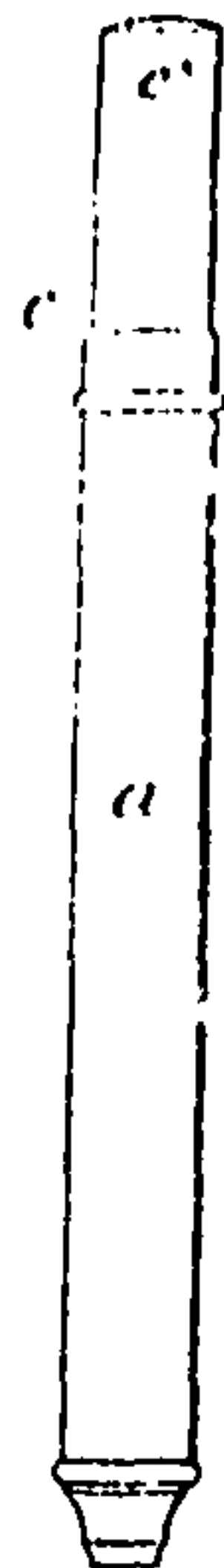


FIG. 2

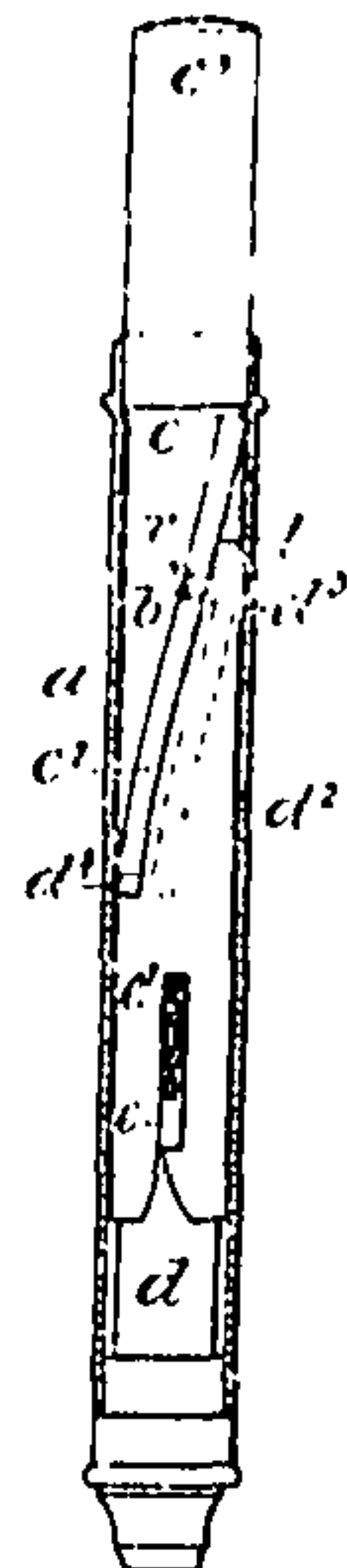


FIG. 3

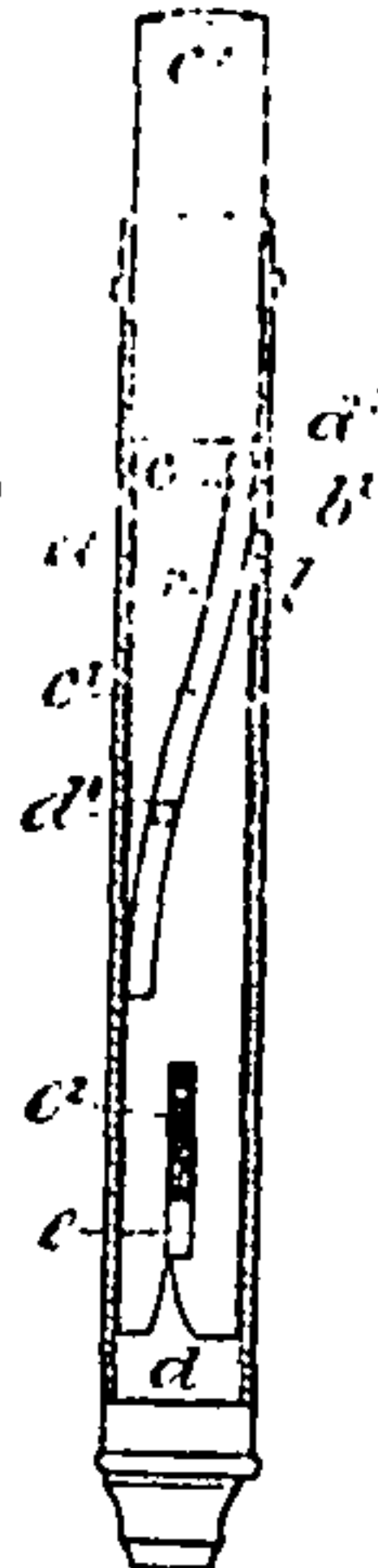


FIG. 4

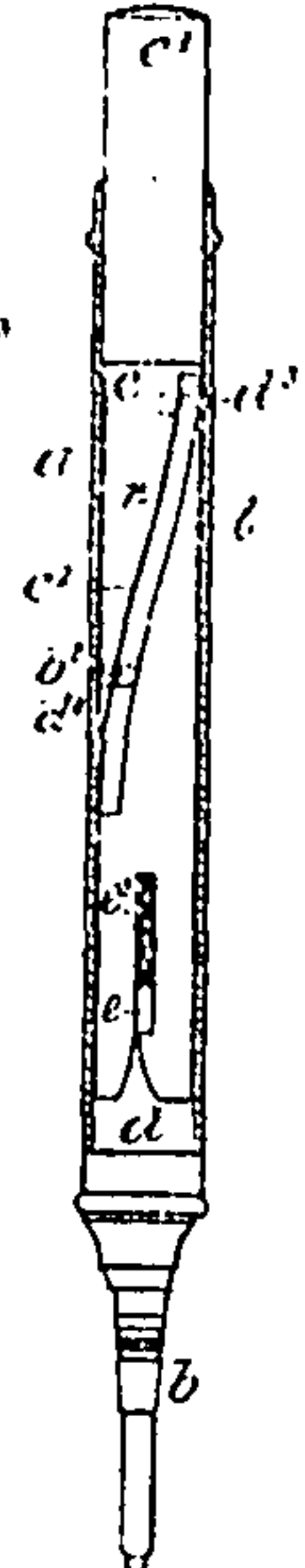


FIG. 5

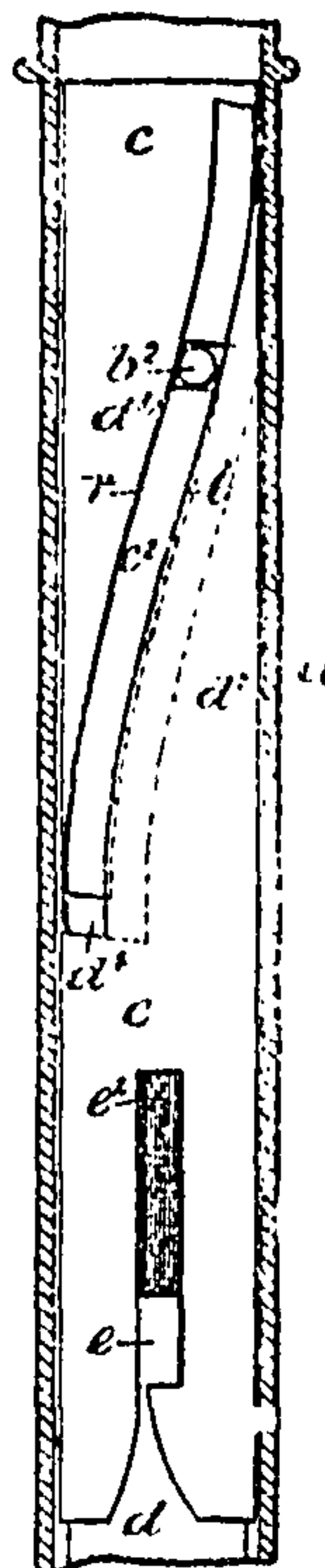
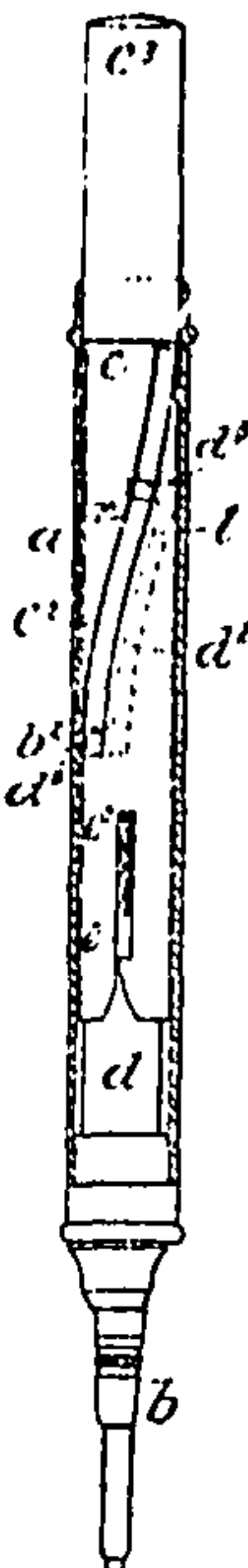


FIG. 20

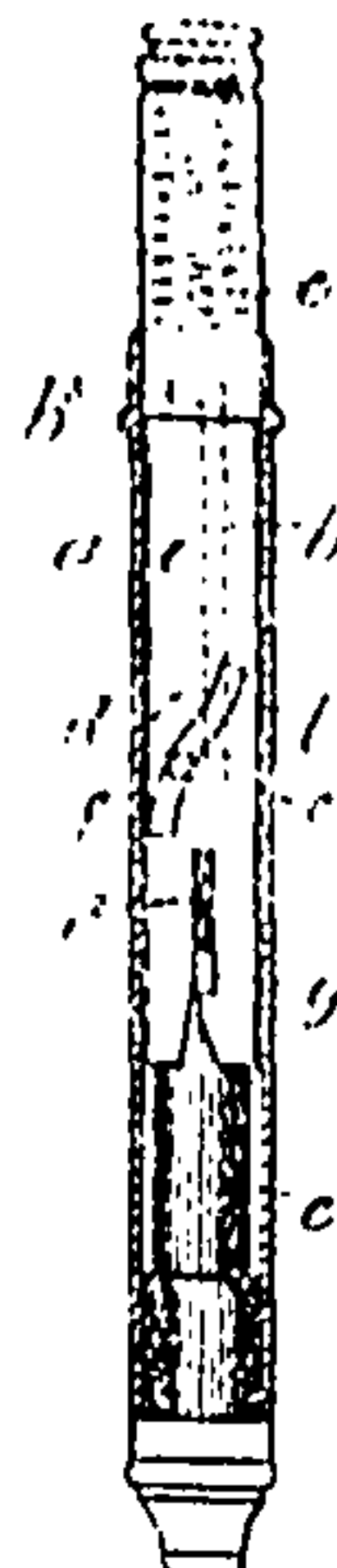


FIG. 21

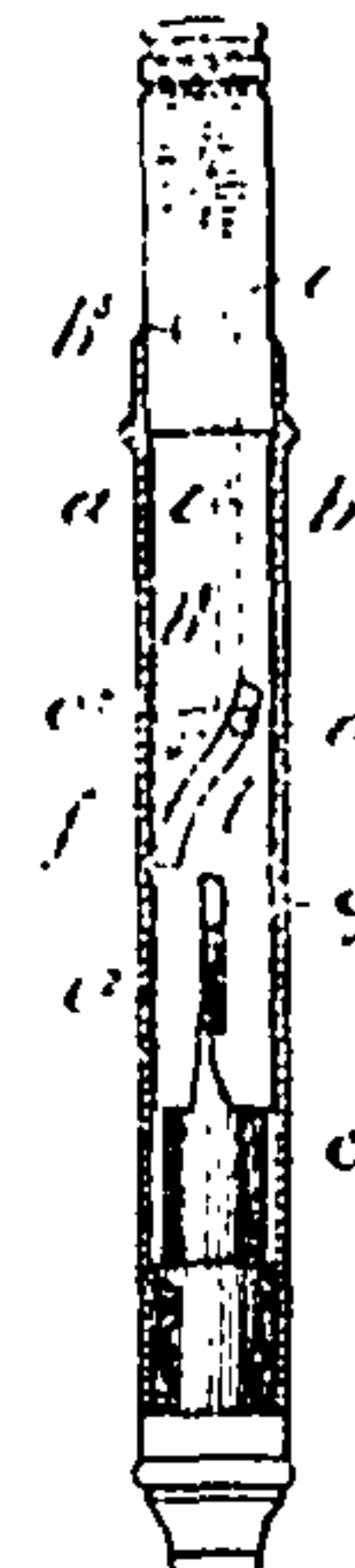


FIG. 22

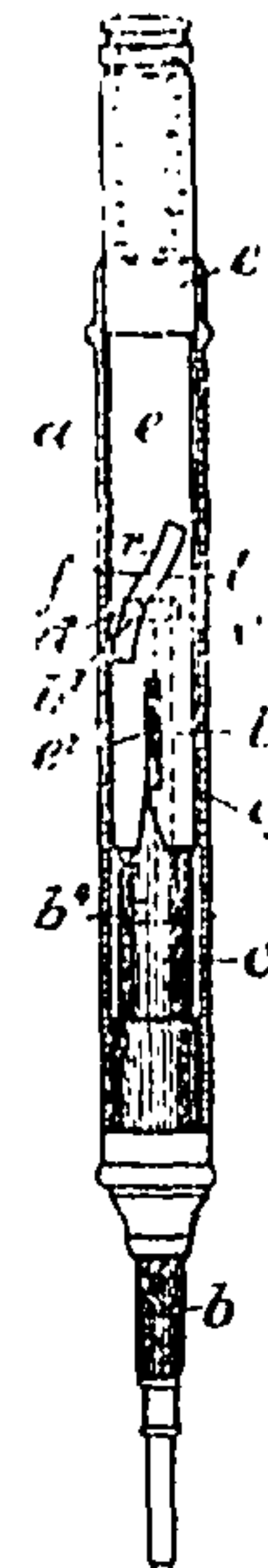
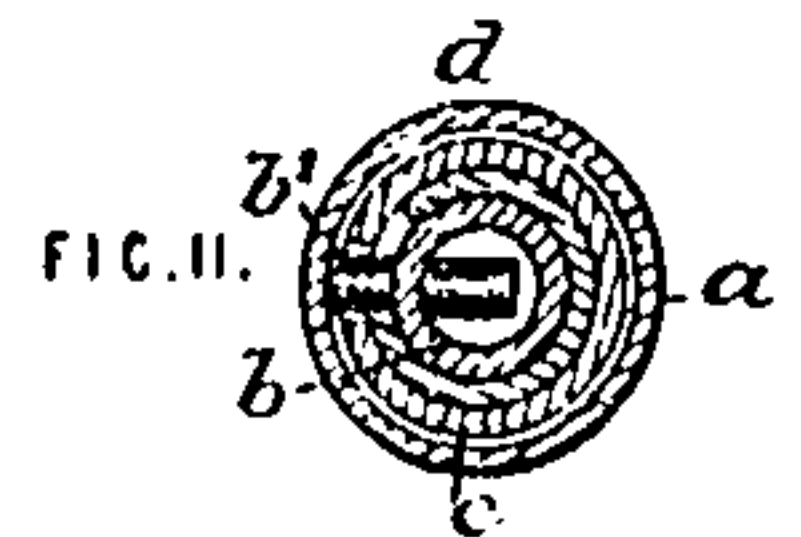
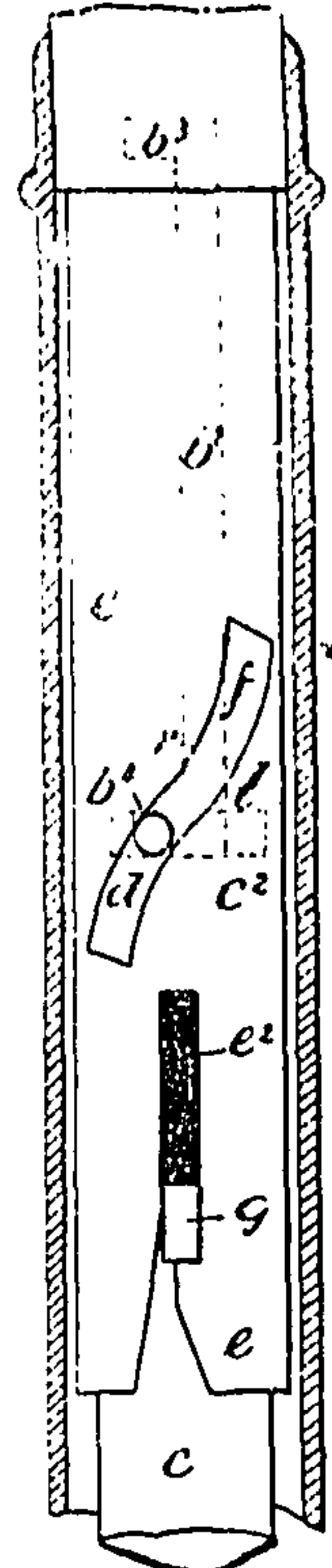


FIG. 31



Diagrams from Woodward's specification (No. 6209 of 1884).

Figs. 1-6, 10, 11, shew the invention as described in the provisional specification.

Figs. 20-22, 31, are of modifications constituting alleged disconformity.

the slots b^3 , b^4 , of the drop movement b , by the diagonal inclines of the slot f in the pusher-tube c . g is a stud working in the slot e^2 for determining the vertical movement of the inclines in locking and releasing the movement when it is required for it to be sheathed or projected."

The action is as follows :—The pusher-tube forces the pin out of the slot as in the former case (Figs. 20, 21), then the drop movement drops, the pin remaining stationary, and the slots allowing the drop movement to fall. The spring returning the pusher-tube c to its original position (Fig. 22), forces the pin into the top locking-slot b_3 .

The claims were—

"First, the improvements in pen and pencil cases and other holders for like instruments and materials hereinbefore described and illustrated in Figs. 1 to 31, both inclusive of the accompanying drawings; that is to say, fixing and releasing drop movements containing the writing material or other instrument, by the direct vertical movement or thrust of the inclined sides of a diagonal or helical slot or slots constituting locking and releasing inclines, which act alternately upon a pin, which holds the movement locked when sheathed or projected, and releases the movement when change of position is required, by acting directly upon a pin or projection which is carried by, or engages with, the movement; the inclines and pin and other parts for guiding, locking, and releasing being arranged, combined, and acting in the ways and for the purpose as described and set forth."

The second claim was for the bow-shaped modification as shown in Figs. 12 to 15; and the third claim was for a form in which the tubes were fluted or ridged to diminish friction.

The patent was upheld at the trial.

On appeal it was upheld by the Court of Appeal.

The Lords Justices held that although the third mode of carrying out the invention was different from those described in the provisional specification, yet the whole came within the invention, the nature of which was described in the provisional.¹

Cotton, L.J. (at p. 175): "It is true that in his provisional specification he has stated a different mode of carrying his invention into effect from that which he stated in sheet 3 of his complete specification; but if both are really within the same invention, described though not minutely but in general terms in the provisional specification, then the patent will not be bad simply because a different mode of carrying the same invention into operation is described in the complete specification, and even although that may be an improvement on what is described in the provisional specification, because a patentee putting in a provisional specification showing the nature of his invention is not bound to describe the way in which that can be carried into effect and operation, but if he does describe

¹ The facts of this case were alluded to and the decision followed by *Cotton*, L.J., and *Lopes*, L.J., in *Siddell v. Vickers*, 5 R. P. C. 426, 433; and also in *Hookham v. Johnson* 14 R. P. C. 561.

a way of doing it, and before he files his complete specification he either finds out improvements in that way or a different way of carrying into effect that which is described as his invention in the provisional specification, he is bound to give the public the benefit of what he has discovered as regards the mode of carrying the invention, the nature of which must be described in the provisional specification, into effect, even although there may be improvement and even invention which was not known to him at the time.”¹

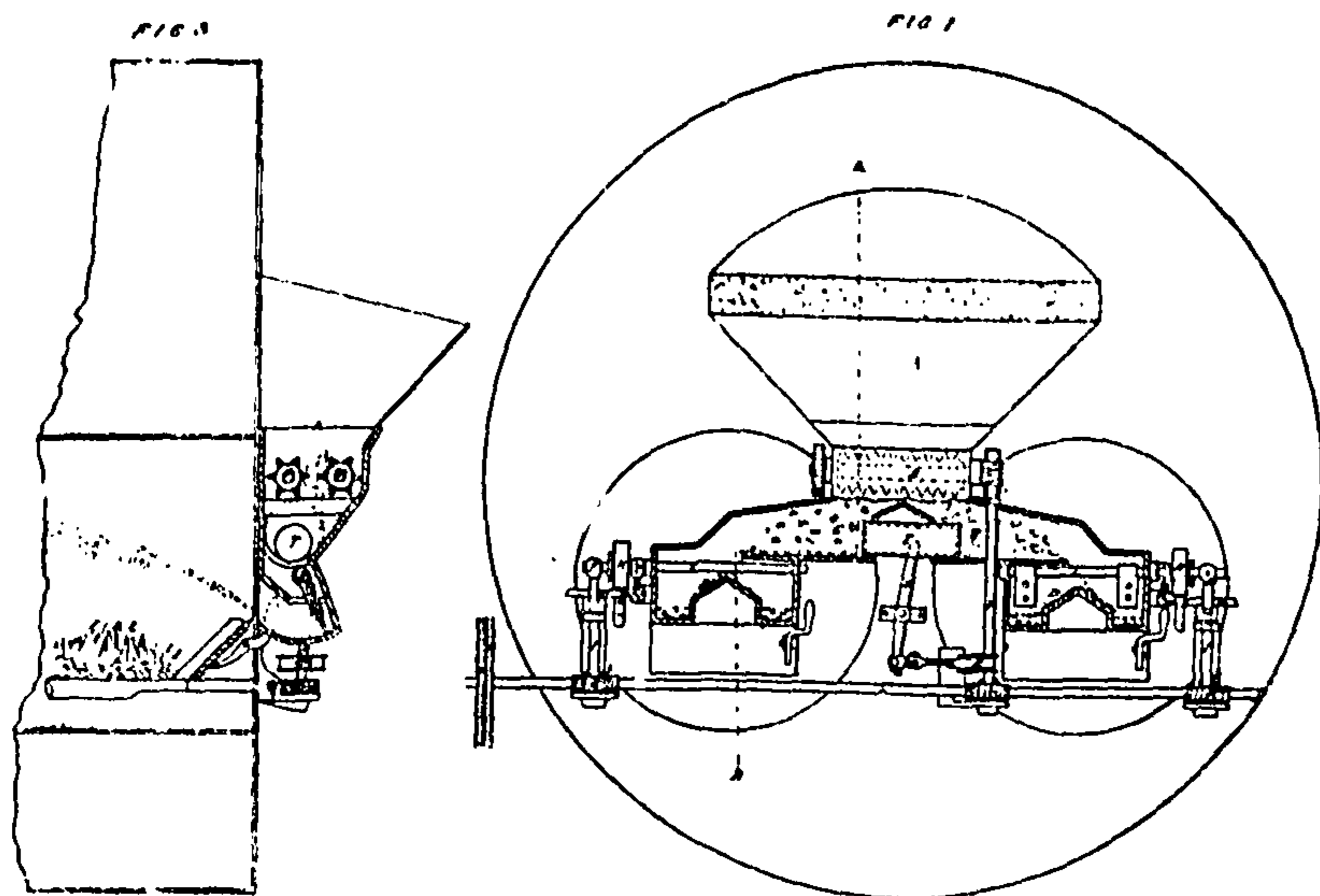
1887. PROCTOR v. BENNIS, 4 R. P. C. 333.

Construction—Mechanical Equivalents.

A patent was granted (No. 2047 of 1875) to *T. Proctor* for “an improved self-acting apparatus for supplying fuel to boiler and other furnaces.”

The complete specification commenced with the following description of the nature and object of the invention as follows:—

“This invention has for its object improved and self-acting mechanism for supplying to and distributing fuel at intervals over the fire surface.



Diagrams from Proctor's specification (No. 2047 of 1875).

“The construction and action of the apparatus is as follows:—I employ an ordinary feed-hopper,² A, applied to the front of the boiler, which by

¹ This rule has been quoted with approval and followed in *Moseley v. Victoria Rubber Co.*, 4 R. P. C. 248; *Gadd v. Mayor of Manchester*, 9 R. P. C. 265 (and in C. A. by *Smith, L.J.*, 9 R. P. C. 529); *Brooks v. Lamplugh*, 14 R. P. C. 617; and *The Pneumatic Tyre Co. v. Leicester Pneumatic, &c., Co.*, 15 R. P. C. 164; and *Ward Bros. v. Hill*, 20 R. P. C. 200.

² The references to the diagrams are here inserted instead of reproducing the detailed description of the drawings. Only those drawings necessary to understand the case are given. Fig. 1 is a front elevation, and Fig. 3 a side view. The remaining figures (2, 4-10) showed an end view and parts in detail.

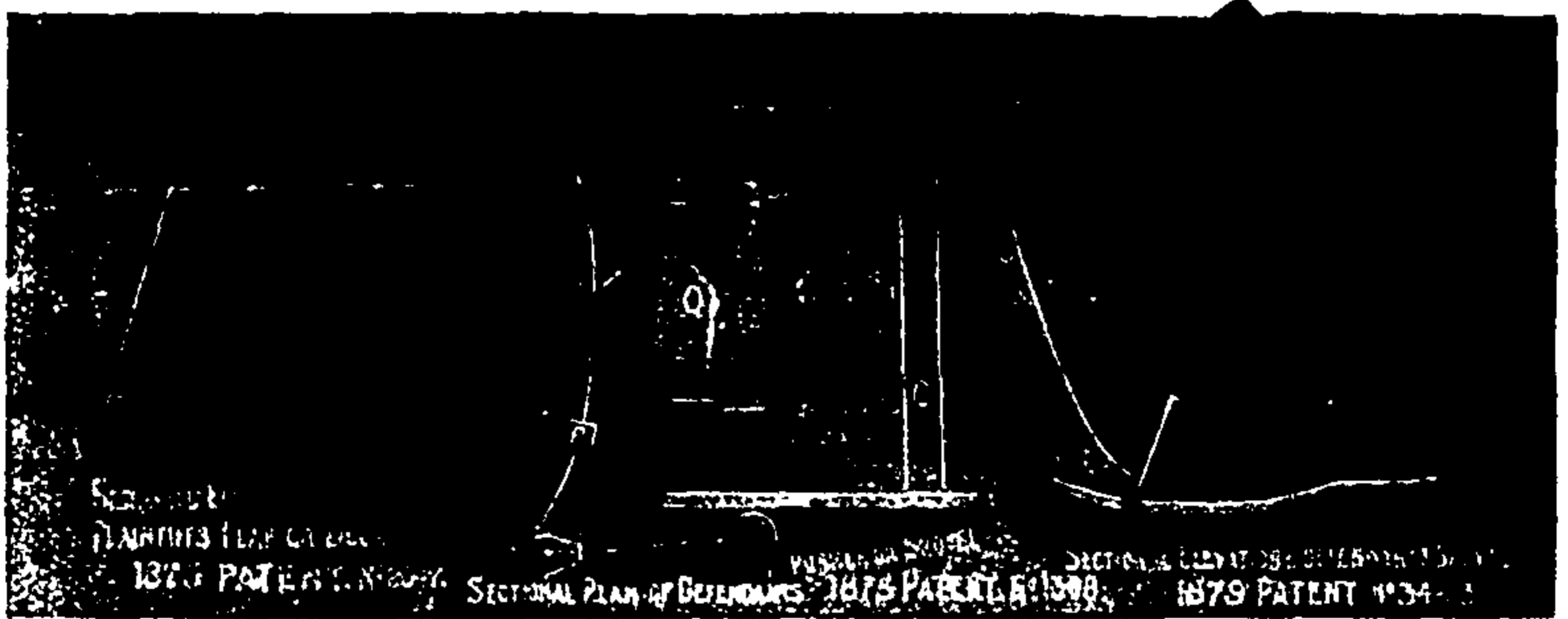
means of spiked or other rollers, BB, will give a supply of fuel, the fuel is received upon an inclined door or flap, D, working within guide plates, the door or flap is secured to cross-shafts, EE, to which by means of lever F and tappets GG a partial turn or rotary motion is given, drawing back the door or flap until the tappet G shall have passed its throw—whereon the partial rotation of the shaft E is suddenly reversed by means of a coiled spring, H, or weight applied thereto—by such reversing action, the door or flap attached to the shaft E receives a rapid forward movement in the direction of the furnace bars, throwing and distributing the fuel over a portion of the fire. The tappet is provided with two or more varying throws, so that the spring will be coiled more or less as the fuel is to be alternately thrown on to the fire surface at the front, midway, or back of the fire surface. The tappet shaft JJ receives motion from a worm, KK, and worm-wheel K'K'."

The specification continued with a detailed description of the drawings, and concluded with the following claim:—

"I lay no claim to the hopper A, nor to the spiked rollers, nor to the shafts and worms for operating the same, but what I do claim is the employment of the tappets GG, and shafts EE, and springs H, when applied to and in connection with the doors DD, as and for the purpose herein fully described and illustrated."

This was an action for infringement of this patent.

The infringement was alleged to be a development of an earlier invention of the defendant's. Its nature can be understood from the drawings.¹ The mode of action of the parts in contact with the coal are shown in



Photographs of models of Proctor's flap or door, Bennis' older pusher, and the alleged infringement.

section; on the left is the plaintiff's door in sectional elevation; in the centre is the old pusher mechanism which operated intermittently and moved rectilinearly; on the right the defendant's pusher is shown in elevation. The last consisted of a bent arm, C, having a flat piece or pusher, M, at the end of it. The motion of the latter was radial, the fulcrum,

¹ For original photographs of the models used as exhibits and shorthand report of the case the author is indebted to Messrs *Procter & Son*, the plaintiff's solicitors.

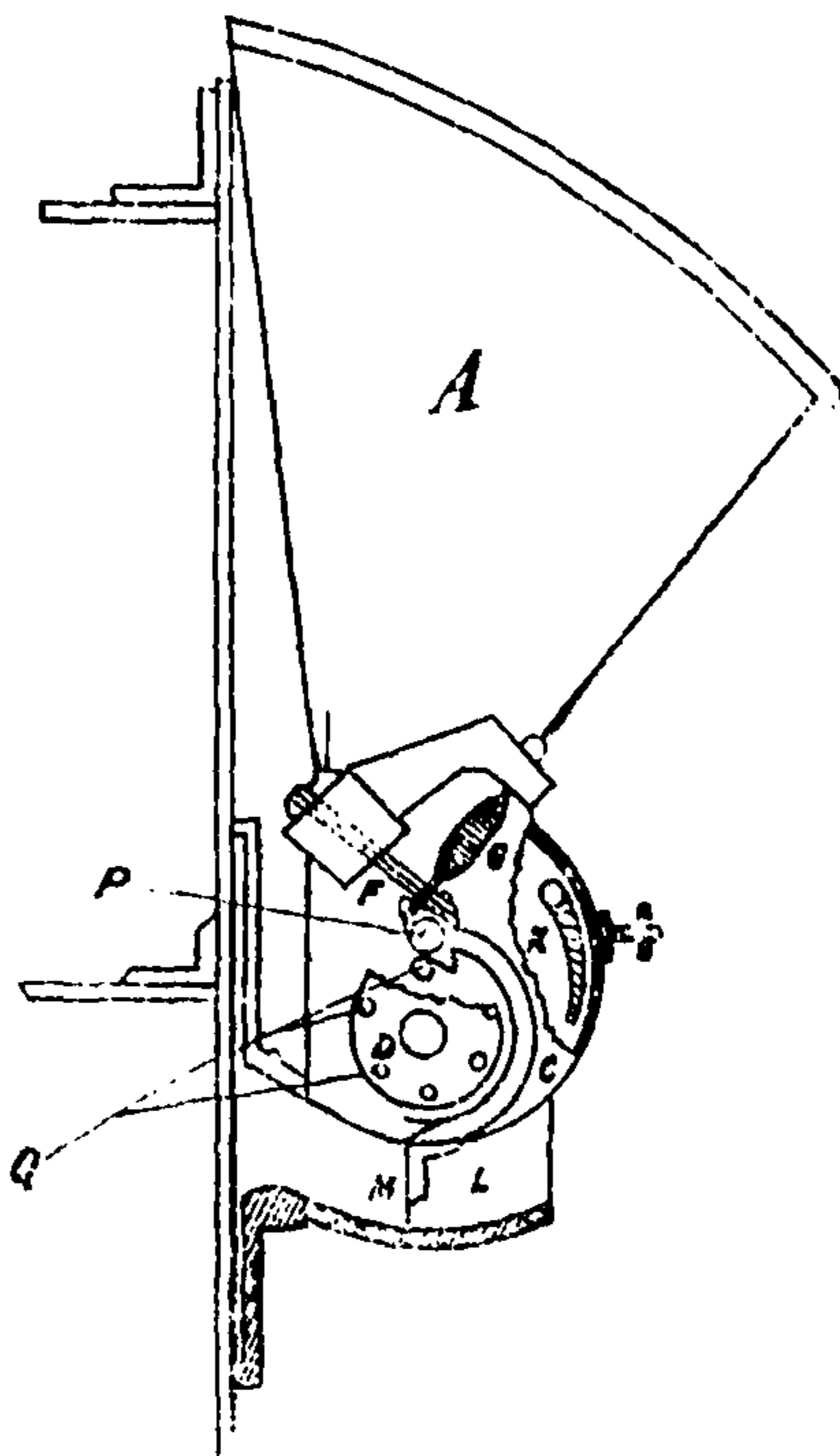
P, being the shaft above, and the motion as regards the fulcrum was geometrically the same as that of the lower end of the plaintiff's door as regards its own shaft. In the plaintiff's case the intermittent actuating mechanism was outside connected with the shaft; in the defendant's it was inside, and connected with the notch on the arm C. This is shown in the last diagram, in which D is a shaft to which cams, Q, are attached. The arm C and shovel M are pressed forward by the springs F and G. When D revolves the cams, Q, press back the arm until they pass the notch, when the arm and shovel spring forwards again, the shovel throwing the coals on the fire.

The main feature in the defence was that the defendant's pusher was mounted on a pin to act as a buffer; that the plaintiff's claim was for the combination as a whole, and that the defendant's was entirely different.

The learned Vice-Chancellor of the Palatine Court held, *inter alia*, that the patent was valid, and had been infringed.

On appeal, *held*, by the Court of Appeal, *inter alia*, that the patent was valid, and that the defendant had taken the essence of the combination.

Cotton, L.J., considered the nature of the claim to be one for a combination. After dealing with the question of novelty and allegation that the novelty of parts was not pointed out, he continued:—"Now I have referred to that so as to show that I have not omitted the argument. In my opinion, it is of necessity, without that observation and this expression of opinion by Lord *Cairns*, that where a combination is claimed to be an invention, if that invention is new, it is immaterial on the question of the validity of the specification, and the goodness of the patent, that the patentee should point out how far he does or does not claim particular portions. Of course, if the alleged infringement had been a subsidiary portion of this combination, or had been particular parts of machinery which formed the combination as a whole, that would have been material, but when I read the claim it will appear that the plaintiff does cut himself down entirely to the combination, pointing out that he does not claim the particular portions of that, but simply claims the



Section of defendant's pusher.

combination of four parts (three being lumped together) - the combination of those with another, namely, his flaps or doors." ¹ The learned judge then pointed out that there was ample evidence of invention, as no workman had been called to show that the earlier machine of the defendant's could be improved to the form of the later.

As to equivalents in view of infringement, he said: "Has the combination in substance been taken? Has the defendant, though not exactly taking the whole combination which has been patented, taken by slight variations, or by mechanical equivalents, the substance of it to produce the same result ² by practically the same means? Has he taken the essence of it?" ³

He continued by examining the specification and claim, and held that the defendant's machine was a colourable variation of the plaintiff's. ⁴

The learned judge dealt next with the variations between the two machines, and distinguished the case of *Curtis v. Platt* (*ante*, p. 231).

"Then it was said that we were precluded from going into that in this case by what was laid down by three judges of great distinction, Lord *Hatherley*, Lord *Westbury*, and Lord *Cranworth*, in the case of *Curtis v. Platt*, in the various stages through which that case went. Of course, whatever one's view might be, one ought not to act contrary to any principle that has been laid down by them. The principle which was contended for was this, that where there is a combination claimed for improvements in machinery, there you must hold the patentee to the description which he gives of the particular means by which his invention is to be carried into effect; and that the doctrine of mechanical equivalents cannot apply in such a case, but you must hold him strictly to the particular mechanical means by which he proposes to carry out his invention. Now, in my opinion, that case does not apply to this, because those observations were applied to a case where there was a machine which had been long in use for producing a certain result. Therefore there was no novelty at all in the results to be produced even in that machine, and the only novelty which could be claimed would be the application and use of certain mechanical means in order to produce in a known machine the same result which in that known machine had been produced by other mechanical means. That, to my mind, distinguishes the case from the present—because what was the case?" ⁵ After calling attention to the facts in *Curtis v. Platt*, the learned judge continued:—"It [the invention] was specially to produce improvements into the mechanical means and arrangements which the previous patentee had used

¹ Quoted by *Porter*, M.R.I., in *Wilson v. Balfour*, 5 R. P. C. 253.

² In *Gosnell v. Bishop*, 5 R. P. C. 156, the same learned judge described the new result or object as spreading the coals on the fire by *intermittent radial action*.

³ This passage was quoted by *Lopes*, L.J., in *Automatic Weighing Machine v. Knight*, 6 R. P. C. 309.

⁴ Relied on by *Ashbourne*, L.C.I., in *Thomson v. Moore*, 6 R. P. C. 444, and by *Palles*, L.C.B. (*ibid.*, 447); also by *Lindley*, L.J., in *Ticket Punch, &c., Co. v. Colley's Patents*, 12 R. P. C. 183.

⁵ Quoted and approved in *Wilson v. Balfour*, 5 R. P. C. 253.

to obtain well-known objects in a well-known machine. Therefore in that case, in applying those words used by the judges, we must deal with the case before him, and come to the conclusion, as I do, that what that meant was this, that where there is no novelty in the result, where the machine is not a new one, nor the result—you must strictly hold the patentee now claims an improvement in the machinery for producing in a known machine that result—you must tie him down strictly to the invention which he claims, and the mode of affecting the improvement which he says is his invention. But here the throwing coal on to the furnace by the intermittent radial action of a flap or door was new. Nothing of the kind had been done before. It is true there had been, though imperfect, previous machines for feeding furnaces automatically, but that had not been done previously to this machine by any intermittent radial action of a flap or door, as was done by the plaintiff, and apparently successfully done by him. In my opinion, therefore, these opinions expressed by the judges with reference to mere improvements in an old machine for an old purpose cannot lay down any law for a case like this, where the result of throwing coal on to the furnace by the intermittent radial action of the flap is first applied in a machine invented by the plaintiff.”¹

Bowen, L. J., in discussing the question of identity of inventions observed, examined the specification and continued:—“ I think the truth is that the doors were, in the eye of the inventor, an extremely important part of the combination, and gave, so to speak, the key to the whole, and it is on that ground that he employs the language he does; but none here are claimed separately. Now I think it goes to the root of this case to remember that this is, as was described by one of the counsel, really a pioneer invention, and it is by the light of that that it seems to me we ought to consider the question whether there have been variations or omissions and additions which prevent the machine which is complained of from being an infringement of the plaintiff's. With regard to the variations, I take precisely the same view that the Lord Justice has taken, and I will not travel over the matter which he has gone over in detail. With regard to the additions and omissions, it is obvious that additions may be an improvement, and that omissions may be an improvement; but the mere fact that there is an addition, or the mere fact that there is an omission, does not enable you to take the plaintiff's patent. The simple question is not whether the addition is a material one, or whether the omission is material, but you must go back again and ask yourself whether what has been taken in the substance and essence of the invention.”² The learned judge concluded by distinguishing *Curtis v. Platt*, and held that the plaintiff was the first to produce “ instead of mere automatic feeding, an intermittent radial action of the flap of the door,” and that the defendant's machine contained the substance and essence of the plaintiff's combination.

¹ These two last extracts were relied on in *Thomson v. Moore*, 6 R. P. C. 439.

² This passage quoted and relied on by *Wills, J.*, in *Incandescent Gas, &c. v. De Mare*, 13 R. P. C. 331.

Fry, L.J., in the course of his judgment described the "pith and substance of the plaintiff's invention is, in my judgment, putting coals upon a fire by intermittent radial action, an invention which, it may be remarked, reproduces with great exactitude the action of the human arm in placing coals upon a fire." After discussing the facts and authorities, he continued :— "Was, then, the object in the present case an old one, or was it a new one? Putting coal upon a fire is, of course, an act, if not as old as Adam, I suppose as old as the time when Tubal Cain wrought in metal, or when Prometheus introduced fire to mankind. It is, therefore, as old as it can be. But is that the real object of the patent? I think that the real object of the patent must be taken to be this, the automatic placing of coal on a fire by intermittent radial action. That object is new. I think, therefore, we are bound to construe this combination as a combination to effect a new and useful object." ¹ The learned judge concluded by pointing out the points of similarity in the actions of the two machines :—"In the present case we have these broad features of likeness, that in both machines the motion is a radial motion, in both machines it is an intermittent motion; in both the machines it is, of course, produced by means of a radius, in both machines that radius is moved in one direction by tappets, and the same radius is moved in the opposite direction by a spring. All those broad features of the machines are in common, but there is this difference, that in the plaintiff's machine the shaft is impelled by the tappets and by the spring, whereas, in the defendant's machine, the radius itself is impelled by the tappets and the spring. It would follow that the radius in the plaintiff's is attached to the shaft, whereas the radius in the defendant's works on a pin. That is the broad distinction between them. The result, therefore, appears to me to be substantially the same: by substituting the pin for the shaft as the centre on which the radius acts, and by impelling the radius itself instead of impelling the shaft fixed to the radius, you have produced in substance precisely the same radial action by the same means. You drive your radius in one direction by tappets, and you drive in the other direction by the spring, and you produce the same result, namely, the feeding of coal by a radial motion made intermittent in one direction by the operation of the tappets, and in the other direction by the shafts."

Notes.

This case has been followed in many cases; besides those alluded to in the notes, in *Automatic Weighing Machine Co. v. Combined W. M. Co.*, 6 R. P. C. 124. It shows that where the result is new, the means of obtaining that result should be more narrowly examined (*Cotton, L.J.*, in *Aut. W. M. Co. v. Knight*, 6 R. P. C. 304); that if the important parts of an invention be taken, equivalents or variations in the rest will not differentiate (*Rigby,*

¹ Adopted by *Cotton, L.J.*, in *Gosnell v. Bishop*, 5 R. P. C. 156, and by *Stirling, J.*, in *Presto Gear Case, &c. v. Simplex, &c.*, 15 R. P. C. 643.

L.J., in *Muirhead v. Commercial Cable Co.*, 12 R. P. C. 63); that if all the combination be novel, it need not be so described (*Romer, J.*, in *Perry v. Société des Lunciers*, 13 R. P. C. 670). In *Aktiebolaget Separator v. Dairy Outfit Co.* (15 R. P. C. 334) it was followed by *Smith, L.J.* (p. 334), and by *Vaughan Williams, L.J.* (p. 338), as an authority that "the doctrine of mechanical equivalents applies to specific definite parts of a combination, definitely included in the words of a claim."

[It should not be forgotten that what was spoken of as the "result" and "object" of the invention by the learned judges included the means, viz. intermittent radial action. It does not support the proposition that where the "result" or "object" is something apart from the mechanism producing it the doctrine of equivalents applies. The "result" here included the principle of the mechanical action of the radial flap, and was therefore part of the "manufacture," that is of the machine itself; the learned judges never described the passage of the coals on to the fire, apart from the action of the radial flap, as a "result" or "object." The "result," as the term here is used, denotes the radial action, or mode of action, of the mechanism; it falls, therefore, within stage III., and not IV., in the classification, given *ante*, p. 7.]

1887. BADISCHE ANILIN UND SODA FABRIK v. LEVINSTEIN,
4 R. P. C. 449.

Construction—Utility—Sufficiency.

A patent (No. 786 of 1878) was granted to *J. H. Johnson* for an invention (communicated from abroad by *H. Caro*) of "improvements in the production of colouring matters suitable for dyeing and printing," and the invention described in the specification consisted in "the production of red and brown colouring matters which, in chemical language, may be termed the 'sulphoacids of oxyazonaphthaline.'"

The specification then described four processes of preparing the dyes.

The first process showed how, by known methods, naphthylamine is converted into its diazo compound; then equal molecules of the diazo compound and of naphthol or naphthyl alcohol are allowed to react on one another in an alkaline solution; according as either of the isomers alphanaphthol or betanaphthol was employed, the resulting precipitate was either of two isomeric modifications of oxyazonaphthaline, "which may be termed 'alpha and beta oxyazonaphthaline' respectively." "These azo compounds are further converted into their sulphoacids by any method now in use for the preparation of organic sulphoacids, such as, for instance, by heating them with fuming sulphuric acid." The excess of acid was then to be removed and the dye obtained in a solid state by precipitation or evaporation—the brown dyes are obtained from the alphaoxyazonaphthaline, and the red from the betaoxyazonaphthaline. An example of the process

was then set out in which the proportions of the substances by weight were given.

Second process:—"Naphthylamine is converted into its diazo compound as before stated, and equal molecules of the diazo compound thus obtained and of the sulphoacids of either alphanaphthol or betanaphthol are allowed to react upon each other, by preference in an alkaline solution;" red colouring matters result, and may be obtained by precipitation or evaporation. The above sulphoacids are produced by heating naphthol with excess of sulphuric acid at a temperature of about 100° C. The product is a mixture of several naphthol sulphoacids. As the process may be applied to the other sulphoacids (besides monosulphoacid of naphthol) which result from the treatment of naphthol with sulphuric acid, the invention under the second process "is the action of the diazo naphthaline upon all sulphoacids of either alpha or beta naphthol, and substantially in the manner aforesaid." An example of the second process was then given.

Third process:—"The sulphoacids of naphthylamine are converted into their respective diazo compounds, and equal molecules of the diazo compounds thus obtained and of either alphanaphthol or betanaphthol are allowed to react upon each other, by preference in an alkaline solution, and substantially in the manner above described in the first and second processes." Alphanaphthol produces brown dyes, and betanaphthol red. No known ways of producing the said sulphoacids of naphthylamine are mentioned. "By the said methods, as is well known, several modifications of the sulphoacids of naphthylamine are obtained, chiefly differing from each other by their various degrees of solubility in water, some of them being nearly insoluble, such as the so-called naphthionic acid." Examples of this process are next given, in which naphthylamine is directed to be "mixed or dissolved" in strong muriatic acid. The colours obtained differed in a similar ratio in their various degrees of solubility.

A fourth process was then described.

The claims were—

"First, the production of red and brown colouring matters, which in chemical language may be termed the sulphoacids of oxyazonaphthaline, by the action of the diazo compounds which may be prepared from naphthylamine or from the sulphoacids of naphthylamine upon any of the isomeric naphthols, or of mixtures of the same, or upon any of the sulphoacids which may be prepared from either alphanaphthol or from betanaphthol or from mixtures of the same, substantially by the processes above described.

"Secondly, the production of similar colouring matters, and which in chemical language may be termed the sulphoacids of dioxyazonaphthaline, by substituting dioxynaphthaline for either of the two isomeric naphthols in any of the processes above described for the preparation of the sulphoacids of oxyazonaphthaline, substantially as hereinbefore described."

An objection on the ground of alleged absence of utility was based on evidence showing that out of all the dyes produced only one was commercially useful, as it was of a bright colour, and took the public fancy,

although the descriptions were correct as to the process producing other shades of colour for which there turned out to be no market. And also on the ground that there was no means of knowing beforehand the shades that would result.

At the date of the patent there were two isomeric naphthylamines, alpha-naphthylamine and beta-naphthylamine; the former would produce the required result, the latter not. The point was raised that this constituted insufficiency of direction. But it was proved that the alpha-naphthylamine had been known for fifteen years, and the beta-naphthylamine for only two; and that a chemist would ordinarily use the term naphthylamine to denote the older form, and speak of the beta-naphthylamine as the "new naphthylamine."

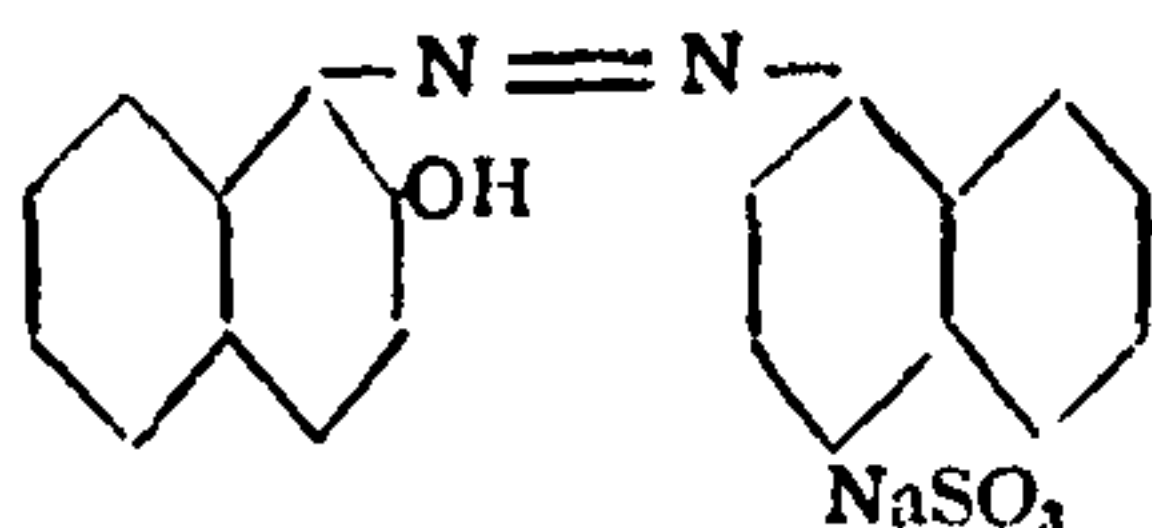
The directions as to the first process were objected to as being misleading, as there were some organic sulphoacids which could be prepared by using ordinary sulphuric acid at a temperature lower than 100° C., at which temperature the sulphuric acid would not convert the oxyazonaphthaline into sulphoacids. It was contended, however, by the patentee that it would be an unreasonable construction of language to hold that the specification asserted that every degree of strength of sulphuric acid and of temperature which would suffice for the preparation of the sulphoacid would convert the azo compounds into their sulphoacids.

The directions for the second process were alleged to be misleading, since it was stated that red dyes would result, whereas the dyes were brown or red according as alpha- or beta-naphthol was used. But shades of red and brown run into one another, and may be differently described by different people; e.g. "brownish red," "reddish brown," &c.

The third process was alleged to be misleading because the most useful dye, producing the brilliant red colour,¹ was formed from the insoluble sulphoacid, and the specification did not call attention to this, but tended to lead the reader away from trying the insoluble sulphoacid. Against this it was urged that the third process referred to the other two, in which "mixing" was spoken of as well as "dissolving," and that the word "solution" therefore included an intimate mixture of powdered solid dusted into the liquid; and also that the use of insoluble sulphoacids was distinctly included in the language describing the process.

At the trial of this action for infringement of the above patent it was held that it was valid, and that the defendant had infringed.

¹ This dye is that known as Fast Red B.T., which is the sodium salt of α -naphthalene-azo- β -naphthol-monosulphonic acid, viz. $C_{20}H_{13}N_2O_4SNa$. Its constitutional formula, according to *Schultz & Julius*, is $C_{10}H_7(\alpha)N=N[1]C_{10}H_5 \left\{ \begin{array}{l} OH[2] \\ NaSO_3[6] \end{array} \right.$, but is given by *Seyewitz & Sisco* as—



This decision was reversed by the Court of Appeal, on the ground that the patent was invalid, because the specification did not distinguish what was useful and what not, the third process being misleading, and the use of the term "naphthylamine" (without distinguishing "alpha" from "beta") ambiguous.

On appeal to the House of Lords.

Held, that the claims included all the different isomers described as "sulphoacids of oxyazonaphthaline," which are red or brown dyes, and which are produced from the action of the diazo compounds prepared from naphthylamine or from the sulphoacids of naphthylamine upon the isomeric naphthols, or upon any of the sulphoacids which may be prepared from either alphanaphthol or betanaphthol, or from mixtures of the same. Also that the several objections to the patent failed, and that it was valid.

Per Lord *Halsbury*, L.C. (p. 462): "There is certainly authority for saying that an invention must be useful, although that word is not found in the statute. . . . The element of commercial pecuniary success has, it appears to me, no relation to the question of utility in patent law generally, though of course where the question is of improvement by reason of cheaper production, such a consideration is of the very essence of the patent itself, and the thing claimed has not really been invented unless that condition is fulfilled."¹

Per Lord *Herschell* (466): "I do not think it is a correct test of utility to inquire whether the invented product was at the time of the patent likely to be in commercial demand or capable of being produced at a cost which would make it a profitable speculation to manufacture it. . . . The products which result from the appellant's products are, no doubt, of varying worth, but one at least has proved to be of great commercial value, and it is not shown that any of them are incapable of being used effectually for the purpose of dyeing."²

As to sufficiency of directions (p. 467): "But I think the patent under consideration does show how the colouring matters are to be produced, and that what it leaves a skilled person of the class, to whom the specification is addressed, to discover is only which of these colouring matters will best answer his purpose at any particular time. There is, in my opinion, no warrant for asserting that this invalidates the patent."³

¹⁻² The foregoing portions of judgments have been quoted in *Siddell v. Vickers*, 5 R. P. C. 96, and referred to in *Kurtz v. Spence*, 5 R. P. C. 182, as being the latest exposition of the law on this point. Also quoted and followed by *Buckley, J.*, in *Atkins & Applegarth v. Castner-Kellner Alkali Co.*, 18 R. P. C. 296.

This case is quoted to show that "useful" means useful for the purpose indicated by the patentee: *Lane Fox v. Kensington, &c.* (per *Lindley, L.J.*), 9 R. P. C. 417.

³ See also *Edison & Swan v. Holland*, 6 R. P. C. 284.

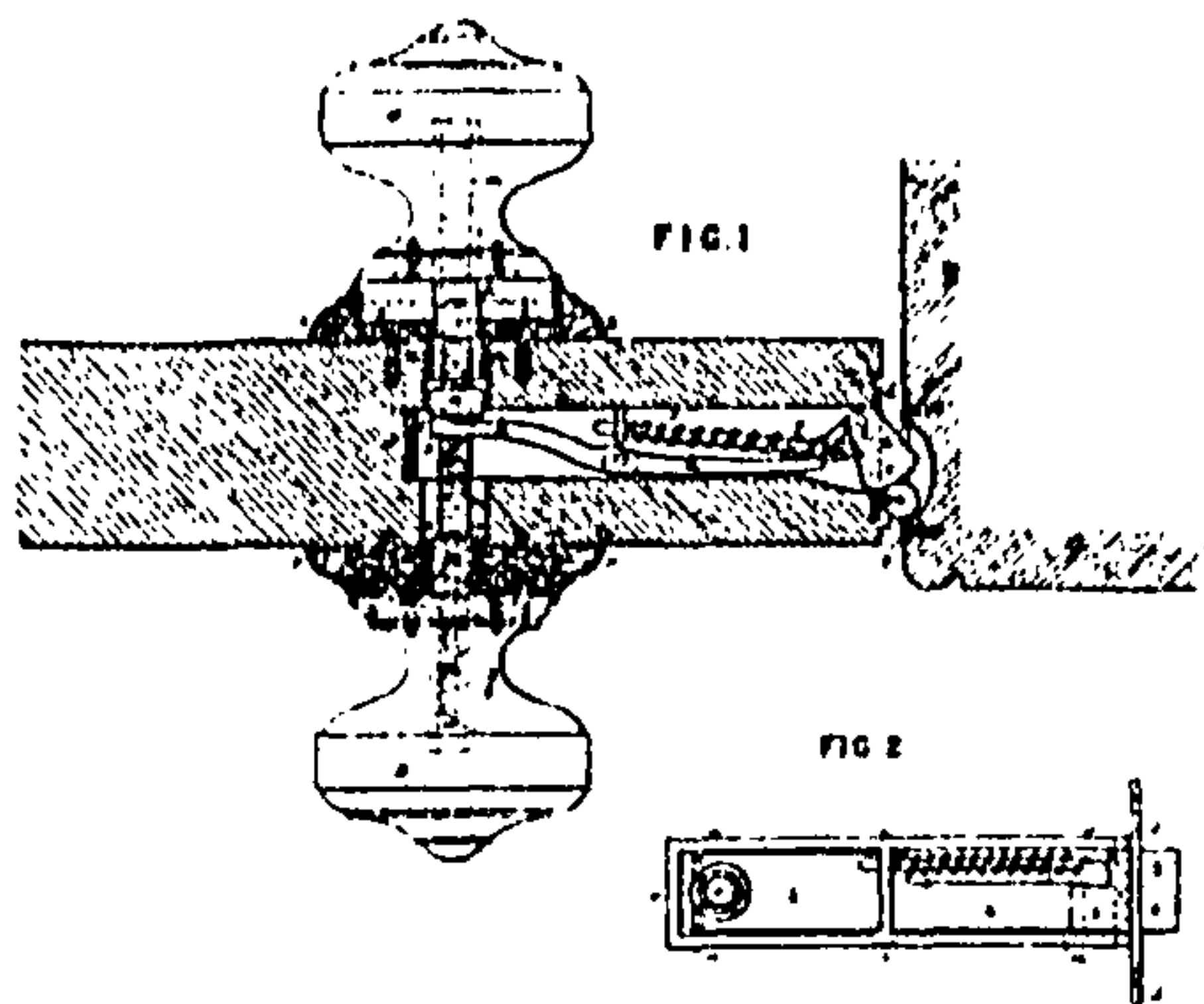
1888. KAYE v. CHUBB & SONS, 5 R. P. C. 641.

Alleged Anticipation—Earlier device a failure.

A patent (No. 4873 of 1877) was granted to Messrs. *Kaye* for "improvements in the means or apparatus employed for fastening and unfastening doors, gates, lids, and windows."

For the present purpose it will be sufficient to refer only to the following portions of the specification:—

"At Figs. 1 and 2 *a* is the shell or framework of the door-fastener, in which we provide the finger or segment *b*, which is fitted so as to move radially on the stud or pin *c*, and to project when at rest through the front plate *d*, as shown at *e*, for the purpose of inserting itself into the catch-plate *f*, as shown at Fig. 1, in the door-frame or jamb *g*.



From *Kaye's* specification (No. 4873 of 1877).

"For the purpose of actuating the finger or segment *b* we provide a lever, *h*, which is pivoted or mounted on a pin or stud, *i*, within the shell or framework *a*. In order to retain the finger or segment *b* in the projecting position, as shown at *e*, we provide the spiral spring *j*, or other equivalent means; by this arrangement the segment or finger *b* (except when moved inwards by the lever *h* in the manner hereafter described) always remains in the position shown at *e*. In all cases we avoid coupling the lever *h* by any rigid connection to the forefinger or segment *b*.

"In order to actuate the lever *h* we engage the inner end *k*, which has a projecting piece, *l*, with a spindle, *m*, on which is provided the projection or collar *n*, against which the end *k* of the lever *h* remains in contact. For the purpose of more conveniently moving the spindle *m* we provide knobs *o* and *o*¹, which are screwed or otherwise fastened on to the outer ends thereof. The position of such knobs *o* and *o*¹ on the spindle *m* varies in accordance with the thickness of the door, and in order to retain these at their required distance apart we provide on the spindle two adjustable nuts or bosses, *p*, whose position with regard to the knobs is clearly shown at Fig. 1. . . .

"The mode of operating or working the fastener is as follows:—By pulling a knob, *o*, or pushing at *o*¹, the spindle *m* provided with the collar *n* is moved in the direction shown by arrow. The collar *n* being in contact with the end *k* of the lever *h*, causes it to transmit motion to the finger or bolt *B*, and thereby withdraws it upon the catch-plate *f* and clear of the

loose runner or roller *v*, and by a continued pulling or pushing of the knobs in the direction shown the door may be opened after the finger or segment is withdrawn.

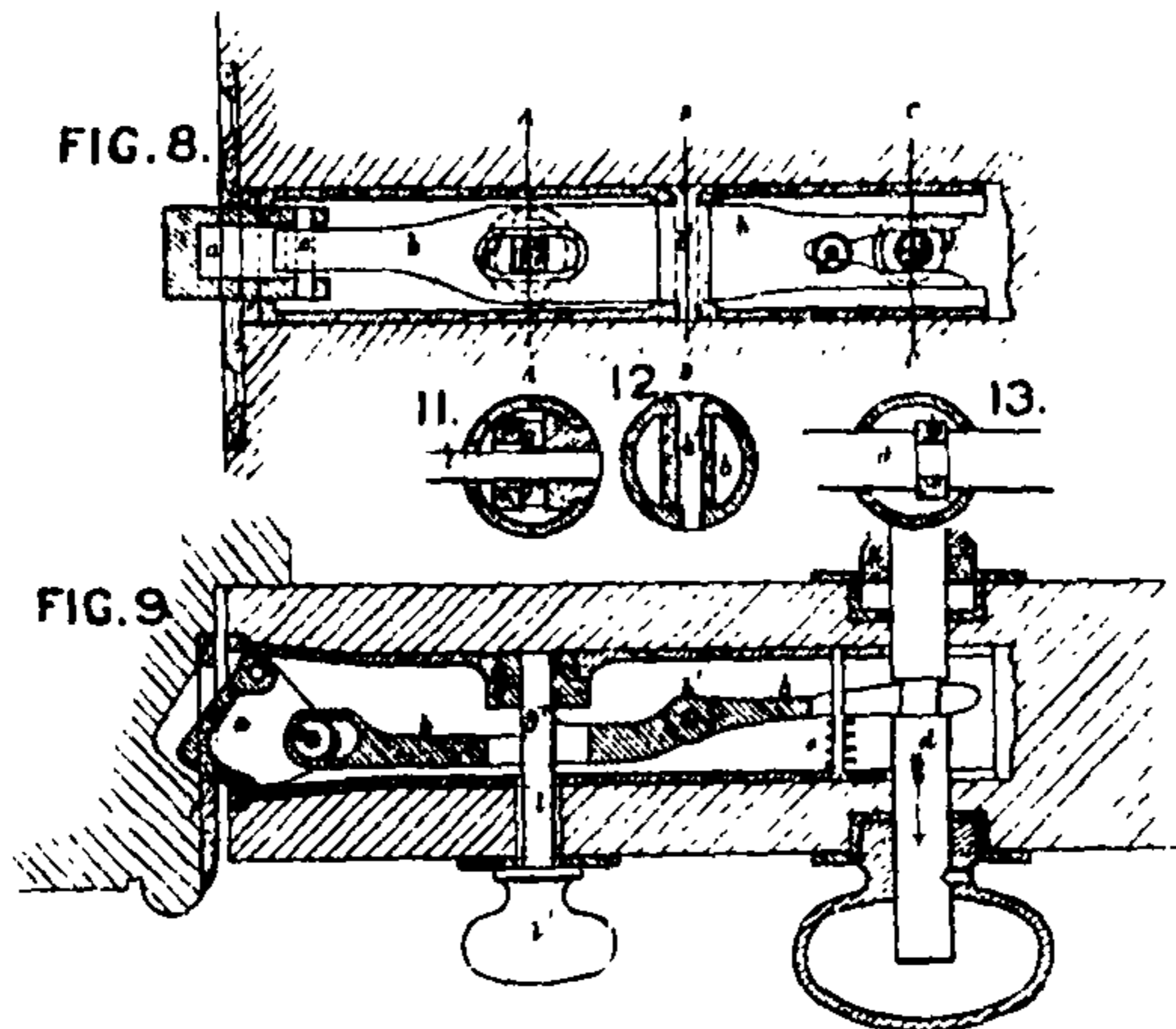
“By having no rigid connection between the segment or finger *b* and the lever *h*, the door may be closed through the means of the knobs or handles, or it (the door) may be closed without moving the knobs *o* or *o*¹. . . .

“We hereby declare that we make no general claim to the opening of latches or fasteners by a pull or push of a spindle or knob, but we claim:—The construction of a latch or fastener wherein a lever worked by the push or pull of a spindle or knob moves in one direction only a segment or finger turning on a fulcrum and pressed in the opposite direction by a spring so as to engage with a catch-plate, substantially as and for the purposes herein set forth.”

In an action for infringement against the defendants the validity of the patent was contested, *inter alia*, on the ground that the invention was anticipated by *Imray's* specification (No. 1160 of 1871).

For the present purpose the following description is sufficient¹:—

“Another object of my invention is the construction of a spring-latch



From *Imray's* specification (No. 1160 of 1871).

in such a manner that it is disengaged from the catch-plate (*f*) by pulling the knob or handle on the side towards which the door opens, or by pushing the knob or handle on the other side. Thus the act of pulling or pushing the knob without turning it round serves to open the door. For this purpose the knob-spindle (*d*) is made with a groove in it (*d*, *b*, Figs. 8 and 13), or with a projection or collar on it, which engages with a lever (*b*) connected to the spring-bolt (*a*). The knob-spindle being pulled or pushed in the

¹ The passage here quoted had in the original no references to the diagrams, which are given from another part of the specification.

direction of its length, moves the lever, and so causes the bolt to be retracted."

The action will be apparent from Fig. 8. There was no diagram showing "a projection or collar" on the knob-spindle *d*. In this respect it differed from *Kaye's*. On attempting to close the door by *pushing the handle* the groove *d* forced the lever *b* back, thus forcing out the latch *a* too soon and hindering the closing of the door. The evidence showed that a slight modification would have made it work successfully. The inventor did not see this, and the patent was abandoned as useless.

It was held at the trial, that *Kaye's* invention was not anticipated, and that the defendants had infringed.

On appeal, it was held by the Court of Appeal that *Imray's* specification anticipated *Kaye's*.

The plaintiffs appealed.

Held, by the House of Lords, that *Imray's* specification only disclosed as its contemplated object (so far as this case was concerned) "the opening of the door," the "projection or collar upon it" (*i.e.* the knob-spindle) being merely an equivalent for the "groove in it." The plaintiffs' patent was declared valid.

1889. EDISON & SWAN CO. v. HOLLAND AND OTHERS, 6 R. P. C. 243.

Sufficiency—Utility.

This was an action for infringement of the patents discussed in two previous cases, *viz.* *Edison's* (No. 4576 of 1879, *ante*, p. 293), and *Cheesbrough's* (No. 4847 of 1878, *ante*, p. 297). Practically the case turned on the former only.

The evidence was very voluminous. It was mainly directed to the issue of the sufficiency of the specification, the defendants alleging that the ordinary skilled workman would not know of the necessity of using in the process of carbonizing either carbon "packing," or a metal box or vessel through which oxygen would not permeate at high temperatures; and that he would not know that the tar-putty required prolonged rolling or kneading. Evidence was also called to prove that the "coating" process was a failure. It was proved that some lamps had been publicly exhibited which were made according to the specification; but that none were made or used commercially except with further improvements subsequently invented.

Judgment was in favour of the plaintiffs with regard to the *Cheesbrough* patent. The learned judge found that the *Edison* patent was invalid on the following grounds:—The second claim was too wide: the lamp could never be commercially successful; experiments and trials were necessary to enable the workmen to make the filaments; one process was injurious and another useless; and that the third claim was for a useless invention.

On appeal, it was held by the Court of Appeal that all the objections failed, and that the patent was valid.

The Lords Justices found that the learned judge was wrong in certain conclusions of fact he drew from the evidence, and as regards the law—that the Court was bound by its construction of the claim in the former case; that “commercial utility” was not the test; that the specification was sufficient if the directions enabled a person skilled in the art to carry out the invention, although he had to attempt the process several times in order to acquire the requisite facility, so long as he had not to “invent.”

Per *Cotton*, L.J. (p. 277), as to sufficiency of directions: “It is necessary that this should be done so as to be intelligible, and to enable the thing to be made without further invention—not as was pressed upon us by an ordinary workman, but by a person described by Lord *Ellenborough* in *Huddart v. Grimshaw* (1 Webs. 85, 87) as a person skilled in the particular kind of work, or, as said by Lord *Loughborough* in *Arkwright v. Nightingale* (1 Webs. 60), a person conversant with the subject. But in my opinion it is not necessary that such a person should be able to do the work without any trial or experiment, which, when it is new, or especially delicate, may frequently be necessary, however clear the description may be. One of the principal subjects of attack was that part of the specification which gave directions for making a combination of lampblack and tar to form a material to make the filament to be carbonized¹ . . . the defendants contended before us, without any support from the evidence, that the material could not be effectually prepared without a trade secret. . . . It was said that the secret was the necessity of kneading the material for a length of time, and with the exercise of great pressure . . . and though there are no express directions in the specification how this tar-putty is to be prepared, it is stated that the material can be rolled into threads as small as ‘007 of an inch, and I think it would be obvious to any intelligent workman who wished to prepare the material that it must be kneaded so as to make it perfectly homogeneous, and to prevent any breaking of the thread in consequence of any particle of lampblack not being perfectly amalgamated with the tar.”

Per *Lindley*, L.J. (p. 280): “In complying with the first condition, *i.e.* in describing the nature of his invention, the patentee does all that is necessary if he makes the nature of his invention plain to persons having a reasonably competent knowledge of the subject, although from want of skill they could not themselves practically carry out the invention. In complying with the second condition, *i.e.* in describing in what manner the invention is to be performed, the patentee does all that is necessary if he makes it plain to persons having reasonable skill in doing such things as have to be done in order to work the patent, what they are to do in order to perform his invention. If, as may happen, they are to do something the like of which has never been done before, he must tell them how to do it, if a

¹ See *ante*, p. 294, ll. 25-43.

reasonably competent workman would not himself see how to do it on reading the specification, or on having it read to him. The principle to be applied to the language used to comply with the two conditions is the same for both; but one class of persons may understand only one part of the specification, and another class only the other, and yet the patent may be valid. In a well-drawn specification, the two conditions that have to be complied with are kept distinct; but in many specifications this course is not pursued. The nature of the invention, and the manner of performing it, are often described together. It may be that one set of words sufficiently discloses both the nature of the invention and the mode of performing it, as in *Boulton v. Bull*. But it may be, and sometimes is, very difficult to sever the two, and to see whether both are sufficiently described. . . ."

As to the directions for rolling and coating tar-putty filaments (p. 282): "I feel the great difficulty of describing in words the distinction between an amount of practice, without which failure is *probable*, but the necessity for which does *not destroy* a patent, and an amount of experiment and invention, without which failure is *certain*, and the necessity for which destroys a patent. The test, however, by which to decide such a question is, I think, to be found by asking whether anything new has to be found out by a person of reasonably competent skill in order to succeed if he follows the directions contained in the specification. If yes, the patent is bad; if no, it is good so far as this point is concerned. Practice is one thing, experiment and trial something different."

As to utility (p. 283): "The utility of a patent must be judged by reference to the state of things at the date of the patent; if the invention was then useful, the fact that subsequent improvements have replaced the patented invention and rendered it obsolete and commercially of no value does not invalidate the patent."¹

As to the second claim: "Whether the view here taken of the patent is correct or not, turns, in my opinion, on what Mr. *Edison* did when he introduced 'carbon filaments.' That was, I think, a new departure of the highest importance in electric lighting, and if this be so, the claim is not too wide (see *Houshill Co. v. Neilson*, 1 Wels. 683)."²

1889. AMERICAN BRAIDED WIRE CO. v. THOMSON, 6. R. P. C. 518.

Novelty—Subject-matter—Ingenuity.

The patent in question (No. 9073 of 1885) was granted to *W. R. Lake* for "improvements in bustles or dress-improvers."

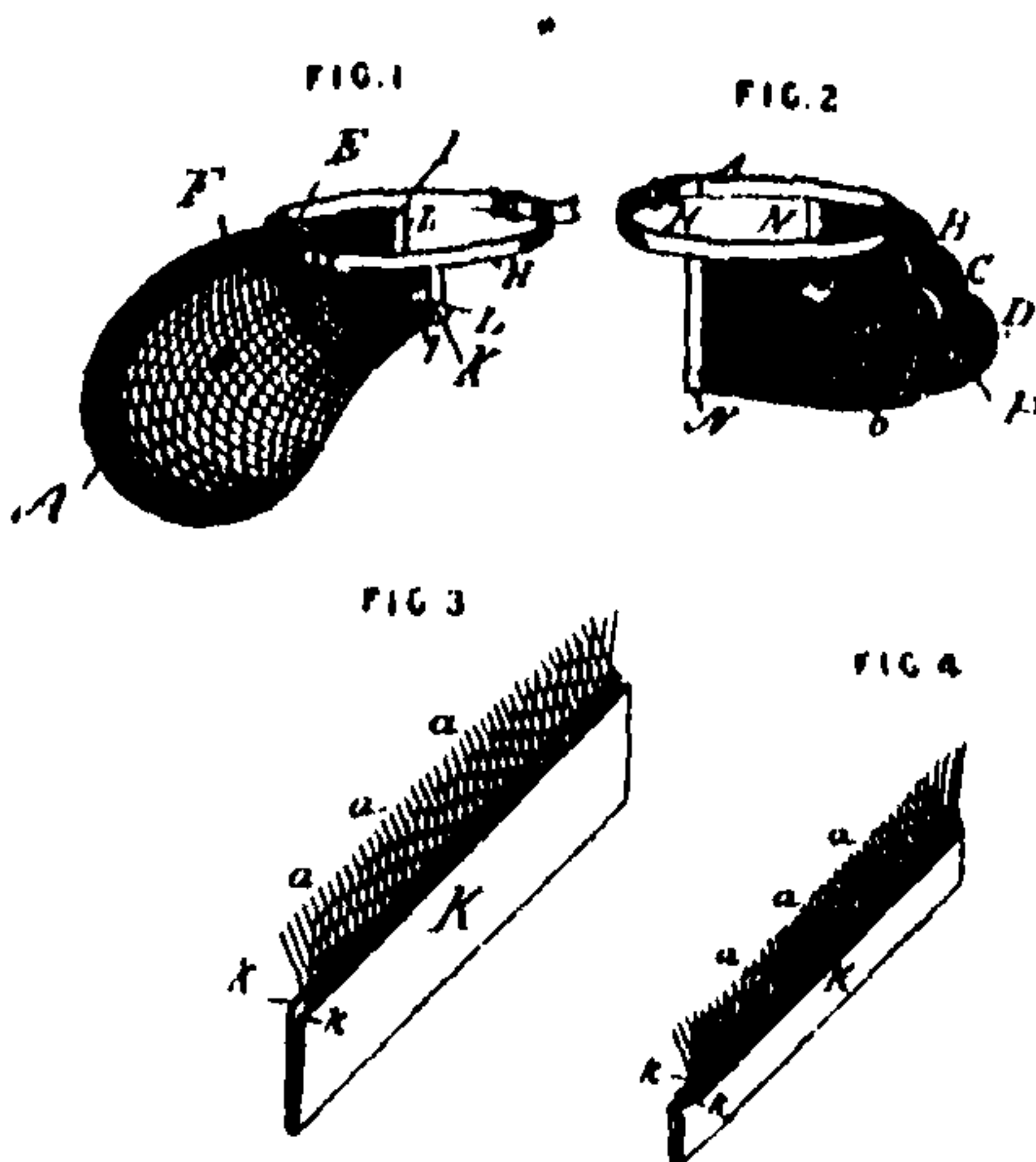
The complete specification commenced with a general statement of the

¹ Quoted and followed in *Rockliffe v. Priestman*, 15 R. P. C. 158. This judgment is also referred to as showing that the invention must be useful for the purposes indicated by the patentee. *Lane Fox v. Kensington, &c.* (per Lindley, L.J.), 9 R. P. C. 417.

² It was said by Lord Justice Clerk *Hope* in that case, that an invention consisting in the application of a principle was good subject-matter for a patent, although the claim was wide.

nature of the invention, "a light, cool, elastic bustle, of novel construction &c." Braided wire was spoken of as a known article, to be braided "on a braiding-machine of suitable construction so as to form a hollow cylinder or tube." The mode of construction was then described in general terms, and then more particularly as follows:—

"Fig. 1 represents a bustle-body which is composed of a single section of braided or plaited wires.



From Lake's specification (No. 9073 of 1885).

ends, II, of the section A are contracted by drawing or pinching the wires *a* together, and these ends are each clamped in a plate, K. The plates K are bent lengthwise, as shown in Fig. 3, so as to form V-shaped pieces, in the troughs of which the ends of the section A are placed. The sides *kk* of the V-shaped plates K are then pressed together and again bent or doubled lengthwise, as shown in Fig. 4, clamping the wire *a* firmly between them and forming hooks on the ends of the wires, which prevent the latter from being pulled out of place. The ends of the section A, after having the clamping-plates K applied to them, are secured to the waistband by tape-hangers L, L, which form covers and give a finish to the article. By gathering the wires on the inside of the middle of the crescent, as above specified, said wires form curvilinear braces radiating towards the ends and the outside of the bustle, imparting additional strength and resisting properties.

"When two or more wire-sections are employed to form the body of the bustle, the several ends thereof are clamped in the manner just described in bent plates, and these are also fastened to tape-hangers, NN, secured to the waistband. The middle portions of the several sections are secured to each other and to the waistband by an encircling tape, P, fastened to said waistband. By increasing the number of sections, the article will form a half-skirt, which is within the scope of this invention."

The claims were—

"Fig. 2 shows a bustle, the body of which consists of a plurality of sections of similar material or wire.

"Figs. 3 and 4 are details showing the clamping-plate for the ends of the wire sections of the bustle.

"The section A is crescent-shaped, being curved and of larger diameter at the middle than at the ends. The middle portion is gathered on the inner side at E, and so held by a spiral spring or helical wire, F, through the coils of which some of the wires *a* pass. A cord, G, passes through the spiral and is tied to a waistband, H, of tape or equivalent material. The

“(1) A bustle composed of a tubular section or piece of braided wire secured to a waistband, substantially as shown and described.

“(2) A bustle composed of two or more tubular sections of braided wire secured to a waistband, substantially as shown and described.

“(3) A bustle comprising a tubular section or sections of braided wire of crescent-shape fastened to a waistband, substantially as shown and described.

“(4) A bustle comprising a tubular section of braided wire gathered at the middle and secured by a fastening, substantially as shown and described.

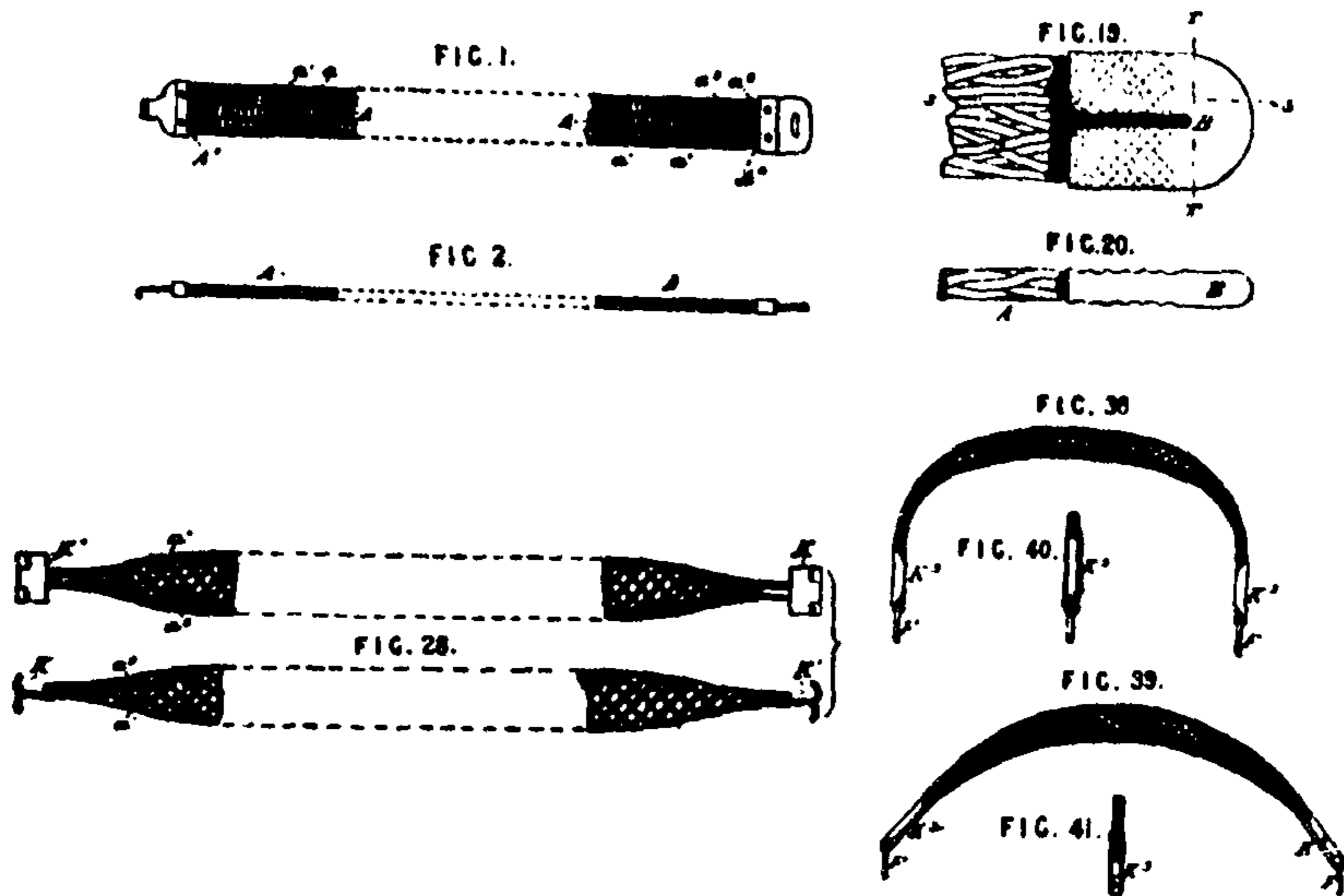
“(5) A bustle the body of which is composed of a tubular section or sections of braided wire, the ends of which are secured in clamping or retaining plates or strips, substantially as shown and described.

“(6) A bustle composed of a tubular section or sections of braided wire fastened at the middle and ends to a waistband, substantially as shown and described.”

The American Braided Wire Company, as owners of the patent, brought an action for infringement.

Two points raised by the defence were—want of novelty, and that the invention was not “subject-matter.”

The alleged anticipations were *Jenkins’* invention (No. 1235 of 1880) and *Lake’s* (No. 10191 of 1884).



Diagrams from Jenkins's specification (No. 1235 of 1880).

Jenkins’ patent was for “improvements in compound wire springs and articles made therefrom, and in machinery and apparatus for producing the same.” The invention was to be applied to all sorts of articles; the ends were to be secured by soldering or riveting into clamps; an improved

method of soldering and capping was devised. The nature of the invention will be (for the present purpose) sufficiently apparent from the following diagrams:—

Figs. 1 and 2, elevation and side view of a garter.

Figs. 19 and 20, end of a braided wire spring with metal caps.

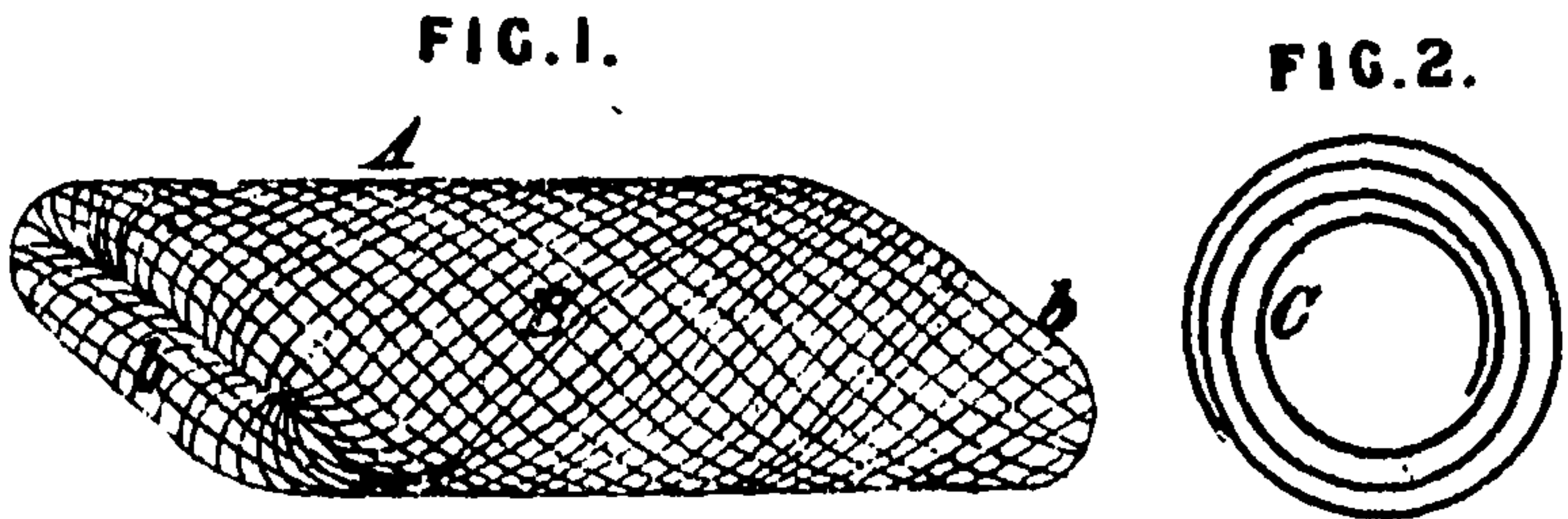
Fig. 28, perches for bird-cages.

Figs. 38 and 39, satchel handles with ends K³ enclosed in metal.

Figs. 40 and 41, longitudinal sections of ends of these with and without rings.

A number of other applications of the braided wire were shown, but those here reproduced were most like the plaintiff's.

Lake's patent (1884) was for "improvements in and relating to pillows, cushions, or similar articles." The nature of the invention will be seen from the drawings here given. Fig. 1 is the pillow, of which Fig. 2 is a



Diagrams from *Lake's* specification (No. 10191 of 1884).

cross-section. The wire, preferably steel, was braided or plaited in the form of a tubular section, either circular, oval, or elliptical—preferably made tapering at the ends. The wires were secured to rings at the ends, which were secured by rods or cords.

At the trial other previous uses of braided wire were proved. It was then held that the patentee's purpose was merely one analogous to that of *Jenkins'* invention, and that there was not sufficient ingenuity in the mode of clamping the wires to support a patent.

The Court of Appeal reversed that decision on both grounds (5 R. P. C. 113).

On appeal to the House of Lords.

Held, that the patent was one for two combinations or forms of bustles shown in Figs. 1 and 2, and that there was sufficient ingenuity exhibited in the application of old braided wire to that new purpose to support the patent.

Notes.

The foregoing case has been regarded as an illustration of an invention just more than the "mere adaptation" of an old thing to a new use: *Morgan v. Windover*, 7 R. P. C. 136. The application of the rule involves a correct estimate of the degree of ingenuity required to constitute a patentable "invention": *Gadd v. Mayor of Manchester* (per Lindley, L.J.), 9 R. P. C. 524.

The thing invented was a new article ; that was the ground of the decision :¹ per Lord *Herschell*, in *Vickers v. Siddell*, 7 R. P. C. 302. The invention lay in the combination of the "clamping" and the tubular braided wire in the bustle : *Thierry v. Rickmann* (*Charles, J.*), 12 R. P. C. 427. Novelty and utility, however, in this case had been proved : *Savage v. Harris* (per *Chitty, J.*), 13 R. P. C. 94.

1890. MORGAN v. WINDOVER, 7 R. P. C. 131.

Analogous Use—No Inventive Ingenuity.

A patent (No. 4216 of 1876) was granted to *G. H. Morgan* for "improvements in carriages." The specification described the invention in detail. It consisted in placing the C-springs, formerly used at the back of a carriage in the front, in such a manner that the turning of the carriage was not interfered with. The claims were : "first, the mode herein described of supporting the front of a carriage by C-springs having their lower parts fixed to the axle and their bows connected by links or loops to bearings fixed to the bottom bed of the under carriage, substantially as and for the purposes herein shown and described ; and secondly, I claim giving support to the tails of the front C-springs by connecting them to a cross-spring fixed at its centre to a stay or stays fixed to the framing pieces of the bottom bed in manner and for the purposes substantially as herein shown and described."

It was proved at the trial that these improvements consisted essentially in putting a known form of spring, which had before been used at the back of carriages, on the front. It was also proved that if a competent workman were told to substitute a composite for an elliptical spring upon the fore axle, he could carry out the order without further instructions.² The invention was useful, and a commercial success.

At the trial, and by the Court of Appeal, the patent was held valid.

On appeal to the House of Lords.

Held, that there was no subject-matter to support a patent, as the inventive faculty was not displayed in adapting known springs to a new position in front of the vehicle.

Notes.

The patentee did not claim the combination of the springs at the back with those at the front, but only the mode of securing them to the front of the carriage, in which operation no invention was displayed ; there being no ingenuity in that, there was an end to the case : *Lyon v. Goddard*, 10 R. P. C. 344 (per Lord *Esher, M.R.*), 345 (per *Bowen, L.J.*) ; S. C. 11 R. P. C. 357 (per Lord *Halsbury, L.C.*).

¹ According to the view submitted in this book (*ante*, pp. 6-13), a new article is a new "manufacture."

² This was the crucial evidence in the case (see *ante*, pp. 35, 37).

Invention is a question of fact and degree; in the above case none was shown: *Pirrie v. York St., &c.*, 11 R. P. C. 448, 456; *Brooks v. Lamplugh*, 14 R. P. C. 615.

It is not the advantage gained, but the substantial amount of invention shown, that can alone decide whether there is sufficient "subject-matter." Per *Rigby, L.J.*, in *Castner-Kellner Alkali Corporation v. Commercial Development Corporation*, 16 R. P. C. 268.

As to utility or advantages being evidence of invention, see *ante*, p. 38.

1890. VICKERS v. SIDDELL, 7 R. P. C. 292.

Disconformity—Inventive Ingenuity—Combination.

In 1885 a patent (No. 6205) was granted to *G. Siddell* for "an improved mechanical appliance for working or operating on large forgings in iron or steel."

The provisional specification was in the following terms:—

"This invention relates to the construction and application of an improved and more simple and effective mechanical appliance or means for working or operating on large forgings in iron or steel, being such forgings as are usually made under a hydraulic forging-press or machine.

"My improved appliance consists of a horizontal bar or bars made of suitable metal and fitted with suitable pulleys and hooks, which bar or bars can be placed or fitted on either side of the crosshead of the forging-press, or through the 'pellet' or key-way.

