chester, in the county of Lancaster, candle-wick maker, for his invention of "*certain improvements in the manufacture of wicks for candle lamps, and other similar purposes, and in the apparatus connected therewith.*"

The patentee states, that since the taking out of the said Letters Patent, and since the enrolment of his SPECIFICATION, he has discovered that his invention cannot be applied beneficially to manufacturing wicks for lamps; and he therefore disclaims the words, "*lamps and other similar purposes,*" in the title of his Specification; and also all those parts of his Specification which relate to manufacturing wicks for lamps. The title of the said Patent will now read as follows, "*Certain improvements in the manufacture of wicks for candles, and in the apparatus connected therewith.*"

The SPECIFICATION of the PATENT granted 7th May, 1842, to GODFREY WETZLAR, of Myddleton Square, Clerkenwell, for "*improvements in rendering fabrics waterproof,*" (being a communication), due 7th November last, has not been enrolled during that month.

The SPECIFICATION of the PATENT granted 9th May, 1842, to WILLIAM SANDERSON, of Aldermanbury, London, silk manufacturer, for "*improvements in weaving fabrics to be used for covering buttons,*" due 9th November last, has not been enrolled during that month.

The SPECIFICATION of the PATENT granted 31st May, 1842, to HENRY PHILLIPS, of Exeter, chemist, for "*improvements in purifying gas for the purposes of light,*" due 30th November last, has not been enrolled during that month.

Law Reports on Patent Cases.

JUDICIAL COMMITTEE of the PRIVY COUNCIL.— 8th December, 1842.

SIMISTER'S PATENT.

(Present—*Lord Campbell, Mr. Justice Erskine, the Judge of the Prerogative Court, and the Judge of the Admiralty Court.)*

Mr. M. D. Hill and Mr. Webster appeared in support of the petition, which was opposed by the Solicitor-General and Mr. Cowling on the part of the staymakers.

This was an application under Lord Brougham's Act for the renewal of a patent granted on the 18th of December, 1829, to Mr. James Simister, of Birmingham, staymaker, for "an invention of improvements in weaving, preparing, or manufacturing a cloth or fabric, and the application thereof to the making of stays and other articles of dress, which improvements are also applicable to other purposes." The petition stated, that before this invention the cloth used for stays (sateen) was woven according to the usual and well-known methods of weaving, and stays were made by placing two surfaces of such cloth together, and sewing or stitching by the hand in such manner as to leave the requisite spaces for the introduction of the whalebone, steel, wood, cotton, or other article or material with which stays were filled; and that in stays so made the work was not performed with so much regularity, the stays in the process of making became soiled, and they did not fit so easily or pleasantly to the wearer. The petitioner, after bestowing much labour and expense in devising means to obviate these defects, had succeeded in discovering a method of weaving whereby the cloth or fabric might be formed into stays, consisting of two surfaces united together in a proper manner, the requisite open spaces to be filled with whalebone, so being

left or made at the time the cloth was woven, and the method so discovered was applicable to other articles of dress, such as braces, purses, bags, or reticules, &c.

The extension of the term of the patent was moved for on the ground of the invention being of public utility, and on account of the expense the applicant had been put to in perfecting it, and in law proceedings.

Several witnesses were heard in support of the application, which was opposed by

The Solicitor General, on the ground that the described fabric was not a new invention, and because the applicant had failed to prove that the invention (if it were one) was of public utility, or that he had not derived that emolument from it to which he was fairly entitled.

After a short deliberation,

Lord Campbell said, that in this case their Lordships were of opinion that no sufficient case had been made out to entitle the applicant to a renewal of his patent.

ROLLS' COURT, Chancery Lane.—Wednesday, 21st December, 1842.

BAKER *v.* COLE.

Mr. Dixon, for the plaintiff, William Baker, moved *ex parte* for an injunction to restrain the defendant, Richard Cole, from using the trademark or name of "Impilia" upon the sole of any boots or shoes sold by him, or by his direction, and from selling any boots and shoes with that trademark or name thereon, or any boots or shoes made according to the plaintiff's patent. The plaintiff's affidavit stated that he had discovered a new and useful invention for an improvement in the manufacture of boots and shoes, for which, in January last, he had obtained a patent, and had, in July, enrolled his Specification. The invention was specified to be "the applying a piece or sole of matted or felted horse or other strong curled hair between the inner and outer sole of the boot or shoe." The plaintiff had designated the articles thus

made by the name of "Impilia," which name had become universally known as designating his boots, and never had been before so used; but he had caused it to be adopted as the trade-mark of the boots and shoes made according to his patent. He discovered, on the 17th instant, that the defendant was selling boots and shoes which he represented to be "Impilia" boots, &c., made according to the plaintiff's patent, excepting that instead of horse-hair there was wool placed between the soles. The defendant had sold to a man of the name of Wise a pair of these boots, with the word "Impilia" upon the outer sole.

Injunction granted.

VICE CHANCELLOR'S COURT.—Thursday, 22nd December, 1842.

(Before Sir J. K. Bruce.)

MUNTZ *v.* GRENFELL.

This was a motion on behalf of the plaintiff, Mr. Muntz, the member for Birmingham, to restrain the defendants, Edward Pascoe Grenfell and others, from using or continuing to use the alleged invention of the plaintiff for making metal plates for sheathing the bottoms of ships.

Mr. Wigram and Mr. Follett were for the plaintiff, and Mr. K. Parker and Mr. Hetherington for the defendants.

The facts appeared to be as follows:—That in October, 1832, letters patent for the term of fourteen years were granted to Mr. Muntz for this invention, and in September, 1833, the defendants, who were then copper-merchants, entered into partnership with him, and by the agreement it was stipulated that the letters patent should be vested in the plaintiff and defendants, jointly, for the then residue of the term; that the patent should be the joint property of the partners, and the profits, after deducting expenses and apportioning £2. a ton to the plaintiff for all metal made according to the patent, were to be divided, one

moiety for the plaintiff, and the other moiety among the defendants. Liberty was reserved to either party to put an end to the partnership by one month's notice. Upon the formation of the partnership the plaintiff explained to the defendants the mode of working his patent, and the sale of the articles so manufactured was managed by the latter. The bill stated, that by these means the defendants had become possessed of the good-will of the trade. In May, 1841, the defendants gave the plaintiff a month's notice, according to the stipulation of the arrangement, to put an end to the partnership, and on the 17th of June in that year the same ceased, and the plaintiff received notice from the defendants to give up the mills in which the partnership business had been theretofore carried on. It was insisted that the patent was vested in the plaintiff, but that the defendants continued to work, make, and expose for sale the composed metal as before; and for this reason the present application was made. He claimed the common right of a patentee, and that if the patent should, as the defendants alleged, be found invalid, he ought to be protected, considering the distinct contract that had been entered into between the parties; but, whether the patent was good or bad, the defendants were not at liberty now to question it. The counsel for the plaintiff said that Mr. Muntz was the party who had all the knowledge of the mode of working the patent, and that the defendants, having extracted from him that knowledge, and being intrusted with the management of the sale, had got the whole of the trade into their hands, by which, if not restrained, they would inflict irreparable injury on the plaintiff. Mr. Muntz was quite willing that his title should be tried at law, but in the mean time he insisted that his interests ought to be protected by a court of equity. The cases of "Bowman *v.* Taylor," 2 Adolphus and Ellis; "Hale *v.* Thompson;" "Pickford *v.* Skewer;" "Russell *v.* Cowley;" the case of "Oxford and Cambridge," in 6 Vesey; and "Hullett *v.* Haig," 2 Barnewall and Adolphus, 377, were cited.

Mr. Follett, in answer to a question from his Honour, said that the plaintiff was in a condition to prove that the patent had

been infringed by the defendants, without any admission on the part of the defendants; for that they had issued circulars to the trade, in which they stated, that as untrue reports had been propagated as to the legality of their continuing the manufacture of these plates, they would be willing to indemnify any persons who might suffer any damage by dealing with them.

For the defendants it was said, that the issue to be tried was whether or not the present was a valid patent—a point which the defendants negatived. In the *Repertory of Arts* they found, for the year 1804, a Specification of a patent of a Mr. Collins, precisely like that alleged to be the invention of the plaintiff.

His Honour.—Was the plaintiff ignorant of the invention of Collins?

Mr. K. Parker.—Mr. Muntz says, that he is the true and original inventor, and denies that his was the same as Collins's invention. The plaintiff's case is, that his metal is manufactured from "the best selected copper, an article of commerce not known at the time Collins obtained his patent." The patent of Collins consisted of "red, yellow, and white metals," all composed of copper and zinc in different proportions, and the defendants allege that the second, "the yellow metal," was exactly the same as that of the plaintiff's alleged invention.

His Honour.—As both compositions consist partly of copper, I wish to know whether such copper as was used in 1804 will do for the purposes of Mr. Muntz's patent?

Mr. Wigram.—My case is that only "the best selected copper" will do, and that that article was not known until within the last few years.

Mr. K. Parker proceeding, said, that the second ground on which the defendants relied was, that there had been no exclusive enjoyment under the patent, that is to say, uninterrupted enjoyment. The patent was never worked until September, 1837. The defendants paid Mr. Muntz 1,000*l.* for his invention; and therefore, if shortly after the agreement they had been aware of the invalidity of the patent, it would not have been consistent with their interest to state their opinion, at all events, until they

found other parties infringing the patent. So early, indeed, as 1837, the defendants wrote to the plaintiff, saying "the patent is all humbug." Before the dissolution of the partnership, a bill had been filed by the plaintiff and defendants against Messrs. Vivian, of Swansea, for an infringement of the patent, and Mr. Muntz had not then, as he might have done, tried his right at law. Infringements had also been proved to have been made by Lyon and Newton, and Mr. Freeman. The affidavit of Sears proved that "the best selected copper was smelted in exactly the same manner as the best cake or tithe copper, in the same furnace, at the same time, and by the same process, and that it was used, to his own knowledge, for many years before 1831." The defendants, therefore, insisted that the plaintiff was not entitled to the relief he prayed, but they were quite willing to account until the right could be decided at law.

Mr. Hetherington was heard on the same side.

His Honour.—The first question is whether for the limited purpose of the present interlocutory application, and as between these parties only, the patent is or is not to be taken to be valid? The utility of the process is not questioned, The Specification has not been strongly attacked, and it appears that there has been a conviction on the part of the defendants that the invention is the plaintiff's, and that the Specification is not insufficient. The main question is as to the originality of the alleged invention. Now, how does that stand on the evidence? The patent is dated the 22nd of October, 1832. Negociations took place during the following year between the plaintiff and defendants, for the purpose of working (as it is called) the patent in partnership together. That negotiation ripened into a contract on the 24th of September, 1835; by which the plaintiff and defendants agreed to carry on the business together for a term commensurate with the duration of the patent, subject to the notice for dissolution which has been mentioned. The articles of agreement, though not in precise terms, recite the validity of the patent, proceeding upon the notion that they were dealing with a valid patent. In 1835 the Specification of a former

expired patent was observed in a scientific publication, which was brought to the attention of the plaintiff and defendants as being likely to affect the validity of the patent in which they were jointly interested. On that occasion the plaintiff in substance offered the defendants to close his connection with them, if they were dissatisfied. This offer was refused, and the partnership went on as usual until May, 1842, when the parties, not being able to agree (why was not shown), notice of dissolution was given by the defendants to the plaintiff, in accordance with the articles of agreement. On the 17th of June, 1842, the partnership expired, the result of which was to revest the patent wholly in the plaintiff. Some time before this, Vivian was supposed to have infringed the patent, and a bill was filed against him in this Court by the present plaintiff, and the defendants jointly, as co-plaintiffs, and an injunction was moved for. That suit was conducted by the private solicitor of the present defendants, as I collect, and they used, as a main part of the materials on which they applied for the injunction, an affidavit made by Mr. Muntz, in which he swore precisely as to the originality of the patent. Under these circumstances, can I, for the present limited purposes, and as between the present parties, refuse to let this injunction go? If I were of opinion that I ought so to do, then the question of enjoyment or disturbance becomes of less importance than otherwise it would be. It appears that the plaintiff from the first has manufactured sheathing from his patented plan. He endeavoured to make his invention public for the purpose of selling it. It appears that there existed a strong impression in the trade against it; and as it would appear, from prejudice and ignorance of its real merits, for no one seemed to dispute that it was a meritorious invention. At first, therefore, it had no considerable sale; but in 1837 the patent appeared to be set actively at work, and was more known and taken up by the trade. Between 1838 and 1841 there was an attempt made to invade it by a party named Cutler, but he soon desisted. There are only three instances of infringement: one by Vivian, another by Lyon and Newton, and a third by

Freeman. Against this there is that species of enjoyment by the plaintiff which has taken place to the extent before mentioned, previously to the partnership, and a substantial, full, and complete enjoyment during 1838, 1839, and 1840. Considering, therefore, if the view I take be correct, as to the manner in which I have for the present purpose treated the question of the validity of the patent, I think I must consider the infringement as a slight disturbance. I shall, therefore, order the injunction as between the present parties, the plaintiff undertaking to abide by such order as the Court may think fit as to compensation, and undertaking immediately to bring his action to try the question of the validity of the patent; the trial to be in Middlesex; the plaintiff to commence within a week, unless prevented by the defendants, and to deliver the declaration in three weeks.

Scientific Notices, &c.

DESCRIPTION OF AN "ECHOMETER," OR PERCUSSION INSTRUMENT FOR INVESTIGATING DISEASES OF THE CHEST.

INVENTED BY C. J. B. ALDIS, M.D.,

Cantab, Fellow of the Royal College of Physicians, Physician to the London Dispensary, and Lecturer on Medicine at the Charlotte Street School.

Dr. Aldis's Echometer, which was registered Nov. 30, 1842, consists of a leathern plessimeter, with a steel stem and handle; the percussor is composed of steel, having a leathern face, and is attached by means of a joint to the stem of the plessimeter; the percussor is raised by pressure on the lever handle, having a spring underneath, which forcibly raises it when pressure is removed from the lever handle; on depressing the lever handle, it comes in contact with the top of a regulating screw, which can be raised higher or lower, according to the increase or diminution of sound required, which is a very great advantage for equalizing the force of the percussor, as well as the sound elicited; and it is remarkable that no instrument has been invented previously to the present one for fulfilling these intentions, since it is necessary, in comparing the opposite sides of the chest, to produce equal sounds.

We consider the echometer invented by Dr. Aldis for investigating the diseases of the chest, the greatest improvement in percussion since the discovery of the plessimeter by Piorry; and we strongly recommend it to the

notice of medical practitioners and students, much of whose time will be saved by using this instrument, instead of practising percussion in the ordinary way; for the operator, from the ingenious contrivance of its mechanism, cannot do otherwise than produce distinct and equal sounds.

The makers are Savigny & Co. of St. James's Street.

ROYAL POLYTECHNIC INSTITUTION.—Saturday, Dec. 17.

The Earl of Enniskillen, Sir M. A. Shee, Dr. Faraday, Professors Brande and Groves, with many other gentlemen distinguished in the scientific and literary world, attended at this Institution on this evening, by invitation of the directors, to witness some novel experiments with the colossal electrical machine. On this occasion the Leyden jars of the Royal and London Institutions were added to those of the Polytechnic, comprising in all 135, and presenting a chargeable surface of 200 square feet. The great machine offers a surface of 60 square feet, and was acted on by double rubbers, at a rate of 100 revolutions a minute, thus creating an electrical force of unequalled intensity. The chief experiments were those demonstrating the deflagration of the metals by electrical influence, and the appearances presented after this process were of the most unique and beautiful description.

INSTITUTION OF CIVIL ENGINEERS.

TELFORD AND WALKER PREMIUMS, 1842.

The council of the Institution of Civil Engineers have awarded the following Telford and Walker Premiums:—

A Telford Medal in silver, and a premium of books, suitably bound and inscribed, to Robert Thomas Atkinson, M. Inst. C. E., for his paper "On the sinking and tubbing, or coffering, of pits, as practised in the coal districts of the North of England."

A Telford Medal in silver to William Cotton, for his "Memoir of Captain Huddart."

A Telford Medal in silver to the Chevalier Frederik Willem Conrad, for his "History of the Canal of Katwyk (Holland), with an Account of the Principal Works upon it."

A Telford Medal in silver to James John Wilkinson, for his "Historical Account of the various kinds of Sheathing for Vessels."

A Telford Premium of Books, suitably bound and inscribed, to Thomas Casebourne, M. Inst. C. E., for his "Description and Drawings of part of the Works of the Ulster Canal."

A Telford Premium of Books, suitably bound and inscribed, to Thomas Girdwood Hanlie, Assoc. Inst. C. E., for his "Description and Drawings of an Iron Work in South Wales."

A Walker Premium of Books, suitably bound and inscribed, to Charles Nixon, Assoc. Inst. C. E., for his "Description and Drawings of part of the Tunnels on the Great Western Railway."

A Walker Premium of Books, suitably bound and inscribed, to Alexander James Adie, for his "Description and Drawings of the Bridges on the Bolton and Preston Railway."

A Walker Premium of Books, suitably bound and inscribed, to John Brannis Birch, Grad. Inst. C. E., for his "Description and Drawings of the Bridge at Kingston-on-Thames."

A Walker Premium of Books, suitably bound and inscribed, to Robert Richardson, Grad. Inst. C. E., for his "Description and Drawings of part of the Works of the London Docks."

A Walker Premium of Books, suitably bound and inscribed, to James Combe, Assoc. Inst. C. E., for his "Description and Drawings of Messrs. Marshall's new Flax Mill, at Leeds."

A Walker Premium of Books, suitably bound and inscribed, to Charles Denroche, Grad. Inst. C. E., for his "Description and Drawings of the Apparatus used for compressing Gas, for the purposes of illumination, &c."

A Walker Premium of Books, suitably bound and inscribed, to Adrian Stephens, for his "Description of the Explosion of a Steam Boiler at the Penydarran Iron Works, South Wales."

A Walker Premium of Books, suitably bound and inscribed, to George Ellis, Grad. Inst. C. E., for the drawings illustrating the "Description, Specification, and Estimates of the Calder Viaduct, on the Wishaw and Coltness Railway; with the Series of Experiments on the Deflection of Trussed Timber Beams for that work, by John Macneill M. Inst. C. E."

A Walker Premium of Books, suitably bound and inscribed, to Thomas Chalmers, Grad. Inst. C. E., for the drawings illustrating the "Report on the Sinking of two experimental Brick Cylinders in an attempt to form a Tunnel across the River Thames, by John Isaac Hawkins, M. Inst. C. E."

The council take this opportunity of calling the attention to the importance of making the institution the depository of books, drawings, descriptions, and models of works and machinery; also of papers, reports, and pamphlets, which, though apparently of only local or temporary interest, would, when collected, be of great value to the profession.

TELFORD AND WALKER PREMIUMS.

SESSION, 1843.

The council invite communications on the following as well as other subjects for Telford and Walker Premiums:—

1.—The original cost, annual expense, and durability of timber bridges, compared with similar structures in stone, brick, or iron.

2.—A description of the Canal of the Helder (Holland), or of any foreign engineering works of a similar kind and importance.

3.—The modes of irrigation in use in Northern Italy; of drainage adopted in the Lowlands of the United Kingdom; or works of a similar nature in Holland, or in other countries.

4.—On any of the principal rivers of the United Kingdom (the Shannon) or of foreign countries, (the Po, Italy,) describing their physical characteristics, and the engineering works upon them.

5.—An account of the waste or increase of the land on any part of the coast of Great Britain, the nature of the soil, the direction of the tides, currents, rivers, estuaries, &c., with the means adopted for retarding or preventing the waste of the land.

6.—The various kinds of limes and cements employed in engineering works.

7.—The best and most economical mode of raising large stones or rocks from the beds of rivers and harbours.

8.—The conveyance of fluids in pipes, under pressure, and the circumstances which usually affect the velocity of their currents.

9.—The means of rendering large supplies of water available for the purpose of extinguishing fires, and the best application of manual power to the working of fire engines.

10.—The most advantageous method of employing the power of a stream of water, where the height of the fall is greater than can be employed to water wheels of the usual construction.

11.—The construction of large chimneys, as affecting their draught; with examples and drawings.

12.—On the ventilation of coal pits or mines, in Great Britain or in foreign countries.

13.—The relative merits of granite and wood pavements and macadamised roads, derived from actual experience.

14.—The smelting and manufacture of copper.

15.—The smelting and manufacture of iron, either with hot or cold blast, in Great Britain or in foreign countries.

16.—The comparative advantages of iron and wood, or of both materials combined, as employed in the construction of steam vessels; with drawings and descriptions.

17.—The sizes of steam vessels of all classes, whether river or sea-going, in comparison with their engine power; giving the principal dimensions of the engines and vessels, draught of water, tonnage, speed, consumption of fuel, &c.

18.—The various mechanism for propelling vessels, in actual or past use.

19.—The description of any meter in practical use for accurately registering the quantity of water for supplying steam boilers, or for other purposes.

20.—Deductions from direct experiment of the degree of condensation which is most favourable for the working of steam engines, as regards the production of mechanical power, stating the inconveniences resulting from the use of steam at a high pressure, and showing how such inconveniences may be remedied; with simple rules for indicating the proper temperature of the discharged water.

21.—The various modes adopted for moving earth in railway tunnels, cuttings, or embankments, with the cost thereof.

22.—On stone blocks and timber sleepers or sills, with or without continuous bearings, for railways.

23.—The results of experience as regards the consumption of power for a given effect, on railways having different widths of gauge; with the advantages attributable to any established width of gauge.

24.—On the forging of solid axles for locomotive engines and railway carriages, which are subjected to great strain, noticing particularly whether the iron used be of a cold-short or red-short quality; the relative strength of the two qualities, and whether the size of the crystals appears to influence the cohesive strength of the metal.

25.—The advantages of large and small hollow wrought iron shafts for machinery, axles for carriages, &c., the best mode of manufacturing them, and the formulæ for computing its strength.

26.—Memoirs and accounts of the works and inventions of any of the following engineers:—Sir Hugh Middleton, Arthur Woolf, Jonathan Hornblower, Richard Trevithick, and William Murdoch (of Soho).

Original papers, reports, or designs, of these or other eminent individuals, are peculiarly valuable for the library of the institution.

List of New Patents.

PATENTS GRANTED IN ENGLAND, FROM NOVEMBER 25th TO DECEMBER 22nd, 1842.

Six Months allowed for Enrolment of Specification, unless otherwise expressed.

Felix Napoleon Target, of Blackheath, gentleman, Leon Castelain, of Back-lane, Shadwell, chemist, and Adolphe Aubril, of Back-lane, aforesaid, artist, for "a new method of refining or manufacturing sugar." Sealed November 25.

James Smith, of Coventry, pattern drawer and card stamper, for "improvements in weaving ribbons and other ornamented fabrics." Sealed November 25.

Charles Heard Wild, of Birmingham, engineer, for "an improved mode of constructing floors for fire-proof buildings." Sealed November 25.

Isham Baggs, of Wharton-street, Middlesex, chemist, for "improvements in producing light." Sealed November 25.

Frederick Oldfield Ward, of St. Martin's-lane, gentleman, and Mark Freeman, of Sutton, Surrey, gentleman, for "improvements in candlesticks, apparatus, and instruments employed in the use of candles and rush-lights." Sealed November 25.

Pandia Theodore Ralli, of Finsbury-circus, wine merchant, for "improvements in the construction of railway and other carriages, and in apparatus connected therewith." Being a communication. Sealed November 25.

William Henry Fox Talbot, of Laycock-abbey, Wilts, esquire, for "improvements in coating or covering metals with other metals." Sealed November 25.

Thomas Mansell, of Birmingham, agent, for "certain improved machinery for cutting or shaping leather, paper, linen, lastings, silks, and other fabrics." Sealed December 3.

Ebenezer Timmis, of Birmingham, manufacturer, for "certain improvements in apparatus used for arresting the progress of, and extinguishing fires." Sealed December 3.

Edward Cobbold, of Melford, in the county of Suffolk, clerk, master of arts, for "certain improvements in instruments for writing or marking, part or parts of which improvements are applicable to brushes for water colour drawing." Sealed December 3.

John Stubbins, of Nottingham, hosier, for "improved combinations of machinery to be employed for manufacturing certain parts of articles in stocking or lace fabrics." Sealed December 3.

Don Pedro Pouchant, of Glasgow, civil engineer, for "a certain improvement or improvements in the construction of machinery for manufacturing sugar." Sealed December 3.

John Sealy, of Bridgewater, merchant, for "an improved tile." Sealed December 3; two months.

Charles Heard Wild, of Birmingham, engineer, for "an improved switch for railway purposes." Sealed December 3.

Thomas Howard, of Hyde, Chester, manufacturer, for "certain improvements in machinery for preparing and spinning cotton, wool, flax, silk, and similar fibrous materials." Sealed December 3.

William Hancock, Jun., of Amwell Street, gentleman, for "certain improvements in bands, straps, and cords for driving machinery and other mechanical purposes." Sealed December 3.

Frederick William Etheredge, of Frindsbury, gentleman, for "certain improvements in the manufacture of bricks, tiles, and other similar plastic substances." Sealed December 3.

William Henry Stuckey, of Guildford Street, esq., for "certain improvements in filtering water, and other fluids." Sealed December 3.

William Pope, of the Edgeware-road, ironmonger, for "an improved stove." Sealed December 6.

William Oxley English, of Kingston-upon-Hull, distiller, for "improvements in purifying spirits of turpentine, spirits of tar, and naptha." Being a communication. Sealed December 8.

William Coley Jones, of Vauxhall Terrace, practical chemist, and George Fergusson Wilson, of Vauxhall, gentleman, for "improvements in operating upon certain organic bodies or substances in order to obtain products or materials therefrom for the manufacture of candles and other purposes." Sealed December 8.

William Smith Harris and Septimus Hamel, both of Leicester, cotton-winders and co-partners, for "improvements in the manufacture of reels for reeling cotton and linen thread." Sealed December 8.

William Kempson, of the Borough of Leicester, manufacturer, for "improvements in the manufacture of muffs, cuffs, ruffs, tippets, mantillas, pellerines, dressing gowns, boots, shoes, slippers, coats, cloaks, shawls, stocks, cravats, capes, boas, caps, bonnets, and trimmings for parts of dress." Sealed December 8.

George Purt, of St. Mary-at-Hill, soda water manufacturer, and William Hale, of Woolwich, engineer, for "improvements in producing aerated liquors." Sealed December 8.

Richard Barber, of Leicester, reel manufacturer, for "improvements in the manufacture of boots, shoes, and clogs." Sealed December 8.

John George Bodmer, of Manchester, engineer, for "certain improvements in the manufacture of metallic hoops and tyres for wheels, and in the method of fixing the same for use; and also improvements in the machinery or apparatus to be employed therein." Sealed December 8.

William Edward Newton, of Chancery-lane, civil engineer, for "certain improvements in the construction and arrangement of axles and axle-trees for carriages, carts, and other vehicles used on rail or other roads." Being a communication. Sealed December 8.

William Lomas, of Manchester, worsted spinner, and Isaac Shimwell, of the same place, worsted spinner, for "certain improvements in the manufacture of fringes, cords, and other similar small wares, and also in the machinery or apparatus for producing the same." Sealed December 8.

John Grantham, of Liverpool, engineer, for "certain improvements in the construction and arrangements of the engines and their appendages for propelling vessels on water." Sealed December 8.

James Brown, of Soho, Birmingham, engineer, for "certain improvements in steam engines and steam-propelling machinery." Sealed December 8.

Benjamin Fothergill, of Manchester, machine maker, for "certain improvements in machines called mules and other machines for spinning cotton, wool, and other fibrous substances." Sealed December 8.

Percival Moses Parsons, of Waterloo-road, Surrey, civil engineer, for "certain improvements in steam engines and boilers, and in motive machinery connected therewith." Sealed December 8.

Charles Keene, of New Bond-street, hosier, for "improvements in the manufacture of hose, socks, drawers, gloves, mitts, caps, comforters, and cuffs." Sealed December 15.

William Palmer, of Sutton-street, Clerkenwell, manufacturer, for "improvements in the manufacture of candles." Sealed December 15.

Thomas Cardwell, of Bombay, in the East Indies, merchant, for "improvements in the construction of presses for compressing cotton and other articles." Sealed December 15.

Moses Poole, of Lincoln's-inn, gentleman, for "improvements in dressing mill-stones." Being a communication. Sealed December 15.

Charles Maurice Elizee Sautter, of Austin Friars, in the city of London, gentleman, for "improvements in the manufacture of sulphuric acid." Being a communication. Sealed December 15.

Guillaume Simon Richault, of the Sabloniere Hotel, Leicester-square, editor of music, for "improvements in apparatus for exercising the fingers of the human hand, in order to facilitate their use in the playing of the pianoforte and other instruments." Being a communication. Sealed December 15.

James Winchester, of Noel-street, hatter, for "certain improvements in steam boilers, and in the methods of applying steam or other power to locomotive purposes." Sealed December 15.

Edward Robert Rigby and Charles John Rigby, of Gracechurch-street, brush manufacturers, and co-partners, for "an improvement or improvements in the manufacture of certain articles in which bristles have been or are now used." Sealed December 21.