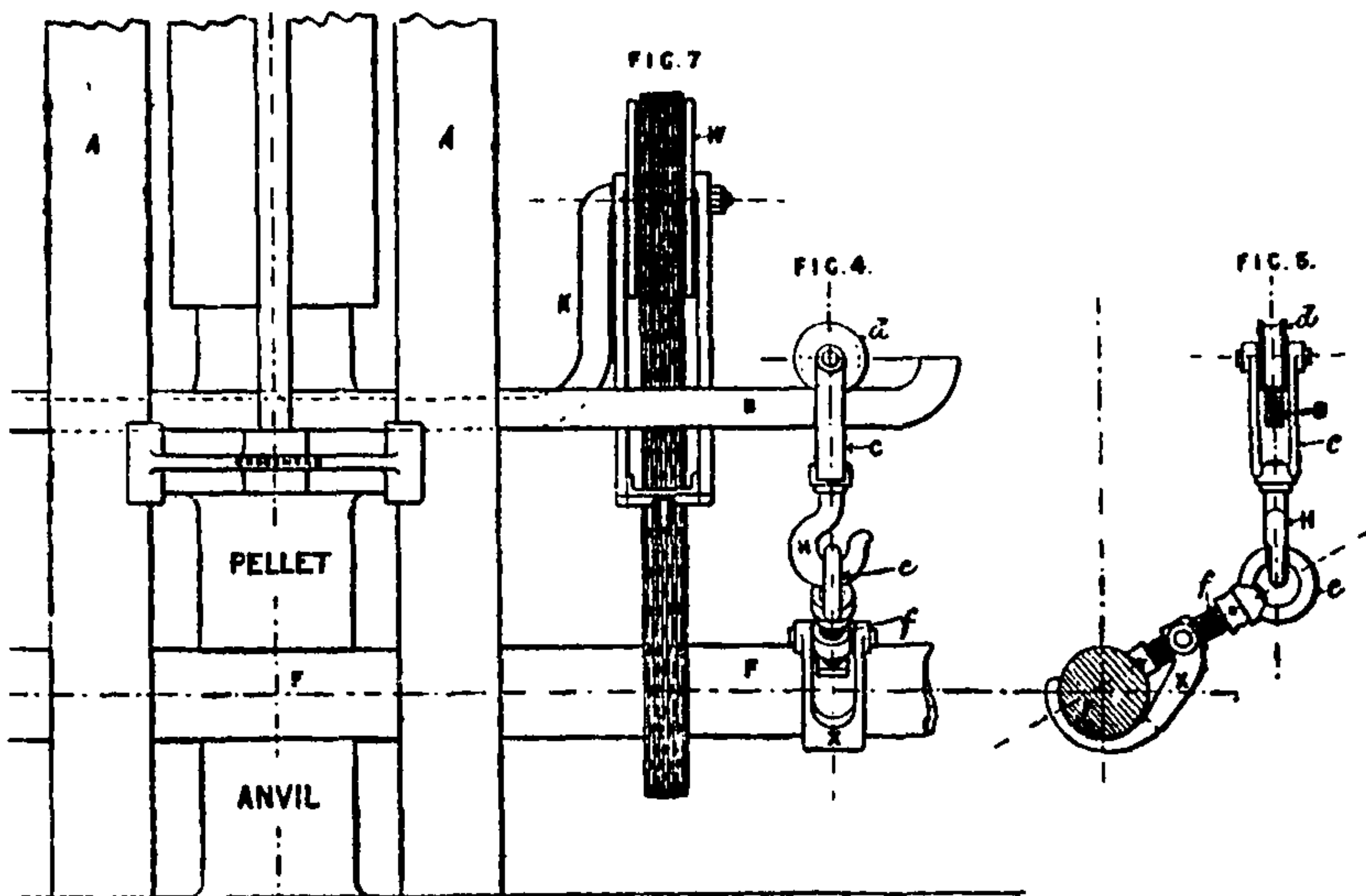
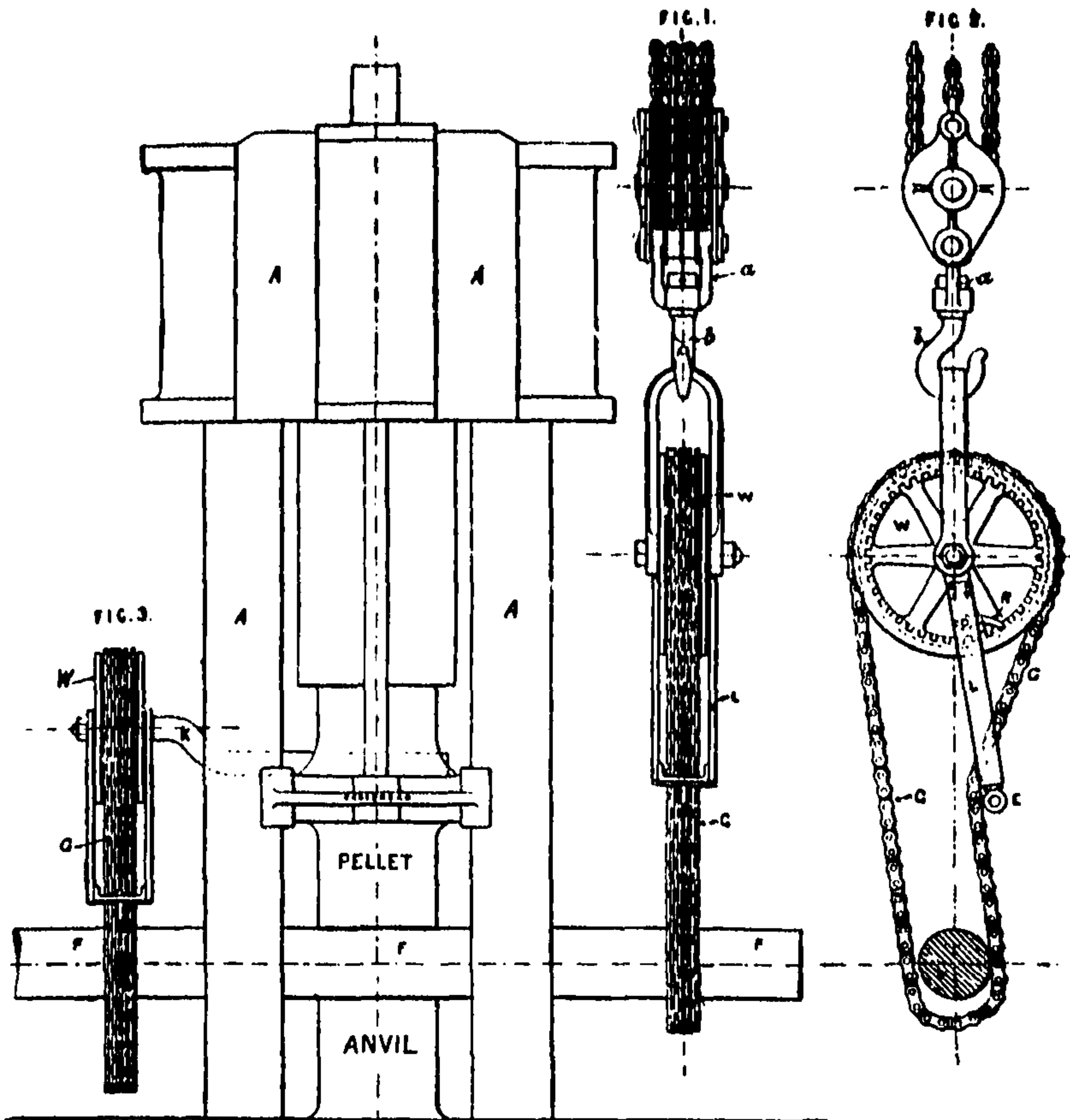
"Clips or grips or ratchets are conveniently arranged so as to fix on or hold the ingot or forging and hooked on the ratchet or clip or grip; and in operating, when the press lifts up or is raised, the ingot or forging will be turned as much as required at every stroke or operation of the press.

"The crank bar of the press in connection with the wheel and endless chain thereof will raise the forging from the anvil at the same time that the clip or grip or the ratchet is turning the forging, the ratchet being suitably fixed for turning the crane-wheel over which the endless chain passes.

"The ratchet has a chain attached to the crane girder, which will travel along a horizontal bar suitably fixed for the purpose, and will turn over the ingot or forging in the furnace."

The complete specification described the invention by the aid of diagrams.¹ For the present purpose the following is sufficient. In Fig. 2, G is an endless chain passing over the wheel W and under the forging F, on which it was to operate. In one modification the wheel W turned on an axle attached to the crosshead K of the press (shown side view in Figs. 3 and 7). The single or double lever L worked on the same axle. In another form the axle of the wheel W was suspended by the crane-hook, &c., *ab*, as shown in Fig. 1. A ratchet, R, engaged in internal

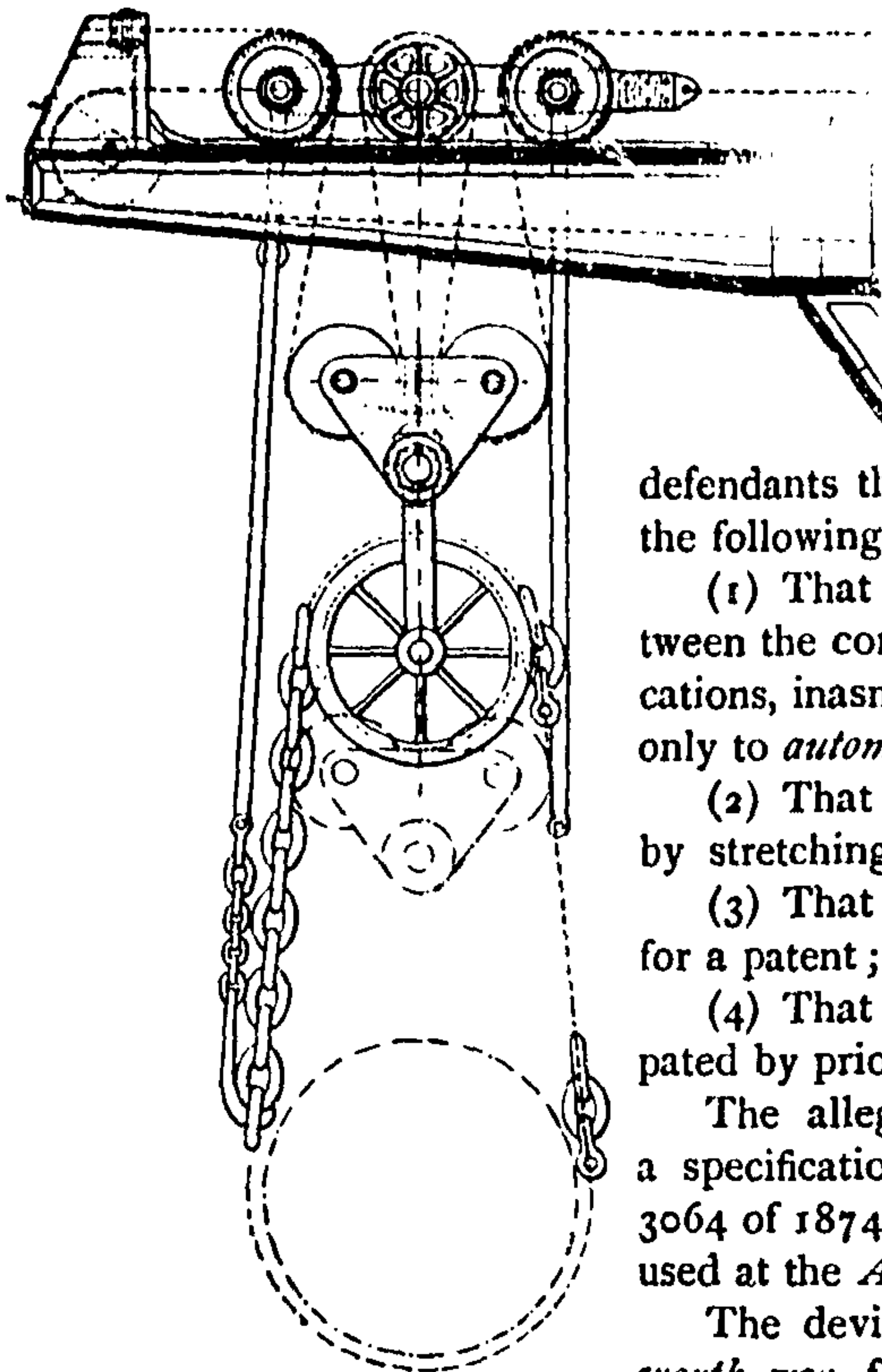
¹ These here given are in part and condensed.



Diagrams from Siddell's specification (No. 6205 of 1885).

cogs in the wheel W. When the press rose the weight of F came wholly or in part on the chain G, straightening it, thereby actuating the lever L and turning the wheel W. Instead of this automatic action, external force might be applied to the loop E, and the lever so actuated independently of the endless chain G. Another form of appliance was shown in Figs. 4 and 5, the arrangement or grip X_e being hung by the hook H from the wheel d, running on a bar, B, of the crosshead. When the latter rose the "tongs" X gripped the forging F, and so turned it a corresponding amount. The arrangements could be used separately or combined (as shown in Figs. 4 and 7), and might be attached to a movable crane.

The claim was for "the general construction, adaptation or application, and the combination and use of the several parts, in the whole, constituting improved more simple and efficient appliances or means for working or



Drawing of a part of the Abouchoff crane.

operating on iron or steel forgings, substantially as hereinbefore set forth, and as illustrated on the accompanying drawings."

In an action for infringement of the above patent against Messrs. *Vickers*, it was contended, *inter alia*, for the

defendants that the patent was invalid upon the following grounds:—

(1) That there was disconformity between the complete and provisional specifications, inasmuch as the provisional related only to *automatic* turning of the forgings.

(2) That the supposed *automatic* action by stretching the chain was useless.

(3) That there was no subject-matter for a patent; and

(4) That the invention had been anticipated by prior appliances.

The alleged anticipations consisted of a specification of Sir *J. Whitworth* (No. 3064 of 1874), and descriptions of machines used at the *Abouchoff* and *Creuzot* works.

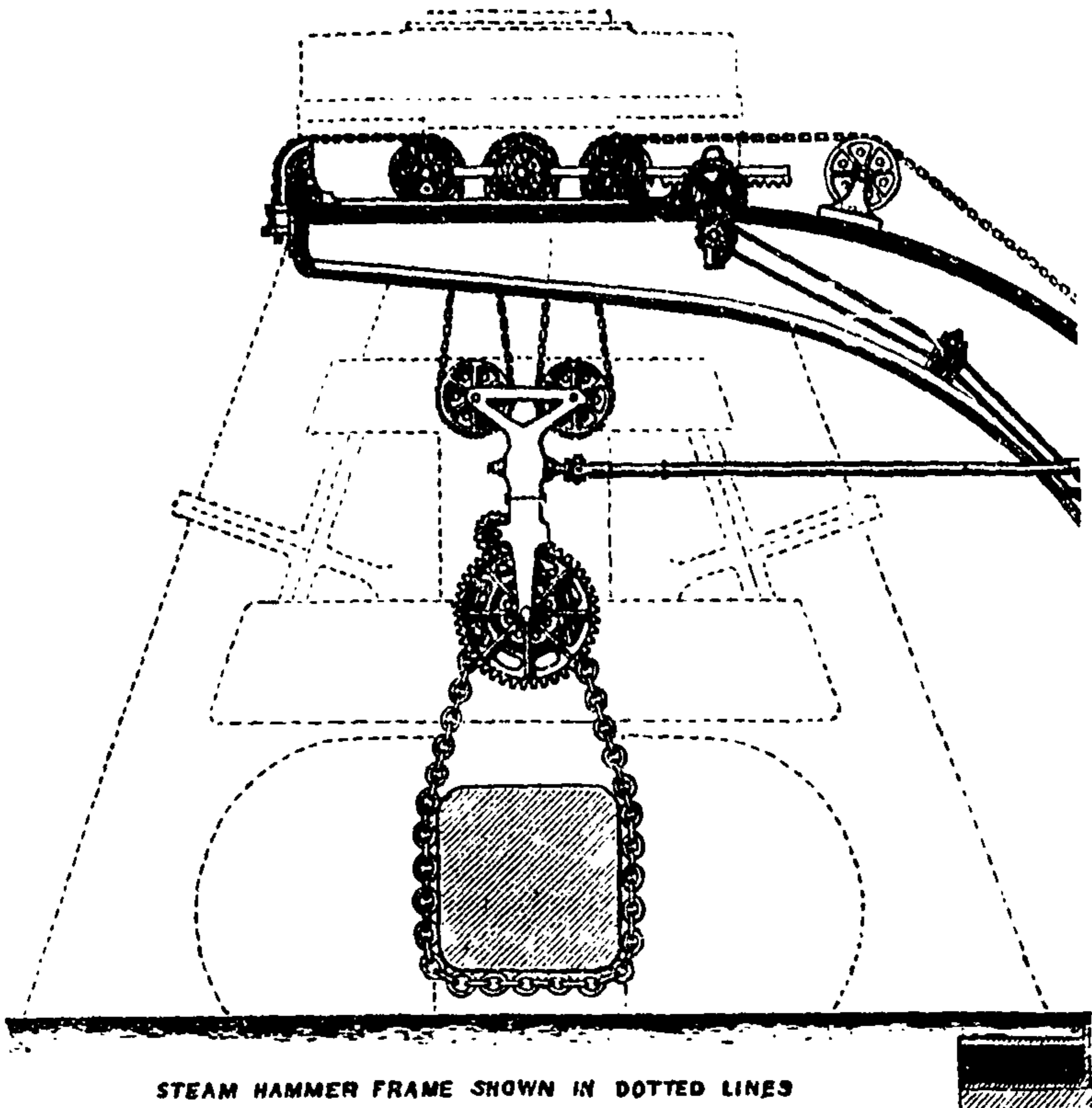
The device employed by Sir *J. Whitworth* was for the purpose of turning a mandril, not the forging itself, and consisted in a ratchet-wheel fixed to the mandril,

and engaging with a pawl on a lever worked by a hydraulic ram. The ram could be raised either by hand or by a self-acting motion.

The "Abouchoff" machine was described in *Engineering*, Jan. 25, 1878 (Vol. 25, p. 64). The whole drawing showed a sixty-ton steam-

crane (a portion of which is only shown here)¹ with the mechanism for raising the apparatus here shown and moving it horizontally along the crane. In turning the forging it was necessary to insert by hand the hook into the chain, as shown on the left-hand side of the drawing. This device prevented the hooked link from descending, and so turned the chain and forging.

The "Creuzot" crane was one of one hundred and sixty tons, and was described in the *Engineer* of May 10, 1878. The full drawing (of



Drawing of a part of the Creuzot crane.

which a part only is here shown)¹ showed the whole crane. The steam-hammer frame is shown in dotted lines. The chain enclosing the forging was turned by means of external cog-wheels working on the chain-wheel, as shown in the drawing.

It was proved that the precise combination in question (*Siddell's*) had

¹ The exhibits used in the case in the House of Lords were the full drawings taken from the above-named publications. The author is indebted to the proprietors of those papers for the parts of the same drawings here reproduced.

not been used before, that it effected a great saving in labour and of £175 in wages per week. The defendants (*Vickers*) first claimed that they were the inventors, and that the patentee had taken the device from them; but this argument was abandoned on appeal.

At the trial, and in the Court of Appeal, the patent was held valid.

On appeal to the House of Lords.

Held, that the provisional specification sufficiently indicated the nature of the invention subsequently disclosed in the complete specification; that the combination was novel, and the patent was valid.

Per Lord *Halsbury*, L.C. (p. 303): "The objection that no distinct claim is made is one of form only, and I think the Legislature did not intend to make the direction, which undoubtedly the Act contains, a condition upon the non-compliance with which the patent should be void. There is no trace of any such intention in the statute, and there does not seem any good reason why it should be inferred from the general policy of the statute. On the contrary, the questions of mere form, I think, were intended to be dealt with under the new machinery provided."¹

Per Lord *Herschell*, (p. 304): "The question remains whether this mode of dealing with forgings which require to be gradually turned was so obvious that it would at once occur to any one acquainted with the subject and desirous of accomplishing the end, or whether it required some invention to devise it. There is no doubt about the law applicable to such a question, though it is often difficult to apply it to the circumstances of any particular case, and its application is perhaps most difficult when the alleged invention consists of a new apparatus combining known elements. If the apparatus be valuable by reason of its simplicity, there is a danger of being misled by that very simplicity into the belief that no invention was needed to produce it. But experience has shown that not a few inventions, some of which have revolutionized the industries of this country, have been of so simple a character that, when once they were made known, it was difficult to understand how the idea had been so long in presenting itself, or not to believe that they must have been obvious to every one."

At p. 306: "The last objection taken to the patent is, that the complete specification does not 'end with a distinct statement of the invention claimed' as required by sect. 5 (5) of the Act. The Act does not provide that if this requirement is not complied with the patent shall be void, and I think it impossible to imply any such condition. There is no more warrant for doing so in this case than in the case of non-compliance with any other of the provisions of the section. The provision which immediately precedes that in question requires that a specification should 'commence with a title.' It could hardly be gravely contended that if the Comptroller accepted a specification where the title did not occupy the first place, the patent granted ought on that account to be held void.² It is not necessary to express any opinion whether the specification did end

¹⁻² Reaffirmed in *Tubes Ltd. v. Perfecta, &c.*, 20 R. P. C. 99, *post*, pp. 461, 462.

with a distinct statement of the invention claimed within the meaning of that statute. I should certainly not recommend it as an example to be followed."¹

Notes.

The first of the foregoing passages from Lord *Herschell's* judgment has been frequently quoted (in whole or in part) and followed in *Shaw v. Barton*, 12 R. P. C. 291; *Savage v. Harris*, 13 R. P. C. 94; *Birch v. Harrap*, 13 R. P. C. 620; *Thierry v. Rickmann* (the whole judgment was relied on by *Charles, J.*), 12 R. P. C. 427; and *Taylor & Scott v. Annand & Others*, 18 R. P. C. 62.

Lord *Herschell* also pointed out that as there was evidence that various devices had been made to meet the want, the patentee's device was not so obvious as had been suggested. *Longbottom v. Shaw*, 8 R. P. C. 337.

Vickers v. Siddell decided that the rule as to "disconformity" still continued after the Act of 1883; it is restated in *Gadd v. Mayor of Manchester*, 9 R. P. C. 259, 526, 529. It also shows that in ascertaining the nature of the invention the whole specification must be considered; the absence of express claim for the novel feature in the invention does not of itself invalidate a patent: *Presto Gear Case, &c. v. Simplex, &c.*, 15 R. P. C. 640.

This case is an example of great simplicity in a patentable invention. *Lancashire Explosives Co. v. Roburite, &c.*, 12 R. P. C. 399.

Vickers v. Siddell shows that the facts of each case must first be ascertained, and then arises the question whether there be "invention?" *Case v. Cressy*, 17 R. P. C. 263.

1890. GAULARD & GIBBS' PATENT, 7 R. P. C. 367.

Want of Inventive Ingenuity—Alleged Combination—Best Use of Known Tools.

In 1882 a patent (No. 4362) was granted to Messrs. *Gaulard & Gibbs* for "a new system of distributing electricity for the production of light and power."

The complete specification was as follows² :—

"This system consists of the employment of an alternating current produced by an electro dynamo machine, and determining by its passage through a number of electrical generators of special construction the formation of induced currents, of which the quality and the value depend only on the construction of the secondary coils of the said electrical generators.

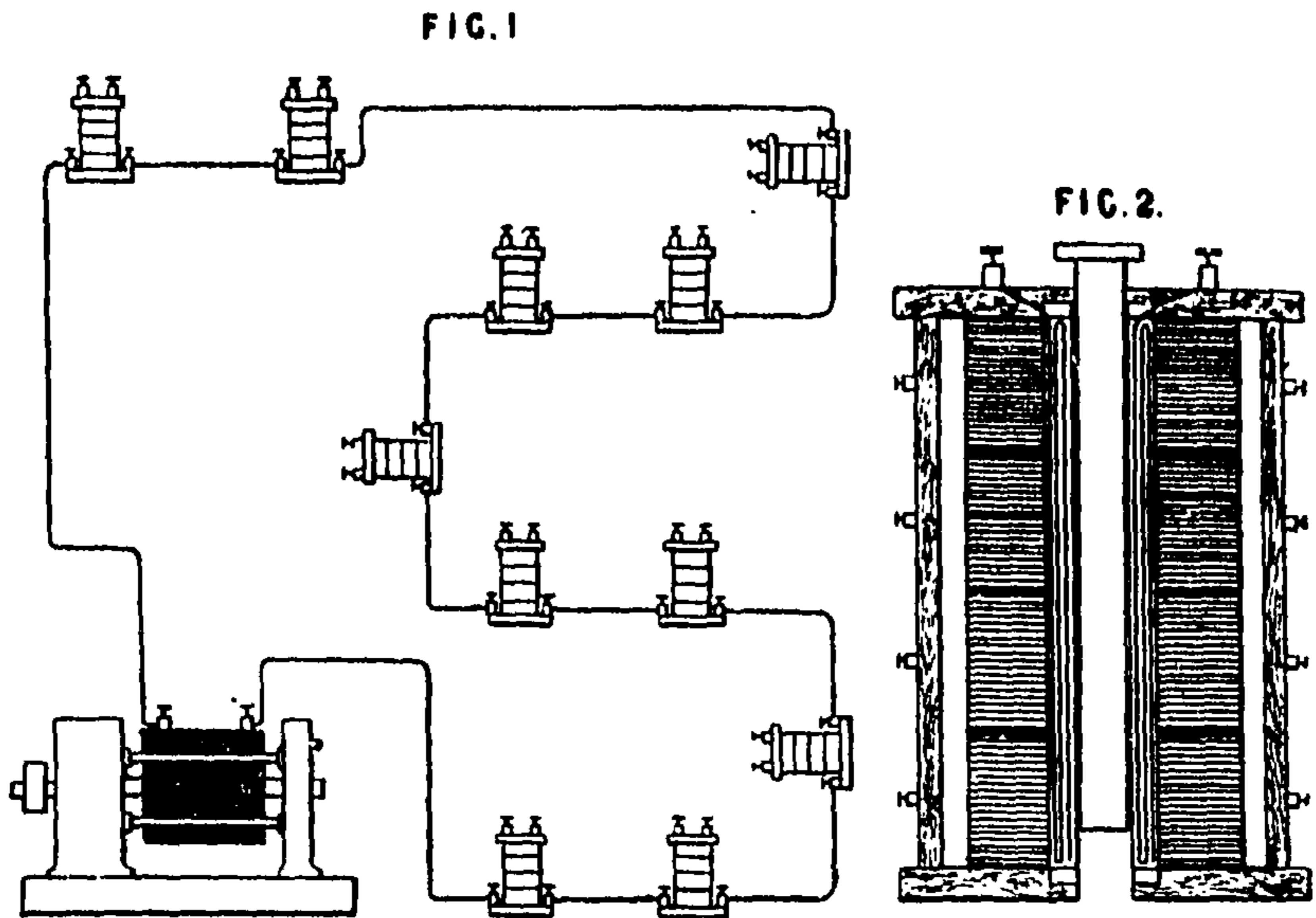
¹ As to an inventor's duty to distinguish the novelty of his invention, see *ante*, pp. 57-60.

² As the decision in the House of Lords did not turn on the objection of disconformity, the extracts from the specification are here given as amended without distinguishing the amendments.

"The currents generated under these conditions are utilized either by lamps to produce light or by magneto machines to produce motive power.

"We take an alternating current dynamo machine constructed in such a manner that the resistance of the inducted system ('induit') is greater than that of the external circuit uniting its two extremities, but we do not use, or desire to use, alternating dynamo machines that produce currents other than currents of high tension, as hereinafter firstly claimed.

"Let us suppose the length of this circuit equal to 50 kilometres, we place (see Fig. 1) upon it, at every 500 metres, for instance, a secondary generator constructed in the following manner.



Diagrams from Gaulard & Gibbs' specification (No. 4362 of 1882).

"The secondary generator may be constructed as represented in Fig. 2."

The details of the secondary generators, with dimensions of wires, are next given: the cores were of soft iron wire, and the ends of the cables of the bobbins of the secondary coils were so placed as to allow of their being grouped either for quantity or tension. By this means the tension was to be varied to suit the requirements of the consumer.

The claims were:—

"First, the privilege of exclusively working our process of distribution characterized by the following points, as above explained; the employment of an alternating current of high tension for the generation on a number of secondary generators of induced currents individually utilized either for the production of light or motive power.

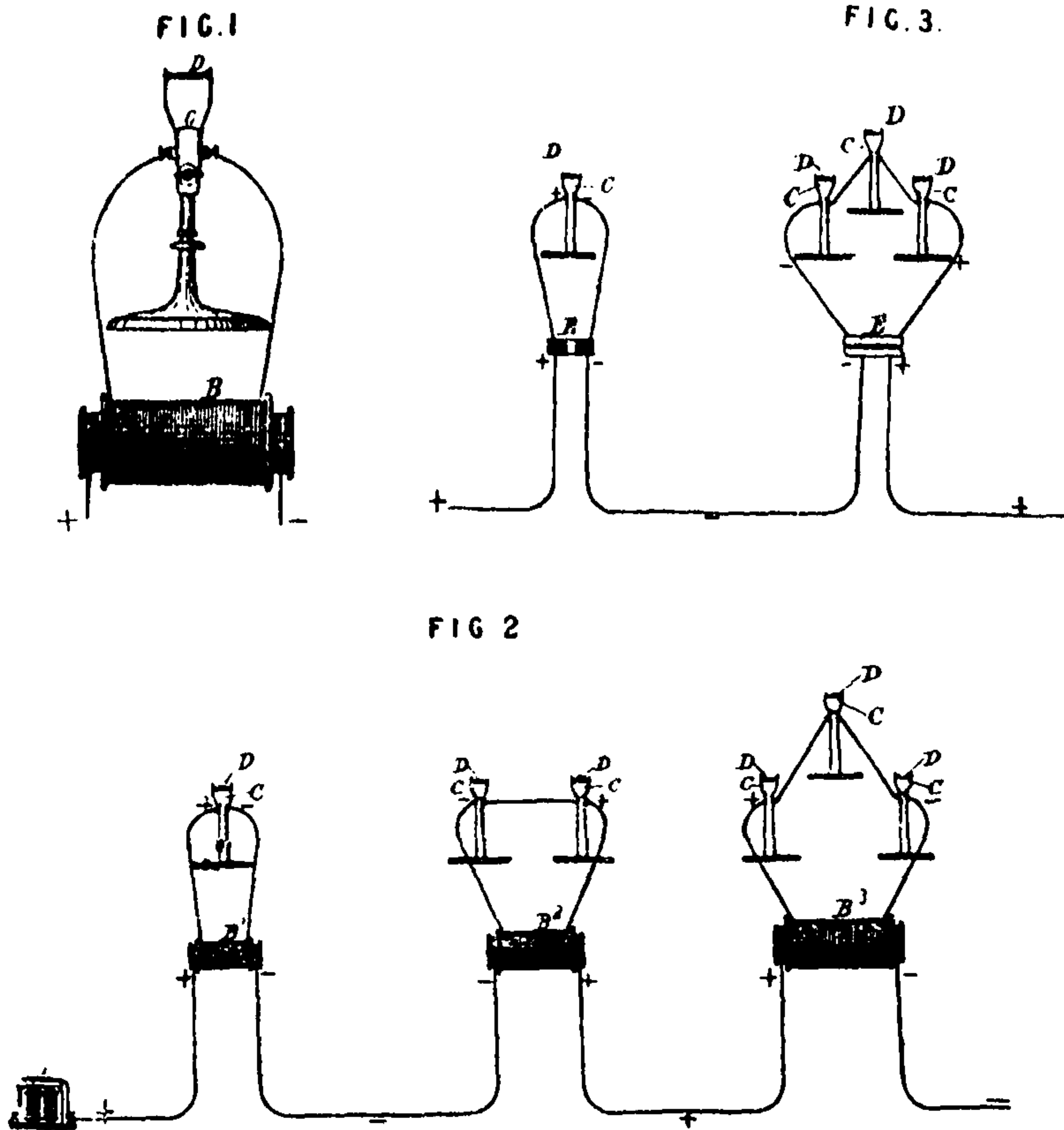
"Second, the system of electric distribution such as is laid down in the foregoing statement."

There had been a third claim for the special construction of the generators, but this was disclaimed on amendment.

A petition for revocation of the above patent was presented. Amongst other grounds alleged in the petition, that of want of subject-matter was relied on.

Evidence of the state of public knowledge and alleged anticipations was given at the hearing.

In 1877 a patent (No. 1996) was granted to *P. Jablochhoff* for a new



Diagrams from Jablochhoff's specification (No. 1996 of 1877).

method of electric lighting. His lamps of special construction were used in series. Hence it was necessary to provide means whereby the failure of one lamp would not extinguish all the rest. It was also necessary to supply the current to each lamp at a high tension, the potential difference at the poles of the lamp being comparatively great. The system is shown in Figs. 1, 2, and 3 above. In his specification the following passages occurred:—

"In carrying my invention into effect, I establish in the electric circuit employed a number of induction coils corresponding to the number of lamps to be employed, the terminals of each inner coil being connected to the said circuit, while the terminals of the outer coil are situated on each side of the slab of kaolin of the lamp. . . ."

"In cases where continuous electric currents are employed the induction coils are provided with interruptors and condensers, either one to each or one to a number of coils. In the case of alternating currents the interruptors and condensers are dispensed with." Another advantage in the use of induction coils lay in the power to extinguish one lamp without extinguishing all.

Publications were proved describing *Jablochkoff's* system; in these the *Ruhmkorff* coil was mentioned. It was well known and constructed with iron wire or split cores.

Other publications showed that for the purpose of transmitting electric energy it was known that it was economical to use transformers to change the current to one of high tension, and to change it again to one of low tension at the place where it was to be applied.

It was also proved that, until the *Edison & Swan* lamps were made, there was no occasion to use the electric current for lighting purposes at a comparatively low tension; hence no demand for a "step down" system.

It was contended that the patentee had invented the combination of the three elements, (1) an alternating dynamo supplying the main wire, (2) a current in that wire of high tension, and (3) a secondary generator such as described.

The patent was declared invalid by *Kekewich, J.*, on the ground that the inventor had merely indicated the best method of using known tools (5 R. P. C. 525).

Held, by the Court of Appeal, that the invention was new and useful, but by amendment the monopoly claimed had been extended, and that the patent was bad on the latter ground (6 R. P. C. 215).

Held, by the House of Lords (not agreeing with the Court of Appeal as to disconformity), that the patent was bad for want of subject-matter, the combination consisting merely in putting well-known machines together in a manner that involved no invention.¹

1891. *Longbottom v. Shaw*, 8 R. P. C. 333.

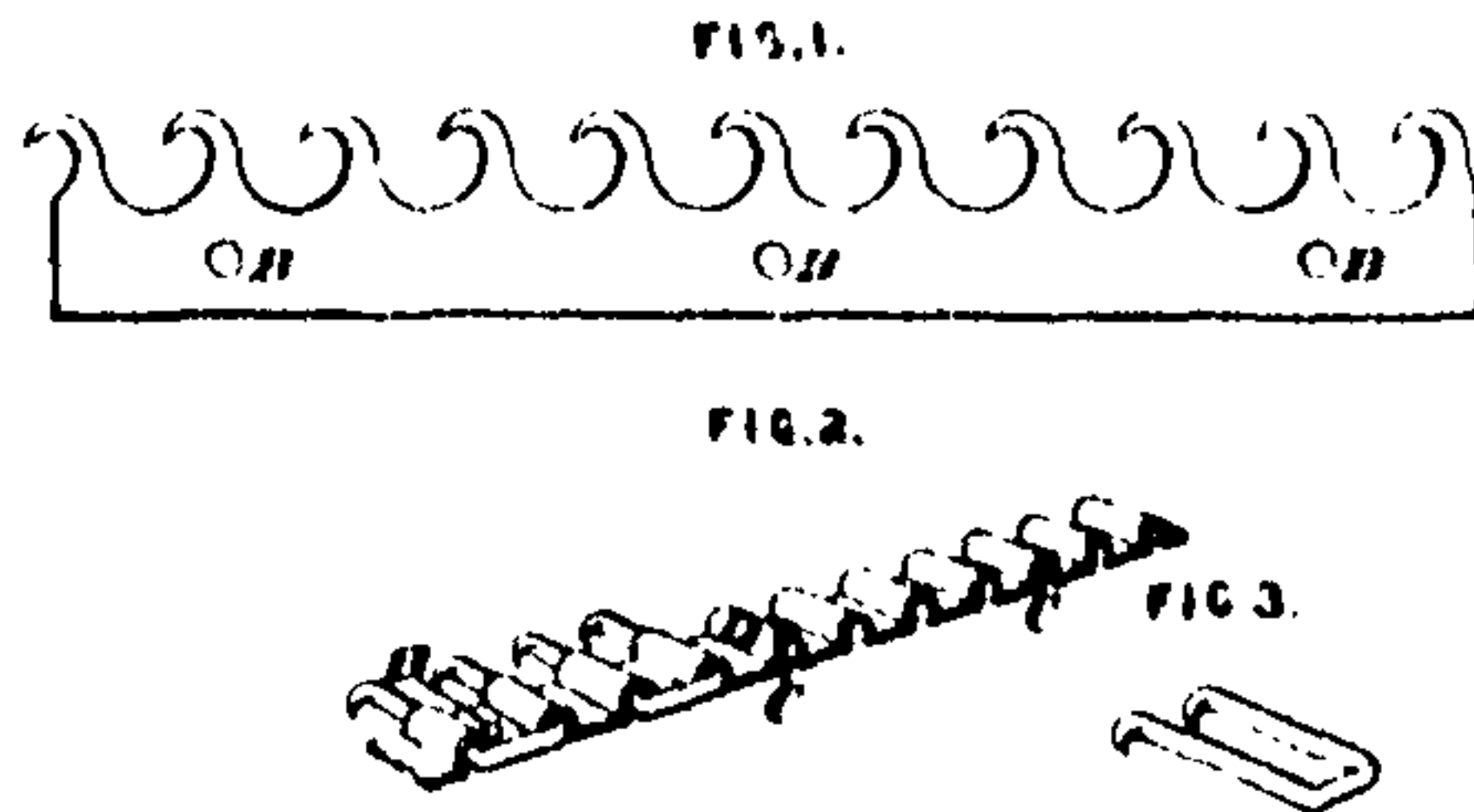
Analogous Use—Want of Inventive Ingenuity.

A patent was granted (No. 2695 of 1886) to *C. Longbottom* for "improvements in reels or frames for holding pile and other fabrics."

The specification described a new method of forming and attaching

¹ In *Rucker v. London Electric Supply Corporation*, 17 R. P. C. 294, *Farwell, J.*, referred to this case as a useful illustration of the application of the principles upon which the Court acts in construing specifications.

hooks to the arms of the reels. Fig. 1 shows hooks, cast or stamped, secured to the arm of the reel by rivets through the holes B. Fig. 2 shows another method in which the strip of metal is stamped out and the hooks (Fig. 3) soldered into the transverse grooves C.



Diagrams of Longbottom's specification (No. 2695 of 1886).

The claims were :—

“(1) The combination, with a reel or frame for holding pile or other fabrics, of a row of hooks formed of cast metal, substantially as herein shown and described.

“(2) The combination, with a reel or frame for holding pile or other fabrics, of a row of hooks stamped from sheet metal, substantially as herein shown and described.

“(3) The combination, with a reel or frame for holding pile or other fabrics, of a row of hooks formed by attaching hooks to a suitable foundation adapted to be secured to the arms of the reel or frame, substantially as herein shown and described.

“(4) In a reel or frame for holding pile or other fabrics, the novel method of attaching the hooks, substantially as herein shown and described.”

At the date of the patent the use of a row of hooks in the plane of the reel or frame was well known, the hooks being separately attached to the frame by rivets. Rows of hooks fastened in planes at right angles to the strip or lath of metal to which they were attached, so that the whole could be used by attaching the metal where required, were known, but for other purposes, such as hanging goods up, &c. There was an improvement in the alleged invention, the new articles being largely sold in preference to the older kinds.

Held, by the Court of First Instance, the Court of Appeal, and the House of Lords, that the application of old things, as shown above, to reels for pile fabrics, although an improvement, did not require experiment or possess sufficient ingenuity to support a patent.

Note.

This case is a good example of want of subject-matter. Per *Smith*, L.J., in *Brooks v. Lamplugh*, 15 R. P. C. 48.

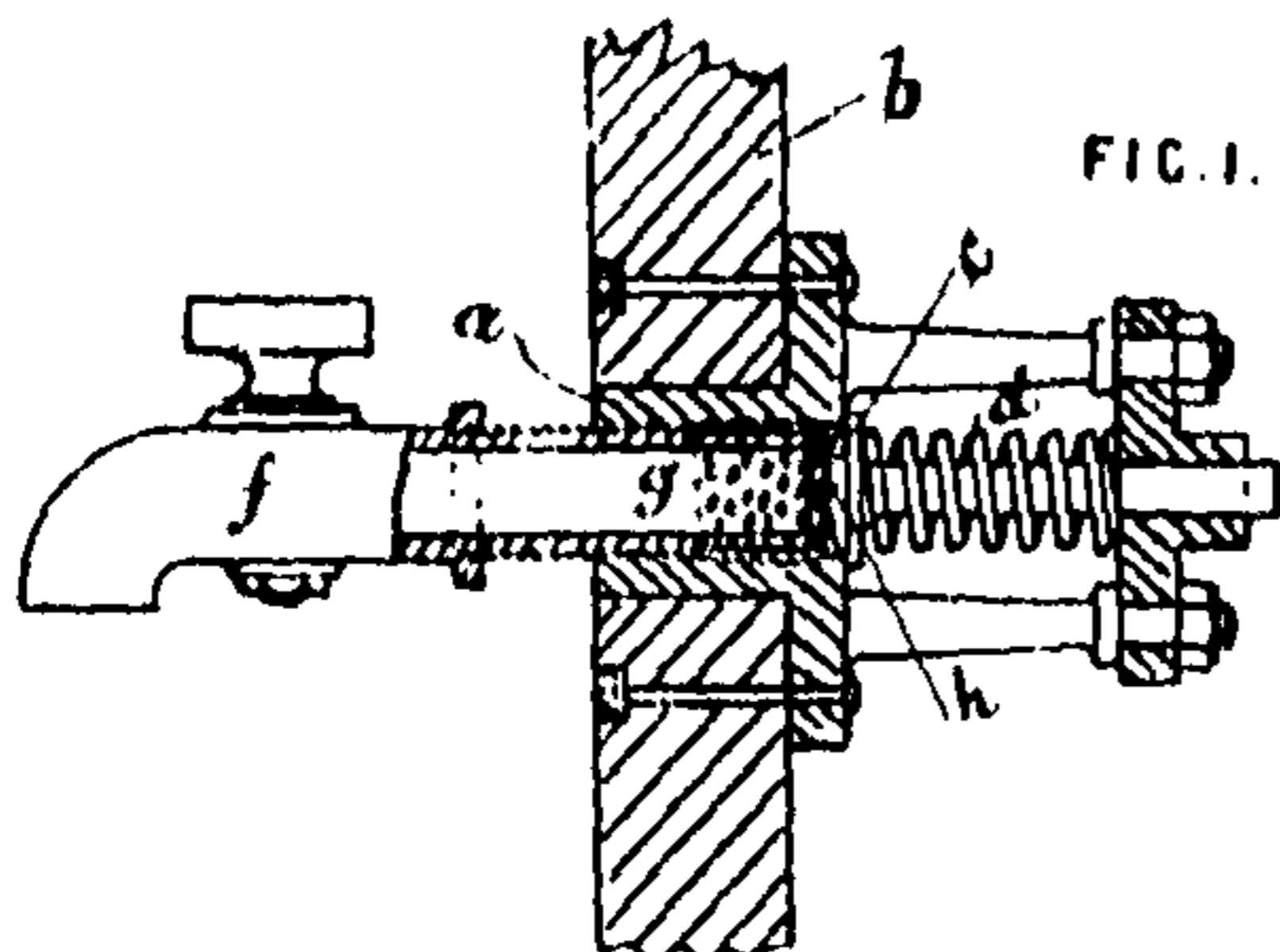
1891. NUTTALL v. HARGREAVES, 8 R. P. C. 450.

Disconformity—No Invention in Provisional.

A patent (No. 5059 of 1880) was granted to *F. Nuttall* for "an improved method of tapping barrels containing beer, porter, or other liquids, and preventing waste and leakage of said liquids during tapping."

The provisional specification was as follows:—

"This invention consists of an improved method of tapping barrels containing beer, porter, or other liquids, and for preventing waste and leakage of said liquids during tapping, by means of a screwed bush or plug, *a*,



From Nuttall's provisional specification.

secured to the barrel-end *b*; the bush also carries a guide for the valve *c* and spring *d*, the valve being kept on the seating *c* in the bush by means of the spring *d*, and preventing the liquid from escaping.

"To tap the barrel I use a tap, *f*, screwed to suit the bush *a*, the tap being provided with holes as shown at *g* (Figs. 1 and 2).¹ The tap is screwed into the bush until it forces the valve *c* from its

seating (Fig. 2); the liquid then escapes through the holes *g* in the tap. The said tap is arranged so that it is screwed in the bush *a* a short distance (Fig. 1) before coming in contact with the valve, so as to prevent leakage through the bush before opening the valve.

"When the tap is removed or unscrewed from the bush the spring *d* presses the valve back to its seating before the threaded part of the tap leaves the bush.

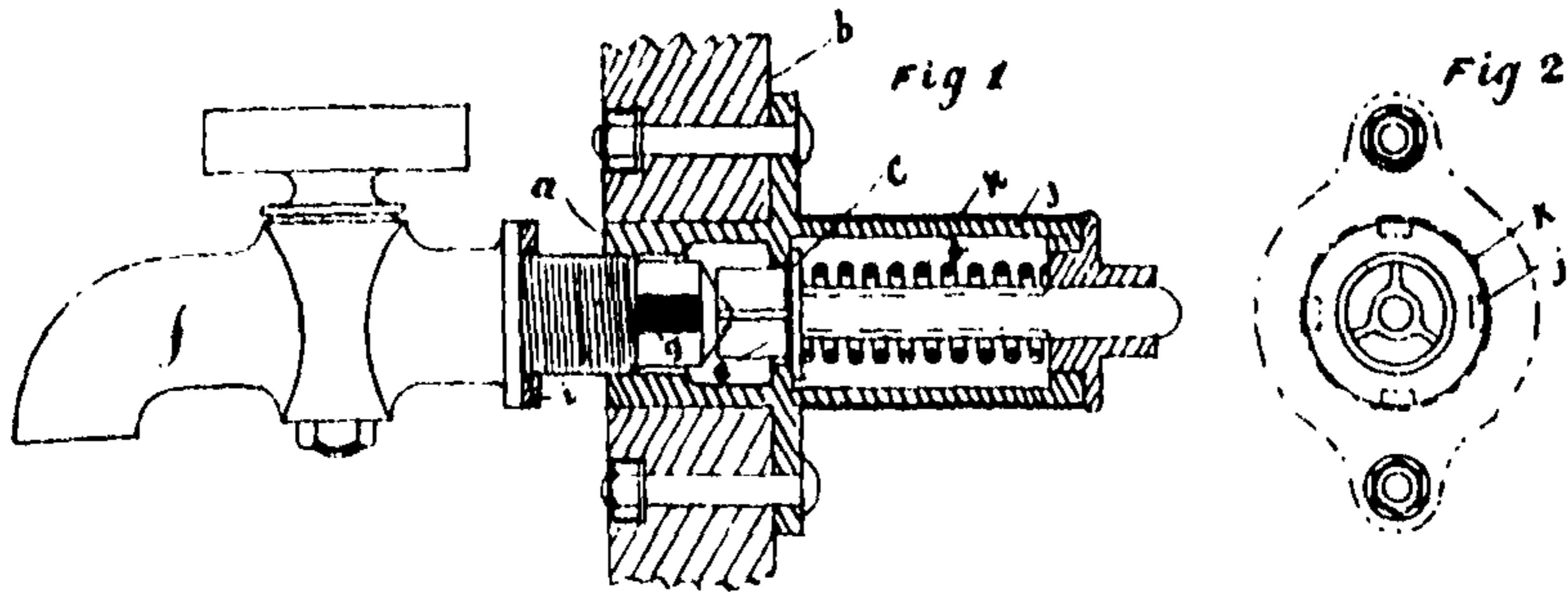
"I also provide the tap with a centre point, *h*, to engage in a corresponding recess in the valve as shown, to ensure easy and direct opening of the valve with little friction and without damaging the face of the valve."

The complete specification gave a more detailed description of the invention as shown in Figs. 1 and 2 below. The action of the tap was thus described:—

"To tap the barrel I use a tap, *f*, screwed to suit the bush *a*, the tap being provided with a hole or holes as shown at *g*, the tap is screwed into the bush until it forces the valve from its seat, the liquid then escapes through the holes *g* in the tap, the tap is arranged so that it is screwed into the bush a short distance before it commences to open the valve, so as to prevent

¹ It is unnecessary to reproduce Fig. 2, which was the same as Fig. 1, but showing the tap in position when screwed home, the spring *d* being compressed.

leakage through the bush before the valve is opened, the tap is also provided with a leather or rubber collar, *i*; the face of the valve *c* may also be provided with a similar facing of leather or other material; the valve casing or projections *j* are encircled by a gauze or strainer, *k*, to prevent hops or impurities



From Nuttall's complete specification (No. 5059 of 1880).

escaping through the tap. When the tap is removed or unscrewed from the bush the spring *a* presses the valve back to its seat before the threaded part of the tap leaves the bush. Figs. 1 and 2 show the arrangement secured to the barrel end on the inside."

Other modifications were then described by diagrams, and the claim was for:—

"A method of plugging or securing the outlet of barrel by means of an arrangement of bush or valve casing with valve and spring secured to barrel end in connection with a tap as shown, and for the purpose as hereinbefore set forth and more particularly described in specification and drawings."

It was proved at the trial that the invention of the tap described in the provisional specification had neither novelty nor utility. The patentee thought it was original.

It was also shown that the utility and novelty of the complete invention lay in the use of the strainer *k, j*, described in Figs. 1 and 2 of the complete specification.

It was argued for the plaintiff that the strainer was a mere adjunct and improvement in carrying out the invention (*Newall v. Elliott, ante, p. 201*).

At the trial the learned judge held that the alleged invention was neither novel nor subject matter for a patent (8 R. P. C. 273).

The plaintiff appealed.

Held, assuming that the claim was for a combination of strainer, bush and guide-valve, and screw-tap, the element of the strainer was not included in the provisional specification; the patent was therefore invalid. The objection of "disconformity" between provisional and complete specifications may be taken since the Act of 1883.

Notes.

In this case previous decisions were reviewed; the patentee need not describe details in the provisional specification: *Lane Fox v. Kensington, &c.*, 9 R. P. C. 238.

Nuttall v. Hargreaves shows that if the invention described in the two specifications be not the same, the patent is invalid: *Gadd v. Mayor of Manchester*, 9 R. C. P. 259.

The real invention (the strainer) was not made at the date of the provisional specification, which described a tap that was neither new nor useful. Per *Lindley*, L.J., S. C. 9 R. P. C. 527.

Nuttall v. Hargreaves was also followed in *Pether v. Shaw*, 10 R. P. C. 297.

1892. THE WENHAM GAS CO., LTD. v. THE CHAMPION GAS CO.,
9 R. P. C. 49.

Novelty—Subject-matter—Construction.

A patent (No. 2869** of 1881) was granted to *F. W. Clark* for "improvements in railway-carriage, street, and other gas lamps."

The specification commenced with a general description of the invention, and was illustrated by diagrams. In all of these the only kind of lamp shown was that in which the flame was beneath the supply-pipe, and the light was cast downwards.

One modification of the lamp is shown in Figs. 5 and 6, Fig. 6 being a horizontal section through AB of Fig. 5, showing the three tops of the air inlet pipes alternating with three openings for the escape of the products of combustion up the chimney. It is thus described¹:—

"In Figs. 5 and 6 of the drawing I have shown the arrangement of lamp I prefer to adopt when the inner concentric tube serves for the air inlet, a lamp of this construction being specially suitable for use as a street-lamp.

"*a* is the lamp body; *b*, the glass; *c*, the cover; *d* and *e*, the concentric tubes; *g*, the reflector; *h*, the chamber formed by the lamp body *a* and the outer tube *e*; *i*, cover to same; *j, j*, air inlets; *k, k*, the air inlets in the outer tube *e*; *u*, is the gas supply-pipe which I use in this arrangement instead of a coil as hereinbefore described; between the inner tube *d* and the gas-pipe *u* I provide an additional pipe, *d'*, the space between the two tubes forming the chimney; and the space between the tube *d'* and the gas-pipe *u* forming the heated air-chamber corresponding with the chamber *f*, in the arrangement hereinbefore described and shown in Figs. 1 to 4. In this arrangement a ring, or circular burner of the kind shown in the drawing and

¹ The specification is here shown as amended without distinguishing the amendments.

marked r , may be employed; e^1 is an earthenware or metal continuation of the tube d^1 , such tube e^1 being perforated if found desirable for causing a portion of the heated air to be more equally supplied to the interior surface of the flame."

The air entered at the outer circumference under the cover, part descended along the surface of the glass b , keeping it cool, as shown by the arrows, and part through the inlets k , along the reflector g , thence upwards and through openings under line AB and down the tube d^1 , through per-

Fig. 6

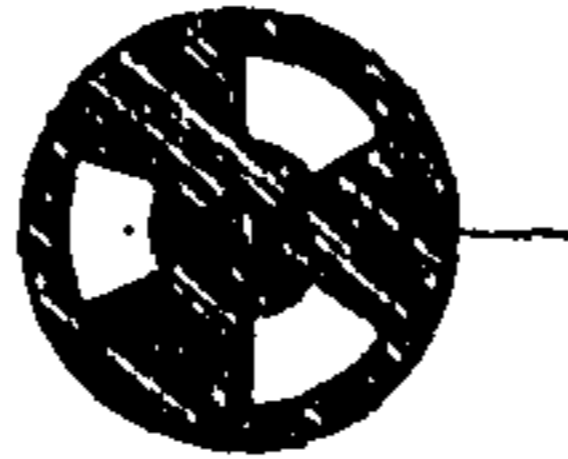
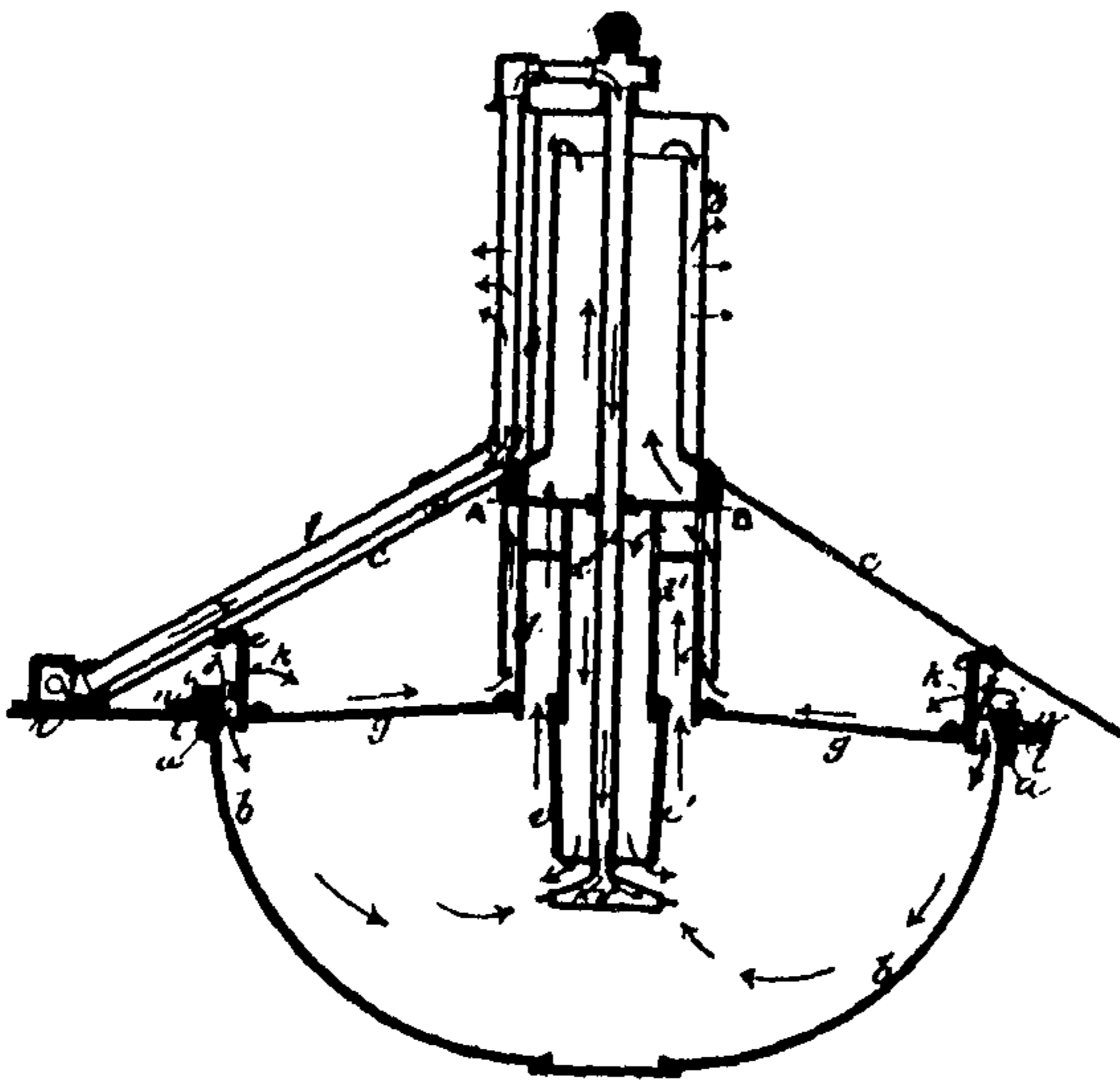


Fig. 5



Diagrams from Clark's specification (No. 2869 of 1881).

forations at bottom of e , and so on to the upper or inner side of the circular series of gas-jets from v , supplied by the central gas-pipe u .

The claims were:—

"Firstly, the general arrangement and construction of the improved lamp hereinbefore described and represented in Figs. 1 to 4 of the accompanying drawing.

"Secondly, the modified construction of lamp hereinbefore described and represented in Figs. 5 and 6 of the accompanying drawing.

"Thirdly, the method of supplying heated air to the inner surface of the flame by causing such air to pass through the chimney in its passage to the

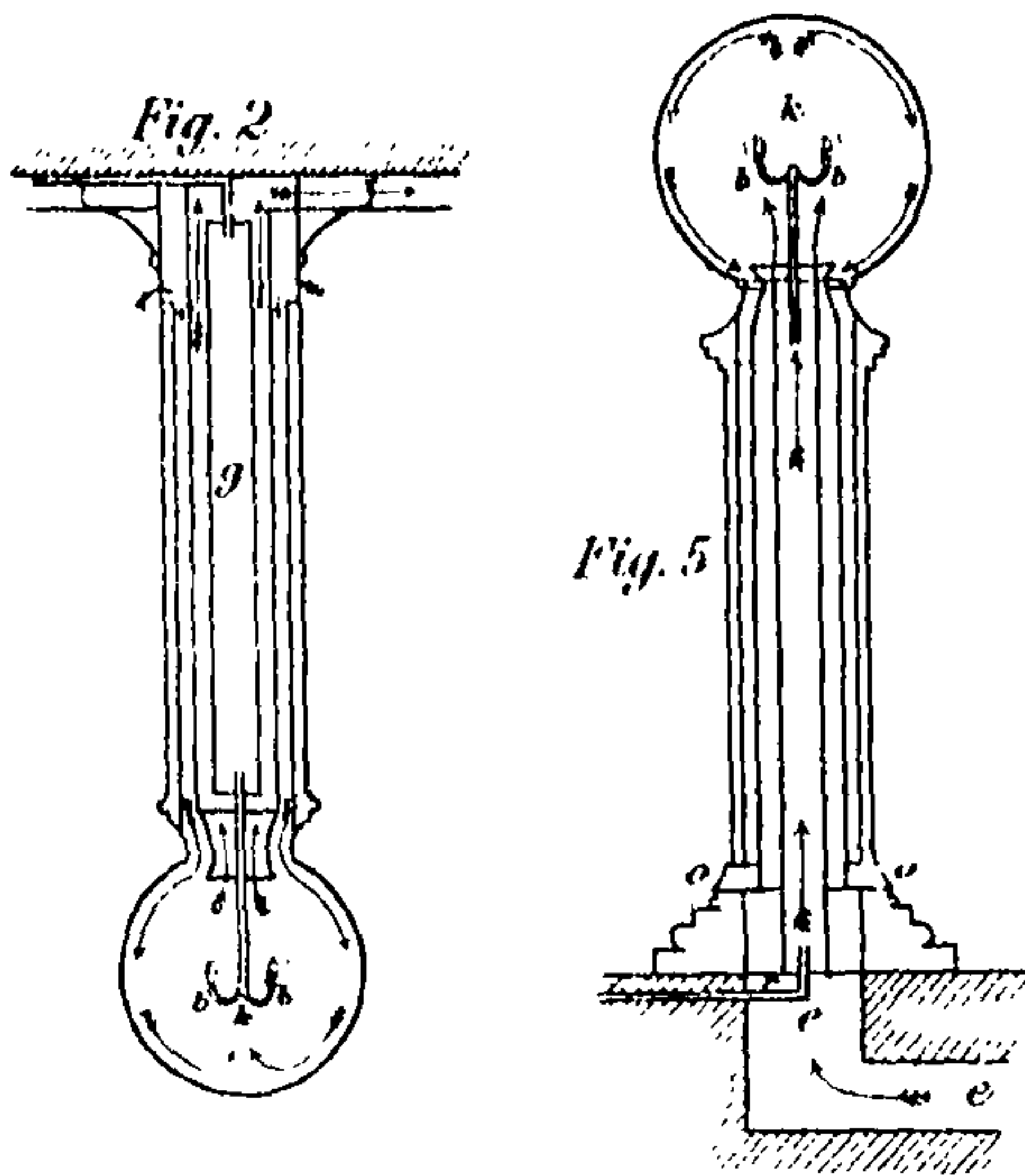
flame, substantially as hereinbefore described and represented in Figs. 5 and 6 of the accompanying drawing.

"Fourthly, the employment of the perforated continuation e^1 from the chimney for distributing the heated air over the interior surface of the flame as hereinbefore described and represented in Fig. 5 of the accompanying drawing."

The action was for infringement.

Amongst other objections, want of novelty was pleaded and want of subject-matter raised in argument.

Amongst other anticipations, *Siemens'* specification (2231 of 1879) was relied on. In Fig. 2 the incoming air was heated by passing down outside



Diagrams redrawn from *Siemens'* specification (No. 2231 of 1879).

the central gas-pipe g and the circular chimney surrounding it. Fig. 5 shows an inverted lamp in which the air that is heated enters by inlets o , passes upwards along the middle concentric passage, the chimney consisting of the outer one. But there was nothing to show how an incoming downward air-current could be directed to the inner surface of the flame.

Wire diaphragms were also proved to be old. The device was proved to be a great improvement on former lamps.

At the trial the patent was upheld.

Held, by the Court of Appeal, that the improvements effected by the patentee con-

stituted a patentable invention; that claim 2 included as an element in the combination the cooling current; that claim 3 was for a subordinate integer; and that claim 4 was redundant, a mere repetition of claim 3, and not a substantive claim to the use of perforations.

Lindley, L.J. (at p. 52), pointed out how *Siemens* had discovered the importance of heating the air before it reached the flame; he showed the advantages of it and how to do it. "That idea is seized upon or adopted naturally by *Clark*, who is a later inventor—a very valuable idea, because it seems obvious, now that we know all about it, that it was a very important and a very valuable suggestion. . . . *Clark's* mind was addressed to the particular method of bringing a supply of heated air to particular places on the flame. His step is in advance of *Siemens'*; he takes *Siemens'* as far as it goes, and modifies that and produces a new and very valuable result—a brighter flame and a much better result. . . . He so arranges his

concentric ring, or machinery, or tubes, as to bring his hot current down to the middle of the particular kind of flame which he selects for the purposes of his lamp. In addition to this, *Clark* has availed himself of what *Siemens* did not, 'hat I know of, that is, the cooling current which kept the temperature of the glass down, and prevented cracking, and so on."

1892. PICKARD *v.* PRESCOTT, 9 R. P. C. 195.

Prior Publication.

A patent was granted to Messrs. *Pickard & Curry* (No. 8953 of 1885) for "improvements in the bridges of pincenez, or double eye-glasses."

The patentees brought a note of suspension and interdict in the Court of Session against the respondent, praying that he be interdicted from infringing the above patent.

The chief objection raised was that of prior publication of the patented invention.

At the hearing the following facts were proved. A description of the invention was communicated by a person employed to carry it out in *Paris* to the *Revue Générale d'Ophthalmologie*, and there published in the number for June 30, 1885. There was no evidence of the actual date of publication in *Paris*. The *Revue* circulated amongst oculists who wished to be informed of the progress made by their profession. A witness, speaking several years after the event, said that he saw the *Revue* at the time of publication immediately after June 30, 1885; but on cross-examination could not fix the date even to the month of July. It was proved that on August 25 there was a copy in the hands of a gentleman connected with the Middlesex Hospital. A witness at the time of the trial (1889) had in his possession his own copy of the *Revue*, to which he was a subscriber, and had seen three copies— one at the Royal Ophthalmic Hospital, another at the Ophthalmological Society's, and a third in the possession of a London oculist. There was an entry in the books of the agents in Edinburgh to the effect that they received their copies on July 10, 1885. It was their practice to deliver them at once to subscribers. A subscriber proved that he took the *Revue* regularly, but he could not recollect at what date he read the number in question, nor whether he was at his usual residence at the time.

Held, by the Lord Ordinary, that prior publication was not proved.

The respondent reclaimed.

Held, by the Inner House that prior publication was established, and that therefore the patent was invalid (7 R. P. C. 361).

On appeal to the House of Lords.

Held, that there was sufficient evidence of prior publication to invalidate the patent, bearing in mind the nature of the invention and the general desire of practitioners to have early information on the subject in question, and in the absence of any evidence on the other side.

1892. KING & Co. v. ANGLO-AMERICAN BRUSH CORPORATION,
9 R. P. C. 313.

Anticipating Specification, Construction and Sufficiency of.

In 1878 a patent (No. 2003) was granted to *J. Haddan* for "improvements in apparatus for the generation and application of electricity for lighting, plating, and other purposes."

The complete specification was as follows:—¹

"My invention relates to electric apparatus for the generating of electricity, and for its application and use in electroplating and in the production of electric light, and for any other purpose to which electricity may be applied. In stating wherein my invention consists, it may be separated into the following divisions: . . . Fourth, a peculiar manner of disposing and arranging the insulated wires and current conductors of the machine."

With regard to the "fourth division" of the invention, the specification pointed out the defect in series-wound dynamos—the cessation of exciting magnetism "on opening" the circuit, the formation of powerful currents only when the external circuit is closed and its resistance not too large. "Such machines are not well adapted to certain kinds of work, notably that of electroplating"—in which industry a counter electromotive force is developed, and may, under certain circumstances, reverse the polarity of the machine. A moderate constant magnetic field would obviate this.

"Other useful applications of a 'permanent field' machine will readily suggest themselves. I attain my object by diverting from external work a portion of the current of the machine and using it either alone or in connection with the rest of the current for working the field magnets. I prefer the latter plan of the two just above mentioned, especially for electroplating machines. . . . In applying my invention to dynamo-electric machines, I wind the cores of the field magnets with a suitable quantity of a comparatively fine wire having a high resistance in comparison with that of the external circuit and the rest of the wire in the machine. The ends of this wire are so connected with other parts of the machine that when the latter is running a current of electricity constantly circulates in said wire, whether the external circuit be closed or not. The high resistance of this wire prevents the passage through it of more than a small proportion of the whole current capable of being evolved by the machine, therefore the available external current is not materially lessened. When this device, which I have called a 'teaser' (E),² is used in connection with field magnets, also wound with coarse wire (as shown in Fig. 1 of the drawings), for the purpose of still further increasing the magnetic field by employing the main current for this purpose in the usual manner, then the 'teaser' may be so arranged that the

¹ Only those portions are given which affect the ground on which the appeal was decided by the House of Lords. As to the issue of disconformity, see *ante*, pp. 69, 70.

² The letter "E" was not in the original, but is inserted to facilitate reference.

FIG. 1.

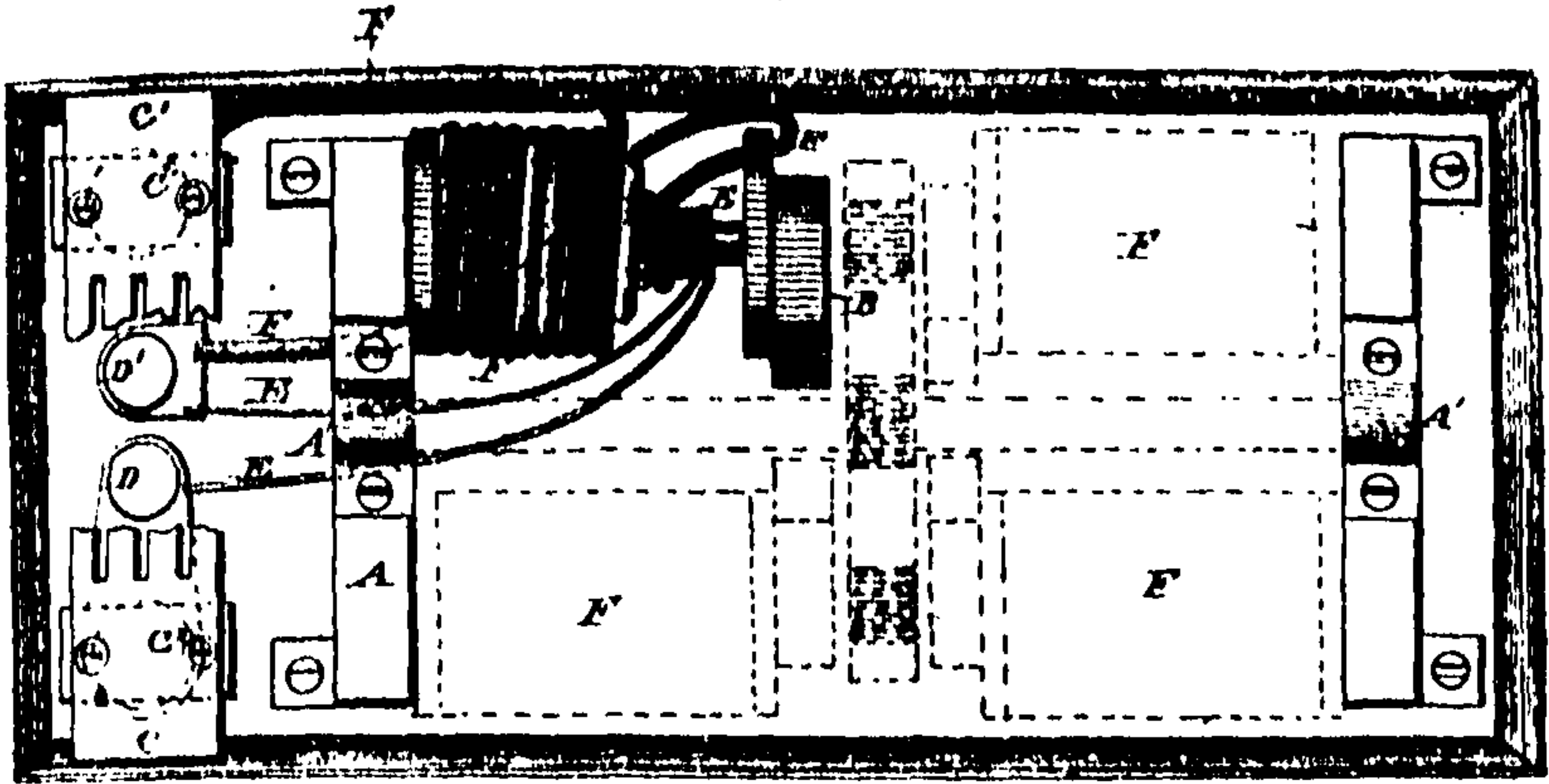


FIG. 2.

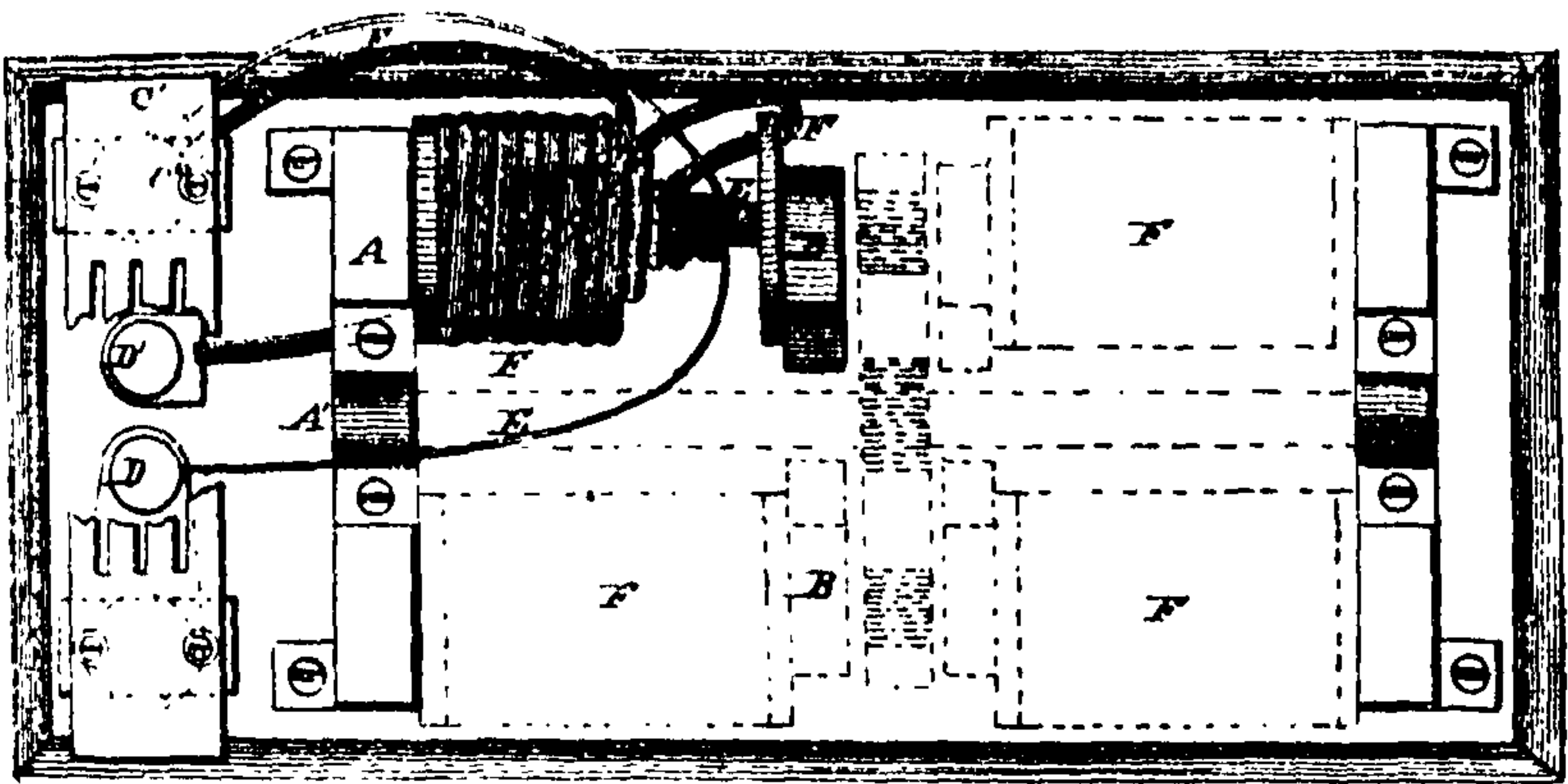


FIG. 3.

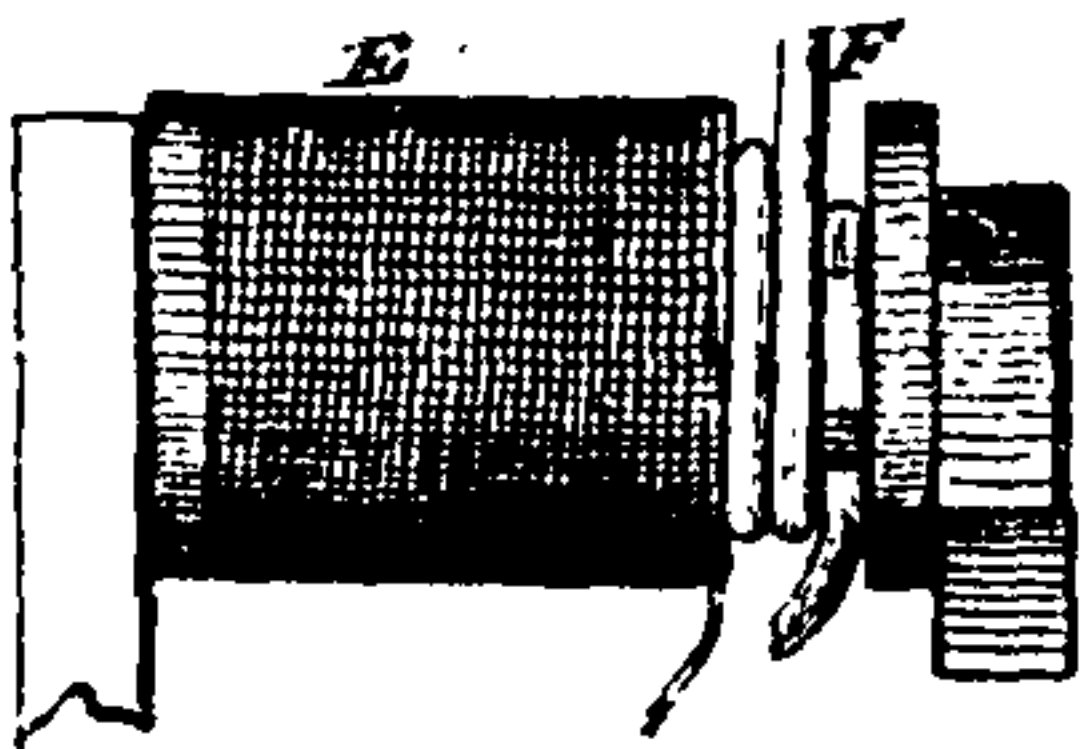
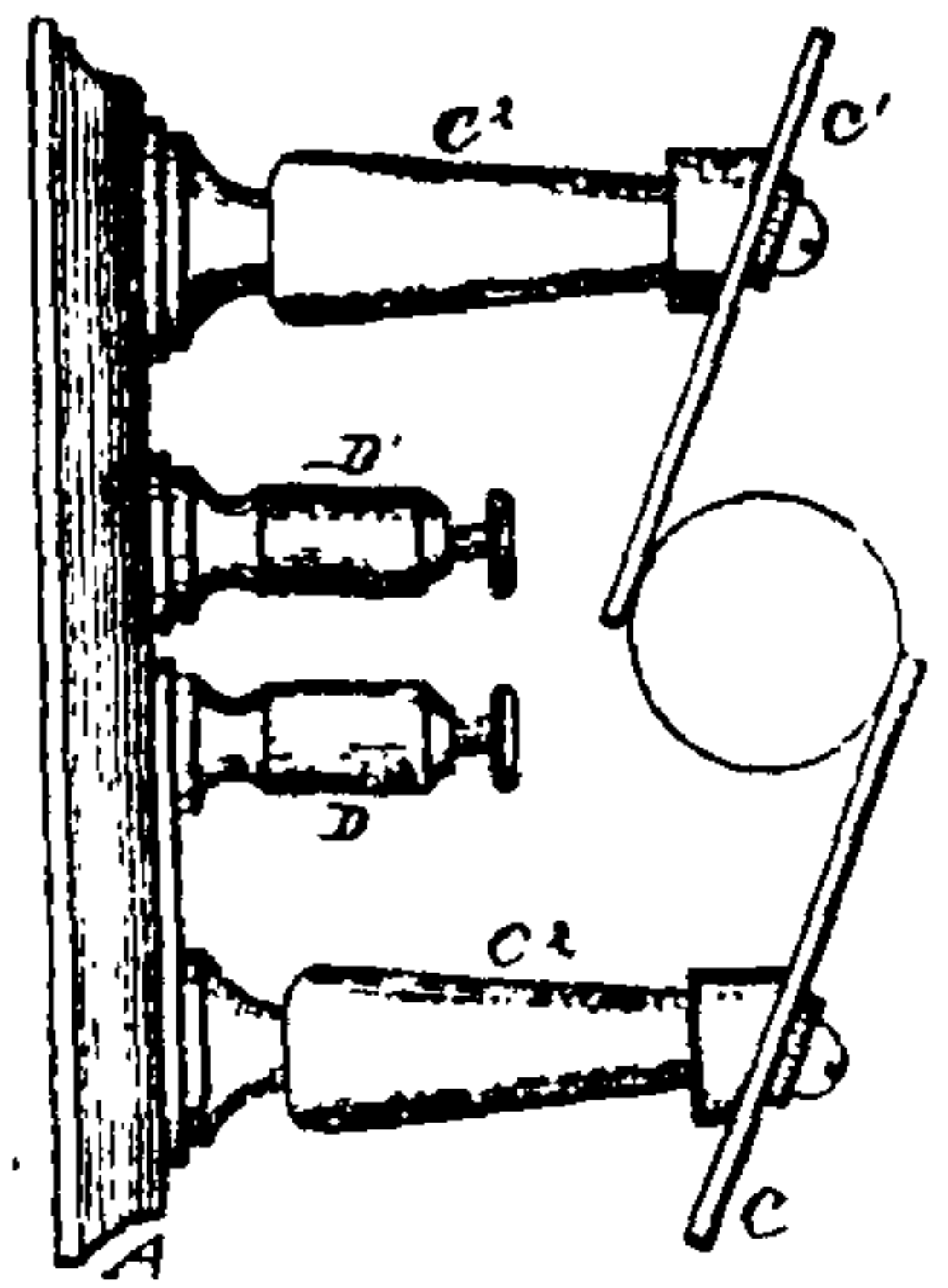
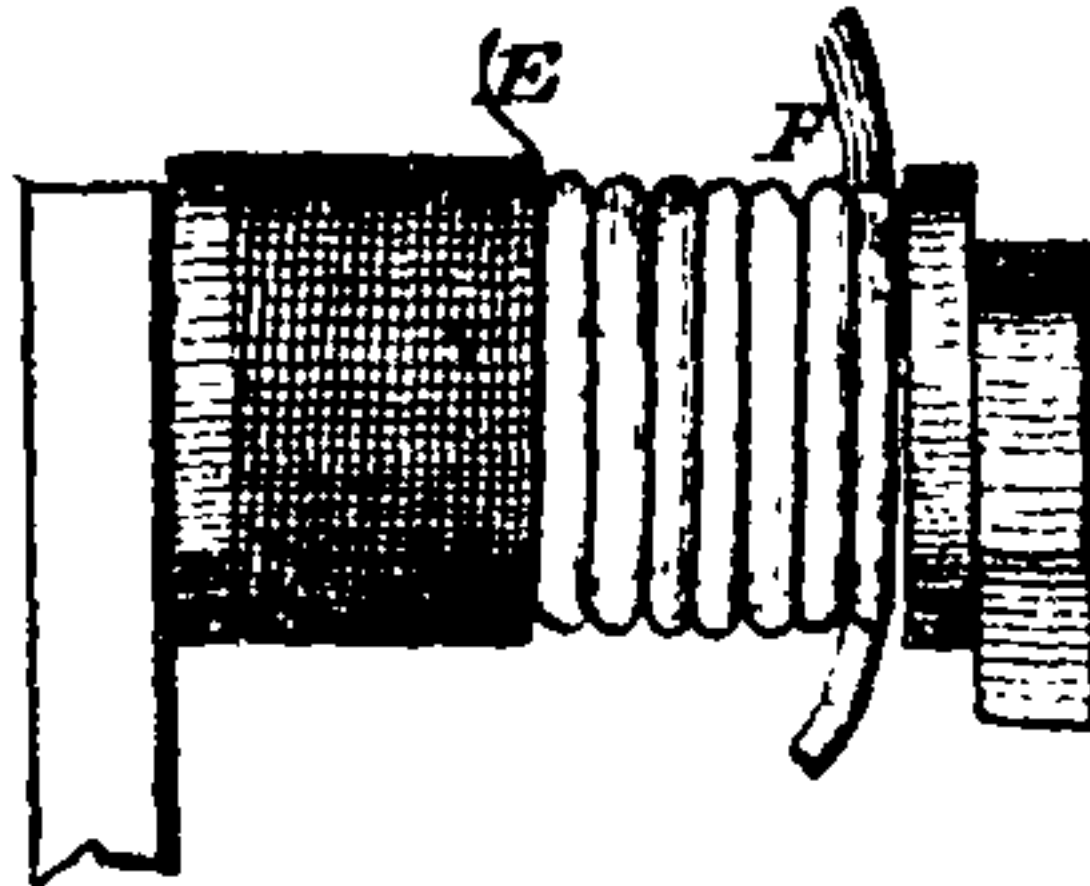


FIG. 4.



Diagrams from Haddan's specification (No. 2003 of 1878).

current which passes through it will also circulate in the coarse wire, thus increasing the efficiency of the device. This arrangement, illustrating one of the most prominent applications of my invention, is shown in Fig. 1. . . . Fig. 1 represents in plan view a portion of a dynamo-electric machine, showing one of its magnetic helices partially wound and so arranged as to exhibit the 'teaser' (E) and helix F, also to show one form of arranging the currents of the teaser and main wire. Fig. 2 is the same, showing, however, a modified arrangement of the currents of the teaser and main wire. Fig. 3 shows a modified method of applying the teaser by wrapping it upon the outside of the main helix instead of within it, as shown in Fig. 1. Fig. 4 shows another modified form of teaser, where it may be wrapped around the magnet alongside and independent of the main helix. . . . It is not at all essential that the teaser (E) be wrapped around the magnet underneath the wire F. A variety of methods would be equally as operative as the above, the essential object being that the teaser wire shall form a helix around the field magnet; and this may be accomplished in many ways, among which may be mentioned that illustrated in Fig. 3 of the drawings, where the teaser is wrapped outside of the helix F; also that shown in Fig. 4, where the teaser is wrapped alongside the helix F, forming a separate and independent section or helix."

The seventh claim (in the amended specification) was :—

"(7) In a dynamo-electric machine the wire or helix E, having a comparatively high resistance and kept in closed circuit while the machine is running in combination with the magnet wire or helix F, as commonly employed, substantially as shown in division four."

The respondents, who were assignees of the above patent, commenced an action in Scotland against the appellants to have the patent declared null and void.

Prior publication and user were alleged. Amongst the publications, *Clark's* specification (4311 of 1875) and *Varley's* (4905 of 1876) were relied on.

Clark's invention consisted in taking a derived current from the poles of the machine which furnishes the currents to the fixed electro-magnets, and using it for doing the external work required. Improved results were obtained where the work to be done was constant. The application of the invention of "lateral derived currents" to a *Lontin* machine was shown. In the *Lontin* machine the armature bobbins were fixed radially on an axis revolving between two fixed electro-magnets. *Clark* connected each bobbin to a separate "rubber" on the axis or commutator. They could thus be grouped for quantity or tension. One or more of them could be separately connected with the existing fixed magnets. The claim was for the employment of "lateral derived currents" for all purposes where a constant current was required.

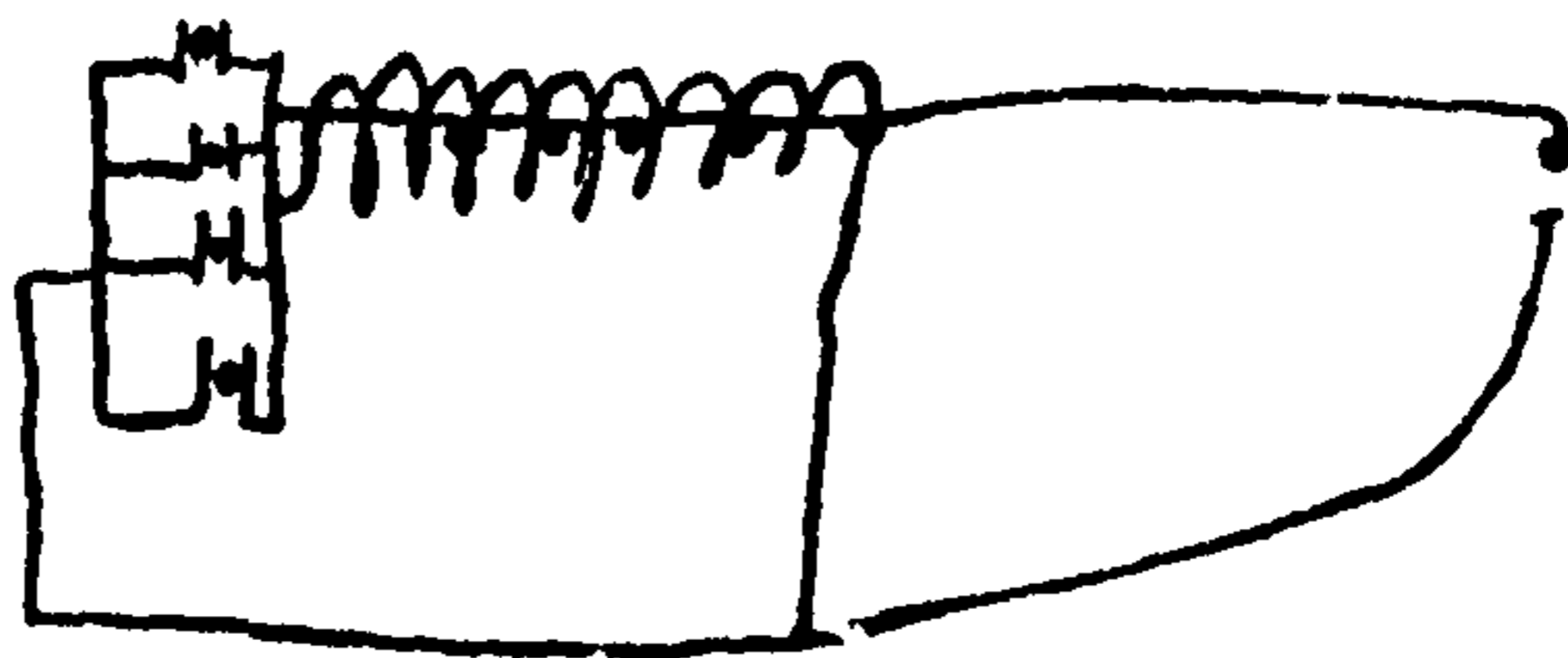
Varley's specification described a complicated mode of constructing dynamos. In describing his machine, the following passage occurred :—

"Part of the electricity developed by the machine is diverted to

maintain the magnetism of the soft iron magnets, and the remaining portion is used to produce the electric light. There are several well-known ways of doing this, but the method I prefer is to wrap the soft iron magnets with two insulated wires, one having a larger resistance than the other. The circuit of larger resistance is always closed, and the circuit of less resistance is used for the electric light. When the electric light is being produced, the greater portion of electricity passes through the circuit of less resistance, which I term the 'electric light circuit,' maintaining the magnetism of the magnets and producing the light. When the electric light circuit is opened from any cause, the electricity developed passes through the circuit of greater resistance only, and maintains the magnetism of the magnets."

There was no claim in *Varley's* specification for series-shunt winding, nor was such winding illustrated, nor were any directions given for carrying it out, and the evidence was conflicting as to whether an ordinary skilled workman could carry out the compound winding from *Varley's* description only.

Varley's knowledge at the date of his specification of shunt winding was proved by a rough sketch¹ of his invention that was made in his diary. Across



Sketch from *Varley's* diary.

the page was written this sentence: "It would probably be better if the cores of the bobbins were made of a bundle of wires and not a solid cylinder."

It was proved that before the introduction of parallel lighting by glow-lamps in 1882 there was no demand for a dynamo producing a current at *constant potential*, as distinguished from one producing a *constant current*. Evidence was also given as to the fall of potential in a series-wound dynamo with the increase of external resistance; and in the case of a shunt-wound machine, of the division of the current in the two circuits in a ratio the inverse of their respective resistances, whereby the potential was increased when less current was required for lighting purposes.

There was no mention in *Haddan's* specification of the maintenance of a constant potential; this could only be ensured by regulating the ratio of the resistances of the two circuits round the magnets with regard to the work the dynamo had to do.

At the trial, the Lord Ordinary held that (1) there was disconformity between the complete and provisional specifications,² and (2) that the invention had been anticipated by *Varley* (6 R. P. C. 414).

¹ The diagram here given is reproduced from the original exhibit given to the author by Mr. J. C. Graham.

² The report of this finding is unnecessary; a summary of it is given, *ante*, pp. 69, 70.

On appeal, the First Division held that the patent had been anticipated ; no decision was given as to the alleged disconformity (7 R. P. C. 436).

On appeal to the House of Lords.

Held, that the invention claimed as above in *Haddan's* specification was disclosed in *Varley's*, and therefore the patent was invalid.

Per Lord *Halsbury*, L.C. (at p. 317) : "The 'series' was known, the 'shunt' was known, and the language" (of *Varley's*, as above) "seems to me incapable of any other interpretation than that the patentee" (*Varley*) "did mean to combine the two previously known systems. If he did, and disclosed the mode of doing it, the novelty of the later patent cannot be supported. I confess I am unable to entertain a doubt that it was so disclosed. What he intended was, I think, conclusively shown by the original rough sketch produced. Distinguished electricians cavil at the mode of its disclosure, criticise the language (which is not, perhaps, the most felicitously chosen), and possibly suggest doubts as to what would have been the fate of Mr. *Varley's* patent if it had been attacked upon the ground of the insufficiency of the specification ; but that is not the question to be determined here. The question is the disclosure of the invention, which consisted in the combination of two known forms or dynamo-electric machines. . . . I think it is certain that neither the one patentee nor the other had any very definite notion of the importance of the invention until a year or two later. The invention of the incandescent light brought into prominence the importance of an even uniform and continuous flow of the electric energy."

Lord *Watson* (at p. 319) : "The appellants' evidence consists of oral testimony by electricians of great eminence, and is directed mainly, if not wholly, to prove (1) that on a fair construction of the specification of 1876 (*Varley's*) the words relied on do not disclose either shunt or series-shunt winding, and (2) assuming them to do so, that the specification does not contain explanations or directions which would enable a workman of ordinary skill to construct either a shunt or a series-shunt machine. . . ." At p. 320 : "The testimony of their witnesses was given upon the footing that in 1876 *Clark's* invention of the previous year was still unknown, and that those who read *Varley's* specification could have no knowledge of any system other than series-winding. Upon that assumption it occurs to me that a reader, whether a man of science or skilled workman, would probably have been at a loss to discover what *Varley* meant, and might not have arrived at either shunt or series-shunt winding with some exercise of his inventive faculty. I am, however, unable to find any good reason for finding that *Clark's* shunt machine was unknown in the year 1876. It is true that Mr. *Brush* had never heard of *Clark's* invention, and also that shunt-winding was unknown to Sir *William Thomson* before 1879. But it appears to me that *Clark's* taking out a patent for his invention was, both in fact and law, a publication of it. I do not suppose that every electrician, however eminent, is by necessity personally cognizant of every invention patented within the bounds of his science ; and the ignorance of two or more of them

is unavailing to prove that the knowledge of others was equally defective. I cannot therefore avoid the conclusion that, in 1876, *Clark's* shunt-winding machine had been disclosed to the public, and must have been known to some, if not to all, electricians, and consequently that the controverted passage in *Varley's* specification ought to be construed on the footing that shunt-winding was known at its date."

"I do not think it necessary to deal with the conflict of testimony as to the sufficiency of *Varley's* specification for the guidance of a skilled workman. . . . Every patentee, as a condition of his exclusive privilege, is bound to describe his invention in such detail as to enable a workman of ordinary skill to practise it; and the penalty of non-compliance of that condition is forfeiture of his privilege. His patent right may be invalid by reason of non-compliance; but it certainly does not follow that his invention has not been published. His specification may, notwithstanding that defect, be sufficient to convey to men of science and employers of labour information which will enable them, without any exercise of inventive ingenuity, to understand his invention, and to give a workman the specific directions which he failed to communicate. In that case, I cannot doubt that his invention is published as completely as if his description had been intelligible to the workman of ordinary skill."¹

1892. LANE FOX v. KENSINGTON & KNIGHTSBRIDGE ELECTRIC LIGHTING CO., LTD., 9 R. P. C. 221, 413.

Disconformity—Insufficiency—Want of Utility.

In 1878 a patent (No. 3988) was granted to *St. G. Lane Fox* for "improvements in obtaining light by electricity, and in conveying, distributing, measuring, and regulating the electric current for the same, and in the means or apparatus employed therein."

The provisional specification² began with the above title and a description of the lamp (metallic leaves or foil) employed. It continued:—"The way in which I work a number of these lamps from a single source of electricity is as follows. From one pole or electrode of the electric generator or generators proceeds a large conductor, from which branch out at various points where lights are desired smaller conductors, which again may have conductors branching off from them, and so on. The other pole or electrode of each electric generator is connected with the earth, so that the conductor and its branches and sub-branches will be perpetually in a state of electric tension, tending to develop currents in every direction to the earth. One pole of the electric lamp is connected with the earth, and this may be conveniently effected by means of gas or water pipes, where such exist, so that wherever

¹ This paragraph was quoted and followed by *Lindley, L.J.*, in *Savage v. Harris*, 13 R. P. C. 368.

² Only those parts which are material for the present purpose are here given.

the circuit is complete between the earth and any one of these branches a current of electricity will pass through the thin leaf of metal, rendering it incandescent, and so produce light." The system of measurement was next described; and the specification continued:—"The electromotive force of the electric conducting mains should be kept as nearly as possible constant, at, say, 100 volts or B.A. units of E.M.F. A number of *Planté's* (lead and sulphuric acid) cells joined together in series between the main and the earth will serve as a kind of reservoir for electricity." The conductors are next described, then:—"In order to keep the E.M.F. in the mains constant, it is desirable to have in the first place several generating machines; next, it is necessary to have some regulator, such as that about to be described." The regulator consisted of a quadrant electrometer connected with the main and earth "in the usual way." The needle, on coming into contact with fixed pegs, would complete local circuits, and so actuate levers acting on valves, thereby increasing or diminishing the supply of steam to the generating engines.

The complete specification¹ was for "improvements in [obtaining light by electricity, and in conveying], distributing, [measuring], and regulating the electric current for [the same], *obtaining light by electricity* and in the means or apparatus employed therein." The lamp was first described, consisting of a platinum or platinum alloy wire or leaf. Then came the general system of distribution as mentioned in the provisional and illustrated by Fig. 3,² A being the generator, and the conductors being shown by the lines, terminating in lamps, from which the "earth" wires (not shown) led to "earth." The mode of connecting them to gas or water pipes was described. The measuring apparatus (a shunted voltmeter) was also described. "The E.M.F. of the electric conducting mains should be kept as nearly as possible constant, say at 100 volts or B.A. units of E.M.F. A number of secondary batteries, such as *Planté's* (lead and sulphuric acid), such batteries being joined together in series between the main and the earth, will serve as a kind of reservoir for the electricity. The cells should have a very large conducting surface, and there should be several batteries connected up at various points of the mains, so that by increasing the E.M.F. during the hours when not much electricity is being used, they will become charged and the electric force will be stowed up in them, so that a sufficient supply will be available when the E.M.F. falls, owing to the draft from the mains when the force is most used and needed. The number of cells in each of these batteries will depend on the E.M.F. of the mains."

"Fig. 5 is a diagram representing a secondary battery joined up between the main and the earth for the purpose above described. E indicates earth, and *l* lamps.³ . . . In order to keep the E.M.F. in the electric mains

¹ Only those parts are inserted which are necessary to appreciate the decision. The amendments made by disclaimer are shown:—the words in square brackets were omitted, and those in italics inserted.

² Figs. 3 and 5 are diagrammatic, and are here given.

³ A description of the conductors were here omitted by disclaimer.

FIG. 3.

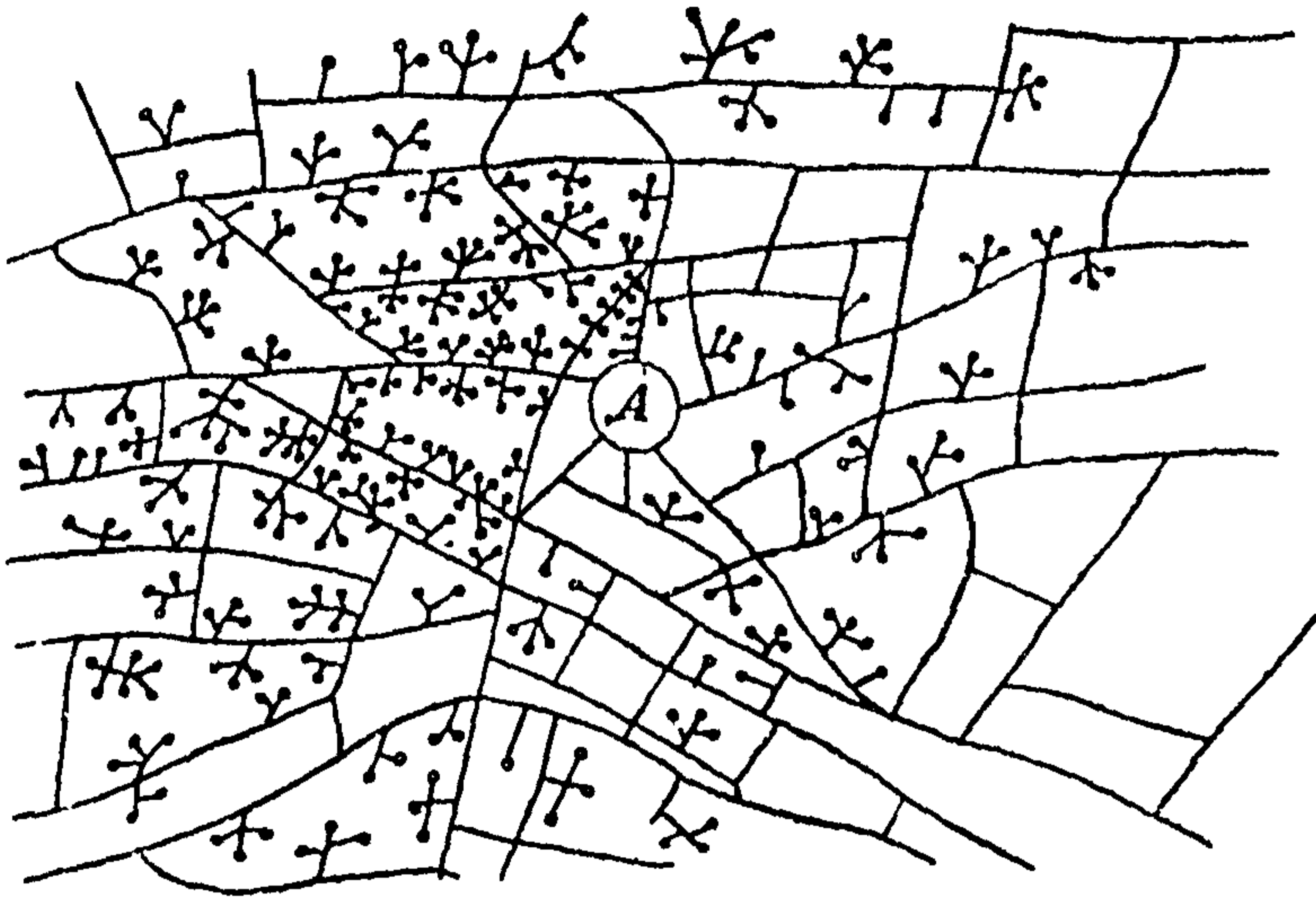
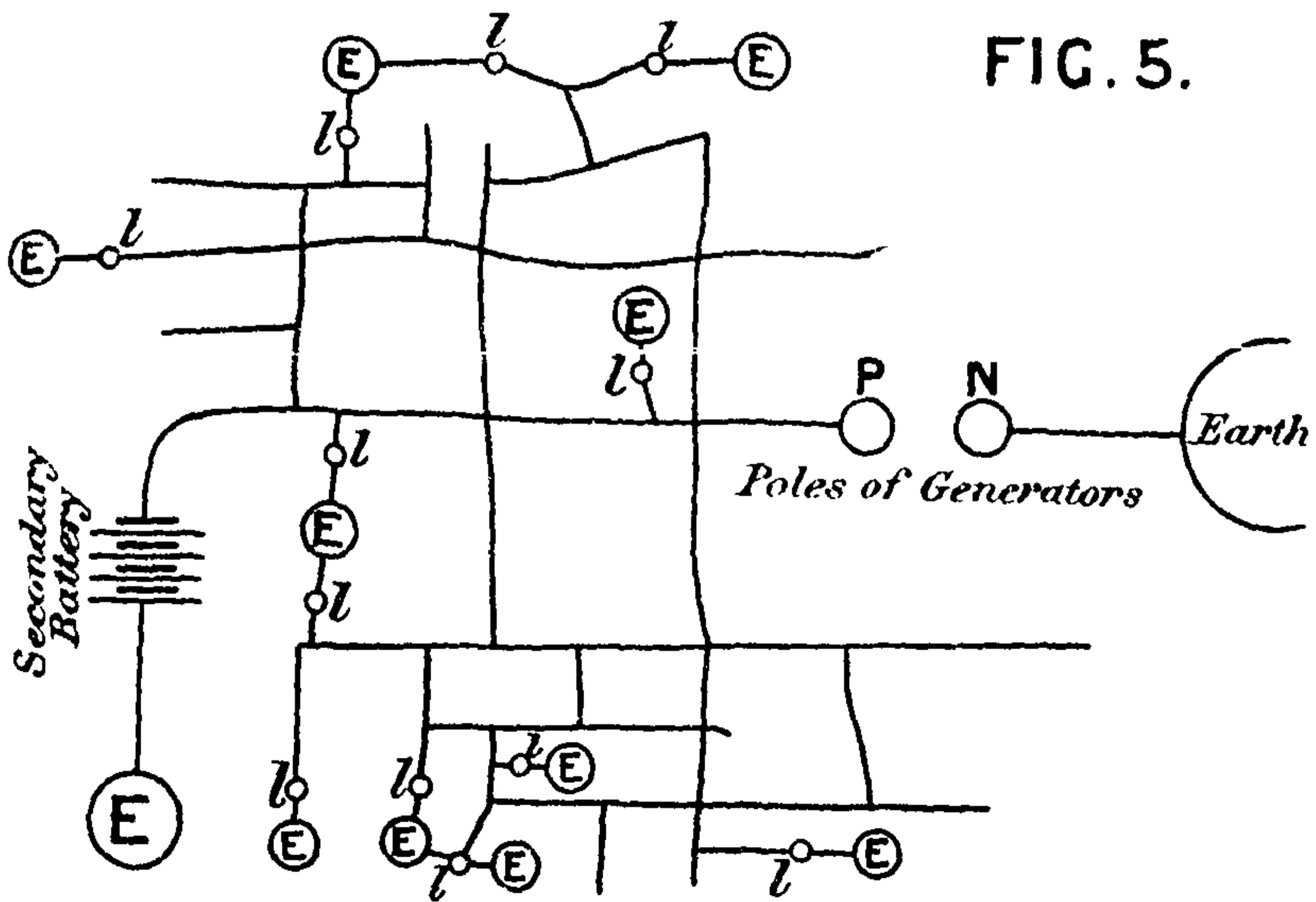


FIG. 5.



Figures from the Plaintiff's Specification
No. 3988 of 1878

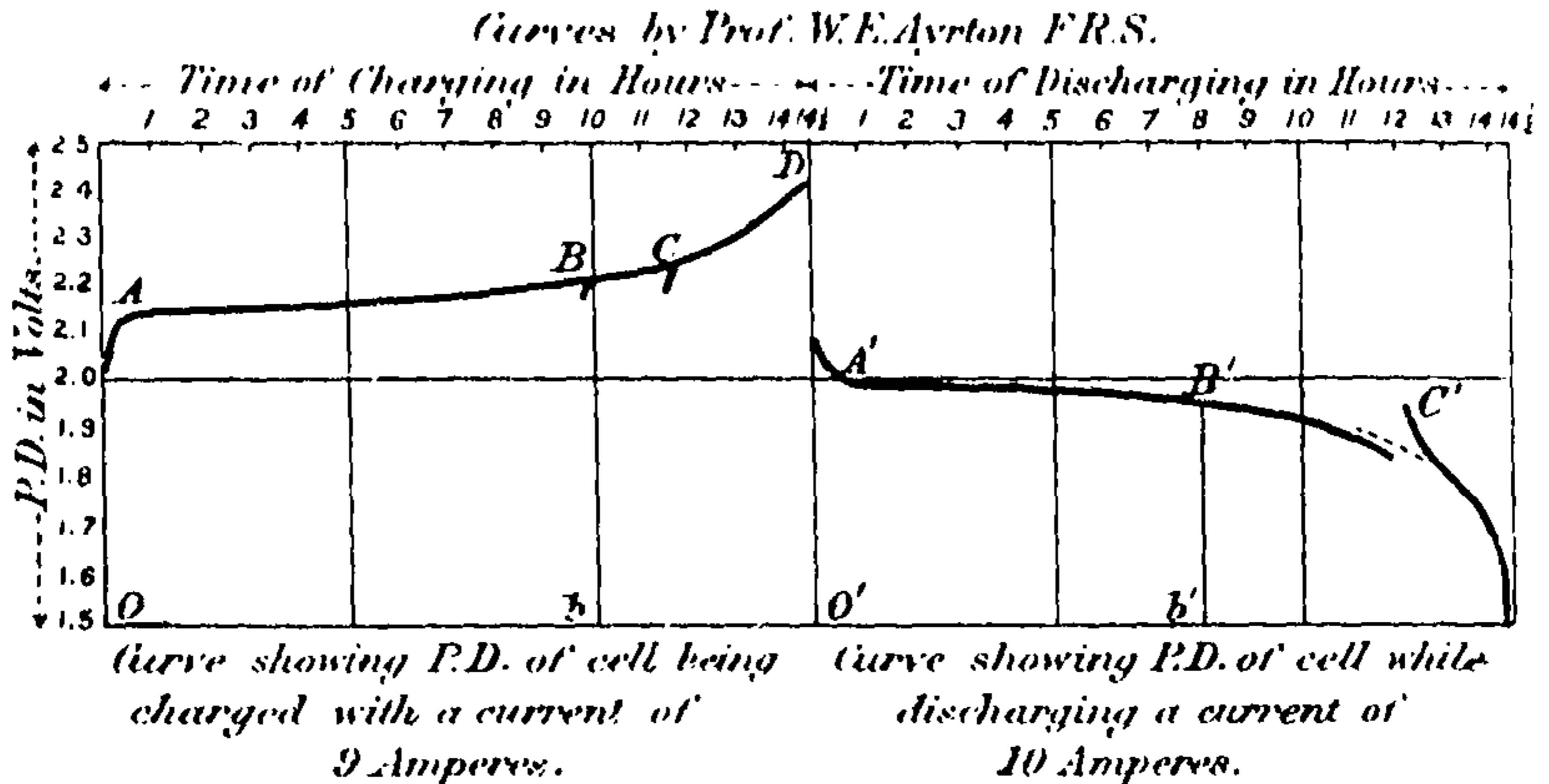
constant, it is desirable to have in the first place several generating machines, also a number of reservoir batteries, as before explained; [next it is necessary to have some regulator such as that about to be described]."¹ The quadrant regulator was disclaimed and its description struck out.

The claim in the amended specification was for "the employment as described of secondary batteries as reservoirs of electricity in combination with a mode or system of distribution such as is hereinbefore explained."

In an action for infringement against the defendants the following facts, *inter alia*, were proved:—

That *Planté* cells, when discharging, had a smaller potential difference between their terminal plates than when being charged, hence they could not act as automatic regulators of potential in the mains.

That they were useless unless used with a switch, so that the number of cells in the battery could be varied with the rise or fall in potential during charging and discharging. Without a switch the pressure necessary to charge the batteries would break down the lamps. This was illustrated by the curves here reproduced.² From them it appears that if the battery



(say of 50 cells) be arranged to discharge at 100 volts, it must be charged at a pressure from 105 to 115 volts, which the lamps would not bear.

But if that difficulty were overcome, it was proved that there would be considerable irregularity both in pressure and current during the discharge, so that the battery could not act as a regulator. The amount of this irregularity is shown by Prof. *Kennedy's* diagram given below.

That *Planté* cells were well known in 1878, and had been used for storage

¹ These words were struck out by disclaimer.

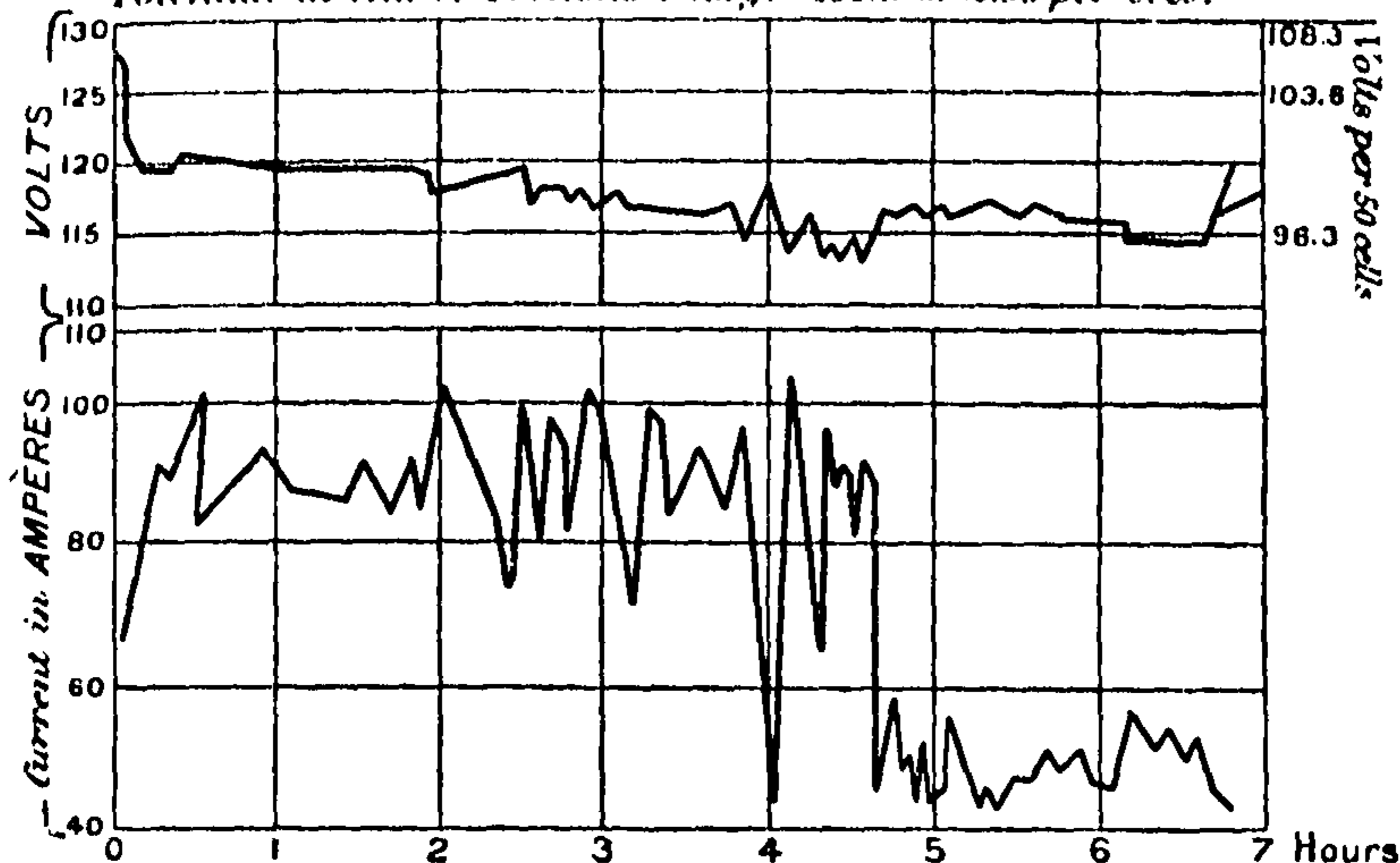
² In this diagram produced at the trial the descending curve was continued further. It was originally published by Prof. *Ayrton* and Messrs. *Lamb* and *Smith* to illustrate their paper on "The Chemistry of Secondary Cells." The breaks at B, C, and C' were due to the stoppages in an experiment to remove certain test plugs. The change of potential of the battery in action is according to the continuous curve. See Vol. XIX. p. 660 of *The Journal of the Institution of Electrical Engineers*.

in connection with arc lighting, but not in connection with dynamos for incandescent lighting.

That in 1878 no successful incandescent lamp had been invented. Nor was it known that in large districts the earth could not be used as a return conductor—the term “earth” was technically used for return conductors.

Diagram 1 by A. KENNEDY F.R.S.

Showing irregularity of Potential & Current from a Battery of 60 31 Pl. cells discharging with variable external Resistance Potential at end of Previous Charge -154.8 or 2.58 per cell.



The patent was held invalid at the trial on the grounds of disconformity and insufficiency, and the opinion expressed that otherwise it was new, was subject-matter, and had been infringed (9 R. P. C. 221).

Both parties appealed.

Held, by the Court of Appeal—

That without further invention, or experiment as regards “switching” the invention was useless for the purposes described by the patentee.

That the specification was insufficient, owing to the want of such directions as would enable a constant pressure to be maintained in the mains.¹

The patent was therefore invalid.

That the invention claimed in the amended specification (*regulation by batteries*) was different from that described in the provisional (*storage by batteries and regulation by regulator*).²

¹ This follows from the preceding finding. It is looking at the same matter from a different point of view.

² This finding (at p. 419) was not enunciated until the patent had been declared invalid. In coming to the conclusion that the amended complete specification was disconform to the provisional, the learned Lords Justices followed the decision of the Court of Appeal in *Gaulard & Gibbs' Patent* (6 R. P. C. 215), in which case there was a strong analogy as to the facts, without noticing that the House of Lords did not approve of the

Per *Lindley*, L.J. (p. 416): "An invention is not the same thing as a discovery. When *Volta* discovered the effect of an electric current from the battery on a frog's leg, he made a great discovery, but not a patentable invention. Again, a man who discovers that a known machine can produce effects which no one knew could be produced by it before, may make a great and useful discovery; but if he does no more, his discovery is not a patentable invention:—*Britain v. Hirsch*, 5 R. P. C. 232; *Harwood v. G. N. Ry. Co.*, 11 H. L. C. 654; *Horton v. Mabon*, 12 C. B. N. S. 437; *Saxby v. Gloucester Wagon Co.*, 7 Q. B. D. 305. He has added nothing but knowledge to what previously existed. A patentee must do something more: he must make some addition, not only to knowledge, but to previously known inventions, and must so use his knowledge and ingenuity as to produce either a new and useful thing or result, or a new and useful method of producing an old thing or result. On the one hand the discovery that a known thing—such, for example, as a *Planté* battery—can be employed for a useful purpose for which it has never been used before is not alone a patentable invention; but, on the other hand, the discovery how to use a thing for such a purpose will be a patentable invention if there is novelty in the mode of using it, as distinguished from novelty of purpose, or if any new modification of the thing, or any new appliance is necessary for using it for its new purpose, and if such mode of user, or modification, or appliance involves any appreciable merit. It is often extremely difficult to draw the line between patentable inventions and non-patentable discoveries, but I have endeavoured to state the distinction as I understand it, and so far as is necessary for the purposes of the present case. I have, of course, been guided by the previous decisions on the subject, and especially by *Harwood v. G. N. Ry. Co.*, which is the most instructive of them all."¹

At p. 417: ". . . The utility of the alleged invention depends not on whether by following the directions in the complete specification all the results now necessary for commercial success can be obtained, but on whether by such directions the effects which the patentee professed to produce could be produced, and on the practical utility of these effects. Can it be said that the invention as described in the amended specification was, in 1878, a practically useful addition to the then stock of inventions? To judge of utility, the directions in the amended specification must be followed, and, if the result is that the object sought to be attained by the patentee can be attained, and is practically useful at the time when the patent is granted, the test of utility is satisfied. Utility is often a question of degree, and always has reference to some object. 'Useful for what?' is a question which must be always asked, and the answer must be, useful for the purposes indicated by the patentee."

finding of disconformity by the Court of Appeal in that case (*ante*, p. 64). An inventor should not rely too much on this being an example of disconformity.

¹ As re-stated by *Lindley*, L.J., in *Moser v. Marsden*, 10 R. P. C. 358, and followed by *Smith*, L.J. (*ibid.*, p. 363). Followed in *Pirrie v. York St., &c.*, 11 R. P. C. 438, 453, 455; *Thierry v. Riekmann*, 12 R. P. C. 427; and *Acetylene Ill. Co., Ltd. v. United Alkali Co.*, 20 R. P. C. 173.

1892. GADD & MASON v. MAYOR OF MANCHESTER, 9 R. P. C. 516.

Disconformity;—Inventive Ingenuity—Prior Publication.

In 1888 a patent (No. 18119) was granted to Messrs. *Gadd & Mason* for "improvements relating to the construction of gasholders."

The specifications¹ were as follows:—

"The improvements relate to the construction of gasholders, and have for object the supporting of the same in their working position, in such manner as to enable the external or upper guide framing hitherto employed for that purpose to be dispensed with, and yet to give the requisite stability; although such, or a modified form or framing, may be employed in connection with the improvements herein described, when desired.

"To accomplish this, and to effect our improvements, we fix round the face of the tank or well a series of vertical guides, which are constructed in the form of racks, or mechanical equivalents therefor, (*such as vertical screw-shafts of coarse or quick thread, or vertical endless chains or bands passing over and between pulleys or wheels at or near the top and the bottom of the tank or holder, as the case may be*). At corresponding intervals round the lower curb or ring of the holder we mount on suitable shafts or studs, pinion, mitre, or other toothed wheels or mechanical equivalents therefor (*such as notched wheels, or in some cases plain wheels or pulleys*), which gear into *or with* the racks *or equivalents* aforesaid.

"These wheels are, by preference, all likewise geared together, in such manner that when one is caused to turn, the whole will turn therewith and to the same extent. By which means, if the holder carrying *or connected with* these geared-up wheels moves upwards or downwards, it will be sustained in the same relative position at all heights.

"The like result is also obtained by fixing the vertical racks, or equivalents *as aforesaid*, to the outer face of the holder, and the pinion, mitre, or other wheels round the top of the tank; and in like manner the method may be extended to telescopic holders.

"The wheels which take into the guides may be geared together either by shafts, intermediate between *and turning* in suitable journals; or by means of intermediate wheels in train [round the circle]; or by *plain-chain or rope* or *link-chain* gearing; and instead of the whole of the wheels being geared together, portions thereof may be geared as a modification.

"Other variations in detail may be made without departing from the peculiar character of the invention, *which consists in connecting, by means of torsional or tensional gearing, a number of points round the bottom curb of a*

¹ The specifications are here shown together. The provisional specification can be read by omitting all the passages and words in italics, and including those words in square brackets down to the beginning of the description of the drawings. To read the complete include the words in italics and omit those in square brackets. The new matter constituting the alleged disconformity will be thus seen at a glance.

gasholder, in such manner that when one point thereof tends to rise or fall, the same tendency is transmitted, through such gearing, round the circle to every other point."

Figs. 1 and 2 show a plan and elevation of one method of carrying out the invention, in which the spur-wheels and their shafts are attached to the holder and the rack. When one pair of wheels tend to turn in their rack by reason of the gasholder rising at that point, this tendency is transmitted to the wheels on either side by the shafts, and thence by the rack to the next, and so on. A horizontal position for the gasholder is thus ensured. Other diagrams showed modifications of the same principle of torsional gearing.

Figs. 15 and 16 (plan and elevation) show another method of effecting the desired object by means of tensional gearing. Chains or ropes are attached at certain points, *c*, to the outside of the bottom of the gasholder; these pass over and under wheels fixed to the side of the tank, as shown in Fig. 16. When one point of attachment tends to rise or fall, it creates a corresponding tension in the rope or chain, which is transmitted over the wheels to the next points of attachment on either side round the gasholder.

Other modifications of the tensional gearing were shown.

The claims were for:—

"(1) The employment of torsional gearing arranged round a gasholder or gasholder tank, which gearing connects or gears together points upon and at intervals around such holder, so that one point moving upwards or downwards communicates through such gearing the tendency of motion to the other points round the holder, for the purpose and in manner substantially as herein showed and described.

"(2) The employment of tensional gearing arranged round a gasholder or gasholder tank, which gearing connects or gears together points upon and at intervals around such holder, so that one point moving upwards or downwards communicates through such gearing the tendency of motion to the other points round the holder, for the purpose and in manner substantially as herein shown and described.

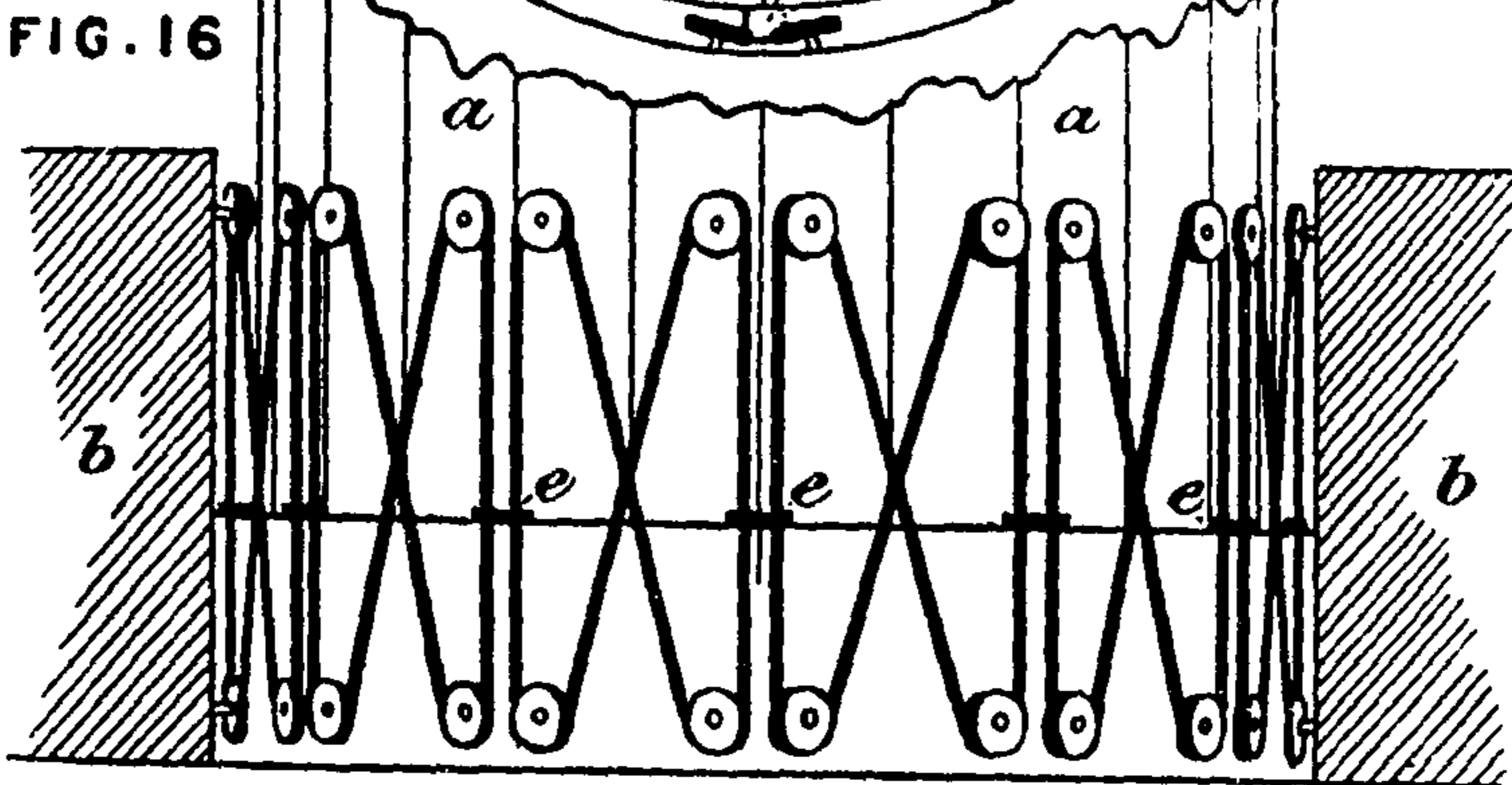
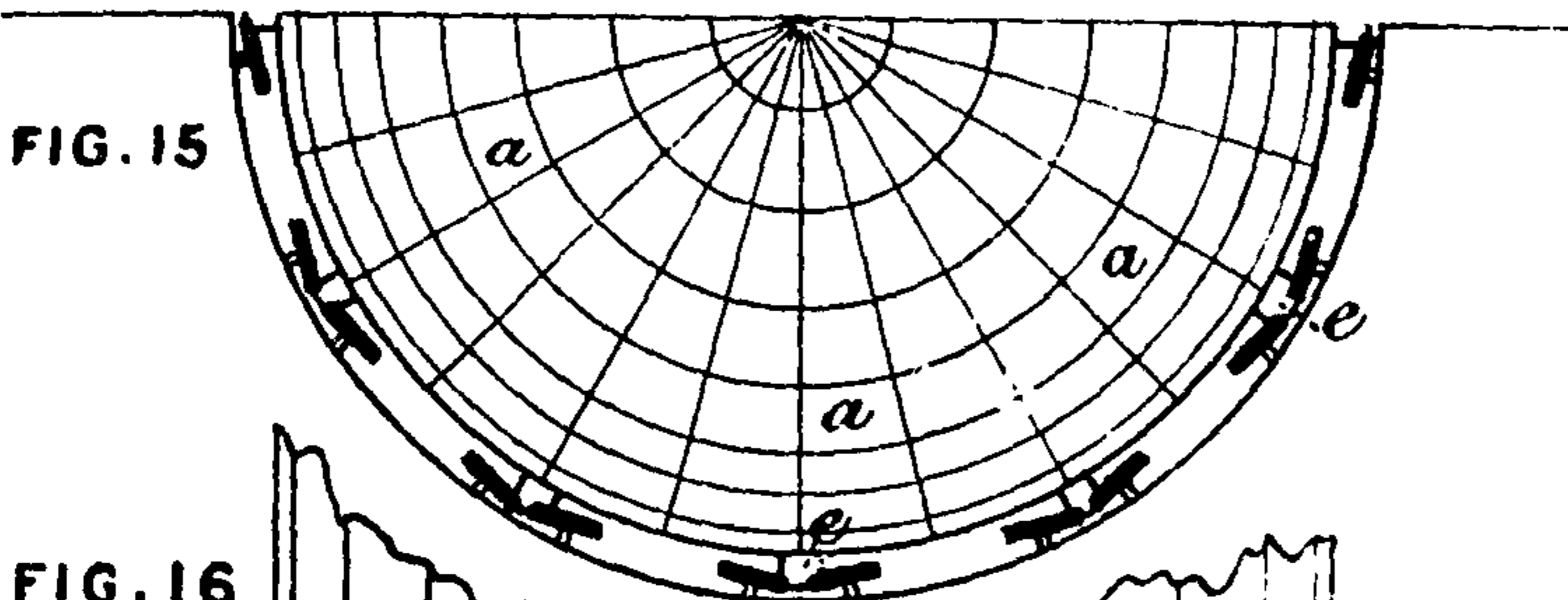
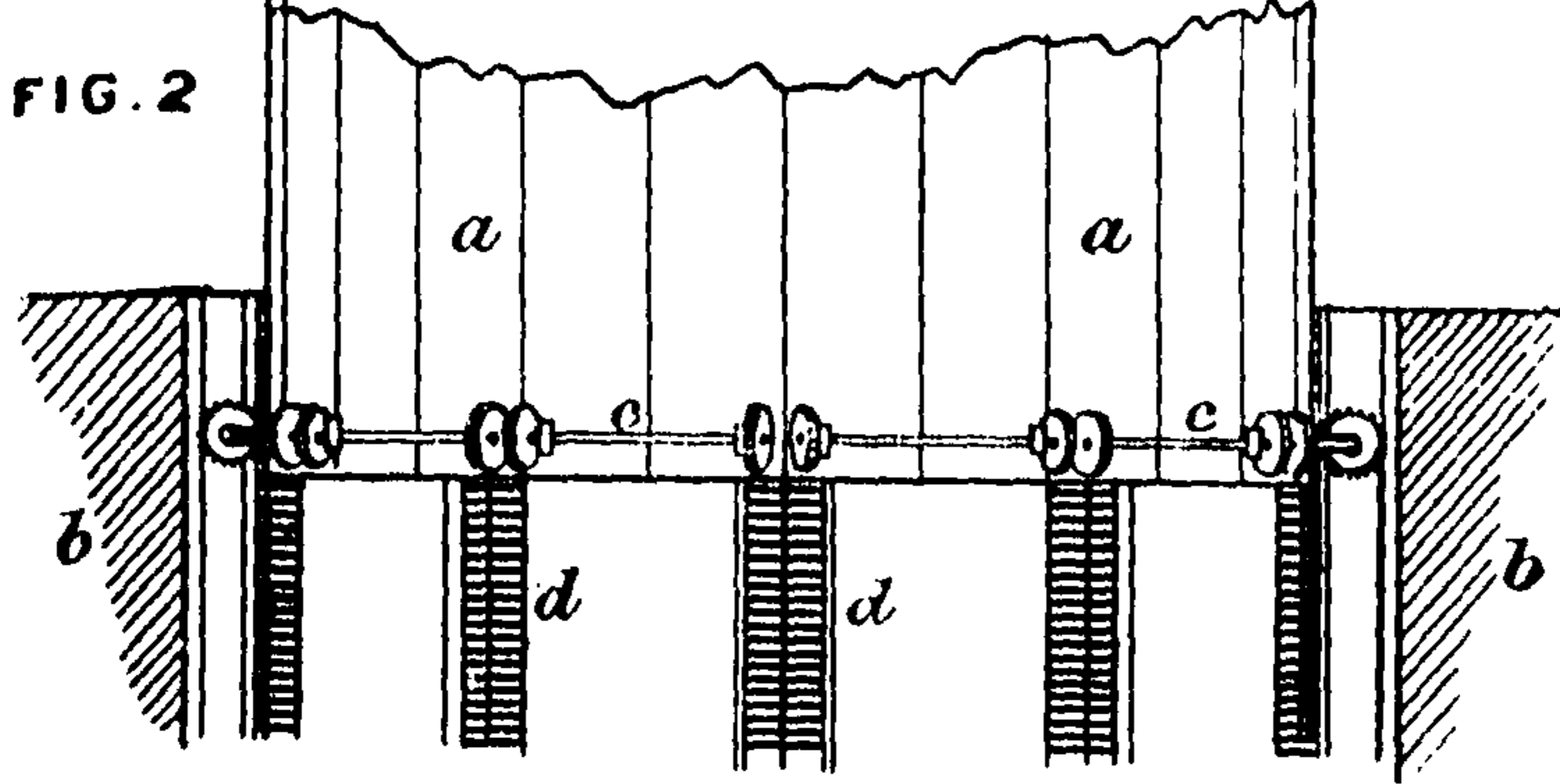
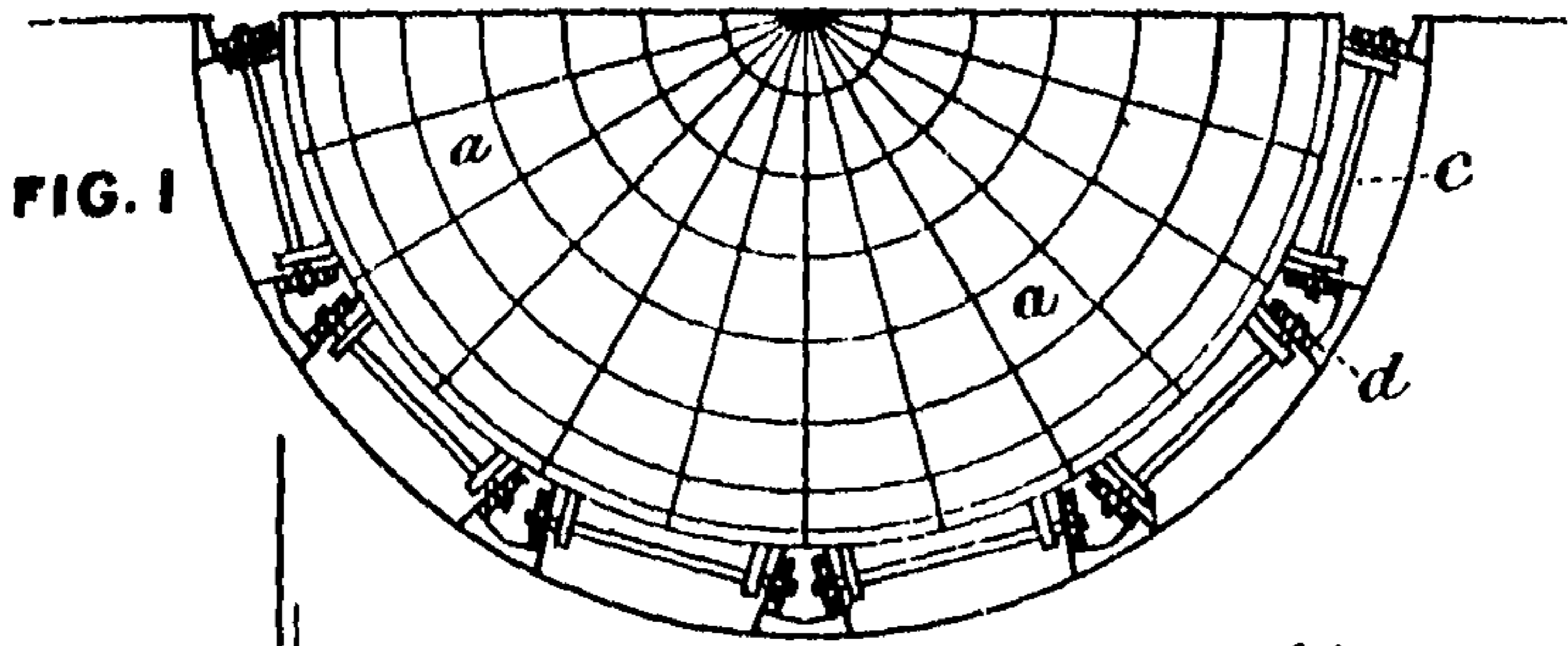
"(3) The employment of torsional and tensional gearing combined, arranged round a gasholder or gasholder tank, which gearing connects or gears together points upon and at intervals around such holder, so that one point moving upwards or downwards communicates through such gearing the tendency of motion to the other points round the holder, for the purpose and in manner substantially as herein shown and described."

In an action for infringement of the above patent the principal defence relied on was that the patent was invalid by reason of—

(1) Disconformity, because the invention of torsional gearing in the complete specification was not disclosed in the provisional.

(2) There being no subject-matter, considering the prior publications in the specifications of *Wild* (1850) and *Standfield* (1883).

(3) The invention had been published by being disclosed by a rival inventor to sundry persons.



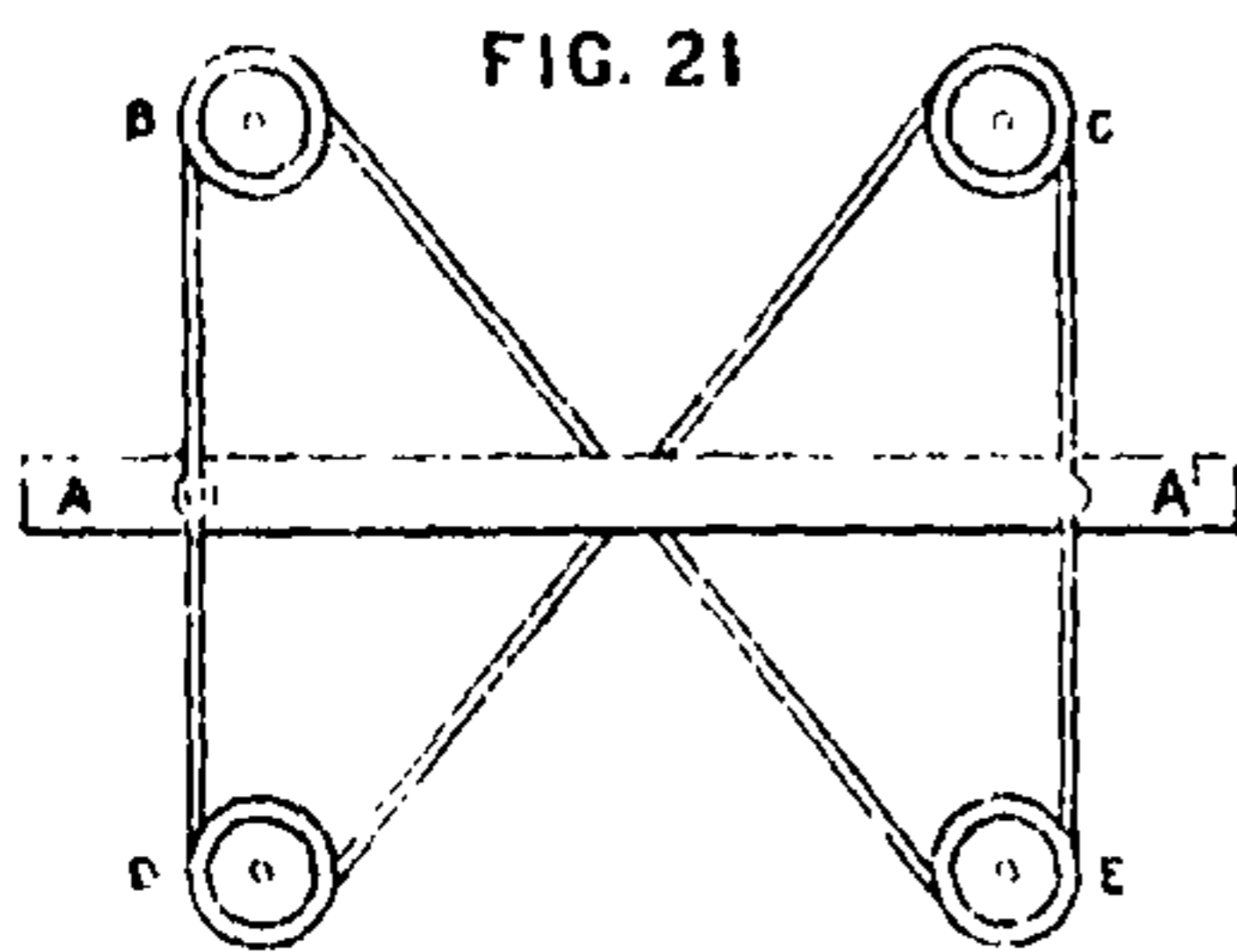
Diagrams redrawn from Gadd & Mason's specification (No. 18119 of 1888).

Technical and contradictory evidence was called as to what would be understood by the term "gearing" by mechanics.

Wild's specification (13226 of 1850) related to floating caisson docks. It worked on the same rack and pinion principle as the plaintiffs'. It disclosed a method of preserving a horizontal position by means of cog-wheels on the top and bottom of the rectangular caisson, geared together by shaft, passing along its two inside sides, and these worked in racks fixed in the dock. But the structure never rose above the level of the dock, nor was it kept level by being held externally at the base only.

Standfield's invention (5889 of 1883) was for a similar purpose, viz. keeping floating structures level. Amongst other devices it disclosed the torsional method of keeping the pontoon level in the following terms:—

"Fig. 21 shows a mode of maintaining the horizontality of any platform,



From Standfield's specification.

beam, or frame $A A'$, which practically ensures a parallel motion. A chain is made fast to the upper side of the beam at A, passes over the pulley B and under the pulley E, and is then secured to the lower side of the beam at A' . A second chain is made fast to the lower side of the beam at A, it passes under the pulley D and over the pulley C, and is made fast to the upper side of the beam at A' .

"It will be seen that this beam will pass up and down only in a horizontal position, however it is weighted with respect to the raising power."

Neither of these inventions were shown to have been actually used; nor did either of them refer to gasholders.

Evidence was given of the difference between the forces to be considered in floating structures (the upward pressure of water due to displacement) and gasholders (the expansive force of the gas and external wind-pressure).

It was also proved that a rival inventor had disclosed the same invention to several persons, some in his employment, others engineers and managers of gasworks. But all these communications were made confidentially and for the purpose of obtaining assistance and advice.

Held at the trial that the patent was invalid on the ground of disconformity between the complete and provisional specification (9 R. P. C. 249.)

Held, by the Court of Appeal—

That there was no disconformity.

That sufficient ingenuity was shown in applying the principles known in relation to floating structures to gasholders to support the patent.

That there was no "prior publication" by the rival inventor.

Per *Lindley*, L.J. (at p. 524): "These cases,¹ and many others which

¹ *Brook v. Aston*, 8 E. & B. 478; 5 Jur. N.S. 1025; *Harwood v. G. N. Ry. Co.*, 11 H. L. Ca. 654; *Morgan v. Windover*, 7 R. P. C. 131. Also *Penn v. Bibby*, 2 Ch. Ap. 127;

might be cited, establish the following propositions applicable to the present case, viz.: (1) A patent for the mere new use of a known contrivance, without any additional ingenuity in overcoming fresh difficulties, is bad, and cannot be supported. If the new use involves no ingenuity, but is in manner and purpose analogous to the old use, although not quite the same, there is no invention; no manner of 'new manufacture' within the meaning of the statute of James. (2) On the other hand, a patent for a new use of a known contrivance is good, and can be supported if the new use involves practical difficulties which the patentee has been the first to see and overcome by some ingenuity of his own. An *improved thing* produced by a new and ingenious application of a known contrivance to an old thing is a manner of new manufacture within the statute. . . .

"The difficulty of saying where invention sufficient to support a patent exists and where it does not, is well known to all persons conversant with patent law. . . . If, practically speaking, there are no difficulties to be overcome in adapting an old contrivance to a new purpose, there can be no ingenuity in overcoming them, there will be no invention, and the first rule will apply. The same rule will, I apprehend, also apply to cases in which the mode of overcoming the so-called difficulties is so obvious to every one of ordinary intelligence and acquaintance with the subject-matter of the patent as to present no difficulty to any such person. Such cases present no real difficulty to people conversant with the matter in hand and admit of no sufficient ingenuity to support a patent. If in these two classes of cases patents could be supported, they would be intolerable nuisances, and would seriously impede all improvements in the practical application of common knowledge. . . . The plaintiffs have made a new and useful thing, viz. an improved gasholder, and however obvious their invention may now seem, it was not at all obvious until they hit upon it." ¹

As to disconformity (at p. 526): "This part of the case turns entirely on the view taken of the nature of the plaintiffs' invention. My view is that they sought and obtained protection for an invention for keeping the bottoms of gasholders horizontal without the use of an external framework, but instead thereof by mechanical means such as are described in the provisional specification. But the plaintiffs were not tied to those particular means. A patentee is not prevented from improving the means of carrying out the invention for which he obtains provisional protection. . . . The only limit set to what he can do in this respect is that the invention, as finally specified, must not be a different invention from that provisionally protected." ²

Cunnington v. Nuttall, L. R. 5 H. L. 205; *Otto v. Linford*, 46 L. T. 35; and *Hayward v. Hamilton*, Griff. 115.

¹ The judgment of *Lindley*, L. J., is frequently quoted as to the difficulty of deciding as to subject-matter: *Savage v. Harris*, 13 R. P. C. 93. The application of the above rules is always a question of fact and degree: *Brooks v. Lamplugh*, 14 R. P. C. 615. Practical difficulties must be overcome: *Rockliffe v. Priestman*, 15 R. P. C. 159; *Beavis v. Rylands, Glass Co.*, 17 R. P. C. 98.

² Quoted to show that inventions must be unmistakably different to constitute disconformity in *Chadburn v. Mehan*, 12 R. P. C. 135.

Per *Smith*, L.J. (at p. 529): "The Patent Act of 1883, s. 5, enacts that the patentee 'must describe in his provisional specification the nature of his invention.' This does not mean that he must give a full description of his invention, but he must describe its nature so that the law officers may be informed of its subject-matter, and the identity between it and the complete may be capable of being ascertained. . . . In considering the question of 'non-conformity,' it becomes necessary to apprehend clearly what the plaintiffs' invention really is, for until this is done, it is impossible to ascertain if a new and separate invention, or only an improvement upon or different mode or modes of carrying out and developing the original invention, are set forth in the complete specification. In the first case the patent is bad. In the second it is not."¹

Note.

At p. 532 the rule as to *paper anticipations* is again restated by *Smith*, L.J., and was followed in *Shrewsbury & Talbot Cab. Co. v. Sterckx*, 13 R. P. C. 53; *Pneumatic Tyre Co. v. Leicester, &c.*, 16 R. P. C. 57.

1894. BENNO JAFFÉ UND DARMSTEDTER LANOLIN FABRIK v. JOHN RICHARDSON & CO., LTD., 11 R. P. C. 262.

Construction of Claim—Manufacturing Equivalent—New Process.

A patent (No. 4992 of 1882) was granted to *F. C. Glaser* for "a new or improved manufacture of fatty matter from wool-fat."

The specification described the invention as follows:—

"This invention relates to a new or improved manufacture of fatty matter from wool-fat termed 'lanolin,' which may be produced either from the waste liquors of wool-washing works or from ordinary commercial wool-fat." Lanolin was described as a combination of pure wool-fat and water. Previous attempts were reviewed and their drawbacks pointed out, more particularly the smell due to certain putrid formations. The new special method was thus described: "The still fresh undecomposed lye passes through a depositing centrifugal machine, in which the dirt and fat are separated from each other, while the cleansed soap liquor is continually drawn off by means of a pipe and led direct into the vat which serves for the acidulation. The raw 'lanolin' thus obtained is thoroughly kneaded by suitable machinery with cold flowing water, until the water which flows away is as clear as the inflowing water. The raw 'lanolin' is then heated with water, whereby it is decomposed into the elements of water and fat. The latter is skinned off from the surface and cooled, and can then be again operated upon in the centrifugal machine in a melted condition for further

¹ Frequently quoted with approval: *Cassel Gold, &c. v. Cyanide Recovery, &c.*, 12 R. P. C. 257.

purification," or it could be dissolved in certain solvents described, and then filtered. The fat was then kneaded with water. If commercial wool-fat were employed instead of wool-washing water, alkalies such as carbonate or hydrate of soda, had to be added before the above treatment was carried out.

The claims were:—

"First. The herein-described improved manufacture of fatty matter termed 'lanolin' from wool-fat, by first treating the waste liquors of wool-washing works in a depositing centrifugal machine, then purifying the raw lanolin so obtained and converting the same into wool-fat, and, if necessary, purifying the wool-fat by means of ether or other solvents or by operating upon the same when heated in a centrifugal machine, and lastly converting the wool-fat into 'lanolin' by treatment with water."

"Second. The herein-described improved manufacture of fatty matter termed 'lanolin' from wool-fat by treating commercial wool-fat with water, carbonate of soda, hydrate of soda, soap, or other alkaline substance or mixtures thereof until a thin milky fluid is obtained, which is then treated in the manner set forth in the preceding claim."

In an action for infringement brought by the plaintiffs as assignees of the above patent, it was contended—

(1) That "lanolin" had been anticipated by the manufacture of a substance named "œsopus," described by *Dioscorides* in 1598; and by *Pliny*, whose works were published in England in 1601.

(2) That the claim was for lanolin when made as described, *i.e.* by the use of a centrifugal machine only.

The evidence showed that "œsopus," was not the same product, as it would not keep. That the wool-washings in alkali contain cholesterin fats, soap, and impurities. Of these, cholesterin fats possessed the lowest specific gravity. That the inventors discovered it could be easily separated from the fatty acids by the centrifugal machine. That such a machine had been invented as a "separator," as an improvement on the older process of allowing milk to stand and then "skimming" it.

Judgment was given for the plaintiffs.

Held, on appeal by the Court of Appeal—

That the substance was a new one. That the claim, considering the whole process and specification, included the process of separating by gravity as well as that mentioned.

Per *Lindley*, L.J. (at p. 271) applying the rule in *Cropper v. Smith* (1 R. P. C. 89): "Now, applying that principle to this case, I am satisfied, now I understand it, although I was not when I was ignorant of it, that to construe this document as claiming the means of doing the thing is to miss the substance and mistake the principal for the accessory. I think this claim does not cover any mechanical method of effecting the separation at the stage indicated, although it may not be done by the precise machine which is selected as the best."

Per *Kay*, L.J. (at p. 273): "Now I see the result of this manufacture was to produce a perfectly new substance . . . a hitherto unknown

compound . . . Now that I see that, I am not so much impressed with the importance of using a centrifugal machine as I was before, because to say that another man may produce the very same thing, which has turned out to be an extremely valuable product, by taking every one step of the plaintiffs' process except the centrifugal machine, and substitute for it a depositing-tank, seems to me to violate the principle which has been laid down over and over again, that you cannot take every step of a process, especially where the result is a production of a hitherto unknown compound, except one, and substitute for that one that which is a manufacturing or mechanical equivalent."

1894. GODDARD v. LYON, 11 R. P. C. 354.

Construction—Drawings—Invention.

A patent (No. 3172 of 1880) was granted to *W. Lyon* for "improvements in the construction and arrangement of apparatus for purifying, disinfecting, drying, and heating."

The complete specification was as follows:—

"My said invention consists of improvements in the construction of apparatus for purifying and disinfecting wearing apparel, bedding, and other articles, by means of which all germs of disease, vermin, and the eggs thereof, can be effectually destroyed without the necessity of employing any destructive chemical agent. The said apparatus is also applicable for the purposes of drying and heating, all risk of burning articles submitted to such operations being entirely avoided.

"The body or main portion of the apparatus consists of a chamber constructed of wrought iron or other suitable metal or material, and provided with a door so arranged and fitted as to close in a steam-tight manner. Steam is conducted from the steam space of a high-pressure boiler into the interior of the said chamber by means of a pipe or pipes, which open or project into the lower part of the latter. The said chamber, which is hereinafter referred to as the 'inner chamber,' is surrounded, except at that part where the door is situated, by an outer casing in such a manner that a steam-tight space or chamber (hereinafter referred to as the 'outer chamber') shall exist between the said outer casing and the exterior of the inner chamber, suitable stays or supports being provided for maintaining the inner chamber in its proper position. A steam-tight door is provided for the purpose of obtaining access to the inner chamber. Pipes are arranged in the manner hereinbefore described for conducting steam to the outer chamber. Both chambers are provided with suitable pipes for conducting off any water resulting from the condensation of the steam, and also for facilitating when desired the escape of the latter.

"I will now proceed to refer to the accompanying drawings, from which the nature of my said invention will be more clearly understood. In these

drawings the apparatus is shown mounted on wheels; Fig. 1 is an end view with the door open, and Fig. 2 is a perspective view with the door closed. A is the inner chamber, and B the casing enclosing the outer chamber; C is the door, which is provided with a flange, *c*, so that when the door is closed it can be firmly secured by means of bolts and nuts to the flange *d*. On the body of the apparatus, however, although this arrangement constitutes a simple and effectual method of securing the door in a steam-tight manner, in some cases it may be desirable to employ other arrangements, for instance, clamps connected to a rod or rods, as will be well understood; *e* is an aperture provided for the purpose of introducing small articles into the inner chamber without the necessity of opening the

Figure 1

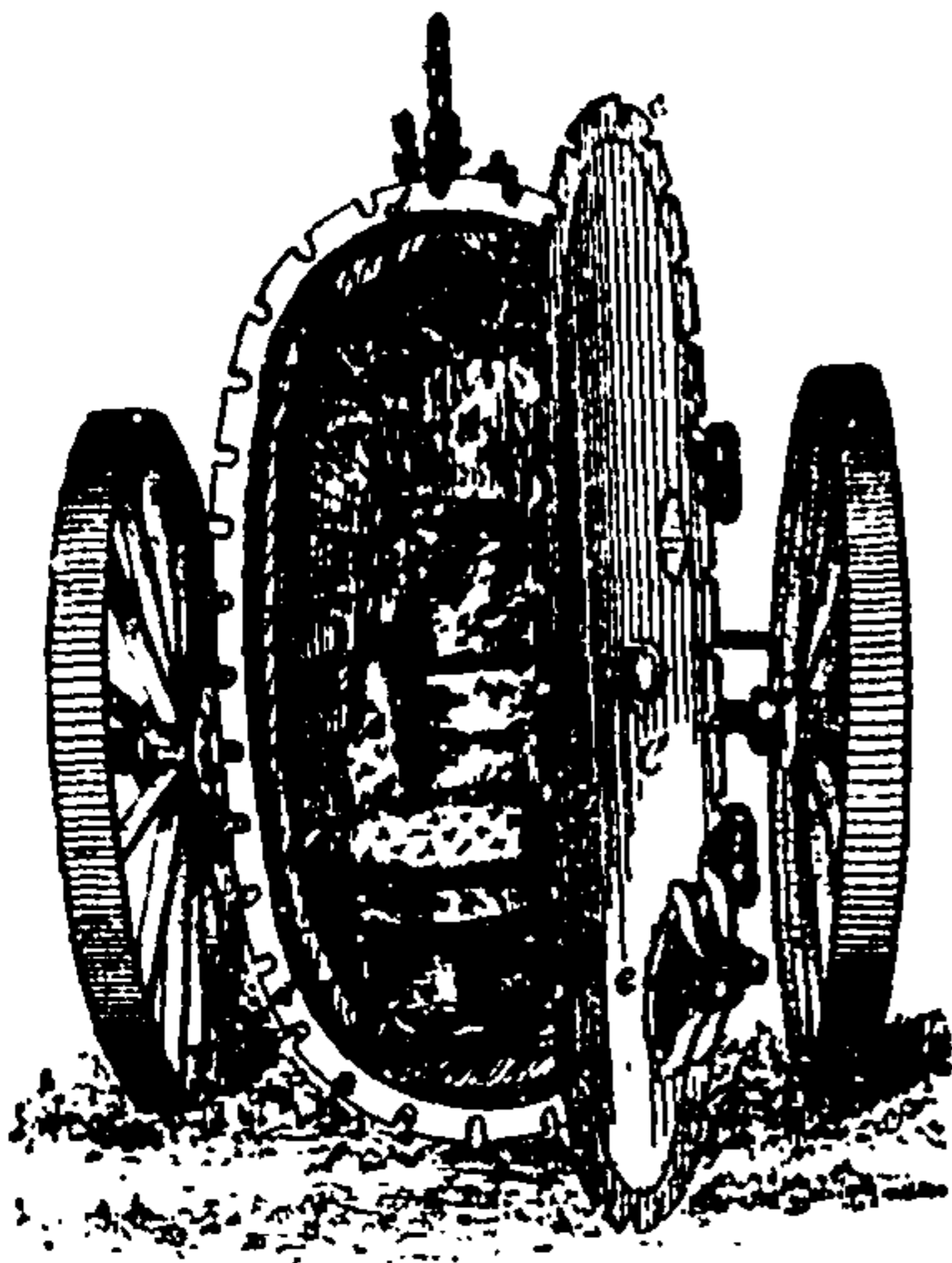
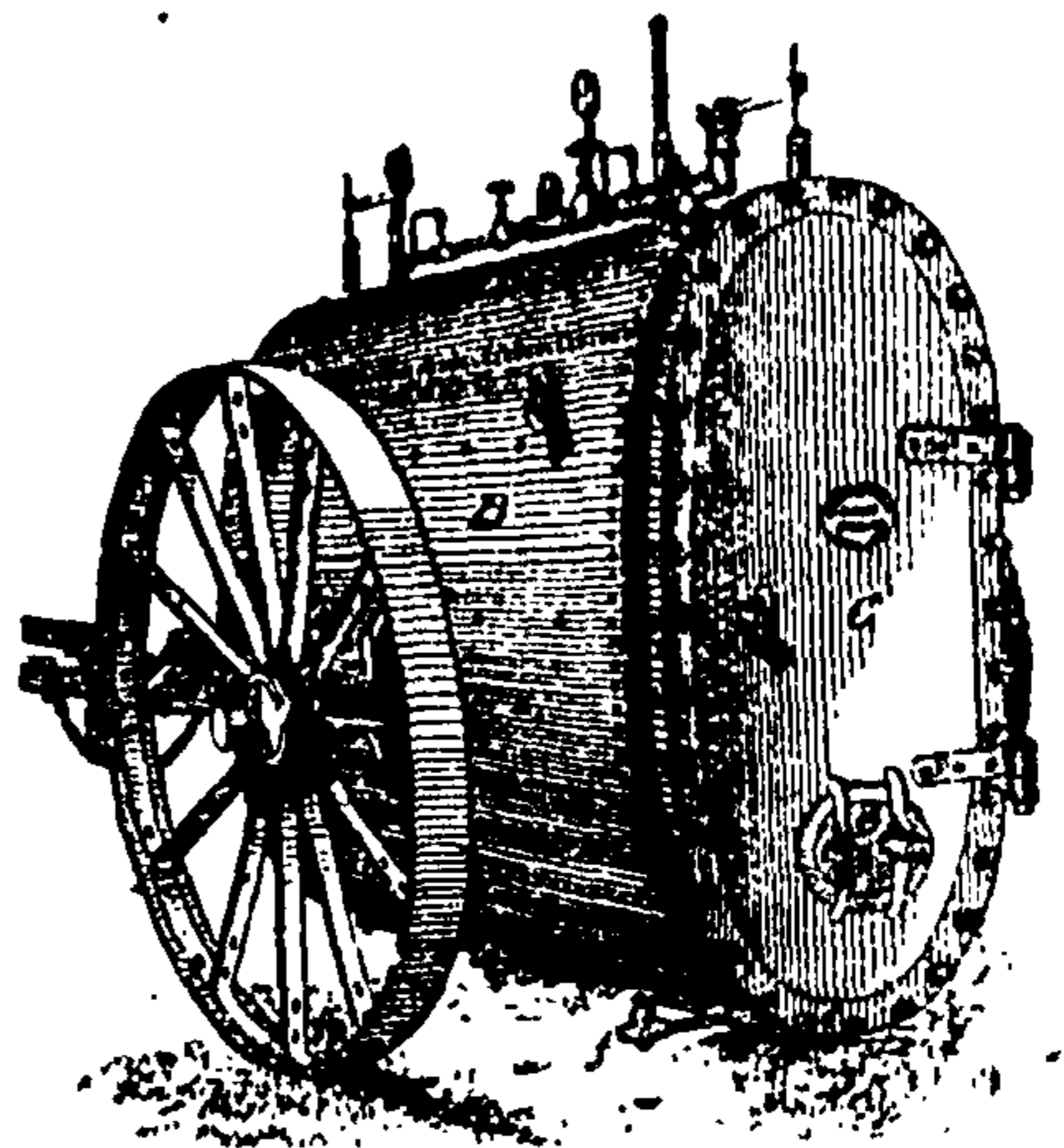


Figure 2



From Lyon's specification (No. 3172 of 1880).

door; *f* is a cock or valve for the escape of water resulting from the condensation of the steam. On the upper part of the apparatus are shown arranged safety-valves, steam-gauges, and thermometer, for the purpose of ascertaining and regulating the temperature of the interior.

“The action of the apparatus is as follows:—The wearing apparel, bedding, or other article to be operated upon is arranged on a perforated shelf, or in any other suitable manner, within the interior of the inner chamber; the door is then closed and steam is admitted into the said chamber, and is thus brought into contact with the article under treatment, which is allowed to remain exposed to the action of the same until the desired object is effected. In order to prevent condensation of the steam within the inner chamber, steam is admitted into the outer chamber by preference at a higher pressure than the steam in the inner chamber a short time before the admission of steam to the latter, which is thereby heated

and prepared for its reception. When the apparatus is to be employed for airing clothing or bedding, or for drying articles, or for any purpose where a dry heat is required, steam is only introduced into the outer chamber; but when a moist heat is required for the preservation of meat, or for cooking the same, the apparatus is used in the same manner as hereinbefore described for disinfecting."

The claim was for:—

"The combination and arrangement of the inner and outer chambers, substantially as and for the purposes hereinbefore described and set forth."

In an action for infringement the chief alleged anticipation was an apparatus used by the *Aberdeen Laundry Company*.

That apparatus worked as follows¹:—There was an inner chamber, A, into which articles were placed to be dried. Steam was admitted through the inlet B into the steam-jacket C, surrounding the inner chamber. This jacket was furnished with a safety-valve, D, and pressure-gauge, E. These were not constructed for high pressures. There were no valves or gauges on the inner chamber. Steam could be introduced into the inner chamber from the jacket by the pipe F, but, before the date of *Lyon's* patent this was only done experimentally. Condensed steam escaped by the outlet G from the outer chamber or jacket. It was also proved that after the publication of the patent in question the front end door H was burst by undue pressure against the bar I across the door. Packing (LL) was used to render the door steam-tight. The bar and door were then strengthened and a safety-valve put on. J is the floor of the chamber, and K an exit-pipe leading to the chimney. The Aberdeen machine, in its original condition, could not be used with steam in the inner chamber under a greater pressure than 3 lbs. per square inch, whereas the plaintiff's invention would not work usefully with a less pressure than 10 lbs. per square inch in the inner chamber.

It was proved that when steam is superheated (*i.e.* dry and under pressure) its temperature depends on its pressure, and conversely (10 lbs. and 240° F., 20 lbs. and 260° F.). By first heating the outer chamber by steam under high pressure, and then introducing dry steam under pressure into the inner chamber, clothes, bedding, &c., in the latter could be rapidly disinfected by being raised to a high temperature. The dry steam under high pressure permeated the things thoroughly, and in a few minutes effectually heated them, a result which, under older processes, it took several hours to attain. Again, the articles were not destroyed, as they would be by the use of condensed steam.

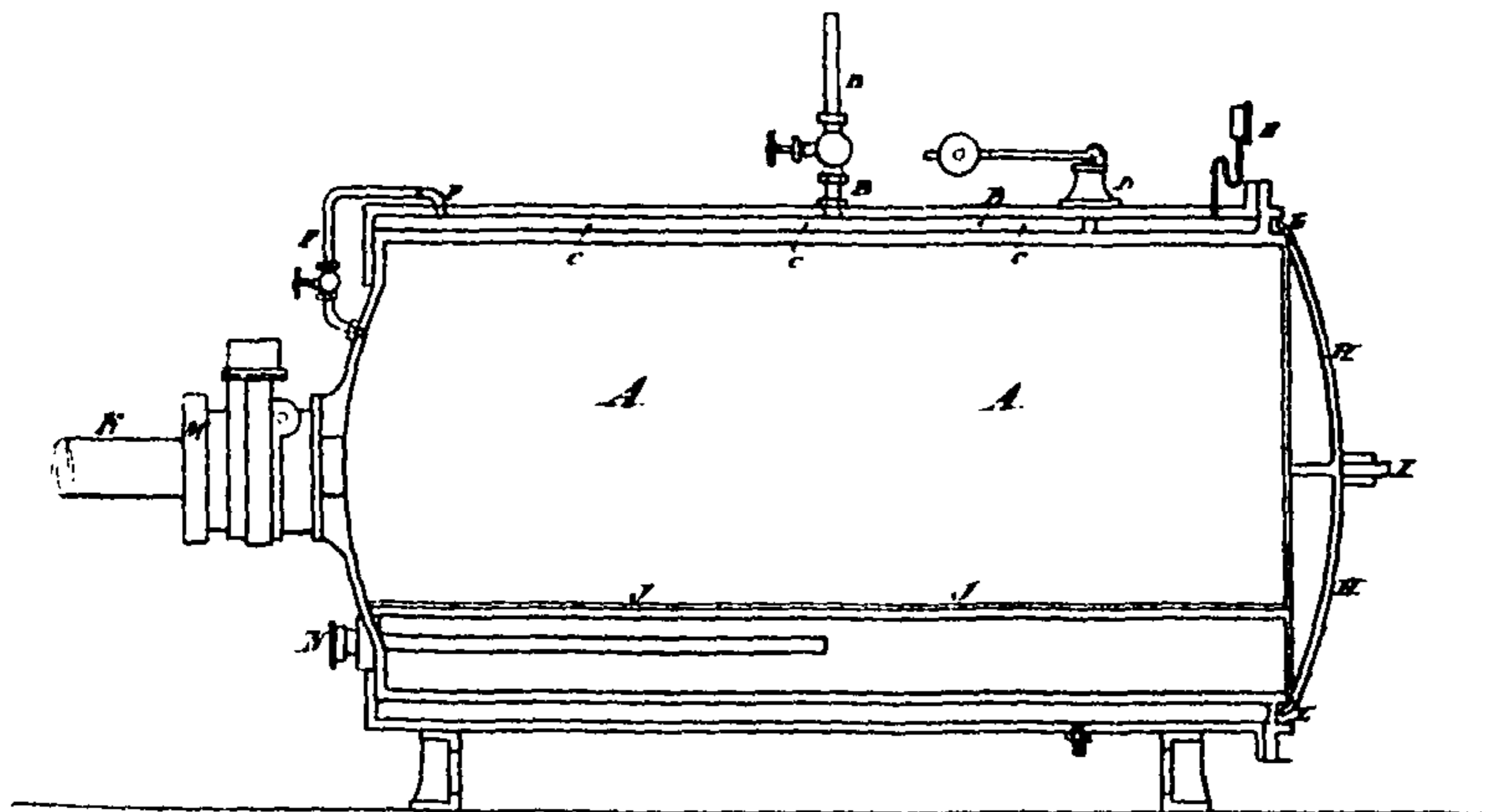
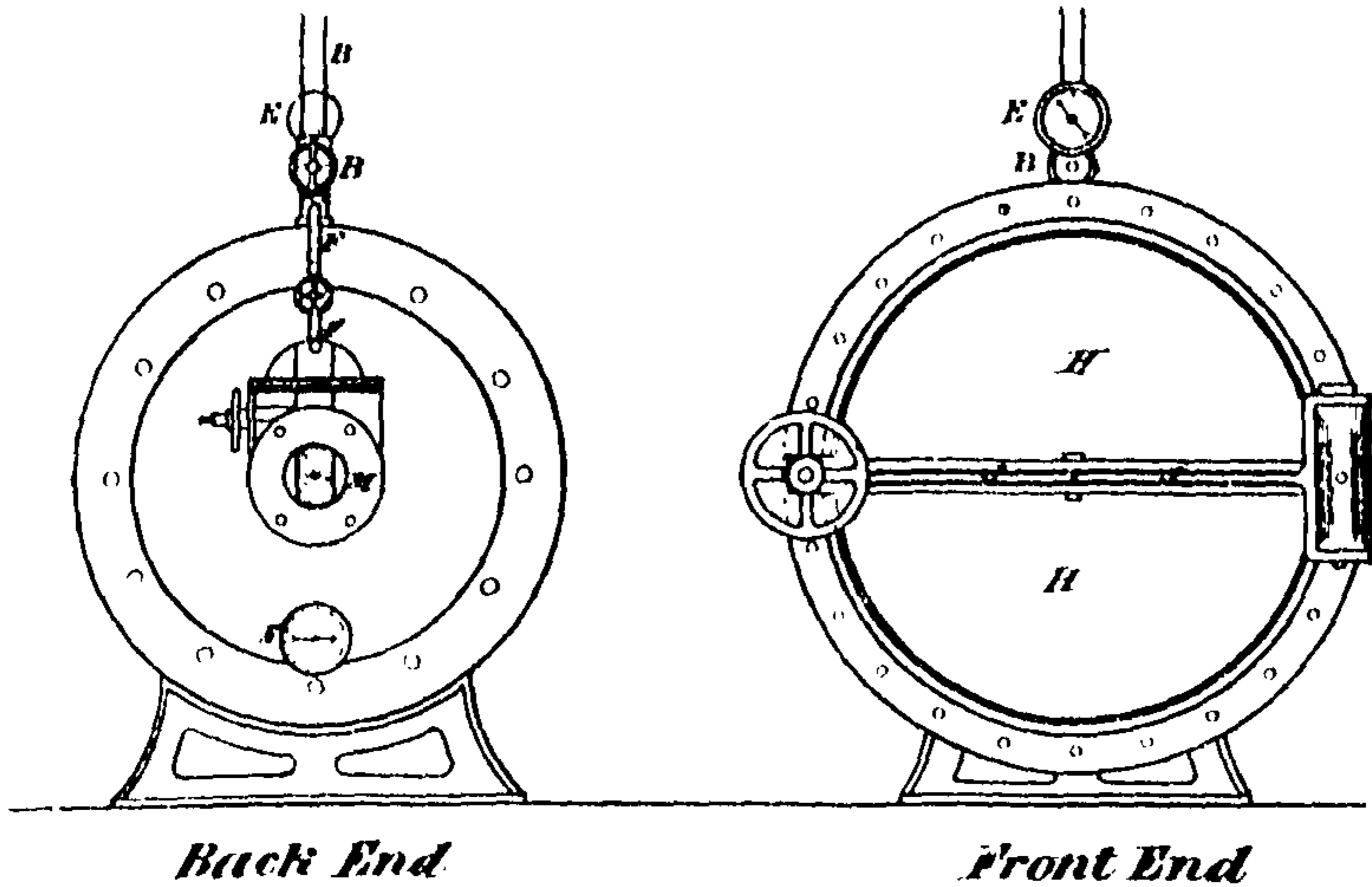
The points relied on for the defendant were chiefly—

That the specification claimed the invention for airing, &c., at low pressure, and was therefore anticipated.

That there was no subject-matter in improving a known machine to stand high pressure.

¹ The drawing here given is reproduced from the original exhibit lent to the author by Messrs. *Finney, Thomas & Co.*

Held at the trial and by the Court of Appeal, that the patent was valid.
Held, by the House of Lords—
 That on considering the whole specification the claim was for the com-



Section

Disinfector used at the Aberdeen Steam Laundry.

ination of the two chambers for the purpose of disinfecting by direct agency of steam under high pressure; that its use for mere drying was indicated, not claimed.

'That it was not anticipated.

'That there was a sufficient improvement on the then state of public knowledge to render the patent valid.

Per Lord *Herschell*, L.C. (at p. 360): "It is quite true that the change" (*i.e.* difference between the *Aberdeen* machine and *Lyon's*) "is but small; but if it be the case that the change was made with a view to the use of steam at a comparatively high pressure in the inner cylinder, and consequently rapid disinfection, and that the plaintiff" (*Lyon*) "for the first time put before the public a machine adapted for that purpose, although the difference between that machine and any machine in prior use might be slight, it appears to me to be none the less the subject-matter of a patent.

"But the matter which, I confess, has given me the greatest difficulty, and which has led me to entertain some doubt whether the judgment can be sustained, is that which I have indicated, namely, whether the plaintiff does, on the face of his specification, indicate the intention that the steam in the inner chamber is to be used at a considerable pressure, and that the apparatus has been devised accordingly. I confess that I think this case very near the line. I think it is unfortunate that the plaintiff was not more specific in his description on the face of his specification; because if he had been so, very possibly he might not have been subject to the difficulties which he has had to encounter in this litigation. . . ."

As to construction: "When one turns to the drawing to which those letters and figures have reference, one finds a door firmly fastened by a great number of nuts and bolts at short intervals all round the door. Now it seems to me that any one reading that specification in connection with the drawing could come to no other conclusion than this, that inside that inner chamber there was to be used steam at a considerable pressure, because safeguards are introduced to render the door capable of withstanding a considerable pressure; and it can hardly be supposed that this large number of nuts and bolts were introduced out of mere wantonness."

Lord *Watson* (at p. 363): "The only essential difference between the two apparatus appears to me to consist in this: That in the respondent's" (*Lyon's*) "the purifying chamber is fitted with a door capable of resisting, and therefore enabling the process of purification to be carried on with high-pressure steam. If the *Aberdeen* apparatus had been made with a door to the inner chamber, which would have permitted the use of high-pressure steam within it, the respondent's invention would, in my opinion, have been thereby anticipated."

1895. *LEONHARDT & CO. v. KALLÉ & CO.*, 12 R. P. C. 103.

Inventive Ingenuity—Sufficiency of Directions.

In 1888 a patent (No. 2664) was granted to *H. H. Lake* for an invention (communicated from abroad) for "improvements relating to the production of colouring-matters."

The complete specification was as follows:—

“It has been found that from para-nitro-toluol-sulpho-acid a number of yellow, orange to brown colouring matters can be produced which have the property of dyeing cotton direct and fast to alkali without mordant.

“The formation of these colouring matters is effected in such a manner that oxidable organic or mineralic substances and free caustic alkali in a dissolving or distributing agent act under heat, upon paranitrotoluolsulpho acid or its salts.

“As such oxidable substances I mention for example: methyl alcohol; ethyl alcohol; glycerine; resorcine; xantongenate of potassium, &c.; hydroquinone; orcin; naphthol; dioxynaphthaline; pyrogalic acid; resorcylic acid; oxynaphthoic acid; gallic acid; tannic acid and substances containing tannic acid, for example sumach, catechu, and the like; oxyquinoline carbonic acid; dioxynaphthalinesulpho-acid; sulphurous acid; arsenious acid; antimonious acid or its salts.

“The above-mentioned substances have given good results, but other oxidable substances can be used in lieu thereof, for which reason I do not limit myself to those above enumerated.

“The process which I use for the preparation of these new colouring-matters is in general as follows: I dissolve or distribute paranitrotoluolsulpho-acid or a salt of this acid, under addition of such oxidable substances, in water, or one of the above-mentioned liquid oxidable agents, for example spirit, glycerine, and heat the same with caustic alkali until the formation of colouring-matter has terminated.

“By employing more or less of the oxidable substances the shades of the colouring-matters obtained can be greatly varied.

“In order to render the process better understood I give the following examples, to which however I do not limit myself, as they can be variously modified without departing from the nature of the invention.

“Example 1.—Upon 10 kilogrammes of the sodium salt of paranitrotoluol-sulpho-acid, or an equivalent quantity of the free acid, are poured about 30 litres of spirit or methyl alcohol and heated in a vessel provided with an agitator and a reflux-cooler. About 8 kilogrammes of caustic soda-lye of 40 degrees Baumé are then gradually added, and the whole is heated to ebullition. The colouring-matter obtained is filtered, pressed, and dried.

“Example 2.—10 kilogrammes of paranitrotoluolsulpho-acid are heated together with about 20 kilogrammes of glycerine, and to the mixture is gradually added, at about 60 degrees centigrade, about 8 kilogrammes of caustic soda-lye of 40 degrees Baumé. A powerful reaction which may occur, and which is accompanied by strong ebullition, is met by adding cold water or by externally cooling the vessel. The formation of colouring-matter is terminated in a short time. The thick paste obtained is gradually introduced into about 100 litres of boiling salt water which must be kept acid up to the end, preferably by means of acetic acid. The colouring-matter thus separated is filtered, pressed, and dried.

" Example 3.—20 kilogrammes of sodium salt of paranitrotoluolsulpho-acid and 4 kilogrammes of resorcine are dissolved in 60 litres of hot water, 20 kilogrammes of caustic soda-lye of 40 degrees Baumé are added, and the mass is boiled up to the end of the formation of the colouring-matter. The colouring-matter is precipitated by neutralization with an acid, and by the addition of common salt in the usual manner.

" Example 4.—5 kilogrammes of α naphthol are dissolved in 20 kilogrammes of caustic soda-lye of 40 degrees Baumé and 60 litres of water, 20 kilogrammes of the sodium salt of paranitrotoluolsulpho-acid are added, heat being applied until the formation of colouring-matter is terminated. The colouring-matter is then separated in the usual manner.

" The same process serves for the production of colouring-matters by means of naphthol dioxynaphthalines and its sulpho acids: pyrogallie acid; resoreylic acid; oxynaphthoic acids; gallic acid; tannic acid and substances containing tannic acid, such as sumach, mirabolane, catechu, and the like; oxyquinoline carbonic acid.

" Example 5.—10 kilogrammes of sodium sulphite are dissolved in 60 litres of water and 20 kilogrammes of caustic soda-lye, then 20 kilogrammes of the sodium salt of paranitrotoluolsulpho-acid added, and the whole boiled.

" Example 6.—6.5 kilogrammes of arsenious acid are dissolved in 150 litres of and 20 kilogrammes of caustic soda-lye, then 20 kilogrammes of the sodium salt of paranitrotoluolsulpho-acid added, the whole being heated as long as colouring-matter is formed.

" In the above directions I always speak of caustic alkali in the form of lye (aqueous solution), but it is a matter of course that in certain cases the alkali can be used in another form. In some cases, in lieu of caustic soda or caustic potash, caustic baryta or caustic strontia can be used. Furthermore, the operation can be carried out in a closed vessel with or without suitable pressure."

The claim was for:—

" The process of producing colouring-matters fast to alkali which will dye cotton yellow, orange to brown without mordant, by the action of suitable oxidable substances, and fix¹ alkalies upon paranitrotoluolsulpho-acid under heat, substantially as described."

In the action for infringement the chief defences raised were:—

(1) Insufficiency of the specification in not showing how to distinguish the *suitable* oxidable substances, in not giving proportions, in not defining how different shades of colour could be produced, and in not giving the chemical composition of the dye produced.

(2) That the claim was too wide, and would include substances such as *zinc dust* that would not do.

(3) That it was not a new invention, being anticipated in several publications, and amongst others *Lake's* specification, No. 4387* of 1886.

¹ This word "fix" should be *free* or *fixed*, more probably the latter, but it is immaterial which is correct.