Gabriel Hippolyte Moreau, of Leicester-square, gentleman, for "certain improvements in steam generators." Sealed December 21.

Gabriel Hippolyte Moreau, of Leicester-square, gentleman, for "certain improvements in propelling vessels." Sealed December 21.

John Squire, of Ponghill, Cornwall, engineer, for "certain improvements in steam boilers or generators." Sealed December 21.

Taverner John Miller, of Mill-bank-street, Westminster, oil merchant, for "improvements in apparatus for supporting a person in bed or when reclining." Sealed December 21.

William Bridges, of Birmingham, button tool maker, for "certain improvements in buttons." Sealed December 21.

Henry Purser Vaile, late of Fleet-street, gentleman, for "improvements in combining mechanical instruments for obtaining power." Sealed December 22.

Joseph Beaman, of Smethwick, Stafford, ironmaster, for "an improvement in the manufacture of malleable iron." Sealed December 22.

William Godfrey Kneller, of Wimbledon, chemist, for "improvements in the manufacture of soda in the evaporation of brine, and in the concentration and manufacture of sulphuric acid." Sealed December 22.

Robert Wilson, manager at the works of Messrs. Nasmyths, Gaskell & Co., at Patricross, near Manchester, engineer, for "certain improvements in locomotive and other steam engines." Sealed December 22.

James Morris, of Cateaton-street, London, merchant, for "improvements in locomotive and other steam engines." Sealed December 22.

PATENTS GRANTED FOR SCOTLAND, FROM OCTOBER 25th, TO DECEMBER 24th, 1842.

John Varley, of Colne, in the county of Lancaster, engineer, and Edmondson Varley, of the same place, cotton manufacturer, for "certain improvements in steam engines." Sealed October 26.

James Hyde, of Duckenfield, Cheshire, mechanic, and John Hyde, of the same place, cotton spinner and manufacturer, for "a certain improvement or improvements in the machinery used for preparing cotton, wool, silk, flax, and similar fibrous materials for spinning." Sealed November 3.

John Clay, of Cottingham, in the county of York, gentleman, and Frederick Rosenborg, of Sculcoates, in the county of York, gentleman, for "improvements in arranging and setting up types for printing." Sealed November 3.

James Pilbrow, of Tottenham Green, in the county of Middlesex, engineer, for "certain improvements in the application of steam, air, and other vapours and gaseous agents, to the production of motive power, and in the machinery by which the same is effected." Sealed November 7.

Francis Roubiliac Conder, of Highgate, in the county of Middlesex, civil engineer, for "improvements in the cutting and shaping of wood, and in the machinery for that purpose." Being a communication. Sealed November 9.

John Mitchell, of Birmingham, in the county of Warwick, steel pen manufacturer, for "a certain improvement in the manufacture of metallic pens, and a certain improvement in the manufacture of pen holders." Sealed November 11.

Henry Clarke, of Drogheda, in the county of Louth, in the kingdom of Ireland, linen merchant, for "improvements in machinery for lapping and folding all description of fabrics, whether woven by hand or power." Sealed November 17.

John Spinks, the younger, of John-street, Bedford-row, in the county of Middlesex, gentleman, for "an improved apparatus for giving elasticity to certain parts of railway and other carriages requiring the same." Being a communication. Sealed November 21.

Thomas Wrigley, of Bridge Hall Mills, Bury, Lancaster, paper manufacturer, for "certain improvements in machinery for manufacturing paper." Sealed November 28.

William Coley Jones, of Vauxhall-walk, in the parish of Lambeth, in the county of Surrey, chemist, for "improvements in treating or operating upon a certain unctuous substance, in order to obtain products therefrom for the manufacture of candles and other purposes." Sealed December 7.

Charles Maurice Elizee Sautter, of Austin Friars, in the city of London, gentleman, for "improvements in the manufacture of sulphuric acid." Being a communication. Sealed December 7.

Don Pedro Pouchant, of Glasgow, civil engineer, for "a certain improvement or improvements in the construction of machinery for manufacturing sugar." Sealed December 7.

Charles Heard Wild, of Birmingham, in the county of Warwick, engineer, for "an improved switch for railway purposes." Sealed December 7.

John Browne, of Charlotte-street, Portland-place, in the county of Middlesex, esquire, for "improvements in the manufacture of mud boots and overalls." Sealed December 7.

William Coley Jones, of Vauxhall-terrace, in the county of Surrey, practical chemist, and George Fergusson Wilson, of Vauxhall, in the same county, gentleman, for "improvements in operating upon certain organic bodies or substances, in order to obtain products or materials therefrom for the manufacture of candles, and other purposes." Sealed December 7.

William Losh, of Newcastle-on-Tyne, esquire, for "improvements in the construction of wheels for carriages and locomotive engines intended to be employed on railways." Sealed December 9.

Thomas Cardwell, of Bombay, in the East Indies, merchant, for "improvements in the construction of presses for compressing cotton and other articles." Sealed December 9.

Charles Augustus Preller, of Eastcheap, in the city of London, merchant, for "improvements in machinery for preparing, combing, and drawing wool and goats' hair." Being a communication. Sealed December 9.

THOMAS SEVILLE, of Royton, in the county of Lancaster, cotton spinner, for "certain improvements in machinery used in the preparing and spinning of cotton, flax, and other fibrous substances." Sealed September 9.

WILLIAM YOUNG, of Queen-street, in the city of London, lamp maker, for "improvements in lamps and candlesticks." Sealed December 12.

GEORGE EDMUND DONISTHORPE, of Bradford, in the county of York, top manufacturer, for "improvements in combing and drawing wool and certain descriptions of hair." Sealed December 12.

JOHN BISHOP, of Poland-street, in the county of Middlesex, jeweller, for "improvements in apparatus used for retarding carriages on railways, parts of which are applicable for portioning power, and improvements in steam cocks or plugs." Sealed December 12.

ISHAM BAGGS, of Wharton-street, in the county of Middlesex, chemist, for "improvements in the production of light." Sealed December 13.

GABRIEL HIPPOLYTE MOREAU, of Leicester-square, in the county of Middlesex, gentleman, for "certain improvements in steam generators." Sealed December 13.

JOHN GEORGE BODMER, of Manchester, in the county of Lancaster, engineer, for "certain improvements in the manufacture of metallic hoops and tires for wheels; and in the method of fixing the same for use; and also improvements in the machinery or apparatus to be employed therein." Sealed December 19.

WILLIAM LOMAS, of Manchester, in the county of Lancaster, worsted spinner, and ISAAC SLIMWELL, of the same place, worsted spinner, for "certain improvements in the manufacture of fringes, cords, and other similar small wares; and also in the machinery or apparatus for producing the same." Sealed December 21.

MOSES POOLE, of Lincoln's-inn, in the county of Middlesex, gentleman, for "improvements in dressing mill-stones." Being a communication. Sealed December 22.

WILLIAM PALMER, of Sutton-street, Clerkenwell, in the county of Middlesex, manufacturer, for "improvements in the manufacture of candles." Sealed December 22.

PATENTS GRANTED IN IRELAND FROM 25th NOVEMBER TO 25th DECEMBER, 1842.

JOHN MITCHELL, of Birmingham, in the county of Warwick, steel-pen manufacturer, for "a certain improvement in the manufacture of metallic pens, and a certain improvement in the manufacture of pen holders." Sealed December 5.

JOHN SPINKS, the younger, of John-street, Bedford-row, in the county of Middlesex, gentleman, for "an improved apparatus for giving elasticity to certain parts of railway and other carriages requiring the same." Being a communication. Sealed December 5.

MATTHEW GREGSON, of Toxteth Park, Liverpool, in the county of Lancaster, esquire, for "an improvement applicable to the sawing or cutting of veneers." Being a communication. Sealed December 10.

JOHN RIDSDALE, of Leeds, in the county of York, esquire, for "improvements in preparing fibrous materials for weaving and sizing warps." Sealed December 24.

JOHN BISHOP, of Poland-street, in the county of Middlesex, jeweller, for "improvements in apparatus used for retarding carriages on railways, parts of which are applicable for portioning power; and improvements in steam corks or plugs." Sealed December 24.

JOHN THOMAS BETTS, of Smithfield-bars, in the city of London, gentleman, for "improvements in covering and stopping the necks of bottles, jars, vases, and pots." Being a communication. Sealed December 24.

The Record

OF

PATENT INVENTIONS.

No. V.

SPECIFICATION enrolled 1st December, 1842, of a PATENT granted 1st June, 1842, to HENRY BEAUMONT LEESON, of Greenwich, in the county of Kent, M.A., and Doctor of Medicine, for "*improvements in the art of depositing and manufacturing metals and metallic articles by electro-galvanic agency, and in the apparatus connected therewith.*"

THE first part of this invention relates to improvements in the construction and arrangement of a galvanic battery, whereby the same can be better managed, and the quantity and intensity of the electric current regulated. This apparatus consists of a rectangular wooden trough, into which is placed a similar trough containing the porous cells, which fit into grooves cut on each side of the trough, and rest upon a ledge or flange formed at the bottom of the trough. This trough is open at the top and bottom, so as to allow a free communication of the electrolytic fluid or fluids with all the pairs of plates, which are suspended in the fluid from a piece of brass screwed to the side of the trough. Each piece of brass has three prongs or projecting bars, to which the plates are attached, and

each middle plate is suspended in one of the porous cells; the external oblong box or trough is provided with a conical plug, which can be taken out for the purpose of letting off the fluid. By this arrangement, the quantitative and intensity of the electric current can be increased or diminished, by merely raising or lowering the internal box which contains the plates and cells, so as to increase or diminish the depth to which the plates are immersed; or the electric current may be diminished by drawing the plug and thus allowing the liquid to run off, without at all deranging the apparatus.

The second improvement consists in the application of a galvanic battery for the purpose of amalgamating or coating the surface of zinc plates, and also in the application of the same for the purpose of cleaning copper and zinc plates which have been used in any battery.

The third improvement consists in the application of certain electrolytic fluids to be used in connection with nitric, muriatic, and sulphuric acid, for the purpose of exciting a galvanic current to be used in the deposition of metals; such, for instance, as the impure ammoniacal liquor, lime liquor after it has been used for the purpose of purifying coal gas, the impure alkaline sulphurets of potassium and sodium, the sulphurets of calcium, barium, and strontium produced from the sulphurets of lime, baryta, and strontia; and, lastly, in the use of sulphate of iron in connection with any of the above mentioned alkaline solutions, for the purposes described.

The fourth improvement relates to the mode of applying the galvanic current, in which is shown the maximum quantitative effect of batteries containing from four to eight pairs of plates, and also the quantity in cubic inches of gas produced per minute.

The fifth part of this invention relates to improvements

in the method of manufacturing works of art and other articles; and consists, first, in the application of an elastic mould to be employed for the purpose of obtaining casts: another part of these improvements relates to a method whereby silver may be deposited, and consists in using a strong solution of cyanide of silver and potassium, formed by dissolving from 10 to 20 ounces of pure salt in one gallon of distilled water, and adding thereto one ounce of cyanide of potassium, so that the latter salt may be slightly in excess.

The sixth improvement relates to a method whereby a smoother external surface may be obtained, and a greater amount of metal deposited in a given time; and consists in putting the object to be deposited upon in motion, which can be effected by an ordinary smoke-jack, or other mechanical means, or the electrolytic fluid may be put in motion by any known means.

The seventh improvement consists in the application of the electro-deposition of metals to the formation of parabolic and other reflecting surfaces and specula. In the first place, a mould is formed of the exact curve required, and silver, antimony, or other metal is deposited thereon, which is to be strengthened by a deposition of copper.

The eighth improvement relates to the deposition of metallic alloys: this is effected by connecting the article to be covered to the terminical cathode of two or more distinct batteries, according to the number of metals of which the alloy is to be composed, and placing the article to be covered in a solution composed of similar salts of the different metals to be deposited; and the cathode plate of each of the metals composing the alloy is to be placed in the solution, each of the plates being connected to the anode of one of the batteries.

The ninth improvement consists in the preparation of

metallic surfaces for electro-deposition, by first covering the same with a slight coating of metallic mercury, so as to produce greater adhesion of the metal afterwards deposited.

The tenth improvement relates to a mode of arranging the anode, or surface to be deposited upon, so as to assist in generating and maintaining a galvanic current; and consists in arranging the articles themselves in a series, as a portion of the battery, making the metals or articles to be deposited on anodes of the arrangement, and the cathodes by preference of the metal to be deposited; but zinc or other oxidizable metal may be employed.

The eleventh improvement consists in a method of depositing gold, silver, platinum, lead, zinc, tin, nickel, cobalt, and mercury, without the aid of a solution originally containing such metal; and consists in immersing the article to be deposited on in any fluid not containing such metals to be deposited, but capable of acting on or combining with the supply metal of which the deposit is to be formed.

The twelfth improvement relates to the electro-metallic deposition of metals, by the aid of a galvanic battery, as a means of manufacturing, extracting, or obtaining platinum and other metals from their respective ores.

The thirteenth improvement consists in forming or manufacturing platinum and other articles, and also in covering and coating other articles or surfaces therewith.

And lastly, this invention relates to the application of compounds of metal not heretofore proposed to be used for the purpose of furnishing an electrolytic solution to be employed in depositing the respective metals. Some of the compounds of metal mentioned in the Specification are cyanide of platinum and potassium, perchloride of platinum and barium, perchloride of platinum and potas-

sium, perbromide of platinum and sodium, sesquicyanide of platinum and ammonium, persulphocyanide of platinum, sulphomolybdate of platinum, hyposulphomolybdate of platinum dissolved in sulpharseniate of platinum, hyposulphomolybdate of gold, subsesquiarseniate of silver, sulphocyanhydrate of silver; with about two thousand others.

The patentee claims as follows :—First, the improved method of constructing a galvanic battery, without limit to any particular dimensions, and the particular mode of placing or constructing the metal bars connecting the cathode and anode poles, so that one plate can be readily removed or changed without disturbing the remainder; also the mode of separating and arranging the porous cells in one frame, so that the whole can at once be removed. Secondly, the application of a galvanic battery for the purpose of cleaning the copper and zinc plates used in any battery, and for the purpose of depositing mercury upon the zinc plates. Thirdly, the application of the electrolytic fluids mentioned, for the purpose of exciting an electric current to be used in the deposition of metal. Fourthly, the use of what the patentee terms the "intensity arrangement," for the purpose of obtaining a good metallic deposit, consisting in the use of a galvanic battery composed of more than ten pairs of plates. Fifthly, the method of manufacturing works of art and other articles in silver, by depositing the metals upon moulds of wax, plaster of paris, and other non-conducting surfaces, by using a strong solution of cyanide of silver and potassium, prepared in the manner described; also the use of elastic moulds for the purpose of producing casts to be employed for the purpose of electro-deposition, and also the peculiar method of obtaining a deposit on badly-conducting surfaces. Sixthly, the giving motion to the surface to be deposited upon, or to the electrolytic fluid in which such surface is

immersed, during the period of electro-deposition. Seventhly, the application of the electro-deposition of metals and metallic alloys to the formation of the reflecting surfaces of parabolic and other reflectors and specula. Eighthly, the methods of depositing metallic alloys, as described. Ninthly, the method of preparing metallic surfaces for electro-deposition, by previously covering the same with a slight coating of metallic mercury. Tenthly, the method of arranging the articles to be deposited upon, so as to assist in generating and maintaining the galvanic current. Eleventhly, the method of depositing metals by the aid of electrolytic solutions not originally containing such metals as component parts thereof, when in conjunction with a cathode of the metal to be deposited. Twelfthly, the use of electro-depositions, when employing the cathode herein mentioned, as a means of manufacturing platinum and other metals from their respective ores. Thirteenthly, the application of electro-deposition to the manufacture of vessels and other articles of platinum; also the method described of covering metal and other surfaces with platinum; and lastly, the application of the compounds of various metals set forth in the Specification as not having been heretofore used for the purpose of the deposition of such metals.

SPECIFICATION enrolled 1st December, 1842, of a PATENT granted 1st June, 1842, to WILLIAM HENRY KEMPTON, of South-Street, Pentonville, in the county of Middlesex, gentleman, for "*improvements in the manufacture of candles.*"

THIS invention relates to certain improvements in the manufacture of candles in which plaited wicks are employed, and consists in combining with or binding to the

side of a plaited wick a cord, bobbin, braid, string, or yarn, or other preparation of fabric. The plaits forming these wicks are similar to those in common use, but plaited not quite so hard; and are composed of three strands of soft cotton yarn, having several yarns in each strand, laid side by side and plaited in the ordinary manner. The cotton cord, which is to be bound on one side of the plaited strands, and which the inventor employs, consists of three strands of cotton yarn, each strand consisting of three yarns of cotton, the strands being twisted separately and then twisted together. It will be necessary to observe, that the cord, or other preparation of fibres twisted into a cord or yarn, should not be too strong for the wick; and also that, in affixing such cord to the plaited wick, it is placed on that side of the wick where the strands of which the plait is composed run upwards and from the centre outwards to the edges of the plait. By this arrangement, the wick will be controlled in its burning outwards, or separating, and the candle will burn more brilliantly and steadily, and not be so liable to gutter.

The inventor claims the application of plaited wicks combined with bobbin, braid, cord, or yarn, or other like preparation of fibres, whereby the plaited wick is regulated and controlled in its burning out of the flame.

SPECIFICATION enrolled 2nd December, 1842, of a PATENT granted 2nd June, 1842, to JAMES REED, of Bishop's Stortford, in the county of Hertford, statuary and mason, for "*improvements in tiles, slating, and the construction of water-tight joints, and in the covering and casing of buildings and other erections.*"

THESE improvements consist, first, in an improved form

and method of manufacturing by pressure, roofing, facing, paving, and other tiles, and in certain methods of ornamenting the same. The drawing shows several forms of tiles, each having an edge or rib projecting about three-eighths of an inch above the upper surface of the top part of the tile; and also a projecting edge or rib on the under side of the tile, each projection occupying about one-half of the circumference of the tile; so that when two or more tiles of the same pattern are placed together on the building, the projection on the under side of one tile shall overlap the raised part or projection of the tile below, in as nearly corresponding, or parallel, curved, or oblique lines as possible, according to the peculiar form or shape of the tile employed. The clay, after being prepared in a pug-mill, or otherwise, in the ordinary manner (care being taken to use as little water as possible, in order to prevent it from shrinking), is to be formed into plane slices, which are to be laid upon or between a pair of dies, and submitted to the action of a press, in order to give the proposed material for the tile the shape and impression required for one side. It is then submitted to the action of another pair of dies, in which can be cut or engraved crests, arms, or other devices, and which dies complete the form of the tile, which is afterwards dried in a closed house or shed; after which it is burnt in the ordinary manner. The drawings give a description of a machine for compressing and stamping the said tile; and consists of a pair of dies, the upper one being weighted or acted upon by some elastic power; and the lower die, which is capable of moving to and fro, for the purpose of placing the slices of clay upon it, is acted upon by a slide, which moves up and down in the framing by means of a connecting rod and a crank shaft; at every revolution of which the lower die is lifted up or forced against the upper die.

The second part of these improvements consists in an improved compressed composition of materials for manufacturing tiles, &c.; which composition is fit for use without subsequent burning, and consists in equal quantities of ground or pulverized bricks, tiles, or other earth, having been previously burnt, and newly slaked lime or other cement incorporated together with a sufficient quantity of water, which is to be first applied to the lime or cement in order to bring it to a creamy state; to which is to be added the pulverized material, and the whole well mixed together until sufficiently stiff to be worked. This composition is then to be placed into moulds and submitted to the action of a powerful press, which will have the effect of making the particles adhere more firmly; at the same time the composition can be formed into the peculiar form of tile required.

The third part of these improvements consists in a peculiar method of covering and casing buildings with slates, stones, and other slabs; also in laying, arranging, and fastening or securing the same, and rendering the joints water-tight. In covering roofs, the rafters or battens are laid at an angle of 45 degrees with the front walls, and the slates or other covering are of a diamond form, having the lateral corners cut off. These slates or coverings are nailed by their edges to the rafters, so as to overlap one another; and in order to secure the same against strong winds, the inventor employs an improved tie-bolt; and in order, also, to prevent the same from rattling, a piece of cord, such as a pitch band, is placed between those parts of the slates which overlap each other. The patentee also makes use of a disc of india rubber underneath the head of the tie-bolt, which prevents the wet from getting through the hole; and also applies strips or bands of caoutchouc, in an elastic state, between the slates or

slabs and the rafters or timbers employed in roofing and casing buildings.

The claims are as follow :—First, the peculiar form of roofing tiles, whereby the patentee obtains the overlapping joint in diagonal, oblique, and curved lines, by the application of reversed fillets or projections, as described. Secondly, the peculiar form of valley eaves and barging tiles. Thirdly, the forming of stone, slate, and other slabs for roofing and covering buildings, with reversed fillets. Fourthly, the peculiar form of facing tiles, with receding steps, fillets, bevilled or ornamented edges and shoulders; the outward edges of their surfaces fitting into or corresponding with the outward edges of other similar tiles in oblique and curved lines, as described. Fifthly, the manufacturing of tiles, mouldings, and facings, and other bricks and slabs, in a press, by stamping and pressing the same out of plane slices or surfaces of clay or other material; and in raising or depressing thereon crests, arms, and other devices. Sixthly, the use and application of pulverized brick, tile, or other burnt clay or material, mixed with lime or other cement, in the manufacturing of tiles, for the purpose and in the manner described, instead of being subjected to the fire in the ordinary manner. Seventhly, laying the rafters of buildings obliquely, for supporting and fixing thereto slates and other slabs in diagonal or oblique lines, without the use of battens; and, where battens are used, fixing the same in oblique directions, and slating upon them in a diagonal direction with square slates; and also the mode of fastening several slates or slabs by one and the same pin, as described. Lastly, the use and application of collars, bands, and strips of caoutchouc or india rubber, in an elastic state, for rendering the joints or parts to which it is applied, in roofing, covering, and casing buildings, water-tight.

Fig 2.

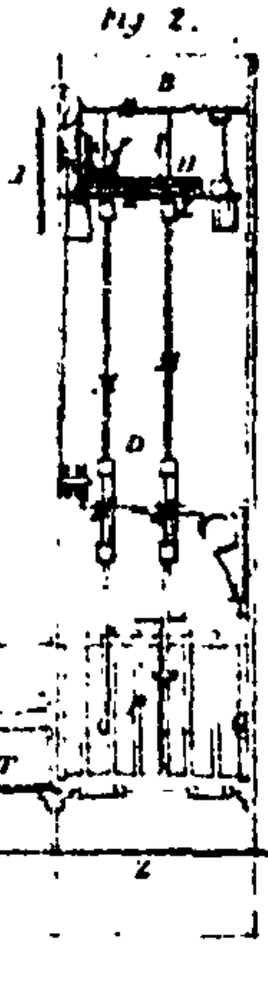


Fig 13

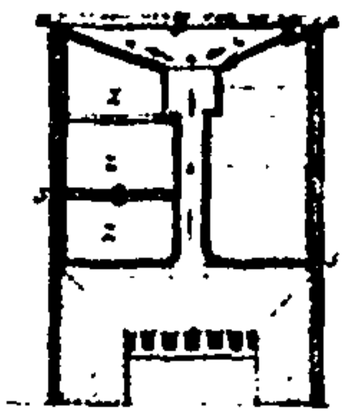
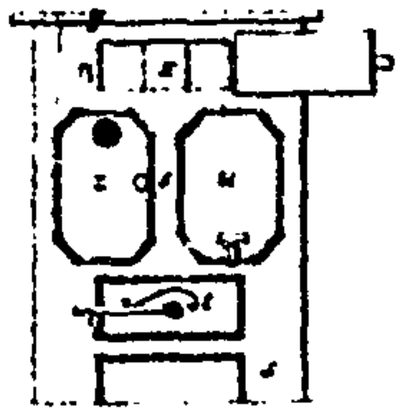
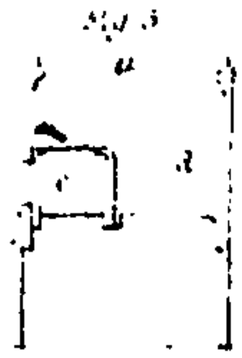
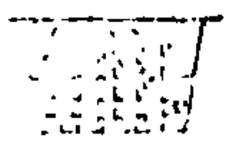


Fig. 12.







Figs 14 & 15

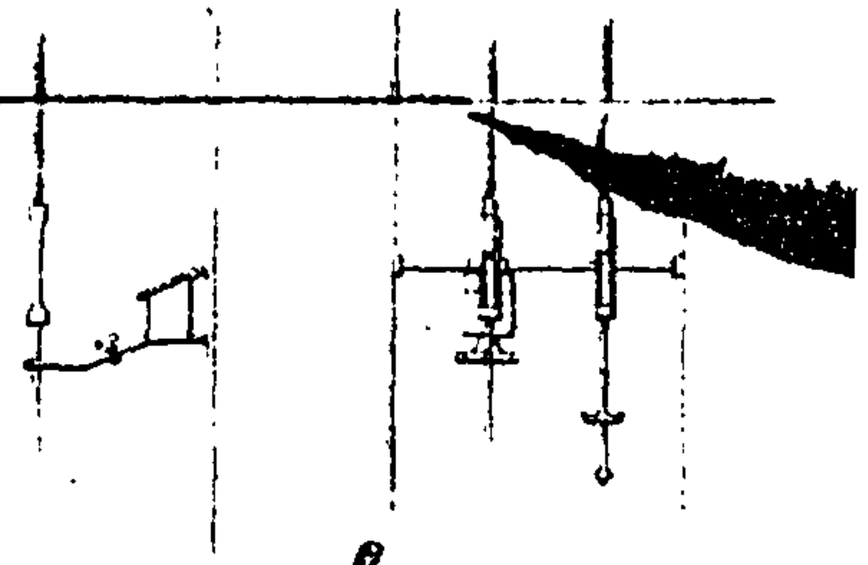


Fig 11

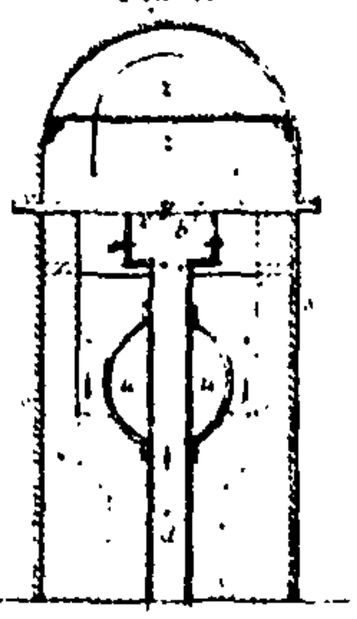


Fig 9

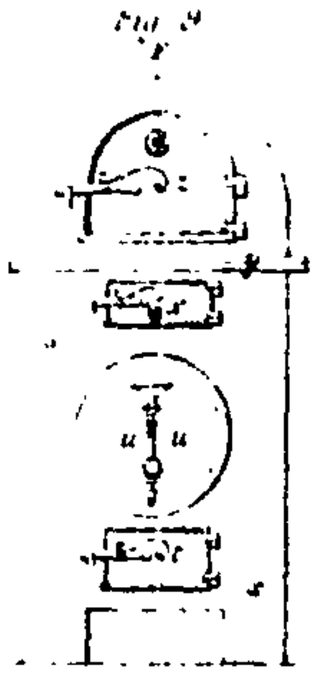


Fig 10

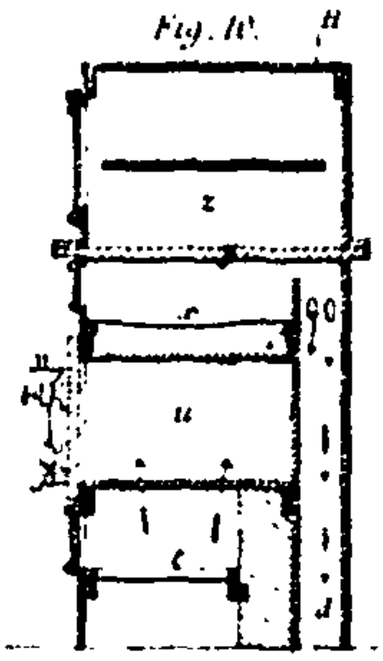


Fig 4

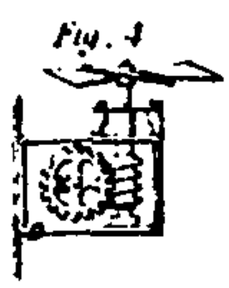


Fig 1.