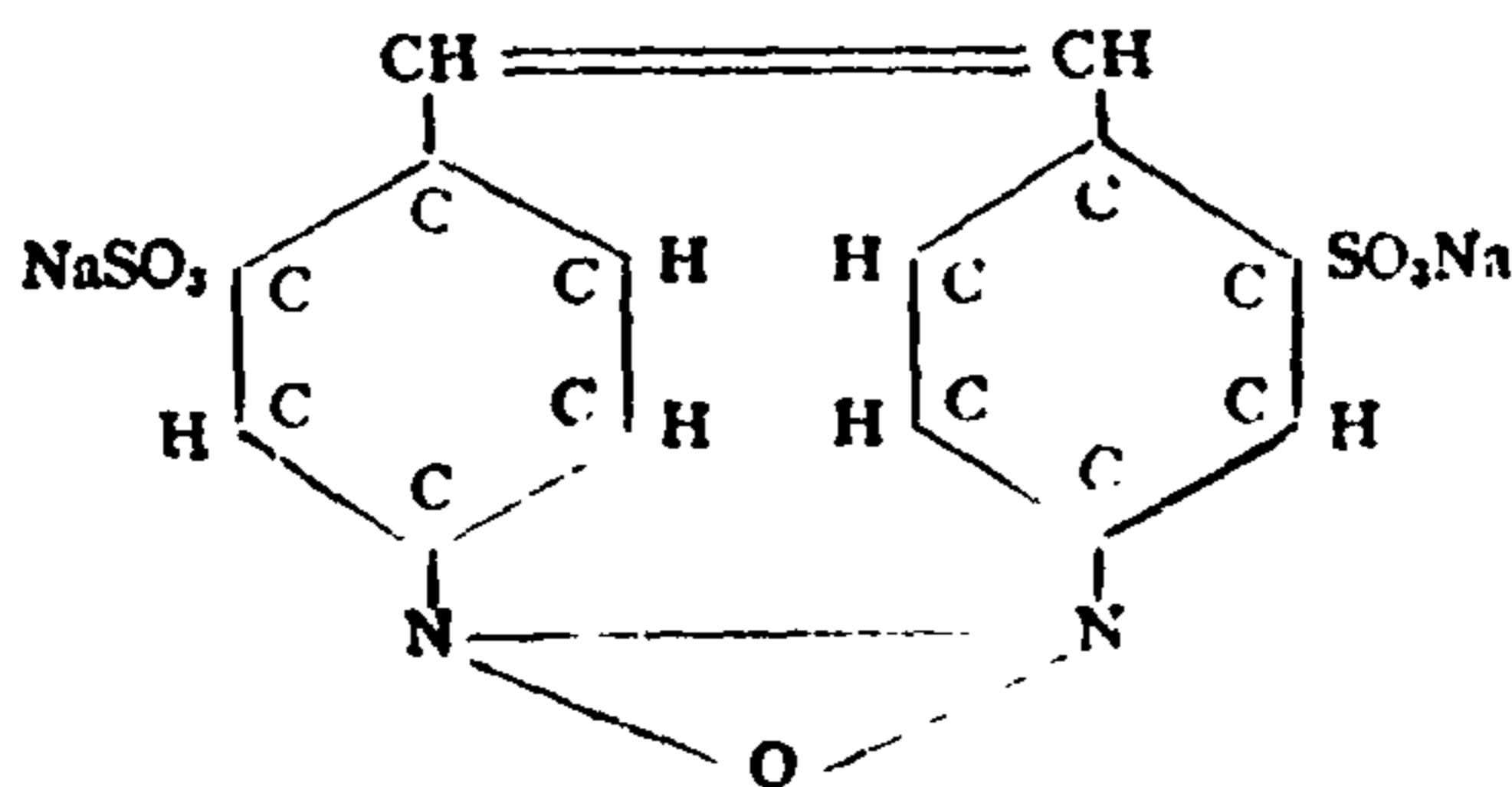
This alleged anticipation of 1886 was a new mode of producing certain dyes. The process consisted in the first place of boiling paranitrotoluol-sulphonic acid with caustic soda. The result was "an intensely red fluid, from which a yellow colouring-matter¹ may be obtained by salting out," but the salting out was not done, and there was added "to the fluid as much zinc-dust as necessary to render the fluid colourless." The zinc-dust was a powerful reducing agent. The new amidosulpho acid was then purified and used with other organic substances to produce a series of dyes. The inventor subsequently discovered that by adopting a slower process of de-oxidation (e.g. by using less active agents), and by stopping the process when colouring-matter ceased to be formed he got a new dye which was fast to alkali and could be used on cotton without a mordant. In the former and more rapid process these colouring-matters were supposed to have been made and destroyed. The specification sued on and above set out is that for this new process of slower oxidation.

Held, that the discovery of the mode of stopping of the older process at a given stage by slower oxidation was a patentable invention, that the directions were sufficient, and that the claim was not too wide.

Mr. Justice *Romer* first dealt with the alleged anticipations, and found the process was novel and was good subject-matter for a patent.

As to other objections (at p. 116): "Objection 1 contends that the complete specification is ambiguous and misleading on certain grounds. In my opinion it is not ambiguous and not misleading. Let me deal with the various heads on which that contention is based in objection 1. Take objection (a), which is that the specification 'shows no means for ascertaining what oxidisable substances are not suitable.' Now with reference to that, what has the patentee done, and what really could he do more? He has pointed out numerous oxidisable substances, and admittedly those oxidisable substances he mentioned are as good, if not better, and more easily dealt

¹ The soda salt here mentioned is known commercially as "sun yellow" ($C_{14}H_8N_2S_2Na_2O_7$), and its constitution is represented by the formula—



The formula for the new dyes ("Mikado" colours) has not been finally determined, but is, according to *Hurst*, similar to the above, with the condensation atom of O replaced by $(CH_2)_2$.

thus $\begin{array}{c} N-N \\ | \quad | \\ CH_2 \quad CH_2 \end{array}$ instead of $\begin{array}{c} N-N \\ \diagdown \quad / \\ O \end{array}$. A recent French work gives the change as the substitu-

tion of O_2 for the condensation O, thus: $\begin{array}{c} N-N \\ \diagdown \quad / \\ OO \end{array}$.

with, than the other oxidisable substances which are not specifically mentioned. . . . I do not think that he was bound to specify all possible oxidisable substances that could be used, or to point out which of the oxidisable substances not mentioned should rather be avoided as not being so good as those expressly mentioned."

As to the giving of proportions (at p. 117): "He has taken numerous examples and given details with regard to numerous oxidisable substances, how they are to be used, in what proportions, and with every necessary information. . . . He was not bound to apply a theory. He was bound to give the best result. If he had formed a theory the objection would have been taken against the theory. He has done what in my opinion is right. He has shown how to obtain the best result from the different oxidisable substances in fact, and not in theory."

As to the shades produced (at p. 118): "It is very difficult to define colours. . . . The patentee has pointed out what colours his dye produce. Undoubtedly all the colours that are produced from his process are rightly stated by the limits given in the specification. Practically there would be no difficulty. A person wanting to use these dyes would test the examples given." The learned judge alluded to the objection as to the absence of any formula for the product as being "another example of an unfair objection. In my opinion the patentee was not bound to state anything of the kind."

1895. NOBEL'S EXPLOSIVES CO., LTD. v. ANDERSON, 12 R. P. C. 164.

Construction of Specification.

A patent (No. 1471 of 1888) was granted to *A. V. Newton* for an invention (*A. Nobel's*) for "improvements in the manufacture of explosives."

The complete specification began by describing the object of the invention:—

"The object of this invention is to combine the substances nitro-glycerine and nitrated cellulose, with or without nitro-starch or nitro-dextrine, or both, so as to produce an explosive substance of a horny or semi-horny character, and capable of being reduced to grains suitable for use as a propeller of projectiles." Various processes of manufacture were described. The proportions were indicated. "The limit of variation, as regards the relative proportions of the two ingredients above named, viz. nitro-glycerine and soluble nitrated cellulose, which permits of obtaining a compound consistent enough to be granulated, is very wide. But when the proportion of nitro-glycerine exceeds two-thirds of the compound, it is rather too soft, and when, on the contrary, nitrated cellulose is in excess of two-thirds, it becomes too tough and hard to be easily granulated." Throughout the specification "insoluble" nitro-cellulose was never mentioned, but frequently the terms "soluble nitrated cellulose" and nitro-cellulose of the "well-known soluble kind" were used.

The first claim was for :—

“The manufacture from nitro-glycerine and soluble nitro-cellulose of a horny or semi-horny explosive compound, susceptible of granulation, substantially as and for the purposes herein described.”

It was proved at the trial that at the date of the patent soluble¹ (*i.e.* soluble in ether alcohol mixture) nitro-cellulose and insoluble nitro-cellulose were known substances and different substances; that they were distinguished in commerce, and by chemists. That each, as usually made, contained about 10 per cent. of the other. The processes described in the specification were equally applicable to both substances, and the results were horny and semi-horny explosives capable of granulation.

At the trial it was held that the claim did not include the insoluble nitro-cellulose, it not being at the date of the patent a known equivalent for the soluble, and hence there was no infringement.

The Court of Appeal confirmed that decision.

On appeal to the House of Lords.

Held, that the claim did not include a powder made by using the insoluble nitro-cellulose, although as manufactured it contained 10 per cent. of soluble nitro-cellulose.

Notes.

It was pointed out by *Kay*, L.J., in the *Incandescent Gas Light Co. v. De Mare, &c.* (13 R. P. C. 566), that the above decision turned on the fact that the patentee avoided the “insoluble” nitro-cellulose in his claim.

Lord *Herschell*, L.C., to the same effect in *Morris & Bastert v. Young*, 12 R. P. C. 461.

1895. CASSEL GOLD EXTRACTING CO. v. CYANIDE GOLD RECOVERY SYNDICATE, 12 R. P. C. 232.

Construction of Claims—Inventive Ingenuity.

In 1887 a patent (No. 14174) was granted to Messrs. *MacArthur & Forrest* for “improvements in obtaining gold and silver from ores and other compounds.”

The complete specification was as follows :—

“This invention has principally for its object the obtaining of gold from its ores or other compounds, but it is also applicable for obtaining silver from its ores or compounds; and it comprises an improved process which, whilst applicable to ores or compounds generally, is effectual with ores and compounds from which gold or silver have hitherto not been easily

¹ “Soluble” nitro-cellulose is *dinitro-cellulose*— $C_6H_8(NO_2)_2O_5$, and “insoluble” is “gun-cotton” or *trinitro-cellulose*— $C_6H_7(NO_2)_3O_5$. The plaintiff contended that these bodies were not distinct, but that “nitro-cellulose” was $C_{6n}H_{10n-m}(NO_2)_mO_{5n}$, where *n* and *m* varied according to the amount of nitration produced.

obtainable because of the presence of various other metals or their compounds, or because of the physical or chemical condition of the gold or silver in the ores or compounds."

"In carrying out the invention the ore or other compound in a powdered state is treated with a solution containing cyanogen or cyanide (such as cyanide of potassium, or of sodium, or of calcium) or other substance or compound containing or yielding cyanogen. In practice we find the best results are obtained with a very dilute solution, or a solution containing or yielding an extremely small quantity of cyanogen or a cyanide, such dilute solution having a selective action such as to dissolve the gold or silver in preference to the baser metals. In preparing the solution we proportion the cyanogen to the quantity of gold or silver or gold and silver estimated by assay or otherwise to be in the ore or compound under treatment, the quantity of a cyanide or cyanogen-yielding substance or compound being reckoned according to its cyanogen. . . ."

The mixing process was next described. "When all, or nearly all, the gold or silver is dissolved, the solution is drawn off from the ore or undissolved residue, and is treated in any suitable known way, as for example with zinc, for recovering the gold and silver." . . . Residuary cyanogen compounds to be reconverted for use again. . . .

"Any cyanide soluble in water may be used, such as ammonium, barium, calcium, potassium, or sodium cyanide, or a mixture of any two or more of them. Or any mixture of materials may be taken which will by mutual action form cyanogen or a substance or substances containing or yielding cyanogen.

"In dealing with ores or compounds containing, per ton, twenty ounces or less of gold, or silver, or gold and silver, we generally use a quantity of cyanide, the cyanogen of which is equal in weight to from one to four parts in every thousand parts of the ore or compound, and we dissolve the cyanide in a quantity of water of about half the weight of the ore. In the case of richer ores or compounds, whilst increasing the quantity of cyanide to suit the greater quantity of gold or silver we also increase the quantity of water so as to keep the solution dilute. In using free cyanogen, the cyanogen obtained as a gas in any well-known way is led into water to form the solution to be used in our process; or any suitable known mode of setting cyanogen free in solution may be employed." Higher temperature and pressure might sometimes be advisable.

The claims were:—

"(1) The process of obtaining gold and silver from ores and other compounds, consisting in dissolving them out by treating the powdered ore or compound with a solution containing cyanogen or a cyanide or cyanogen-yielding substance, substantially as hereinbefore described.

"(2) The process of obtaining gold and silver from ores and other compounds, consisting in dissolving them out by treating the powdered ore or compound with a dilute solution containing a quantity of cyanogen or a cyanide or cyanogen yielding substance, the cyanogen of which is

proportioned to the gold or silver or gold and silver, substantially as hereinbefore described."

The plaintiffs were assignees of the above patent, and sued for infringement.

It was proved at the trial that the solubility of finely divided gold in cyanide of potassium was known. Previous publications disclosed the use of cyanides in unlimited quantities in connection with electricity and carbonate of ammonium. In one specification one ounce of carbonate of ammonium was employed with each pound of cyanide of potassium, the quantity of the latter being about equivalent to the amount mentioned by the patent in question.

Eminent expert chemists gave evidence that the solution of gold in cyanide of potassium alone was generally known, but not one said that *he* knew it.

It was proved that none of the publications disclosed the fact that a *dilute* solution of cyanide of potassium would dissolve gold from crushed ore in preference to the baser metals. A strong solution would dissolve the baser metals first.

It was argued that the words "substantially as hereinbefore described" in the first claim referred to a dilute solution as mentioned in the specification, and that the second claim referred to the richer ores only.

At the trial it was held that there was no invention in the use of a dilute solution, and that the patent was invalid (11 R. P. C. 638).

Held, by the Court of Appeal—

That the first claim could not be read as applying to dilute solutions only, and was therefore anticipated.

That the second claim was for a novel and useful invention, and was valid.

Smith, L.J. (at p. 257): "It appears to us that claims 1 and 2 are independent claims, having application to the whole specification; the first making claim for the use of any cyanide of potassium in solution, irrespective of amount, substantially as therein described; and the second making claim for the uses of a dilute solution containing a specified quantity of cyanide of potassium, substantially as therein described. It appears to us impossible to discard either the one or the other, or to hold that both mean the same thing, or that claim 1 applies to one part of the specification and claim 2 to another; for this in our judgment is not the true construction of the specification as framed."

Note.

In the *Electric Construction Co. v. Imperial Tramways Co.* (17 R. P. C. 549), this case was referred to by Lord *Alverstone*, M.R., (*post* p. 436), as an example that one claim cannot be limited or narrowed by another.

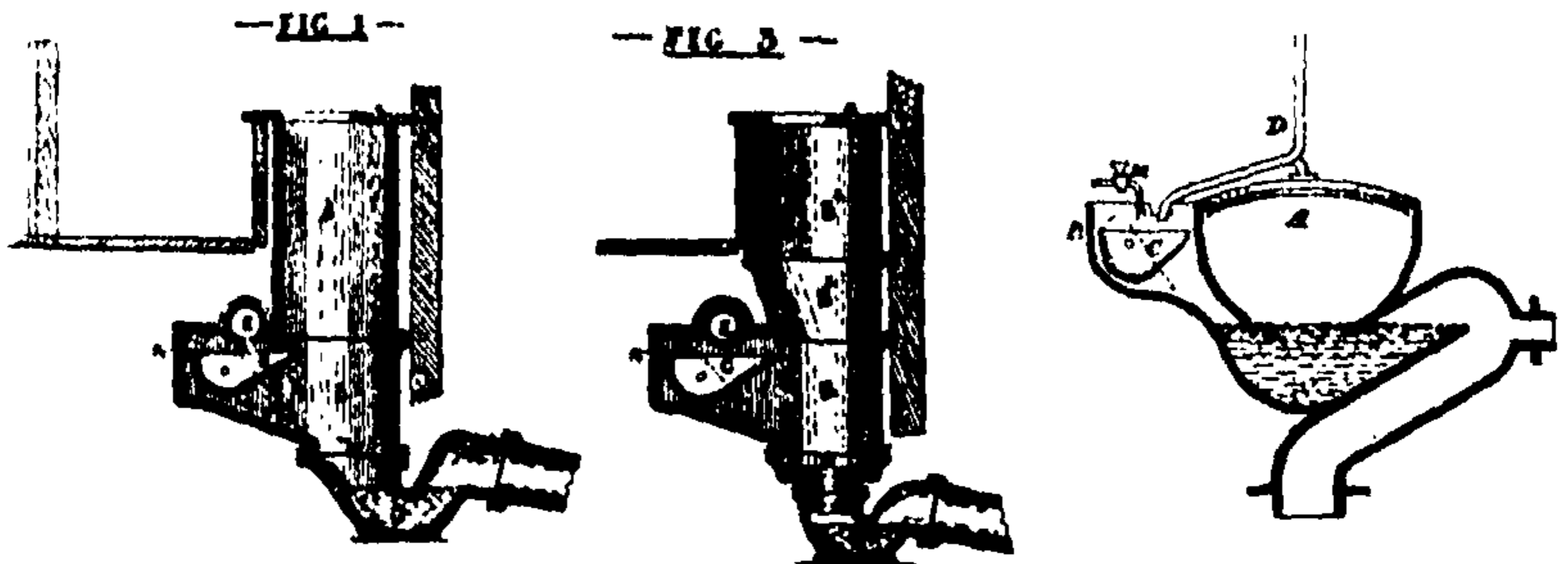
1895. DUCKETT, LTD. v. WHITEHEAD, 12 R. P. C. 376.

Inventive Ingenuity—Removal of Part—Turning Failure into Success.

A patent (No. 17991 of 1888) was granted to Messrs. *J. & A. Duckett* for "improvements in and relating to water-closets."

The complete specification commenced with a reference to the inventors' previous patent (No. 3431 of 1887), and continued as follows¹:—

"The present invention has a twofold object. The first object is to combine the flushing-chamber or tank A with the closet-pan or a section or length of such pan B in one piece of earthenware. The pan is open to its full width at its point of connection with the flushing-chamber, so that the mouth of the tipper C may protrude into the interior of the pan or to a point horizontally beyond the vertical face of the pan or extension pipe above (B², Fig. 1). The second object is to construct the outlet from the pan (B¹ and H) (combining the flushing-chamber) circular in plan to adapt



From Duckett's specification (No. 3431 of 1887).

From Sutcliffe's specification (No. 1046 of 1884).

it to the socket of an ordinary trap, D, that the outlet from the latter may be turned in any direction to suit the main drain. . . .

"In Figs. 1 and 2 the tipper-box or chamber A is connected to the pan B or a section of the same in one piece of earthenware. The opening to the pan from the flushing tank or chamber A is in width equal to the diameter of the pan B, so that the mouth of the tipper C may protrude into it say four inches or thereabouts.

"This arrangement of the chamber A and pan B renders the former considerably less in size, and more compact in form, with less liability for leakage than when not permanently attached to each other, and with the mouth of the tipper not so protruding. Another essential qualification in this arrangement is, that when the water is discharged from the tipper it falls almost vertically with great force direct into the trap D, ensuring a

¹ To save space references are inserted in this first paragraph to the diagrams. Fig. 1 shows a vertical section, and Fig. 3 a modification of the invention. E is a section of the inlet junction conveying waste water to C.

thorough displacement of sediment, which may have a tendency to lodge therein.

"It will be obvious that paper or matter floating on the surface of the water contained in the trap will also necessarily be driven or swept effectually by the force of the flush through the trap to the main drain. . . ."

The claims were:—

"(1) The combination and arrangement of chamber A and pan B, the latter fitting the socket of an ordinary trap, substantially as described and illustrated for the purpose set forth.

"(2) The combination of chamber A, pan B, and protruding tipper C, substantially as described and illustrated."

Amongst other alleged anticipations were those of *H. Sutcliffe* (No. 1046 of 1884), and the inventors' previous specification referred to above.

Sutcliffe's invention is apparent from the diagram. The tipper C could be filled by the pipe D from the cistern (not here shown), or from the tap M, or by an ordinary waste-water pipe (not shown). As C fills, the centre of gravity of it and its contents gradually rises towards the right, until it is above the fulcrum, when the tipper tips over, as shown by the dotted line, discharging its contents into the side of the trap below.

Dockett's earlier specification showed an arrangement in which the tipper was situated some distance away from the closet. The contents were discharged through a trap and along a pipe slightly inclined, entering the water in the closet-pan just over the surface.

Neither of the alleged anticipations was a success. *Sutcliffe's* was never used. The invention in question was sold by thousands, and was very useful in places where there was a scanty water-supply.

The patent was upheld.

Held, by the Court of Appeal, that the first claim was for the making of the two chambers into one, so that the tipper could protrude over the trap, and that there was sufficient change to constitute invention, failure having been turned into success.

1895. MORRIS & BASTERT v. YOUNG, 12 R. P. C. 455.

Benevolent Construction of Specification—Inventive Ingenuity.

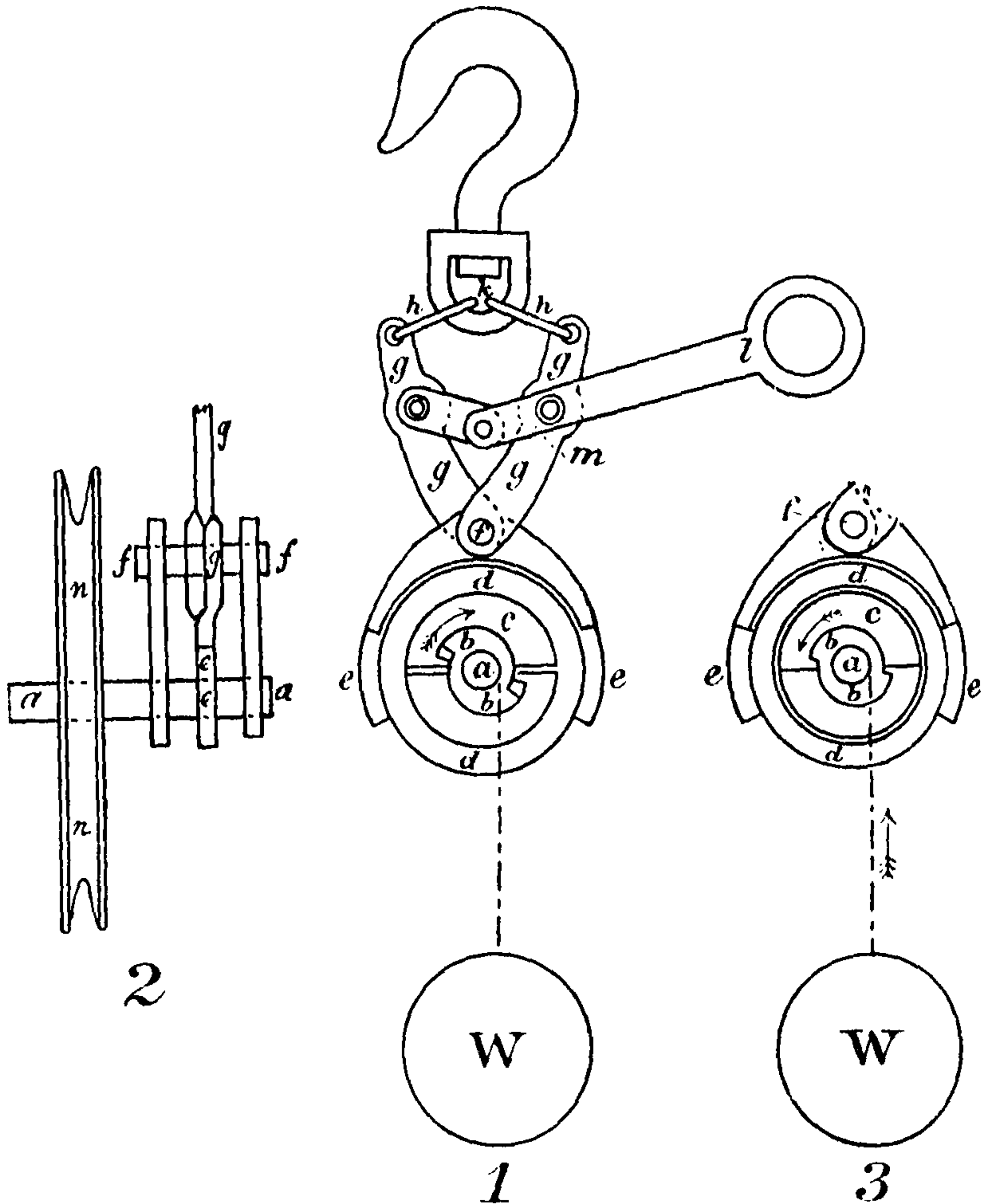
A patent (No. 2742 of 1888) was granted to Messrs. *Gay, Whitehead & Young* for "improvements in machinery for lifting heavy bodies."

The object of the invention is thus described in the complete specification:—

"Our invention consists in improvements in pulley-blocks and hoisting appliances used for the purpose of raising and lowering weights and heavy bodies, whereby the load in being raised is safely sustained when the hand-power is released, and whereby it is possible to lower either by the reverse pulling of hand-chain or rope, or by means of the brake at will. We further arrange our lifting-chain that a double lift is possible by having a

hook at each end of the same, and we allow the load to descend by brake from either hook, or we pull the same down by reverse motion of hand-chain at pleasure." The machine worked in the following manner¹ :—

From a hook is suspended by the links *h, h* (Fig. 1) a scissors-like appliance, whose arms, *g, g*, hinge at *f*. From *f* (Fig. 2) hangs the shaft *a*,



Drawings showing action of Plaintiff's hoist.

on which (Fig. 1) are the cams *b* engaging in segments, *c*, in a brake-ring, *d*. The lower ends *e* of the arms *g* close as brakes on the ring *d*.

¹ The diagrams here used are taken from exhibits before the House of Lords furnished by Messrs. *Robbins, Billing & Co.*; it is unnecessary to set out the specification in detail. The same letters denote the same parts throughout.

The action is as follows : The weight W acts vertically downwards through the shaft a , and thence through the hinge or fulcrum f , as shown in Fig. 2. The effect of the pull of the weight W vertically downwards at f (which thence acts through g and h pulling vertically downwards at k) is to pull the upper ends of the arms g together, thus causing the brake-blocks c to grip the brake-ring d and keep it stationary. When the body is raised by turning the shaft a by means of the wheel n (Fig. 2), the contrivance acts as shown in Fig 3; the cams b engage the segments c , which slip within the ring d , and so allow of the motion. On releasing the hand the weight W turns the shaft backwards, as shown in Fig. 1, the cam b causing the segments c to expand, and so be kept at rest by the friction between the segments c and the inner surface of the ring d . This friction is proportional to the weight W . The whole is then at rest.

Lowering the weight is effected by turning the shaft a in the direction of the arrows in Fig. 1, and so causing slipping between the ring d and the brake-blocks c, c by overcoming the friction. The friction here is proportional to the normal pressure of the grip, which in turn is proportional to the weight W , hence ensues the slow descent of the weight. Or by giving a downward pull to the lever l , the arms g tend to open until slipping ensues between d and c from the lessening of the friction of the grip. When a rapid descent is required, the latter method is used.

The specification showed several forms of the appliance.

The first claim was for :—

“The use in hoisting-machines of an automatic brake with cams and expanding or contracting segments acting upon an internal or external circular surface to allow free rotation of a spindle in one direction, but to seize upon rotation of the spindle in the opposite direction, substantially as and for the purpose hereinbefore described.”¹

It was proved that an automatic brake with cams, expanding or contracting segments acting upon an internal circular surface to allow of the free rotation of a shaft in one direction but to arrest its rotation in the opposite direction, was not new ; it was patented by *Hubbard* for all kinds of machinery, but had not previously been adopted in a hoisting machine. *Hubbard's* device was identical with the patentees' shaft a , cam b , expanding segments c , and ring d . Its object was to enable the shaft to communicate motion to the ring when turning in one direction and not in the other. It was a substitute for a noisy ratchet.

Held at the trial that the plaintiffs claimed generally the application of the mechanism to hoisting machines, and that the patent had been infringed.

The Court of Appeal upheld the decision.

Held (on appeal, by the House of Lords, reversing the Court of Appeal), that the claim was one confined to the combination of the arrangement of the expanding segments with the external brake of the scissors-like appliance, substantially as and for the purpose described in the specification.

¹ It is unnecessary to set out the other four claims.

Lord *Herschell* (at p. 459, in argument): "When once it is admitted that the expanding segments are old, the application of them is not a great invention. The patentee is then confined to his actual claim. . . . It is well settled that when a combination is good, but made of parts that are old, the doctrine of mechanical equivalents cannot be applied in the same way as if the invention were new."

In his judgment at p. 462: "That friction-clutch or apparatus" (i.e. *Hubbard's*) "had not, however, been previously employed in a hoisting-machine; it was therefore open to the plaintiffs to obtain protection for an arrangement by which the friction-clutch was adapted to, and employed in, a hoisting-machine, but it is obvious that they could not patent the mere idea of so employing it, or obtain a monopoly of its use, in such a machine apart from the particular method of using it which they made known to the public."

Lord *Darby* (at p. 463): "But the learned judge" (at the trial) "held that the patent was for the application generally of the friction-clutch to hoists in the form of an automatic brake with cams and expanding and contracting segments. It is on this point I differ from the learned judge. In favour of the patentees, I am of opinion that we ought to adopt the narrower construction of the claim, because if the wider construction be adopted, the patent would in my opinion be invalid."

At p. 464: "But *Hubbard* describes his contrivance as applicable to all revolving shafts, including those to be used for hoisting. The Court is entitled to be informed of the state of knowledge at the date of the patent, and to apply that information in order to ascertain what it is that the patentees have invented. No doubt the plaintiffs might have a patent for a new combination for the purpose of applying *Hubbard's* friction-clutch to hoisting machinery, and I think that the plaintiffs' patent in the present case may be supported as of that character. But, if so, I am of opinion, in accordance with many well-known authorities, that the invention should be confined to the particular combination described and claimed."

1895. *MOSER v. MARSDEN*, 13 R. P. C. 24.

Effect of Amendment—Construction of Claim.

In 1885 a patent (No. 11,640) was granted to *C. E. Moser* for "improvements in gig-mills employed in the finishing of woven fabrics."

In the complete specification (which was amended)¹ the invention is thus described:—"This invention consists in the construction of a series of rollers, cards, or other suitable raising material, and arranged round a shaft at equal distances from the same, the said rollers being supported by carriers fastened on the shaft of the cylinder; these rollers carry on both

¹ The amended specification is read by omitting the words in square brackets and reading those in italics, which were inserted by the amendment.

ends pulleys, over which pass belts [and] which receive their motion from a counter-shaft. This counter-shaft is driven from the cylinder by wheels, cones, or speed-pulleys, in order to be able to obtain different speeds. When the cylinder turns, the rollers will turn with it, and also in their respective bearings, either forward or backward, to the cylinder motion and at different speeds depending upon the direction in which the counter-shaft is moved by crossing or opening the belt, which gives it its motion, and depending upon which part of the cone or speed-pulley the belt is placed. By this arrangement the rollers turn independent of the movement of the cylinder, and at a known speed they may be turned backwards so much contrary to the direction of the cylinder that the speed of the cylinder is equalized and no raising produced. In making them turn less backward or forward their action increases proportionally." References were then given to the drawing. The specification concluded: "The number of the raising rollers which form the cylinder may vary, also the manner in which the stuff to be raised is guided around them and through the rest of the machine [and there may be one, two, or more of thus-formed cylinders, and so placed as to raise the stuff on both sides at the same time]. The counter-shaft or raising rollers may also be driven by chains, wheels, or cones.

"The invention consists substantially in forming a raising cylinder by rollers covered with cards or suitable raising material, which receive by means of driven counter-shafts an independent variable but known motion from that of the cylinder itself. . . . I declare that *I make no general claim to forming raising cylinders by arranging around a shaft a series of raising rollers, but what I claim is—*

"[1]. Forming raising cylinders by arranging a series of suitably covered raising rollers round a shaft at equal distances from the same, which *rollers are made to receive [an independent] a variable but known motion [from] independent of that of the so-called raising cylinders themselves, by means of counter-shafts or any other suitable driving motion.*

"[2. The general arrangement of the machine as herein described.]"

It was proved that a method of obtaining a *known* motion of the rollers was old, that the means of obtaining a *variable* motion for the rollers was also old, but that no one had shown mechanism to regulate the speed of the rollers as required for the fabric independently of the speed of the cylinder.

It was held at the trial of this action for infringement that the (1) invention could not be subject-matter for a patent, and (2) that the amendment had enlarged the scope of the invention and thereby invalidated the patent.

This decision was reversed on both grounds by the Court of Appeal.

On appeal to the House of Lords.

Held, that section 18(9) of the Act of 1883 precluded an objection being taken that the amendment of the claim enlarged its scope; and that the amended claim was not for an invention greater than that described in the body of the specification, the concluding words "or any other suitable

driving motion " indicating that the patentee did not claim the source from which the power was taken. The patent was therefore upheld.¹

Lord *Watson* (at p. 30) remarked on the defence that the improvements were not novel nor subject-matter, and continued : " The first and second of these objections are in my opinion devoid of substance. There could hardly be more appropriate matter for a patent than the introduction of mechanism admittedly novel into an old combination, with the practical result of converting a comparatively defective apparatus into an efficient and useful machine. Again, the anticipation upon which the appellant chiefly relied consisted in the fact that an earlier patentee had expressed the obvious truism that the motion of the individual rollers in a raising cylinder might be either accelerated or retarded, but without indicating any method by which that object could be accomplished so as to produce a useful result."²

At p. 31 : " The very object of the Act of 1883 was to make an amended claim, when admitted by the proper authorities a complete substitute to all effects and purposes for the claim originally lodged by the patentee. The validity of the amended claim must, therefore, be determined in the same way, and on the same footing, as if it had formed part of the original specification ; and the claim, as it stood before amendment, cannot be competently referred to, except as an aid in the construction of its language after amendment."

Notes.

The result of this decision is that leave to amend will not be so readily granted as before, when it was thought there was a power to review in the Courts : *Parkinson's Patent* (per *Finlay*, S.G.), 13 R. P. C. 512.

The foregoing decision does not preclude the examination of the un-amended specification for the purpose of *construing* the amended one. The former law is noted in the last note to *Dudgeon v. Thomson* (*ante*, p. 269). The difference between the modern practice of using erased and italic type and the older one of adding to alterations in a separate document does not affect the question of principle ; the public see both the amended and un-amended specifications. *E.g.* a statement that a certain thing *was an essential* being struck out on amendment, amounts to a statement that it is *not an essential* ; but if the specification were originally drawn as amended, the point would be left open to inference from the whole document.

It is submitted that, taking an amended specification as the basis, one may look at the unamended form in order to see the limits of the claim, it being presumed that the officials complied with the law and that the claim in the amended specification has not a wider ambit than the unamended one.

¹ The *manufacture* (*ante*, pp. 6-13) here is the machine ; as in the improved machine the parts discharged new functions, the improvements constituted a new manufacture.

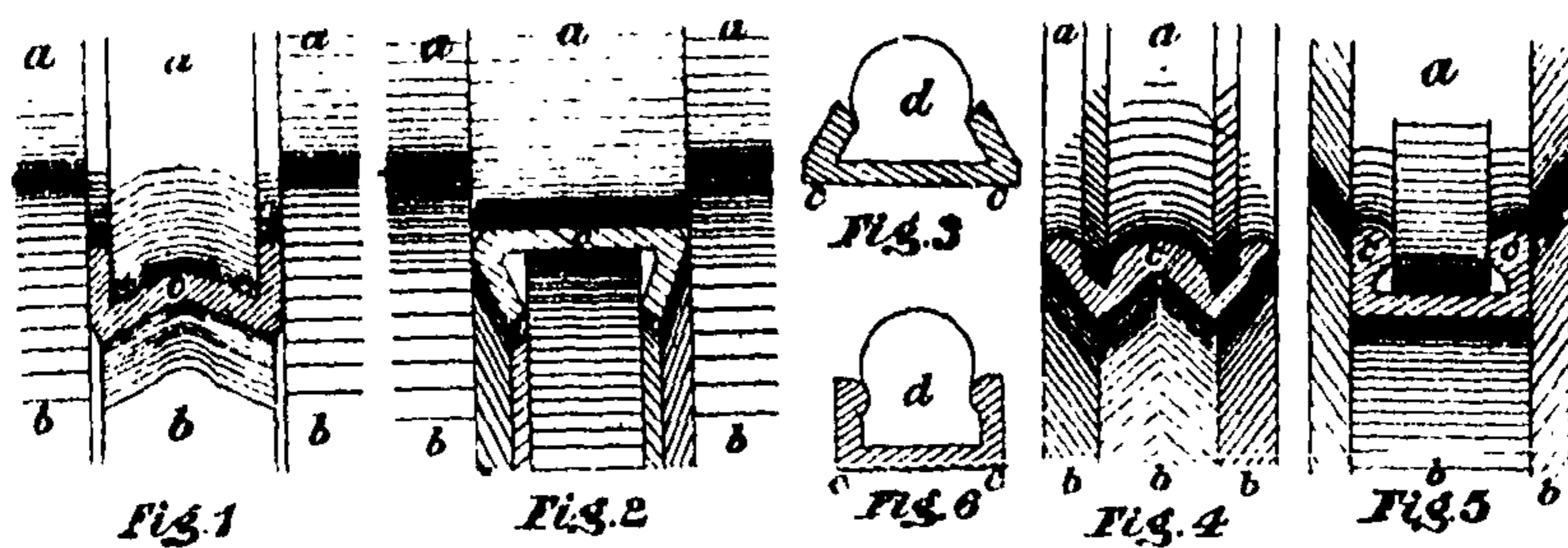
² This shows the distinction between the *object* to be attained and the *means* for attaining it : the latter, viz. the application of the idea, constitutes the manufacture invented.

1896. THE SHREWSBURY & TALBOT CAB CO. v. STERCKX, 13 R. P. C. 44.

Novelty—Inventive Ingenuity.

In 1883 a patent (No. 703) was granted to *W. H. Carmont* for "improvements in the manufacture of grooved tyres for wheels."

The specification thus described the object of the invention:—"The object of my invention is to produce tyres grooved in the form of a dove-tail for the purpose of holding or securing india-rubber or other yielding substance. In performing my invention I roll a section similar to ordinary channel-iron, but with the lower surface of the base of the section concave. I then pass it through a groove of the necessary shape in rollers that flatten the base, thereby causing the upper edges of the tyre or channel to approach one another and thus form the dove-tailed groove desired." The drawings were next described; Figs. 1, 2, and 3 show one series of rollings to form one shape of dove-tail, and Figs. 4, 5, and 6 another; *a* being the



Diagrams from Carmont's specification (No. 703 of 1883).

upper, *b* the lower, rolls; *c* the metal rolled, and *d* the rubber tyre when inserted.

The claim was for:—

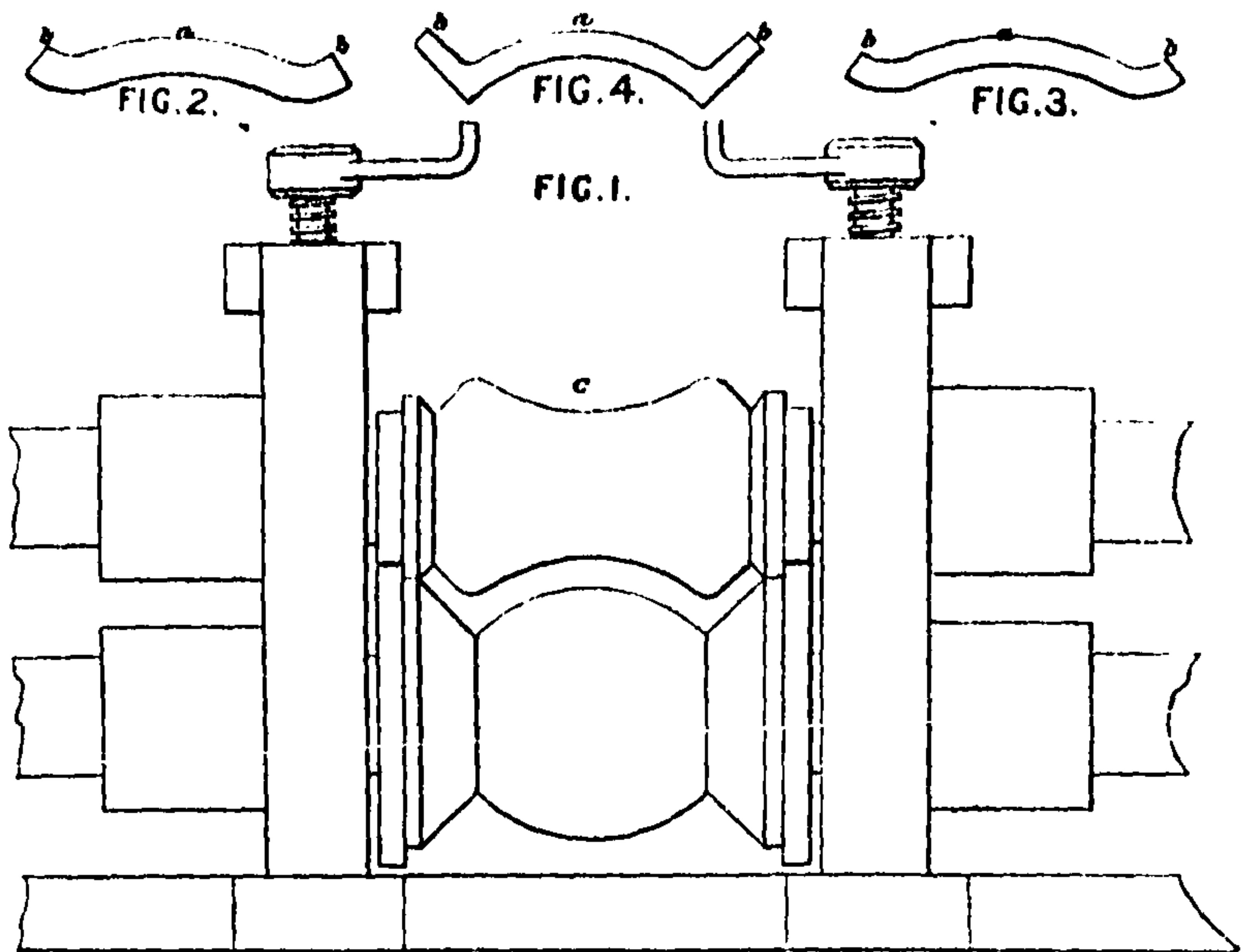
"The improvements in the manufacture of grooved tyres for wheels, substantially as and for the purposes herein shown and described."

The alleged anticipation was the specification of *Alleyne & Roberts* (No. 2412 of 1862), which was of an invention of improvements in the manufacture of flanged wrought-iron. The material portions of that specification are as follows:—

"Our invention has for its object the formation of wrought-iron or steel plates, having more or less vertical flanges at their sides, and of wrought-iron beams and frames of a more or less rectangular trough-shaped section, and more particularly when such plates are of considerable dimensions and thickness, by such a process of manufacture that the difficulties and imperfections attendant on their manufacture by processes at present known or proposed are to a considerable extent overcome."

The object of the manufacture was described as producing the "grain" in the flanges of armour plates, &c., in the proper direction. The process was for the production of "flanged plates or trough-shaped beams and frames."

This new process consisted in first forming a plate or slab by known processes; secondly, in rolling it either at once into the shape shewn in Fig. 4 by means of rolls, as shewn in Fig. 1, C, "or if the plate be of considerable thickness, we prefer to pass it first consecutively through rolls having grooves as shown at A and B, Fig. 1" (showing the rolls further apart, with room at the ends for the widening of the metal on compression),



From Alleyne & Roberts' specification.

"so as to bring the flat plate by successive operations consecutively into the forms as shown in transverse section at Figs. 2 and 3, and then into the form as shown at Fig. 4, the *central*¹ portion *a* being *curved*, as shown, whilst the two side portions *b, b*, which are subsequently to form the flanges of the plate or the sides of the trough, are bent sharply up, being made to form such an angle with the extremities of the curved central portion *a* as the flanges *shall be required to assume when the process shall have been completed*. The kind of angle, whether a right angle or *otherwise*, will depend upon the nature of the work to which the plate, beam, or frame is to be adapted. We shall refer to the before-described peculiar formation of the plate as the 'second process.'

¹ The italics are not in the original, but are here inserted to call attention to the more important points. Only those portions of the specification which affect this case are referred to or quoted.

"The two sides, *b, b* of the plate, although brought by the above process into their definite position relatively to the ends of the part *a*, or nearly so, yet *diverge* by a considerable angle from one another, owing to the *curvature of the central portion*, and the position thus given to them in the rolls allows of the free passage into their grooves of the metal which is pressed into them by the simultaneous reduction of the thickness of the plate."

The third stage of the process consisted in flattening the curved portion by a pair of rolls (Fig. 5, D), or when necessary for thicker plates, by a series of rolls at different but decreasing distances apart.

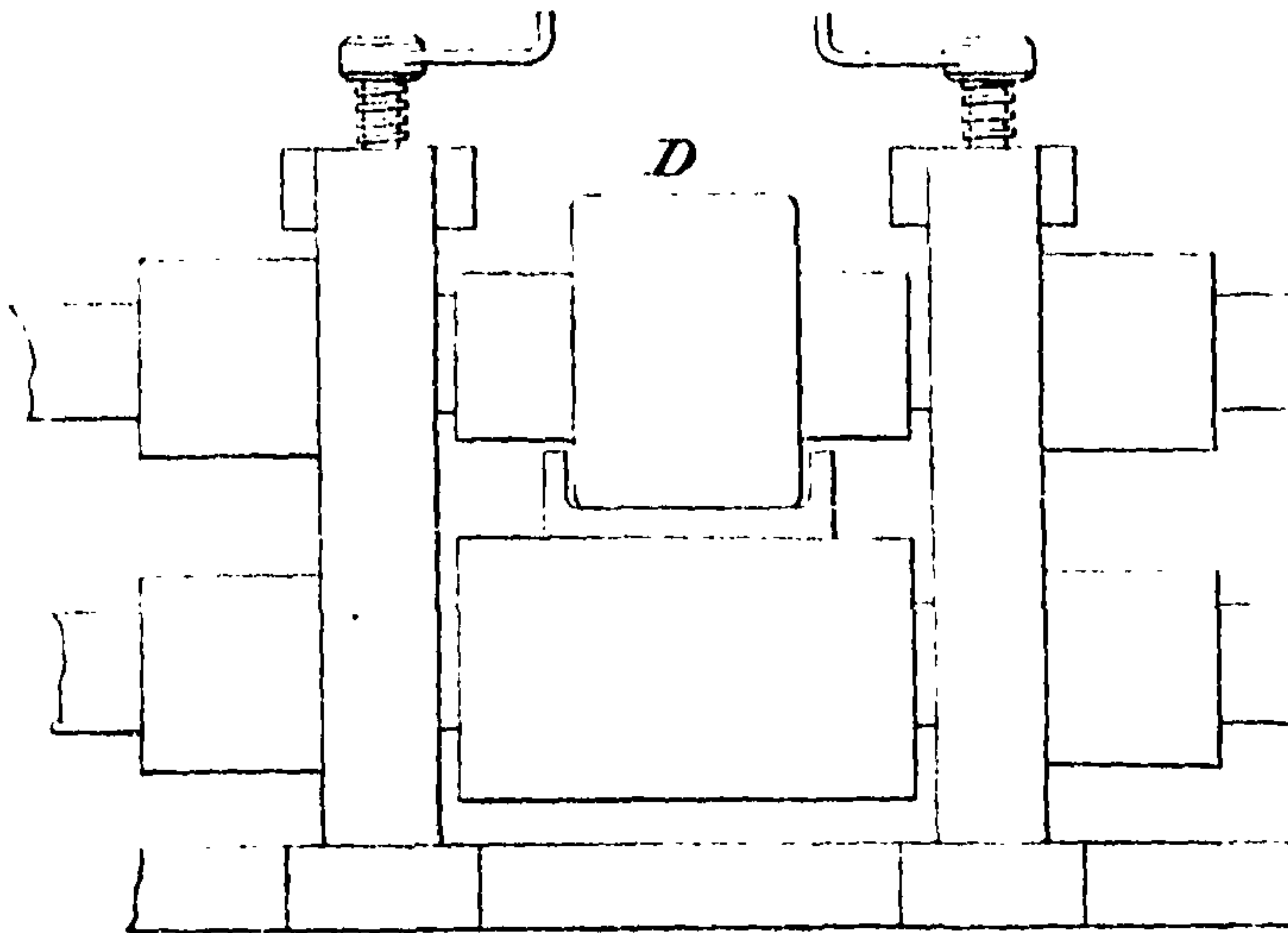


FIG. 5 D

From Alleyne & Roberts' specification.

The fourth and last part of the process was that of "finishing," as shown at (Fig. 5 E). A hammering process was next described, and subsequently a modification for the forming of a convex surface to the iron:—

"When required, we pass the plate, beam, or frame through a pair of rolls, formed as shown at Fig. 8, Sheet I., so as to form the plate somewhat *convex* on its outer surface, as shown in transverse section at Fig. 9. If it be required that the flanges *b, b* shall remain at right angles, or nearly so, to the face of the plate, as shown, the roller A^1 (Fig. 8) must be made of such a width as to clear the edges of the side flanges when these are made to approach each other by the bending of the plate, as shown at Fig. 8. In some cases the top roll A^1 may be formed so as to press upon the outside

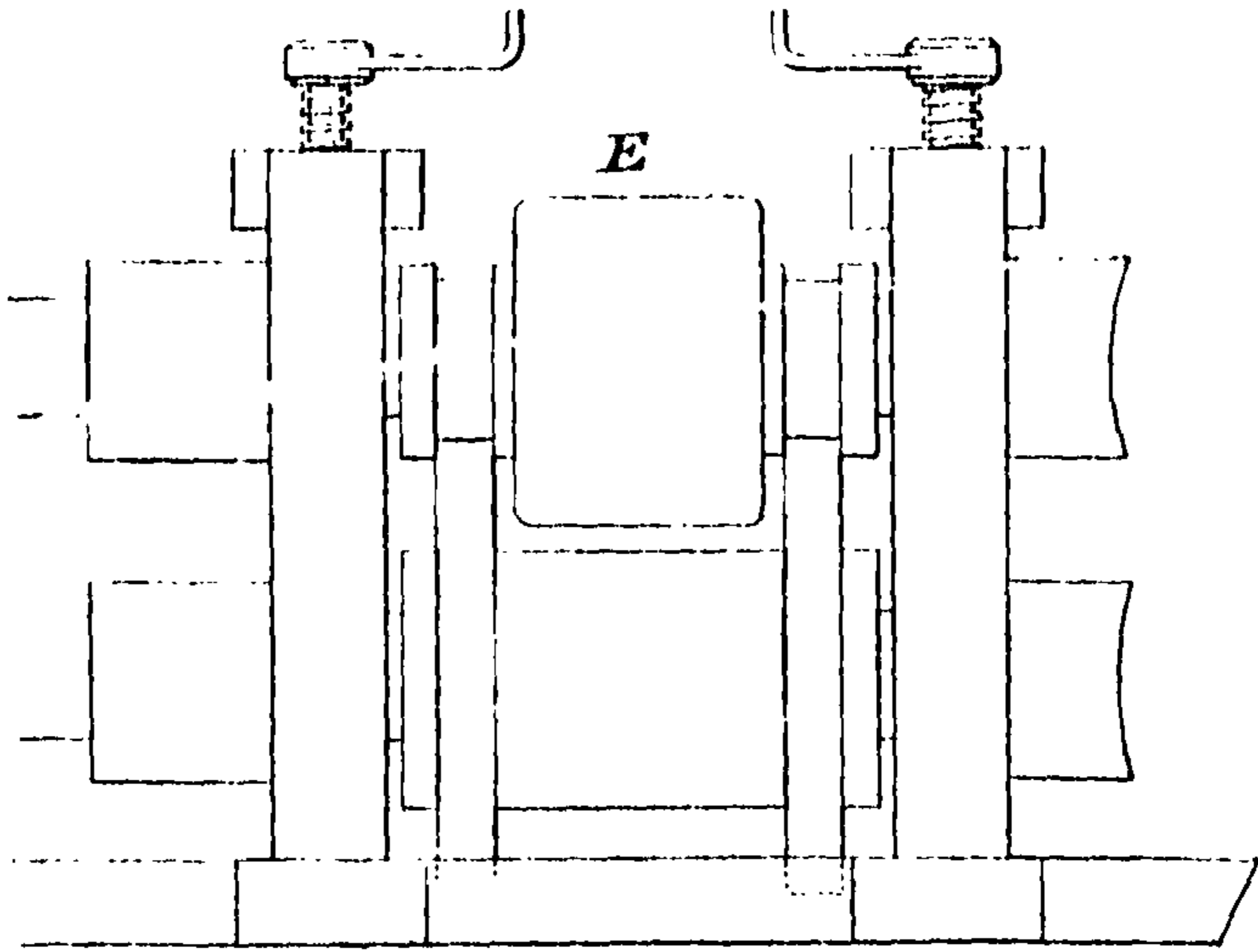
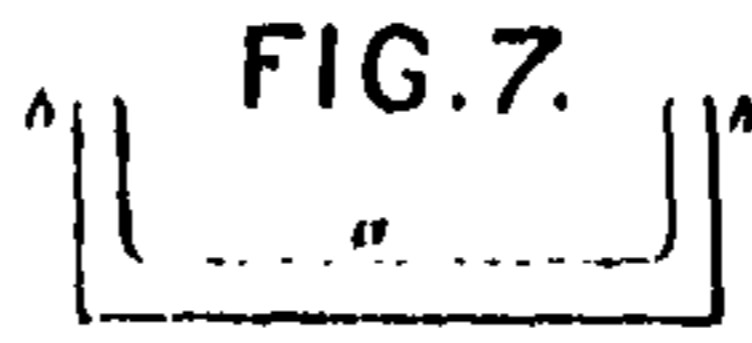


FIG. 5 E

From Alleyne & Roberts' specification.

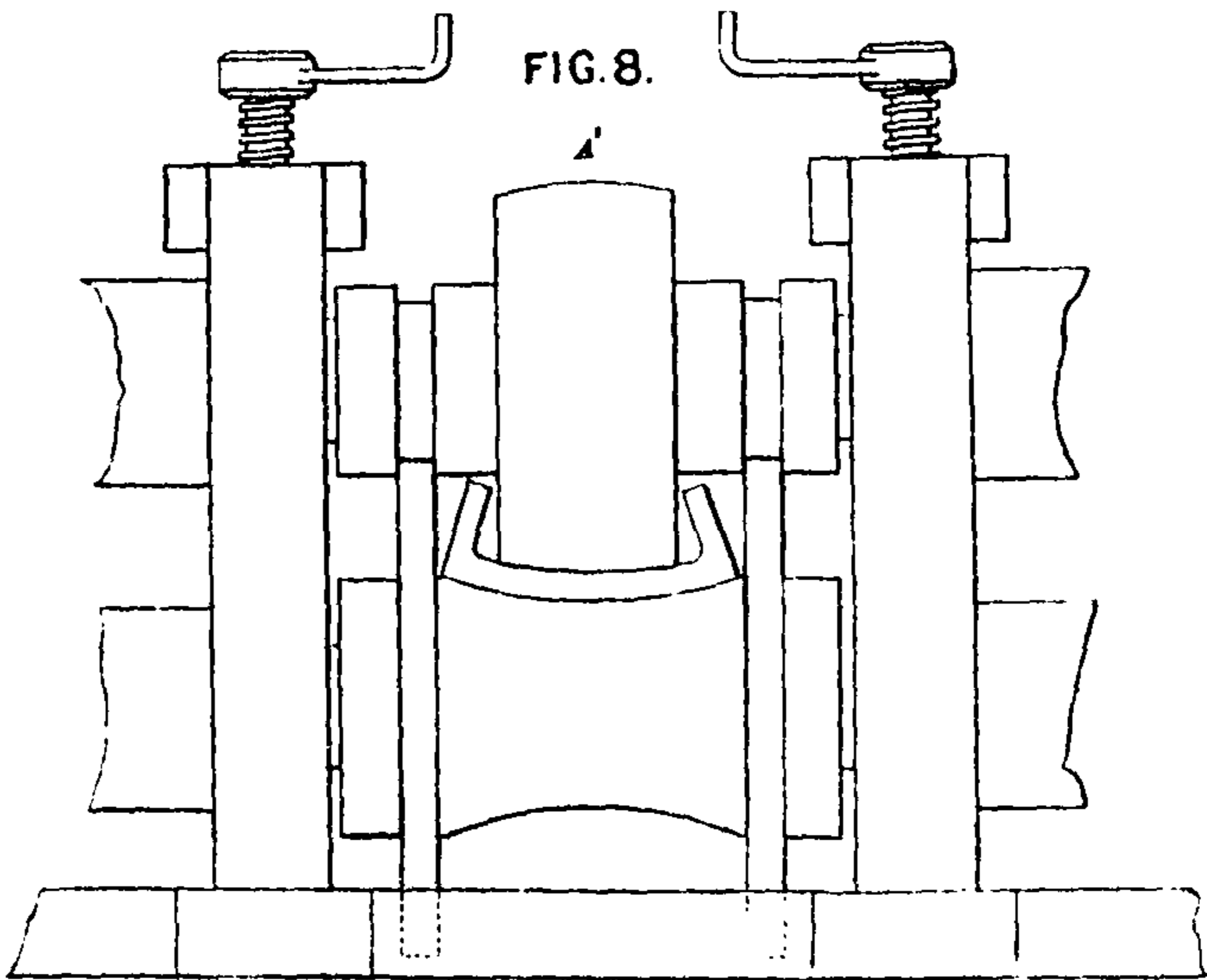


FIG. 8.

From Alleyne & Roberts' specification.

of the flanges of the plate, in order to assist in bringing them into the requisite position."

No evidence was adduced at the trial to show that a "dovetail" had ever been rolled, or that any workman would know how to roll one from this specification. Sir *J. Alleyne* (one of the patentees) said there was nothing that would specially "lead to a dovetail," and that if trying to roll one with a flat bottom he would proceed from Fig. 3, and work on Form C, Fig. 1, *ante*, p. 378.

The result invented by *Carmont* was much desired for a considerable time before 1883.

Held, at the trial, that the patent was valid and had been infringed.

That decision was supported on appeal.

Smith, L.J. (p. 53): "The specifications and drawings of 1862 do not enable a skilled workman to perceive the very discovery to carry the invention into practical use . . . inventive ingenuity was required to bring about what Mr. *Carmont* effected, and which, be it noted, though the result was much desired, no one thought of until Mr. *Carmont* did so in the year 1883."¹

Rigby, L.J. (at p. 54), pointed out that *Carmont* did not include what was old, as his Fig. 1 did not show a "W" with *diverging* flanges as in *Alleyne's* specification, and that the diverging flanges in Fig. 4 had the important addition of the bead.

1896. THE PNEUMATIC TYRE CO. v. CASSWELL, 13 R. P. C. 375.

Combination of Old Elements—Invention is addition to Public Knowledge.

A patent was granted (No. 4175 of 1891) to *C. H. Woods* for "improvements in or relating to inflated tyres of wheels for bicycles, tricycles, and other road vehicles."

The complete specification was as follows²:—

"This invention refers to improvements in or relating to tyres of wheels for bicycles, tricycles, and other road vehicles, wherein the said tyres are inflated by means of air, gas, or liquids under pressure, for the purpose of effecting elasticity and immunity from vibration, and consists in providing the same with a non-return valve in an economic and unique manner, which allows of the said valve being operated upon or removed without opening the tyre as hitherto. This I effect by securing to the hollow tyre (A) a tube (B) by means of a nut or its equivalent. The tube (C) is provided internally with a chamber or cavity (J), in which is disposed a conical or other stem, or valve (K), with inlet and outlet passages (N), through which the inflating medium is forced by means of a force-pump or

¹ As to this being evidence of invention, see *ante*, pp. 37, 38.

² It is only necessary for the present purpose to exhibit one diagram of the drawings. To save space references to it are inserted in brackets in this part of the specification. In the original the description of drawings was repeated separately.

like device. The outlets in the conical or other stem, or valve, are provided with an elastic or other suitable medium" [shown in black]; "the stem or valve being secured in the chamber or cavity by a nut (O) screwed on

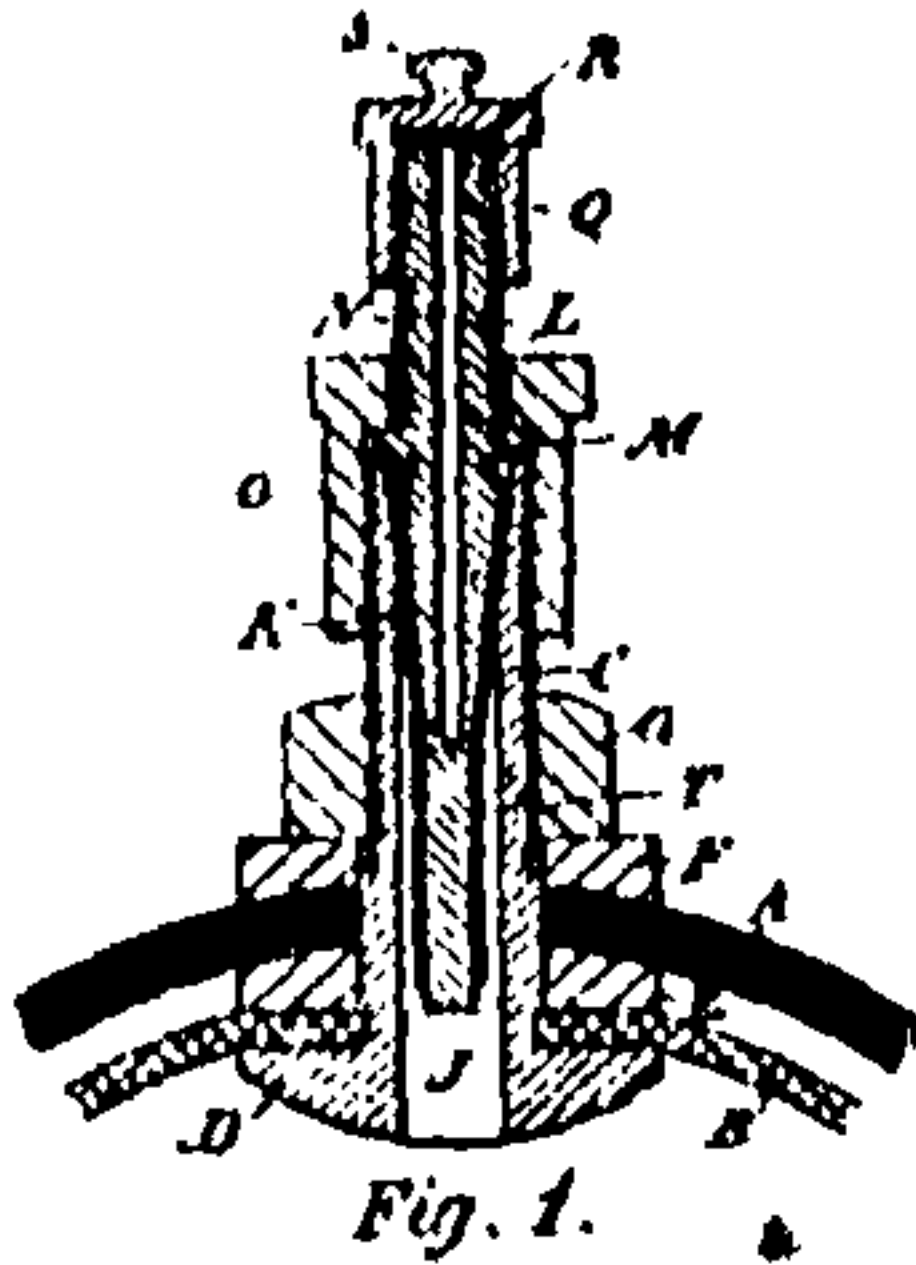


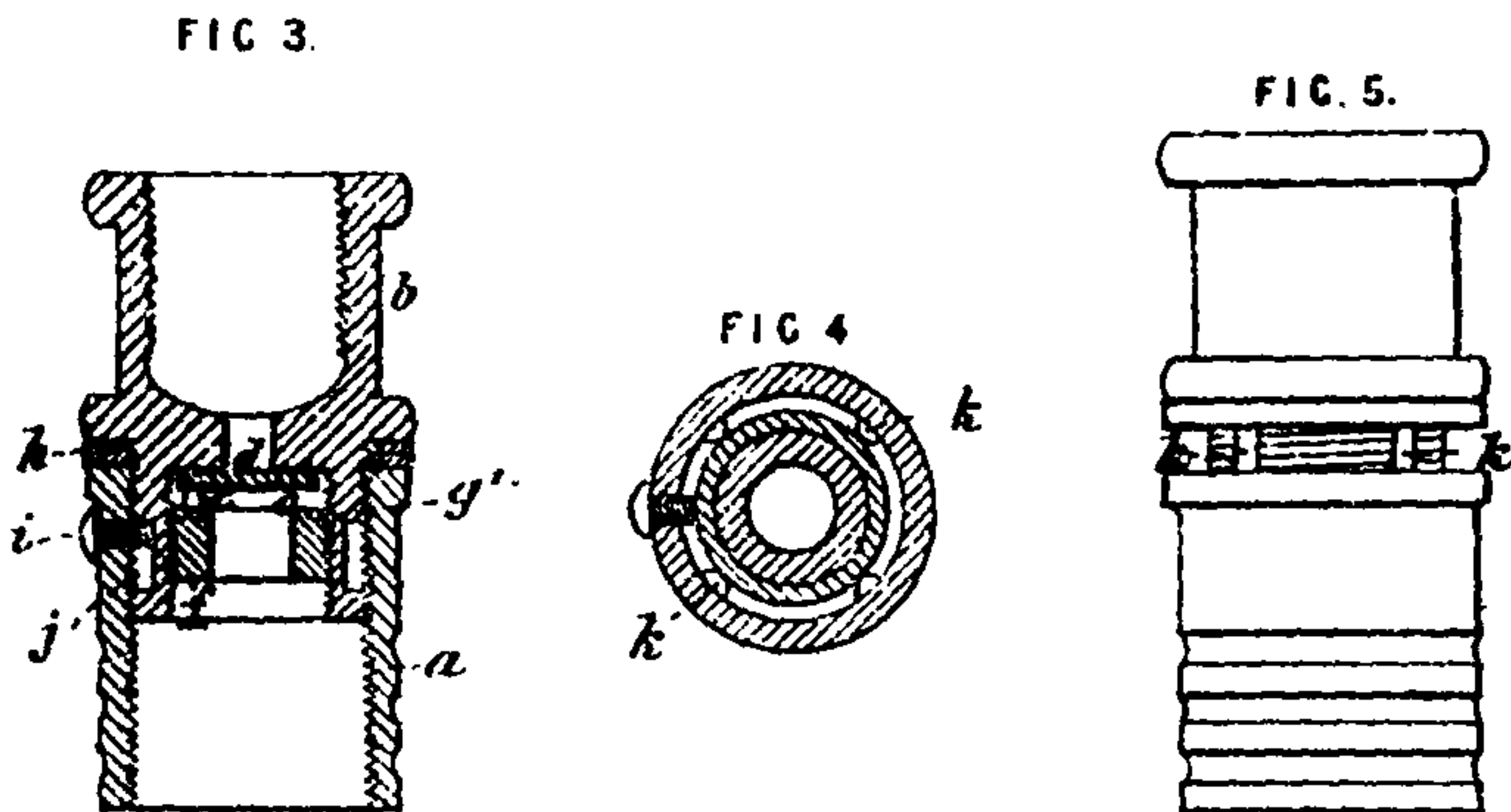
Fig. 1.
Wood's specification.

the outside of the said hollow tube. The other end of the conical or other stem, or valve, passes through the outside nut (O), and is provided with means for readily attaching a pipe or its equivalent connected to the force-pump or like device. When air, gas, or liquid is being forced into a hollow tyre, the elastic or other medium yields and allows the same to pass, and instantly closes the outlet passage or passages when pumping ceases by its own elasticity or other means and the pressure in the tyre. If desired, the charging-end of the stem or valve may be provided with a cap (S), to give additional security against leakage."

A short description of the advantages of the valve followed; and then a full description of the drawings. These showed modifications of form, but consisted substantially of the same elements as shown in Fig. 1.

The first claim was for:—

"(1) The general arrangements, constructions, and combinations of parts composing the improved non-return valve for pneumatic tyres of cycles and other road vehicles, as hereinbefore described, and as illustrated in the annexed drawings."



Diagrams from Parson's specification.

The second claim was for the combination of the tube C with the removable stem K; and the third claim was for the whole combination, with references to the diagrams in detail.

The chief alleged anticipation was that contained in *Parsons'* specification (No. 2996 of 1879), describing an inflation valve for life-belts, air-pillows, and the like. Fig. 3 shows this valve, in which *a* is the tube,

b the mouthpiece, *d* the non-return rubber valve. The deflation was effected by partially unscrewing the mouthpiece *b*, when the air escaped through the passages *k*, which are shown in Figs. 4 and 5.

It was proved that all the elements in *Woods'* combination were old, the valve (*K*, in Fig. 1) being old, but not in *Parsons'* combination.

Held, at the trial, that the invention was found in *Parsons'* specification, and that therefore the patent was invalid.

On appeal to the Court of Appeal this decision was reversed.

KAR, L.J., in delivering the judgment of the Court (at p. 380): "Assume that no separate portion of this apparatus, taken by itself, could be patented; the whole thing taken together is quite new. No such valve—to give it a comprehensive name—had ever been used or seen before. Its usefulness is abundantly proved. It has been sold by millions. It has practically driven all other inventions for the same purpose out of the field. Its ingenuity is manifest. As I understand his judgment, the learned judge says that the utility is beyond doubt; that it has great merit; that there is good subject-matter; and that the patent is clearly for a combination. But he holds that this patent adds nothing to the stock of practical knowledge. But if the combination is new, a new combination is a material addition to such knowledge."

1896. FAWCETT v. HOMAN, 13 R. P. C. 398.

Construction of Claim for Combination—Alleged Paper Anticipations.

A patent (No. 2815 of 1888) was granted to *M. Fawcett* for "improvements in the construction of fire-proof floors."

The complete specification was as follows¹:—

"My invention relates to improvements in the construction of fire-proof floors, and has for its object to encase and so protect the iron or steel joists or girders or other load-carrying material used in such floors, to dispense with the use of centering in the construction of such floors, to reduce the dead weight of such floors, and to enable them to be constructed more expeditiously and economically than heretofore.

"My invention consists of a floor formed or constructed with flanged tubular lintels [*L* and *f*, Fig 3] as the special feature. These lintels are made of fire-clay or other fire-proof material, and of various sections, which are arranged to rest on the lower flanges [*a*, Figs. 2 and 3] of iron or steel joists or girders [*J*], and to pass under the lower flanges of the same, an air-space [*S*, Figs. 2 and 3] being formed between the under surface of the

¹ The references to the diagrams shown in brackets were not in the original, but are inserted to abbreviate the specification. Fig. 1 is a plan showing the oblique position of the lintels; Fig. 2 is a longitudinal section through and parallel to the centre of the lintel; and Fig. 3 a cross-section of the floor at right angles to the section in Fig. 2. It will be seen that a section across the line *XX* in Fig. 1 (not in original) will show a complete single arch.

joists or girders [α , Figs. 2 and 3] and the lower part of the tubular lintels. Concrete is placed between and over the tubular lintels so as to form concrete arches, which take their bearing on the lower flanges [J, α] of the joists or girders independently of the lintels.

"The functions of the tubular lintels is to protect the joists or girders from the action of fire, to act as centering until the concrete is set, and to reduce the dead weight of the floor. Dovetail grooves [g , Fig. 3] are formed in the under surface of the lintels to make a key for the plaster or other material of the ceiling below. . . ."

"The joists or girders $J, J . . .$ are fixed at a suitable pitch to give the required strength, and the lintels $L, L . . .$ are made of the proper lengths to slot in between the webs $w, w^1 . . .$ of the joists or girders $J, J . . .$ and to rest on the lower flanges $\alpha, \alpha^1 . . .$ thereof. The lintels $L, L^1 . . .$ are fixed in such a manner that their lower or flat portions $p, p^1 . . .$ are below the bottom flanges $\alpha, \alpha^1 . . .$ of the joists or girders, leaving an air-space, S , between the two.

"The lateral flanges $f, f^1 . . .$ owing to their peculiar shape, allow the concrete, which fills the space between the same and covers the lintels $L, L^1 . . .$, to have a direct bearing on the lower flanges $\alpha, \alpha^1 . . .$ of the said joists or girders $J, J^1 . . .$, this concrete supporting, when set, the flooring and the load placed thereon."

The floors and ceiling were to be finished in the usual manner.

"The joists or girders can also be perforated as shown at $d, d . . .$ making the air-space in the upper part of the tubular lintel continuous in addition to the air-space S ; the air-spaces thus formed being continuous, constitute a flue or conduit for the outward passage of foul air or heat through the walls into the open air outside.

"My improved lintel enables me to protect the load-carrying material, to dispense with centering, to considerably reduce the dead weight of the floor, while permitting floors to be constructed expeditiously and economically."

The claims were :—

"(1) The improved construction of fire-proof flooring arranged and operating substantially as and for the purpose described.

"(2) The improved flanged tubular fire-proof lintels, substantially as hereinbefore described and shown on the drawing."

At the trial of the action for infringement the usual defences were set up. The most important alleged anticipations were descriptions in specifications, as follows :—

Abord's (American, No. 57450 of 1866)¹ was for bricks, B , for ceilings. These (as shown in longitudinal section in Fig. 1) rested on the flanges α of the girders A , with projections, b , underneath to hide the girders, the spaces c being for the introduction of mortar to bind the bricks and

¹ The sketches here given are taken from the diagrams used at the trial, by the courtesy of Messrs. *Faithfull & Owen*.

Fig. 1

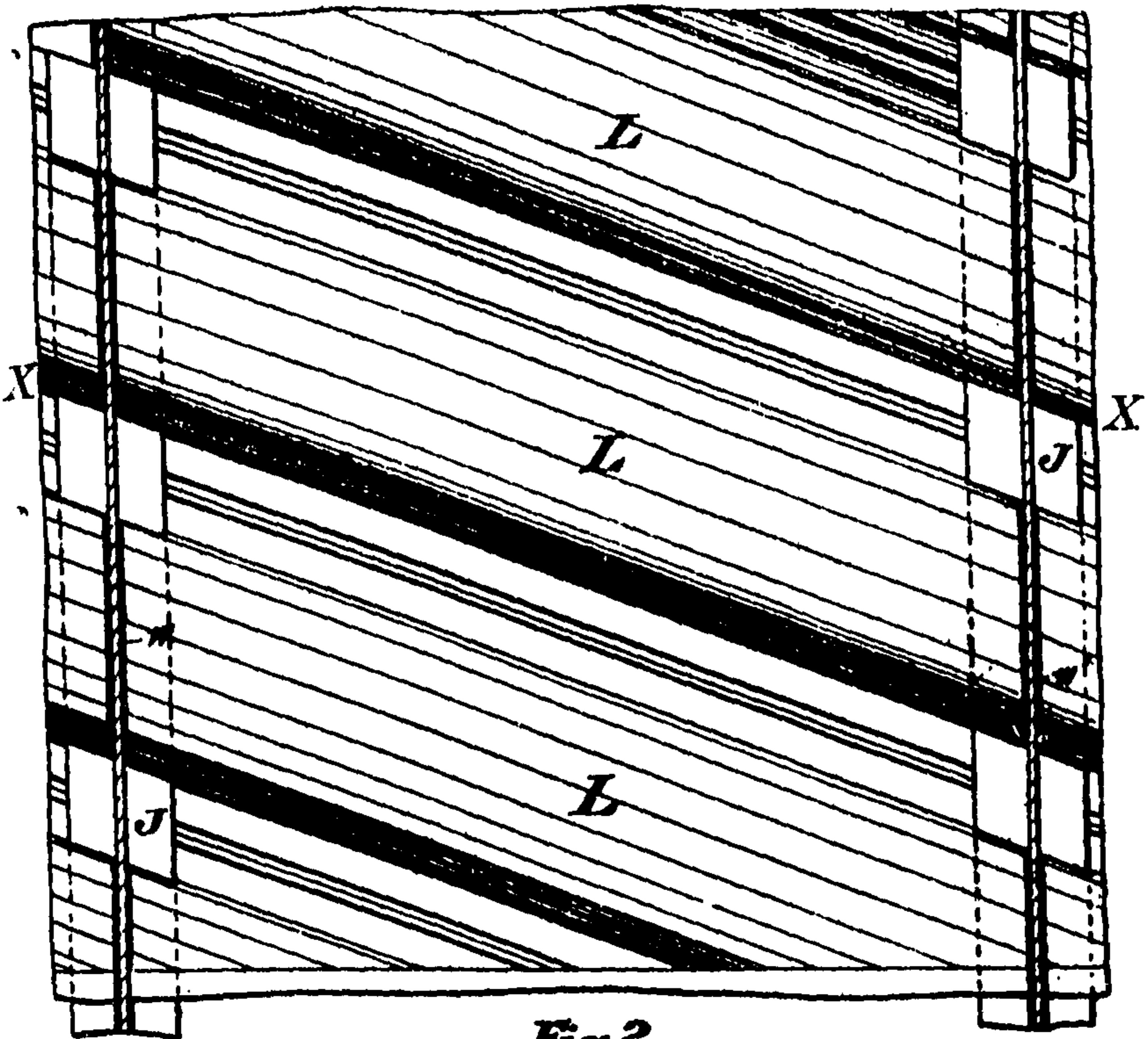


Fig. 2.

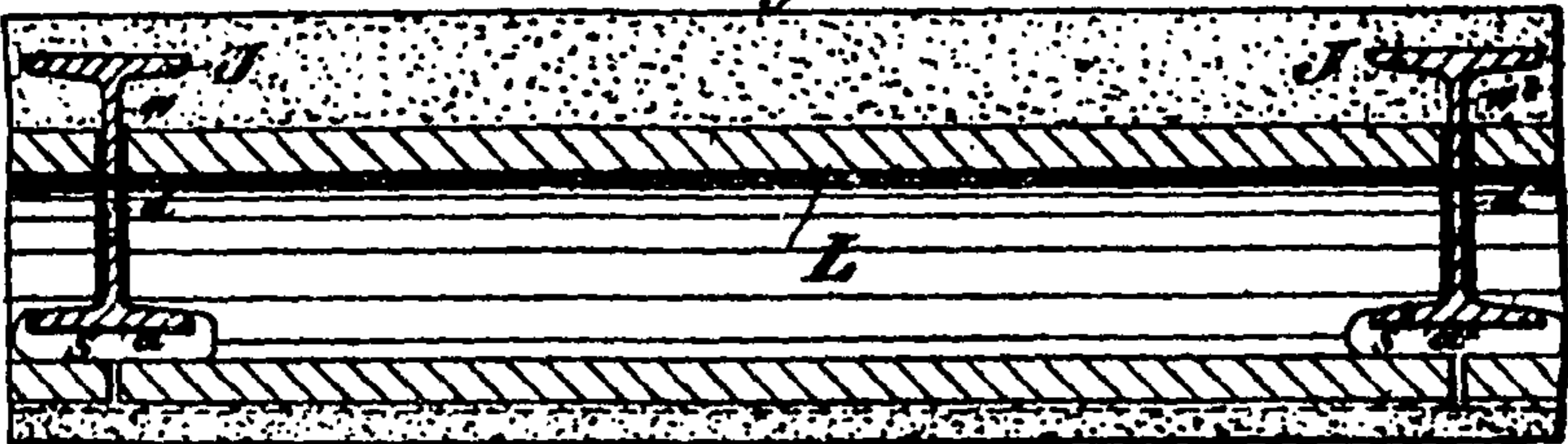
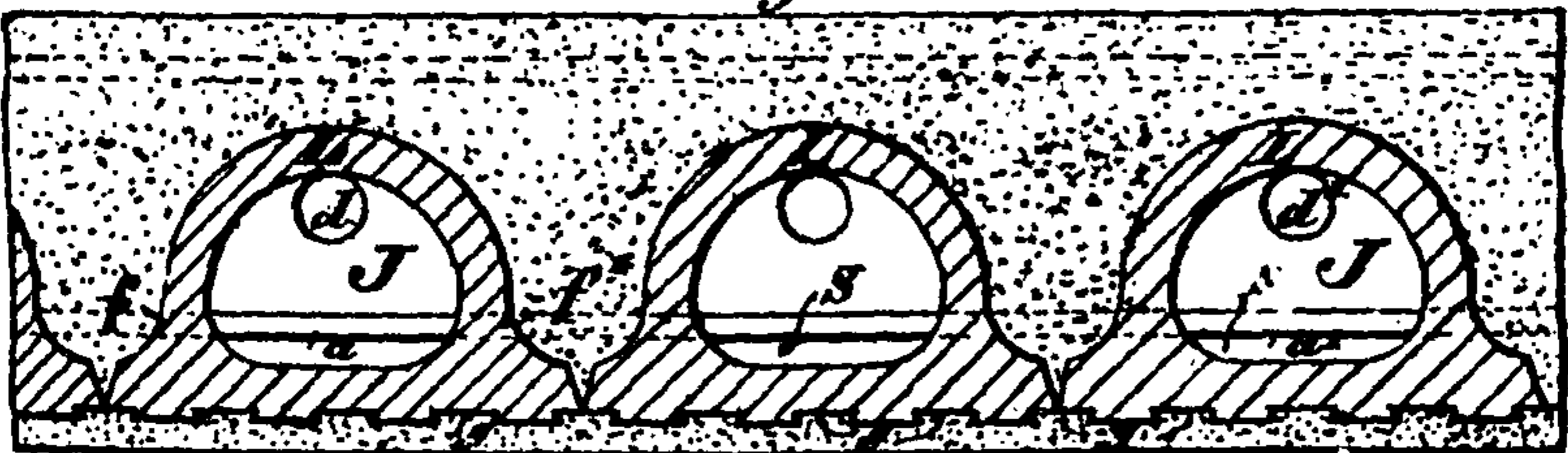
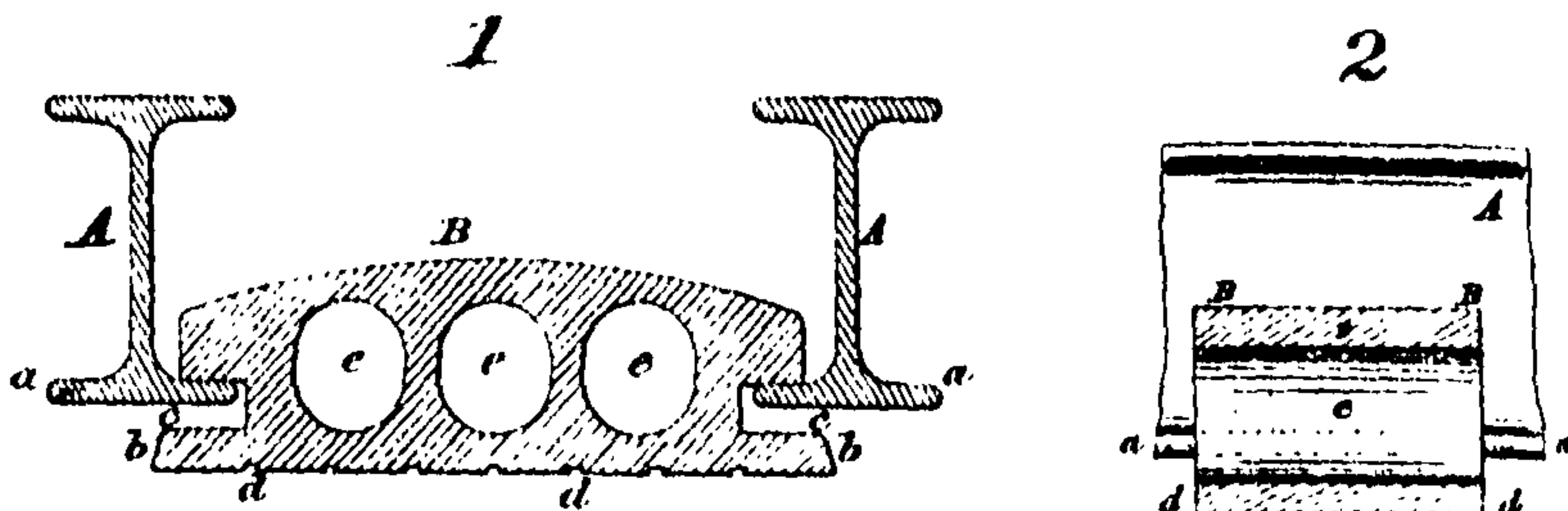


Fig. 3.



Diagrams from Fawcett's specification (No. 2815 of 1888).

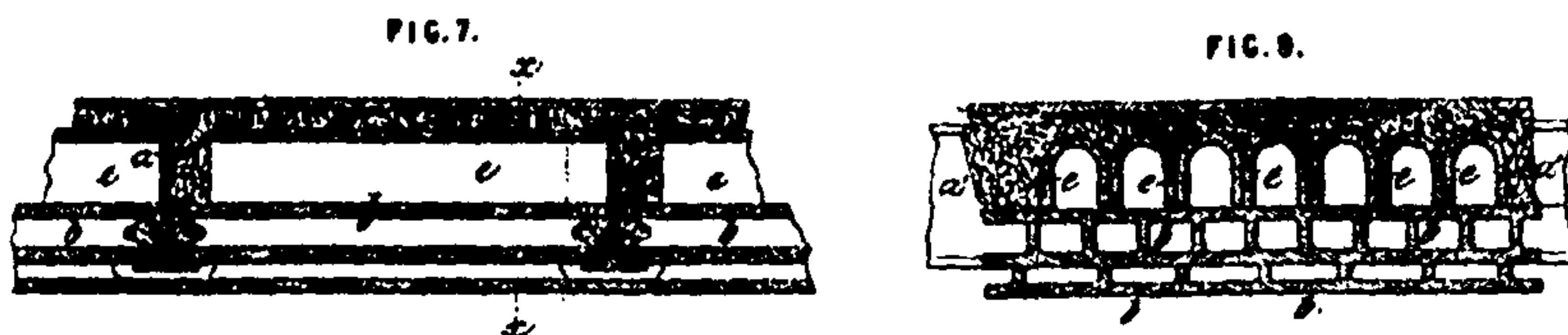
cover the girders, and the indentations *d* underneath to fix plaster where used. The bricks were lightened by being hollowed crosswise, the spaces *c* being across the brick. Fig. 2 is a section across the middle of the brick parallel to the girders A. The invention was "substituting for . . .



Abord's bricks for ceilings.

in the case of fire-proof structures, metal cross-ties and the usual filling in between the girders, hollow or tubular bricks, &c." There was no mention of construction of floors.

Snelgrove's (No. 7339 of 1885) was for improvements in ceilings and floors. The main feature was the construction of blocks so that they could be readily inserted between the girders or joists. These are shown in longitudinal section (*b*) in Fig. 7, and in cross-section (*b*) in Fig 9 (on line *xx* of Fig. 7). "Sometimes" tiles (*e*) in Figs. 7 and 9 were placed upon the blocks and the interstices filled in with cement. For the purposes of



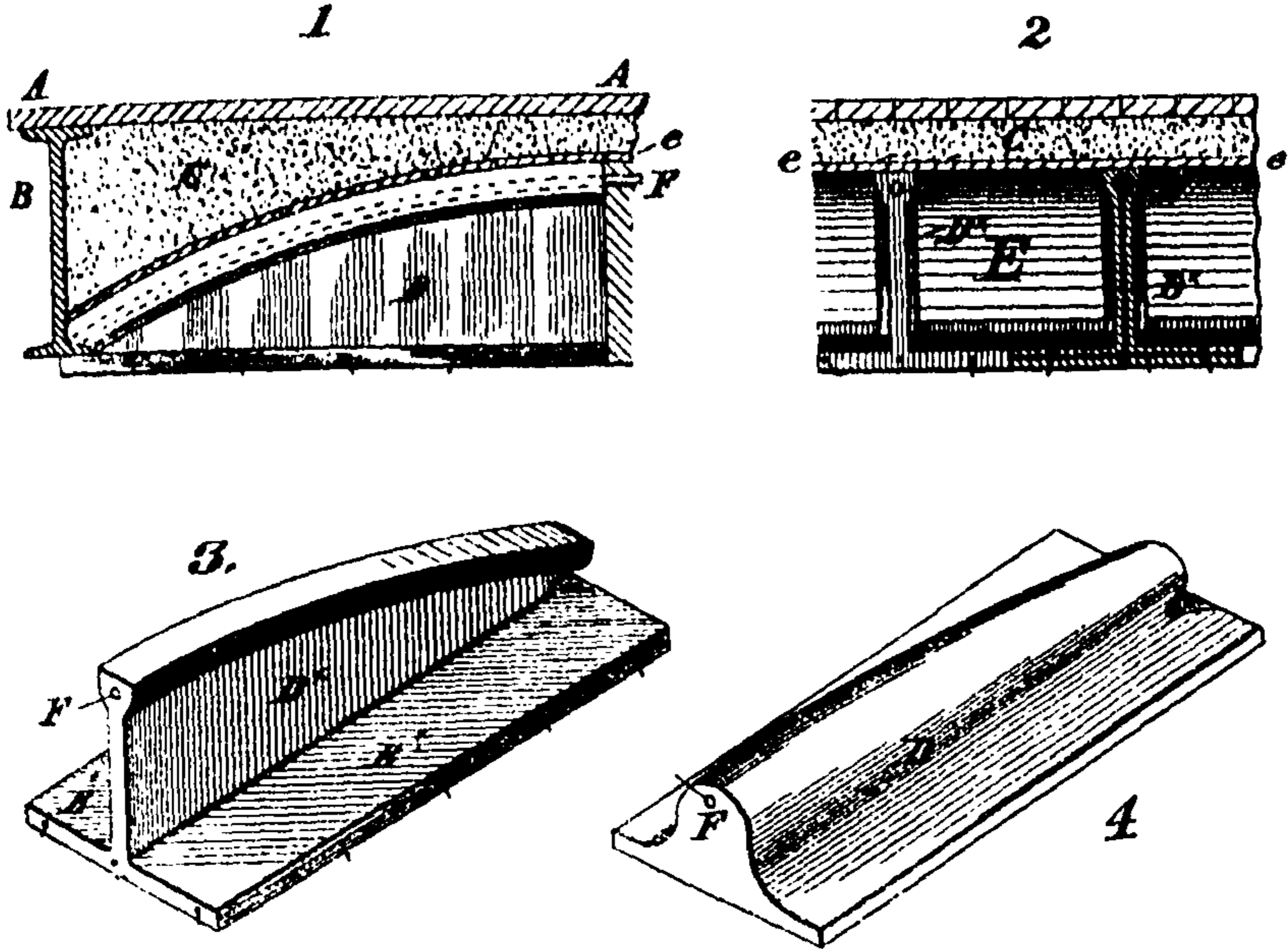
Diagrams from Snelgrove's specification (No. 7339 of 1885).

insertion these were shorter than the distance between the girders, and were placed alternately in contact with each girder. Concrete or cement grouting or other suitable material was filled in to support the tiles of the floor above.