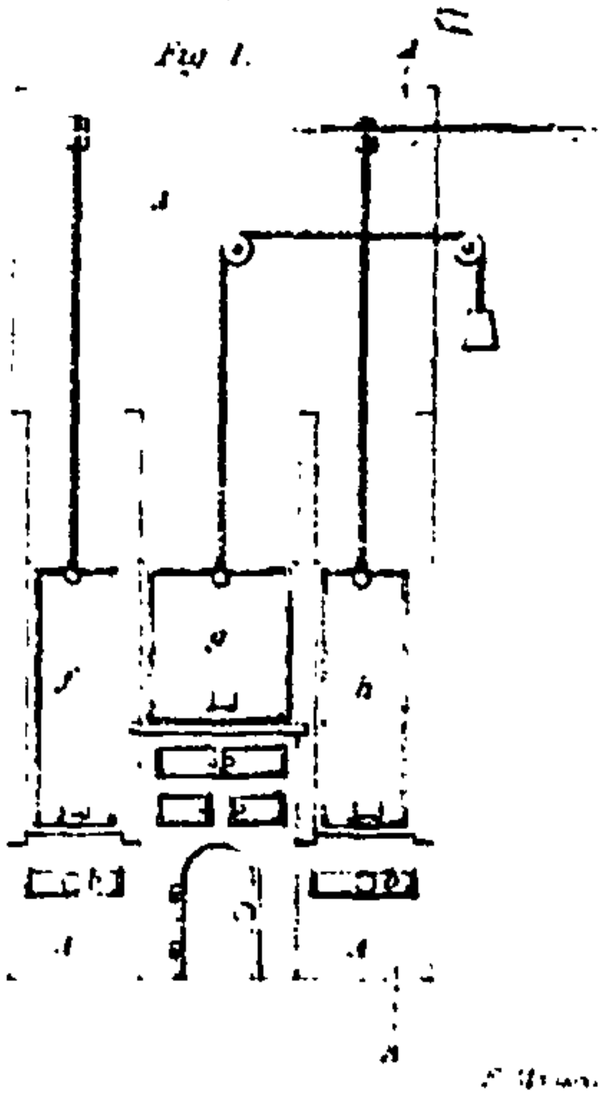


Fig 8

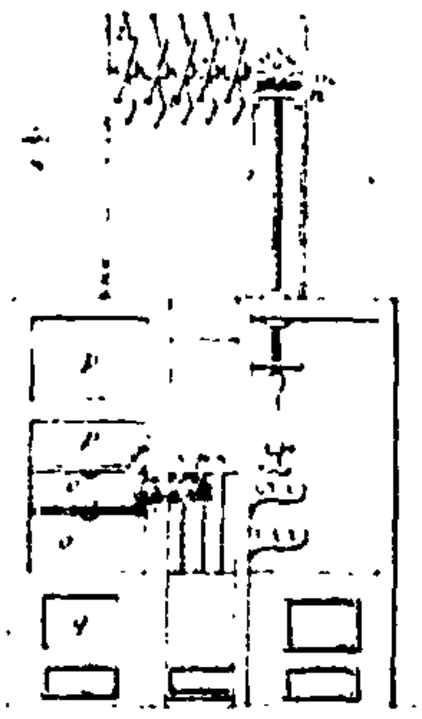
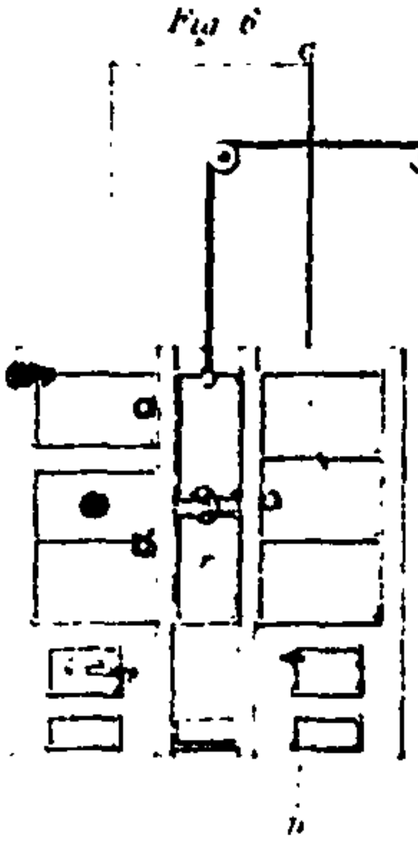


Fig 7

Fig 6



SPECIFICATION enrolled 2nd December, 1842, of a PATENT granted 2nd June, 1842, to HENRY JUBBER, of Oxford, in the county of Oxford, confectioner, for "*certain improvements in kitchen ranges, and apparatus for cooking.*" (With a drawing.)

THIS invention relates to certain improvements in the construction of kitchen ranges, and apparatus for cooking, and consists in a novel and peculiar arrangement and combination of the parts connected therewith, whereby great economy in fuel is effected, and the process of cooking rendered less laborious to the attendant, and more effective than by the use of the apparatus hitherto employed for that purpose.

In plate 5, figure 1 represents a front elevation of an apparatus for cooking.

Figure 2, a vertical section of the same, taken through the line A B.

Figure 3, an elevation of the apparatus, a portion thereof being removed, in order to expose to view the internal mechanism, and also the general arrangement of the parts.

Figure 4, a detached view of an ordinary smoke-jack.

Figure 5, another arrangement of hot plate.

Figures 6, 7, 8, represent another arrangement of cooking apparatus, calculated for small establishments.

Figure 6, being a front elevation thereof.

Figure 7, a vertical section, taken through the line C D; and

Figure 8, an elevation, a portion of the front being removed to expose the internal arrangement of parts.

Figures 9, 10, 11, represent another arrangement and combination of parts, constituting an entire apparatus for

cooking; and figures 12, 13, a modification of the same.

Figure 9, being a front elevation thereof.

Figure 10, a vertical section, taken through the line E F.

Figure 11, a vertical section, taken through the line G H.

Figure 12, a front elevation.

Figure 13, a vertical section; and

Figures 14, 15, an arrangement for basting the meat.

In figures 1, 2, 3, 4, 5, A A represents a rectangular case or framing of metal, against one side of which vertical plates B B are firmly secured (by rivetting at the back) for carrying the mechanism employed to actuate the vertical and horizontal spits; the middle compartment C forming a metallic flue, at the upper part of which an ordinary smoke jack D is situated, (a detached view of the same being shown at figure 4) for imparting motion to the horizontal axis E, upon each end of which, mitre wheels F F are keyed, taking into corresponding wheels G G, motion being imparted from thence to spur wheels H H, which are likewise keyed upon vertical axes I I, situated in top and bottom plates K K, as represented by the drawing; L L, collars screwed upon or otherwise connected to the lower ends of the vertical axes; into these collars is inserted and made fast, one end of a fine wire rope M M, the other end being similarly secured in collars formed at the upper ends of the vertical spit carriers N N; O O, rack plates (see detached figure 5*) fixed to the sides B B, to enable the cook to place the spit at any required distance from the fire; P P, the grate, extending from back to front of the frame or casing A A, and furnished with a sliding cheek Q, worked by a rack and pinion R S; the arrangement and construction of this part of the invention forms an important feature in these improvements; the quantity of radiating surface of the fire exposed and available for the

purposes of cooking being considerably augmented by constructing the grate in such manner as that the three sides of the fire are beneficially employed, as represented by the drawing: T, a boiler, fixed to the front of the grate, and furnished with steam cocks, which may be used as required, the surplus steam passing off through an opening *x*, formed at the upper part of the boiler, as shown, and from thence through the fire or otherwise, as may be found most convenient; U, a hot plate, situated at the front of the framing A, heat being furnished to the same from the fire V, an opening W being made therefrom into the grate P; X, an air flue, situated in front of the hot plate; the air, which passes through a vertical perforated pipe Y, to supply the fires, is prevented from passing in any other direction than through the under side of the fire, by the hinged plates Z, situated at each side of the grate, the quantity of air admitted thereto being regulated by a damper *a*; *b b* slides for carrying dripping pans. Figure 5 shows another arrangement of hot plate, by which the necessity for a separate fire is dispensed with, and the heat from the water and steam contained in the boiler employed to effect the same; since, however, an open fire may occasionally be found necessary, provision is made for this purpose at *c*, a damper *d* being situated in the flue leading therefrom, which communicates with the main flue as represented.

The operation of the apparatus is as follows:—The fire being previously lighted in the grate P, and the spits charged with meat, motion will be imparted to the jack, by the ascent of rarified air, and from thence to the wire ropes or rods, to which the vertical spit carriers N N are attached; the horizontal spits receiving motion from a wire rope, passing over a rigger 1, fixed upon the axis *e*, and from thence over riggers 2, 3, 4, 5; and in order that

as much heat as possible may be rendered useful, sliding doors *f*, *g*, *h*, are employed, furnished with counterbalance weights, which it will only be found necessary to open when requiring to feed the fire, or notice the progress of cooking. It is obvious also, that instead of the peculiar arrangements hereinbefore described, of a boiler and hot plate in front of the fire, the boiler might be placed at the back, and the front of the fire used as an open fire, without departing from the principal features of the invention, namely, the rendering the fire at the two sides available for the purposes of cooking, as above described.

The patentee wishes it to be understood, that in this part of his invention he does not claim the exclusive use of any of the separate parts above mentioned and referred to, except so far as the same may be used in combination for the purposes of his said invention; one part of which he declares to consist in the construction of a kitchen range, or cooking apparatus, whereby the heat radiating from the fire exposed between the bars, on the two sides, may be rendered available for the purposes of cooking.

In figures 6, 7, 8, the drawings represent a more simple arrangement and construction of apparatus, possessing all the advantages of that above described; but being less in size is more portable, considerably less expensive, and better calculated for general domestic purposes. In place of the ordinary smoke-jack, shown at figure 4 (plate 5), the patentee employs a series of fans 1 1, mounted upon the horizontal axis *k k*. At one end of this axis a worm *l* is keyed, taking into worm wheels *m*, secured in their proper position by collars formed thereon, working in brackets *n n*. These worm wheels actuate the vertical spits, which are similar to those referred to above, with this difference, that by this arrangement only one set of spits is employed, an oven *o*, and hot plate *p*, and

hot closet *p'*, being substituted in the place of the second set. A set of horizontal spits may be employed in the apparatus, by the application of arrangements similar to those already described in the first part of this invention. In order that the heat arising from the fire may be made to act upon all sides of the meat, the oven is furnished with revolving shelves; *q*, a fire-place, having a flue communicating with the chimney, and furnished with a damper, by which a separate fire may be used when necessary, the apparatus being provided with doors similar to those used in the former apparatus, and being for the same purpose. As the front of the fire is not furnished with a boiler, a sliding door *r* is substituted, so that this part of the fire may be rendered available when required.

The patentee does not claim the exclusive use of any of the separate parts of the apparatus above mentioned, except when the same are used in combination for the purposes of his said invention; another part of which he declares to consist in the construction of a kitchen range, or cooking apparatus, whereby the heat radiating from the fire exposed between the bars, on one side, may be rendered available for the purposes of cooking.

In plate 5, figures 9, 10, 11, *s s* represents a rectangular casing, or box of metal, at one part of which a furnace *t t* is formed, the fire of which imparts heat to water contained in the cylindrical boiler *u*, which is provided with the necessary means of escape of steam, and drawing off the water when required; an arrangement being likewise made for ascertaining the quantity of water in the boiler, by the application of an ordinary water gauge *v*, at the top of which a funnel *w* and cock are fitted, for the purpose of filling the boiler; the whole being firmly fixed to the casing, as represented by the drawing. Immediately over the boiler *u* a second furnace *x* is situated, being for

the purpose of imparting heat to the hot plate *y*, and transmitting it from thence to an oven *z*, situated at the top of the hot plate, as represented by the drawing; this oven may be removed, when required, to use the hot plate. The patentee remarks, that from the portability of this oven it can, with a trifling modification, be adapted to any ordinary range or grate. The furnace *t t* is constructed with flues (the course of which is represented by the arrows' flight), and communicates with a descending flue *a'* by holes formed in the sides of the upper furnace *u* at **, an opening being made at *b'* communicating between the furnace *x* and descending flue. In figures 12 and 13, similar letters to those used in the foregoing figures are placed upon corresponding parts of the apparatus.

The patentee does not claim the exclusive use of any of the separate parts of the apparatus lastly above described, except when the same are used in combination for the purposes of his said invention; another part of which he declares to consist in the particular combination and arrangement of parts lastly above described, for the construction of an apparatus for cooking.

SPECIFICATION enrolled 3rd December, 1842, of a PATENT granted 4th June, 1842, to BENJAMIN AINGWORTH, of Birmingham, in the county of Warwick, gentleman, for "*certain improvements in the manufacture of glass, for the purpose of producing glass which may be used for the purposes to which plate glass and window glass are usually applied.*"

THESE improvements in the manufacture of glass consist in the application of machinery for the purpose of pro-

ducing plate glass, which machinery greatly facilitates the operation of casting glass into flat plates of uniform thickness. The ordinary mode of casting glass into flat plates is by pouring out the melted glass in a thin broad stream upon the upper surface of a large flat table of metal fixed in a horizontal position, and the melted glass is retained from spreading itself too wide by means of two metal rulers, which have been previously laid down lengthwise upon the surface of the table, along each of the sides thereof and parallel to those sides; the edges of the two rulers forming temporary raised borders, and the said edges being placed at such distance asunder as will suit the width of the plate glass intended to be cast. The thickness of the said rulers is equal to the thickness of the plate intended to be cast; and in order to retain the melted glass endways on the table, another ruler of like thickness is laid transversely across the width of the table, extending from one side ruler to the other; and in order to flatten down the melted glass evenly on the surface of the table, and to a uniform thickness, a heavy cylindrical roller of metal is used for rolling over the outpouring of the melted glass. For this purpose the roller is laid with its axis horizontally across the width of the table, the roller resting near to its ends with its circumference upon the said rulers, which bear the weight of the roller; the table, together with the two rulers, and also the roller, are all made hot, in preparation, for the operation of casting, in order to avoid chilling the glass too suddenly. Soon after the melted glass has been poured out on the surface of the table, the said roller is rolled by manual labour upon the surface of the glass and the two rulers, but without any guidance for moving the roller regularly upon such surface, so as to advance equally at each end of the roller, which operation depends entirely upon the

dexterity of the workmen, who give motion to the roller by holding the ends of the axis of the roller in their hands, and advance steadily over the surface of melted glass, in order to flatten it down upon the table. The melted glass is poured out from a square melting pot or cistern of a suitable rectangular form, for pouring out its contents in a broad thin stream upon the table; the cistern is suspended by chains, by means of a crane, the same being suspended upon pivots, so as to be convenient for tilting the cistern by means of handles; during all the time of the pouring out of the melted glass from the suspended cistern, the latter requires to be moved along by the workmen who tilt it, so that it may retreat over the surface of the table with a steady progress, in a direction of the length of the table. There is also a moveable cross ruler laid upon the table between the two side rulers, which cross ruler is moved by workmen, by means of a long handle, so as to withdraw the same as fast as the melted glass requires: all which motions are to be regulated by the skill of the several workmen. The tilting motion given to the cistern for the outpouring of the melted glass, and the retreating motion which is given to the same cistern, and to the moveable cross ruler for distributing the outpouring with uniformity of quantity along the length of the table, must be regulated, one motion to suit the other, so as to pour out the melted glass with the utmost attainable regularity of progression along the surface of the table, and also the rolling motion must be regulated to suit the consistence of the layer of melted glass, so that the roller will follow with regularity and in due time after the outpouring of the melted glass; all which regularity and steadiness of motion, and the requisite consort of the different motions, depend solely upon the manual dexterity and skill of the workmen employed.