Evidence was given that the whole strength would be due to the blocks *b*.

Bruner's (American, No. 356,703, 1887) was for improvements in arches or beams. These arches were made of concrete, cast with an iron rod running through the arch. They were made preferably, but not necessarily, in separate halves. Fig. 1 shows a longitudinal section of half an arch, in which A is the floor above, resting on the girder B and concrete D is the section of the half-arch. Fig. 2 is a cross-section of the floor

through the end of the half-arch of the form shown in Fig. 3. E is air-space between the arches, formed by putting thin boards, *c*, across the arches to support the concrete C. These spaces were described as "very important, as they effect a saving of material and a reduction in the weight of the structure." F is the iron rod cast in the arch, and wires were inserted in the concrete parallel to the edges to hold it together. Fig. 4 shows another shape of half-arch, which might be useful in some cases, as to



Portions of drawings of Bruner's arches and beams.

which no directions were given. These arches were placed side by side, flanges touching, but there was no indication that the spaces E were to be filled by concrete.

There was no proof that floors had ever been constructed according to the alleged anticipating specifications.

Evidence was given that *Fawcett's* floor would support the weight it was intended for, even after the lintels had been broken away.

The learned judge held at the trial that, having regard to the state of knowledge, there was not sufficient invention to support the patent.

On appeal to the Court of Appeal—

Held, that the invention was for a novel combination of old parts, producing a self-supporting floor, and that it was good subject-matter for a patent. Also that the second claim for the lintels was a claim for their use in fire-proof floors, and not generally.

Lindley, L.J. (at p. 405) : "The merit of an inventor very often consists

in clearly realizing some particular useful end to be attained, or 'in apprehending a *desideratum*.' If an inventor does this, and also shows how to attain the desired effect by some new contrivance, his invention is patentable, although his contrivance involves the use of things, or parts of things, previously used by other people. Were it otherwise, no patent for a new thing comprised of well-known parts would ever be sustained. 'This appears to me to be the case here. The patentee had in his mind something which had never before occurred to any one; and the merit of his invention is attributable to this circumstance.'

Rigby, L.J. (at p. 409), dealt with the construction of the second claim. The patent "is for 'improvements in the construction of fire-proof floors.' There, I know, is the distinction between ceilings and floors. The patentee has taken the floor throughout, and the lintel is only a means to an end, put forth throughout the whole of this specification as a means, and as a means, I may say, without shrinking at all. It is the means for producing the end aimed at, that is, the construction of a fire-proof floor, so that the claim must not be construed, unless on the perverse idea of destroying the patent, instead of giving a fair effect to it—it must not be construed as a mere claim for the lintel in that shape and form as it appears, and independent of its use. In fact, you cannot throw over the function which is clearly and plainly and very fully put forth in the specification. . . ." At p. 410: "I therefore come to the conclusion that the claim of the lintel was a claim not intended, and not operating unduly, to extend the scope of the patent, and that it be legitimate to separate the lintel itself—and this was the mainstay of the argument before us—from the purpose for which it was designed. To do so, and to hold that the patent was invalid on that ground, would really be departing from the substance in order to adhere unnecessarily to the mere letter. . . . The merit of this patent is not so much in the way in which the idea was carried out as in conceiving the idea itself. Then the thing became simple. I should like also to protest against the notion that you can in any way take away from the merit of an inventor by pointing out that one of his details is to be found in one obscure specification, and another detail in another, and so on, and saying that all he had to do was to put these things together, and then he would get a hint of one thing from one place and another thing from another. It is the getting of the idea, and it is the putting together of that idea, with the mechanical means of attaining it, that constitute invention."

1896. THE INCANDESCENT GAS LIGHT CO. *v.* DE MARE, &C.,
13 R. P. C. 559.

Construction of Specification—Pioneer Invention.

A patent (No. 15286 of 1885) was granted to *C. v. Welsbach* for the "manufacture of an illuminant appliance for gas and other burners."

The complete specification was in the following terms:—

“My invention relates to the manufacture of an illuminant appliance in the form of a cap or hood to be rendered incandescent by gas and other burners so as to enhance their illuminating power. For this purpose I employ a compound of oxide of lanthanum and zirconium or of these with oxide of yttrium, which substances in a finely divided condition when they are heated by a flame give out a full, large, almost pure white light without becoming volatilized or producing scale or ash even after being kept incandescent for many hours, but remain efficient without deterioration even when they are long exposed to the air.

“The proportions in which the substances are compounded may be varied within certain limits. I have found the following proportions very suitable:—

60 per cent. zirconia or oxide of zirconium,
20 per cent. oxide of lanthanum,
20 per cent. oxide of yttrium.

“The oxide of yttrium may be dispensed with, the composition being then:—

50 per cent. zirconia,
50 per cent. oxide of lanthanum.

“Instead of using the oxide of yttrium, ytterite earth, and instead of oxide of lanthanum, cerite earth containing no didymium and but little cerium may be employed.

“For applying the substances mentioned as an illuminant I use a fine fabric, preferably of cotton previously cleansed by washing with hydrochloric acid; I saturate this fabric with an aqueous solution of nitrate or acetate of the oxides, and gently press it until it does not readily yield fluid, so that in stretching or opening out the fabric the fluid does not fill up its meshes. The fabric is then exposed to ammonia gas, and when it has been dried it is cut into strips and folded into plaits. One method of giving the desired shape to the cap or hood is to draw a fine platina wire through the meshes of the net and bend it to the form of a ring so as to give the fabric the shape of a tube, the edges of which are then sewn together with an impregnated thread. The cap or hood thus formed can be supported on cross-wires in the chimney of the lamp. The platina wire ring may be attached to a somewhat stronger platina wire to form a supporting stem by which the net can be secured to a holder on the burner-tube, the net itself being at such a height that the platina ring is an inch or more above the burner.

“On igniting the flame, the fabric is quickly reduced to ashes, the residuum of earthy matters nevertheless retaining the form of a cap or hood.

“For part of the zirconia a mixture of magnesia and zirconia may be employed with a little loss of intensity of the light.”

It was next pointed out that the form and construction of the fabric

could be varied to suit the burner. Modes of coating with a fresh solution of the salts, and of strengthening the connection of the fabric to the supporting wire were mentioned.

The claim was for :—

“The manufacture substantially as herein described, of an illuminant appliance for gas and other burners, consisting of a cap or hood made of fabric impregnated with the substances mentioned and treated as set forth.”

In the trial of the action for infringement it was proved that the term “rare earths” at the date of the patent was applied to denote earths consisting mainly of oxides of a group of metals known as the “cerium group;” some of the salts of these metals produced a precipitate with potassium sulphate, others not. Two subgroups were thus distinguished: the “cerium,” consisting of the metals cerium, lanthanum, didymium, and samarium, the salts of which produce a precipitate; the other subgroup, called the “yttrium,” consisting of the metals, yttrium, erbium, terbium, and others, did not yield a precipitate. But it was extremely difficult to separate the members of these respective subgroups from each other. The usual sources from which these metals were obtained were: “gadolinite,” in which members of both groups were frequently found; “samarskite,” which did not contain any of the “cerium” group; and “cerite,” not containing the “yttrium” group.

The alleged infringement consisted in making mantles of zirconia and erbia, lanthana not being used. “Cerite” earth, mentioned as substitute for lanthana, did not contain erbia.

Before the date of the patent no means had been devised successfully for producing light by heating in burning gas substances like those used in *Welsbach's* invention, which created a new industry.

It was held at the trial that the claim was for the whole process by which the illuminating appliance, the hood, was produced, and was not confined to the precise proportions of salts mentioned, but was a much wider claim than one for the use of oxides of zirconium and lanthanum as described, and that it had been infringed.

On appeal to the Court of Appeal the decision was upheld.

Kay, L.J. (p. 572): “Up to the time when this patent was taken out, nothing like the mode of appliance which this patentee invented had ever been used. In that sense it is what is called a ‘pioneer’ patent. Somebody has adopted the word ‘pioneer,’ but what is meant is this: that it was the very first time that this mode of applying this substance to a gas-flame or any practical mode of doing it had been discovered.”

Smith, L.J. (p. 578): “This patent is not a patent simply for the use of zirconium and lanthanum; it is a far greater claim than that, and I will read just three lines of my brother *Wills's* judgment, because he most tersely states what in reality this patent is for. He says: ‘*Welsbach* certainly discovered for the first time a method (or process) by which a skeleton, frail but durable, of the resistant earthy oxides mentioned by him could be produced

which would give practically a means of obtaining light by incandescence, which would surpass the economy of the best methods known of getting illumination from gas. His specification claims the whole process by which he arrived at that result.' That, in short and apt language, describes what his patent is for."

Notes.

In the *Welsbach &c., Co. v. The Daylight Incandescent Mantle Co.* (17 R. P. C. 141), the above case was distinguished. In the latter case the alleged infringement consisted of the use of zirconia with $\frac{1}{2}$ per cent. of cerium. It was held by the Court of Appeal that this use was not within the claim.

Per *Romer*, L.J. (p. 146): "It is probable that the patentee in this case might with safety have enlarged his claim. But he is bound by that claim. . . . I agree that the Court ought to take a broad view, and ought not to hold that ingredients substantially differ merely because they have different chemical names, and only differ in minor or comparatively unimportant respects from the substances mentioned." P. 147: "It appears to me impossible so to hold in accordance with any principle applicable to the construction of specifications. The fact is that no one, at the date of the specification, had the slightest idea that half per cent. of cerium, or any such quantity of cerium, could be of the slightest use in itself, or with zirconia, for the purposes of the patentee. That it was of use was a remarkable and astonishing discovery of later time, and one not contemplated by the patentee or covered by his specification. In this context it is important to bear in mind the proportions given by the patentee in his specification in which substances must or should be used. I quite agree that in a patent of this kind the Court should not tie down the patentee too strictly to the exact proportions given by him."

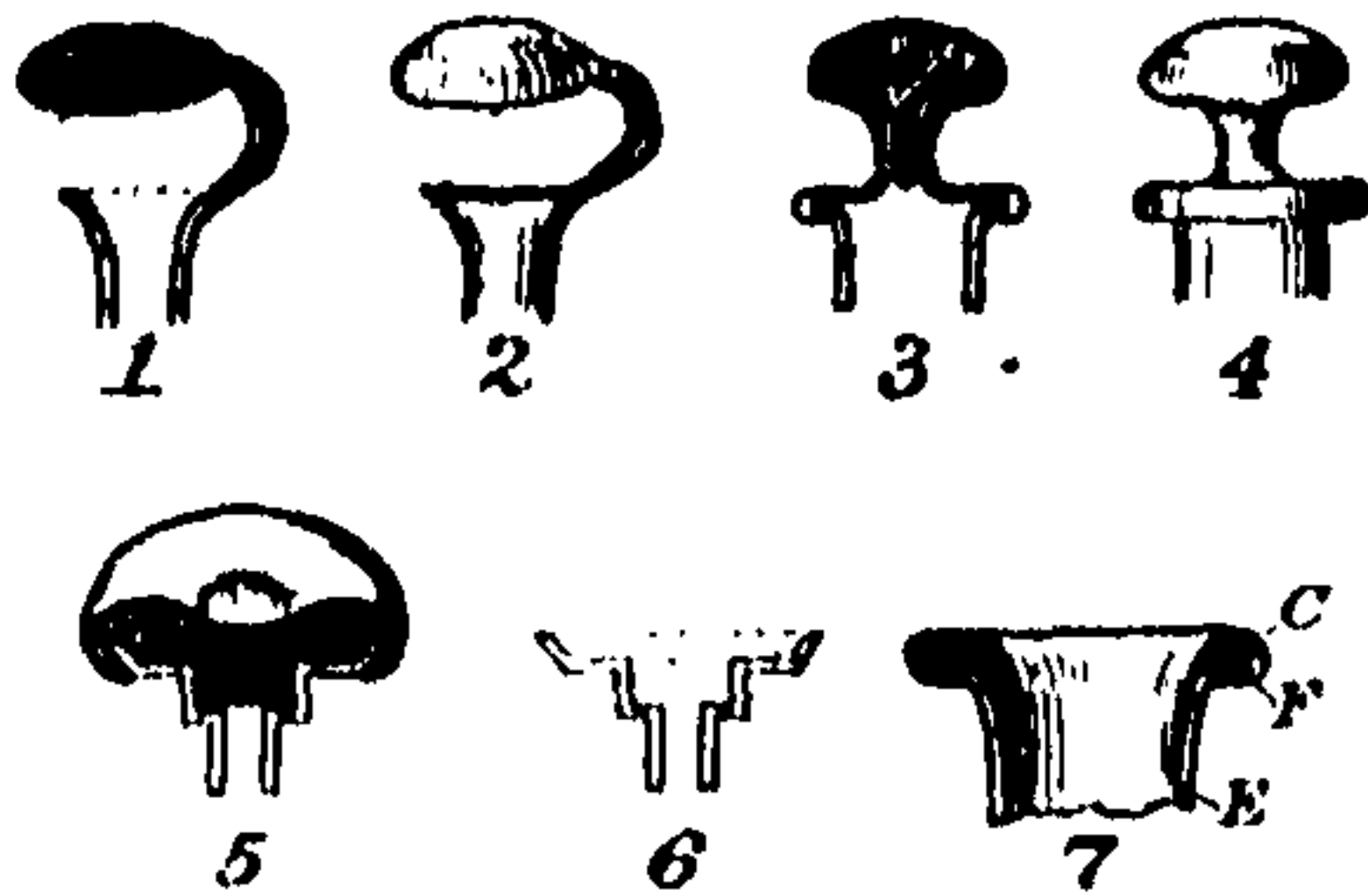
1896. RIEKMANN v. THIERRY, 14 R. P. C. 105.

Want of Invention—Ingenuity—Analogous Use—Construction of Claim.

In 1891 a patent (No. 18,331) was granted to Messrs. *Thierry* for "an improvement in eyelets."

The complete specification began with a statement relating to deficiencies in existing eyelets, and continued: "The object of our invention is to provide a permanent facing for the flange of an eyelet, this facing being of any desired colour, and giving a neat finish to the eyelet. For this purpose, instead of varnishing or otherwise treating the surface of the metal, we fix on the flange, which is the visible part of the eyelet, a casing of celluloid or similar material, such as xylonite, which may be of any desired colour, and which is moulded so as to present a neat rounded

facing of the flange. The accompanying drawing¹ is a magnified section of an eyelet with its flange encased with celluloid according to our



Thierry's eyelet (Fig. 7) and alleged anticipations.

invention. E is the tubular body of the eyelet, F its flange encased with celluloid, C, which, as shown in the drawing, not only covers the face of the flange, but also extends round its edge and forms a layer under it, so that it is firmly held upon the flange and cannot be separated from it without actual fracture. This encasing of the flange with the celluloid may be effected in various ways, which

we do not claim as of our invention. . . ."

A long description then followed of the modes of manufacture of the eyelet.

The claim was for:—

"A metal eyelet having its flange embedded in celluloid or like material, forming a facing. A facing layer over the flange and a fixing layer under the flange, substantially as described."

In an action for infringement the chief defence was that of want of novelty. Four specifications were alleged as disclosing the invention. Of these,² Figs. 1 and 2 show hooks of metal coated with celluloid according to *Smidt's* specification (No. 16,238 of 1889) in cross-section and outside view respectively; Figs. 3 and 4 show similar drawings of studs from *Smidt's* specification (No. 13,402 of 1890); and Figs. 5 and 6 show cross-sections of studs of *Joyce's* American specification (No. 259,867 of 1882). *Smidt* (1889) also showed an eyelet with a celluloid facing, but one not turned over the edge.

Evidence was given at the trial to show that the patentees had much difficulty and made many experiments in perfecting their invention; but they did not know of the alleged anticipating specifications.

The learned judge found that the patent was valid.

That decision was upheld by the Court of Appeal.

On appeal to the House of Lords:—

Held, that there was not sufficient ingenuity shown in the invention of the eyelet to support a patent.

Lord *Halsbury*, L.C. (at p. 614): "I think this patent is bad for lack of invention. The mode of covering a metal stud and coating it with either celluloid, or as the patentees say, some other similar substance, appears to me to be ingenious and useful, and for aught I know to the contrary it

¹ The drawing is reproduced in part and reduced as much as is necessary in Fig. 7.

² Only those are here sketched that are nearest to invention in question.

³ In all these drawings of cross-sections, as here shown, the celluloid is shown by shading in straight lines, and the metal foundation left clear.

might have been the subject of a patent. That, however, is expressly disclaimed, and, indeed, I think it is important before considering what the invention claimed is to consider what is disclaimed. . . . It comes to this—any eyelet of any metal, if covered with celluloid or any similar material, is within the patent. My Lords, it appears to me that there is no invention in applying to eyelets either celluloid or any other similar material. Whether there is or is not invention such as will support a patent is a question of fact and degree, and the state of facts and degree in one case can never be any guide in another.”¹ The Lord Chancellor then discussed the facts and decisions in *Hinks v. The Safety Lighting Co.* (*ante*, p. 254) and *Brook v. Aston* (*ante*, p. 45), and continued: “I refer to these two cases only as illustrative of the proposition that no smallness or simplicity will prevent a patent being good,² while mere novelty of manufacture, or usefulness in the application of known materials to analogous uses, will not necessarily establish invention within the meaning of the patent laws.” (At p. 116): “Looking at what is claimed, and much more at what is not claimed, it is very difficult to stop short of saying that all eyelets if covered with celluloid or other plastic materials are within the patent, and if so any button, stud, or hook, which was ever covered with a plastic material would be, equally with the eyelet, an invention whenever it was first so covered; but, whether it would be good subject-matter of a patent or not, it is not new, and therefore, to my mind, there is no invention, though this may be an improved eyelet, and there may, and I think there is, ingenuity in the process of covering it.”

Lord *Davey* (at p. 121): “The respondents’ Counsel now tells us that the invention is the eyelet itself, which he says is a new and useful article, and therefore patentable, and he likens it to a combination of old matters producing a new and useful result. And if I understand him correctly he argued that no patent could be held to be bad if the subject of it was a new and useful article. If he meant only that a new and useful article in the production of which there is invention is the proper subject of a patent, I suppose nobody will disagree with him. But if he means that an article which is new to the market is therefore proper subject-matter for a patent, irrespective of the question whether the production of it was the result of invention, I do not agree, and I am of opinion that it is not the law.” His lordship then quoted the rule in *Harwood v. G. N. Ry. Co.* (as given, *ante*, p. 207, note 1), and continued: “It is not enough that the purpose is new or that there is novelty in the application, so that the article produced is in that sense new, but there must be some novelty in the mode of application. By that I understand that in adapting the old contrivance to the new purpose there must be difficulties to be overcome, requiring what is called invention, or there must be some ingenuity in the mode of making

¹ Quoted by *Ridley, J.*, in *Brooks v. Lamplugh*, 14 R. P. C. 615.

² His lordship probably alluded to the decision of *Jessel, M.R.*, as the patent was there held invalid for insufficiency and want of novelty (*ante*, p. 257).

the adaptation." His lordship then discussed the anticipation (as shewn above), and continued (p. 122): "In each case the mode of attachment and the plastic head is precisely the same as that employed by the respondents. The question is, whether given the use for the purpose of a button or stud, of a celluloid head or cap attached to a flanged metal foundation tube or shank, by pressing it over and under the flange, there is any invention which will support a patent in employing the same device for an eyelet. The contrivance is the same. It can hardly be contended that the purpose of ornamenting or protecting his eyelet is not analogous to the purpose for which it is used in the stud. Is there any novelty in the mode of adaptation?" The patentees do not claim any of their three modes to be novel or part of their invention. . . . I can find no suggestion of any difficulty to be overcome in adapting the contrivance for the purpose of an eyelet which does not equally exist in the case of a button or stud . . . it is a great demand on one's credulity to say there is any invention in the matter."

As to the difficulties and experiments of the patentees, his lordship pointed out that they did not know of *Joyce's* and *Smid's* specifications. "The force of the argument, of course, depends very much on the inventive faculty and knowledge of the experimenters. . . . The question of patentable novelty must be determined from the subject itself, and not from evidence that a particular person was a longer or shorter time in arriving at it."

1897. THE LANCASHIRE EXPLOSIVES CO. v. THE ROBURITE EXPLOSIVES CO., 12 R. P. C. 470 and 14 R. P. C. 304.

Amount of Ingenuity required for Invention—Construction of Claim.

(First Action, 12 R. P. C. 470.)

A patent was granted in 1885 (No. 13690) to *H. H. Lake* for an invention of "an improved explosive compound."

The complete specification (as amended)¹ commenced with a general statement as to the defects of nitroglycerine and the objections to its use; the new invention is then described:—

"This explosive material or compound, which is termed 'Bellit,' is composed of only two solid substances, a nitrate, as for instance nitrate of ammonia, nitrate of potash, nitrate of baryta, or nitrate of soda, and a bi- or tri-nitrate of carburetted hydrogen,² such as binitro-benzine, trinitro-naphthaline, or trinitro-toluol, mixed with such proportions that, in the explosion, the hydrogen of the carboniferous matter burns to water, and its carbon

¹ No question was raised by the amendments, they are not here noticed; some were mere improvements in translation, others substantial.

² "Carburetted hydrogen" obviously means "a hydrocarbon." The specification was translated into English, the invention being communicated by a foreign inventor, *Carl Lamm*.

burns to carbonic oxide or carbonic acid or a mixture of both, at the expense of the oxygen contained in the nitrate conjointly with the oxygen already existing in the bi- or trinitro compound of carburetted hydrogen."

"The manufacture is carried on in such a manner that the bi-nitro benzine, the trinitro-naphthaline, or the trinitro-toluol, which are solids, are first pulverized conjointly with the nitrate or separately, after which they are mixed together, preferably in a revolving cylinder, which by means of steam is heated to 100° C., when the said nitric or nitro compounds melting at a temperature of between 75° and 100° C. completely coat the particles of nitre or saltpetre all over, the bi- or tri-nitro compound, after cooling, turns solid or sets, the whole becoming thus a solid, hard mass." The material is pressed into required shape before cooling, or is granulated afterwards. Proportions are then given for the ingredients, so as to form either carbon monoxide and water after explosion, or carbon dioxide and water, or mixtures of both. The excellent properties of the resulting explosive are pointed out. The specification concluded:—

"The 'Bellit' is, moreover, composed of only such nitrated carburetted hydrogens as are very rich in oxygen, but poor in carburetted hydrogen, and, amongst these, such as melt at from 75° to 100° Celsius. In consequence of the intimate mixture when heated, Bellit becomes so homogeneous that, without the addition of any nitro-glyceriniferous substances, picrate or gun-cotton, it may be caused to explode only by means of a fulminating cap. This circumstance renders the said explosive quite free from danger, both in loading, as any ordinary shock will not cause it to explode, and in storing, as it cannot be ignited by fire. The greatest advantage offered by the Bellit is that it may thus very advantageously serve the purpose of ordnance, partly as a charge of powder and partly as charge in the projectiles, as the effect of shooting does not cause the explosion of the Bellit."

The claim was for:—

"An explosive material or compound termed 'Bellit,' prepared by mixing two solid substances, viz. such bi- or tri-nitro compounds of carburetted hydrogen (or mixtures thereof) as are perfectly solid below 75° C., and a nitrate (or mixtures thereof) which substances are heated after being mixed together, so that the solid bi- or tri-nitro carburetted hydrogen melts, and after solidifying completely surrounds the unmelted nitrate, substantially as above set forth."

An action for infringement was brought against the defendants for the manufacture of an explosive called "Roburite," consisting of 86.45 per cent. of ammonium nitrate, 13.30 per cent. of chlorodinitro-benzole, and 0.25 per cent. of moisture.

The only defence finally relied on was that of want of "subject-matter," or lack of a sufficient exercise of inventive ingenuity.

The chief alleged anticipations were *Sprengel's* (No. 2642 of 1871) and *Jensen's* (No. 2422 of 1876).

The principle of *Sprengel's* invention was to keep separate the

“oxidizing” and “combustible” agents (one at least being a liquid) until the explosive was required to do its work. A large number of oxidizable substances were mentioned, liquids and solids, e.g. oxygen acids, preferably nitric acid, nitrates, and other solids. Amongst a long list of “combustible” substances were mentioned (solids) such nitro compounds and nitrates of organic compounds as were non-explosive, e.g. nitro-naphthaline and nitrate of aniline, also amongst the liquids, benzol, and nitro-benzol. When made in the prepared form certain solid oxidizing and combustible substances were to be added in proportions required to produce the explosive effect.

Jensen's specification, a provisional one, alleged an invention of an explosive compound made of mono-, di-, or tri-nitro-benzol nitrated alkalies, with chlorate of potash by preference, treated as directed in another provisional specification of the same date. The latter was for mixing nitrated alkalies with hydro-carbons, not liquefying at ordinary temperatures, e.g. stearine, paraffin. The hydro-carbons were to be liquefied “by heating before mixing with the nitrated alkalies, which thereby are to be made non-deliquescent.”

It was proved at the trial that:—

The substances mentioned in the patent in question were included in *Sprengel's*, but it was only during the progress of manufacture that one of the substances was a liquid. The efficiency of the “Bellite” was due to each solid particle being coated with the other ingredient during manufacture, which was not indicated in *Sprengel's*. *Jensen's* explosive, made as described by him, could not be fired without a powerful detonator, unless chlorate of potash were an ingredient, and if it were used the manufacture would be too dangerous to be carried on. The nitrate of a hydrocarbon used in Bellite was not included in *Jensen's*, but it had the same “water-proofing” effect. An expert of fifty years' experience considered it would require experiment and invention to produce Bellite, and that sufficient directions for that purpose were not given in *Sprengel's*, *Jensen's*, or the other publications relied on.

It was also proved that it was known that the ingredients of Bellite could be mixed as described, and that a chemist conversant with explosives would suppose *a priori* that Bellite would be an explosive.

The defendants relied on the last-mentioned evidence elicited in cross-examination.

The learned judge held there was no invention, and the injunction asked for was refused.

On appeal to the Court of Appeal:—

Held, that there was ample evidence of sufficient ingenuity, and the injunction was granted.

Per Lord *Herschell* (at p. 479): “The patent is not merely for mixing together the substances he describes. When he mixes them together he treats them in a particular way. He treats them with heat, and he directs your attention to this, that in making your selection you must have regard to the degree of Celsius at which the substances will melt, because the

object is that one of them when heated shall melt, and that the other shall remain a solid, and that then they shall be allowed to cool, and that that which has melted shall surround the solid, so that you get a substance capable of detonation, and yet not too readily to be detonated, and yet one which is what is called waterproof. Where is the suggestion of Sir *F. Abel* that any chemist would have known that? He is not asked the question. Under these circumstances I am really at a loss to see how it can be said that in this case there was no invention. Chemists of the highest experience have said that it would require experiment and research. There is produced to the public, and the method of producing it is described, a new and useful substance, possessing qualities not known by any explosive which the world had been told about before, and it seems to me that the patent cannot be otherwise than supported."

Per *Rigby*, L.J. (at p. 482): "Invention consists in many cases of putting together items of common knowledge which no one else had ever thought of combining—common knowledge that you may mix, common knowledge that you may waterproof; but the essence of this invention appears to be that the inventor has taken a great many things that were common knowledge, and tried which of those items of common knowledge would produce a new and useful result, and he has ascertained that, following the process described by him, you will arrive at the new and useful result which he does arrive at, and I consider that this is undoubtedly invention. I go further, and say that in this particular case it would seem to me to be invention of a somewhat high order."

(The Second Case, 14 R. P. C. 304.)

The defendants thereupon altered their mode of manufacture of their powder, and made it in the following manner. About two per cent. of chloronaphthaline was used as a third ingredient; it was added to the nitrate of ammonia, before the addition of the binitro-benzine. Heat was used, but not above 40° C., so the binitro-benzine was never melted as described in the specification. Complete "waterproofing" was not secured.

On a motion to commit for breach of the injunction the learned judge held that the defendants had not infringed.

The Court of Appeal upheld this decision.

On appeal to the House of Lords:—

Held, that the patent was confined to the substance produced by means of heat as described, and that the claim did not cover what the defendants had done.

Per Lord *Herschell* (at p. 311): "Of course, it very often happens that a patentee claims less than he could have done. I do not say that is the case here: it is not necessary to apply one's mind to that; but a patentee often makes that smaller claim in order to render himself perfectly safe with the smaller claim, when a larger claim would have rendered his patent one open to cavil and question. Of course, very often when he

makes that smaller claim he does not foresee that making it smaller in order to make his patent safe, he has at the same time laid himself open to the danger of having something made which may be more or less equivalent to his invention without his invention being infringed. That is always one of the risks that a patentee runs. If he makes his patent too wide, it may be held bad. If, on the other hand, he makes it too narrow, he may find its value very largely diminished, because the protection it affords is very small. The difficulty always is to hit the medium between these two extreme cases. But nevertheless where a patentee has, as I think he has here, clearly and unequivocally made a smaller and more limited claim . . . it is impossible to construe his claim as extending to something which its language does not naturally include."

1897. WOOD v. RAPHAEL, 14 R. P. C. 496.

Want of Inventive Ingenuity—Alleged Combination.

A patent (No. 8124 of 1893) was granted to *J. J. Wood* for "Improvements in, or connected with, pince-nez or double eye-glasses."

The complete specification described the object of the invention, so to construct pince-nez that the centres of the glasses should be a constant distance apart corresponding with the normal distance apart of the user's eyes, and the supports be adjustable so as to firmly and comfortably fit, no matter on what part of the nose they are placed. The specification continued:—

"According to this invention, I combine with eye-glasses having a rigid or firm bridge and fixed centres, arms mounted at one end upon a hinge or joint, each having a spring in connection with it, adapted to normally press the arms towards the nose; and at the other end, gripping bearers which are hinged by a pivot, or equivalent loose joint or carrying support through which said bearers may move or swivel about on said arms; or, one only of said gripping bearers may be loose upon its joint and free to swivel thereon, the other being fixed, after being fitted or adjusted to the wearer's nose."

The invention will be apparent from Fig. 1,¹ in which "*a* are the glass frames, *b* is a rigid or practically rigid bridge connecting said frames *a* together, and *c* are the glasses; *d* are the rigid or practically rigid arms, and *e* are gripping bearers hinged on the ends of the arms *d*. Each of the arms *d* is hinged at its base to the frames *a*, and is pressed outwards from their frames by springs, one of which, *f*, is shown on the right-hand side of Fig. 1."

The details of the springs and attachments are described, as well as other modifications.

¹ It is unnecessary to give the other diagrams here. The author is indebted to Mr. *Raphael* (defendant's solicitor) for exhibits used in this case.

The first claim was for:—

“The herein described improvement in, or connected with, pince-nez or double eye-glasses consisting of the combination with pince-nez or double eye-glasses the centres of the glasses of which are fixed, of rigid arms, *d*, hinged on the frames or glasses thereof, gripping bearers (or one

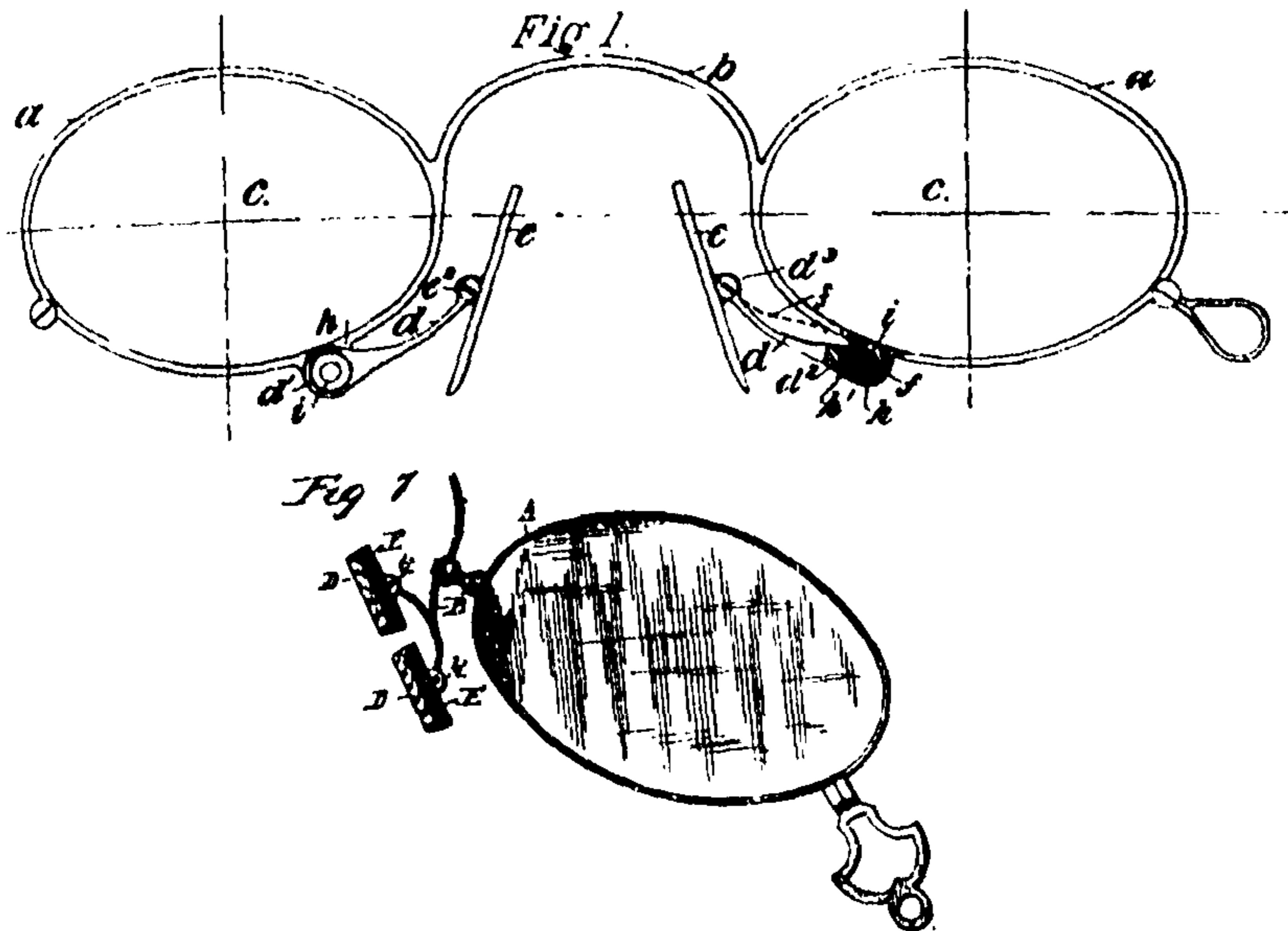


Fig. 1 of Wood's specification (No. 8124 of 1893).
Fig. 7 of Borsch's invention—an alleged anticipation.

gripping bearer), *e*, having oscillatory movement upon same, and springs by which said arms are pressed outwards and the gripping bearers on to the nose of the wearer; operating substantially as and for the purposes set forth.”

The second and third claims were for the combinations as shown in the drawings more specifically.

A patent (No. 4280 of 1890) had previously been granted to the same inventor for similar improvements. In that specification the diagrams showed a rigid attachment of the arm *d* to the frame, instead of the coiled spring *f* of the later patent, the necessary play being secured by the arm *d* being elastic instead of rigid. The placquet was mounted on a hinge at its centre. The second claim was for—

“A pince-nez or double eye-glass wherein the relative positions of the foci—*i.e.* centres—of the glasses are constant or fixed, and the—*i.e.* hinged—gripping bearers are adapted to be moved or adjusted laterally, and pressed on to the wearer's nose by springs, substantially as set forth.”

This was an action for infringement of both these patents.

It was proved at the trial that the advantage of keeping the centres at a constant distance was well known; so also were placquets hinged on to the focuses without intervening springs in pince-nez, in which spring-bridges were used helical and arched; so also were placquets rigidly attached to spring-arms in pince-nez with rigid bridges. Various forms of such contrivances were produced. Amongst other alleged anticipations, *Borsch's* American specification (1889) showed pince-nez in which the placquets were doubled on each side, in which the following passage occurs: "In Fig. 7 there is another form of cross-bar, which is provided with ears, *b'*, in which the nose-pieces are pivoted. I do not intend to limit myself, except where especially claimed, either to spring, bendable, or rigid metal for the parts carrying the nose-pieces, as either may be used at the will of the manufacturer. In some cases the wearer may prefer that these parts be of spring metal, while others may prefer that the metal may be capable of being bent to suit the nose, and depend upon the bridge for the spring." A rigid bridge was not mentioned, and the diagrams showed an arched one. The essence of the invention was the double placquet.

It was contended for the plaintiff that the inventions consisted in the combination of the three elements of rigid bridge, pivoted placquets, and spring-arms.

Held, that there was no invention to support a patent, as the alleged combination only gave to a well-known article an additional well-known feature (13 R. P. C. 730).

Romer, J. (at p. 735): "In my opinion there was nothing novel in the application of that extra feature, or in the purpose for which it was applied. There was no difficulty in adding that additional feature, if so desired; certainly no invention was required to add it. In fact the evidence shows that workmen in the ordinary course of their work, before the date of the plaintiff's patent, have applied pivoted placquets to pince-nez, both with fixed rims and elastic rims. . . . In the case before me I am satisfied that there is no real invention to support a patent—no real step by way of invention. In my opinion to uphold such a patent as this would unduly hamper the trade of this country. We should have clouds of such patents, and no workman would dare to make the simplest addition in perfectly well-known articles"¹

On appeal the Court of Appeal upheld the learned judge's decision.

Per *Lindley* and *Rigby, L.JJ.*: *Borsch's* device cannot be confined to an elastic bridge.

Lindley, L.J.: "So far as the invention goes, so far as that idea goes, the thing unquestionably was incorporated in and published by *Borsch*. . . . After *Borsch's* specification to say that there could be a patent for the combination of a rigid bridge, with springs carrying a placquet which was hinged, appears to me to be going a great deal too far."

¹ It appears that from the point of view adopted in the older cases there was no "manufacture" at all. See *ante*, pp. 30-33, 35.

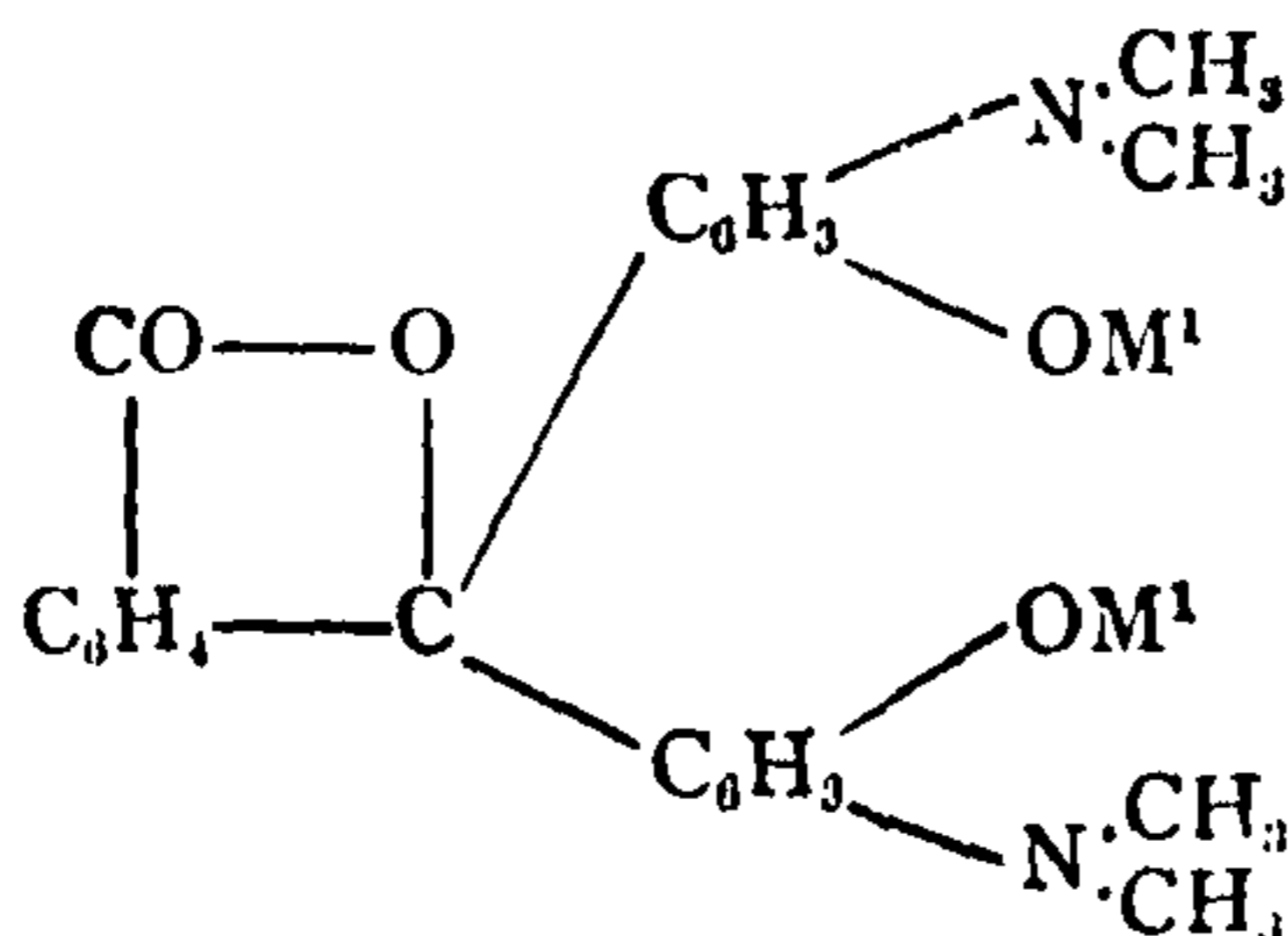
1897. MONNET v. BECK, 14 R. P. C. 777.

Construction—Erroneous Theory.

In 1892 a patent (No. 4677) was granted to *P. Monnet* for an invention of "the manufacture of new colouring matter or dyes."

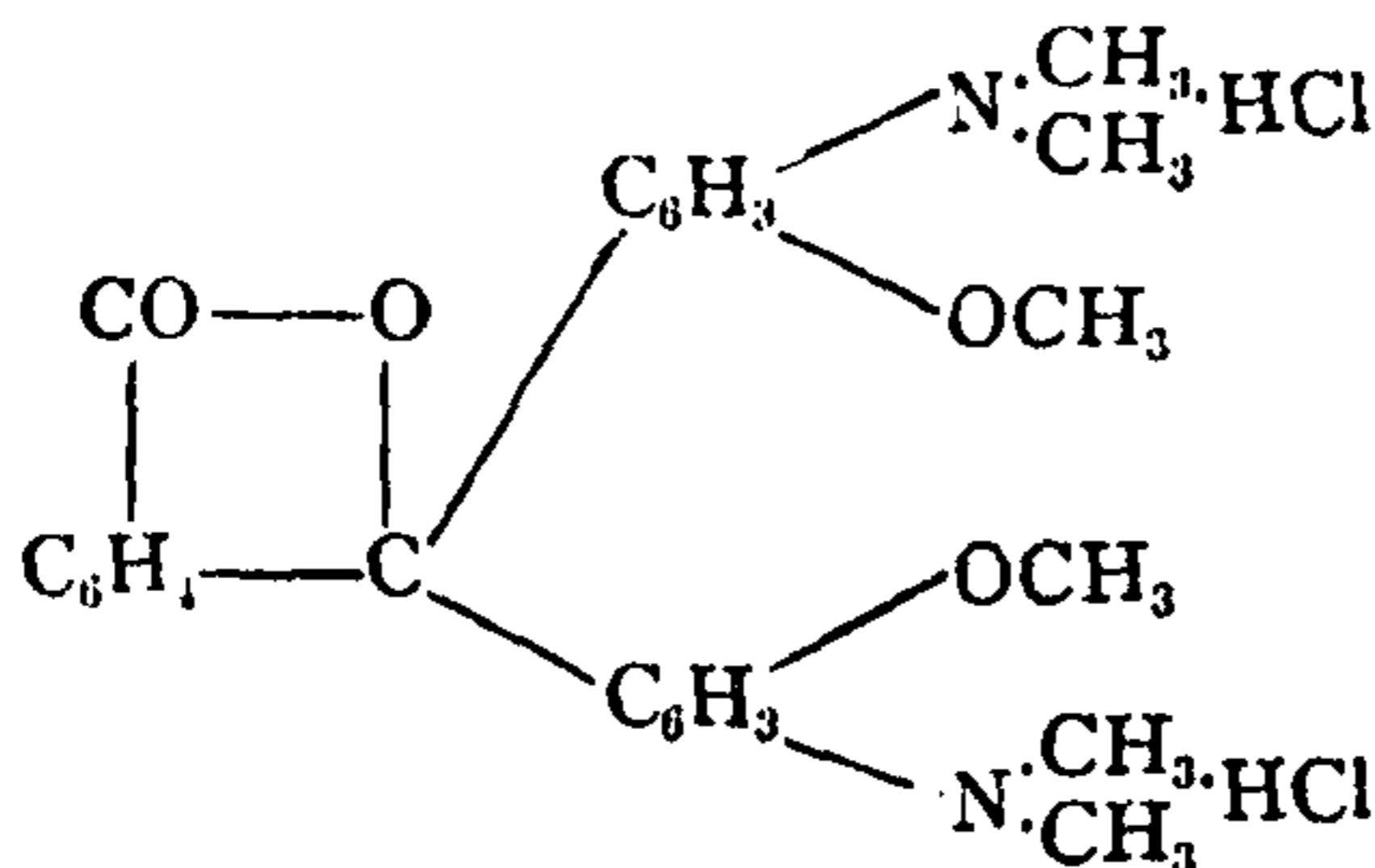
The specification commenced as follows:—

"The object of this invention is to manufacture new colouring matters, or dyes, which may appropriately be called 'aniselines,' from the bodies known as 'rhodamines.' These rhodamines can be obtained by several processes, the general formul. of which is:—

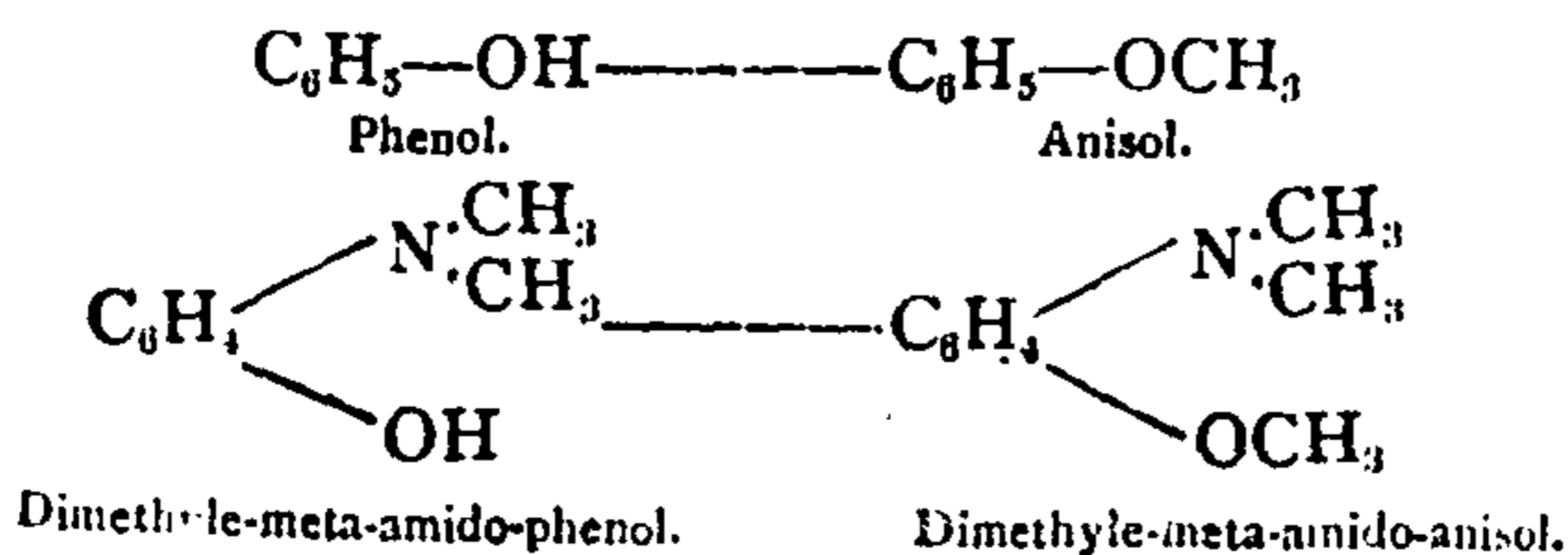


"(M¹ designates a monovalent metal.)

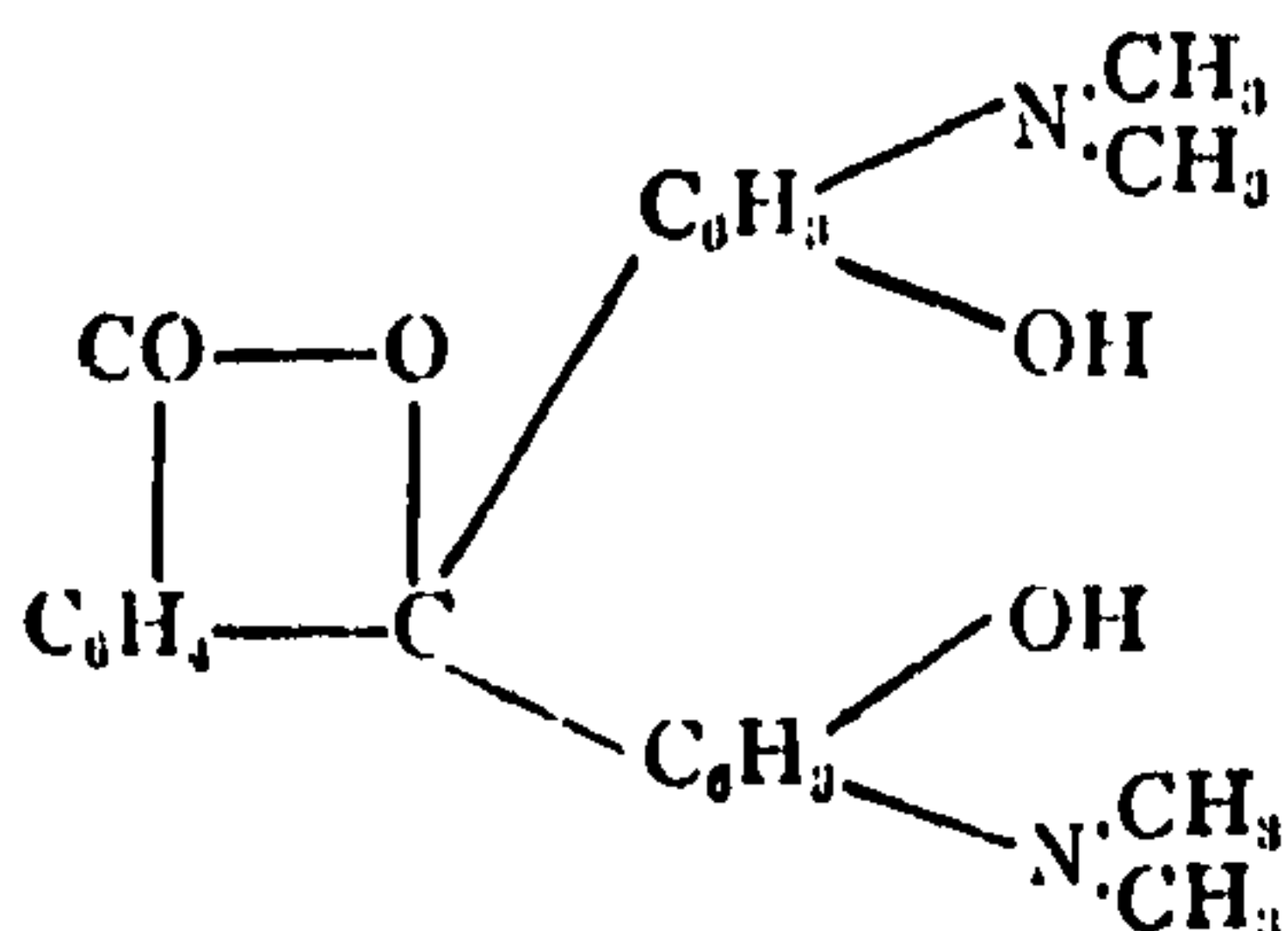
"It is by substituting for this metal a simple alcoholic radical such as ethyle (C₂H₅), methyle (CH₃), amyle (C₅H₁₁), &c., or a compound alcoholic radical such as benzyle (C₆H₅—CH₂), that I have succeeded in forming my new colouring matters or dyes, the constitution of which is:—



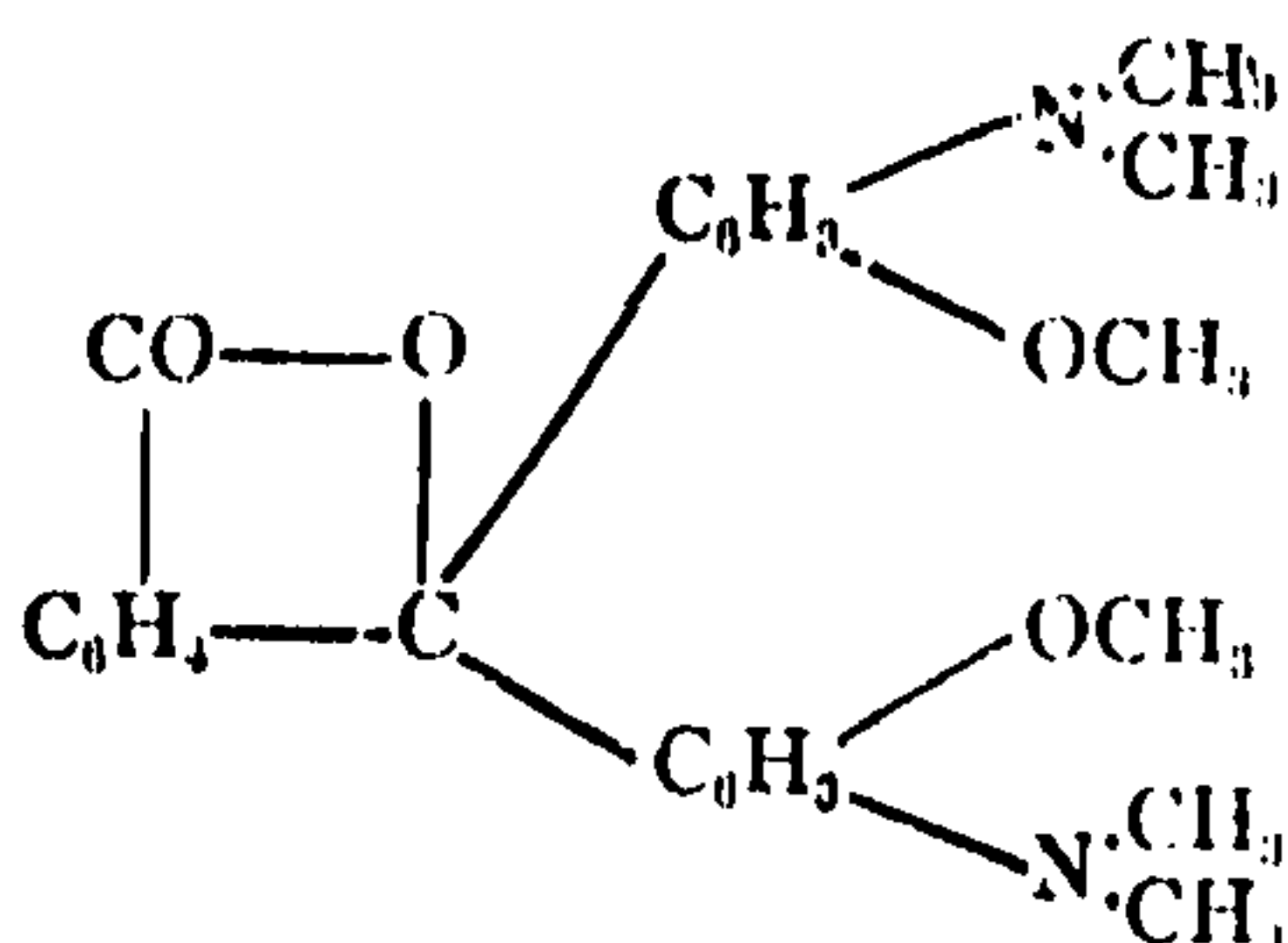
"I give these colouring matters or dyes the name 'aniselines,' on account of their analogy with anisols which are phenols in which the H of the hydroxyle is replaced by the alcoholic radical CH₃, thus:—



"The dimethyle-meta-amido-phenol enters into the constitution of the rhodamines and the dimethyle-meta-amido-anisol into that of the anisolines.



Rhodamine (base).



Anisoline (base).

"EXAMPLE OF THE PREPARATION OF THE POTASSIUM SALT
OF A RHODAMINE.

"The hydrochlorate of dimethyle-meta-amido-phenol-phthaleine is transformed into a potassium salt" in the following manner:—¹

"Dissolve 10 kilos. of hydrochlorate of dimethyle-meta-amido-phenol-phthaleine in 50 litres of boiling water, pour this solution into another boiling solution of 5 kilos. of caustic potass dissolved in 20 litres of water. The potassium salt is immediately precipitated in the crystalline state, more soluble cold than hot; it is separated by filtration of its boiling solution, drained and dried. About 10 kilos. of potassium salt is obtained.

"TRANSFORMATION INTO ANISOLINE.

"Six kilos. of potassium salt of dimethyle-meta-amido-phenol-phthaleine of meta-amido-cresol-phthaleine dimethylated or diethylated, &c., 20 kilos. of ethylic alcohol at 93° C., and 3 kilos. of chloride of ethyle, or its equivalent of chloride of methyle, or of a bromide or an iodide, or the equivalent of chloride of benzyle, are heated under pressure for four hours at a temperature exceeding 100° C., preferably at about 120° C. After cooling, the product withdrawn from the autoclave is diluted with water, distilled to drive off the excess of chloride and to extract the alcohol; then there is added the amount of hydrochloric acid necessary to form the salt of anisoline, after which it is precipitated by sea-salt.

"The anisoline is dissolved in pure water and left to crystallize, or precipitated by sea-salt."

Further information was given as to the action of iodides, bromides, and chlorides under the same conditions. It was also pointed out that dyes might be also obtained by the above process from the condensation

¹ The formula for the salt was here inserted. It is the same as that of the rhodamine base above given, with the substitution of K for H in both the hydroxyl radicles.

products of succinic, suberic, &c., acids with alkylized amido-phenols or amido-cresols.

The claims were :—

“(1) The method or process of obtaining new colouring matters or dyes, hereinbefore called ‘anisolines,’ by substituting for the metal of rhodamine salts a simple alcoholic radical such as methyle, ethyle, or amyle, or a compound alcoholic radical such as benzyle, as hereinbefore described.

“(2) The carrying out of the method or process referred to in claim 1 by the action of a simple or compound alcoholic chloride, bromide, or iodide on a rhodamine salt, for example a potassium rhodamine salt in presence of ethylic alcohol, the whole being heated under pressure for several hours at a temperature exceeding 100° centigrade, the product of the reaction being diluted with water, then distilled to separate the alcohol and drive off the excess chloride of ethyle, the hot solution having added to it hydrochloric acid, whereby hydrochlorate of anisoline is formed, which is precipitated by sea-salt, all as hereinbefore set forth.

“(3) As new products, the colouring matters or dyes hereinbefore called ‘anisolines,’ obtained substantially in the manner set forth.”

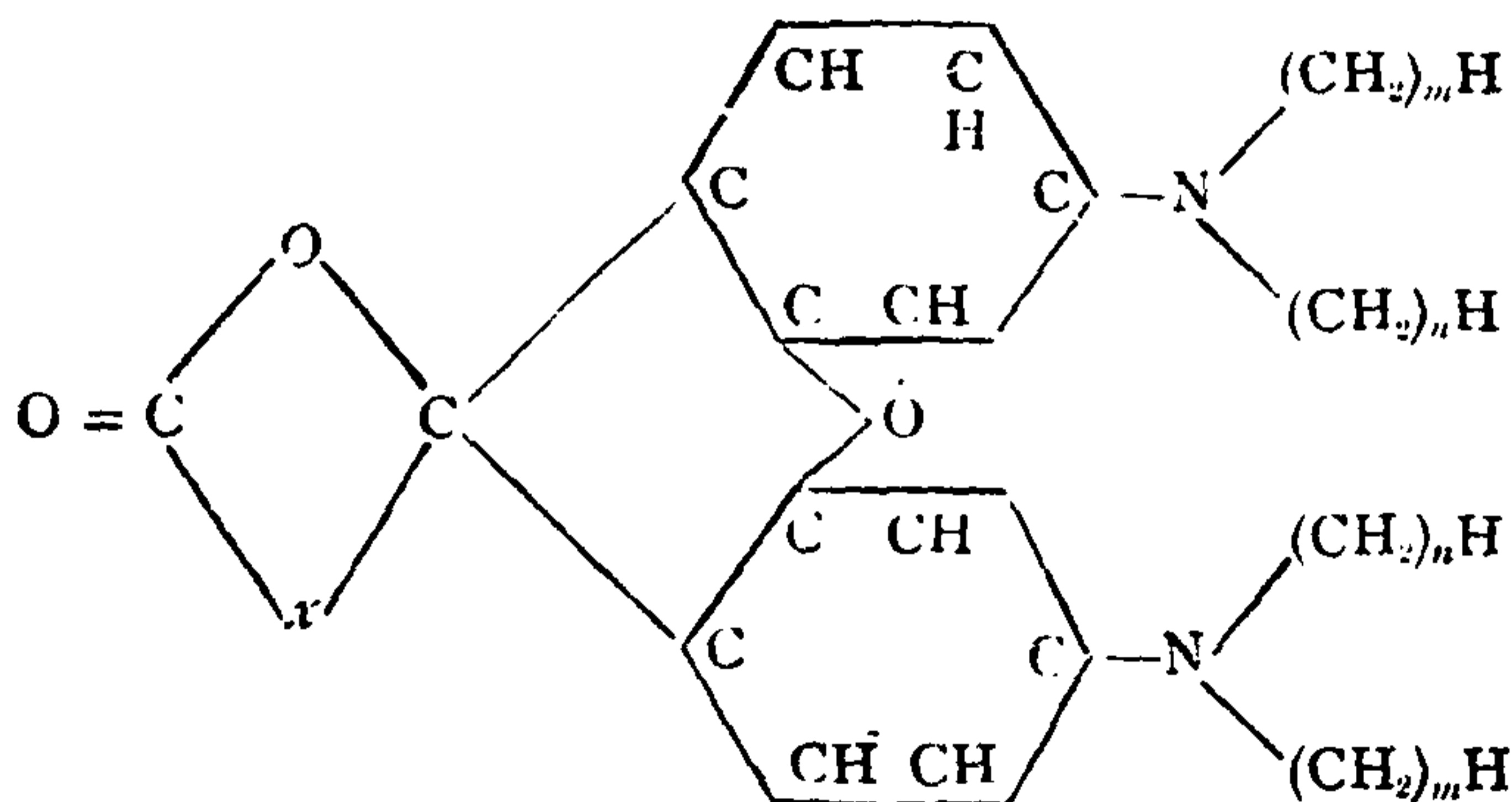
This was an action for an alleged infringement of the above patent.

The usual defences of insufficiency, want of novelty, want of utility, were raised, besides that of non-infringement.¹

The alleged infringement consisted in the carrying out of the process described in the specification of the following case, *Badische Anilin, &c. v. La Société Chimique des Usines du Rhone* (post, p. 405).

The alleged invention and alleged infringement were both advances or improvements based on the manufacture of rhodamines as patented in 1887 (No. 15,374).

The general formula² of a rhodamine is :—

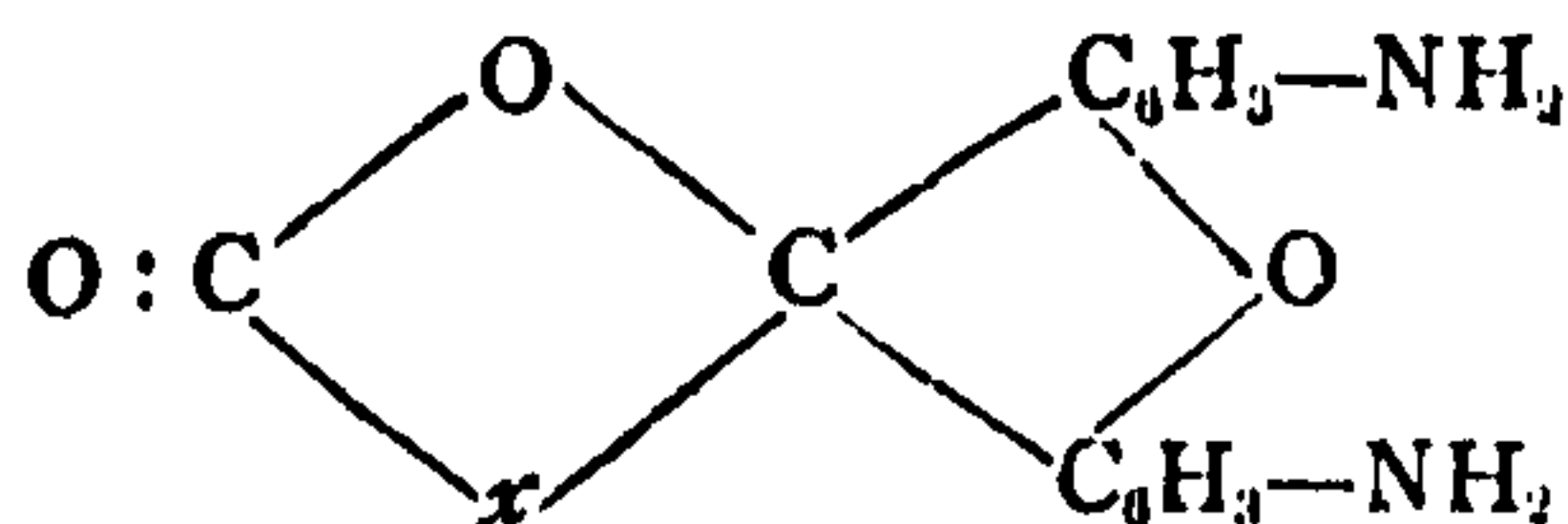


formed by condensation of two molecules of meta-amido-phenol or its alkyl derivatives with an organic acid. In this formula m and n are

¹ Only that part of the case is summarized here which is necessary to understand the main issue of validity.

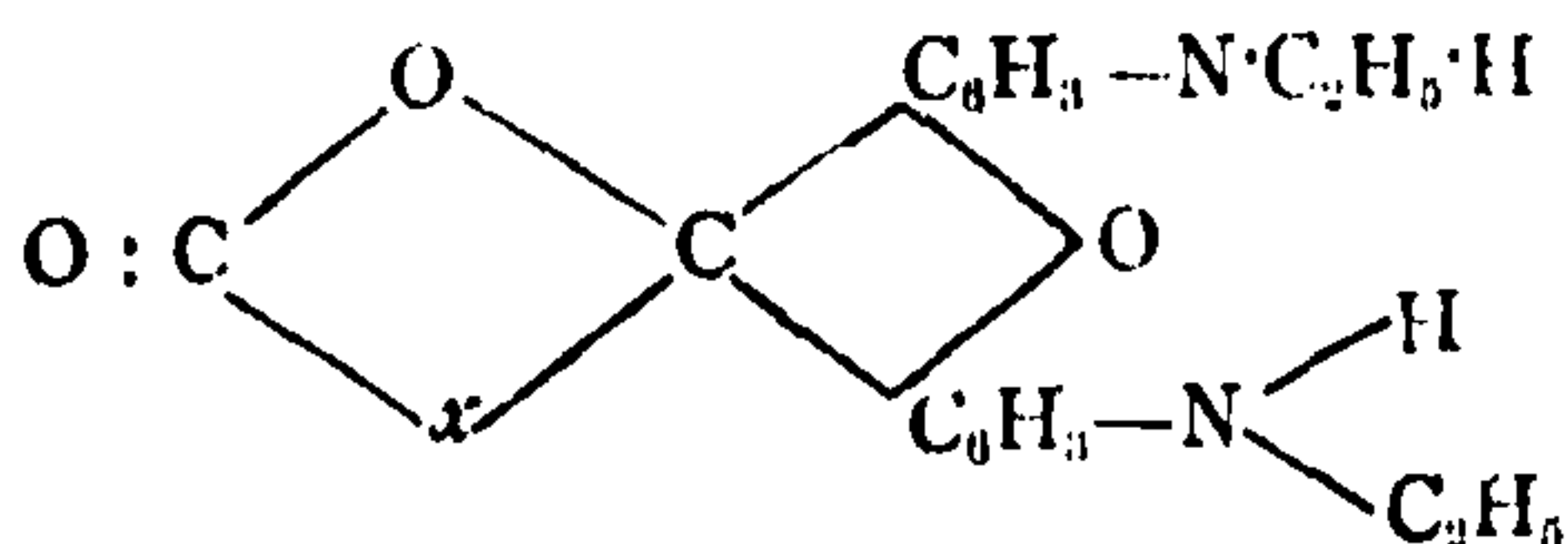
² The letters inside the hexagons denote the original atoms in the benzene rings.

indeterminate (0, or 1, 2, 3, &c.), and (x) depends on the particular acid used. *E.g.* if succinic acid [$C_2H_4 : (COOH)_2$], then x represents (C_2H_4), if phthalic acid [$C_6H_4 : (COOH)_2$] be employed, then x represents (C_6H_4). If both m and n be zero, then the rhodamine is of its simplest form—



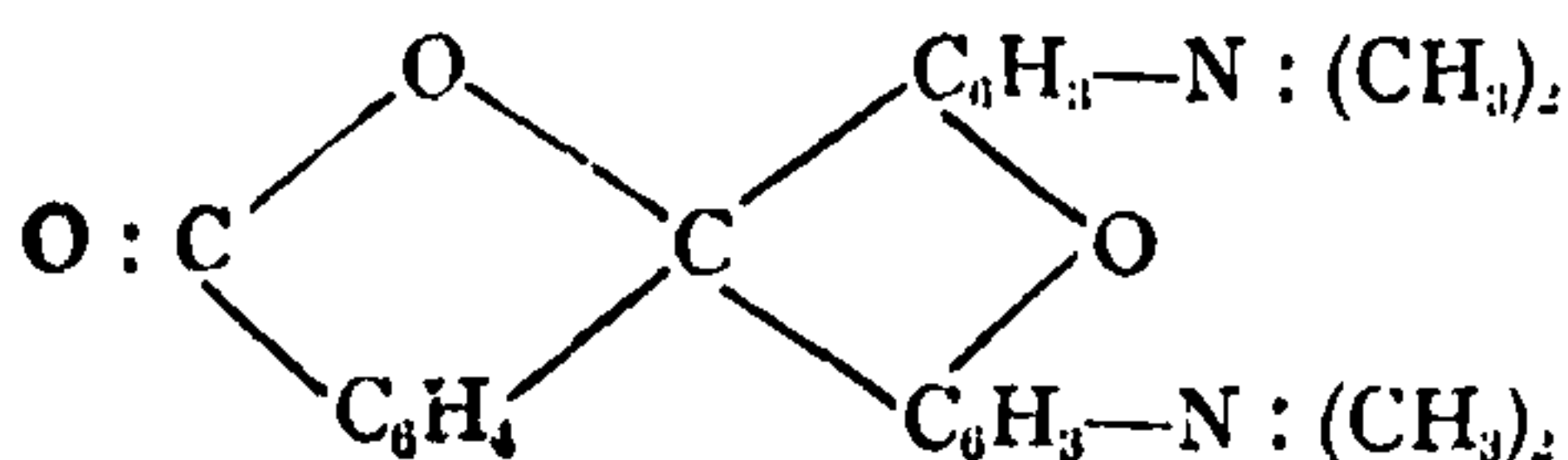
and is an "unalkylated" rhodamine.

If n only be zero, then the rhodamine is "dialkylated." Thus:—



represents a diethyl-rhodamine ($m = 2$ $n = 0$).

Where both the atoms of H in the amidogen are replaced by alkyl groups the rhodamine is "tetra-alkylated;" *e.g.* dimethyl-meta-amido-phenolphthaleine is formed by the action of phthalic acid and dimethylmeta-amido-phenol, and is represented by the formula—¹



It was admitted that the theory underlying *Monnet's* specification was incorrect; that no such metallic salt as therein described was, or could be formed; that instead of such salt the original base only was used in "transformation into anisoline." The defendant's process and patent was based on the discovery of the real nature of the reaction involved, *viz.* that the etherification consisted in the introduction of the new alkyl groups into that part of the molecule which came from the condensation of the original organic acid (*i.e.* the second O in the formula) instead of their introduction into the "condensation link" of the phenol groups.

It was *held* at the trial that the first and second claims included a claim for the potassium salt; that the third claim (taking the whole document into consideration) was for the product produced as described,² and not by any other process; and that the patent was invalid.

¹ *Monnet's* specification gives this formula without condensation, in support of his theory of the etherification taking place in the phenol groups.

² One of the reasons for this conclusion was the reference in the specification, to "anisoline," the production of anisol from phenol involving the production of a metallic salt. "Anisoline" is classified by *Schultz & Julius* as identical with "Rhodamine 6 G," on next page.

Per *Wills*, J. (at p. 847): "It seems to me you may put it in two ways, either of which is fatal to the patent. It may be said, 'You are claiming an impossible process,' which cannot be the subject of a patent, or if it be urged that *Monnet's* specification, apart from the claim, does not really describe a process depending upon a metallic salt, then, 'You are claiming a process which is not the one you have described,' which is equally fatal."

1897. BADISCHE ANILIN UND SODA FABRIK v. LA SOCIÉTÉ CHIMIQUE DES USINES DU RHONE AND WILSON, 14 R. F. C. 875; 15 R. P. C. 359

Construction—Alleged Prior Publication—Insufficiency—Inventor's Best Knowledge.

A patent (No. 9633 of 1892) was granted to *J. Y. Johnson* for "the manufacture and production of new basic dye-stuffs."¹

The complete specification commenced as follows:—

"My foreign correspondents have discovered that a new basic rhodamine dye can be obtained by treating symmetrical di-ethyl rhodamine of the phthalic acid series in a manner such as to cause a further combination thereof with ethyl. This dye (which may be called 'di-ethyl-rhodamine-ethyl-ester') can be used for dyeing silk and wool, but appears to be best suited for dyeing vegetable fibre when mordanted with tannin. To such material it imparts red shades of colour which cannot be equalled in beauty and fastness, by the use of any hitherto known dye.

"The invention can be applied to other di-alkyl-rhodamines of the phthalic and succinic acid series which yield analogous results, and in every case instead of causing a further combination with ethyl, so as to obtain an ethyl ester, other alkyl groups may be introduced whether mono- or poly-valent so as to obtain other esters.

"Having stated the nature of the invention, I will further illustrate it by giving the following examples, but I premise that these can be varied considerably in their details, and that they are merely typical, illustrating the application of the invention to particular cases. The parts are by weight."

The first example given was a process consisting in passing dry HCl gas through a solution of di-ethyl-rhodamine in ethyl- or methyl-alcohol until saturated; then preferably heating, and continuing the process in the boiling solution until complete. The separation of the new dye was also described.

"Example 2. Heat about one part of di-ethyl-rhodamine-hydrochlorate, dissolved in about four parts of ethyl- or methyl-alcohol, in an autoclave for about ten hours at a temperature of about one hundred and fifty degrees centigrade, and work up as described in Example 1.

¹ Known as "Rhodamine 6 G." This specification and case can be better understood by a previous perusal of *Monnet v. Beck* above. The main issue alone is noted.

" Example 3. Heat about forty parts of di-ethyl-rhodamine base with about two hundred parts of methyl- or ethyl-alcohol and about fifty parts of methyl or ethyl-chloride. The operation is conducted in an autoclave which is heated in a boiling saturated salt solution. Continue heating for about eight hours. Distil with steam, filter the aqueous solution of the residue while hot. Unchanged di-ethyl-rhodamine base remains on the filter. On cooling the new dye separates out from the solution in the crystalline form. A more complete separation can be obtained by adding hydrochloric acid, and, if necessary, common salt. Filter, press, and dry at a low temperature."

Statements then followed showing how other di-alkyl-rhodamines could be used; also other acids for hydrochloric and other alcohols as solvents, and analogous halogen compounds for the chlorides in the third example. The properties of the dyes were mentioned.

The claims were:—

"(1) The manufacture of new basic dye-stuffs by treating di-alkyl-rhodamines of the phthalic or succinic acid series so as to cause a further combination with alkyl, substantially as hereinbefore described.

"(2) The manufacture of a new basic dye-stuff by treating di-alkyl-rhodamine of the phthalic acid series in an alcoholic solution with hydrochloric acid gas, substantially as hereinbefore described under Example 1.

"(3) The manufacture of a new basic dye-stuff by heating a salt of a di-alkyl-rhodamine of the phthalic acid series with an alcohol under pressure, substantially as hereinbefore described under Example 2.

"(4) The manufacture of a new basic dye-stuff by heating a di-alkyl-rhodamine of the phthalic acid series in the form of free base in alcoholic solution with an alkyl-halogen compound, substantially as hereinbefore described under Example 3.

"(5) As a new product, the new basic dye-stuff hereinbefore described, being di-ethyl-rhodamine-alkyl-esters, such, for example, as can be obtained by treating di-ethyl-rhodamine so as to cause a further combination with alkyl in particular with ethyl or methyl."

This was an action for infringement of the above patent. The usual defences were raised, but not that of "insufficiency." *Monnet's* process was alleged to anticipate the third example. During the trial it was discovered that the process described in the second example failed unless an iron autoclave were used. HCl was given off in the process, and interfered with the reaction. But by using an iron autoclave (as the inventor, Dr. *Bernthsen* had happened to do), the iron itself entered into the combination, and by destroying the free HCl, made the production of a comparatively pure dye possible.

It was proved that autoclaves made solely of iron were the cheapest and most common, but that the more expensive ones were enamelled throughout, and were used in manufactories devoted to making dyes when strong acids were anticipated.

At the trial the learned judge gave leave to amend the pleadings by

adding an objection as to insufficiency of the specification. It was proved that Dr. *Bernthsen's* discovery was that rhodamine acted as an acid (see *ante*, p. 404).

Held, at the trial, that the fifth claim (no foreign substances being mentioned) was for dyes in a state of substantial purity; that *Monnet's* specification, pointing away from the use of the unconverted rhodamine base (although he in fact used it), did not anticipate the third process; but that the patent was invalid owing to the insufficiency of the directions as to the autoclave.

On appeal to the Court of Appeal.

Held, that the specification was insufficient, and that since in the Court below the plaintiffs agreed that the claim was for a pure product, they could not contend on appeal that it was for the production of an impure dye.

Per *Smith*, L.J. (at p. 366): "In my judgment it is my duty to read the plain direction given in the specification, which is 'to heat in an autoclave,' which are plain and simple English words, and require no scientific knowledge to understand as soon as it is ascertained what an autoclave is. In my judgment it is clear that the words 'to heat in an autoclave' mean 'to heat in any autoclave'—of course of sufficient strength, and which is used for this class of dye-making. There cannot, in my opinion, be found in the words 'to heat in an autoclave' a direction to heat in an autoclave composed of iron and no other . . . It appears to me plain that if a dye-chemist, working by this specification, were to take for his work the more expensive, and, presumably, the better, class of autoclave, that is, the autoclave enamelled throughout within, he would never go back to the cheaper sort, namely, an autoclave made solely of iron, for his autoclave being of the best description, it would never occur to him that his autoclave was at fault when he could not get the desired result, which he clearly would not get with an enamelled autoclave, and that the commoner and cheaper autoclave was the one which alone could be used with effect."

1897. BROOKS v. LAMPLUGH, 15 R. P. C. 33.

Invention—Extent of Claim—Disconformity.

[This was an action on three patents. Two of these only are discussed in these pages.]

A patent (No. 15424 of 1890) was granted to *J. B. Brooks* for "Improvements in velocipede saddles."

The complete specification commenced as follows:—

"This invention relates in the first part to the base-framings, or supporting brackets, of cycle-saddles, and in the second part to the bosses connected with the said base-framings, and where through the L-bar for supporting the saddle, or connecting a saddle to a machine, passes.

“The primary object of my said invention, in connection with the framing part, is to obtain a maximum strength with lightness, and this I accomplish by making the said base-framing, or base-bracket part, trussed, or of the figure of a double-sided beam, trussed, or tied together in manner that the same is capable of resisting considerable tensile strain.

“In carrying out this part of my invention, I take two triangular-shaped frames, composed of rods, whose ends are respectively connected or secured to cross-ends, upon which the lower parts of the supporting springs of the saddle-seat rest. The triangular sides are directed nearly parallel one with another, and separated to an extent of about the breadth of the boss or L-bar bracket, which is secured at the middle of the said frames, by snug extensions, directed from the outside of the boss, and wherethrough the middle parts of the whole of the rods, which are preferably four in number, pass.

“Thus the boss is suspended as it were, between and at the middle of the framing-rods, which pass through radiating lugs, directed from the outside or periphery of the boss.

“By constructing the base-framing or bracket of rods tied together after the manner of triangles, a frame in equilibrium is thereby produced, as no change of figure to the sides can take place, unless by rupture or bursting.

“Both sides, and if necessary, the top, are longitudinally pierced or slotted, which gives unto the bracket an open and triangular construction.

“To give a tilting adjustment to the saddle-seat, the middle of the top side of the base-plate, or bracket, may be concaved, upon which the boss is adjustable.

“Fig. 1 of the accompanying drawings represent partly in elevation and partly in vertical section, a cycle-saddle, provided with base-framing, constructed and arranged according to my invention.

“The said framing, which is also provided at its middle with an L-bar boss, also constructed according to my invention, is of a skeleton form, and alike unto a trussed beam or bracket, with triangular sides.

“Fig. 2 represents an underside plan of the said base-framing, with the supporting springs of the saddle-seat. This view shows the disposition of the sides, one with each other, and how the same are united and stayed together by cross-ends. It also shows the connection which the L-bar boss has with the framed rods.

“Fig. 3 is a transverse section of the said base-framing through the L-pin, outside the eyes, wherethrough the tied-together rods constituting the framing pass.”

Then followed a detailed description of the drawings here given, and of others showing other forms of the invention.

The first claim was :—

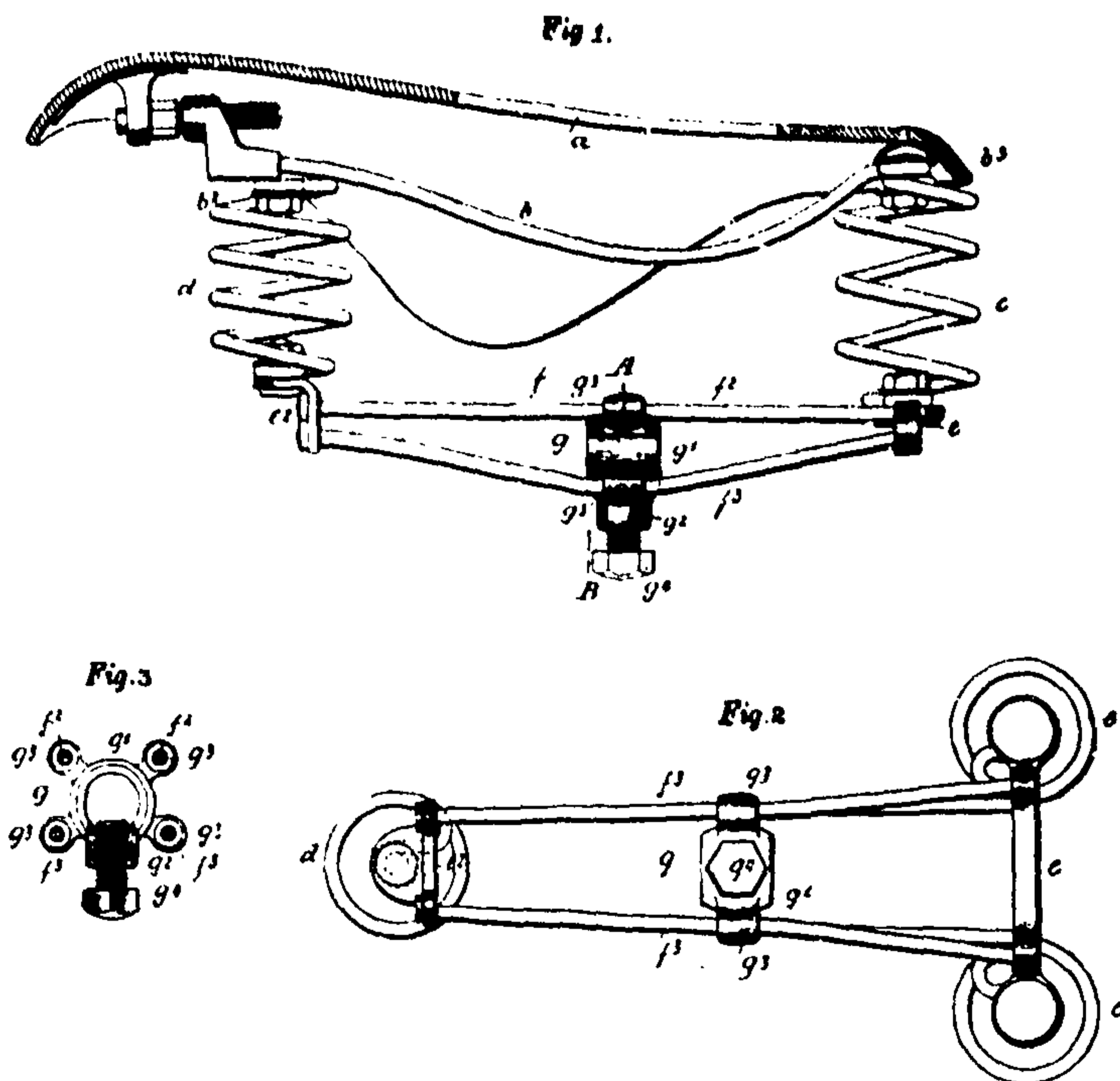
“First:—In cycle-saddles, making or forming the base-framings of them, of the figure of a trussed beam, that is to say, a base-framing consisting of triangular open-shaped sides (made from wire or sheet metal) separated from each other by a divisional space, and united at their ends by bosses,

cross-bars, or other connections, hence a trussed supporting framing, with the members composing the sides, separated from each other at a greater distance at their middles than at their ends, substantially as described and set forth."

There were five other claims of a more detailed nature.

This was an action for infringement of this, the following, and a third patent.¹

The chief objections to this patent were that there was no subject-matter



Diagrams from Brooks's specification (No. 15424 of 1890).

for a patent, the "trussed" beam being old, and used in an old manner, although for a new purpose; and also that the first claim was too wide.

The learned judge at the trial held that this was the application of the old principle of the trussed beam in a way that involved sufficient ingenuity to support the patent.

On appeal to the Court of Appeal:—

Held, that the claim was confined to the methods described in the specification, and did not extend to a claim for the use of trussed beams in cycle saddles generally, and that the patent was valid.

¹ Only so much is here alluded to as bears on the main issue as regards the first and second patents.

Smith, L.J. (at pp. 47, 48), alluded to the objection to the first claim, and the previous knowledge as to trussed beams, *i.e.* the upper member was in tension, and the lower (as struts) in compression. "It by no means follows that a patent is bad because an old well-known mechanical contrivance has been brought into use by a patentee. If it were so, very few patents at the present day could be upheld. We think the law upon this subject may be stated thus: Although there cannot be a valid patent for a well-known mechanical contrivance merely, when it is applied in a manner or to a purpose which is not quite the same, but is analogous to the manner, or the purpose, in which it has hitherto been notoriously applied,¹ yet there may be a valid patent, although well-known mechanical contrivances are used, if they are applied in a manner or to a purpose to which they have not been hitherto applied, and which new application results in a new and useful article not theretofore attained. In the first case there is no room for invention; that is, there is what is called no subject-matter. In the second there is room for invention; and if the Court comes to the conclusion that there has been invention in what has been done, then there is good subject-matter, and it is no answer to say that an old well-known mechanical contrivance has been used in bringing about the novel and useful result attained." His Lordship referred also to *Longbottom v. Shaw* (*ante*, p. 332) and continued—

"It appears to us that in the present case there is good evidence that a long-existing defect had been felt by the public, and a desire, if not a demand, for its remedy for a long time had existed, and that mechanics had been at work to remedy these defects—namely, the numerous patents from time to time taken out for the purpose—and that the plaintiff first produced a real remedy of these defects by his patent of 1890, and that the matter was not obvious before 1890. We do not doubt that this constitutes good evidence of invention."²

Alluding to the first claim (at p. 49), his lordship said: "The defendant argues that this claim is bad, because it claims for the use of a trussed beam in general used anyhow in cycle-saddles, and not the use of a trussed beam in any particular way therein; and that, as a trussed beam is unquestionably old, the first claim is bad. If this were the true reading of this first claim, we argue that it would be bad, but we do not so read it, for, in our judgment, the words at the end of the claim, 'substantially as described and set forth,' apply to the whole claim, and limit the user of the trussed beam to the manner described in the specification."

The second patent sued upon (No. 22608 of 1892) was also granted to *J. B. Brooks* for "improvements in cycle-saddles."

A fairly full description of these improvements was given in the

¹ His lordship referred to *Harwood v. G. N. Ry. Co.*, *ante*, p. 204, and *Morgan v. Windover*, *ante*, p. 323.

² This comes back to the original test as to patentable invention, *viz.* the position of those in the trade. An invention is not patentable if it be so obvious as to unduly hamper persons in the exercise of their skill and knowledge. See *ante*, pp. 35, 37.

provisional specification. The attachment of the saddle-base to the pillar was thus described:—¹

“In the fittings part of my invention—to wit the means of connecting the saddle to a vertical pillar, or an upright carried by the framing of a machine—I proceed in the manner following:—

“I take a divided clip, or a clip made of two sectional parts, with the wings or branched extensions upon one side of them pierced horizontally and through which a pivot-pin passes. The wings at the other side have formed through them radial slots, struck from the centre of the before-named pivot-pin, upon which the said clip turns as a centre of motion.

“Directed horizontally through the radial slots is a cross-pin, alike unto the before-named pivot-pin, and which said cross and pivot pins are slotted at their ends, wherein concave-faced bearing-blocks take, and with the said concaves presented outwards. Fitted within the ends of the slots are also closure or cottar washers with concaved or other seats presented innermost.