The object of the patentee in mentioning these particulars is to point out in what department in the manufacture of glass it is that the said invention is to be applied, and also to show how the machinery employed in the operation differs from the usual apparatus and manipulations required for the purpose aforesaid. The machinery for this purpose is similar to that above described, but the same is applied and used in a different manner, that is to say, the table, instead of being fixed horizontally, is caused by suitable machinery to move horizontally backwards and forwards in a direction of its length with a true sliding motion; and the cylindrical roller, instead of being a mere loose roller, is mounted with its axis horizontally across the table, the two ends of its axis being sustained in bearings formed in fixed standards, which are bolted to the bed of the machine, upon which the table slides, such standards constituting part of the fixed framing whereon the moving table is sustained.

The table, it will be observed, works in a similar manner to the table of a planing machine; and at one end of the roller a spur wheel is fastened, which takes into and is driven by the teeth of a straight rack, which rack is fastened to one side of the table, the diameter of the roller being equal to the pitch line of the tooth of the wheel; by this arrangement, the motion of the surface of the table and that of the roller will be at one and the same speed, the roller being suspended in its bearings at such a height above the table as will leave space sufficient for the thickness of the plate of glass intended to be cast, the bearings of the roller being so arranged as to allow of the roller being raised or lowered according to the thickness of plate required. The requisite motion for moving the table backwards and forwards is shown in the Specification to be effected in a variety of ways; suffice it to say, that the

same may be effected either by manual labour or steam power.

In order to give heat to the table, so as not to chill the melted glass, a horizontal flue, which proceeds from a fire-place, passes along the under side of the table; this flue is covered with flat stones, the upper surface of which are placed as close to the table as they can be without touching the same; the flat stones becoming hot, transmit the requisite heat to the table. The fire-place and flue are contained within the fixed framing or bed of the machine; and, in order to give heat to the cylindrical roller, hot water may be caused to circulate through a coil of pipes, made to fill the interior of the roller, the said pipes being provided at each end with a swivel joint or stuffing boxes, so as to form water-tight junctions at each end of the axis of the roller; and, if required, the table may be heated by the same means, namely, the circulation of hot water through a series of pipes. The operation of casting glass into plate is as follows:—presuming the table and roller to be got up to a proper temperature, and the melted glass to be in the cistern, which is suspended over the table (the end of which table, at the commencement, is to be near the roller), and the pouring out of the melted glass from the cistern, which is performed in the usual manner by workmen tilting the cistern, and at the same time moving the cistern backwards, so as to deposit a broad thin sheet of glass over the surface of the table, the glass having acquired a proper consistency, then the machinery is put in motion, either by the strength of men turning the handles of the machine, or otherwise, which causes the table with the glass upon it to move with an even and steady motion, carrying the glass beneath the roller which flattens down the upper surface upon the surface of the table, thereby reducing the glass to an even thickness. When the table

has thus been moved all the length of its range, and the whole of the glass will have moved underneath the roller, the machinery is to be stopped, and the table and glass remain at rest until the glass is sufficiently stiff for the purpose of removing it to an annealing oven, which the inventor effects by causing the machine to run on wheels upon a railway with a travelling motion sideways with respect to such table, in order that the table may be transported from opposite one annealing oven to another, the several parts of the machinery being so arranged as to admit of the machine being removed in the manner described.

SPECIFICATION enrolled 3rd December, 1842, of a PATENT granted 4th June, 1842, to EDMUND TUCK, of the Haymarket, in the county of Middlesex, silversmith, for "*certain improvements in the covering or plating with silver various metals and metallic alloys.*"

THIS invention consists in the use and application of either of the two carbonates of ammonia, (viz., the sesqui-carbonate and the bi-carbonate,) as one of the ingredients in the mixtures or compounds employed for covering or plating with silver various metals and metallic alloys by the action of electricity. And it is found that by the use of the said carbonates, the silver so deposited and constituting such covering or plating, has not a crystalline character, and is firmly adherent to the surface of the metal.

Bi-carbonate of ammonia may be purchased of the manufacturing chemist, or may be prepared in various ways; among others is the following: take any quantity of the solid carbonate of ammonia of commerce (called sesqui-

carbonate of ammonia), reduce it to a coarse powder, and expose it to the air till it ceases to exhale or give off the pungent odour characteristic of that salt. This change will take place, under ordinary circumstances, in twenty-four hours, more or less, and the salt will have lost from forty to about fifty-two per cent. of its original weight, and will be found to have become bi-carbonate of ammonia; the composition of which is one equivalent (or by weight about 17 parts) of ammonia, two equivalents (or by weight about 44 parts) of carbonic acid, and one equivalent (or by weight about 9 parts) of water.

The material of the articles usually plated with silver is either copper or its alloys, and of these alloys, especially that which is commonly called German silver. This latter consists essentially of copper, nickel, and zinc; but the different manufacturers of this alloy do not use precisely the same proportions of the said ingredients, nor are these ingredients (especially the nickel) brought respectively to equal degrees of purity. Hence the process of plating German silver requires certain adjustments in the proportions of the substances used, and in certain variations in the manipulation, in order to secure in all cases the best result. But these adjustments and variations it is not possible to point out precisely, depending as they do on the varying quality of the alloy.

It has been already stated that bi-carbonate of ammonia is one of the ingredients in the mixture or compound which is employed by the patentee for plating. The other ingredient which the patentee employs is a salt of silver; and he finds it advantageous to vary the salt of silver according to the nature of the metal or alloy intended to be plated. For the common alloys of the so-called German silver, he uses the compound or mixture of a solution of bi-carbonate of ammonia with the sulphate of silver; for plating on

copper or on good German silver, he uses the compound or mixture of bi-carbonate of ammonia with the cyanide of silver; and he observes, that though the latter compound may be used to plate the common alloys of German silver, and the former compound to plate copper or good German silver, the use of these respective compounds, for such purposes, is not so advantageous, according to his experience, as those firstly mentioned. Both of these salts may be purchased of most manufacturing chemists, or may be made in the following way: to prepare the sulphate of silver, he takes a cold saturated solution of the salt called nitrate of silver, and adds gradually to it strong sulphuric acid, as long as any white precipitate comes down; he then washes the precipitate with small portions of cold distilled water, till the excess of acid is got rid of; he then dries the powder at a gentle heat: when it is fit for use. The sulphate of silver thus prepared is composed of one equivalent (by weight about 40 parts) of sulphuric acid, and one equivalent (by weight about 116 parts) of oxide of silver. The cyanide of silver may be made by putting any convenient quantity of the yellow salt called prussiate of potash, or ferro-prussiate of potash, or ferro-cyanide of potassium, into an earthen crucible, and exposing it to a low red heat for a quarter of an hour; the black mass thus produced is to be digested in warm distilled water, which when passed clear through a filter is a solution for the most part of cyanide of potassium; to this is to be added, gradually, a cold saturated solution of nitrate of silver, as long as a white or greyish white precipitate comes down: the precipitate, when washed in cold water and dried, is cyanide of silver, and consists of one equivalent (by weight about 108 parts) of silver, and one equivalent (by weight about 26 parts) of cyanogen. The way of preparing the plating mixture or compound, which

he has found to afford the best results, is to take one equivalent (that is 70 parts by weight) of bi-carbonate of ammonia, and one equivalent (that is 156 parts by weight) of sulphate of silver, or one equivalent (that is 134 parts by weight) of cyanide of silver. The bi-carbonate of ammonia is to be dissolved in distilled water, and the sulphate or cyanide of silver (whichever is made use of,) is then to be added, and the liquor is to be boiled till the salt of silver is entirely dissolved. The strength of the solution, that is the preparation of water, must be regulated by the strength of the galvanic battery made use of. The strongest solution used by the patentee for coating bad German silver, was composed of half an ounce of sulphate of silver, and 107 grains of bi-carbonate of ammonia, dissolved in one pint of water.

The kind of electricity whereby the plating mixtures above mentioned are made to deposit their silver on the metal or alloy to be plated, is that which is produced by means of a galvanic or voltaic battery; and of the various forms of such battery, which have been invented and published, the patentee prefers a modification of that commonly known by the name of Daniell's Constant Battery, of which a description is given in the 439th page of a book, intituled, "An Introduction to the Study of Chemical Philosophy, &c.," by J. F. Daniell, F.R.S. The modification of this battery which is employed, is a rectangular trough of seasoned wood, the cavity of which is divided longitudinally by a thin partition of porous wood into two cells, one of which is twice as wide as the other. The wide cell is again subdivided, by a longitudinal partition, into two equal cavities, which have free communication, because the partition does not quite touch the two ends of the trough. Of these two cavities, the outer is to be filled with crystals of sulphate of copper,

and the inner one with a solution of sulphate of copper and water; a plate of copper is also inserted in this cavity: the other cell is filled with water, and a plate of zinc is also put into it. Near the above mentioned trough or battery is placed another trough, having no partition, and containing the plating mixture or compound. The article to be plated, and a piece of zinc, are put into the plating mixture on opposite sides of the trough, the article to be plated being connected by means of a strip of copper with the zinc plate of the battery, and the piece of zinc being connected by a strip of copper with the copper-plate of the battery. The general proportion of the copper to the zinc surface of the battery, is as four of copper to one of zinc, but the proportion of copper must be increased when operating on those metals or alloys that have but a feeble affinity for silver. The article to be plated must first be made quite clear. The method which the patentee uses for this purpose, is to put it for two or three hours in a cold solution of common carbonate of potash and water, and then to wash it in cold water, and afterwards dip it in a pickle, which is a mixture of aqua-fortis and water, the proper strength of which depends on the nature of the metal or alloy of which the article is made. It is next to be washed and dried, and well rubbed with rottenstone on a rag or piece of leather. In operating on German silver, the quality of the alloy may be judged of by its appearance when taken out of the pickle, the best kinds having a perfectly white surface, the inferior kinds having a surface more or less dark coloured. Immediately before immersing the article in the plating liquid, it is dipped in a solution of common salt, in which a little gum has been dissolved. The strength of the battery must be such as to give a slow and even deposit of silver on the surface of the metal or alloy to be plated.

The usual time for obtaining a satisfactory deposit is three or four days; a perfect coating, indeed, is obtained in an hour, but the further length of time required depends on the intended thickness of the plating.

The patentee states that he does not claim the exclusive use of any of the several processes herein before described, except so far as any of them may be used in connexion with, or in aid of his said invention, which he declares to consist in the use of either of the two carbonates of ammonia, namely, the sesqui-carbonate, and the bi-carbonate, as one of the ingredients in the mixtures or compounds employed for covering, or plating with silver, various metals and metallic alloys by the action of electricity.

SPECIFICATION enrolled 7th December, 1842, of a PATENT granted 7th June, 1842, to WILLIAM IRVING, of Regent Street, Lambeth, in the county of Surrey, engineer, for "*an improved corn drill, or machine for sowing all kinds of seed or grain.*"

THESE improvements consist in certain arrangements of mechanical parts in a drill, and in the application of discs for sowing the grain. Upon the main axle of the machine is a wheel, taking into and driving a wheel keyed upon a shaft extending across a frame, which drives by an arrangement of wheels a number of vertical shafts fixed in centre of the seed boxes, the bottom of which are covered with a plate of iron, having a circular recess which receives a disc of iron, or other metal keyed on the end of the vertical shaft; these discs have one or more holes through them, and there are also holes through the plate and bottom of the seed box leading to pipes

which conduct the seed or grain to the furrows; a small stiff brush is fixed over the last mentioned holes, which bears into the face of the disc. Motion is communicated to this part of the machine by means of a clutch box at each end of the shaft, which, by the application of a lever, throws the said shaft into gear with the wheels of the drilling machine, and, consequently imparts, by the arrangement of wheels, a rotary motion to the discs, the holes of which, (as they revolve) become filled with seed, and on arriving underneath the brushes, pass through the holes in the bottom of the seed box, and into the tube leading to the furrow; the object of the brushes is to brush from the surface of the plate, at that part where the hole is, the superfluous seeds, and also to prevent any more than what is contained in the hole to pass into the pipe. Motion is also communicated from the first driving wheel to two shafts fixed in a box containing manure; one of the shafts is provided with a number of arms for agitating the manure, and the other with a number of spoons for lifting or lading the same, and it is conveyed by pipes into the furrows simultaneously with the seeds.

The coulters of this machine are attached, by means of chains to a roller, fixed in plummer blocks at each side of the machine, by turning which the coulters can be raised from the ground, and, by turning the roller in an opposite direction, they can be depressed so as to cut the furrow deeper, which is effected by two chains passing round the roller in an opposite direction to those first mentioned, the extreme end of which is connected to two levers, or bars, affixed at their lower ends to a board resting upon the upper part of the coulters; thus, by turning the roller, the ends of the bars which stand above the same will be drawn downwards and so depress

them. The inventor claims the peculiar arrangement described, together with the application of the perforated plates or discs for dropping or sowing all kinds of seeds or grain, and their combination with wheels and pinions, or other mechanical contrivances, for the purpose of carrying out the principle herein described and set forth.

SPECIFICATION enrolled 7th December, 1842, of a PATENT granted 7th June, 1842, to JOHN WOODCOCK, of Manchester, in the county of Lancaster, millwright, for "*certain improvements in the construction of steam engines.*"

THE first part of this invention relates to certain improvements in the construction of rotary engines, either for stationary or locomotive purposes. This rotary engine consists of a cylindrical case within which revolves a cylinder having four longitudinal openings or recesses in its periphery, into which are fixed four sliding pistons. This cylinder is eccentric with the case, and turns upon its axis, which passes through the ends of the case, and also through stuffing boxes; these latter thus prevent the escape of steam from the interior of the case. Steam is admitted at one side, and near the lower part of the case; the force of which, acting upon one of the pistons, causes the interior cylinder to revolve, the steam escaping as the piston upon which it impinged passes the eduction port, which is on the opposite side; and in this manner the pistons are alternately acted upon, and rotary motion is obtained. The principal novelty or improvement in this engine, and what the inventor particularly claims, is the manner of connecting each opposite piston together by a

link or rod, having a mortice in the middle, through which the axis of the cylinder passes: by this arrangement, it will be observed, that the shaft is not weakened, as would be the case were the links to pass through mortices made in the shaft. Again, the passages through which the steam passes in and out of the cylindrical case, consist of a number of diagonal slots or openings, or the same may be of a curvilinear form, whereby the pistons will be subjected to less wear and tear.