“Taking upon the extreme ends of the said cross and pivot pins come screw-nuts, and between the bearing-blocks and the closure or cottar washers come the framing-rods, and by the screwing up of the nuts the said framing-rods, which lie within the slots cut within the pins, and between the bearing-blocks or washers, are rigidly affixed in position, and at the same time, the sectional clamp is closed around the upright pillar, and the saddle secured in its desired position, which is adjustable vertically for tilting by the cross-pin taking through the radial slots, whilst the whole is adjustable horizontally on the screwing-up parts being loosened.

“Thus, tilting and horizontal adjustments are made by adjusting and sliding the parts into such positions as may be required upon the frame-rods. This done, then screw up the parts, when the necessary affixing of both saddle to its pillar and framing to the connection-clip is performed.”

The complete specification gave a full description of the details of the invention with diagrams. After describing the invention shown in Figs. 4, 5, 6, and 7 in detail, an alleged modification was thus introduced:—

“In the modified forms of clip comprehended under Figs. 8, 9, and 19, i^{14} is a loop or ring body part, with opposite and screwed trunnion-like ends or pins, i^3 , and with opposite and horizontal side-gaps or middle clearances, i^{15} , extending on both sides from trunnion to trunnion, or nearly so, and embraced by sectional or compound and adjustable clip parts, i^1 , i^2 , taking upon the body part of the said ring-clip i^{14} , and also having end clearances, i^{16} , wherethrough the trunnion ends and also the adjacent portions of the loop i^{14} extend, and through the gaps i^{15} adjacent to the said trunnions,

¹ Only a portion of the provisional is here given. The references to the diagrams of the complete are here inserted merely to facilitate the reader. There were no diagrams with the provisional specification. A part of Fig. 1 is given to aid in illustrating Fig. 4. Fig. 4 shows a vertical section, the saddle being tilted by the clip being raised or lowered on the right, the left pin being the fulcrum. Fig. 5 shows a horizontal section through A B of Fig. 4; the frame-rods f , f passing through the slotted pins, thus allowing of horizontal adjustment. Fig. 6 is a vertical section along C D of Fig. 5, showing the frame-rods f screwed into position. Fig. 7 shows the slotted pin by which this is effected.

Fig. 1.

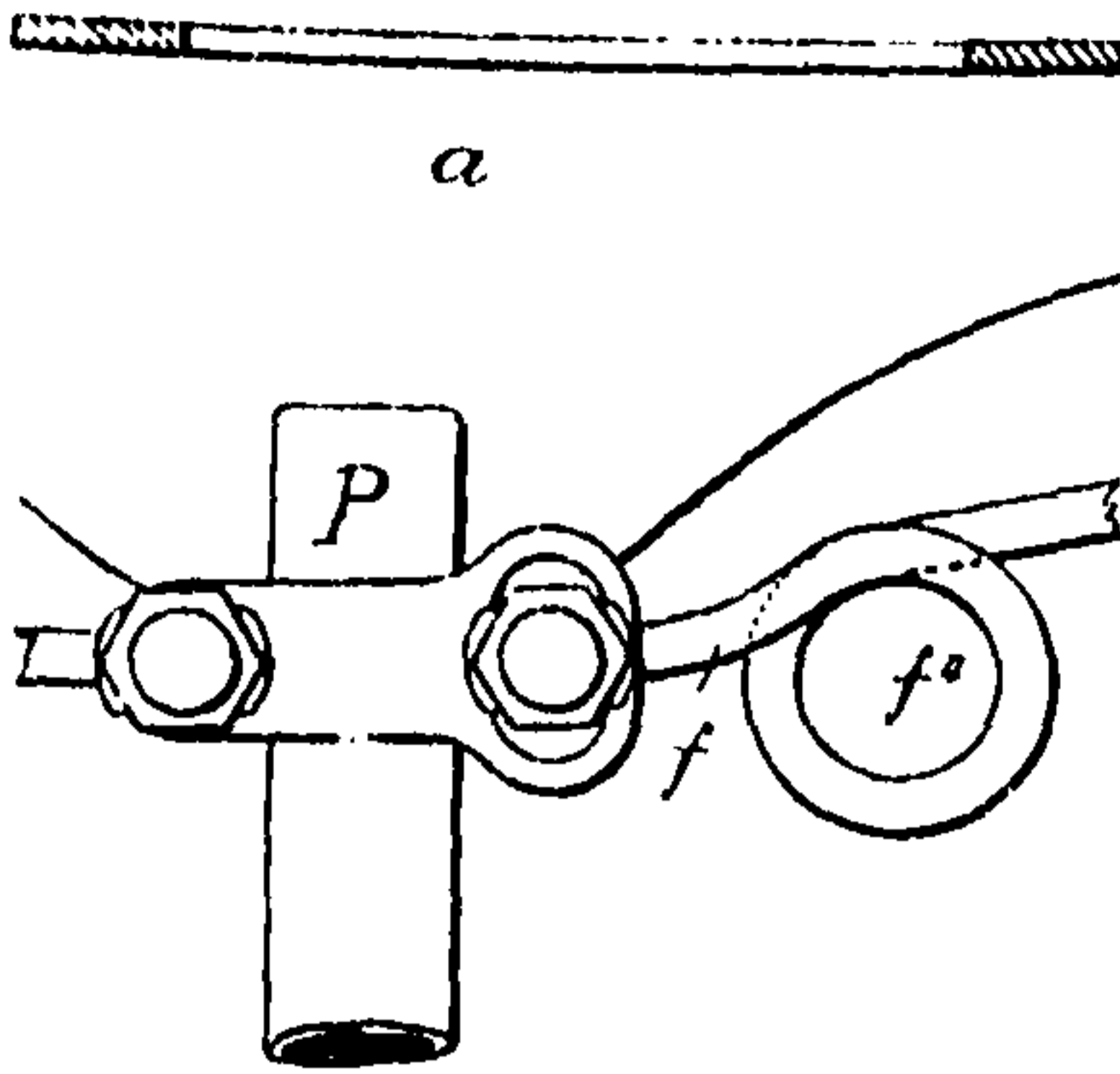


Fig. 4.

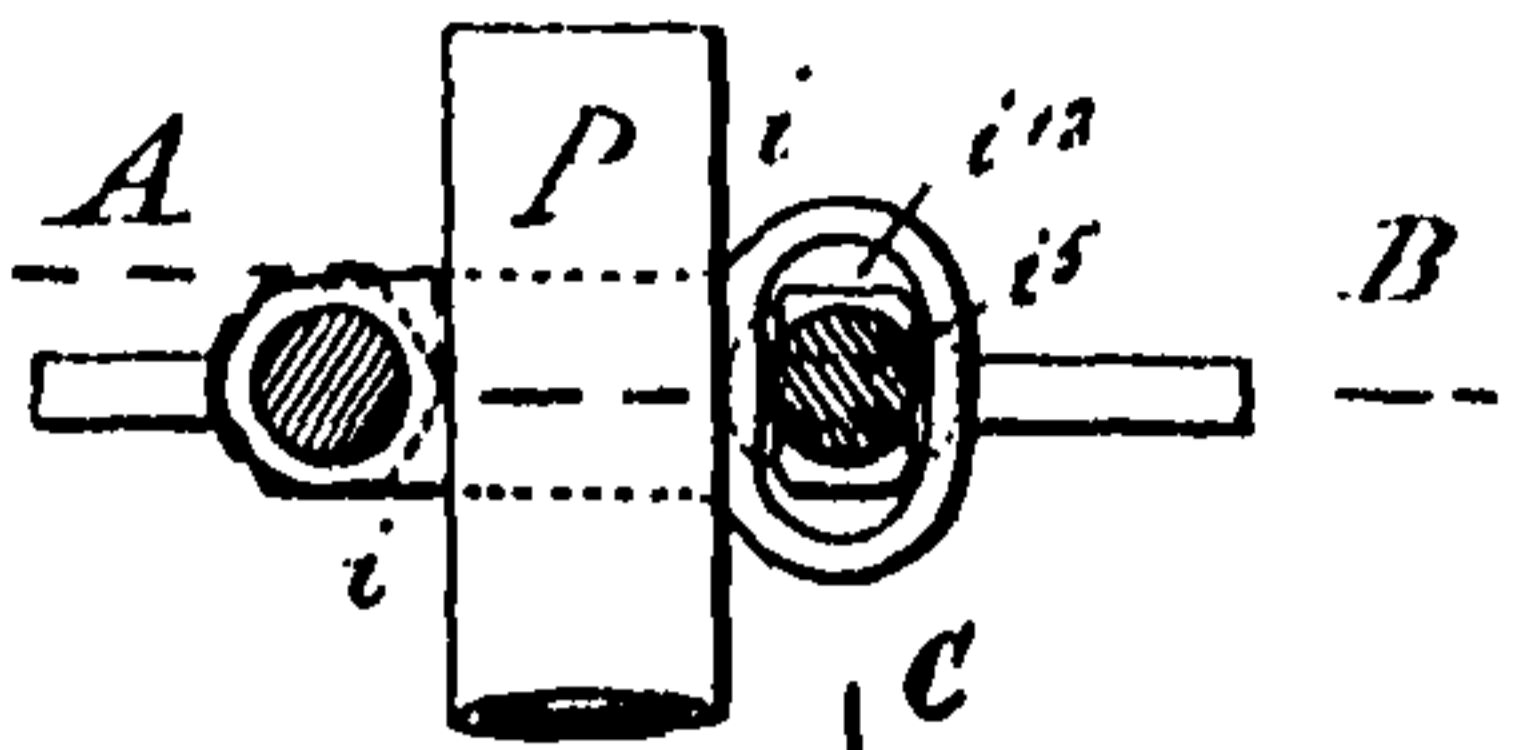


Fig. 5.

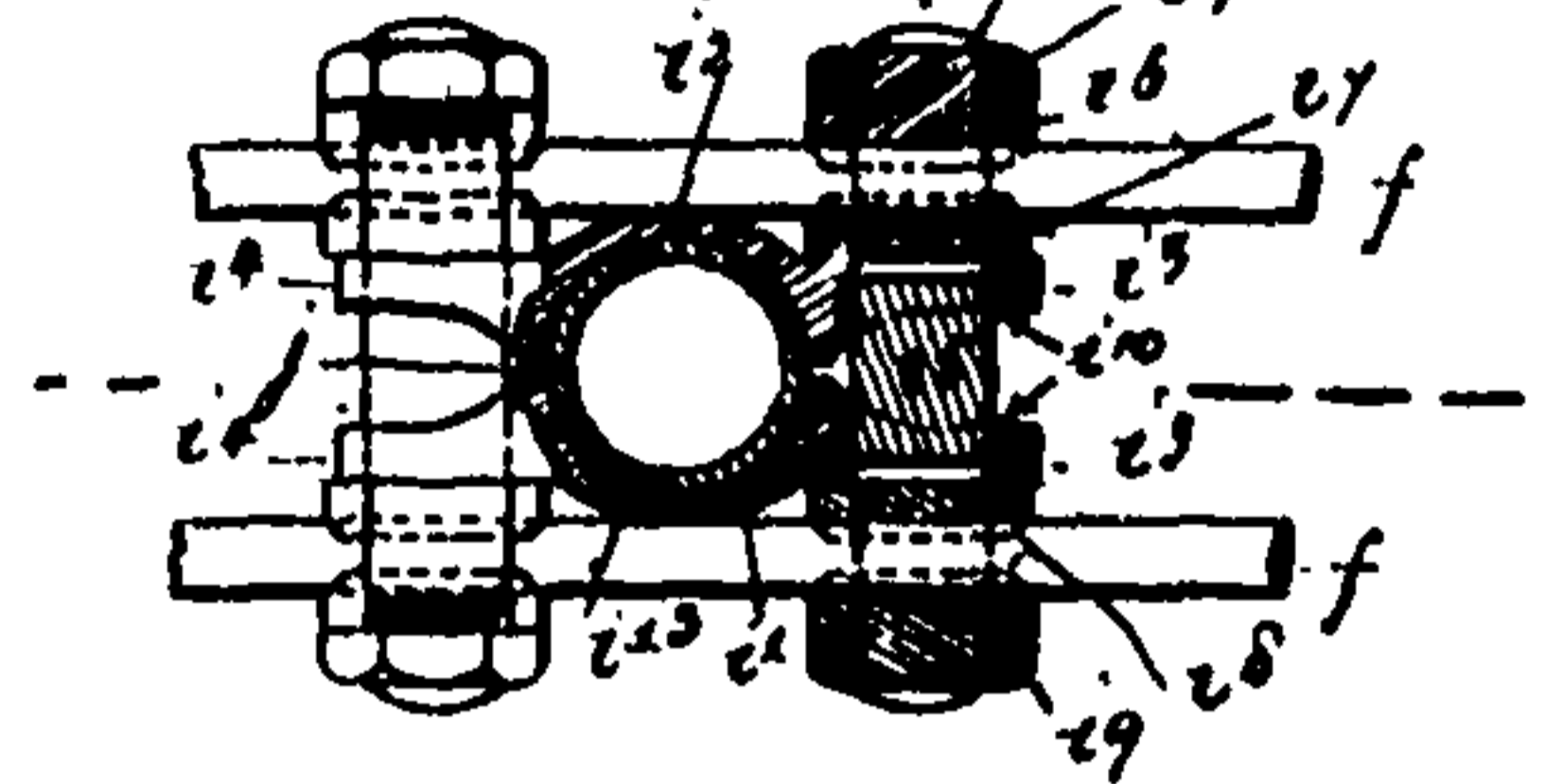


Fig. 6.

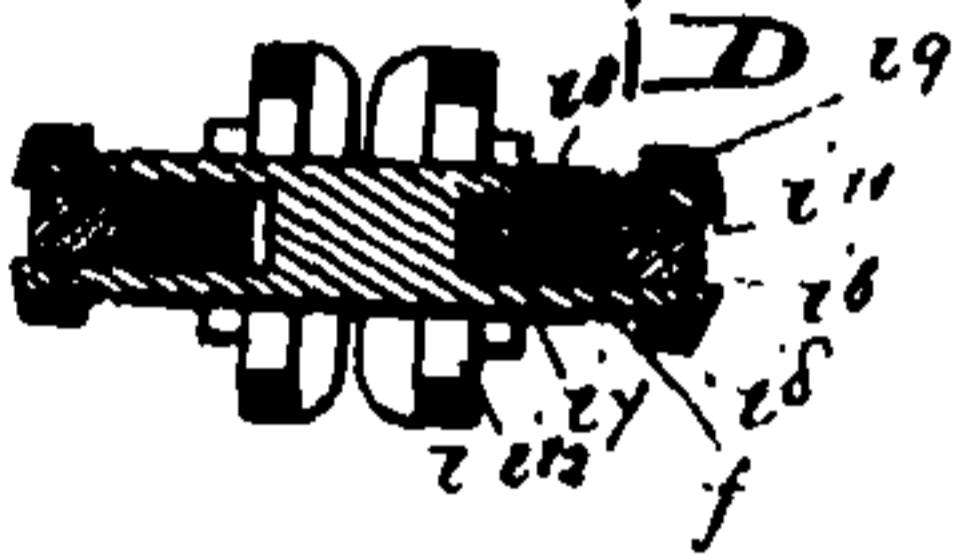


Fig. 7.

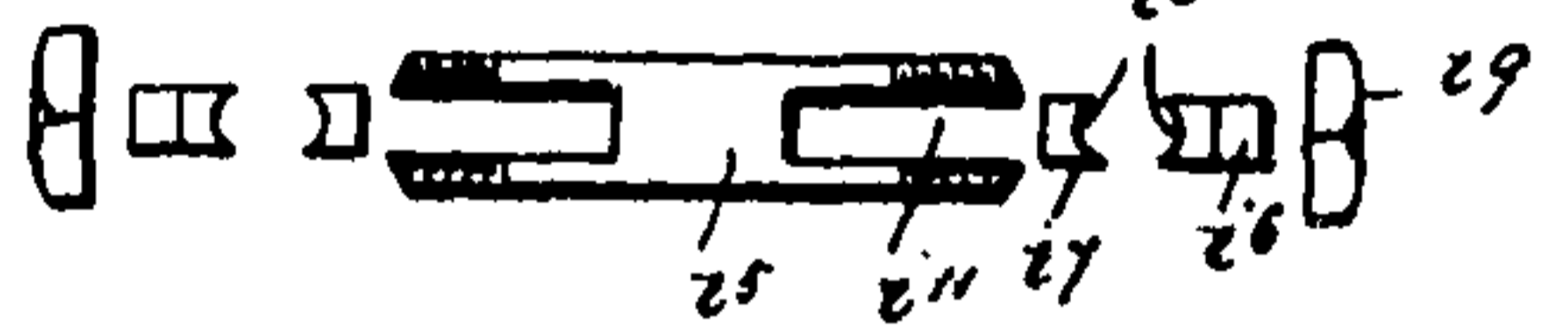


Fig. 8.

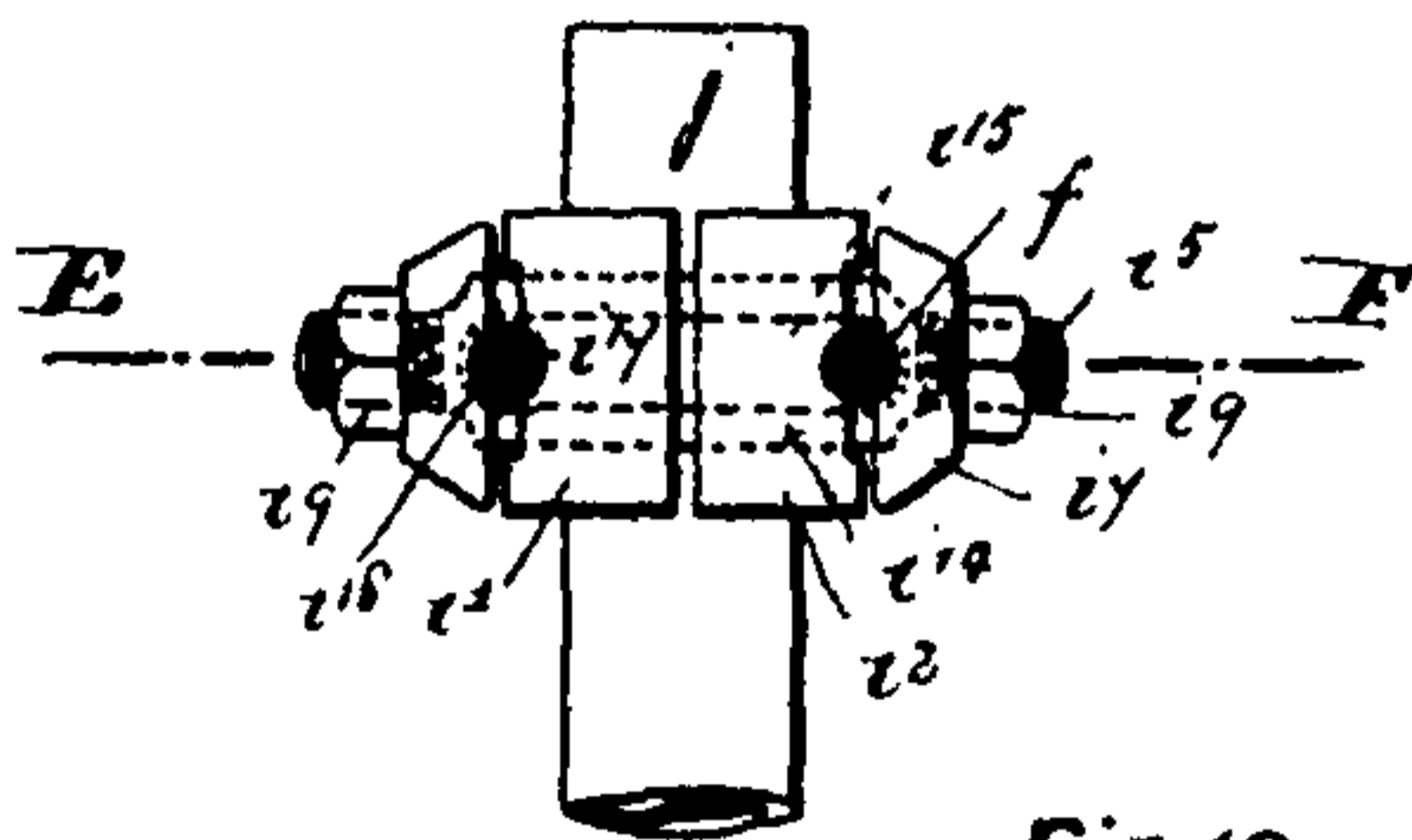


Fig. 9.

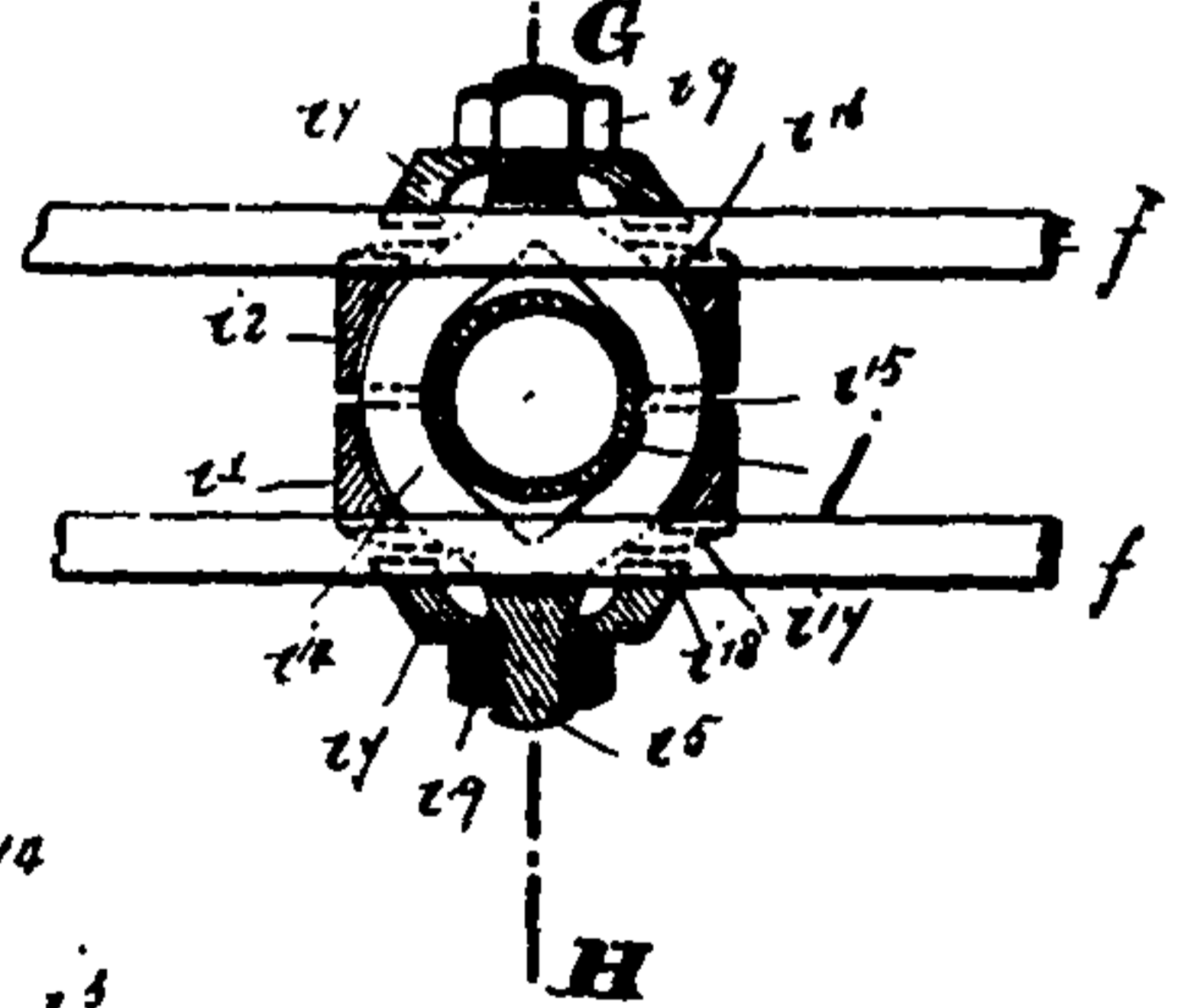
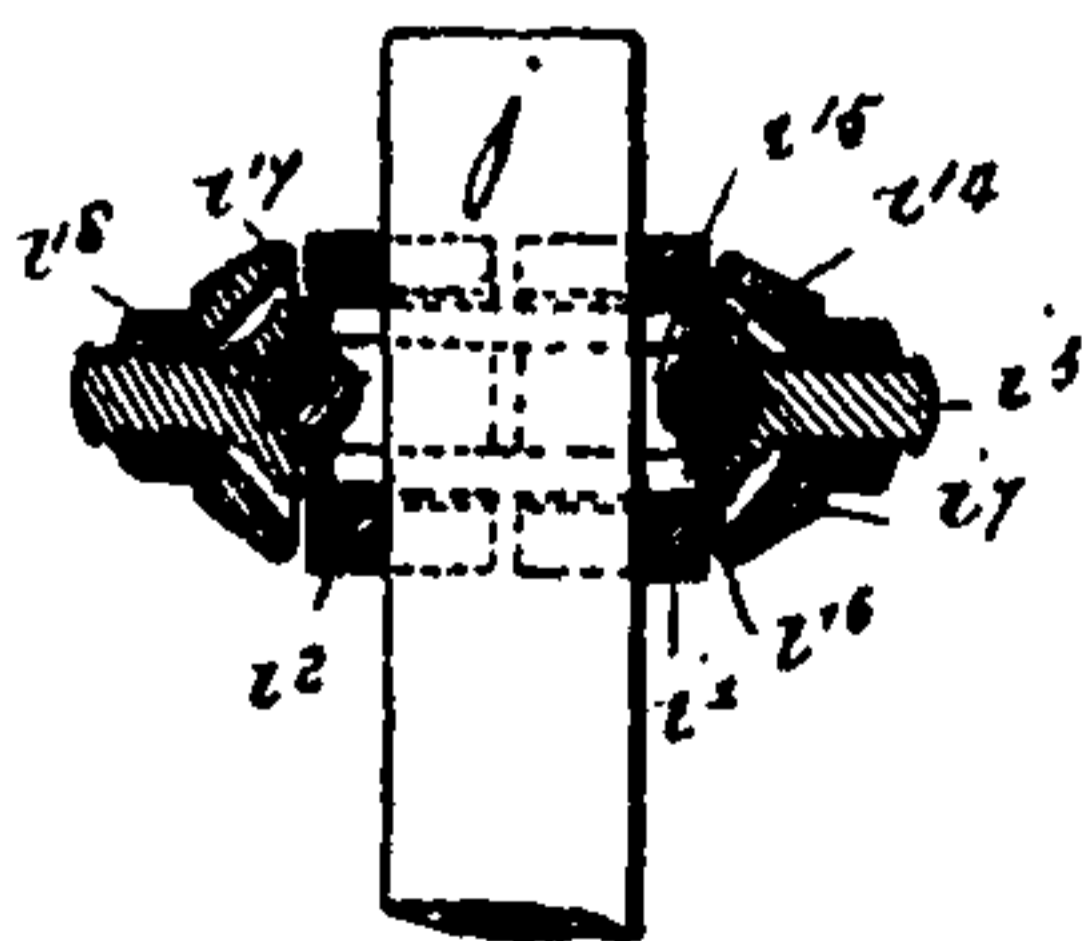


Fig. 10.



Portions of diagrams from Brooks's specification (No. 22608 of 1892).
 The modification in Figs. 8, 9, and 10 constituted disconformity.

frame-rods, *f*, pass, and lie within opposed bearings, *i*¹⁷, *i*¹⁸, formed within the sectional clip parts *i*¹, *i*², and threaded washers *i*⁷, whilst the whole of the parts are drawn together by the nuts *i*⁹, taking upon the screwed trunnion-like ends *i*⁸, and by such drawing up the sectional parts are closed, the frame-rods, *f* are clamped between the opposed clamping surfaces, hence the connection of the boss or clip to the framing, and at the same time the sectional parts *i*¹, *i*² are drawn upon the pillar *j*.

“ Instead of the cross-pins *i*⁹ in Figs. 4, 5, 6, and 7 being slotted at their ends, &c.”

The last four claims were:—

“ Fourthly :—In a saddle-frame and seat-pillar boss connection, consisting of sectional and clip parts adapted to embrace the pillar and to be drawn together by cross-pins, wherein or around which the seatings of opposed clamping washers or plates or their equivalents take or come and grip the frame-rods, so that on the screwing up of nuts or their equivalents upon the ends of the pins the frame-rods of the saddle are clamped to the connection, and at the same time the connection or boss to the seat-pillar or other support, substantially as described and set forth.

“ Fifthly :—In seat-pillar bosses or like connections or clamping means, consisting of an inner ring body-part, having trunnion or screw pins at its two opposite sides, and internal clearances made through the ring, and which ring is embraced by section pillar-clips, having frame-rod seatings upon the two opposite sides and with seating-washers or rod-clamping plates with opposed rod-seatings coming opposite them, substantially as described and set forth.

“ Sixthly :—The improvements in the general construction, arrangement, and combination of the parts of seat-pillar bosses, substantially as described and set forth in Figs. 4, 5, 6 and 7.

“ Seventhly :—The improvements in the general construction, arrangement, and combination of the parts of seat-pillar bosses substantially as described and set forth in Figs. 8, 9 and 10.”

Amongst other objections raised to the validity of this patent was that of “disconformity,” consisting of the introduction of the device shown in Figs. 8, 9 and 10, which were alleged not to come within the provisional specification.

At the trial it was held that the device in question was a fair development of the method disclosed in the provisional.

On appeal to the Court of Appeal this decision was reversed.

Per *Smith*, L.J. (at p. 50): “ It is said that this is a mere modification of the arrangement described in the provisional specification, and not in any sense a new invention. We cannot so regard it. It preserves, it is true, the possibility of lateral adjustment by drawing the framing-rods through the bearings when the nuts are loose; but this is common to every arrangement whereby framing-rods are held in position by the action of nuts upon washers. But it entirely abandons what we regard as the special object and feature of the combination, namely, the method of tilting the

saddle and holding it in its place by the operation of winged and slotted clips and two pins, one acting as a pivot, the other affording the means of fixing it in the desired position in the slotted wings. A ring which embraces the vertical pillar, and so being incapable of pivoting, makes it impossible for the frame-rods which pass through the gaps in it to be tilted, seems to us in no sense a development of the former arrangement. . . . We think that in dealing with patents for special arrangements of very familiar mechanical means, such as pins, washers, clips, or gripping-cheeks, nuts, &c., it is necessary to scrutinize the invention claimed with some nicety. By straining the doctrine of mechanical equivalents a patent for a particular combination of well-known appliances for fastening the framing rods of a saddle to a vertical pillar might be made to cover almost any other combination. . . . It seems to us to be a different means of accomplishing a different end, namely, the rigid attachment of an un-tiltable saddle to the vertical pillar, and therefore outside the provisional specification."

1898. THE GORMULLY & JEFFERY MANUFACTURING CO. v. NORTH BRITISH RUBBER CO., 15 R. P. C. 245.

Construction—Nature of Real Invention—Alleged Anticipation.

A patent (No. 16783 of 1890) was granted to *W. E. Bartlett* for "improvements in tyres or rims for cycles and other vehicles."

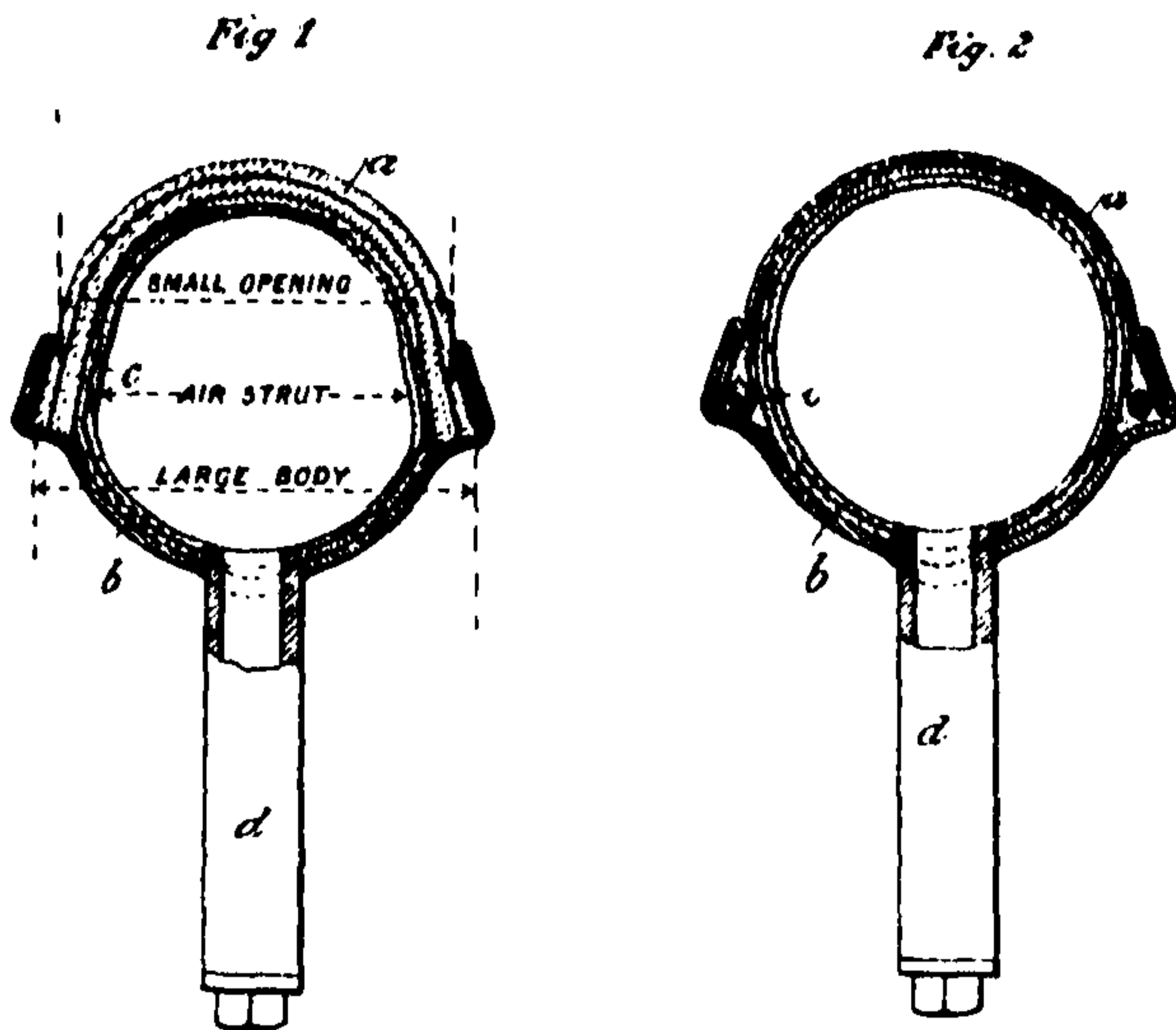
The complete specification was as follows:—

"This invention relates to tyres which consist of a flat endless band of indiarubber wider than the dovetailed groove into which it is inserted, so that it assumes an arched form when in place. I introduce between the arched outside tyre and the circular bottom of the metal rim a tube constructed of cloth and indiarubber provided with a branch for filling it with compressed air. By this arrangement the outer band-tyre may be reduced in thickness, and while assisting in sustaining the pressure (from weight) on the outer band, the lateral pressure of the inside air-tube will press its edges tightly against the dovetailed flanges of the metal rim, and thus be effective in holding it more firmly against the flanges of the metal rim at the momentarily bearing part of the tyre. It will be obvious that one advantage of this arrangement is that successive outside bands or tyres can be renewed from time to time without the necessity of wasting the tubular air-chamber between it and the metal rim, and thus greater economy will be attainable. It will be generally most convenient to have the filling-tube of the tubular air-chamber projecting from the surface of the tubular air-chamber resting on the metal rim, in which a hole is bored through which to pass the filling-tube.

"Where thin outer tyres are used I slightly thicken their edges where they lie inside the trough."

“ DESCRIPTION OF THE DRAWINGS.

“ Figs. 1 and 2 are transverse sections of wheels made according to my invention ; *a* is the outer tyre of indiarubber or other elastic material, *b* is



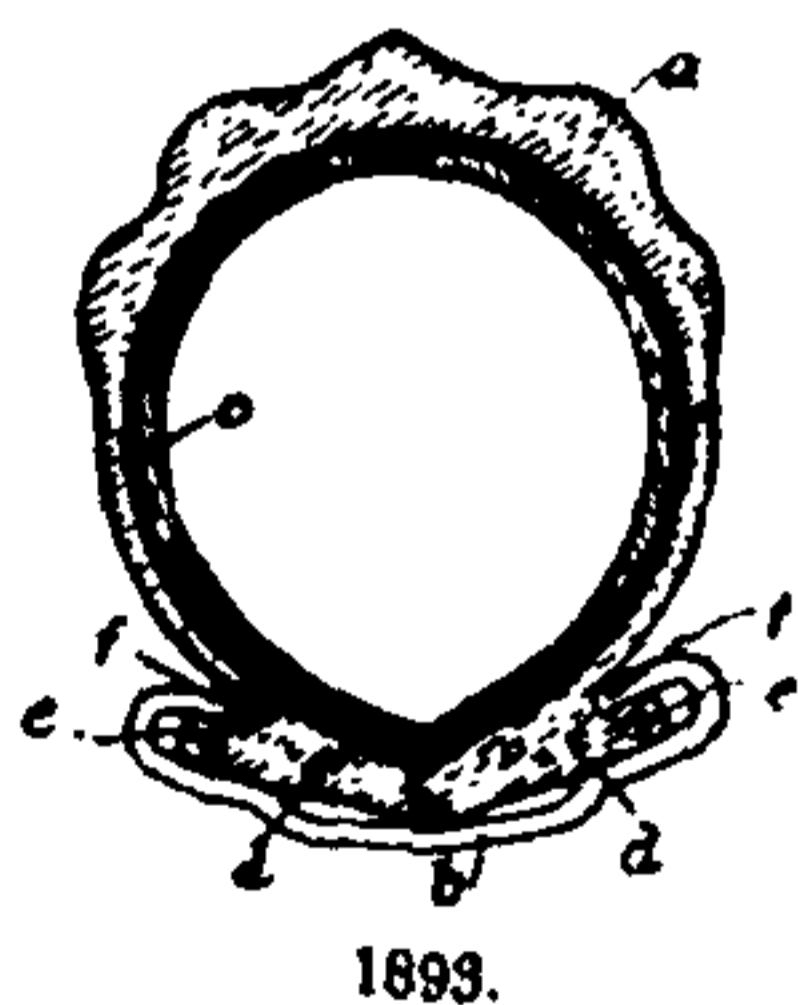
From Bartlett's specification, with addition of words in Fig. 1 indicating defendant's theory of the action of the tyre.

a metal tyre or rim, *c* is an air-tight tubular chamber, and *d* is the filling-tube.”

The claims were :—

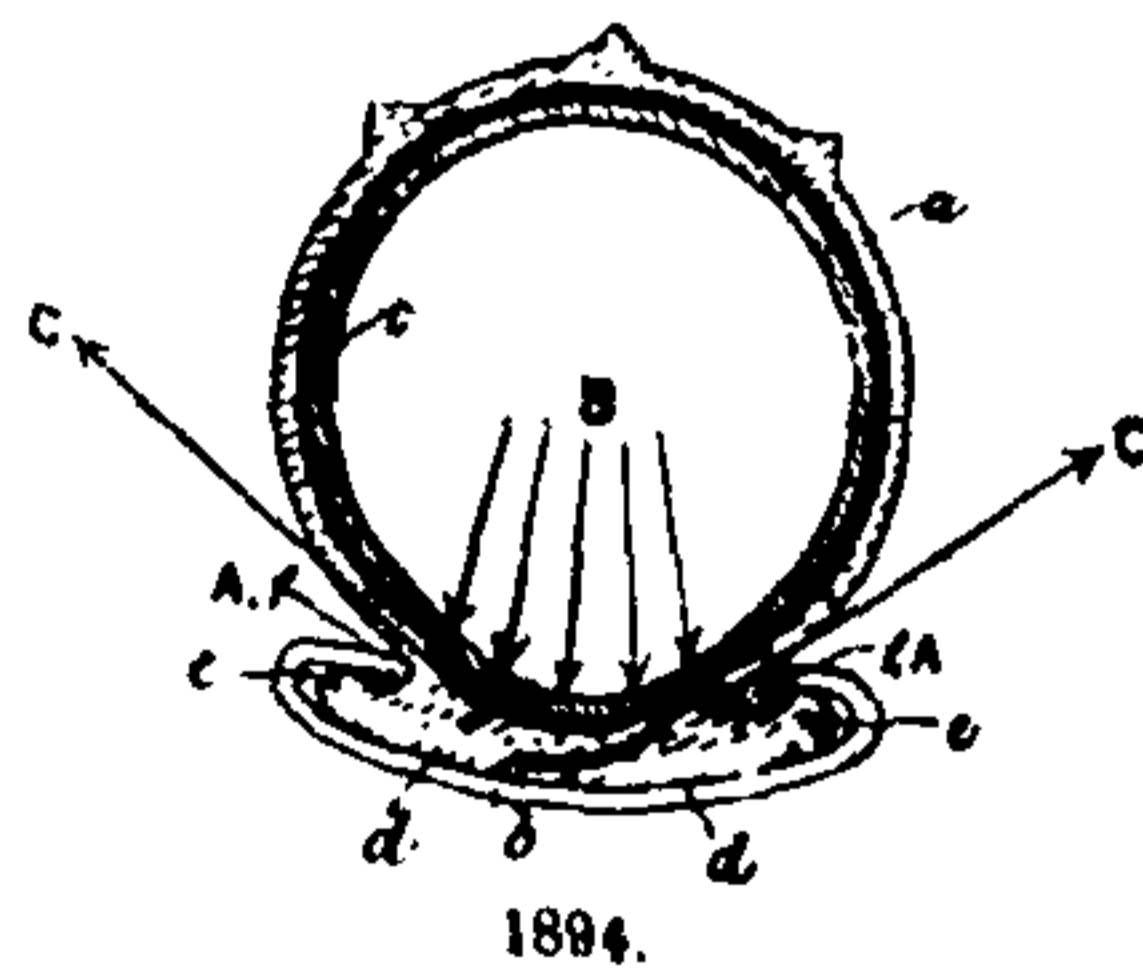
“(1) The combination of a grooved rim or metal tyre, and an arched tyre of indiarubber or other flexible material held in the groove by the pressure of an inflated tube within the arch which forces its edge against the sides of the groove substantially as described.

“(2) Tyres or rims for cycles and other vehicles consisting of the parts *a, b, c* combined and arranged substantially as described and shown in the drawings.”



1899.

FIG. 3.



1894.

FIG. 4.

Sections of infringing tyres.

This was an action for infringement. One form of the alleged infringement is shown in Figs. 3 and 4, in which *a* is the outer cover, *b* the rim, *c* the inner air-tube (rubber alone), *e*, thickened lugs projecting into and held by

the inturned edges or hooks, *f*, of the rim. The only difference between the two tyres shown is the overlapping in the 1894 tyre.

The defendants' contention was that their tyres acted differently from the plaintiffs', which they alleged acted as if it were "dovetailed" into the rim. This is shown in Fig. 1 by the addition of words from the defendants' case as submitted to the House of Lords. They alleged that in their tyres the air-pressure, being everywhere normal to the tube (as shown by the arrows, *B*, in Fig. 4), produced a tangential strain or pull (shown at *c*) which was resisted by the lugs *f*.

At the trial and in the Court of Appeal the patent was upheld and the specification construed; the claim was held to be one not to the mere combination of the inner tube, rim, and outer tube, but for the arrangement whereby the air-pressure of the inner tube kept the tyre in position; and it was also held that defendants had infringed the patent.

On appeal to the House of Lords, the decision of the Court of Appeal was upheld.

Per Lord *Watson* (p. 253): "The appellants maintain that the letters patent do not disclose any new or useful invention, and are therefore invalid if the specification be so liberally interpreted as to bring their manufacture within its scope. In view of that defence it becomes necessary, first of all, to consider what is the true nature and merit, if any, of the invention which is described in the specification. . . ." P. 257: "The claim, as I construe it, is a claim for a method shown in the specification, or for any method substantially the same, of so connecting the ends of the outer cover with the metal rim that the ends of the cover are firmly held and detained, and that part of it which comes in contact with the ground is kept in its proper position as the outer part of the tyre of the wheel. And on a fair consideration of the terms of the specification, taken as a whole, the claim so made appears to me to embody the pith and substance of the invention. I do not think that the patentee claims to have invented the use of a metal rim, an outer cover, or an inner pneumatic tube constructed of cloth and indiarubber, either singly, or as forming in combination the tyre or felloe of a wheel for cycles or other vehicles. In my apprehension what he does claim as a novel invention is the mode which he has described of making such an attachment between the ends of the cover and the edges of the metal rim as will serve, if I may use the expression, to consolidate these three component parts of the tyre, whilst the wheel is in motion, by retaining both the cover and the inner tube in their right positions. According to that view of the specification there is no evidence tending to impeach either the novelty or the utility of the invention."

Lord *Shand* (p. 256): "This view" (that the patentee was confined to the use of "cloth and rubber" air-tube) "would, it appears to me, have been sound and irresistible if, on a true construction of the patent, the inner tube in its form and material and mode of action had been the point or essence and substance of the invention, or if the invention claimed had been merely the combination of outer tyre, inner tube, and metal rim

—a claim which, it appears, however, would have been clearly open to the objection of want of novelty. But I am satisfied that the patentee's claim is not for any such combination, nor for any specialty in the form, material, or application of the inflated inner tube to the outer indiarubber tyre so described as to make the degree of expansion of which the inner tube is capable and the material of which it is composed essential features of the invention. The essential feature, which was clearly novel, appears to me . . . to be in the arrangement and construction of the flanges of the metal rim and the edges or ends of the outer indiarubber or guttapercha tyre, which, when acted on by the inner inflated tube (whether capable of more or less expansion), produces a grip which keeps the outer tyre in its place when the wheel is in use on the road."

1898. THE MAXIM NORDENFELT, &C., CO. v. ANDERSON, 15 R. P. C. 422.

Construction—Range of Proportions given—Narrower Claim—Dictum as to Benevolent Construction.

A patent (No. 4477 of 1889) was granted to Sir *H. S. Maxim* for "improvements in the manufacture of explosive compounds."

The complete specification commenced by stating that the improvements produced a suitable powder for firearms. It continued: "In the manufacture of explosive compounds according to my present invention, I mix dissolved gun-cotton or pyroxyline with nitro-glycerine, nitro-gelatine or similar material and with oil, preferably castor-oil." Then follows a statement of the reasons for using "castor-oil or other suitable oil," and the resulting advantages.

The specification then continued: "I produce an explosive compound which is advantageous for various purposes, by mixing the gun-cotton, the nitro-glycerine, nitro-gelatine, or similar substance and the castor-oil in, or about in, the following proportions, viz., from 2 or 5 per cent. of the castor-oil, from 10 to 16 per cent. of the nitro-glycerine or the like, and the remainder of gun-cotton." The resulting product was then described, and details given for the process of manufacture, in one of which acetone was used as a solvent.

The first claim was for:—

"An explosive compound consisting essentially of gun-cotton or pyroxyline mixed with nitro-glycerine, nitro-gelatine, or similar material, and with castor-oil or other suitable oil, for the purpose above specified."

The other three claims were for processes which included acetone as a solvent.

This was an action for infringement of the above patent by the manufacture of "cordite," which consisted of nitro-glycerine 58 per cent., gun-cotton 37 per cent., and vaseline 5 per cent., together with acetone as a solvent which did not form part of the final product.

It was proved at the trial that at the date of the patent it was thought by chemists to be impossible to make a powder with gun-cotton which contained any very large percentage of nitro-glycerine. The inventor (an eminent chemist) thought the maximum quantity should be in the United Kingdom 16 per cent., and in other countries 10 per cent.

One of the processes in which acetone was used would not be worked with a mineral jelly, as vaseline, instead of the castor or vegetable oil.

Held, at the trial, that the specification claimed the product only when made of the ingredients in the proportions mentioned in the body of the specification. (14 R. P. C. 371.)

The learned judge pointed out that if vaseline be included as an "other suitable oil" one process claimed would not work, and so the patent would be invalid: "It affords a strong if not a conclusive argument in favour of construing the patent if possible as not covering the use of vaseline."

Held, by the Court of appeal, that the learned judge's decision was correct; Lord *Esher*, M.R., approved of the above dictum as to the vaseline. (14 R. P. C. 671.)

On appeal to the House of Lords:—

Held, that the claim must be read in connection with the whole specification, and that it was for the powder made of the ingredients only when combined within the range of proportions mentioned.

Per Lord *Herschell* (at p. 327): "In construing a claim of this kind you must look not only to one part but to the whole of the specification. You cannot stop at the first part of it where you find that it is to be dissolved gun-cotton, but you must equally read the succeeding paragraph beginning, 'I produce an explosive compound . . . by mixing the gun-cotton, &c.'"
P. 428: "It seems to me difficult to doubt that the patentee is there describing his invention, namely, that it is mixing them in or about in those proportions by means of which mixing that he is able to produce an explosive compound, &c. . . . That is farther borne out by the range which he gives, . . . it is 'in or about in the following proportions,' which of course allows a considerable range—a general range."

1898. OSMONDS v. THE BALMORAL CYCLE CO., 15 R. P. C. 505.

Disconformity—Embarrassing Claim.

In 1894 a patent (No. 2520) was granted to *F. J. Osmond* for "improvements in adjusting the driving-chains of safety-bicycles and other velocipedes."

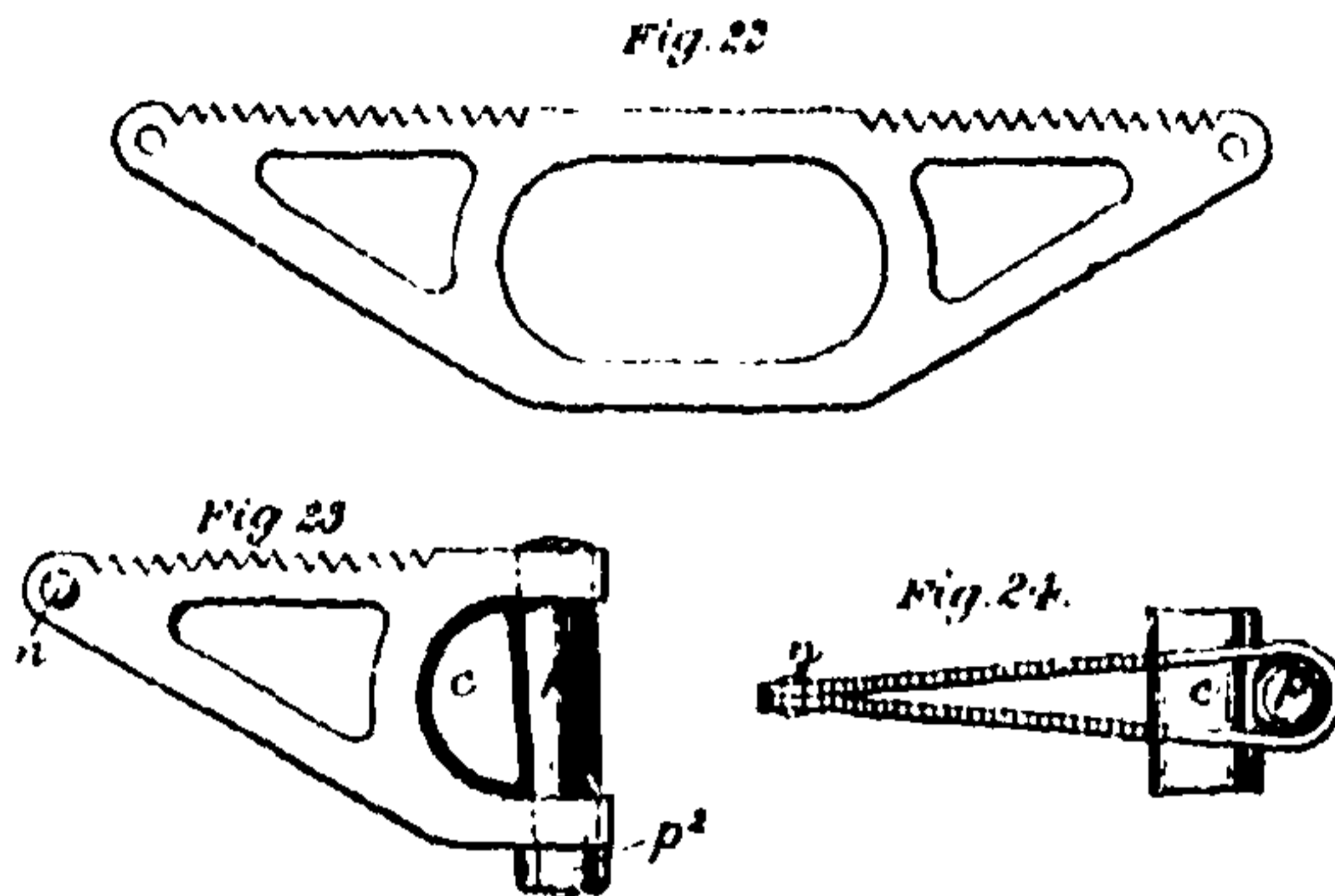
The complete specification described by means of 21 diagrams the details of the invention. In carrying it out it was necessary to remove the step, which consisted of a projection, a prolongation of the axle of the driving-wheel.¹ As a substitute for it Fig. 22 showed a blank stamped out,

¹ The case is only noted here so far as the issue of disconformity is concerned.

which was folded at its middle, as shown in elevation Fig. 23 and plan Fig. 24, rivetted at *n* and secured by the pin *p* and nut *p*² to the end *c* of the chain-stay.

The claims were:—

“First. The improvements in driving-chain adjusting mechanism of velocipedes hereinbefore described and illustrated in the accompanying



From Osmond's specification.

drawings, that is to say, making the ends of the arms or branches of the chain-stay hollow or tubular and longitudinally slotted on their inner sides, and arranging on the ends of the driving-wheel spindle carrier-blocks for taking into and working in the said hollow or tubular ends of the chain-stay, the said carrier-blocks being moved in the hollow or tubular chain-stays in the ways hereinbefore described and illustrated.”

The second, third, and fourth claims referred to particular modifications described in the drawings.

The fifth claim was for:—

“The combination with the chain-adjusting gear for velocipedes hereinbefore described and claimed when used with semi-circular or semi-elliptical chain-stay arms of foot-steps of the kind hereinbefore described and illustrated in Figs. 22, 23, and 24 of the accompanying drawings.”

The provisional specification contained no mention whatever of the new step.

At the trial of this action for infringement certain anticipations were alleged, and also the issue of disconformity was raised.

The learned judge held that claims subsequent to the first were otiose and needless, and did not enlarge the monopoly, as they only claimed the use of invention in the first claim with other things in addition, *e.g.*, the step in the fifth claim. The patent was upheld.

On appeal to the Court of Appeal:—

Held, that the claim to the use of the step in the combination with the gear was not foreshadowed in the provisional specification, and that the patent was therefore invalid.

Lindley, M.R. (at p. 518), referred to the fifth claim, and continued: "That raises a question which to my mind is new and important. He certainly is claiming something there; he certainly is claiming a combination of his chain-adjusting gear with that kind of foot-step; or (transposing the words) he is claiming a combination of the use of that step with his gear. Now, no such intention is shadowed forth in the provisional specification at all." The complete specification is therefore defective. The answer to that is that one cannot use the new gear, and therefore cannot use it with the step. "But that is not quite an answer to the difficulty. There is no doubt whatever that the addition of that step does improve the whole machine, and it is extremely embarrassing to anybody engaged in the trade to find a claim of a particular step in combination with something else; and it is obvious to us, who see so much of the use made of these patents, and the abuse made of them, that if that claim were allowed to stand it might embarrass people a great deal, and might be made an instrument of extortion and blackmail. It is a claim which ought never to have been put in, and which ought unquestionably to be struck out."

Note.

The stronger ground on which this case was decided is that the claim is embarrassing and misleading to persons engaged in the trade. Testing it in the manner suggested (*post*, p. 607), it would obviously be unfair to a rival inventor who invented the step, say immediately after the date of the provisional and before *Osmond* thought of it, to include it in *Osmond's* patent. The apparent distinction in principle between this and the dynamite case (*ante*, p. 274) is that here the new element in the combination is in itself a new invention, in the former case the additional element was old.

1899. DREDGE *v.* PARNELL, 16 R. P. C. 625.

No Invention—No subject-matter.

A patent (No. 18694 of 1891) was granted to *E. Dredge* for "an improved method of cutting necktie linings with a band-knife or other power knife."

The complete specification in describing the invention confined it to band-knives, and mentioned the difficulties met with in cutting soft material like "swansdown" by the then known methods, and continued: "By my process any pattern, whether straight or curved, or recessed or partly straight, and partly recessed or curved, can be rapidly cut, and in piles of 36 to 72 thicknesses deep, a feat never before attempted. Indeed, almost any thickness could be cut, if necessary, with a band-knife of sufficient size and power." The invention was described by means of two diagrams, Fig. 1 a perspective view, and Fig. 2 a plan of the templets as arranged on the cloth. The templets *a* were secured by bolts, *b*, and nuts, *c*, as shown

in Fig. 1. The advantages of the alleged invention were described. The claim was for "the method of cutting at one operation a large number of necktie linings by means of a revolving band-knife, the material being clamped firmly between two templets of identical form, as herein described and set forth."

It was proved that the process was new and useful, in so much that it enabled a band-knife to be used where a hand-knife had been previously employed. No anticipation was alleged. Soft articles before being cut out had previously been stiffened by being pressed

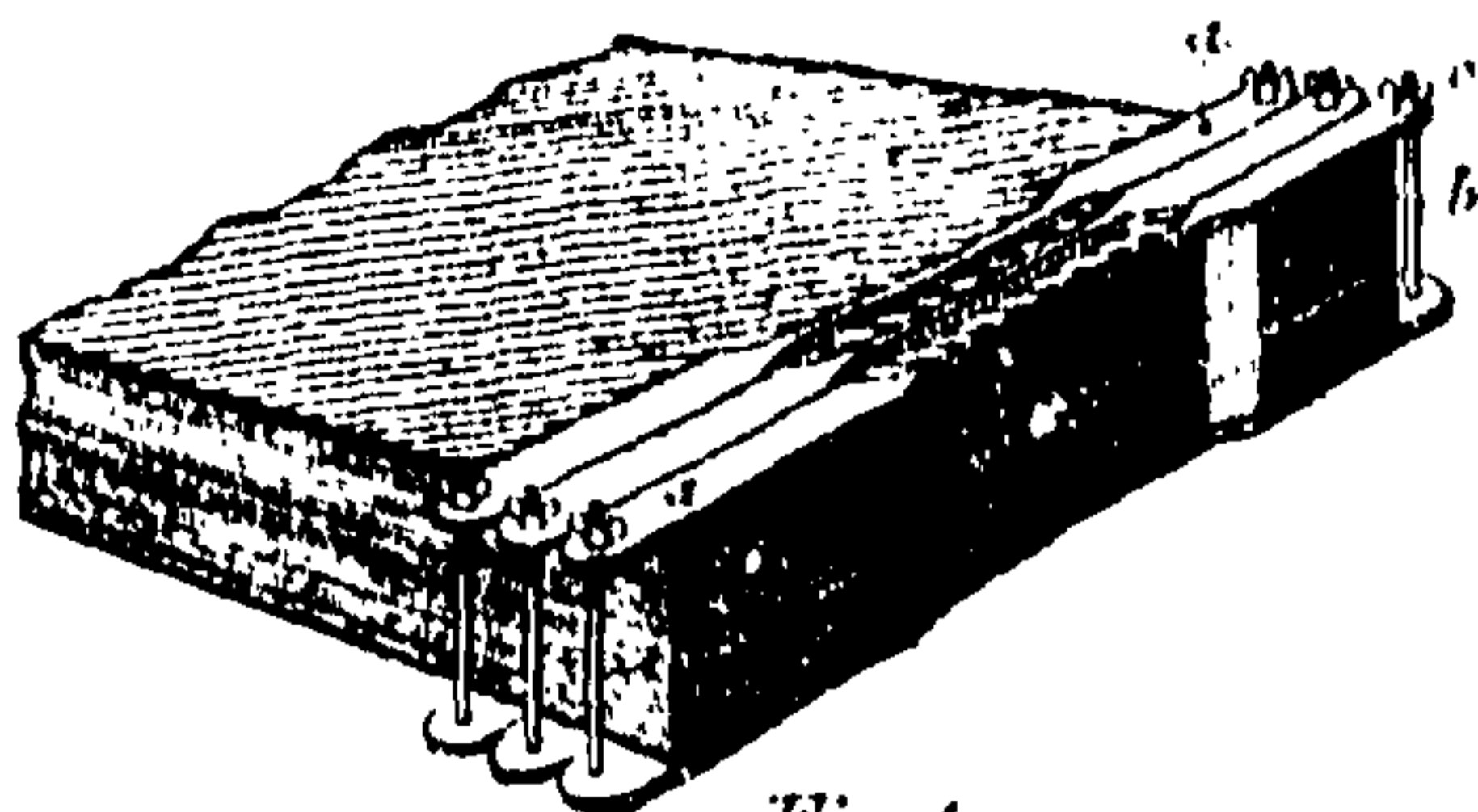


Fig. 1

From Dredge's specification.

between hard surfaces. It was argued that the merit lay in clamping identical pairs of templets close together, so that the knife should be guided by them.

Held by the Courts of First Instance and Appeal that there was not sufficient invention to support a patent.

On appeal to the House of Lords:—

Held, that the patent was invalid for want of patentable invention.

Per Lord *Halsbury*, L.C. (at p. 629): "It would be more true to say that the skilled workman found out in the arrangement of his tools that he ought to do what has been done here than to say that he had made an invention; because this is only an arrangement of his tools, and they are applied practically in the same way . . . adapted to that particular material . . . it is a rather more skilled and experienced application of the same old and well-known tools to the same sort of process that is applicable to fabrics of a firmer texture . . . I quite admit the difficulty there is, when once you admit invention, in saying, if the invention is an invention at all and is at all useful, that you can draw any exact or precise line as to the quantity of invention that is necessary to support a patent; but I confess I go a little further than the learned judges below, because I think, considering this alleged invention in its real essence and nature, there is no invention at all. It is simply a more skilled application of well-understood tools and well-understood processes."

Lord *Macnaghten* pointed out the difficulty of determining the degree of ingenuity to constitute invention. "In this case I do not think there is sufficient invention, and when I say 'I do not think there is sufficient invention,' I should mean the same thing if I said there was no invention or no substantial invention. I think the three phrases all mean the same thing. I do not think that it requires any study or thought to arrive at the instrument at which the plaintiff has arrived. I think any ordinary skilled workman setting his mind to accomplish that object would have come to the same result."¹

¹ The last sentence here quoted bases the decision on the principle discussed *ante*, p. 35.

1899. PNEUMATIC TYRE COMPANY, LTD. v. LEICESTER PNEUMATIC TYRE, &c., CO., 16 R. P. C. 531.

Alleged Disconformity—Fair Development.

A patent (No. 14563 of 1890) was granted to *C. K. Welch* for "improvement in the construction of rubber tyres and metal rims or felloes of wheels for cycles and other light vehicles."

The provisional specification¹ described the objects of the invention to be "easy running, reduction of vibration, and security of the rubbers" to the rims. Former rubber tyres were fitted in grooves, and were thereby cut. In this invention the tyres are soft and larger, and are constructed to fit "either wholly or partly outside the metal rims or felloes," which may be of special shape. The rims may be made D-shaped or convex on the outside. The rubber tyres may be saddle or arch shaped, or thickened with a groove inside to receive the rim, the tyre to be secured by "two small holes through the rubber, one on each side of the rim, through each of which a suitable wire may be put, and the ends may be connected with a nipple having a right and left hand thread," or a similar device, "or I may use the well-known spring-wire." The nipples may be hexagonal. The wires may be connected after the tyre is placed on the rim, and drawn together by a wrench. The tyres may be of shapes different from what they will be on the felloe, *e.g.* a closed horseshoe, the rubber being opened when being put on. The sides would be left, by projecting, more compressible. "I may also make the rubber tyres larger in circumference, and draw them into the rims or felloes by the wires." This would cause the surface of the rubber to be compressed, generally making it still more indestructible and easy running." The rubbers may be lined with canvas. The outer surfaces may be of any form, and the inner grooved, for lightening, reducing vibration, or cementing to the rims.

"The above-described improved rubber tyres are also applicable to cycle and other wheels in present use or made in the ordinary way in which case they may be fitted over the existing rubbers without necessarily making any alteration, or I may substitute in place of the ordinary rubbers a lighter or cheaper material, such as cork.

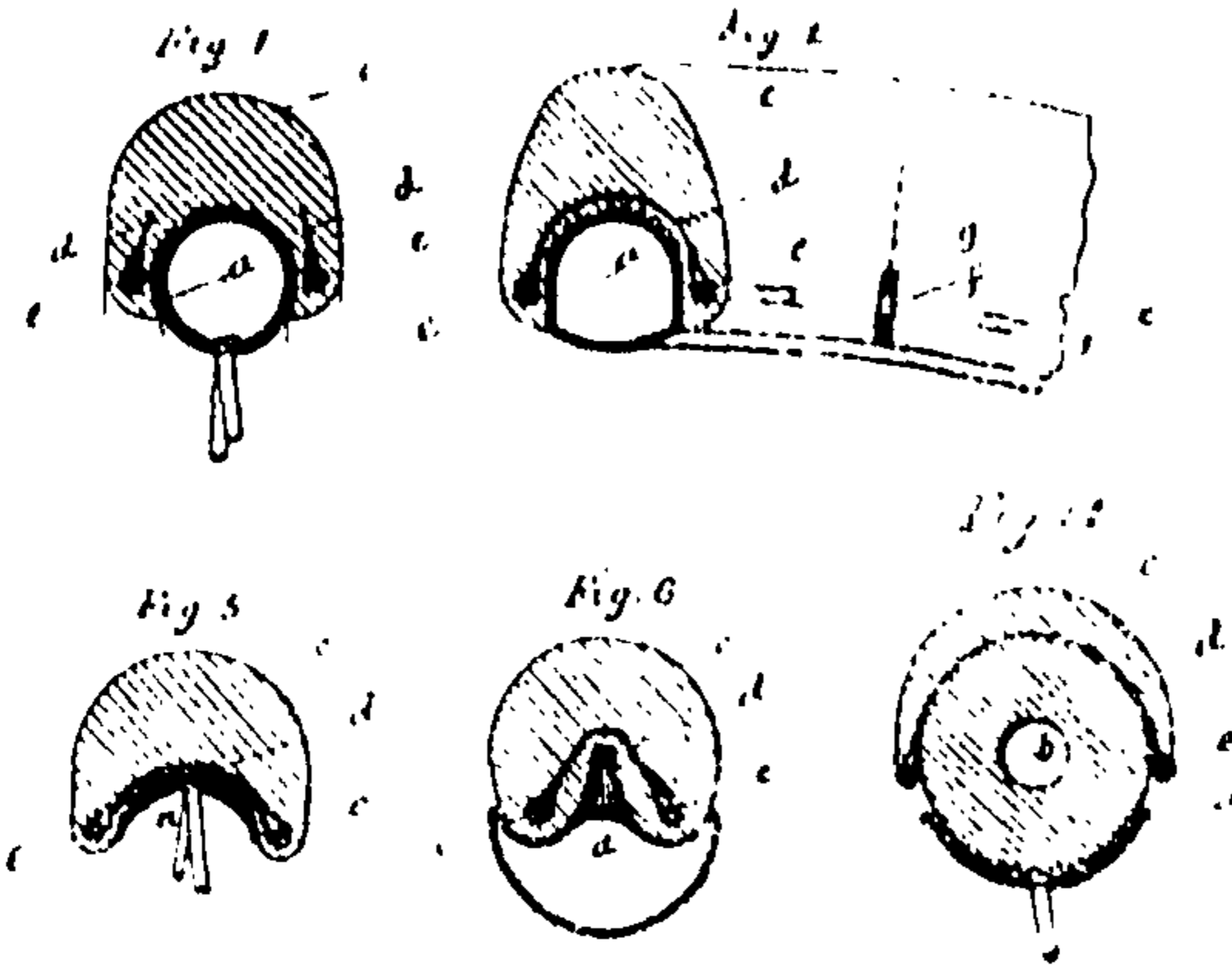
"I may also fit this class of tyre to the ordinary rims by modifying the form of the inner surface of the rubbers, in which case a hole through the centre may be an advantage for lightening the same."

Cement may be used in addition to the wires. Another method of securing the rubber was given. The rubber tyres, "being outside the metal rims or felloes," are free to expand laterally.

The complete specification described the invention in detail, with a large number of diagrams corresponding to various forms of rims and tyres,

¹ The provisional is here summarized, the passages bearing on disconformity being *verbatim*. The case is noted here only as regards the issue of disconformity.

e.g. Figs. 1, 2, 5, and 6. In all the diagrams *a* is the metal rim, *c* the tyre, *d* canvas for supporting the wires *e*, *f* the right and left handed screw-nipple



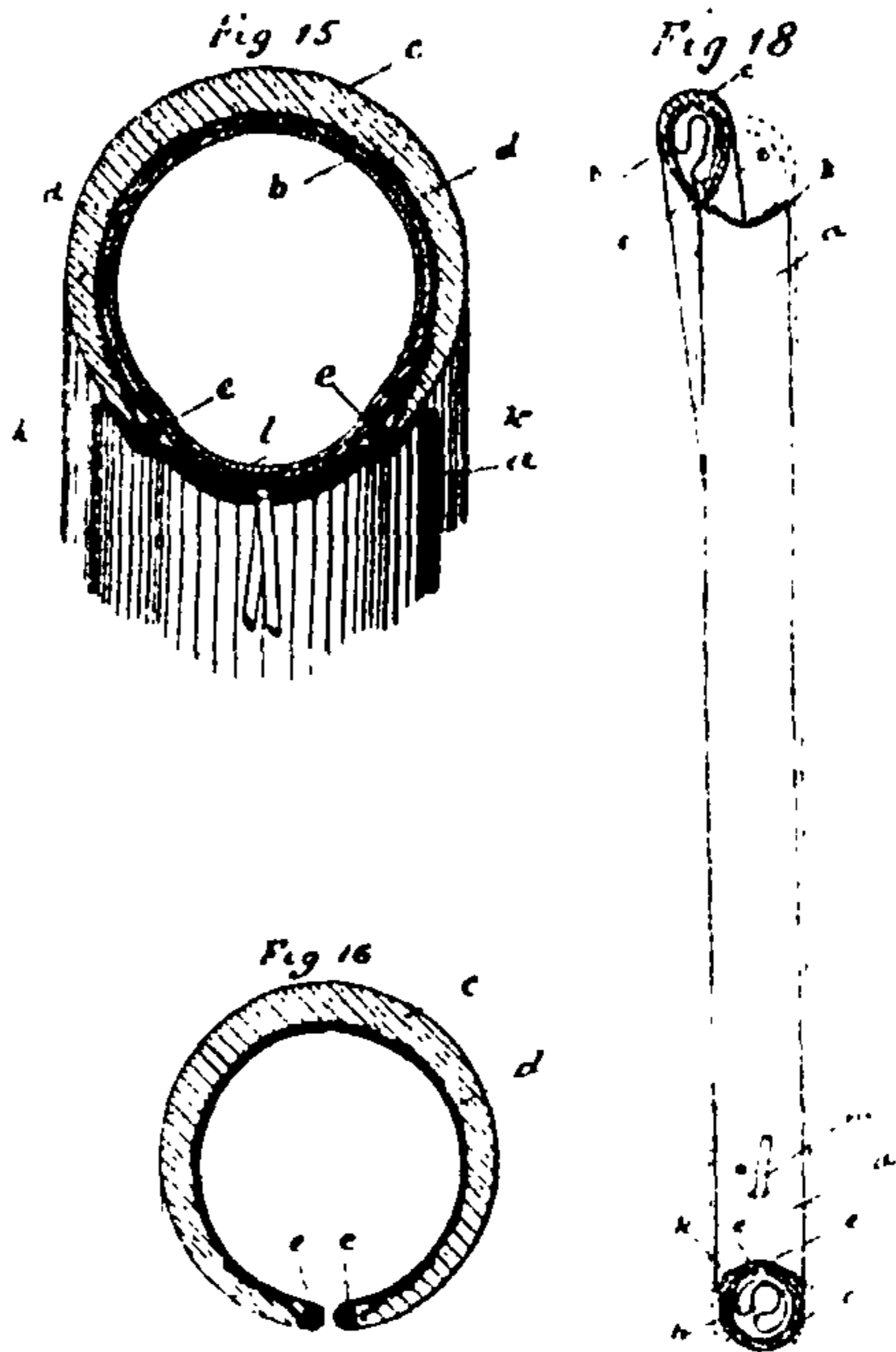
Diagrams from Welch's specification.

for tightening the wires in the aperture *g*. When the rims are shallow, as in Fig. 6, "the tyres may be lifted and held from the rim by any convenient tool, such as a screw-driver. By making this form of rim very shallow, I may connect both the wires beforehand, and force the rubber into its place on the rim. Fig. 14 showed the application of the invention to an ordinary cushion tyre, *b*.

The application of the invention to pneumatic tyres is shown in Figs. 15, 16, and 18. In these diagrams *k* represents the "shoulders" in the rims to receive the wires when the tyre is fully inflated, *l* a canvas strip along groove in rim, and *m* the air-valve, the other letters having the same significations as before.

The action of this device is thus described:—

"To secure the whole on the rim the inflatable tyre is first placed within the outer or protecting tyre *c*, the wires or cores *e e* are then closed together, allowing the tube *m* to project between, this is then pushed



Developments alleged as disconformity.

closed together, allowing the tube *m* to project between, this is then pushed

through the hole in the rim *a*, and the two wires or cores are placed into the bottom of the concave groove for about two-thirds of the whole rim, the remainder of the wires or cores with the tyre can then be lifted or sprung over the edge of the rim opposite the tube *m*, as shown in the drawing; the inner tube or tyre *b* may now be inflated with a small pump in the usual manner, this causes the wires or cores *c, c*, to part, until finally they are pushed into place over the shoulders *k, k*; thus, the wires being smaller in circumference than the edges of the rim, the inner tube or tyre may be pumped tight against the inner surface of the protecting tyre, thus the whole is rendered secure on the rim as shown in Fig. 15, and also in dotted lines in Fig. 18. To detach the rubber tyre or outer covering from the rim, the air must first be allowed to escape when the wires or cores *m a*, be pinched or closed together round the rim by the thumbs and fingers until the wires can be lifted over the edge of the rim; the whole can then be removed as shown in Fig. 18."

Seven of the claims related to Figs. 15 to 18 and the mode of attaching and removing the tyres as above described.

This was an action for infringement of the above patent. In addition to a number of other grounds for invalidity, that of disconformity was raised.

As to disconformity, it was argued that the provisional only disclosed a *convex* rim, on which the tyre was kept in position by wires *outside* the rim, which wires exerted *contractile force* by being screwed tight or "sprung" on if spring wires, whereas the complete disclosed a tyre kept on by air-pressure as the active force, the *inextensible* wires only operating by *reaction* to resist the results of inflating the tube, and the automatic mode of attachment (*i.e.* without the use of a wrench). On the other side it was contended that the tyre proper was on a convex surface, *vis.* the inflated tube; that the complete only showed the modifications necessary to adapt it to pneumatic tubes, which were a natural development of the invention; and that it was sufficiently foreshadowed in the provisional (as quoted *verbatim* above).

It was proved that at the date of the patent pneumatic tyres were known and used, although only to a slight extent.

The Courts of First Instance and of Appeal gave judgment in favour of the plaintiffs.

On appeal to the House of Lords:—

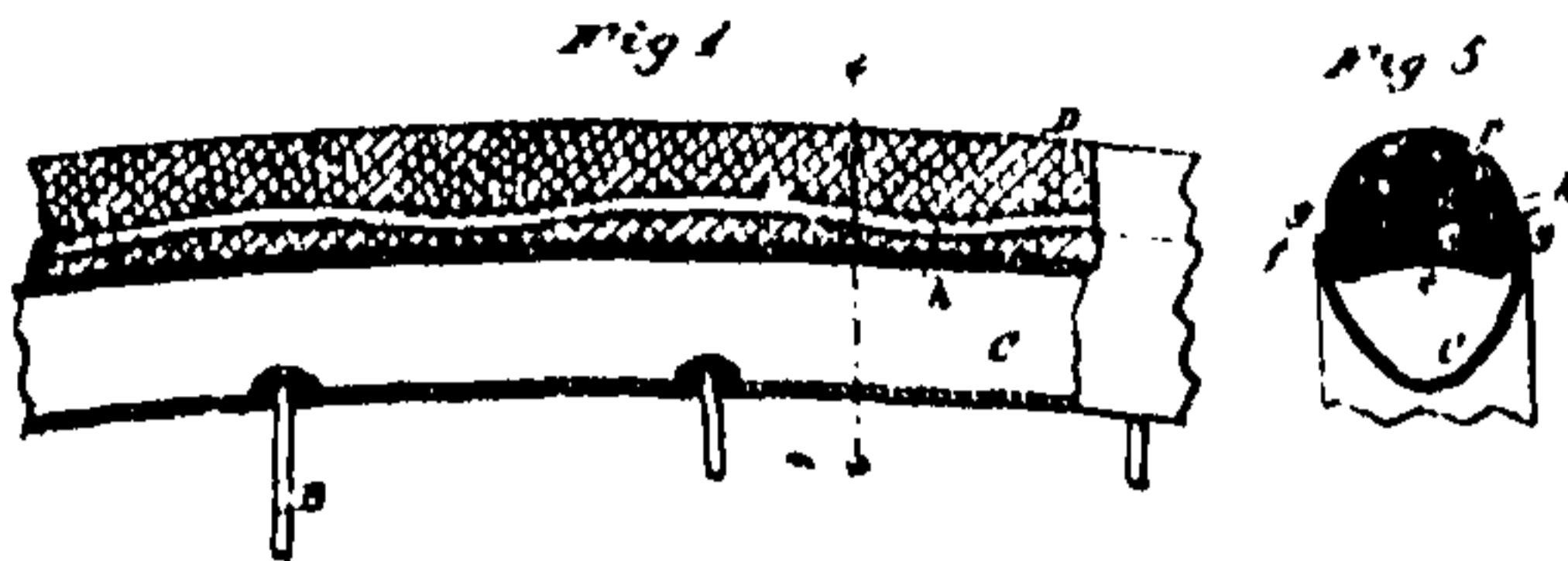
Held (comparing the case with the facts and arguments in *Newall v. Elliott, ante*, p. 201), that the invention objected to was the same invention as described in the provisional specification, with a development that almost must necessarily have been discovered in the interval between provisional and complete specifications, and that the patentee was bound to disclose it in his complete.

1897. PNEUMATIC TYRE CO. v. EAST LONDON RUBBER CO.,
14 R. P. C. 573.

In this case, besides the objection of disconformity, that of want of novelty was raised to the validity of *Welch's* patent.

Several prior specifications were put forward as anticipations. The nearest to *Welch's* was an American one of *Latta* (341811, 1886). It described the construction

of a velocipede. The portion alleged to anticipate *Welch's* invention is illustrated by Fig. 5, in which D, the tyre, is concave on the inner side (f) to fit the crown (c) of the rim, (h) represented "spring wires" embedded in the rubber tyre.



Latta's method of wiring on tyres.

These wires were to be crimped in a serpentine form, and their ends preferably secured before the tyre is moulded, so as to constitute complete rings. Cementing was mentioned as an alternative. The claims spoke of "an elastic tyre having a wavy or serpentine spring wire moulded" therein. No mention of an inextensible wire was made.

Held, at the trial and by the Court of Appeal that *Welch's* invention was novel, *Latta's* wires performing a different function in the tyre.

The decisions on disconformity were the same as noted in the preceding case.

1899. KYNOCES, LTD. v. WEBB, 17 R. P. C. 100.

Construction of Claim—Limit of Benevolent Construction.

A patent (No. 2343 of 1891) was granted to *T. G. Webb* for "an improvement in apparatus for concentrating sulphuric acid."

The invention was thus described in the complete specification:—

"Fig. 1 is a longitudinal section of the furnace-chambers and concentrating-vessels.

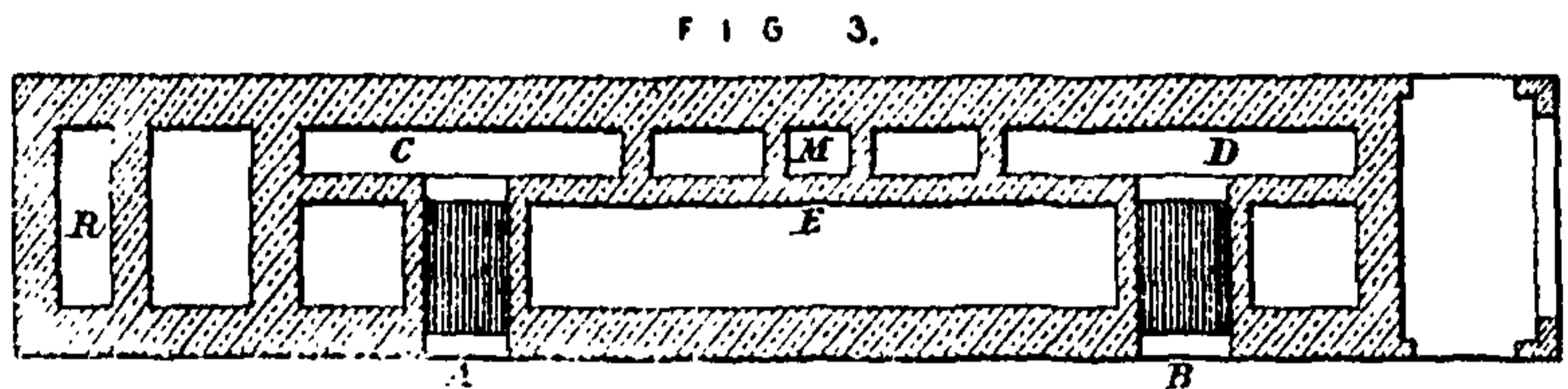
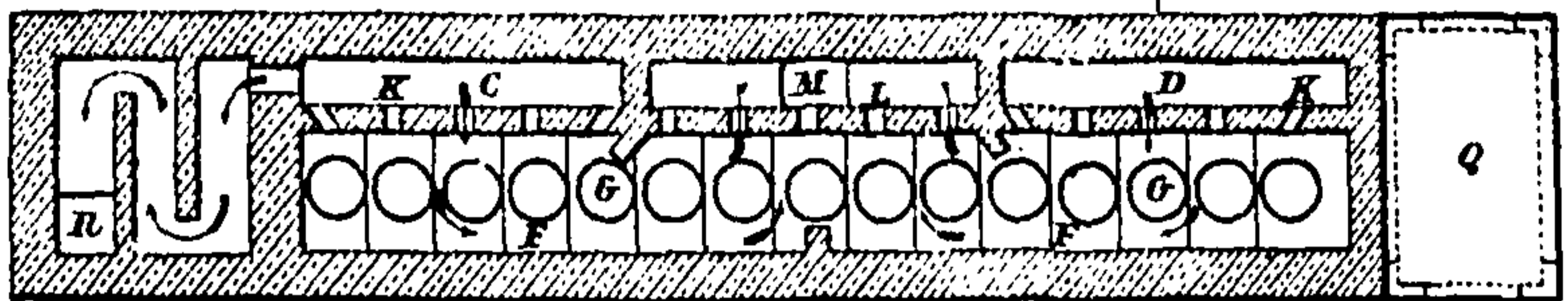
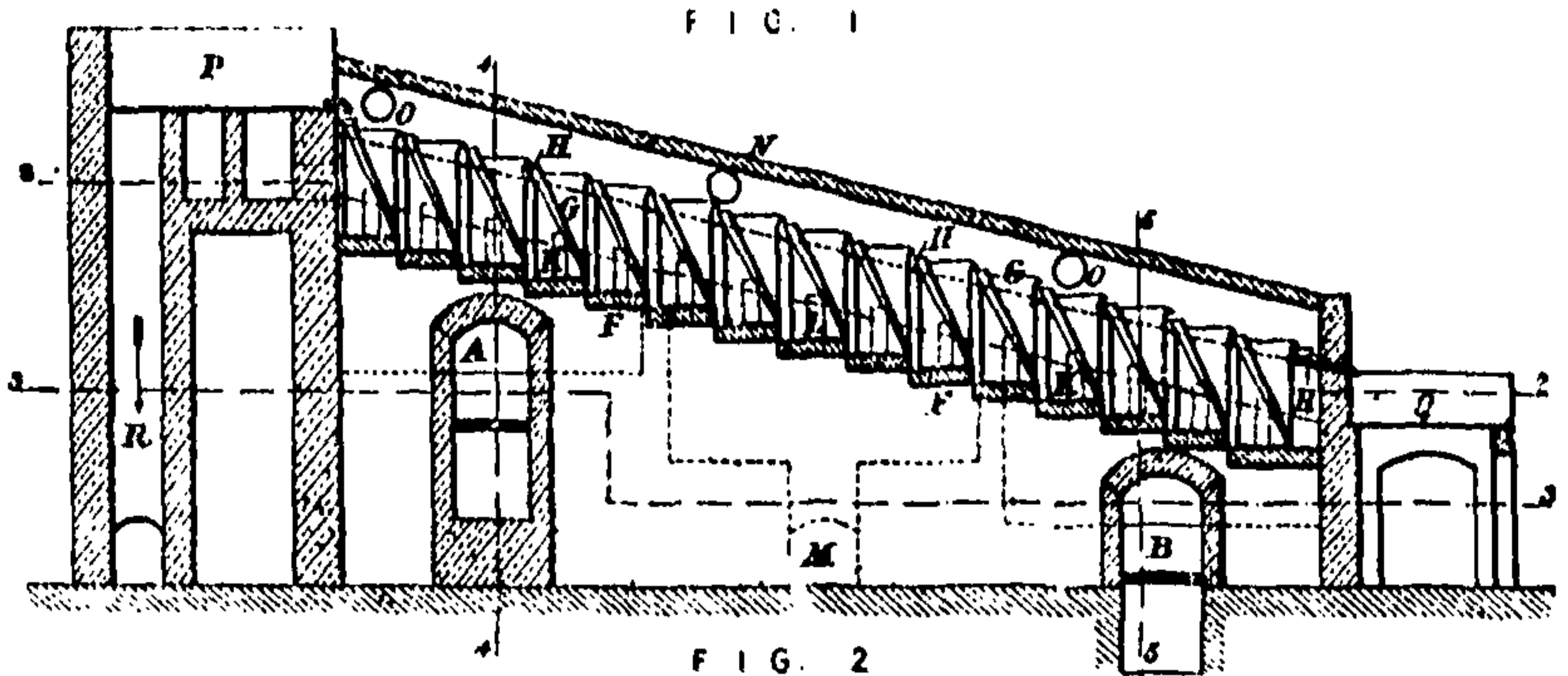
"Figs. 2 and 3 are sectional plans on the lines 2—2 and 3—3 of Fig 1 respectively.

"Figs. 4 and 5 are transverse sections on the lines 4—4 and 5—5 of Fig. 1 respectively.

"A long rectangular furnace-chamber is arranged with two fires, A and B, from which the hot products of combustion pass into chambers, C and D, behind a wall, E.

The space in front of the wall E is covered by slabs, F, arranged in

steps, and on each step is placed a deep cylindrical glass vessel, G, formed with a projecting lip forming an overflow spout at its upper edge. In each of these vessels is loosely placed at an angle a tapered glass tube reaching down to its bottom from the spout of the next higher vessel, the lower end of this tube having an outlet slit along its side. Around the vessels G, near to their upper edges, is formed a floor, H, which may be of iron plate



Diagrams from Webb's specification (No. 2343 of 1891).

made sloping as shown, or it might be made in steps corresponding with the slabs F.

“ Passages, K, are made for the hot products of combustion from the Chambers C and D into the space under the floor H occupied by the vessels G, and passages, L, are made from that space for the products of combustion to the back chamber whence a flue, M, leads to a chimney. Above the tops of the vessels G there is a roof N, and from the space under it pipes, O, serve to carry off fumes. At the upper end of the slope is a tank, P, containing the weak acid that has to be concentrated, and at the lower end of the slope is a tank, Q, to receive the concentrated acid. Hot products of combustion from the chamber C circulate under the tank P, and descend a flue, R, leading to a chimney.

“ The apparatus is worked in the following manner. The hot products

of combustion from the fires A and B pass into the chambers C and D, and issuing thence by the passages K, circulate around the vessels G, heating them, and finally flow away by the passages L to the chimney-flue M. Weak sulphuric acid supplied from the tank P, where it is somewhat heated, flows into the taper-tube of the highest vessel G, and is conducted by the tube to the bottom of the vessel, causing overflow by the spout of the vessel into the taper-tube of the next lower vessel, and thus the acid flows from vessel to vessel becoming more and more concentrated, until finally it overflows from the lowest of the vessels into the receiving-tank Q. The vapour and fumes evolved pass away by the pipes O.

“By arranging the overflow from each of the vessels G to descend by a tube to the bottom of the next vessel, I ensure that all portions of the liquid are subjected to heating while they reascend to overflow again. If the weak acid simply overflowed from one vessel to the next without being forced to descend, it would, owing to its comparative lightness, be apt to flow merely across the upper part of the vessel, whereas by conducting it down to the bottom it displaces a portion of the liquid above it, causing overflow of that which has been heated while ascending from the bottom.

“The numbers and dimensions of the vessels G may obviously be varied, and a single fire or more than two fires or gas-burners might be used for heating them, these appliances being arranged in any convenient manner to give an approximately uniform heat throughout the chamber containing the vessels G, without any openings which might allow cold air to strike against the glass.”

The claim was in the following terms:—

“For concentrating sulphuric acid, a series of glass vessels placed on steps in a heating-chamber, each of these vessels being made with an overflow spout and having placed in it a glass tube reaching down to its bottom from the spout of the next higher vessel, arranged and operating substantially as herein described.”

An action for infringement of this patent was brought by the patentee against *Kynochs, Ltd.*, in the High Court of Justice in Ireland. Besides denying infringement the defendants also contended that the patent was invalid because—*inter alia*—the invention was not new, nor subject-matter for a patent, the specification did not distinguish what parts of the alleged invention were new and what old, and that it was ambiguous and misleading.

The principal anticipation alleged was *Chance's* process (Specification No. 1243 of 1871). *Chance's* apparatus¹ (Figs. 1 and 2) consisted of a series of retorts, *a*, resting on sand, *b*, in an inclined flue, *c*, heated by a furnace, *d*, at its lower end. Dilute acid entered at the top by the pipe, passed down the funnel *e* to the bottom of the retort. The overflow of acid (more concentrated owing to evaporation) passed similarly through the pipe

¹ Fig. 1 is a cross-section through the lowest retort of the series; Fig. 2, a longitudinal section of the arrangement.

to the next retort, until the final product issued from the lowest retort. The retorts were kept at gradually increasing temperatures by reason of the furnace being at the lower end. The steam was either carried off by a separate flue, *g* (Fig. 1), or allowed to evaporate without such flue. Other diagrams showed the mode of arrangement of the apparatus on a manufacturing scale. The claim was for the continuous process.

Another alleged anticipation showed open beakers with lips for the overflow, without tubes to bottom of vessels, but it had not been practically used.

It was proved at the trial that the invention in question produced improved results over the older combinations. The output of acid was more than doubled and the cost of fuel greatly diminished. Breakages could be immediately repaired without stopping the process.

At the trial the patent was upheld by the Master of the Rolls. (15 R. P. C. 269.)

On appeal to the Court of Appeal the lords justices were equally divided in opinion, so the appeal was dismissed. (15 R. P. C. 541.)

The defendants appealed to the House of Lords.

Held, that the patent was invalid, as the claim was wide enough to include *Chance's* invention.

Per Lord *Halsbury*, L.C. (p. 107): "It seems to me that the majority of the Court relied on the fallacious assumption that every improvement in a known patentable article was necessarily of itself a patentable improvement, and that in this case, in which I will assume in favour of the respondent that his machine is better, cheaper, and more efficient than that of the original patentee, this entitles him, not only to use the original patentee's invention, but actually to proceed against him for an infringement of his patent. . . . Now, the claim is that which explains the invention, and the width of the claim is here probably intentional. It is aimed at comprehending every form in which this invention can be used; and if *Chance's* patent were still unexpired, it would be impossible for him, in my judgment, to escape from an action for infringement if this patent were before his, and the limit within which a patentee's rights are to be confined is no immaterial or trivial matter."

Per Lord *Davey*, (p. 115): "Any one might, of course, invent an improvement in any of the parts of the apparatus or a new arrangement or some useful addition to the parts of the apparatus described by *Chance*, and (if otherwise patentable) claim protection for such improvements. But this is not what the respondent has done. He does not by his specification claim to be the inventor of any such improvement, but his claim is for the combination, and whatever merit is in his patent is the combination. Putting it at the best for him he claims a particular form of *Chance's* machine; but in my opinion, as I have already said, his claim is wide enough to cover all that *Chance* invented and described." His lordship referred to *Foxwell v. Bostock* (*ante*, p. 225), *Harrison v. Anderston Foundry Co.*, (*ante*, p. 249), and other cases, and continued (p. 116): "I will assume that the respondent's

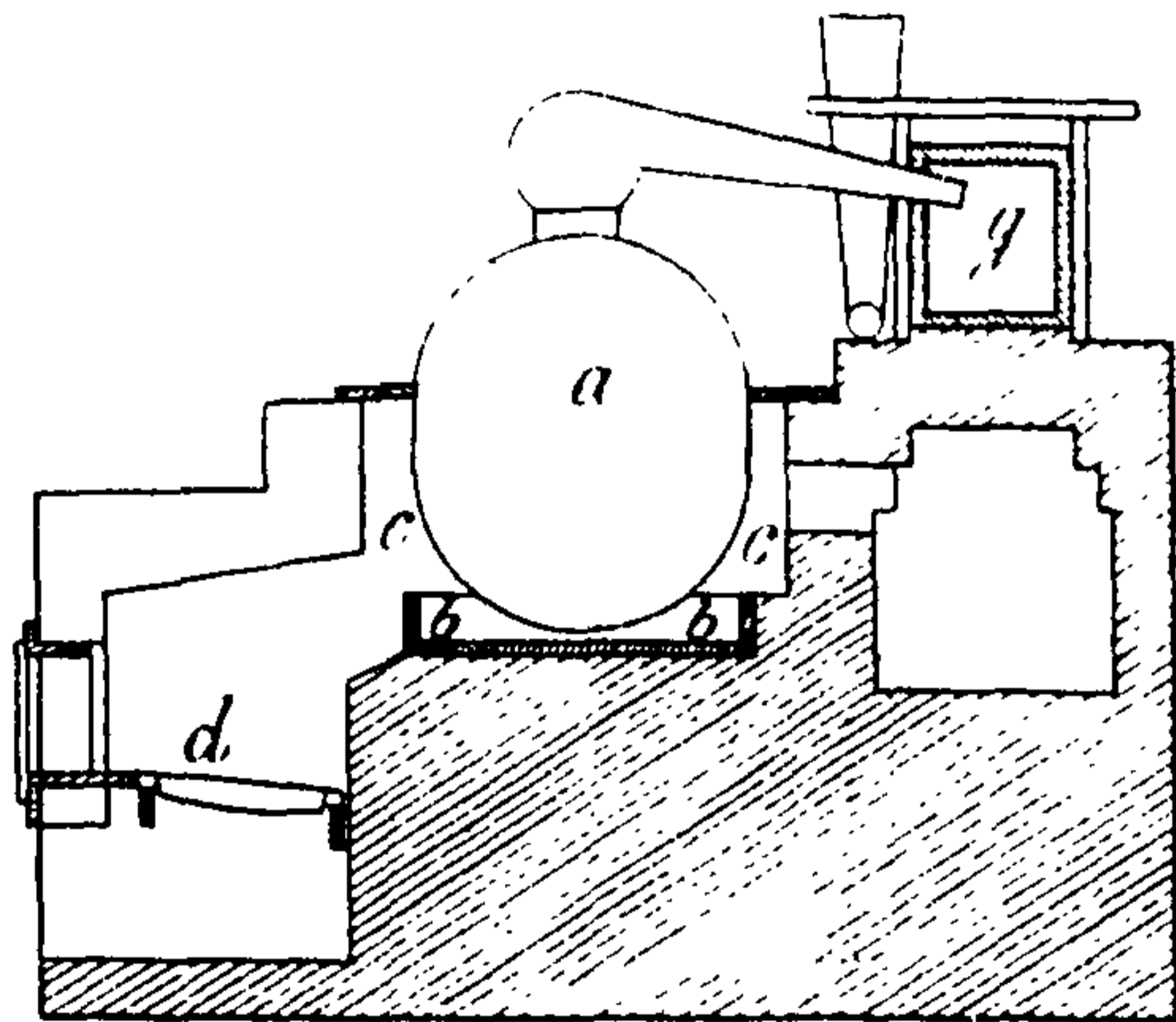


FIG. 1.—Cross-section of lowest retort.

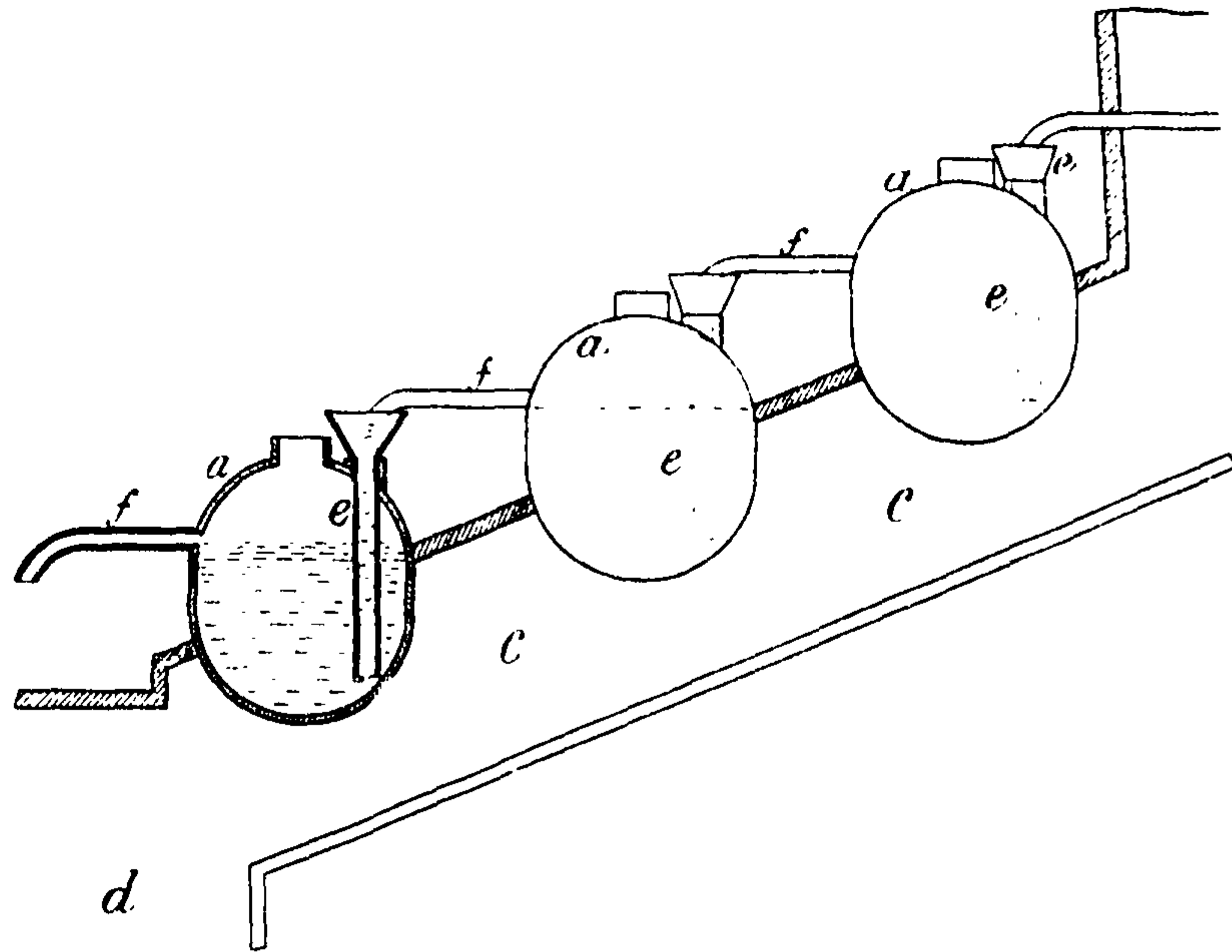


FIG. 2.—Longitudinal section.

Diagrams redrawn from Chance's specification (No. 1243 of 1871).

apparatus is more compact and easily worked, and produces better results with a less expenditure of fuel than one made strictly in accordance with the illustration of his invention given by *Chance*, and it is not wonderful that with the experience of nearly thirty years that should be so. But that will not, in my opinion, entitle him to maintain his present patent. The fallacy which underlies the respondent's arguments, and with great respect some of the judgments below, is the assumption that every useful discovery is a patentable invention." His lordship referred to Lord *Cranworth's* judgment (*Ralston v. Smith, ante*, p. 230), and continued: "In the present case I cannot say that the respondent's apparatus, as claimed by him in his specification, is a new manufacture within the realm. . . . If upon a fair construction of the specification with the assistance of experts and other admissible evidence, you find it contains matters that are not new, you must give effect to it. You are not to put a forced construction on the specification, as not intending to claim something that is old because it was foolish or suicidal of the patentee to claim it."

1900. *DICK v. ELLAM'S DUPLICATOR COMPANY*, 17 R. P. C. 196.

Subject-matter—Claim too wide.

A patent (No. 12013* of 1887) was granted to *H. J. Allison* for "improvements in the process of and apparatus for the copying, duplication, and printing of writings, drawings, typewriting, prints, and designs."

The complete specification commenced with a description of the invention. To make a stencil "I use a thin, tough, highly porous sheet, coated or filled with a material impervious to ink, the sheet being so thin and porous that wherever the filling or coating is removed, the sheet becomes open to the transmission of ink." The sheets were preferably to be thin enough to be permeated by printers' ink after a typewriter had been used to remove the paraffin coating. A thin porous sheet, as Japan dental paper or Yoshino, or any other sufficiently thin, was coated with paraffin or other impervious substance. A typewriter or similar instrument could then open the pores without puncturing or abrading the surface. The chief function of this sheet was for duplication of typewriting. The application of the paraffin or its substitute was described. "In the process I use by preference a sheet of the said dental paper" of a certain thinness. The details of the process of waxing this paper were described.

"I do not claim this process of waxing the sheet, however, but only describe it to enable it to be made without difficulty. I believe that well-known methods of manufacture are equally efficacious."

The mode of using the stencil thus produced to make copies was next described. The bearing surfaces used in making the stencil sheet were disclaimed, also the method of making stencils from paper impervious to ink, and the use of chemicals to eat into the texture of impervious paper.

The claims were :—

“ 1. A transmitting printing-sheet consisting of a thin porous transmitting sheet, through which ink is readily transmitted, as Japanese dental paper or Yoshino, filled or coated with a substance impervious to ink, as paraffin, substantially as described.”

The 2nd claim was for the removal of the paraffin from such sheet at the points of printing. The 3rd for the process of preparing the printing-sheet by the pressure of the printing instrument. The 4th for a like method of making the printing-sheet from Yoshino by a typewriter.

“ 5. A transmitting printing-sheet consisting of a sheet of Japanese dental paper or Yoshino coated with paraffin substantially as described.”

At the trial a number of specifications were alleged as anticipations. It was proved that waxed papers were known, varying, as to thickness, toughness, and texture. Waxing paper was a well-known process. It also appeared that perforation did in fact take place in plaintiff's process, but the disclaimer was held to apply only to cases where perforation avowedly took place.

The patent was held invalid for want of novelty or subject-matter.

On appeal to the Court of Appeal :—

Held, that the first and fifth claims were for a particular kind of paper printing-sheet, apart from the mode of producing it, and were too wide to support the patent.

Per *Lindley*, L.J. (p. 202) : “ There is nothing new in covering paper with any kind of wax. Then he says, ‘ I take a particular class of thin, tough, porous paper. That is what I want, and I claim all such paper covered with wax.’ Having regard to the state of knowledge, and having regard to what was done, there appears to me an absolute want of subject-matter at all. You cannot have a patent for covering one kind of paper with wax, when it is common knowledge that you can cover any paper with wax. The real truth is that his invention is the use of such paper with a particular typewriting machine.”

1900. COOPER & CO v. BAEDER, 17 R. P. C. 209.

Large Sale—Want of Inventive Ingenuity.

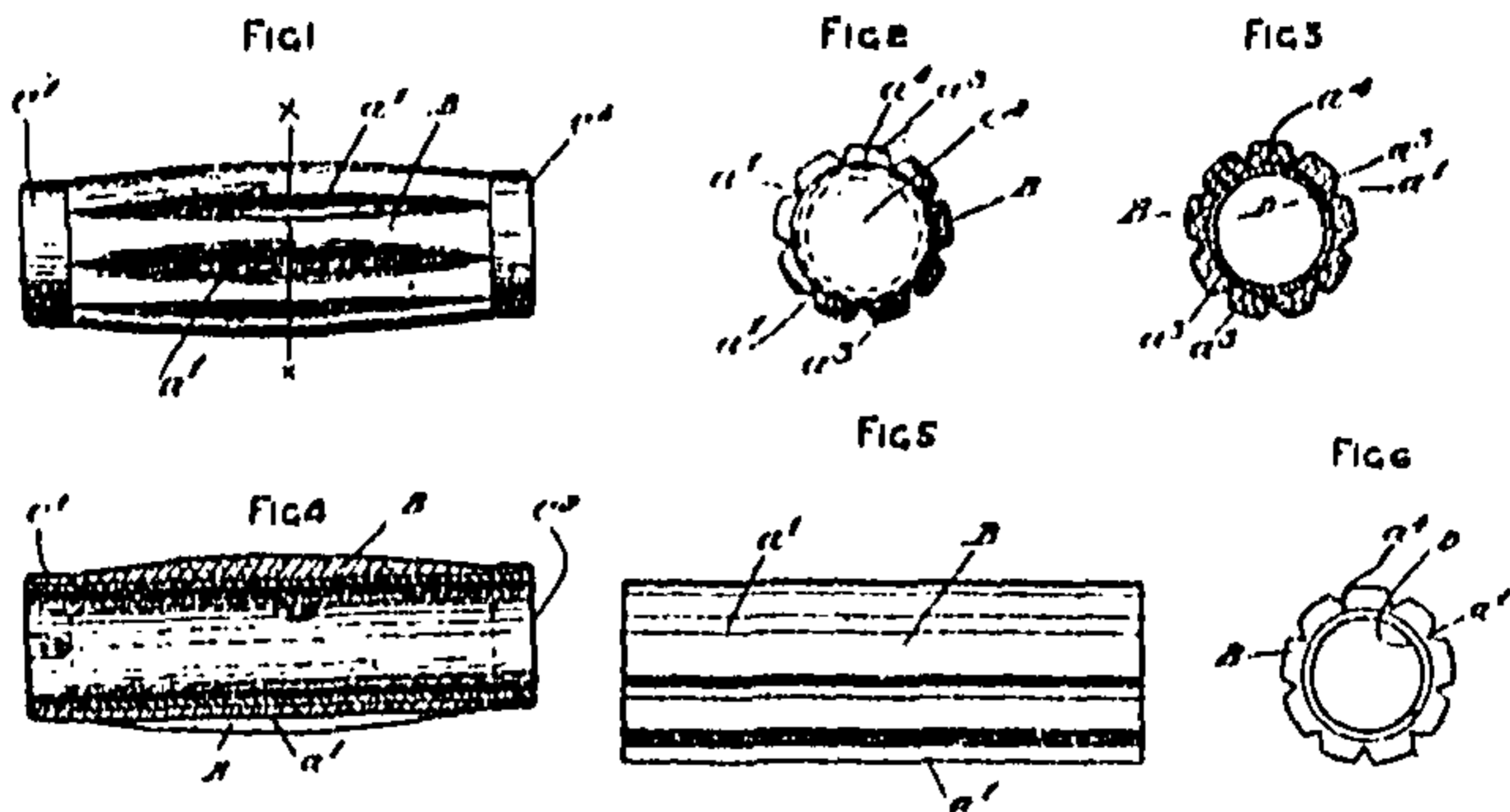
A patent was granted in 1894 (No. 18349) to *F. G. Bensley* for “ improvements in felt handles for velocipedes, golf-sticks, and for other articles, and in the manufacture of the said handles.”

The following extract from the complete specification describes the invention :—

“ Fig. 1 is a side view of a velocipede felt handle constructed according to this invention; Fig. 2 is an end view of the same; Fig. 3 is a cross-section of the same on line X X of Fig. 1; Fig. 4 is a longitudinal section of the same; Fig. 5 is a side elevation, and Fig. 6 is an end elevation

of the partly formed handle; and Fig. 7 shows the strip of felt partly operated upon in accordance with this invention to form three of the said handles.¹ . . .

"In carrying out my invention I take a piece of sheet felt, A, of suitable thickness, say about three-eighths of an inch more or less, but I do not con-



Diagrams from Bensley's specification.

fine myself to any particular thickness, and of sufficient size for making say three handles (see Fig. 7), although the piece of felt which I operate upon may if desired be large enough to make only one or two of the said handles, or it may be large enough to make more than three of the same. I groove this piece of felt longitudinally from end to end, these grooves, a^1 , being sufficiently deep and near enough together to allow of the felt being readily bent into the cylindrical shape of about the size of the required handle shown in Figs. 1, 2, and 3, of which the felt portion is marked B. The piece of felt (Fig. 7) is now (or after being formed into a cylinder as stated above) cross-cut at a^2 into short pieces, each long enough to make one of the required handles, which are then bent into the cylindrical shape as aforesaid, the grooves a^1 being on the outside of the same (see Figs. 5 and 6), and allowing of the bending of the felt into this form, which would be difficult or impossible unless the felt were grooved as aforesaid. The meeting edges of the piece of felt are now secured together at a^4 by being glued or otherwise firmly fixed together. The felt cylinder thus formed (see Figs. 5 and 6) is now turned in a lathe or otherwise machined on the outside if desired so as to reduce the same towards the ends, which are finished by metal mounts, C^1 , C^2 , fixed thereto which may be of the usual kind, or these mounts may be dispensed with. The edges a^3 at the terminations of the grooves a^1 are by preference rounded off as shown in Figs. 2 and 3 so as to afford a more comfortable grip to the hand."

Modifications consisting of a cylindrical lining, D, and modes of joining, and also the advantages of the invention, were described.

¹ It is not necessary for the present purpose to reproduce Fig. 7; it showed merely a strip of felt with nicks or slits in it.

The first claim was for :—

“Making felt handles for velocipedes, golf-sticks, tennis-rackets, and for other articles by first grooving a piece of sheet felt longitudinally at intervals, then bending the same and securing the meeting edges together so as to form a felt cylinder grooved from end to end on the outside which is or is not afterwards reduced towards the ends, all substantially as set forth.”

The second claim was for the handle when manufactured, and the third for the particular form shown in the diagrams with the reduced ends.

This was an action for infringement of this patent.

It was proved at the trial that the invention was so successful that 286,000 handles had been sold in five years. The old method was to turn the handles out of a solid block of felt. Handles so made had been before the patent grooved on the outside. This invention avoided the previous large waste of material.

At the trial the patent was held invalid.

Held, by the Court of Appeal, that the essence of the invention lay in grooving the sheet felt to make it flexible before bending it round for the handle, and that there was not subject-matter to support the patent.

1900. ELECTRIC CONSTRUCTION CORPN. v. IMPERIAL TRAMWAYS CO.,
17 R. P. C. 537.

Claim—Construction of.

A patent (No. 9527 of 1885) was granted to *T. J. Handford* (a communication from *F. J. Sprague* of *New York*) for “improvements in motors for electric railways.”

The complete specification commenced as follows :—¹

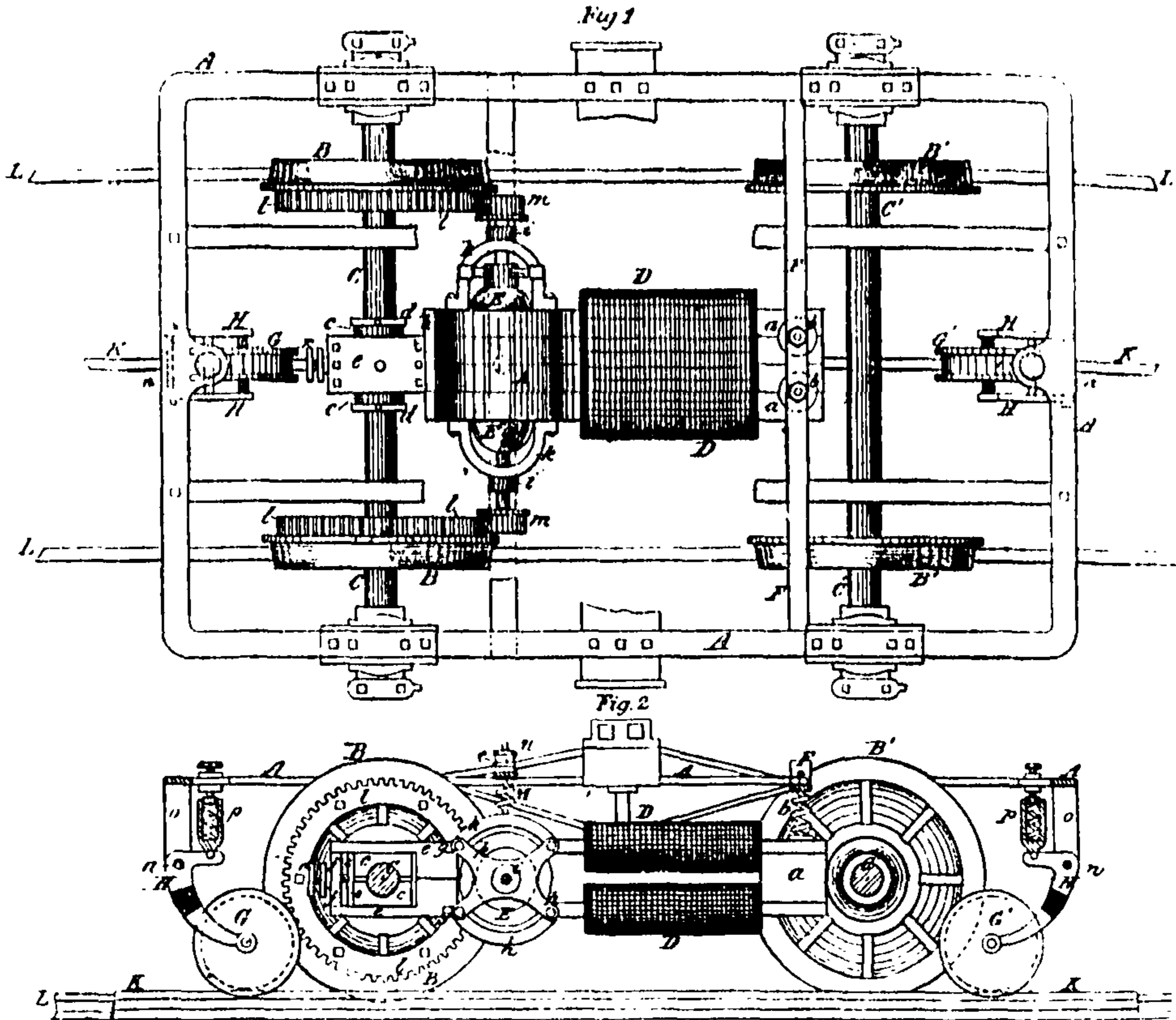
“This invention relates to electric motors mounted upon railway cars or carriages for the purpose of propelling the same, and its object is to so arrange and support the motor that the relative positions of its armature (E) and field-magnet (D) will not be changed, and the mechanical connections between the armature and the driving-axle (C) will not be disturbed by any movement of the car-body or carriage-body on its springs, while at the same time the driving-axle is relieved of dead weight.

“In accomplishing these objects, the yoke or back-piece (*a*) of the field-magnet (D) of the motor is hung from a cross-piece (F) of the truck (A) of the car or carriage by heavy springs (*b, b*); or from the car-body itself in case of a street-car or other vehicle having no truck.

“The driving-axle (C) of the car or carriage at its middle portion is

¹ The references to the diagrams are introduced into this part of the specification to save repetition. Fig. 1 is a plan, and Fig. 2 an elevation of the motor with tooth-gearing. Figs. 3 and 4 were corresponding ones for frictional gearing. Only the essential parts of the specification are here given.

enclosed in journals (*c, c*) situated between collars (*d, d*) on the axle, and these journals are held by clamping-parts (*e, e*) joined together on one side of the axle by a plate (*f*) to which they are bolted, and on the other side bolted to parts (*g, g*) extending from the pole-pieces (*h, h*) of the magnet.



Diagrams from Handford's specification (No. 9527 of 1885).

The clamping-pieces (*e, e*) are of non-magnetic metal. The field-magnet is thus sleeved or centred upon the axle.

"The bearings (*i, i*) of the armature-shaft are carried directly upon the field-magnet pole-pieces, being supported by arms (*k, k*) attached to the journal-boxes and to the said pole-pieces. . . .

"In order to relieve the driving-axle of the dead weight of the motor centred upon it, supporting springs (*M*) are employed which are connected with the sleeve centering the motor upon the axle, or with the polar extensions of the field-magnet, or at any other suitable point. These springs extend to cross-bars upon the truck-frame or to the car-body if there is no truck. Their tension is adjusted by nuts (*t*) locked by other nuts (*u*).

"This adjustment may be such as to carry wholly or partly the weight of this end of the motor or so as to actually exert a pressure upon the lower side of the driving-axle. By this arrangement the hammering effect which would result from supporting the motor directly upon the axle is reduced to the minimum."

Modifications of adjustment for frictional gearing were here given, and detailed descriptions of the drawings. The following passage occurred:—

"The armature being carried rigidly by the field-magnet, these two parts must always maintain precisely the same relative position under every vertical or lateral movement of the wheels or of the car-body or carriage-body, and as the field-magnet which carries the armature is itself centred by the axle of the wheels to which the armature-shaft is geared, the engaging gears also must always maintain precisely the same relative position. . . .

"At the same time the connection of the entire motor with the truck is through springs, so that its position is not affected by the movements of the truck on its springs."

The claims were:—

"(1) The motor of an electric railway car or carriage having its field-magnet centred or sleeved upon a driving-axle, its armature supported directly upon the said field-magnet, and having a shaft separate from the driving-axle and gearing-communicating motion from the armature-shaft to the driving-axle, substantially as hereinbefore described.

"(2) The motor of an electric railway car or carriage supported partly or wholly by springs from the car-body, carriage-body or truck, and having its field-magnet centred or sleeved upon a driving-axle, its armature supported directly upon the said field-magnet, and having a shaft separate from the driving-axle and gearing-communicating motion from the armature-shaft to the driving-axle, substantially as hereinbefore described.

"(3) The motor of an electric railway car or carriage centred upon the driving-axle at one end, and having spring supports at the other end."

This was an action for infringement.

Amongst many alleged anticipations was one that consisted of a drawing from the inventor's American specification, almost identical with that here shown, published with the claims in the American Official Gazette, a copy of which was lodged in the British Patent Office four weeks before the date of the application for the patent. Expert witnesses proved that this drawing disclosed to electricians the invention claimed in the first claim provided the claim did not include a motor hung on springs, which *Sprague's* drawing did not show.

It was held that the first claim did not include springs, and that the patent was therefore invalid.

The plaintiffs appealed to the Court of Appeal.

It was argued that the whole specification showed that the motor-car could not be made unless the electric motor was suspended by springs or their equivalent, that the first claim being for a subordinate integer of the combination must necessarily only apply to a case where springs were used.

Held, that the first claim did not include springs, and that it was anticipated by *Sprague's* own drawing.

Lord *Alverstone*, M.R., dealt at length with the evidence and arguments, and distinguished *Plimpton v. Spiller* (*ante*, p. 258), and followed *The Cassel Gold, &c., Co. v. Cyanide, &c.* (*ante*, p. 367), referring to the arguments and claims in the latter case. "So here we, taking the view that the first claim in its natural meaning claims the combination excluding the use of" (p. 550) "the special springs which form the essence of the patented invention, cannot, however anxious we may be to do so, read the first claim as including that which is specifically claimed and expressed in the two following claims so as to prevent the first claim having its natural meaning. . . . It is not possible to say that that particular combination, excluding the springs, is new. I think myself it was clearly shown in the drawing of *Sprague's* invention, and shown so that any competent electrician would have understood it at once. Then it was said, 'You must not act on a drawing alone.' I know of no such principle. A drawing, like any other anticipation, must be judged according to the facts of the particular case."

Per *Rigby*, L. J. (p. 550): "Claim 2 in effect differs only from claim 1 by the addition to it of the words 'partly or wholly by springs from the car-body, carriage-body, or truck.' The words of claim 1 are afterwards repeated *verbatim*, and you do not need anything more to show that the differentiation of meaning is involved in those words. . . . It seems to me that it is exactly the same thing as if claim 1 had said, 'substantially as hereinbefore described, but not supported wholly or partly by springs.' . . . It has been argued that, although certain words are not there by some construction you must treat them as if they were there. I think that an absolute impossibility, having regard to claim 2. But on what ground must you treat them as being there? It is said to be otherwise absurd. I doubt that, and I am afraid that would not be enough. Patentees are not to be held free from absurdities, or free from mistakes. They are subject to them, and, absurd as it may appear that the patentee should have made such a claim as claim 1, . . . that is not sufficient reason."

1900. CASTNER-KELLNER ALKALI CO. v. COMMERCIAL DEVELOPMENT CORPORATION, 17 R. P. C. 593.

Disconformity—Relative Motion.

A patent (No. 20259 of 1894) was granted to *C. Kellner* for "improvements in electrolytic apparatus for decomposing metallic salts."

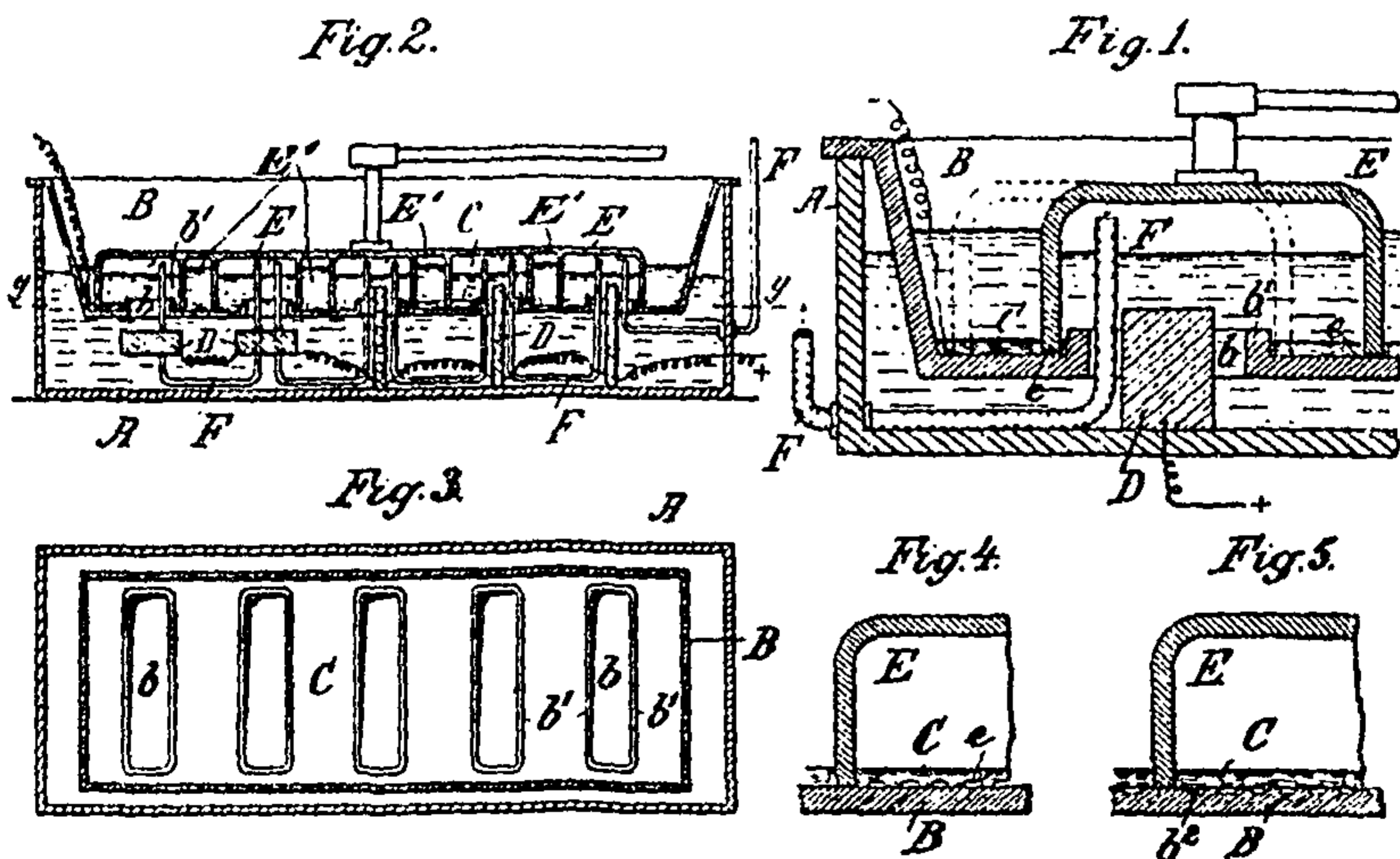
The specifications described the invention as follows:¹—

¹ The two specifications are here given together. The provisional is read by including the words in italics and omitting the words in brackets; conversely with the complete. They can thus be at once contrasted.

“This invention has reference to an apparatus for the electrolysis of alkaline salts with the aid of a stationary mercury cathode, in which the amalgam formed by electrolytic action has its location changed from the decomposing-chamber, in which it is produced, to a combining-chamber, in which it is decomposed and the cation combined with water, an acid, or other body, by the shifting of a partition which is adapted to be moved to and fro in the mercury, and serves to separate the two aforesaid chambers from each other. The partition is in this case made in the form of a bell closed at its lower edge by a mercury seal and enclosing the decomposing-chamber, so that the amalgam formed in the latter is caused by the shifting of the bell to have its location alternately on one side and on the other side of the bell without itself changing or moving its position, and is thus caused to gain access to and become situated in the combining-chamber, whilst the mercury on the other side of the partition, which was previously situated in the combining-chamber, effects [in the decomposing-chamber] the amalgamation of the metal that is being separated by the electrolytic decomposition of the electrolyte. [In this way, a considerable output can be obtained from the apparatus with a comparatively small quantity of mercury, because both operations can take place simultaneously and uninterruptedly.]

“In the accompanying drawings [filed with my provisional specification],

“Fig. 1 is the vertical section taken through one cell of an apparatus constructed according to this invention ;



Drawings of Kellner's provisional specification (No. 20259 of 1894).

“Fig. 2 is a longitudinal section, to a smaller scale, taken through the whole apparatus ;

“Fig. 3 is a horizontal section on the line y—y of Fig. 2 ; and

" Figs. 4 and 5 are sections through the bell showing two different forms of construction of the latter.

[" In the accompanying drawings,

" Fig. 6 is a longitudinal vertical section illustrating a modified construction of the apparatus shown in Fig. 2.

" Fig. 7 is a vertical section, and Fig. 8 a horizontal section, taken in different planes, showing a further modified construction of the said apparatus.

" Fig. 9 is a vertical section through a cell of the apparatus, similar to that shown in Fig. 1, but provided with a short-circuited secondary electrode for the purpose of rapidly removing the alkaline metal from the amalgam that has been formed.]

" The apparatus shown [in Figs. 1, 2, and 3] comprises a vessel, A, for the reception of the electrolyte to be decomposed, and a trough, B, inserted or suspended in the vessel A, this trough having in its bottom openings, *b*, which are surrounded by projecting borders, *b'*, that serve to prevent the escape, through the [said] openings,¹ *b*, of the *mercury layer or cathode* [layer of mercury] C, which serves as a cathode and covers the bottom of the trough. The anodes D are arranged in the electrolytic space of the vessel A, horizontally or vertically, and in the latter case may, as shown, also project through the openings *b* into the trough B. Each of the trough openings is covered over by a bell, E, of non-conducting material—such, for example, as glass, stoneware, porcelain, or ebonite—which dips at its lower free edge into the mercury, and is of greater width than the opening *b*, so that it can be moved to and fro through a certain distance over this opening, the extent of this movement being limited by the upwardly projecting border *b'*. The bell thus encloses the decomposing-chamber communicating with the vessel A, and forms an electrically non-conducting partition between the decomposing-chamber and the combining-chamber of the trough B, which is charged above the mercury cathode C, which constitutes the seal, with water, acid or other substance with which it is desired to cause the cation, previously taken up by the mercury cathode, to combine.

" In order that the mercury shall not become displaced by the lower end of the bell sliding over the bottom of the trough B when the bell is being moved, slots or notches, *e* or *b*², are provided in the lower edge of the bell, as in Figs 1 and 4, or in the bottom of the trough, as in Fig. 5.

" A gas-exit pipe, F, leads from the decomposing-chamber to the exterior of the vessel A.

" The anode D and the mercury cathode C are *suitably* connected to the terminals of a suitable source of electricity.

" In an apparatus of large size, such as is intended to be employed on an industrial scale, the whole of the bells E are preferably united to form a cover which is provided with partitions, and is adapted to be moved to

¹ The letter *b* after the word " openings " was in the provisional, but not in the complete specification.

Fig 6

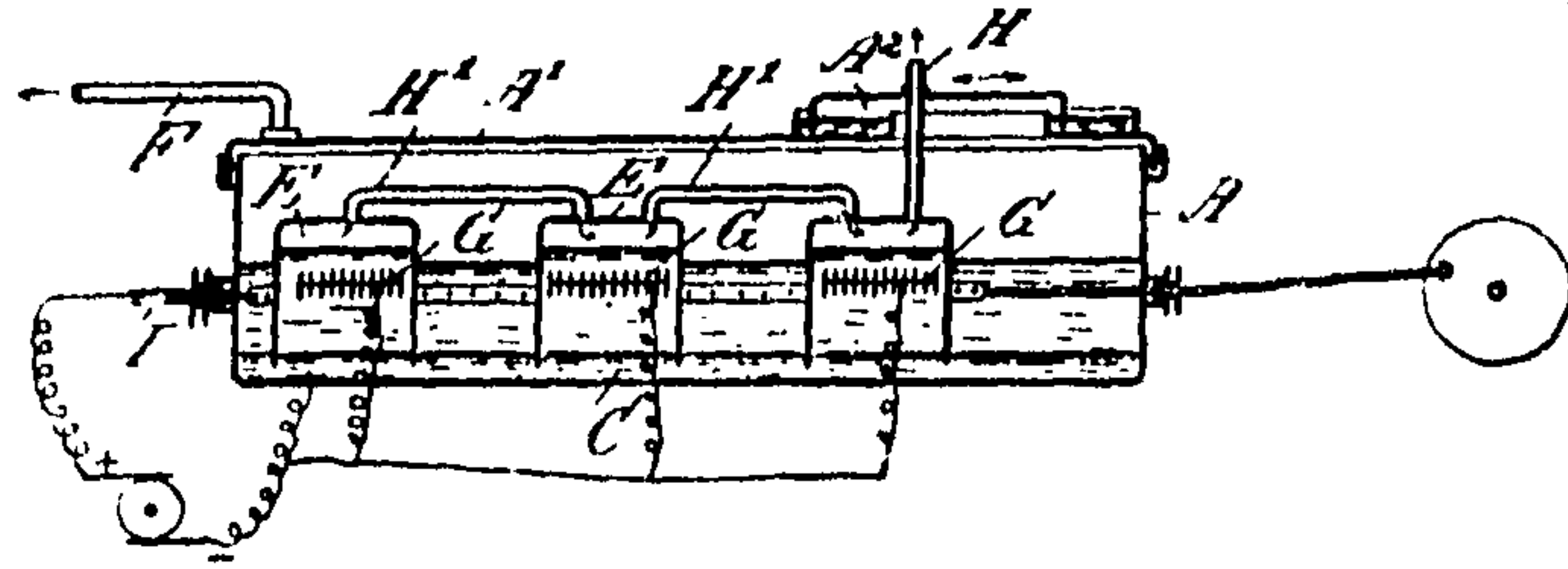


Fig 7

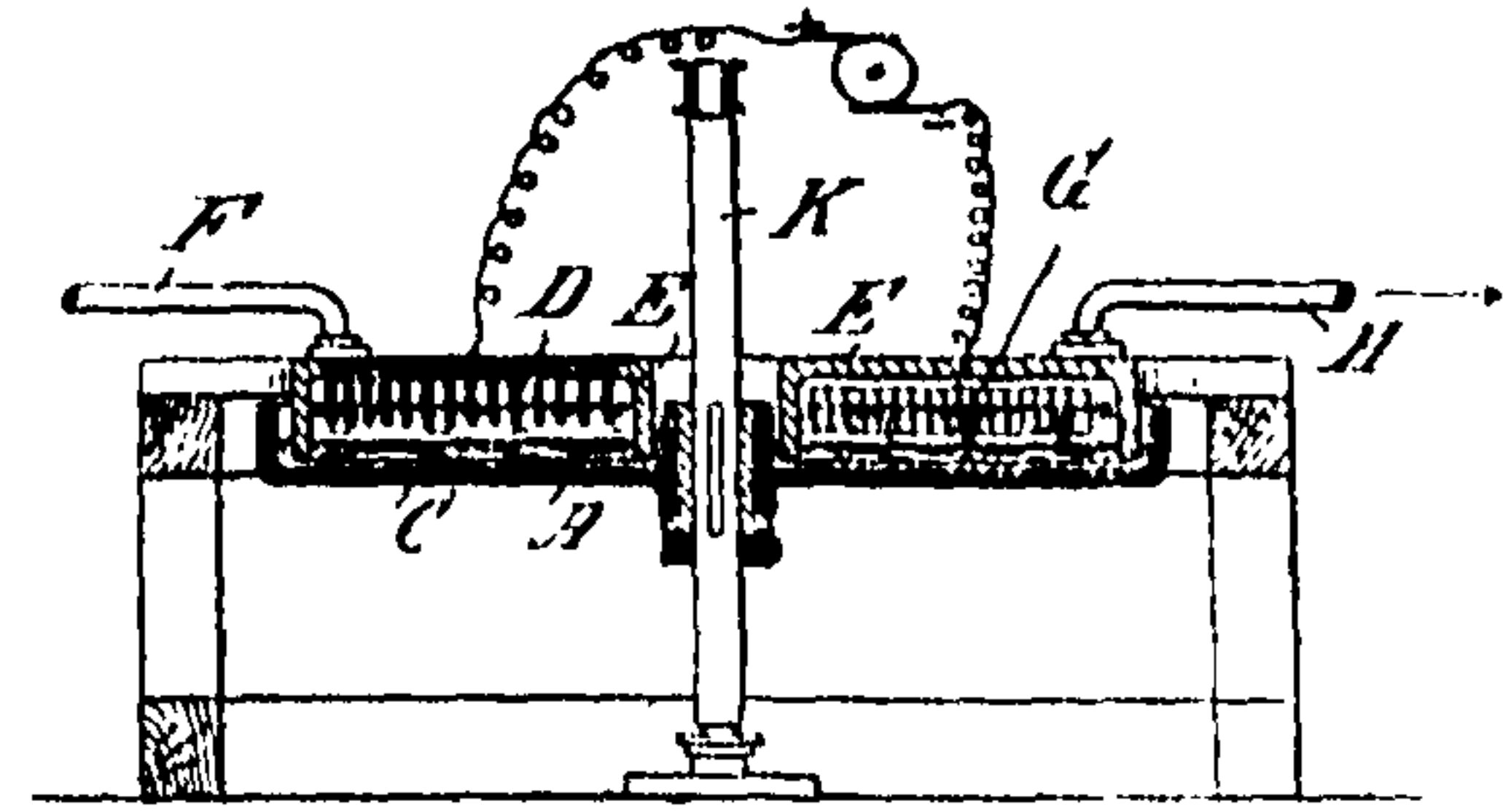


Fig 8

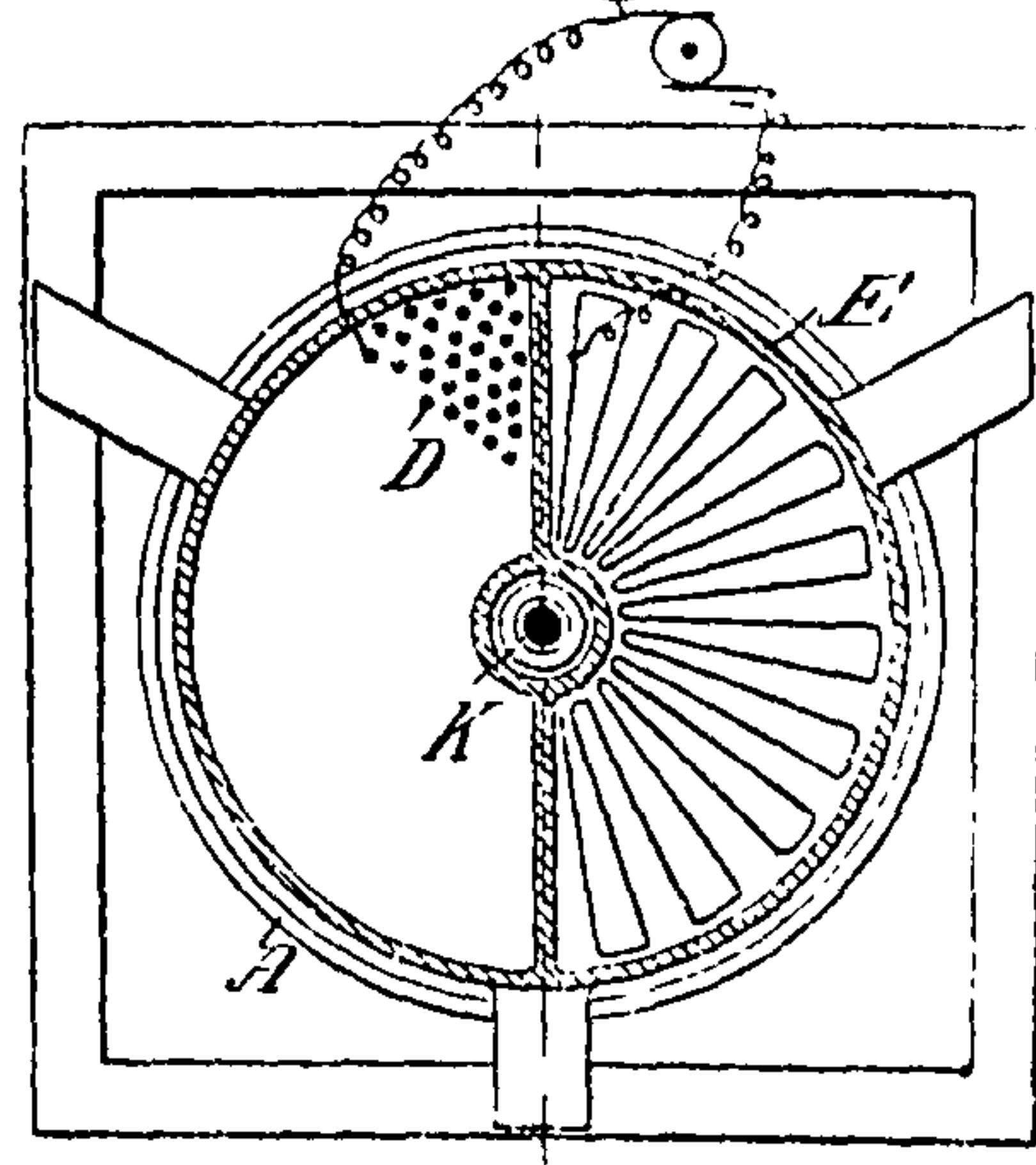
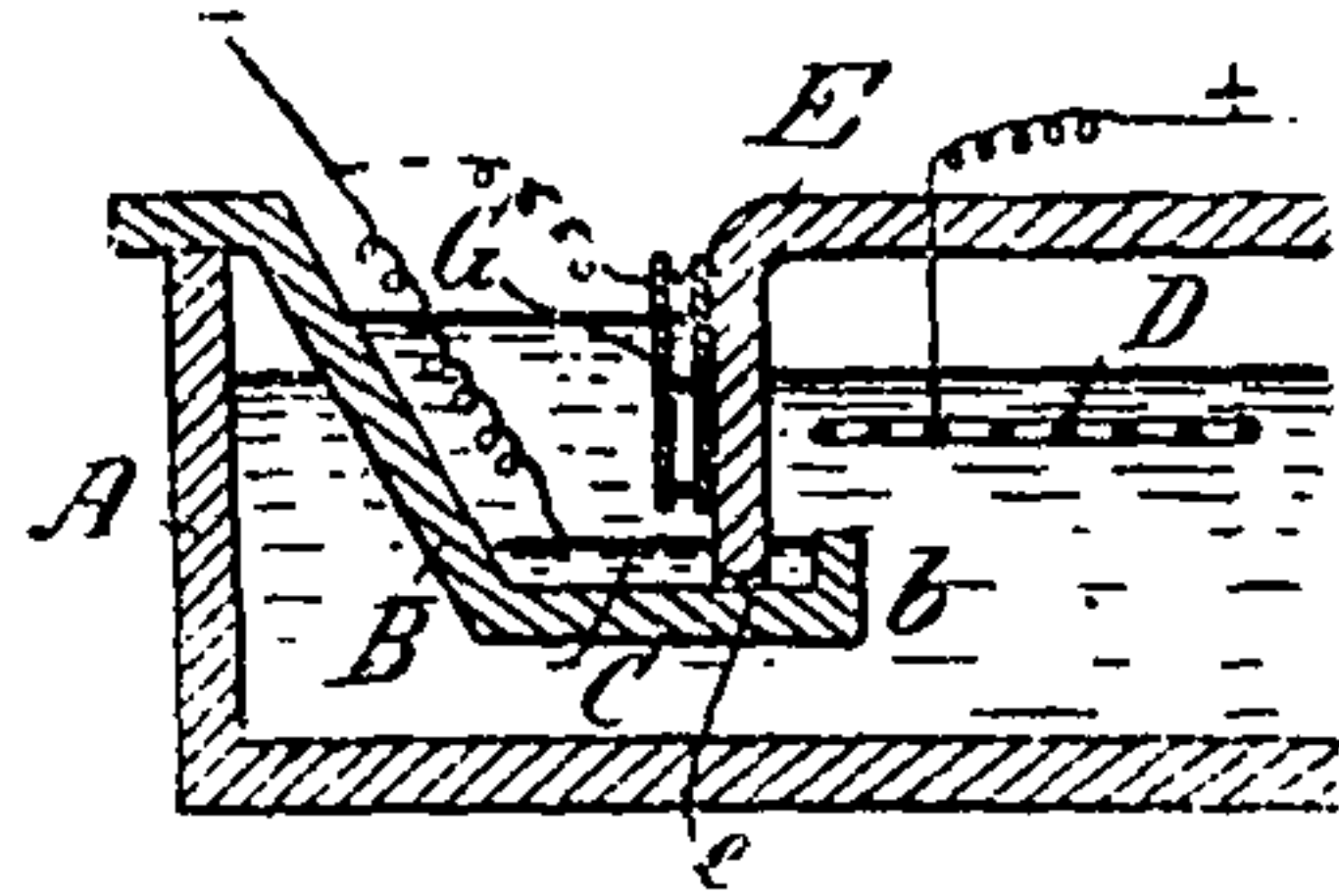


Fig. 9.



Diagrams from Kellner's complete specification. Figs. 7 and 8 show the modification constituting disconformity.

and fro in the trough B, the spaces E¹ between every two bells being arranged to communicate by means of lateral openings with the trough B, as shown in Fig. 2. The gas-exit pipes F are then arranged in such a manner that the generated gas is led through all the bells in succession, and is drawn off from the last bell.

“The manner of working the apparatus is as follows :—

“The electrolyte, for instance a solution of common salt, within the vessel A and the decomposing spaces or chambers, becomes decomposed by the electrolytic action which takes place under the bells E, the liberated chlorine gas being led off through the pipe F, whilst the metallic sodium forms an amalgam with the mercury cathode C, which is situated within the bells E on one side of the anodes D, viz. on the right-hand side in Fig. 1. If now the bells be shifted to the left *hand* into the position shown in dotted lines in Fig. 1, the stationary mercury cathode, together with the amalgam, becomes thereby situated in the combining-chamber of the trough B, which is charged, it may be for instance with water. The sodium separates out from the amalgam, and combines with the water to form sodic hydrate. At the same time, by the shifting of the bells, that portion of the mercury which was previously situated outside the left-hand side portions of the bells, that is to say in the combining-chamber, will now be located in the decomposing-chamber, and acts as the cathode to produce the amalgamation *of* [with] the sodium which is continually being separated in the said decomposing-chamber. If the bells after a suitable interval of time be shifted back into the position shown in full lines, *i.e.* to the right hand, the mercury on the left-hand side of the anodes, together with the amalgam formed thereon, [again] becomes situated in the combining-chamber of the trough, and consequently within the sphere of action of the water in such chamber; whilst on the other hand the mercury situated on the right-hand side of the anodes, and the amalgam portion of which has been *dissolved* [acted upon] in the mean time [by water to remove sodium therefrom] becomes again situated in the decomposing-chamber for the purpose of forming fresh amalgam. It will thus be seen that by the to-and-fro movement of the bells, the transposition of the amalgam formed in the decomposing-chambers to the combining-chambers, and the practically continuous formation of caustic soda in the latter, are caused to take place alternately on the one side and on the other side of the anodes, whilst the mercury cathode itself remains at rest.”¹

The complete next described by Fig. 6 a modification in which the amalgam was decomposed inside the bell E, and the chlorine generated outside, reversing the process as above described. A further modification was introduced in the following terms :—

“Instead of being slidden along rectilinearly, the bell E, or the vessel A, or the bottom of the latter, may have a rotary motion imparted to it. An arrangement of apparatus of this kind is shown in Figs. 7 and 8.

¹ The provisional specification terminates here.

“Here the vessel A, which contains the mercury cathode C, is constructed in the form of a disc provided with an upwardly projecting edge, and the hub of which is fixed on a vertical shaft, K, that is rotated by suitable means. The decomposing and combining chambers are formed by means of fixed radially arranged belts, E, which are connected together so as to form a cover provided with partitions, as in the arrangement shown in Fig. 1.

“The decomposing and combining chambers follow each other in succession, and are respectively provided with the chlorine discharge pipe F, and with pipes H for discharging the hydrogen.”

A method of rapidly removing the alkali metal from the amalgam was shown with reference to Fig. 9.

The claims were:—

“(1) An apparatus for the electrolysis of metallic salts with the aid of a stationary mercury cathode, in which partitions or bells capable of being moved to and fro, and dipping into the said mercury cathode, are arranged to separate the decomposing and combining spaces or chambers from each other, and by their to-and-fro movement to cause the mercury cathode to be located alternately within the sphere of action of the electrolyte, and of the substance to be combined with the cation produced, substantially as hereinbefore described with reference to and illustrated by Figs. 1 and 2 of the drawings referred to.”

The second was for the modification shown in Fig. 6.

“(3) The modification of the apparatus specified in claim 1, in which one or more vessels, A, is or are mounted on a vertical shaft so as to be capable of rotating relatively to the fixed partitions or bells that dip into the mercury cathode carried by the said vessel or vessels, or in which the said partitions or bells are capable of rotating in a fixed vessel or vessels, substantially as hereinbefore described with reference to and illustrated by Figs. 7 and 8 of the accompanying drawings.”

The fourth and fifth claims were for the arrangements shown in Fig. 9 and Figs. 4 and 5 respectively.

At the trial of this action for infringement of the above patent evidence was given to the effect that the chemical and electrical actions of the process were well known. In one of the alleged anticipations the vessels containing the electrolyte and plain water were stationary, dipping into and sealed by mercury, which was revolved by a paddle so as to bring the amalgam from the electrolytic cell into contact with the water in the other to dissolve the sodium or other alkaline metal. But in no previous case had the electrolytic cell been moved as in *Kellner's* specification.

Disconformity by including claim 3 was alleged.

It was held at the trial that the patent was valid, and had been infringed.

On appeal to the Court of Appeal that decision was reversed on the ground of disconformity.

Held, on appeal by the House of Lords, that the only invention described in the provisional was a new mechanical arrangement in which the mercury

formed a cathode "stationary" in the ordinary meaning of the term, and that the invention claimed by the third claim was not within the provisional.

The patent was therefore invalid.

Per Lord *Halsbury*, L.C. (p. 604): "Now I am unable to say that I think the provisional specification here ever contemplated the movement in any sense of the mercurial cathode. It is impossible to read the concluding part of the provisional specification without being struck by the absence of any hint of the arrangement claimed afterwards. What are called the bells are intended to be moved over the surface of the mercury, and the mercury cathode is to remain 'at rest.' . . ." P. 605: "This is a description of a mere mechanical appliance, and I cannot doubt that when this description was given the thing which was meant to be at rest was the mercury and the vessel containing it. . . . Claim 3 and the Figs. 7 and 8 to which it refers are an entire departure from the essential feature of the invention as originally described." The language of complete specification is an ingenious effort to avoid a glaring disconformity.

1900. *BEAVIS v. RYLANDS GLASS AND ENGINEERING CO., LTD.*,
17 R. P. C. 704.

Want of Subject-matter.

A patent (No. 26359 of 1897) was granted to *C. E. Beavis* for "improvements in mineral-water bottles."

The specification was as follows:—

"My invention relates to improvements in bottles for holding mineral and aerated waters, and consists in so altering the shape of the indents in the necks of what are known in the trade as *Codd's* bottles as to obviate some of the drawbacks in their present construction and use.

"As now made, the indents at the lower part of the neck are horizontal, forming a transverse channel on the inside, which permits the liquid to flow in and out, and serves as a stop to prevent the ball from falling into the bottle when not in use; this transverse indentation is a source of weakness in the construction of the bottle, rendering it liable to bursting and fracture from obvious reasons, and the object of my invention is to alter the shape and direction of the indents, and form a differently shaped channel for the ball, and thus to remove some of the disadvantages connected with the use of these bottles."

The advantages and causes of alleged defects in the older bottles were enumerated in detail. The alleged invention was described in the following terms:—

"In Fig. 2 the indents A are made curved, as shown, the nicks B form the usual recess in which the ball rests when the bottle is being emptied; the nicks and indents control the shape of the channel C, which extends

from the recess to the neck of the bottle; by this means the neck of the bottle is structurally strengthened, the oscillation of the ball is prevented, the brush for cleaning is permitted to pass in and out of the neck without choking or wedging, and the inclined passage or channel provided for the ball lets it find its position in the seating or neck more readily than by the present method."

The claim was as follows:—

"In the manufacture of indented glass-stoppered bottles for mineral and aerated waters, making the indents of such a shape as will form a curved channel for the passage of the ball instead of the present horizontal one, substantially as and for the purposes herein set forth and described and illustrated by Fig. 2 of the accompanying drawings."

This was an action for infringement of the above patent. The chief defences were that the alleged invention was not new nor good subject-matter.

At the trial various drawings and bottles were produced, amongst others a drawing showing the form of *Codd's* bottle. In it the ball-stopper was prevented from going too far by the indentation across the bottle, and its return to the mouth while pouring out prevented by two indentations as shown.

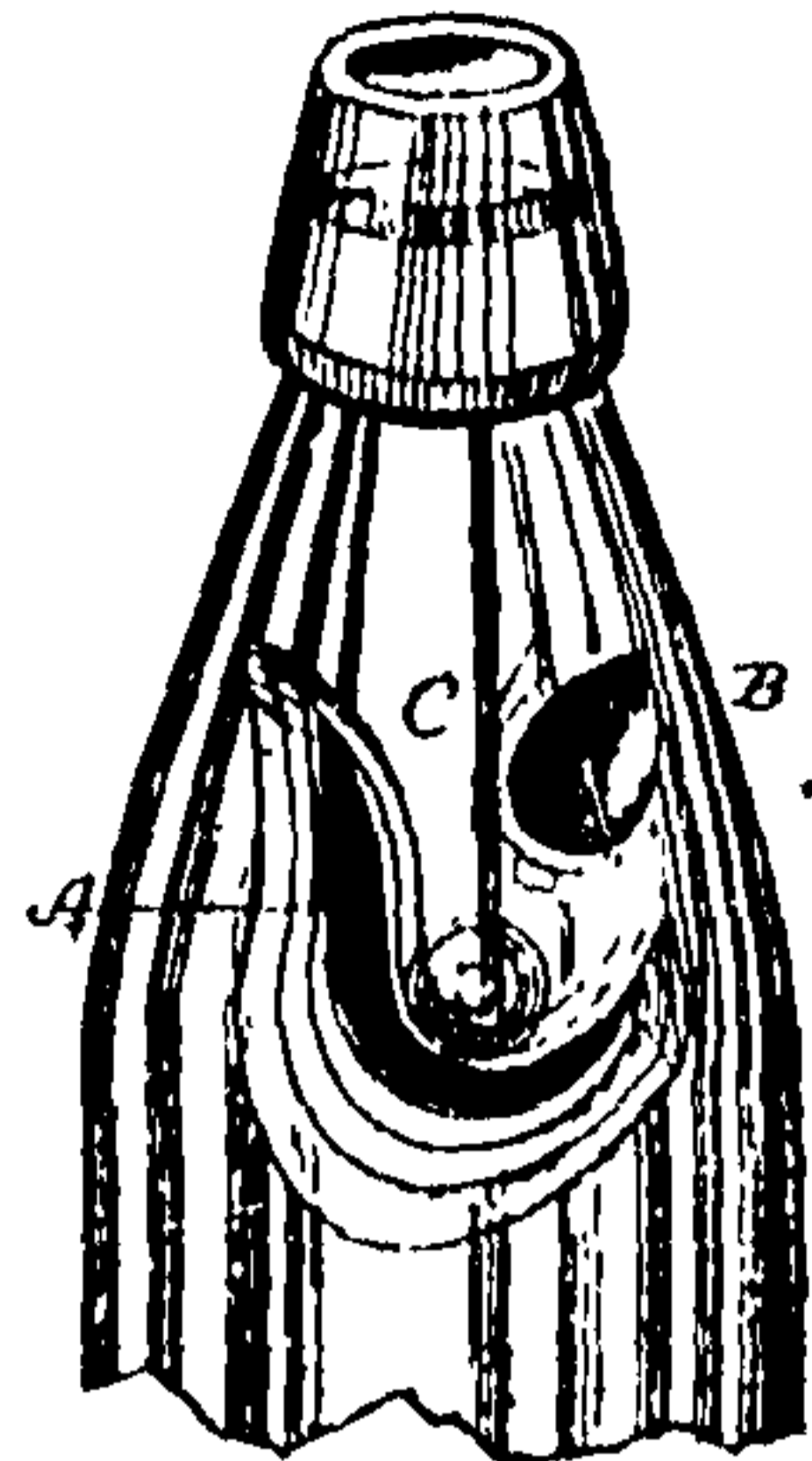
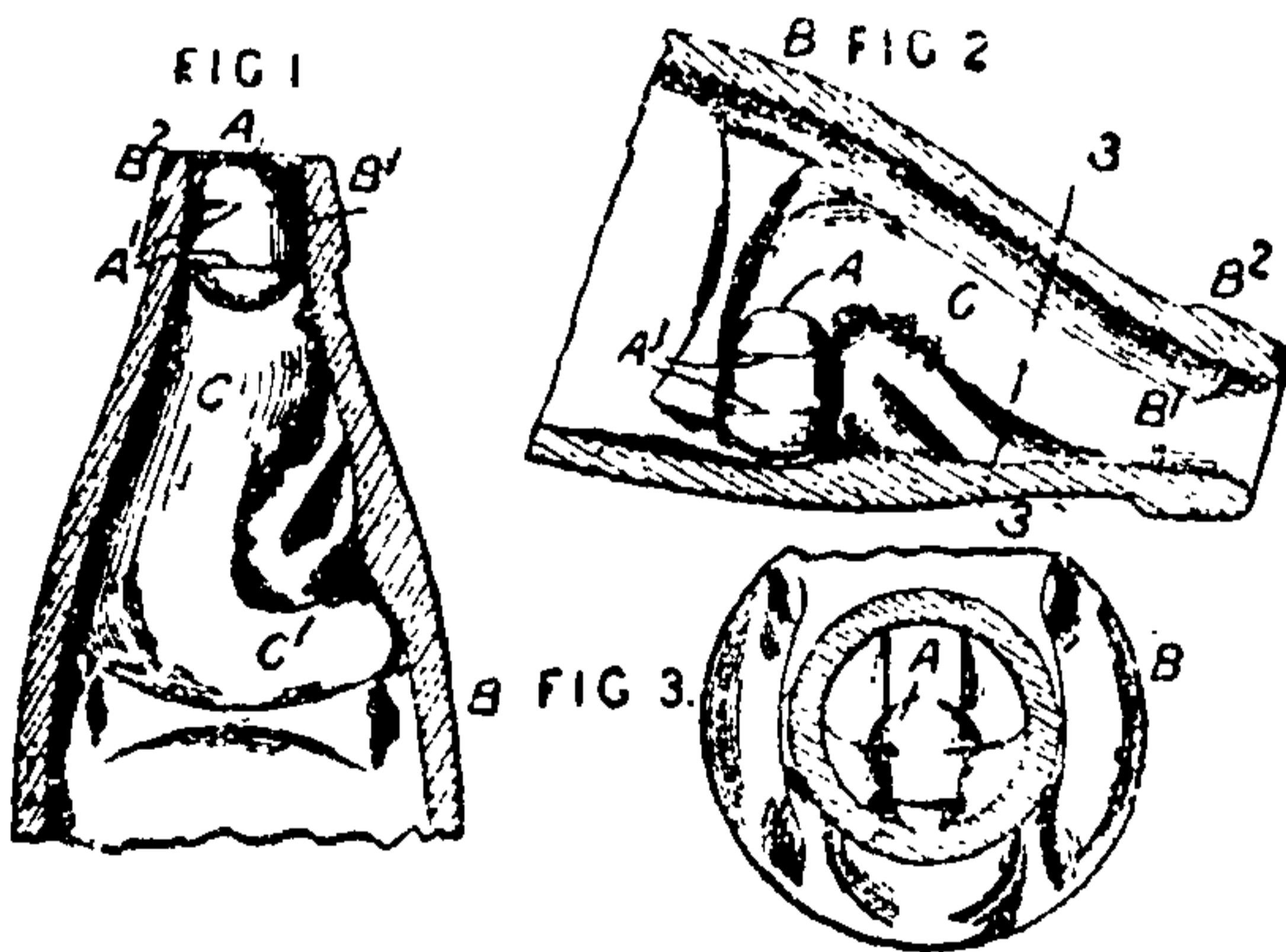
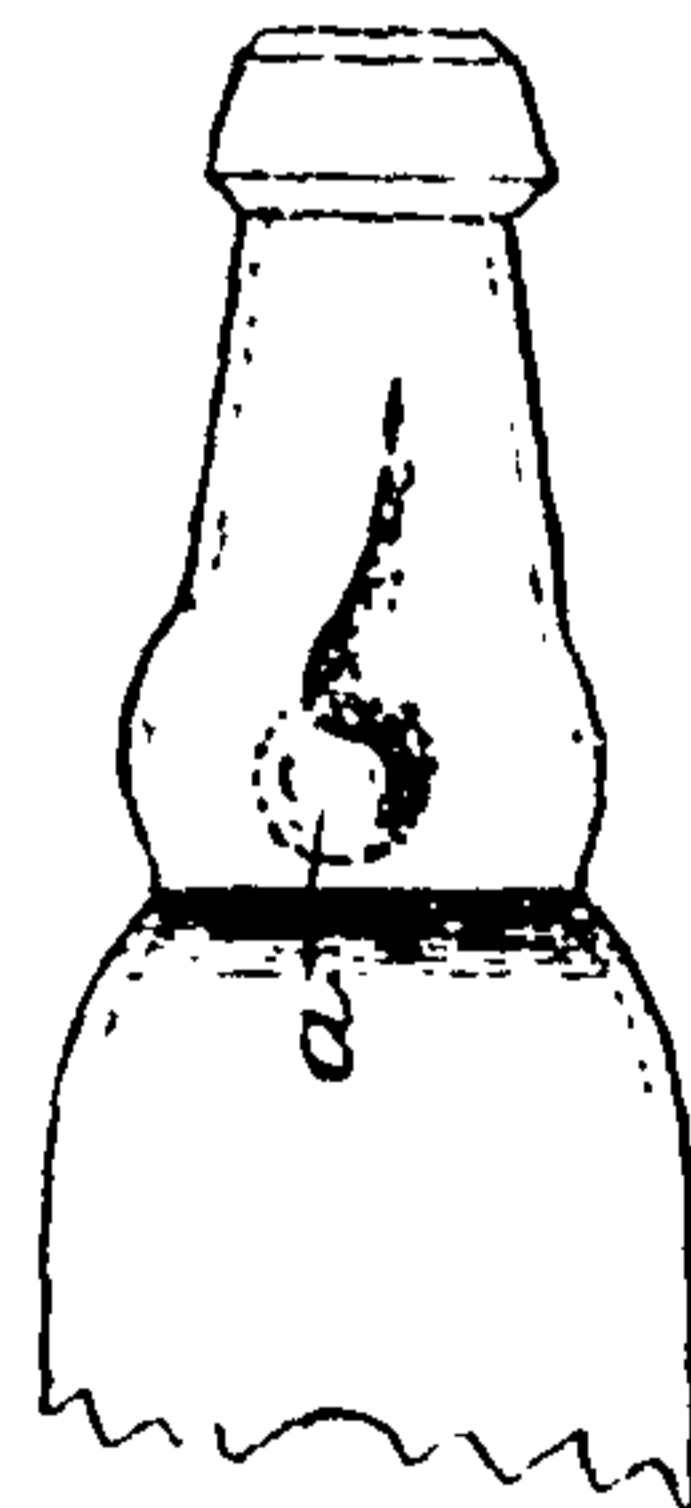


Fig. 2 of Beavis's specification.



From Jones's specification.



Codd's bottle.

Jones's specification of 1894 was relied on as an anticipation. Its nature is apparent from the diagrams. Fig. 1 shows the stopper in its place, Figs. 2 and 3 when kept at the bottom of the curved passage C. The stopper was not spherical, but cylindrical with rounded ends, and could not be turned in the curved channel.

At the trial the patent was held invalid on the above grounds.

On appeal the decision was upheld.

Lord *Alverstone*, M.R., dealt with the alleged anticipations in detail. At p. 710: "In cases which depend upon subject-matter, the most important thing of all, and that which I think the Court should always be first informed of, in order to put a proper construction on the patent, is what was the existing state of knowledge. If you simply look at a specification and endeavour to decide as to subject-matter without information as to the existing state of knowledge you are very likely, either on the one hand to belittle the invention, or on the other hand you may attach undue importance to it."

On the construction of the specification (p. 711): "But whatever may be the true view, it is the specification of the plaintiff we have to deal with, and the specification of the plaintiff claims his invention in these words 'In the manufacture, etc.'" [quoting them]. "In my opinion there was nothing else involved in that claim, or intended to be made the subject-matter of the invention, than turning the channel from what he thought was the common shape (and I dare say it was the best known shape)—the horizontal shape of channel into the curved. That that was disclosed in the specification of *Jones* I have no doubt. I think it was also disclosed in the specification of 1872; and I come to the same conclusion as that to which the learned judge came, that in changing the form of the channel he did not disclose anything which, in the face of the previous state of knowledge, could be good subject-matter."

P. 712: "Everybody who has experience in patent cases knows that cases of this kind do not rest upon mere authority. It is perfectly possible that a very small alteration, which is the result of experiment, or which may be the result of a happy thought, yet still does work such a complete revolution that it may be perfectly good subject-matter.¹ On the other hand, however much the individual may have solved in his own mind, or believes he has solved, a difficulty, in the interests of the public we have to consider what the public were entitled to use before his patent was granted.² In my opinion the existing state of knowledge shows that indents of different angles, and different shapes of curved passages made by the indents, were old; and that being so, in my judgment it was not good subject-matter to claim the changing of a straight indent into a curve."

Rigby, L.J., reviewed the facts and arguments, and concluded:—

"After considering all the instances that have been brought forward (and they are very numerous) I cannot but come to the conclusion that it was evident to any one acquainted with the manufacture that the indent might be horizontal or more or less curving upwards.² That was known, and perfectly well known; and, that being the case, I think that the mere

¹ Followed by *Farwell*, J., in *Parker & Smith v. Satchwell & Co., Ltd.*, 18 R. P. C. 308.

² Both the learned judges tested the existence of subject-matter from the workman's point of view. See *ante*, pp. 19, 34-37.

seizing upon a particular form, which every one knew might be used, even if it had incidental advantages, is not such an invention as would be subject-matter for a patent. I agree, therefore, with the learned judge's judgment."

1920. TAYLOR AND SCOTT v. ANNAND AND OTHERS, 18 R. P. C. 53.

Invention—Construction of Claim.

A patent (No. 5470 of 1886) was granted to *J. H. Buxton* and others for "improvements in arrangements and mechanism to facilitate the rapid application of type representing late news or matter to and the printing of the same by newspaper printing machines."

The complete specification commenced with a statement of the object of the invention:—

"In newspaper-printing new editions containing late news or matter is commonly added by cutting out portions from the stereo plates and inserting in the space thus made the type representing the late matter, but this takes time, and the object of our invention is to be able to add late news and print it in as little time as possible after its receipt."

The ¹ type was to be arranged in a small box which was described in detail with the means of securing and adjusting the type therein, in such a manner that the printing surface of the type formed a segment of the surface of a cylinder concentric with the drum and its axle to which it was attached. Fig. 11 shows one mode of arranging and fastening the box (*a*) on a drum (*b*). The only mode of attachment shown in the drawings was by a dovetail; the box, however, could be secured in its place by more ways than one. This drum (*b*) was mounted on a shaft (Fig. 14).

The drum (*b*) had its own inking roller (*i*) (Figs. 13 and 14). The object in having the drum adjustable on the shaft was to enable it to be placed so as to operate on any column required in the paper. Suitable mechanism was described to bring the drum into use when required.

"The face of the type in the box *a* is in a curve at such radius from the axis of the drum *b* as will be equal to the radius of the operating surface of the impression-cylinder (*e*) or half its radius if the type-box is to print twice for one revolution of the impression-cylinders *e*, and so on."

The paper following *x x* in Fig. 13 passed round to the impression-cylinder (*e*) and was printed on by the stereo (*g*), and, when required, by the type on the drum (*b*).

The claims were:—

"(1) The combination and arrangement of mechanism for securing type or printing-surfaces in a box or holder, substantially as hereinbefore described and illustrated by the drawings.

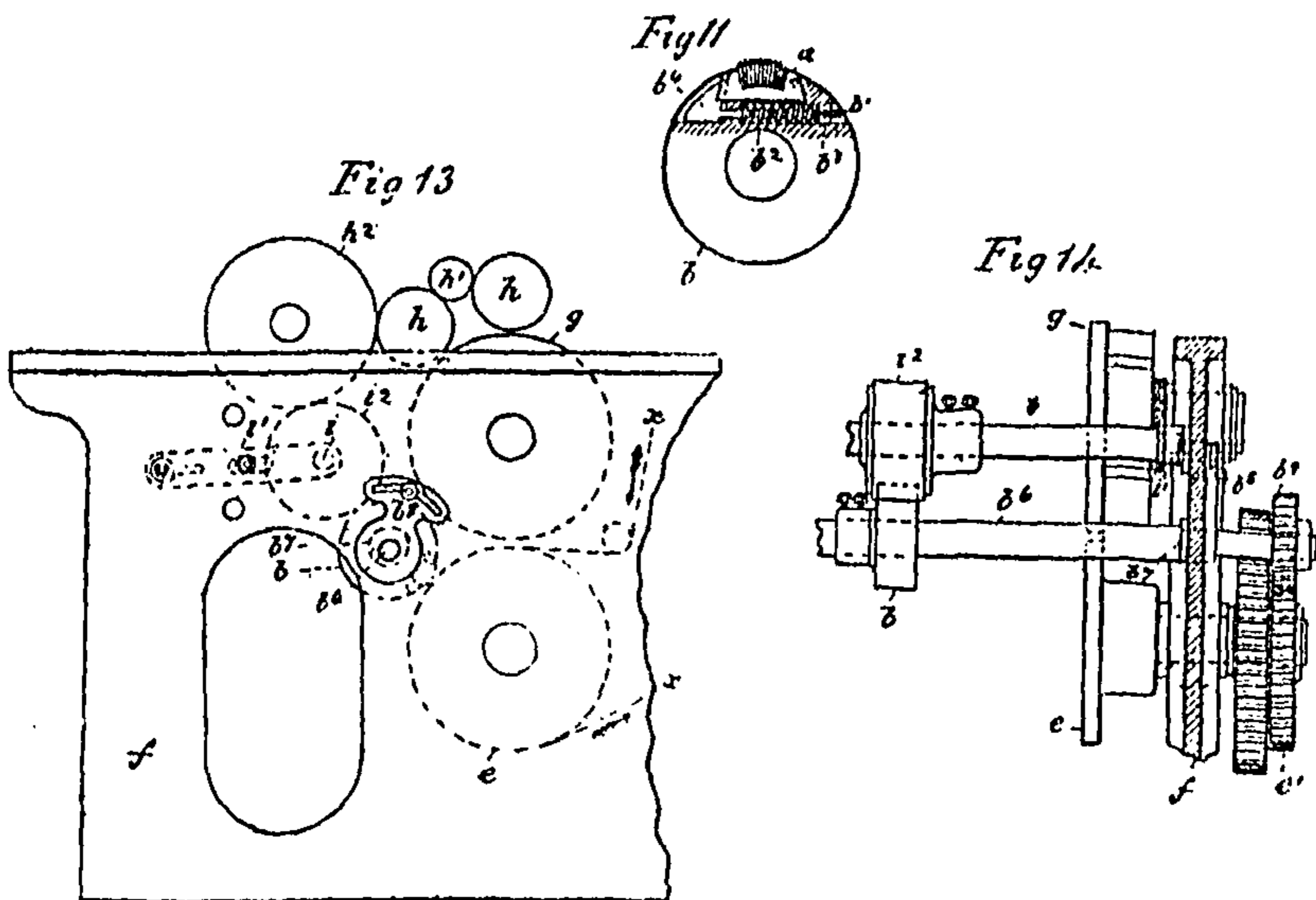
¹ The description of the invention is here summarized and given so far as it relates to the main issue on the third claim.

"(2) The combination and arrangement of mechanism for securing type or letter-press printing-surfaces in a box or holder, and the combination of the latter with a printing-drum separate from the main printing-cylinder substantially as hereinbefore described and illustrated by the drawings.

"(3) The combination and arrangement of a printing-drum (*b*) with the mechanism of the ordinary main impression and printing-cylinders of endless web letter-press printing-machines, substantially as and for the purpose hereinbefore described and illustrated by the drawings."

This was an action for infringement of the patent.

It was proved at the trial that the method in use at the date of the patent of printing late news consisted in cutting out a piece of the stereo, and inserting the new matter, by type set up in fudge-box, which type was



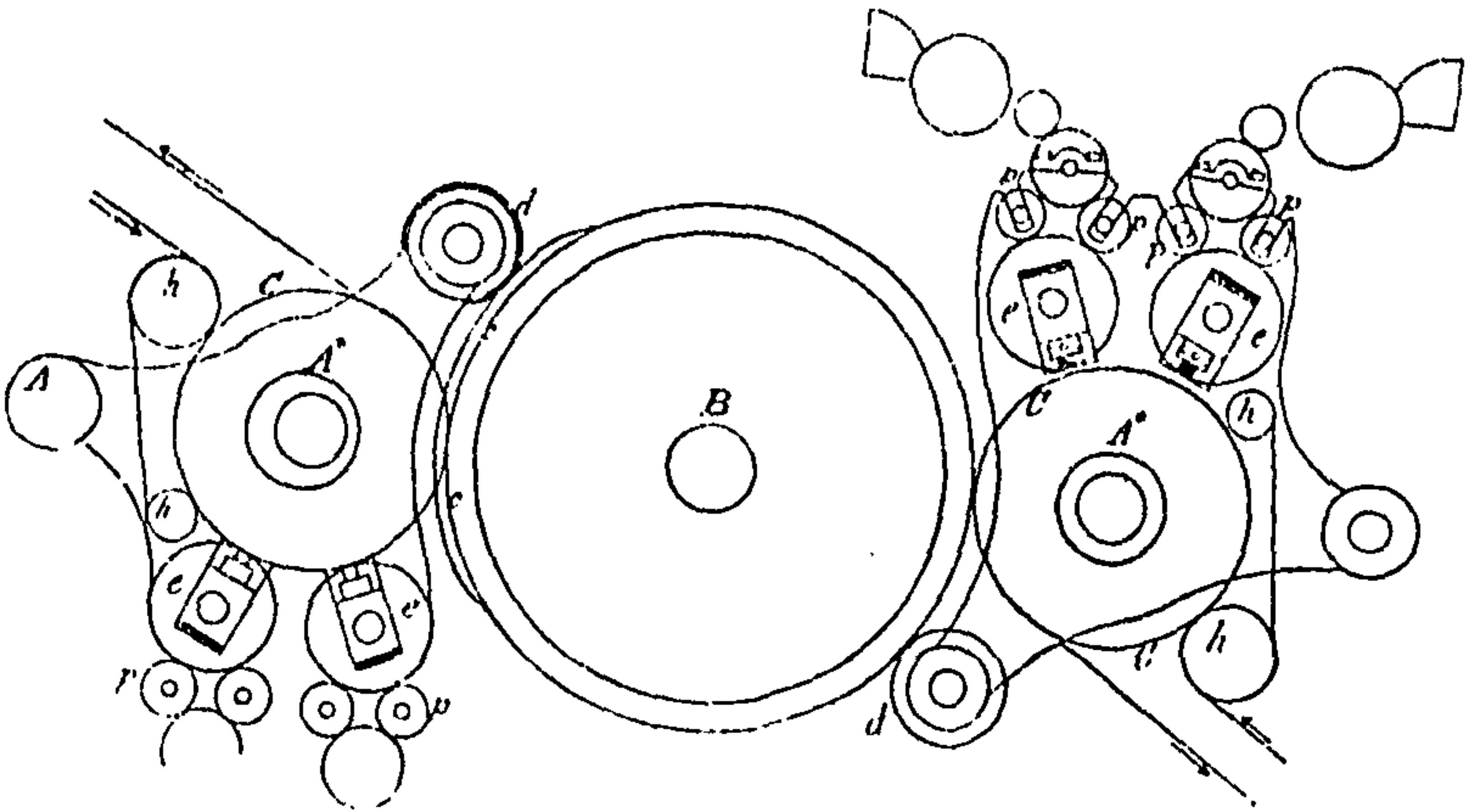
Diagrams from Buxton's specification (No. 5470 of 1886).

not on its surface concentric with the cylinder. There were great difficulties in keeping type securely fixed on a cylinder which in working revolved at a rapid rate. This invention overcame those difficulties and enabled late news to be inserted in a few moments, thereby enabling fresh editions of papers to be brought out in quick succession.

Several anticipations were alleged in order to show that the device in question was a mere adaptation of old methods. The more important of these were those of *Applegarth* (1858), *Duncan and Wilson* (1879) and *Mewburn* (1885).

Applegarth's (No. 372 of 1858) improvements in printing machinery contained amongst others a device for separately printing headings and

suchlike. In some cases he applied "a small roller or rollers with type or printing-surfaces thereon, together with a proper inking apparatus, to each of the printing rollers or cylinders; in this way I am enabled, while printing the main portion of the sheet by the large type or printing-cylinder as heretofore to introduce, for instance, a heading in a different colour, or, in fact, any matter which it is desirable to introduce, and this introduced matter may be changed without interfering with the form on the large printing cylinder." The arrangement to effect this object is thus described: "Fig. 6 is a diagram to show how small auxiliary printing-rollers may be arranged in combination with the roller which receives the black ink impression, so that the title of a newspaper, or the heading of other matter may be printed in three colours. The circumference of the central cylinder in this case is supposed to be 60 inches, and the impressing roller 30 inches.



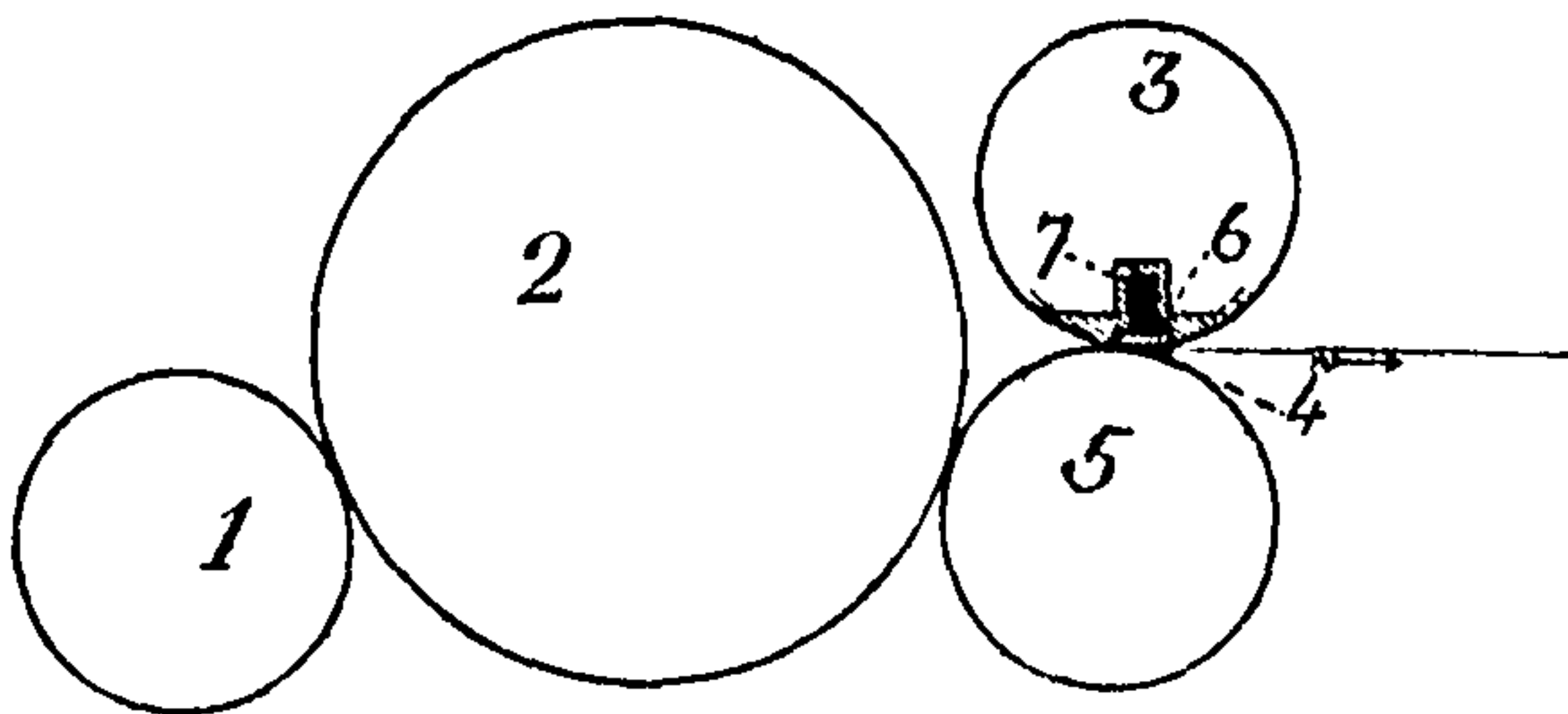
From Fig. 6 of Applegarth's specification (No. 372 of 1858).

Such a machine at 'Times' rate would make 5000 revolutions, and might print at two places, as shown, or more, if only one colour roller is required. The carriage A* which supports the auxiliary printing rollers (which have toothed wheels working into the wheels of C) and their apparatus for supplying ink or colour, is hinged to the main frame of a machine at A; c is one of two shapes or cams which are fixed upon the central cylinder B, and as it revolves they act against the friction rollers d, which causes the carriage A* to revolve a little upon its spindle or hinge, A, so as to press the auxiliary rollers e, e' against the sheet of paper upon the impressing roller C, which may thus be printed in two colours just before receiving the black impression from the form upon the central cylinder B."

On the opposite side of the diagram the apparatus is shown in the position in which it does not print, but is not out of gear; h, h' are rollers with endless tapes pressing the sheet, p, p' the inking rollers, and k the metal distributing rollers.

The improvements of *Duncan and Wilson* (No. 168, of 1879) are thus described: "First, in addition to the stereotype cylinder or cylinders we employ one or more cylinders of small diameter fitted or constructed to carry movable type. The said type-cylinder or cylinders are so arranged as to print and fill up a blank or blanks left on each sheet by the stereotype cylinders. The movable type is not fixed rigidly to the surface of the cylinders, but is so arranged as to be free to move to and from the axis as such cylinder or cylinders, being held in position by a spring or springs, and thus allow of a smaller cylinder or smaller cylinders being used than would be the case if the type were rigidly attached thereto. Instead of employing a spring or springs to hold the movable type in contact with the impression-cylinders during the required time, a cam or cams may be employed for this purpose. Instead of a cylinder or cylinders being employed, the movable type may receive motion from rotating arms, carriers, or equivalent devices. Inking mechanism of the usual construction is employed.