The second part relates to certain improvements in slide valves for high pressure and condensing engines; and consists in making four ports or apertures in the chamber, two for the induction and two for the eduction; the former being made in proportion to the cylinder's diameter, and the latter somewhat larger, say as $1\frac{1}{3}$: 1, or any other proportion that may be required. The slide valve is so constructed as to open and shut all the four apertures; and is also provided with a fifth aperture, for the escape of steam into the exhaust pipe. The arrangement of this valve will admit of six apertures, should it be required, to make those of the eduction double the width of the induction; which would be effected by dividing the eduction at top and bottom of the cylinder into two, and placing the induction between them. In the slide valve, and between it and the cylinder facing, there are small spaces for the passage of steam, in order to reduce the friction, by relieving the valve from the external pressure of steam.

The third part relates to certain improvements in the arrangement of valves used for shutting off the steam between the boiler and the engine; and consists of a rectangular box, having a slide similar to a vertical sliding door; which slide is raised or lowered, for the purpose of opening and closing the communication, by an eccen-

tric fixed upon a shaft having a handle; the eccentric works in a broad slot or mortice made in the upper part of the slide; thus, by turning the handle the communication will be opened or closed as may be required.

SPECIFICATION enrolled 8th December, 1842, of a PATENT granted 8th June, 1842, to CHARLES SEARLE, of Bath, gentleman, for "*improved preparations of tea, coffee, cocoa, and milk.*"

THIS invention relates to preparing and solidifying milk, after the cream is removed, by evaporating the aqueous matter therefrom; and also to combining tea, coffee, and cocoa, with milk so prepared. Having taken the cream from the milk to be prepared, the milk is to be put in a vessel surrounded by a water bath, and about one-fourth part, by weight, of loaf sugar, is to be added. The aqueous matter is to be evaporated therefrom by the application of steam, at such temperature as not to injure the milk; which will be best effected in a closed vessel, from which the air is withdrawn, and a partial vacuum obtained; by which means the milk will be evaporated at a lower temperature, and a product of milk obtained in a perfectly pure and dry state, which can be preserved in bottles or jars. When the milk is to be combined with tea, coffee or cocoa, a strong extract of such matters is to be previously obtained by a carefully conducted evaporation of the concentrated aqueous infusion in vacuo, or by distillation; and the fluid extract thus obtained, added to the milk at an advanced stage of its preparation towards solidification, mixing therewith a suitable quantity of refined sugar, and continuing the evaporation at a low

temperature, in a glass, porcelain, or other suitable vessel, till the whole is converted into syrup, paste, candy, or powder; or by adding arrow-root, isinglas, Iceland moss, or other like matter, the substance will, by this latter addition, be rendered more nutritive, and may be converted into lozenges, and some essence of spice mixed with it to impart flavour, as may be desired.

SPECIFICATION enrolled 8th December, 1842, of a PATENT granted 9th June, 1842, to STEPHEN BENCRAFT, of Barnstaple, gentleman, for "*improvements in the construction of saddle-trees.*"

THIS invention relates to a mode of giving elasticity to the seats of saddles, by the application of metal springs, and consists in screwing a metal spring on to a plate fixed under the cantle of the saddle; underneath this spring are rivetted three arched springs, the ends of which rest on the sides of the saddle-tree, which part is covered with metal plates; by this arrangement, the springs receive the weight of the rider, and transmit the pressure to the saddle-tree, to which part the three springs are applied, and thus the weight of the rider will not press on the spine of the horse, but on the ribs, the spine being free and unencumbered, in addition to the rider having an easy and elastic seat.

The claim is for the mode of obtaining elastic seats to saddles, by applying metal springs to saddle-trees, as described.

SPECIFICATION enrolled 9th December, 1842, of a PATENT granted 9th June, 1842, to JAMES NASMYTH, of Patricroft, near Manchester, in the county of Lancaster, engineer, for "*certain improvements in machinery or apparatus for forging, stamping, and cutting iron and other substances.*" (With a drawing.)

THIS invention relates to certain improvements in the method of working tilt-hammers. As the action of such hammers is well known and understood, it will be unnecessary to dwell upon them, further than to state some of the objections which attend those of ordinary construction, and which objections or defects are entirely overcome by the application of these improvements. The mode hitherto practised of working such hammers is, by a wheel or revolving cylinder, having four or more projections on its circumference, which alternately raise the hammer, and allow it to fall by its own weight. It will be observed, that in hammers of this construction, when a large piece of iron is placed upon the anvil, the blow of the hammer is the lightest, owing to the thickness of the iron reducing the space through which the hammer falls, and is the heaviest when the piece of iron is worked down, the very reverse from what it ought to be; again, the face of the hammer and anvil are never parallel to each other, except when a certain thickness of iron is between them, which defect could not be obviated without having the opposite end of the hammer moveable, so as to rise or fall according to the thickness of iron under operation, which would be attended with great expense and inconvenience: these defects, it will be seen, do not exist in the novel mode of working the hammer, which is the subject of this patent.

The following is a description of the apparatus: fiigure 1, plate 6, is a front elevation, and figure 2 a transverse

Fig. 1.

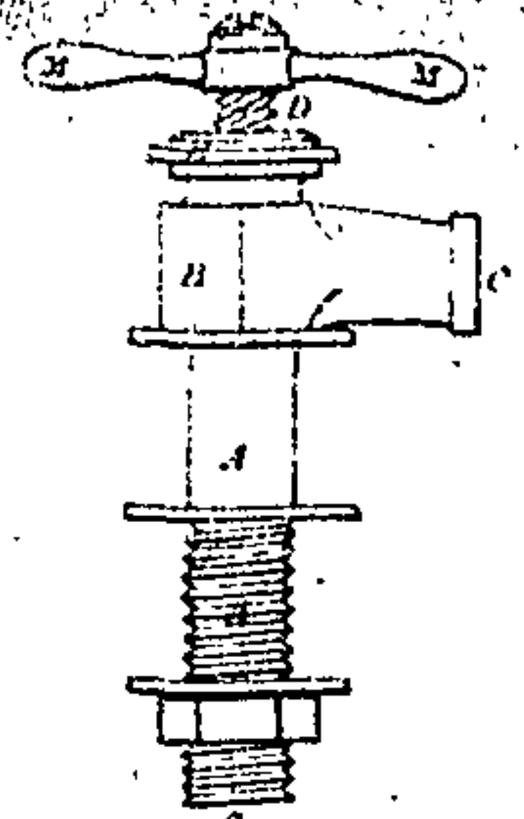


Fig. 2.

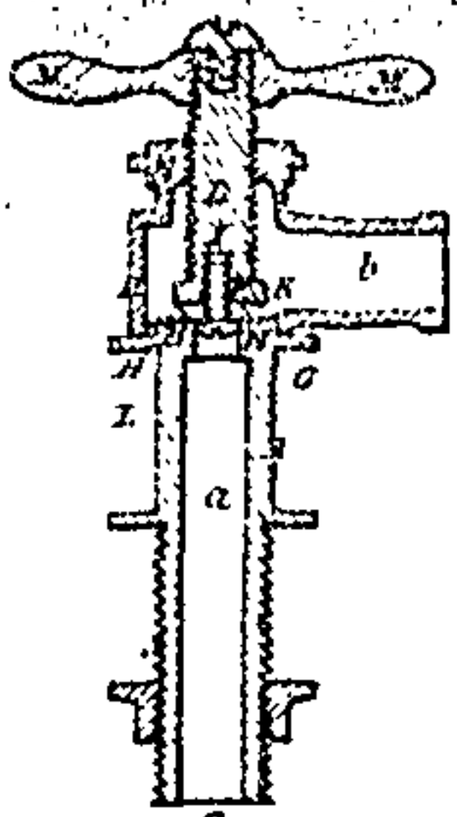


Fig. 3.

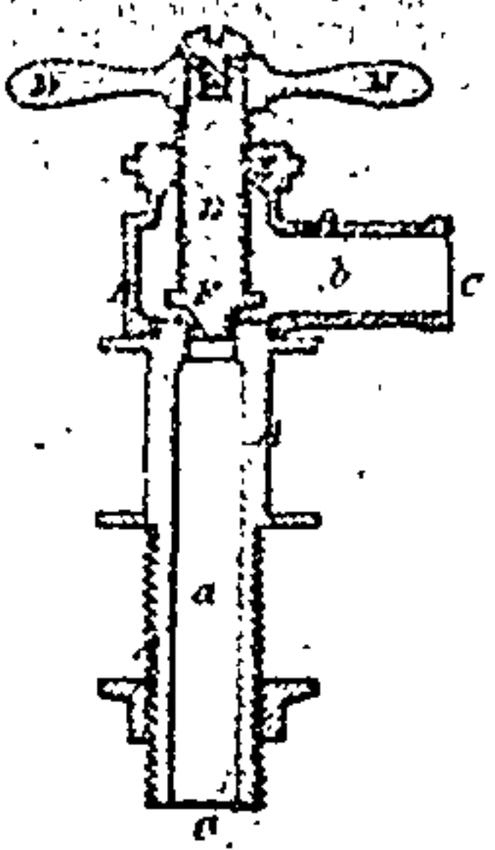


Fig. 5.

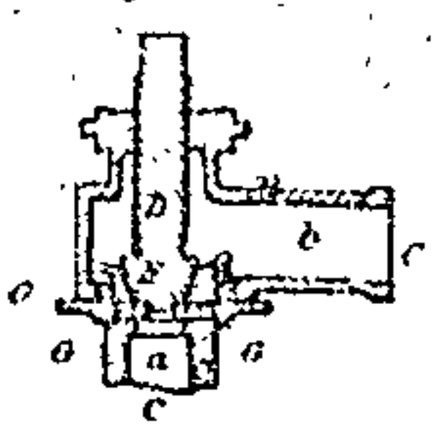


Fig. 4.

Nasmyth's Improvements in Tilt-hammers.

Fig. 2.

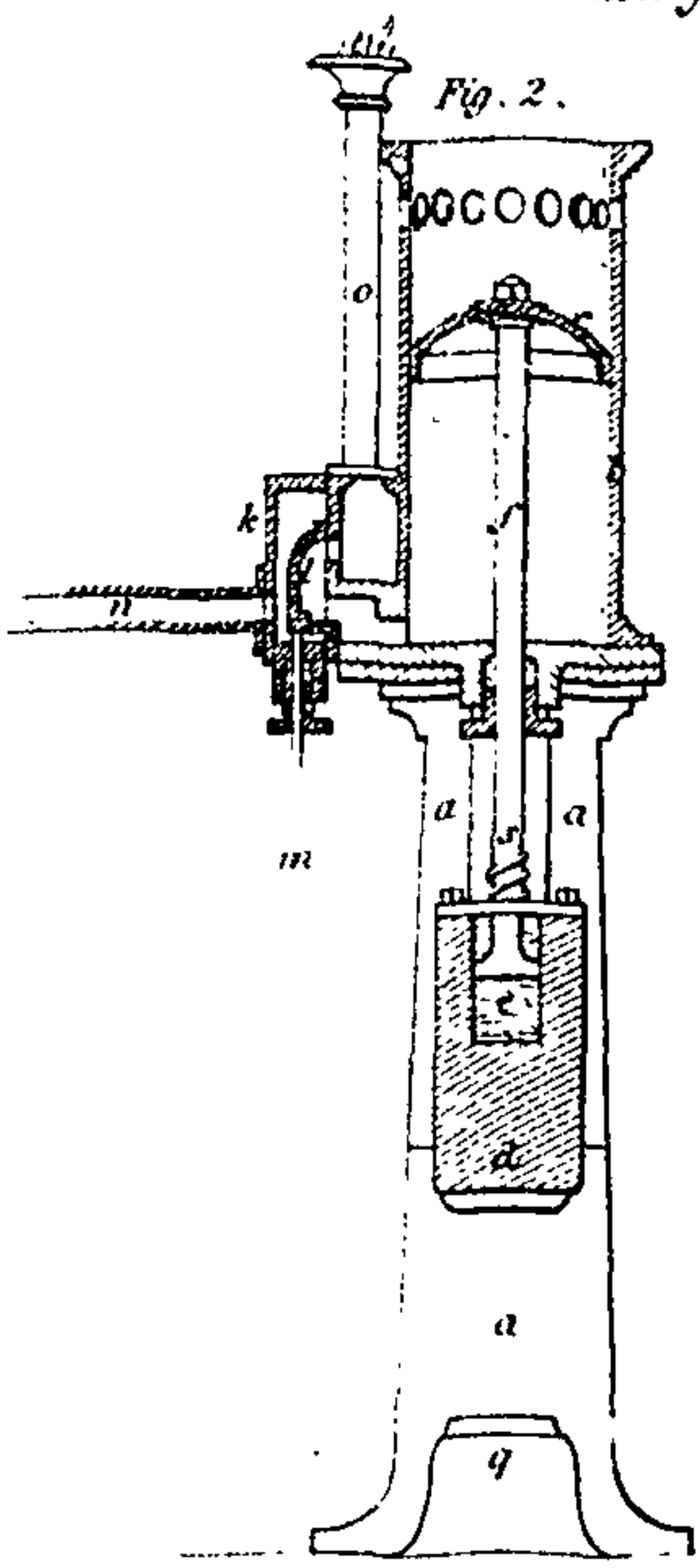
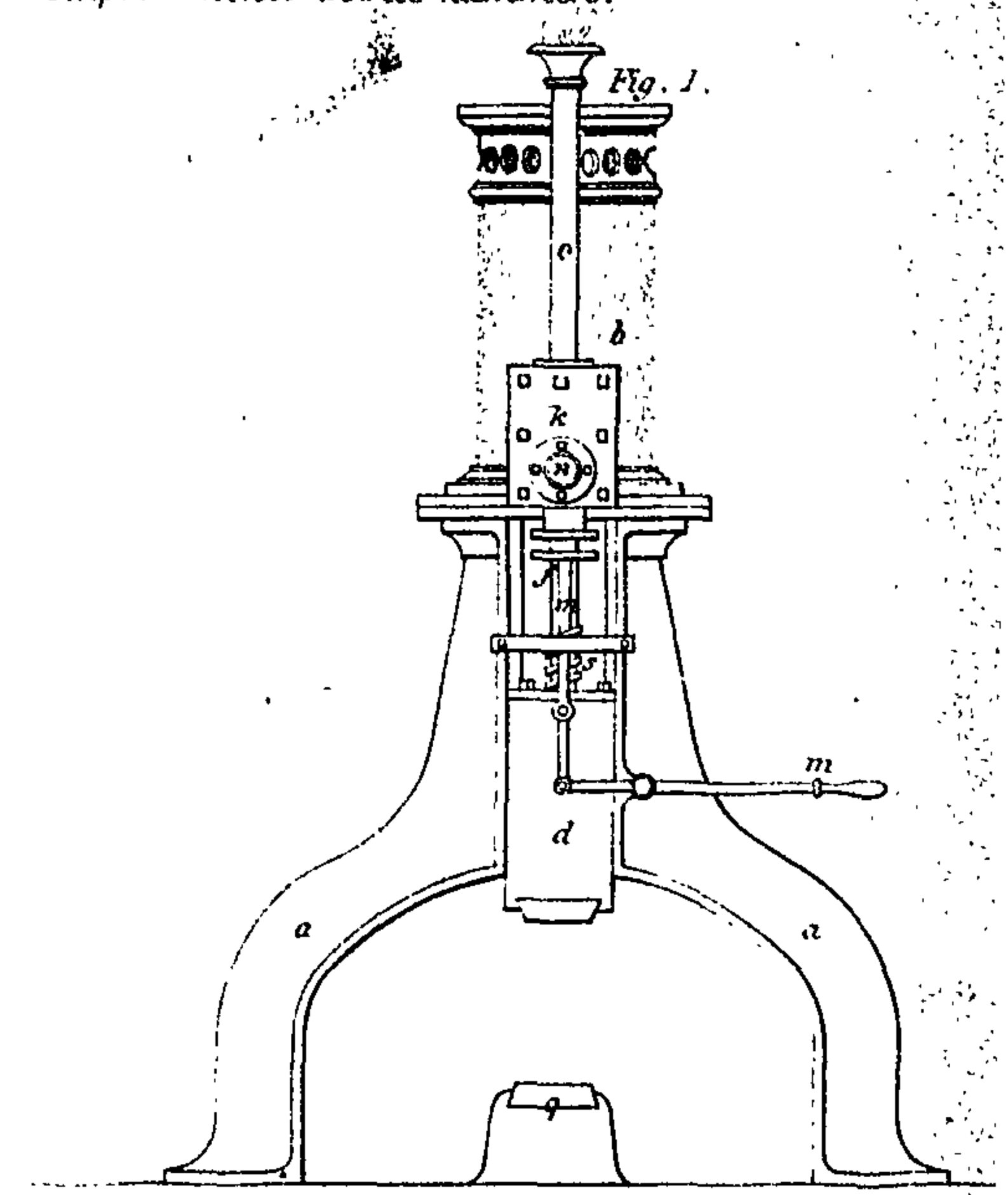