"Fig. 1 is a view of such parts of a printing-machine as are necessary to illustrate the manner of carrying this first part of our invention into



From Fig. 1 of Duncan & Wilson's specification.

effect; (1) stereotype cylinder fitted and supplied with inking and other necessary appliances in any ordinary or well-known manner; (2) impression cylinder; (3) cylinder carrying movable type; (4) (5) impression cylinder. Inking mechanism is arranged to act on the surface of type (4). The said type (4) is held in position in a form which is free to slide in a groove (6), and is pressed against the impression cylinder (5) by means of the spring (7); (8) web of paper passing as shown by arrows. The type (3) is used to fill up blanks left by the stereotype secured on (1)."

Mewburn's (No. 2805 of 1885) was important as showing grooves running the whole length of the auxiliary cylinder in which the additional type could be placed. But it did not disclose any method of fitting type so that its surface would be concentric with the cylinder.

It was held at the trial that the third claim was not novel, as it was an adaptation of old known methods and ideas, and consisted in cutting away the unnecessary portions of a known auxiliary cylinder.

On appeal to the Court of Appeal (17 R. P. C. 126):—

Held, that the patent was valid, and the device displayed great invention, and that the third claim was not confined to dovetailed boxes as shown in the drawings, but any box holding type in the proper position.

Per *Romer*, L.J. (17 R. P. C., p. 136): "Prior to the invention there was no known machine which would do in any practical or efficient way the special work done by the improved machine described. And, in our opinion, to arrive at that improvement there was required on the part of its discoverers great ingenuity and invention in the true sense of the word. Now that the way to effect the improvement is known, it is easy to belittle it. It can, of course, readily enough be pointed out that the principle of using a small auxiliary cylinder was known before; that a drum is only a small cylinder; that a movable drum was not in itself a new discovery, and so forth. This process of undermining an invention is well known, and if allowed to prevail would destroy many valuable and undoubtedly valid patents. But the process is radically wrong. The way to ascertain whether a novel and useful improvement required invention in the true sense is to consider how matters stood just before the improvement was discovered. . . . Sufficient commentary is afforded by the fact that for years the defect in the stereo machines, to which we have previously called attention, remained unremedied, and that when *Duncan* and *Wilson* tried to remedy it they could only suggest means which differed considerably from those adopted by the patent of 1886, and which failed."

On appeal to the House of Lords this decision was upheld.

Lord *Halsbury*, L.C. (18 R. P. C. 62), dealt with the difficulty of dealing with cases in the abstract in which the alleged invention consists in a combination of old things, "because you have to start with the proposition that everything is old, and until you apply yourself to what is the particular mechanism and what is the particular exigency with which you have to deal in inventing the new mechanism for the purpose required, you do not adequately appreciate what that invention is; that is to say, until you come to put it into a concrete form to see what the thing is, and what the thing was intended to do, and then apply your mind to see whether the thing in its combination has been anticipated or not." His Lordship quoted from *Vickers v. Siddell* (*ante*, p. 324), and applied it to this case: "It is (p. 63) very easy to say nothing could be older than the stereotype—nothing could be older than the cylindrical stereotype—and the notion of cutting a piece out of some part of the cylinder and putting in a fudge-box, or some other mechanical appliance of that sort. And if one was arguing *a priori*, and not seeing what in the practical conduct of business was felt to be a want, the absence of which was to be supplied, one was, I think, apt to form a very inadequate idea of what the value of the invention was. . . ." Then when one finds that there is not "one single instance during the whole period of this printing industry to which this case extends, of this thing, or anything like this thing in its application or in its combination, having been produced by anybody, it is an almost irresistible inference of fact that there is something in the nature of invention, because

everybody wanted this thing to be done—everybody felt the usefulness of it when it was done; and to say that it is so obvious that it requires no invention seems to me to be absolutely contrary to the reasonable inference to be drawn from the condition of facts to which I have referred. . . . I am quite content to abide by the admirable and closely reasoned judgment of Lord Justice *Romer*.”

1901. CASE 7. CRESSY, 18 R. P. C. 419.

Want of Invention—Advantageous Results.

A patent (No. 14115 of 1896) was granted to *E. Case* for “an improved construction or arrangement of shore-groynes.”

The specification commenced as follows :—

“This invention has for object constructing shore-groynes from a combination of upright or angle-wise arranged timbers in couples with lower ends set in concrete beds, preferably from about mean sea-level to low-water mark and landwards from the same point to the shore or sea wall, the spaces between the upright or angle timbers having horizontal planks let in or slipped down to form intermediate screens.”

The drawings were then described in detail: A, the upright beams bolted, B, at a distance apart fixed by the intervening block C, the whole being imbedded in concrete; the groyne was built by the insertion of horizontal planks, E, and, if necessary, owing to the silting up of the sand, the structure could be continued as shown in the dotted lines of Fig. 3. A long groyne for a shallower beach was shown in Fig. 4.

The advantages of the alleged invention were thus described :—

“The rapidity with which a groyne on my principle can be prepared and set in position is marvellous as compared to the time occupied in digging, shoreing, strutting, and then tying in position by angle set-struts or props driven into the beach at a distance from the groyne itself. . . .

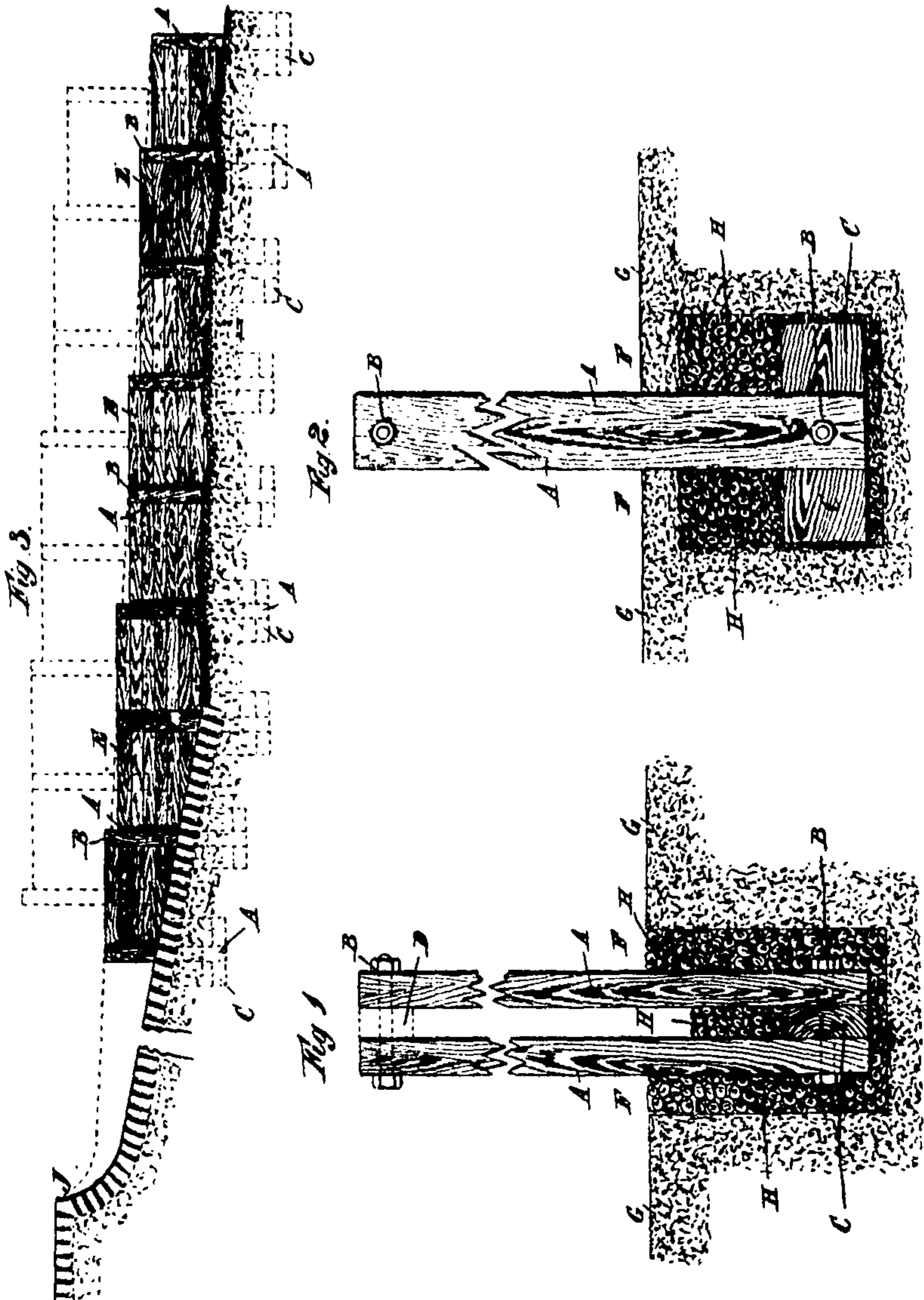
“It will be gathered from the foregoing that all my timber work can be prepared on shore, so that it has only to be carted to the spot as each hole is dug, and the uprights be set in place, gradually moving shorewards or seawards, according to the desire of the contractor.

“It is also to be noted that practically no plant or preparation other than the above is necessary, so that at the shortest notice advantage can be taken of an extraordinary low tide, caused by favourable wind or otherwise, to extend the groyne seawards.

“Little or no skilled labour will be necessary, as the central position for the digging of the holes can be readily staked out for guiding the digging labourers, who also after inserting the uprights simply hold them vertically while the cement concrete is shot in, preferably from a cart, to find its own packing, the action of the water of the inflowing tide effecting the consolidation.”

The claim was for :—

“The construction of shore-groynes in the manner described, by preparing braced uprights, inserting them in holes, fixing them by cement con-

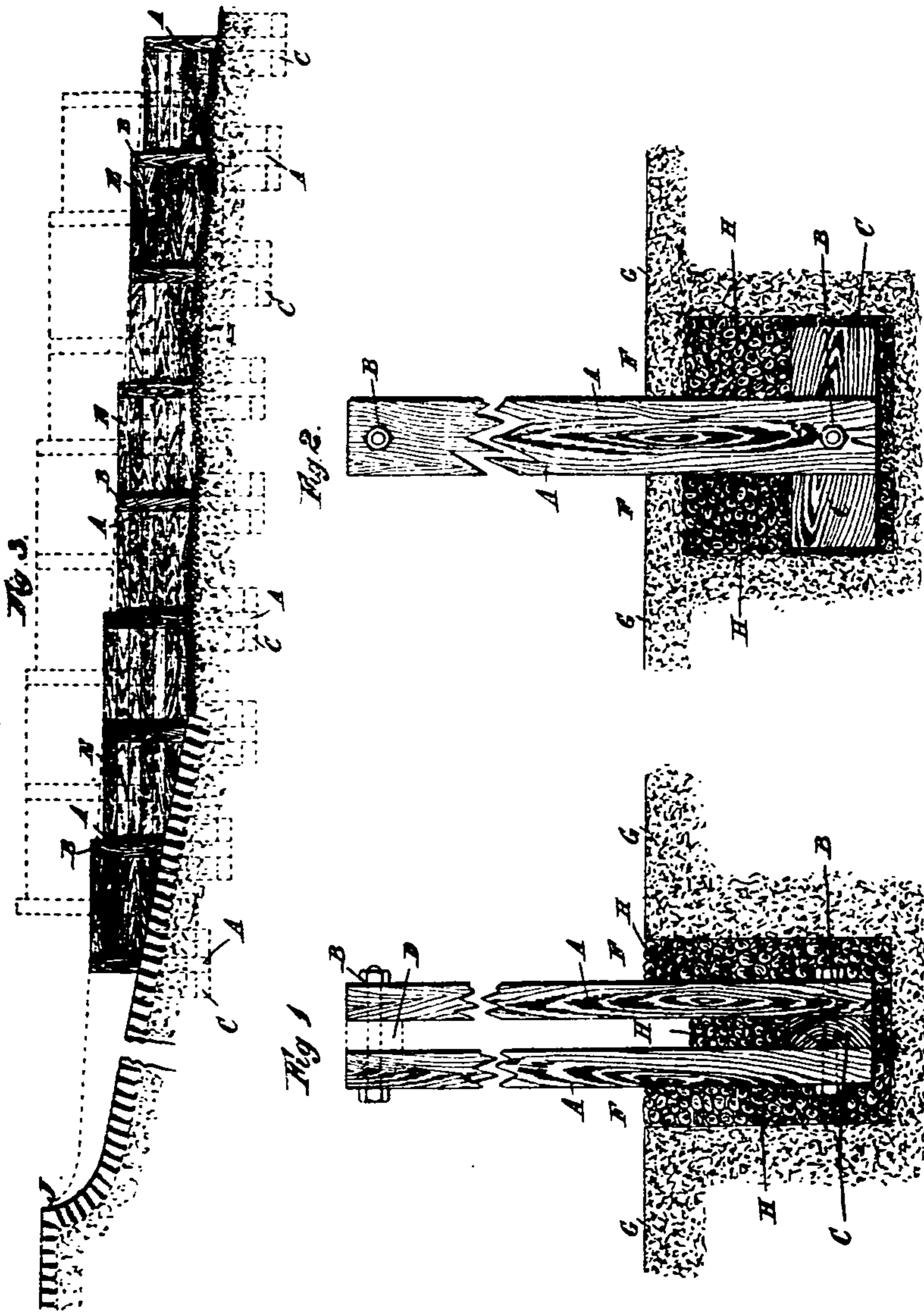


Diagrams from Case's specification (No. 14115 of 1896).

crete, and finally screening the intermediate spaces by horizontal planks, or their equivalents as set forth, the structure taking the form shown on the annexed drawings.”

The claim was for :—

“The construction of shore-groynes in the manner described, by preparing braced uprights, inserting them in holes, fixing them by cement con-



Diagrams from Case's specification (No. 14115 of 1896).

crete, and finally screening the intermediate spaces by horizontal planks, or their equivalents as set forth, the structure taking the form shown on the annexed drawings.”

An action was brought against the defendant for infringement of this patent.

The chief defence relied on was want of subject-matter, the alleged invention consisting merely in applying to the seashore a mode of construction of a fence that was well known on land.

The plaintiff argued that this mode of construction of groynes was new, and had great advantages.

The learned judge at the trial held the patent to be invalid for want of subject-matter.

The Court of Appeal upheld this decision.

Collins, L.J. (p. 421, l. 33):—"The patentee "has discovered that the results on the sea-shore are very successful and are very cheaply accomplished by the use of this particular contrivance, but he does not introduce, and indeed could not have introduced, into his specification any allusion whatever to the advantages resulting from the discovery, or claim any patentable right therein. . . . Therefore it seems to me to be simply the application of a well-known instrument to a purpose—I will not even say to a purpose to which it has never been applied, because I think substantially the same thing was done before—but with results which have never been before accomplished. . . . Therefore it is clearly not proper subject-matter for a patent."

Romer, L.J., referred to the specification, and pointed out that the claim was for the making of a groyne irrespective of a system of groynes. It was *per se* not novel, and was advantageous for sea purposes not by reason of any peculiar nature of the sea, but because the posts were fixed firmly, quickly, and cheaply, as would also be the case on land. "It appears to me it would be carrying the Patent Law too far to hold that there was good subject-matter in this case. It might very unduly hamper persons in their dealings, and indeed I cannot help thinking that, if this was a good patent, the result would be to prevent the defendant from doing what he was doing. I am perfectly convinced that the defendant is doing nothing which ought to be stopped. He has himself shown how the idea of using the post in cement for the purpose of sea-groynes would naturally occur to anybody who wanted to make a post under the circumstances firmly and quickly, and he himself has shown how staggering is a well-known method of putting planks in such a fence as this. It appears to me if this patent were good, the result ought to have been that the defendant should have been held to have infringed, and ought to have been restrained. I do not think he ought. I do not think this is a case where there has been such an invention on the part of the patentee as will sustain the patent."

Note.

The judgment of *Collins*, L.J., recognized that results are no part of a patentable "manufacture" (*ante*, p. 11); and *Romer*, L.J., based his decision on the ultimate test of want of novelty or want of subject-matter:

see *ante*, pp. 19, 34, 37. This case should be compared with *Dredge v. Parnell*, *ante*, p. 420.

1902. TUBES, LTD. v. PERFECTA SEAMLESS STEEL TUBE CO., LTD.,
20 R. P. C. 77.

Construction of Specification—Patent for Improvements.

In 1891 a patent (No. 11436) was granted to *J. Robertson* for “improvements in and relating to the compressing, shaping, and drawing of metal tubes, tubular, hollow, and solid articles, and in the means and apparatus therefor.”

The complete specification commenced as follows:—

“My invention relates mainly to compressing and shaping metals such as iron, steel, and copper made soft by heat, shaping or forming masses or billets of metal in this soft state into tubes, tubular, hollow or solid articles by pressing, piercing, or expanding these by great force into or through shaping dies or matrices by mandrels or shaping-tools for tubes, tubular, and hollow articles, or by rams or shaping-heads for shaping solid articles and bars. My said invention consisting mainly in new and improved means and apparatus for fixing and operating the dies, matrices, mandrels, and metal billets during these shaping operations.

“New and improved means and apparatus for expelling metal articles while in a hot and plastic state from shaping dies or matrices and also for cooling the matrices, mandrels, or other shaping-tools so used quickly after they perform their shaping operations to avoid their being injured by heat.

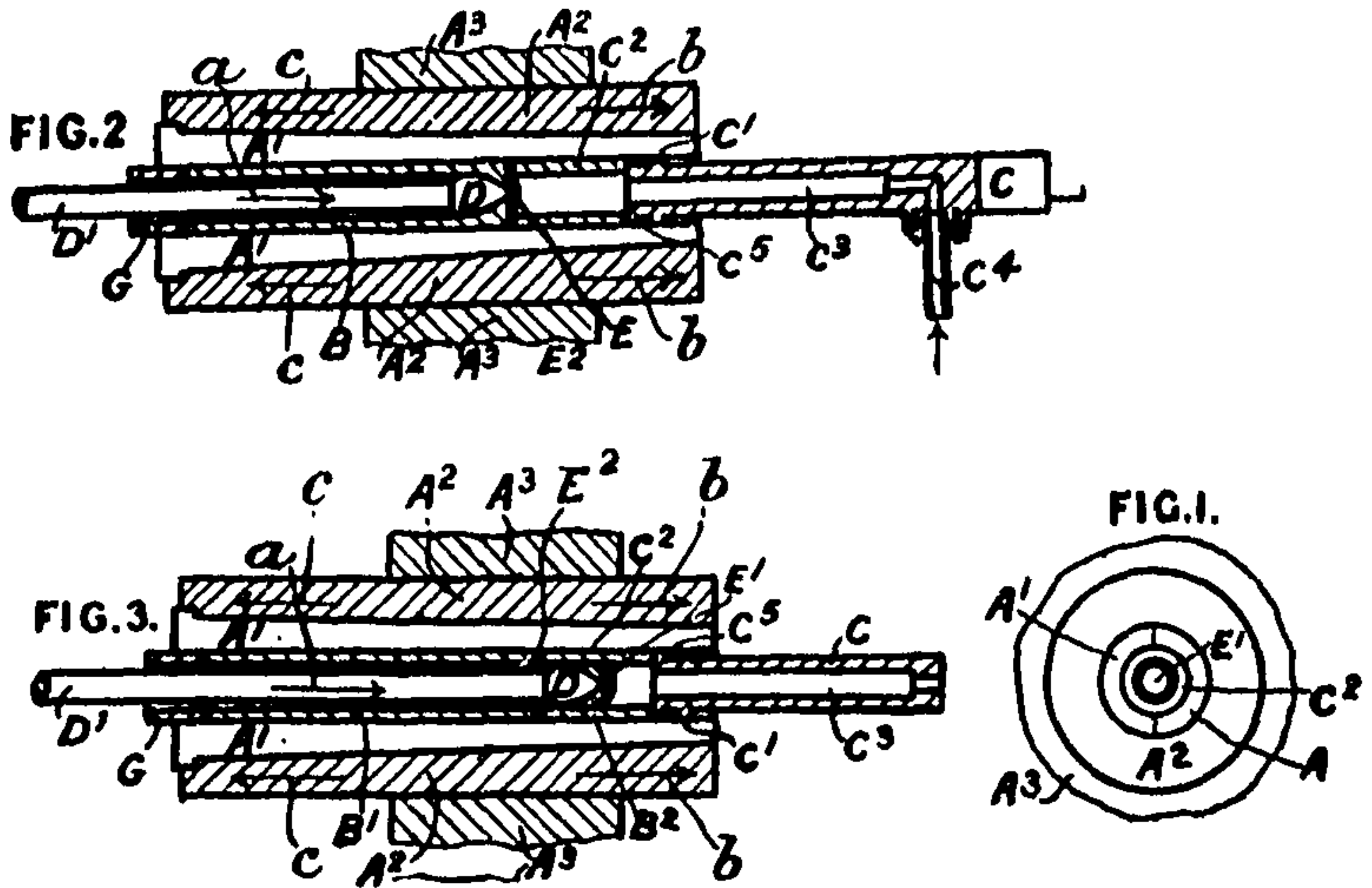
“This invention being mainly a further development, and further new and improved applications of my inventions for which Letters Patent of the United Kingdom were granted to me namely:—No. 5018, dated the 4th day of April, 1888, entitled ‘Improvements in and relating to the manufacture of metal tubes, tubular or hollow articles, and in shaping and finishing of same, and in apparatus therefor,’ and No. 1627, dated the 30th day of January, 1890, entitled ‘Improvements in and relating to the manufacture of metal tubes, tubular and hollow articles and in means and apparatus therefor,’ and which inventions in all the suitable forms of the main parts of same and actuating gear therein shown used, it is part of my invention to combine and apply with these improvements. It is no part of my invention to use any of these new and improved modes and means of making tubes or other hollow or solid articles out of what is usually designated ‘soft metals,’ such as lead or tin, which have the distinguishing feature from other metals of not hardening under pressure or by being hammered in a cold state.

“I use throughout the following description the same letters and numerals of reference to indicate like parts in all the figures where like parts are shown in order as far as possible to avoid needless repetition in describing

the various modifications shown. Throughout my explanation I designate a solid or hollow piece of metal as taken from a heating furnace to be operated upon either for being formed into a tube, tubular, or solid article, a 'billet.' The arrows indicate the directions of the motions of the moving parts of the apparatus shown used, and of the motions of the billets and finished articles being operated upon when in motion.

"For the purpose of showing and described (*sic*) the parts of my invention, that part of my invention for holding up the metal billet in the die to be operated upon against the piercing action of the mandrel and of cooling and expelling the tube or tubular article formed in same, I show a long tube forming die and connecting parts, with mass or billet of hot metal being operated upon of my most improved form of these, all being of the general form described in my older inventions hereinbefore referred to.

"Fig. 1 is a rear-end elevation, and Fig. 2 a plan showing this die and all connections in section, the die A A' being shown in halves, the billet B



From Robertson's specification (No. 11436 of 1891).

in the die A A' being held from motion endwise in its place by the after billet holding up stem rod C against the piercing action of the mandrel D. The billet B being shown in section in Fig. 2 nearly pierced through by the mandrel D. The mandrel D, stem rod D', after holding up stem rod C, and its stem rod head C', and after holding up ferrule piece C² which is placed between the billet of metal B being shown operated upon and for receiving the mandrel after it is forced through same (all of which, so far being part of my older inventions referred to) but to prevent the hot metal of the billet B being operated upon, from passing by the force from the mandrel D into this abutting and receiving receptacle for the mandrel C², a piece of metal plate E in a cold state, by preference formed of copper,

iron, or steel, its employment therein being part of my said new improvements, is shown in Fig. 2 placed over the mouth of this abutting ferrule piece and receiving receptacle C² for the mandrel D, and shown interposed between the hot billet B and the ferrule C².

"I call this plate E a service-plate, and it is used of such a thickness or strength as, by its shearing resistance to the advancing mandrel D and to the advance of the central part or mass of the billet B, to prevent the metal of same flowing into the ferrule C², this plate E being generally of a thickness from about a quarter of an inch to one inch, being increased in thickness as the diameter of the tube being formed is increased or proportioned in thickness to keep the billet B up to the piercing action of the mandrel D, yet to give way or be shorn through when the mandrel D reaches the end of the billet B as is shown in Fig. 2 nearly passed through the billet or close to this plate E."

Fig. 3 was then described,¹ in which the service-plate is shown as sheared by the mandrel, leaving a ring E² (on the left of the mandrel head D) held fast between the head of the formed tube and the ferrule C², "the shearing strength of the cold metal E to be forced off the billet B, being thus so proportioned as to allow little of the heated soft metal of the billet B to pass it, but to give way and allow the mandrel D to pass it."

"My new and improved means and apparatus for expelling tubes and other articles so formed in dies and matrices of heated soft metal in a plastic state, as also for cooling the matrices, dies, mandrels, and other shaping tools after the metal shaping operation is completed is also shown by the figures just described, as also my new and improved mode of cooling articles of this kind so formed, is also shown by the same figures just described, and for fixing the metal in same and shaping it. This expelling and cooling action is effected by injecting water or other fluid at a high pressure into the dies or matrices at or near the inner end surfaces of the article that has been formed in dies or matrices, using by preference water in a cold state for this purpose, as by its ready cooling action it cools and slightly contracts the hot metal and releases the hold of the die on the hot metal article just formed in it, as also affords very steady force for its removal out of it. Fig. 1 in rear-end elevation has shown the after billet holding stem rod C removed, showing the ferrule receiving-piece C² into which the mandrel D is forced after it has performed its piercing work, and into which in the die A A¹ the cooling water is forced at a great pressure. The channel through which the water is led in this example into the die A A¹ to cool and expel the tube B¹ and cool the die and mandrel, is shown formed in the after billet holding up stem rod C, having this water-channel C³ shown in Figs. 2 and 3. Fig. 2 showing a pipe connection, C⁴, to be connected to water forcing pumps, water accumulator, or any means affording water at a high pressure." The operation was described with reference to Figs. 2 and

¹ Only part of Fig. 3 is here shown, the rest is the same as the corresponding parts of Fig. 2.

3; and the mode of making the after stem-rod head watertight. The steam generated at high pressure cools and forces the mandrel D into the tube, "makes it for the instant about watertight, and quickly forces out tube and mandrel, leaving no time for the hot metal to do the die, mandrel, or any of the working parts of the same any injury, and makes the die ready for a fresh operation. The die A A¹ is shown in halves and placed in a container, A², which is shown placed in a sliding guide A³ and provided with a mandrel entering-guide, G, which is of a form used in my older inventions referred to."

Several modifications were then described, with diagrams (Figs. 4-9). These consisted in: (1) interposing a block of metal in front of the service-plate so as to produce a clean shear in the latter; (2) doing without the service-plate by substituting a filling-up pad, round the circumference of which were grooves and corresponding one in the inside of the ferrule, the space being filled with soft metal, and the ring of soft metal giving way before the mandrel as the service-plate did; and (3) by passing through the service-pad a bar of cold metal, iron or steel, "of a strength proportioned to shear through or give way at a resisting strength that will not destroy a billet-piercing mandrel."

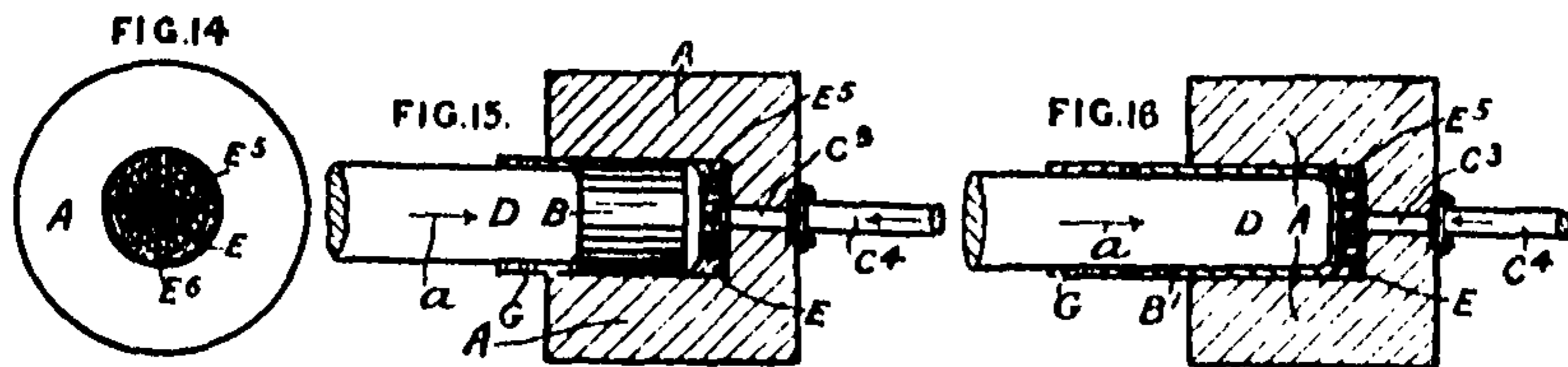
Another method of effecting the same object was described as applicable to billets of large diameters. This consisted in enclosing in a ferrule water or other suitable liquid, so arranged that it afforded sufficient resistance to the mandrel up to the pressure required for the operation. (Figs. 10 and 11.)

A new and improved water-entering chamber was described. (Figs. 12 and 13.)

"Another new and improved way of effecting a closing means against the entrance of the metal into the water-entering orifice in the inside surface of a matrice or die, consists in inserting into the inner surface of same an overlapping metal covering pad plate which may be left loose over the water orifice, allowing room for the water to pass at its edges or through small holes formed in its mass to the hot compressed metal.

"Fig. 14 is a front-end plan, and Fig. 15 a side-sectional elevation of a closed ended matrice, A, bored out internally suited for forming closed ended cylinders of hot metal for being united endwise such as are used for containing compressed gas, volatile substances and like purposes requiring great strength. A water-channel, C³, being shown formed in the centre of the bottom end of the matrice and a water-pipe, C⁴, connected to it. The inside orifice of this water-channel C³ is shown covered over with a thick round pad-plate, E, loosely placed in the bottom of the die A of a shape next to the hot metal to assist in shaping the article to be shaped in the die, and with a number of holes, E⁵, of so small diameter formed in it as will not allow the hot metal to enter far into them shown in plan by Fig. 14, which small holes may have small gutter-channels, E⁶, formed in the inner surface of the plate E from the central water orifice C³ to allow the water freely to these holes.

"A billet, B, of hot metal is shown by Fig. 15 placed in the die A, and mandrel D shown broken off short placed on top of same held centrally on the hot metal by the guide G all in a state ready for the mandrel head D being forced down into the billet of metal B. At the completion of the stroke, the form of the article B¹ shown formed, and the altered position of



Diagrams from Robertson's specification (No. 11,436 of 1891).

the mandrel-head and guide of same, G, and thereafter on the water being admitted all the contents of the die A is by it quickly forced out. The bottom pad covering plate E is by preference made of considerable thickness or mass and partially heated at every fresh operation in order to make the hot metal resting on it flow more readily."

The specification continued by describing another die similar to the last. There then followed descriptions of methods of imparting rigidity to mandrel stem-rods, and of new and improved methods of shaping and drawing tubes so as to reduce the diameter. With respect to the latter, the specification referred to the patent No. 1627 of 1890, and continued: "This new and improved form, combination, or arrangement of die, together with my water-cooling process inside the die, and quick mode of expelling the tube or other article formed in it, rendering this mode of forming seamless tubes practicable."

A mode of compressing and shaping metals in shaping-dies was thus described:—

"A new and improved mode of compressing and shaping metals such as of iron, steel and copper in a heated soft state in combination with my shaping dies and matrices placed in sliding guides so as by the action of one ram and a fixed after holding stem rod, equal pressure can be imparted to both ends or both sides of the article being compressed, and shaped, and also in combination with my new and improved mode of contracting and cooling the articles shaped and dies for same, and of expelling the articles from the dies hereinbefore described in connection with Figs. 1 to 11 on sheet 1 of my drawings.

"Fig. 34 is a rear-end elevation, and Fig. 35 a sectional plan of a die, A A¹, in halves, placed in a container, A², and set in a sliding guide, A³, in which a fixed after holding stem rod C with water channel, C³, and water pipe, C⁴, connected to same is shown placed in the internal after end of the die A A¹, which is of a round form."

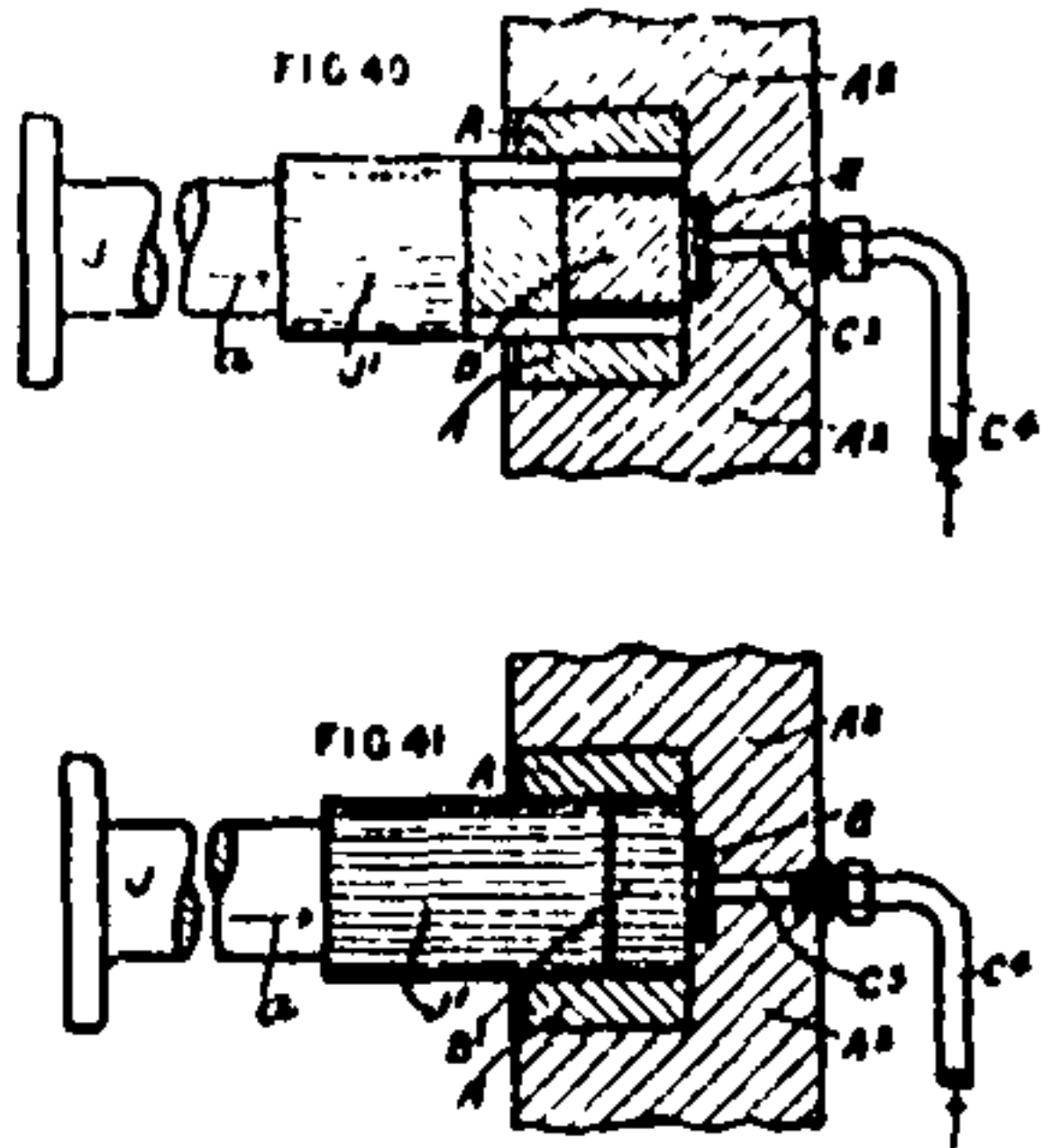
The mode of working this device was described in detail, and by

reference to the thick perforated plate E of Figs. 15 and 16, and Figs. 1, 2, and 3 above.

The use of the new matrix and die in the manufacture of short articles such as cog-wheels was thus described:—

“In matrices and dies suited for compressing and shaping heated soft metal into short articles where there is not much diminution of the pressure by friction by great length of surface on the side walls of the matrices and dies, the sliding guide and after holding up stem rod can be dispensed with, and in that form my new and improved form of matrix and die is mainly limited to the use of my new and improved water cooling and expelling means and apparatus but this for the preservation of the die from injurious duration of contact with the heated metal, and quickness of action obtained by my water-expelling action of the article compressed and shaped from hot metal in this way is of itself important.

“As an example of this form of die, Fig. 39 is a front-end elevation, Fig. 40 a side-sectional elevation of a die, A, adapted to compress and shape a billet, B, of heated soft metal shown placed in same into a cog-wheel. The die A being shown placed in the container A², which has to be made very strong and by preference of steel and here shown broken off. This die A which is of an annular form having shown formed in it the recesses A¹⁰ into which the metal of the plain cylindrical billet B is forced by the pressure of the ram J to form the cogs B¹ of the wheel B¹. The ram J the after end of which is shown of a round form, and shown broken off, has its front end on its periphery shown formed into cogs J¹ for a somewhat



From Robertson's specification.

greater length than the depth of the die A, these cogs being made an easy sliding fit for the corresponding internal cogs, recesses A¹⁰ of the die A.

“Fig. 40 shows the billet B placed in the die, and the ram J entered into the die a short distance, ready for being forced in on the billet B to compress and shape it, and causes the metal of same to squirt into the wheel-cog shaped recesses in the die A¹⁰.

“Fig 41, which is a sectional plan showing the stroke completed and the cog-wheel B¹ formed.

“A perforated plate, E, of the form described in connection with Figs. 15 and 16, for preventing the hot soft metal entering the water-orifice C³ and on the water being admitted through the pipe C⁴ shown, the wheel B¹ is forced out and the die made ready for a fresh operation. Dies shaped to various devices can be made to fit the container A² and in this way articles of various shapes can in this way be formed very solidly and very quickly. This water-expelling process being capable of being suited for most forms of dies for shaping or forging heated soft metals.”

Other devices were described, the whole arrangement being somewhat similar to that described in Figs. 1 to 3.

There were seventeen claims, of which the most important are here given *in extenso* :—

“First. The method of and appliances, and apparatus for compressing and shaping metals such as wrought-iron, steel, and copper made soft by heat, shaping or forming masses or billets of metal in this soft state into tubes, tubular, hollow, and solid articles substantially as herein described in reference to and shown in the accompanying drawings.

“Second. The mode of and means for holding up endwise a metal billet made soft by heat in a tube forming die against the piercing action of a mandrel by inserted pieces of metal in a cold state as a plate, bar, bolt, or ring or like form of such a limited shearing or breaking strength, and apparatus for holding and regulating same as to prevent the billet of metal passing unpierced endwise before the mandrel along the die but to give way as the mandrel approaches to, or reaches the far end of the billet, so as to cause the mandrel to pass entirely through the billet without breaking off any material amount of the metal at the far end of the billet and without injury to the mandrel substantially as described in reference to Figs. 1 to 9 of the accompanying drawings.”

The 3rd claim was for the device described in Figs. 10 and 11.

The 4th was for the mode of introducing fluids at high pressure with reference to Figs. 1 to 44.

The 5th for means of expelling hollow articles as described in Figs. 1 to 10 and 24 to 33.

The 6th for expelling solid articles with reference to Figs. 33 to 44.

The 7th to 10th claims were for devices described with reference to Figs. 14 to 19, 24 to 30, 31 to 33, and 20 to 23 respectively.

The 11th and 12th claims referred to Figs. 34 to 38.

The 13th claim was for :—

“The mode of and means for compressing and shaping metal articles in a heated soft plastic state in matrices, and of cooling and expelling the same by water at a high degree of pressure, as described in reference to and shown in connection with Figs. 39 to 41 of the accompanying drawings.”

The 14th and 15th claims referred to Figs. 36 to 38.

The 16th and 17th referred to Figs. 42 to 44.

This was an action for infringement. The infringement alleged was the use of the holding-up plate and supporting ferrule as described in the second claim.

Besides a denial of infringement, and alleging that the specification was ambiguous, did not ascertain the invention, and disclosed no subject-matter, the main defence was want of novelty in claims 1, 2, 4, 8, and 9.

The patent of 1888 (No. 5018) referred to in the specification disclosed the use of a fluid die and a ferrule. That of 1890 (No. 1627) disclosed the use of the sliding die. It was proved that the “compressing and shaping” processes described with reference to Figs. 15, 16, 40, and 41,

as distinguished from the hydraulic ejection and cooling, were not new ; and that the only novelty about the method illustrated by Figs. 37 and 38 was the use of the sliding die.

It was argued for the defendants that the first claim applied to compressing and shaping as distinguished from cooling and expelling processes, and that as it claimed what was old and included in the patentee's earlier inventions, the patent was invalid.

Held at the trial that there were three parts of the invention, compressing and shaping, cooling, and expelling ; that the first claim was for the whole process including cooling, ejection, and making the die ready for a fresh operation. (17 R. P. C. 569.)

On appeal this decision was reversed. It was held that the cooling and expelling parts were improvements in relation to compressing and shaping, and that they were not throughout the specification included in the latter term ; that the several claims were distinct, and that, comparing the first and thirteenth claim, the case of *The Electric Construction Corp. v. The Imp. Tr. Co.* (*ante*, p. 433) applied ; and that the first claim applied to the devices shown in Figs. 15 and 16, 39 to 41, which were old and formed part of the patentee's earlier inventions. (18 R. P. C. 339.)

Held, on appeal to the House of Lords, that the first claim included the cooling and expelling processes, and the patent was valid.

Lord *Halsbury*, L.C., first described the nature of the improvements devised by the patentee, and the alleged infringement, and continued (p. 95): " Now, my Lords, the main attack, of course, on the specification is upon what may be called its composition from a literary point of view. . . . Why is a specification necessary ? It is a bargain between the State and the inventor. The State says, ' If you will tell what your invention is, and if you will publish that invention in such a form and in such a way as to enable the public to get the benefit of it, you shall have a monopoly of that invention for a period of fourteen years.' That is the bargain. The meaning which I think has always been placed on the object and purpose of a specification is that it is to enable, not anybody, but a reasonably well-informed artisan, dealing with a subject-matter with which he is familiar, to make the thing, so as to make it available for the public at the end of the protected period. The question here is whether that has been done. Now, it appears to me that the mode in which one ought to face that question is to look (and I should say so not only of the specification of a patent, but of every instrument) at the whole of the instrument to see what it means—not to take an isolated passage out of it and make that inconsistent with the general invention, but to see substantially what the inventor really means, and when you arrive at that, then see whether the language is within the test that I have suggested as the proper test to apply to such a specification, and is such as will enable a typical workman to give the public the benefit of his invention."

As to question whether the patentee had anticipated himself by including what was in his previous specifications, the Lord Chancellor referred to and

quoted from the judgment of *Tindal*, L.C.J., in *Hardeastle v. Hardeastle* (1 Webs. 484), and continued: "Now, my Lords, I apply the principle of that case to the present one, and it appears to me, when I look at the language which the patentee has used, and the association of the three things together as a complete machine (I confess, with the utmost respect to those who do not take the same view as myself of the progress of the invention that I have described), the facts that he speaks of his new patent as in relation to the subject-matter that he has described, and that he describes it as improvements upon these things which he had previously patented, leave no doubt whatever in my mind as to what he meant, and, accordingly, I must say I entertain the opinion very strongly that the judgment here ought to be reversed.

"My Lords, there are two matters that I should like to refer to specifically, because they seem to me to raise important questions beyond the particular matter with which your Lordships are now dealing. One is—with the utmost respect I say it—the somewhat confused reference to what is called 'the claim,' and the other is a supposed condition of the patent being good, which I think is inconsistent with a judgment of this House.

"Now, in the judgment of the Court of Appeal, the complete specification is referred to as if every paragraph of it were to be regarded as a distinct and separate claim. That is a mistake. The patentee says (*ante*, p. 453, line 11), 'My invention relates mainly to compressing and shaping metals,' and so on, 'my said invention consisting mainly in new and improved means and apparatus for fixing and operating the dies, matrices, mandrels, and metal billets during these shaping operations.' That, to my mind, looking at the specification and reading it all, refers obviously to the new and improved thing, which is the service-plate. Then he goes on, 'New and improved means and apparatus for expelling metal articles while in a hot and plastic state from the shaping-dies,' and so on. That is the double operation of cooling and expelling. But those two are to be read together, and you cannot treat them as separate things. They are part of the complete specification."

As to the references in the judgments of the Lords Justices *Rigby* and *Vaughan Williams* to the necessity of there being a distinct claim to support the validity of the patent, the Lord Chancellor said (p. 99, line 20): "My Lords, of course no one could deny that the claim, like every other material part of the specification (and it is part of the specification), must be construed with reference to what the specification means, and no one would question if they meant that if, looking at it, it raised the doubt to which they have given expression, there might be ground for saying that the specification was bad, because the statement in the whole of the specification taken together, including the claim, was not that which the patentee was bound to give. But if they meant that, taking the claim as a distinct and separate statement, that was an independent ground, because there was no distinct claim in it, then, my Lords, that is absolutely inconsistent with the judgment of this House in *Vickers v. Siddell*" (*ante*, p. 324). "I do not

think that it would be accurate to speak of that judgment as *obiter*, because it turned upon the question of what were the facts there, and it is not accurate to say that one ground of the judgment was rendered unnecessary by what the facts proved were." The Lord Chancellor then quoted passages from his own judgment and that of Lord *Herschell* (*ante*, p. 328). "Now that judgment in the Court of Appeal, affirmed by this House, ought, I think, not to be so summarily dismissed by the simple observation that the statutable requirement has not been complied with. I wish, therefore, to express my concurrence in the former judgment, which is binding upon your Lordships."

Lord *Davey* (p. 101): "My Lords, I confess to a strong inclination to say, with Lord Justice *Vaughan Williams*, that there is a want of any distinct statement in this specification of the invention claimed. The office of the specification is to ascertain by particular description the nature of the invention, and the mode in which it is to be effected. No doubt a specification is not bad because there are questions or even difficulties which arise on the construction of its language, for a very few patents could survive such a test. In the present case the difficulty is not so much of construing the patentee's language, as of ascertaining what it is he really meant to say, or what are the words he intended to use. In the important part of the specification in which the nature of the invention is apparently intended to be described, you find a series of ungrammatical, disjointed sentences, without any verbs and without any words to indicate the relation which the sentence bears to that which precedes or that which follows it; and both in the body of the document and in the claims you find words inserted with no grammatical relation to the context in which they occur, and the meaning of which they only serve to obscure. The document which I have thus described is supposed to be primarily addressed, not to the trained intelligence of your Lordships, but to the mind of a competent artisan. In the case of a contract, or any similar document, the Court is bound to find a meaning; but in the case of a specification the Court must be satisfied that the patentee has fulfilled the condition upon which his monopoly is granted. This point, however, has not been pressed by the learned counsel for the respondents, and I believe that all your Lordships are agreed that we ought to put a meaning on the document.

"Applying myself, then, to this task, I have come to the conclusion that the construction adopted by Mr. Justice *Buckley* is preferable to that expressed in the judgment of Lord Justice *Rigby*. If I understand him rightly, the learned Lord Justice thinks that by the first claim the patentee has claimed as his invention all the modes of 'compressing and shaping' with or without a service-plate, shown on the drawings, and including those comprised in his earlier patents; or (in other words) he has claimed his invention over again. Now, my Lords, that is not a very probable construction, because the patentee mentions his previous patents in the forefront of his specification, and tells you that his present invention is mainly a further development and further new and improved application of his

previous inventions, which it is part of his invention to combine and apply with his new improvements. But still in a document of this kind the patentee may very well have made his claim too wide, though unintentionally." His lordship then examined the specification in detail, and dealt with the question of infringement. He concluded (p. 103): "My Lords, I have endeavoured to ascertain the meaning of this specification to the best of my ability; but I confess to an uneasy feeling that under the guise of construing, I have in fact drawn an amended specification for the patentee. And I retain my doubt whether the typical 'intelligent' artisan ought to be required to pick his way through this specification as your Lordships have done, in order to ascertain what the invention is—a matter which the patentee is bound by law to state distinctly either in the body of the specification or in his claiming clauses."

1902. WILSON BROS. BOBBIN CO. v. WILSON & CO., LTD.,
20 R. P. C. 1.

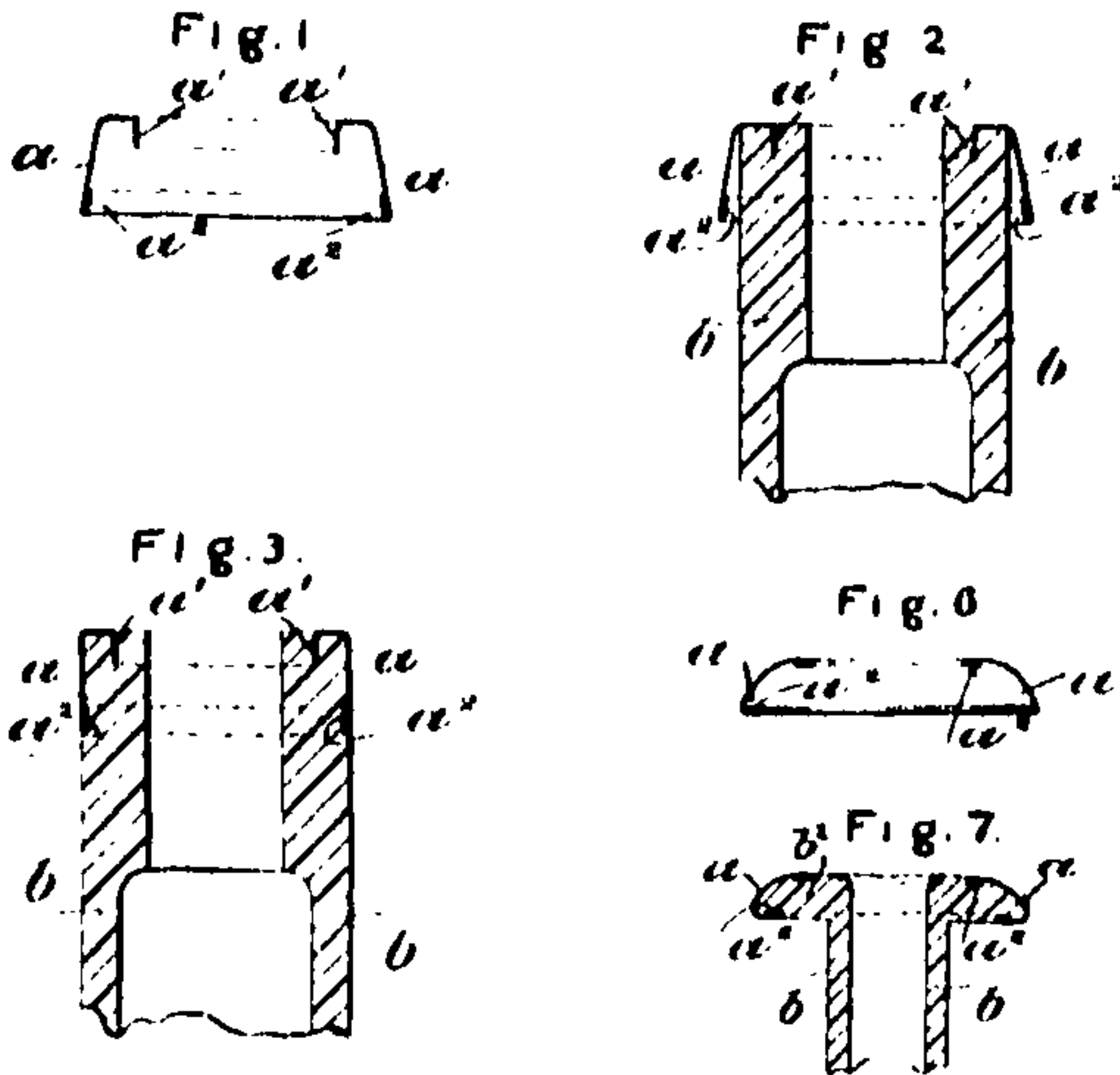
Construction of Claim—Utility—No Inventive Ingenuity.

In 1895 a patent (No. 5559) was granted to *H. W. Wilson* for "improvements in means for strengthening and protecting tubes and bobbins used in the preparation and spinning of fibrous materials."

The specification began by a general statement that the invention "refers to an improved method of forming and applying the light metallic rings" used on bobbins in textile machinery. There was a reference to the earlier patent (No. 18790 of 1891) and the mode of attaching the ring in the specification thereof, viz. by the edge being pressed into a groove preferably cut to receive it. The specification continued: "My present invention is for similar objects, but, instead of forming the metallic hoops or rings with the said penetrating flange or lip, I fold or double over the lower part of the hoop, thus presenting a flat raised band at the foot of the interior of the hoop. When the hoop is applied to a tube or bobbin or flange I press this raised folded edge into the wood of the bobbin or tube, the pressure being sufficient to bury the folded edge in the wood, the edge of the doubled-over portion thus serving as a confining ring to prevent the hoop from coming off. The upper edge of the hoop is formed as set forth in my foregoing patent or in any other convenient or suitable manner so as to engage with or lay hold of the tube or bobbin or flange."

The diagrams illustrating the details of the invention were then described. Fig. 1 shows the ring before being put on, a^1 the edge that enters the wood at the top, a^2 the folded-over lip or edge to the ring. Fig. 2 shows the ring put on the bobbin, and Fig. 3 the final position when the edge or band is pressed into position. Figs. 4 and 5 showed the improved ring applied to interior foot and exterior of the bobbin. Figs. 6 and 7 show the application of the invention to the flanges of a bobbin. "I have found that in

these and other similar applications of the ring a to the tubes and bobbins the folded-over edge a_2 of the ring or hoop a gives a perfectly secure hold-fast to the hoop, and obviates drawbacks which occur in applying the said metal hoops under my aforesaid former patent of 1891. For example, it



From Wilson's specification (No. 5559 of 1895).

is not necessary to groove or indent the wood of the tube or bobbin to receive the folded edge a_2 , as pressure alone suffices to sink the latter into the solid wood, where it remains as a binding and securing ring."

The claims were:—

"(1) In rings, hoops, shields and ferrules for application to tubes, bobbins, pins, and flanges for the purpose of protecting and strengthening the same, forming the said rings, hoops, shields and ferrules with a folded or doubled over edge or lip such as a_2 , which is pressed into the wood or material so as to hold the ring or hoop securely, in conjunction with a flange or lip, a^1 , at the other end or edge of the ring or ferrule substantially as described and shown.

"(2) In rings, hoops, shields and ferrules for application to tubes, bobbins, pins and flanges for the purpose of protecting and strengthening the same, forming the said rings, hoops, shields, or ferrules, a , with folded or doubled-over edges or lips, a_2 , which are both pressed into the wood or material so as to hold the ring or hoop securely, substantially as described and as shown.

"(3) The improved rings or ferrules for application to tubes and bobbins substantially as described and illustrated."

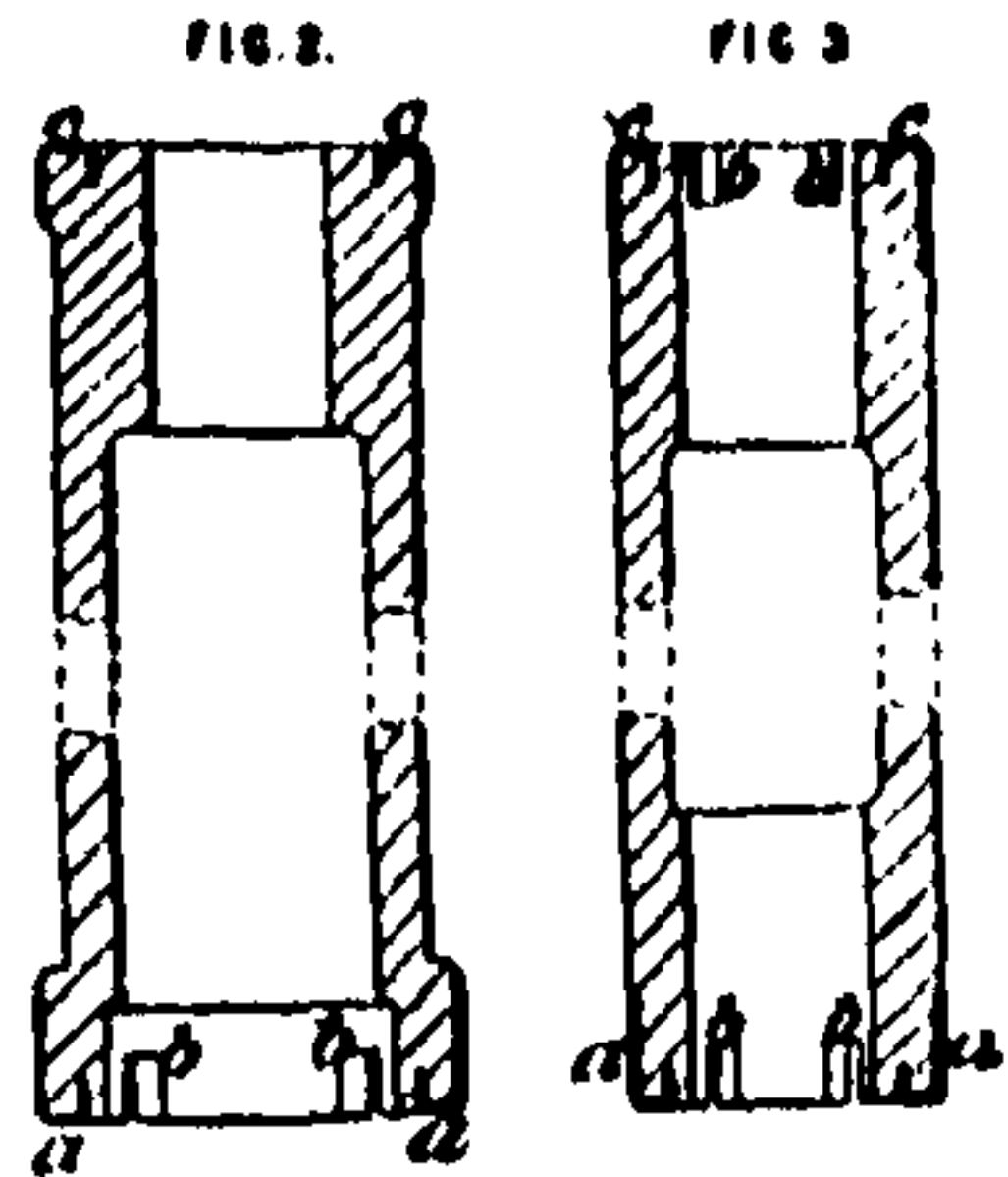
This was an action for infringement.

The chief defences besides non-infringement were that the patent was invalid by reason of there being no sufficient addition to the stock of public

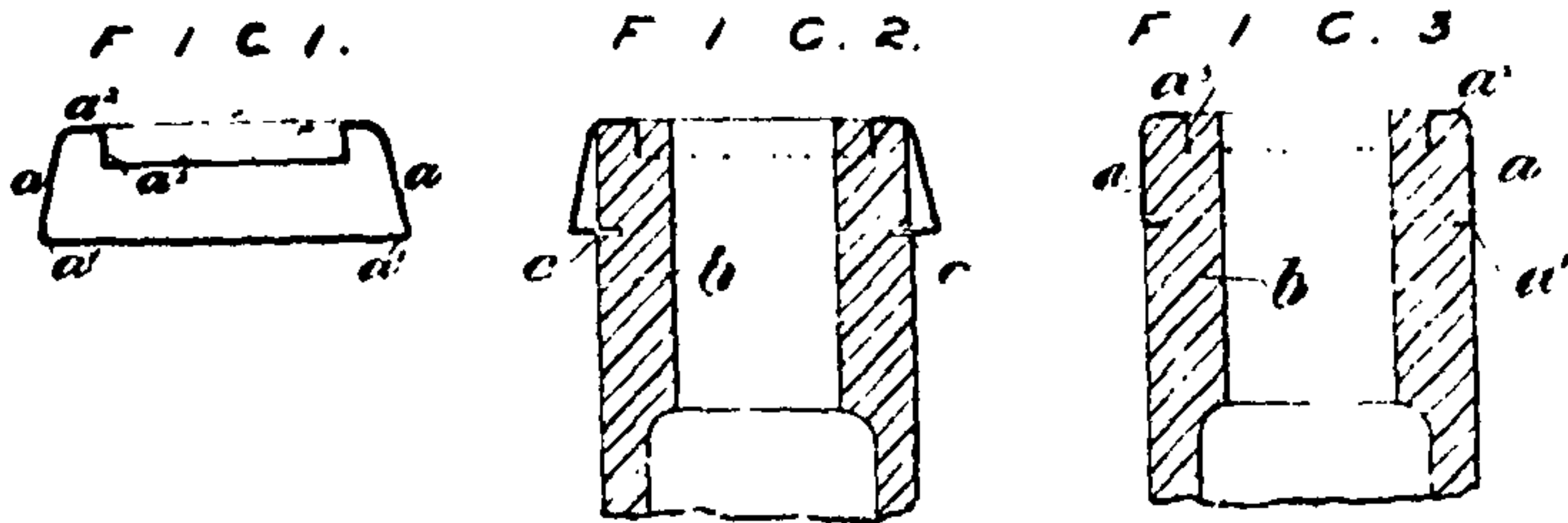
knowledge to constitute subject-matter for a patent; and that the invention as claimed in the three claims was not useful.

Amongst a large number of publications the following were relied on:— The specification of *J. H. and L. Wilson* (No. 1772 of 1881), which described a ring of J, I, or U-shaped cross-section; and one form of which is shown in Figs. 2 and 3.¹ In Fig. 2 the upturned portion of the flange is pressed into the end of the bobbin, and the other edge bent or milled over a shoulder on the tube. Fig. 3 shows a similar ring attached without any shoulder on the bobbin by being pressed or milled against or into the material of the tube or into a groove formed for its reception.

In the specification of *Wilson*, No. 18790 of 1891, the above was referred to, and further improvements thereon described. The sharp edges of the ferrule were got rid of by grooving the bobbin and pressing into the groove the end of the ferrule (Fig. 1), as shown in Fig. 2. When the upper edge or rim was pressed into the wood (Fig. 2) the lower came opposite the groove *c*, and was then finally pressed into it, as shown in Fig. 3, the whole ring becom-



From Wilson's specification (No. 1772 of 1881).



From Wilson's specification (No. 18790 of 1891).

ing cylindrical. Other applications of this improvement were shown in the specification.

Other exhibits were produced. In one of these a ring was shown on a bobbin with the edge at the end of the bobbin completely turned in. This was held in position by the other edge being turned over a shoulder, and not by the inturned edge or band being pressed into the wood.

The patent was upheld at the trial, and judgment given for the plaintiffs.

The defendants appealed.

Upon the hearing before the Court of Appeal the defendants raised the point that, notwithstanding evidence of large sales of the plaintiff's bobbins, there was no evidence of any being made commercially without a groove

¹ The top and bottom of the bobbins are alone here shown.

being cut to receive the band, without which they alleged the rings would not remain on the bobbins.

The Court of Appeal held that the improvement in question was not such an advance upon the methods of the two earlier specifications as to constitute a patentable invention; also that the third claim was for the ferrule *per se* apart from the fastening on the bobbin, and that it was not new. The patent was held invalid.

On appeal to the House of Lords it was *held* that the specification claimed as an invention the fitting on of the rings without grooves, that there was no evidence to prove that this had been done, by the inventors or any one, so that the rings would not come off when being used. The appeal was dismissed.

Lord *Halsbury*, L.C. (p. 14), discussed the nature of the question at issue and the nature of the invention, quoting those portions of the specification given *in extenso* above,¹ and continued (p. 15 (48)): "If that had been proved to be practicable, I confess for myself I thought that it was a very ingenious and meritorious, although it seemed only a simple expedient, the turning in a ring of a sort of ferrule which probably everybody's umbrella has, accomplishing those objects which are set forth in the specification by very simple and effectual means. My Lords, when I find out now what the fact is it appears to me that there is no foundation for the whole of the allegation that the thing purporting to be done has ever been done. . . ." In the Court of Appeal counsel (p. 16 (1)) "very sternly protested that the thing suggested to be done by the patentee could not be done at all, and never had been done, and when an opportunity was given to those who were in favour of the patent to produce a single specimen which would prove the application of the patent in that manner, and so prove that it had been done, there is an absolute failure to prove anything of the sort. . . ." P. 16 (56): "My Lords, the result is that in this case I think the patent itself has shown no invention and no sufficient utility. It is very rarely, I think, that the question of utility is important; the word 'utility' does not occur in the statute, but I mean having commercial existence as a process of manufacture."

Per Lord *Davey* (p. 20 (12)): "I concur that we have not had brought before us any single example or instance in which a bobbin has been made in accordance with Figs. 2 and 3 of the plaintiff's specification of 1895, and that there is no evidence before your Lordships that the patent is capable of being worked, or that the invention which I think is claimed by claims 1 and 2 is capable of being applied in a practical or useful manner—at any rate, to any extent. It may be that in some soft woods it would be possible to apply it, but it appears from Mr. Greenwood's evidence that they have found it necessary (generally I think was his expression) to make a groove to receive the thickened edge before applying the pressure. The patent is not confined to any particular kind of wood, but on the face of the patent it

¹ *Ante*, pp. 463, 464.

is made to apply to all kinds of wood of which bobbins are usually made. I think the qualification ought to be put in 'of which bobbins are usually made.'

"My Lords, I think, therefore, that the patent is bad, either from want of utility, or, if it had been pleaded, for want of sufficiency of specification, and it fails on that ground."¹

1903. CHAMBERLAIN AND HOOKHAM v. MAYOR, &C., OF BRADFORD,²
20 R. P. C.

Construction—Combination—Subsidiary Claim—Equivalents.

A patent was granted (No. 4225 of 1887) to *G. Hookham* for an invention of "improvements in electricity meters, parts of which improvements are applicable to dynamo-electric generators and motors."

The complete specification was twice amended, on the 14th February, 1889, and on the 14th August, 1895.

The specifications are as follows:—³

"My invention consists of the improvements hereinafter described in electricity meters, parts of the said improvements, as hereinafter pointed out, being also applicable to dynamo-electric generators and motors.

"I will describe my invention as applied to an electricity meter.

"My said electricity meter consists essentially of an electro-motor with constant or nearly constant field, the armature carrying the current to be metered and an electric brake consisting of a mass of metal in the form of a disc, cylinder, or other figure of rotation, rotating in a magnetic field in such a manner as to have 'eddy' or so called 'Foucault' currents generated in it. When all other work done by the motor is negligible compared with that done against 'eddy' currents the speed of rotation of its armature is directly proportional to the armature current.

"The electro-motor may be of any of the ordinary forms now in use. It may, for instance, have a drum, ring, or disc armature. Or it may consist of a simple solid disc or cylinder rotating between magnetic poles. In the latter case, however, I may use two thicknesses of metal in the disc or cylinder, the one carrying the current to be measured being insulated from the other except near the centre. And in order to confine the current to a narrow field the said disc or cylinder may be slit in directions at right angles to the motion in the field; or instead of a disc or cylinder so slit, insulated wires or metal strips may be used.

"The electric brake may be formed by the armature itself, or it may be attached to the armature so as to rotate in the same field, or it may be

¹ As to the connection between "utility" and "sufficiency," see *ante*, pp. 80-83.

² This abstract is prepared from the original documents and from hearing the case when this work was in the press. The author is indebted to Messrs. *Ashurst, Morris, Crisp & Co.* and Messrs. *Field, Roscoe & Co.*, for the drawings here reproduced.

³ The provisional is repeated in the first portion of the complete.

independent of the armature, and rotate in a separate field; or a separate brake may be used in addition to an armature brake.

“In order that other work done by the motor may be very small compared with the work done on the electric brake, special means to reduce friction are adopted. If the axis of the motor armature is horizontal, the spindle is supported on anti-friction wheels; and if vertical or nearly vertical, on hardened points, and in both cases I use mercury contacts or commutators where practicable.

“If the spindle of the motor is horizontal I form a double or divided

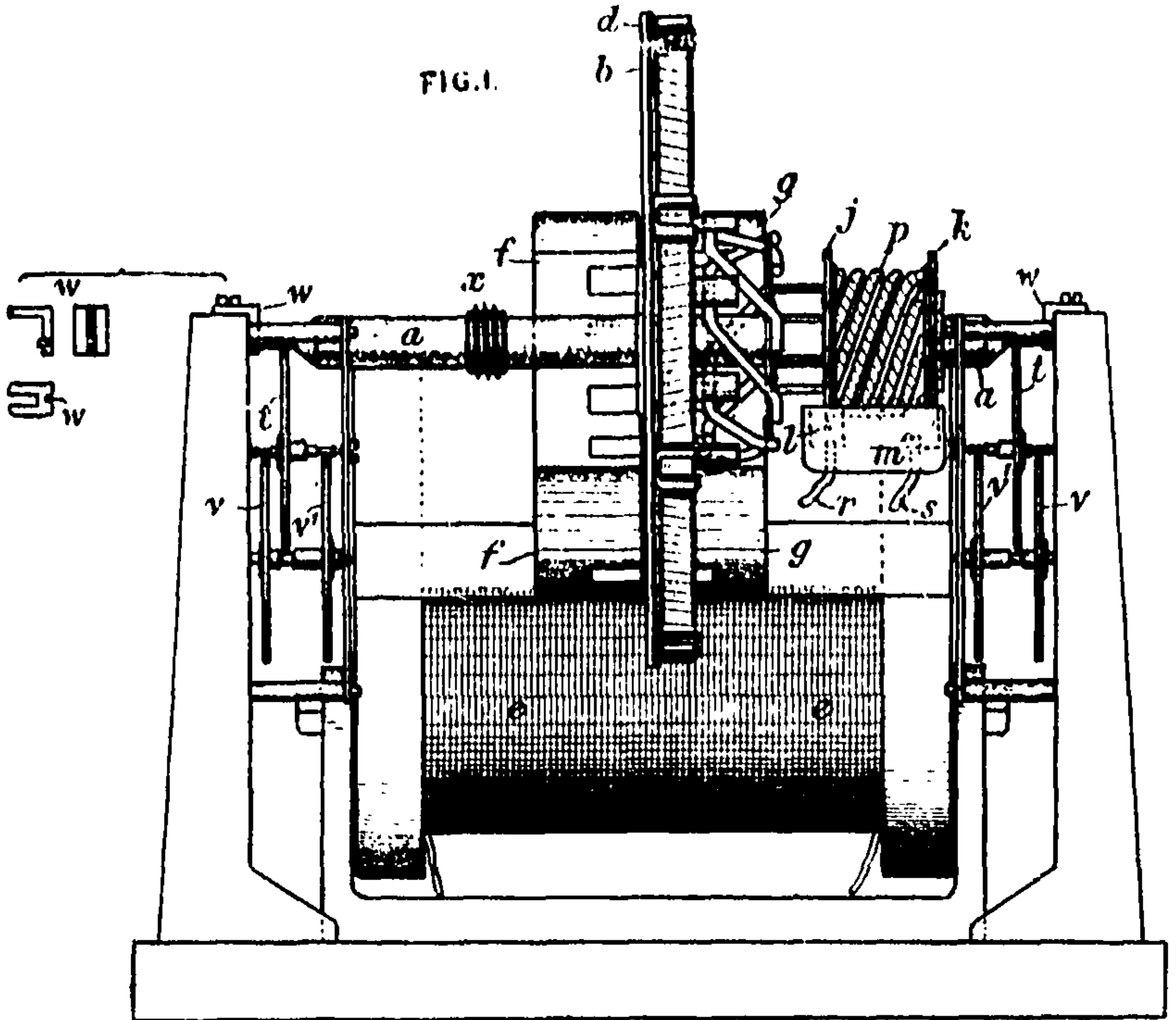


Fig. 1 of Hookham's specification. Side Elevation.

commutator consisting of two sets of insulated spokes or projections placed side by side, each set dipping into a mercury trough, the mercury troughs being connected one with each terminal of the machine. Each commutator spoke is put in connection with the one opposite to it on the other half of the double commutator, so that the mercury troughs, though both on the same side, act as ordinary brushes act when placed on opposite sides of the commutator. If the spindle is vertical I take advantage of the high surface tension of mercury in virtue of which it may be made to stand above the level of the vessel containing it. The ends of wires or metallic

strips from the vertical armature can thus cut the mercury without touching the vessel.

"When I use a motor consisting of a simple solid disc or cylinder, I may, in order to economize magnetizing force, corrugate the disc or cylinder

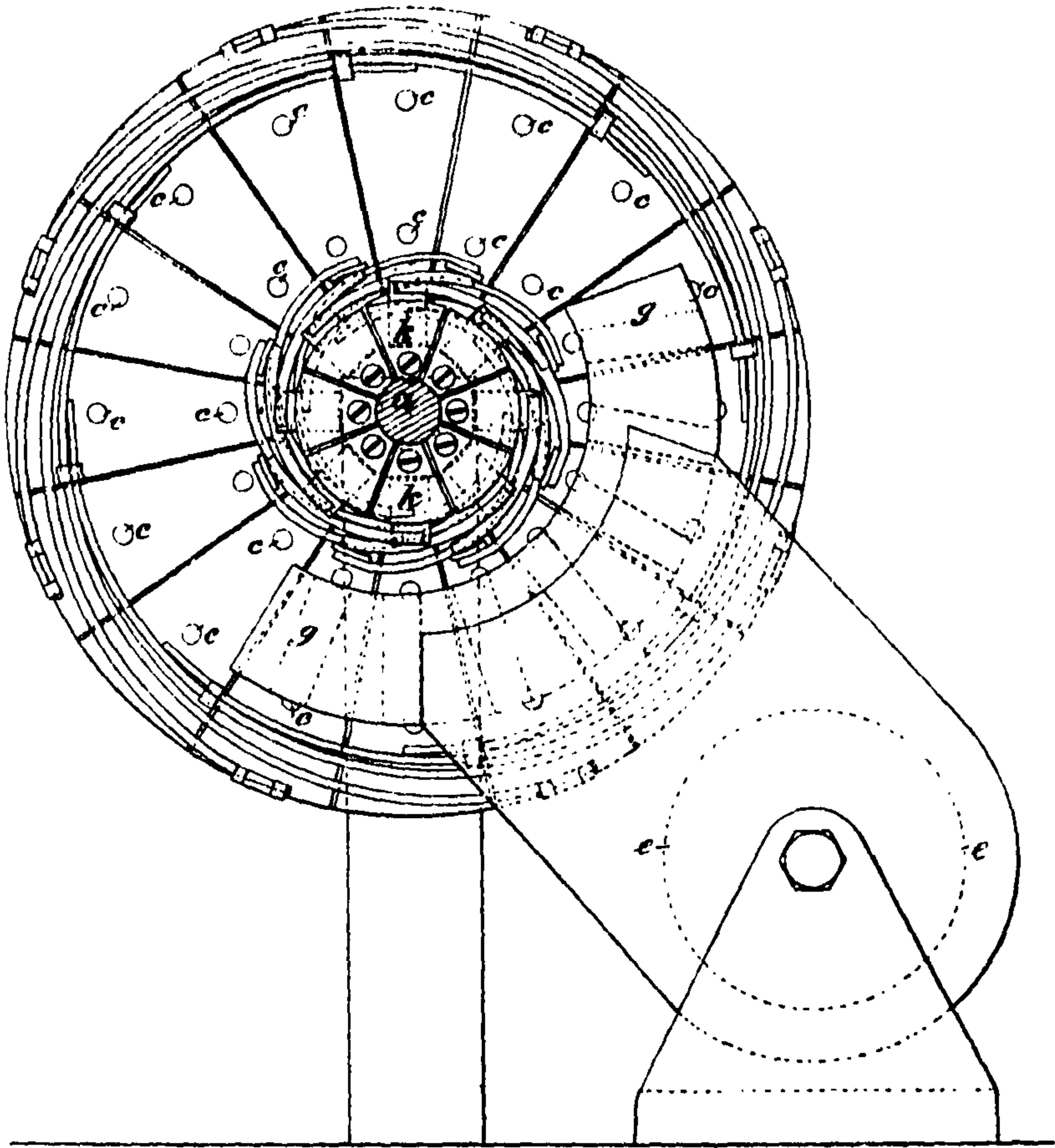


Fig. 3 of Hookhani's specification. Elevation of Commutator End.

in concentric rings and form the magnet poles to correspond, and thereby not only lessen the resistance of the non-magnetic space, but also increase the efficiency of the driving current. If in any case it is found impracticable to render friction or other disturbing causes inappreciable, I may 'compound-wind' the magnets or armature of the motor or, if it is separate, of the electric brake.

"In cases where iron is used in the armature or the electric brake, I may

so dispose the magnets as to counteract or partially counteract gravity, and thereby lessen friction. For alternating currents the magnet cores, and if of iron the armature core, must be finely divided into wires or metal strips.

“The rotations of the axis of the armature of the meter are registered by means of counting apparatus of an ordinary type.

“The double commutator and the corrugation of the disc or cylinder

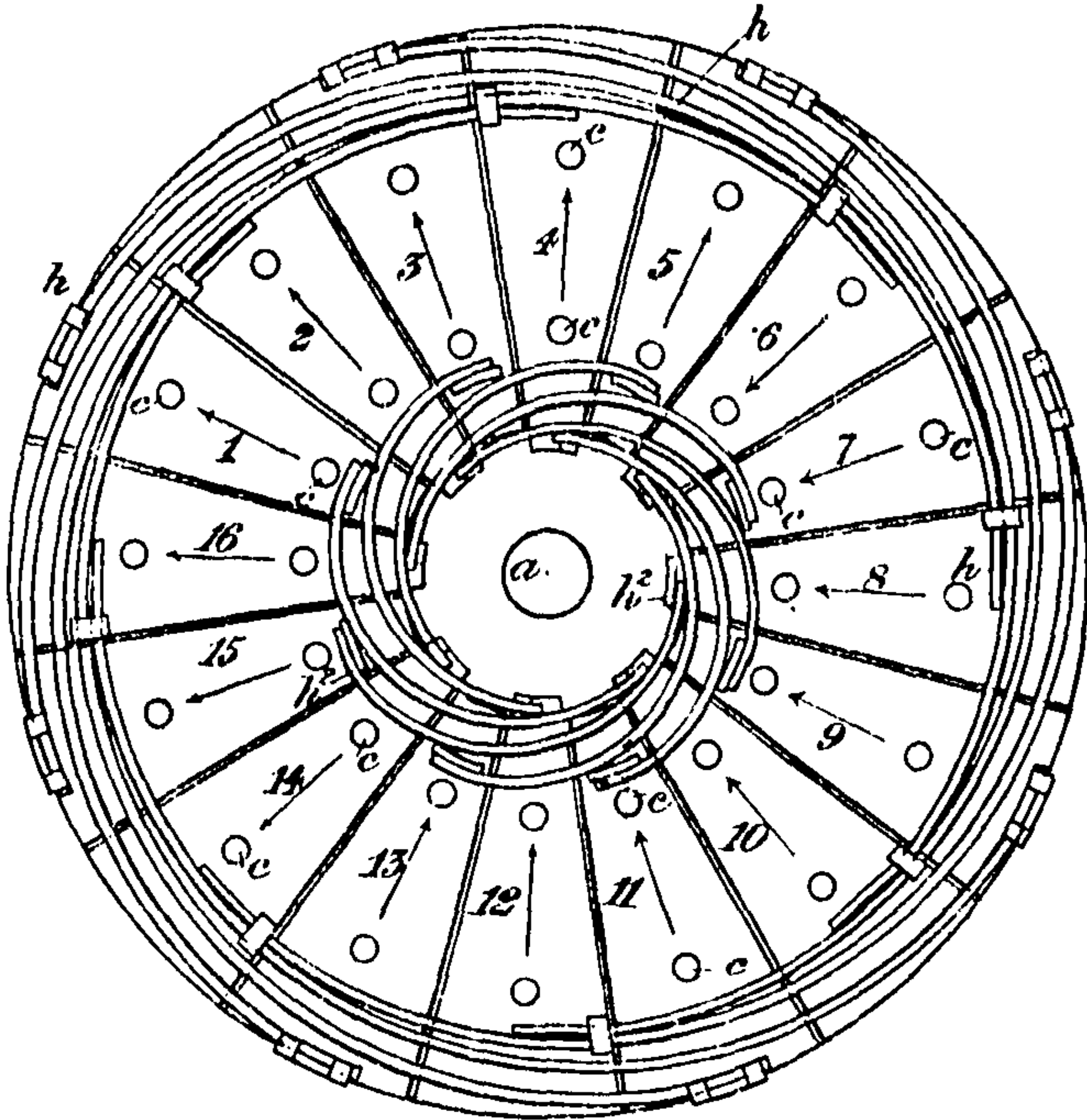


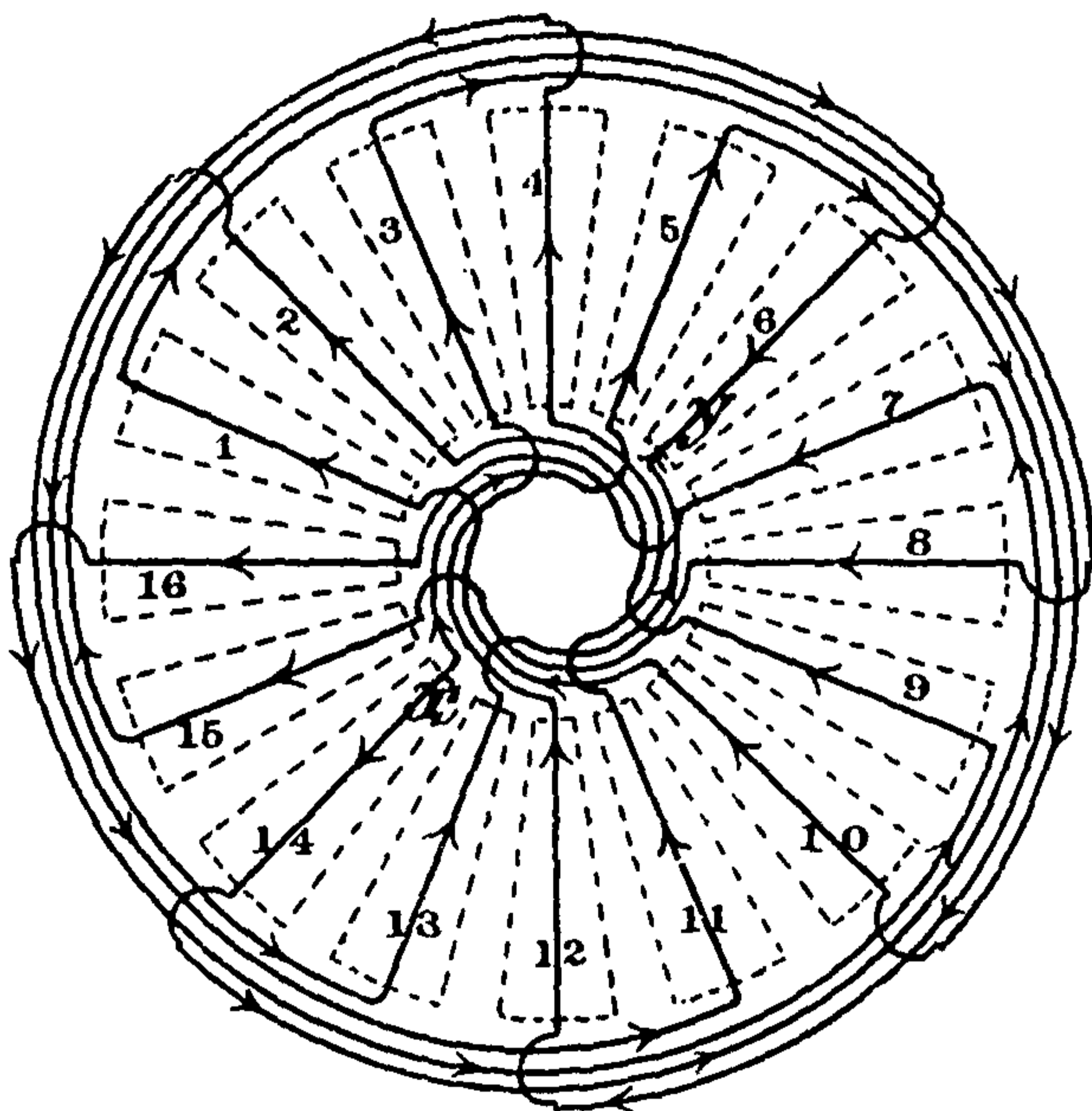
Fig. 5 of Hookham's specification.

and pole-pieces hereinbefore described are applicable to dynamo-electric generators and motors.”

The specification (up to this point a repetition of the provisional) continued by giving a description of the drawings in detail. Fig. 1, representing a side elevation of an electricity meter “constructed according to one form” of the invention, Fig. 3, an end elevation at the commutator end, and Fig. 5, representing the armature in elevation, are here reproduced. The latter is thus described:—

“The armature consists of a series of metallic sectors marked respectively 1 to 16, both inclusive in Fig. 5. These sectors make up a circular disc with radial slits, by which slits the said sectors are electrically insulated from one another. These sectors do not extend to the axis *a* of the machine, as seen in Fig. 5. The said sectors are carried by the circular

disc *b*, which is mounted on the axis *a*, and constitutes the brake of the meter as hereinafter explained. The sectors are connected to the disc or brake *b* by means of the pins or pegs *c*, made of ivory or wood or other insulating material. Between the brake *b* and the sectors is a disc of brown paper, *d*, by which the said sectors are electrically insulated from the brake *b*; *e* is the magnet between the pole-pieces *f* and *g*, of which the armature and brake *b* rotate. The sectors are electrically connected with each other in the manner best seen in Fig. 5. The connections are effected by flat wires or bands of copper covered with silk ribbon or other insulating material, and are carefully insulated from one another. The



x.... Point of entrance of current on disc

y.... Point of exit of current from disc.

sector marked 1 is connected to the sector marked 8 by the outer band *h*, one end of which is soldered to the sector 1, and the other end is soldered to the sector 8. The inner end of the sector 8 is electrically connected by the inner band *h*² to the inner end of the sector 15. By tracing the several outer and inner bands, it will be seen that the several sectors are connected in the following manner."

There then followed a description of the course of the current. This may be seen from the next diagram, in which the current enters at *x* in sector 14, divides in two branches, and, flowing as indicated by the arrows, leaves the armature at *y* in sector 6. Sectors 7 to 13 are supposed to be between the pole-pieces *f* and *g*.

"The result is that the sectors 7, 8, 9, 10, 11, 12 and 13 are urged from between the pole-pieces f and g of the electro-magnet c , communicating a rotary motion to the axis a of the armature. As the armature rotates, the sectors which were in the magnetic field, and were traversed by currents travelling inwards, pass in succession out of the magnetic field when the direction of the currents in them is changed by the commutator as hereinafter explained, and the sectors coming into the magnetic field also have the direction of their currents changed from outwards to inwards by the action of the commutator."

On the armature moving through one division, the current enters the next sector 13, and leaves at sector 5, thus the position of the currents relative to the pole-pieces remains the same.

The commutator was next described.

The commutator consists¹ of two series of insulated sectors, j , k , fixed a short distance apart on the axis, a , of the armature, the marginal portions of the several sectors dipping in turn as the axis a rotates in the mercury troughs l , m respectively. The series of sectors j , k exactly resemble in their action an ordinary commutator, the highest and lowest sectors respectively carrying the incoming and outgoing current. But in order to avoid the friction of a brush or spring upon the two opposite sectors, and to effect the transmission of the current through mercury which is practically frictionless, each of the sectors of the series j is connected by one of the wires p with the sector diametrically opposite to it on the series k , so that the opposite sectors of the series j are respectively connected with the mercury in the two troughs l and m . The wires r and s are the conductors by which the electric current to be metered is conveyed to and from the meter.

"If for any reason I desire to make the axis of the meter vertical, I may make use of the high surface tension of mercury to form a nearly frictionless commutator by means of two cisterns of mercury filled so completely that the surface of the mercury at a little distance from the side of the vessel stands higher than the edge of the vessel. In such case the segments of the commutator will revolve horizontally, and then the commutator need not be divided, but may consist of horizontal sectors moving in one horizontal plane.

"The brake consists of a metallic disc, b , preferably of copper, fixed on the axis a , and consequently rotating with it. As the said disc b travels between the pole-pieces f , g electric currents (commonly known as 'eddy' or 'Foucault' currents) are generated in the said disc b , the resistance they cause to the motion of the disc being proportional to its velocity.

"It is of importance to increase as far as possible the magnitude of these eddy currents. In order to do this I form the pole-pieces f and g

¹ The reference letters are the same in the specification and explanatory diagram given *post.* p. 476; the latter may be an aid in understanding the specification.

with grooves in them radial or nearly radial to the axis of rotation of the armature, as shown in Figs. 1, 2 and 3. The said grooves increase the retarding action of the brake disc *b*. They may be either made in both of the pole-pieces *f* and *g* as shown, or only in the pole-piece *f* nearest the brake disc *b*. Though these grooves are advantageous they are not essential, as both the pole-pieces may be without grooves.

“The special means I employ for reducing the friction of the axis *a* on its bearings to a minimum consists of the arrangement of anti-friction wheels and adjuncts represented in the drawings.” These were described with reference to the drawings in detail, and also the mode of connecting the recording mechanism by the worm *x* on the spindle *a*. The indicating apparatus was not confined to any special form.

“In order to standardize the meter, the strength of the magnetic field may be modified by varying the resistance of the shunt circuit; or I may, in place of or in addition to varying the resistance of the shunt circuit, partially short-circuit the magnetic field by a bar or bars of iron connecting the poles whose section or proximity to the magnet can be adjusted. This method is applicable to permanent magnets whose field may be increased at intervals if it falls off by removing one or more of the iron bars.

“In the meter I have described and represented, the armature is divided into sectors in order that the current to be measured may pass several times across the magnetic field, and the sensitiveness of the meter may be thereby proportionately increased. I wish it, however, to be understood that I do not limit myself to the use of an armature divided into sectors, as a continuous disc may be employed in which the current travels only between the axis and periphery. This arrangement, although inferior in sensitiveness to the arrangement described, may be conveniently employed when heavy currents are to be measured.

“In the meter described and represented the main current passes through the armature and the shunt through the field-magnet, but similar results may be obtained by reversing this arrangement, in which case the use of iron in the armature is preferable.

“In order to enable the meter to measure current, the field must be constant, or else the armature must be of constant magnetic power, and the current to be measured must in such latter case pass round the field-magnets. To obtain this constancy in electro-magnets they must be saturated, and the magnetizing force and the dimensions of the core must be so proportioned as to secure this. The constancy of the field in which the brake moves (in the case in which it moves in a separate field) may be secured in an analogous way. *In electrical circuits in which the electromotive force is practically constant, this degree of saturation in electro-magnets is not essential.*¹ But I prefer to have as field-magnets both of the electro-

¹ This sentence was introduced as part of the first amendments. During the argument it was pointed out that this amendment had been introduced after what the defendants had done