Fig. 1.



Williams's Improvements in Roofs.

Fig. 1.

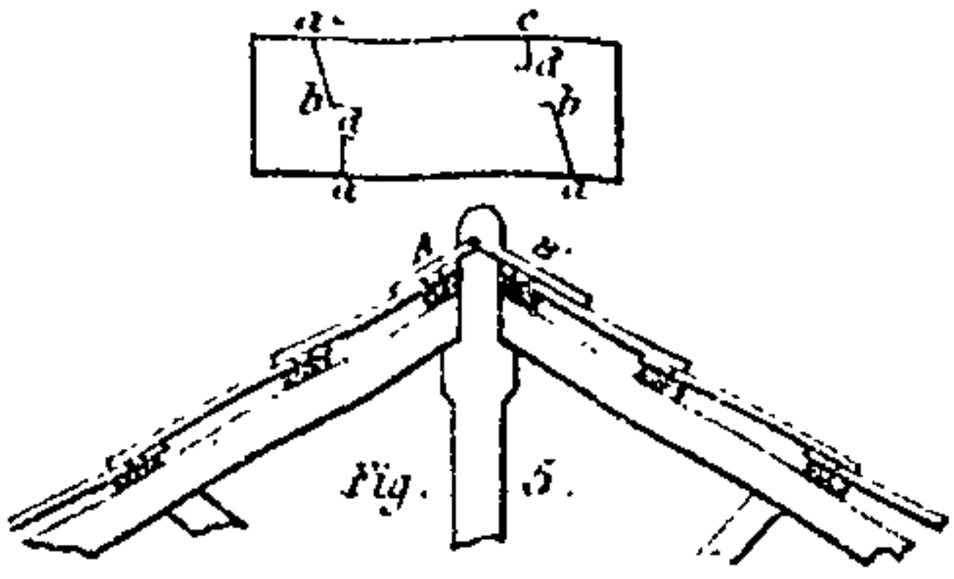


Fig. 2.

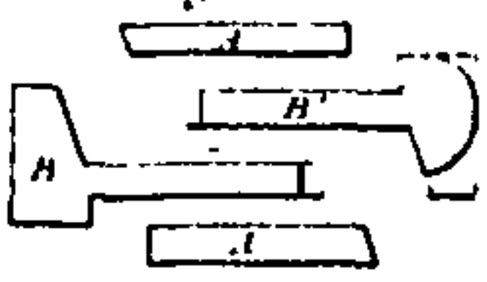
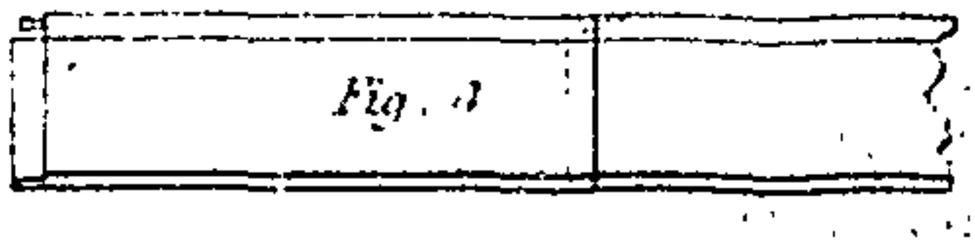


Fig. 3



section of one of these improved tilt-hammers; *a a* is the frame, which supports in a vertical position the cylinder *b b*, having a piston *c*, the rod of which passes through a stuffing box at the lower part of the cylinder; *d* the hammer block, which moves in vertical slides of the frame, and is attached to the end of the piston rod *f*; *h* is a valve box, provided with a valve *l*, worked by a rod *m*, and lever *m'*; *o* the eduction pipe, through which the steam from the cylinder passes.

The operation of the apparatus is as follows:—steam being admitted through the pipe *p* to the valve box *h*, the handle of the lever *m'* is raised by an attendant, which raises the valve, and allows the steam from the valve box to pass into the cylinder, the elastic force of which, on the under side of the piston, causes the same to ascend, and thus raise the hammer block *d*; the lever *m'* being depressed, the valve closes the eduction port, and opens a communication between the cylinder and the pipe *o*; the steam escaping into the atmosphere, allows the hammer block to fall by its own weight upon the iron, which is placed upon the anvil *q*; by this arrangement, any quantity of steam can be admitted to the cylinder, so as to increase or diminish the strength of the blow of the hammer, by causing the same to fall through a greater or less space; and the face of the hammer and that of the anvil will always be in the same plane with each other. In place of having a man to work the valve, the same may be effected by stops or studs, fixed in the hammer block, and an arrangement of levers to move the valve as the block rises and falls. The piston is made very thin and light, and somewhat of an umbrella shape, so as to expand a little by the force of the steam, and thereby pack itself, and contract when the force of steam is removed on the descent of the piston; and in order to destroy as much as

possible the concussion caused by the fall of the piston, the end of the piston rod (as will be seen in the section) is formed with a collar, that fits into a hole made in the hammer block; and the same is packed above and below with some elastic material, such as cork or caoutchouc. There is also a strong spiral spring, lapping round the lower part of the piston rod, which causes the hammer block, when forced to the top, to rebound back; the top of the cylinder is perforated with a number of holes, which, when the piston is at its greatest height, allow the steam to pass from the cylinder.

The patentee in conclusion says, "I desire it to be particularly understood, that I do not claim the exclusive use of any of the several parts, and arrangement of parts, and machinery described, except when the said parts are used in connection with, and in furtherance of, my said invention, whereby the elastic force of steam is made directly applicable to raise the hammer or striking block, for forging, stamping, and cutting iron and other substances, as described."

SPECIFICATION enrolled 9th December, 1842, of a PATENT granted 9th June, 1842, to JOHN GEORGE HUGHES, of No. 158, Strand, in the county of Middlesex, general agent, for "*a new application of telegraphic signals, and the mode of applying the same.*"

THESE improvements consist in the application of telegraphic signals for the transmission of orders from one part of a dwelling to another; which are also applicable to the general working of vessels, and also for the management of engines on board of steam-vessels.

This telegraph consists simply of a disc dial plate, on the face of which are engraved or written the orders required to be transmitted—such, for instance, as coals, hot water, footman, &c. This plate is provided with an index hand affixed to the end of a shaft, upon which is a pulley. There are two of these apparatus: one fixed at the place where the orders are to be given, and the other at the place where they are to be received; a length of band or catgut, which is conducted through the different apartments by means of guide pullies, passes round each of the pullies, which are both of the same diameter; consequently, when the hand of the dial is moved round, so as to point to the particular order required to be given, the hand of the other dial will move in like manner, and the order required will be seen on looking at the dial plate: and in order to call attention to the same, a notched wheel is fixed on the axis of the latter instrument, which actuates a bell; so that the time the order is given will be noticed by the ringing of the same.

There is another modification of the mode of transmitting orders by telegraphic signals; in which case the communication is made by wires and bell cranks, similar to those employed in bell-hanging. Where the order is to be received is fixed an apparatus somewhat similar to those described, having a pulley on the axis of the index hand, round which passes one end of the wire. This instrument may be fixed in the engine-room of a steam-vessel, with the requisite orders written on the disc for the engineer; on each of the paddle boxes is fixed a tablet, equal in length to the circumference of the pulley, and having the same orders written on as those of the dial: thus, by drawing the end of the wire, to which is affixed a hand or pointer opposite the name of the order to be given, the opposite end of the wire being passed round the pulley,

will move the index hand in like manner. In this case, as in the former, a bell is employed; and the axis or shaft is also acted upon by a convolute spring, so as to keep the hand, when not in operation, always in the same position.

The inventor claims:—First, the application of telegraphic signals for the transmission of domestic orders from one part of a dwelling-house or building to another. Secondly, the application of similar signals for the transmission of orders for the management of vessels, from one part of a ship to another; and particularly the orders of the captain or pilot to the engineer of a steam-vessel. Thirdly, the mode of applying such signals, by means of corresponding tablets on which corresponding orders are written, one placed at the spot where the orders are to emanate, and the other at the spot where they are to be received; the communication between the tablets being made by means of cranks and pullies, as described.

SPECIFICATION enrolled 9th December, 1842, of a PATENT granted 9th June, 1842, to JAMES ANTHONY EMSLIE, late of the borough and county of Newcastle-upon-Tyne, but now of No. 5, Barge Yard, Bucklersbury, in the city of London, civil engineer, for "*certain improvements in pumps*."

THESE improvements relate to a method of raising, lifting, or forcing water and other fluids, whereby a great saving of power is stated to be obtained; which is effected by a new bucket, in pumps where buckets are employed. This bucket consists of four leaves, or valves, placed at an angle of about 45 degrees. To the end of the pump rod is attached a block of metal of any required shape; to the top side of which are fixed the inclined valves or leaves

by means of hinge joints, the upper ends of which rest against the sides of the pump barrel. By this arrangement, it will be observed that when the bucket descends, the valves will be forced by the water into a vertical position, or nearly so, and the water will pass between the sides of the barrel and the valves, which are prevented going too far back by projections formed thereon coming in contact with the pump rod; when, by the ascent of the bucket, the weight of water will cause the valves to fall against the sides of the barrel, and thus prevent the water returning: and the same will be lifted in the ordinary manner. When the lift is very great, the valves are supported by vertical screws or bolts passing through the block of metal, the ends of which come in contact with a lug or projection formed on the under side of each valve; by this means, the valves, in place of pressing against the sides of the barrel, during the upward stroke, are supported by the vertical bolts, whereby the friction against the sides of the barrel is entirely removed.

The claim for this part of the invention is the formation of buckets for pumps, whether made of metal or wood, in the form set forth, having any number of leaves or floats at any angle at which they may be set up, and the use thereof in all kinds of pumps for raising, lifting, or forcing water or other fluids.

The second part of this invention consists in certain arrangements for lifting water, by a series of lifts, a distance of 75 feet or thereabouts. In the construction of this apparatus the patentee proceeds as follows:—three lengths of pipe, each 25 feet, are placed in the well from which the water is to be raised; on the top of each length of pipe is fixed a water box, each box being provided with three valves, namely, one for the purpose of preventing the water returning from the box to the pipe; another,

which opens outward into a cistern into which the water passes from the box, and overflows into a reservoir, into which reservoir dips the end of the second 25 feet length of pipe, the top of which is provided with a box and reservoir the same as that just described; into this latter dips the end of the third length of pipe, which is also provided with a box the same as that described, with this difference, that the water, in place of being received into a reservoir, passes into a spout and is carried off. At the top of the shaft or well is an apparatus for exhausting the air from all the boxes, which consists of two cylinders (the cubical contents of each should not be less than the cubical contents of the three water boxes), with pistons connected to each end of a beam; to the bottom end of one of the cylinders is attached a pipe or air tube, passing down the well, and communicating with the top side of each of the water boxes. The third valve, which each box contains, is for the purpose of closing the aperture formed by the air tube as the water rises in each box: thus preventing the water passing into the air tube. The action is as follows: on the ascent of the piston in the air cylinder, which is caused by a vacuum being formed on the under side of the piston in the opposite (or steam) cylinder, the air in all the boxes will be acted upon and removed into the air tubes and cylinder, and water takes the place of the air removed from the boxes; the remaining portion of the stroke, or downward stroke of the piston, or the stroke for delivering the water, is caused by admitting steam under the piston in the steam cylinder, at about atmospheric pressure, which causes the piston to ascend and the piston in the air cylinder to descend, and restores to the surface of the water in the water boxes a pressure equal to that of the atmosphere: "the effect of which is owing to the tendency of the water to gravitate;" and the water contained in the

boxes will pass through the delivery valve and flow into the reservoir. The inventor states, that, in starting this apparatus, it will be first necessary, by means of an air-pump, to exhaust the air from all the water boxes, in order that the water may rise therein; the admission of steam under the piston causing the descent of the water in the boxes, and thereby obtaining the first portion of the stroke, when, by the condensation of steam, a vacuum is produced in the cylinder, and the ascent of the piston in the air cylinder forms the remaining portion of the stroke.

Claim is, the principle and general arrangement and adaptation of machinery described, and the peculiar application of the sources of its action; also the use or application of such power, or as many powers, as can be applied.

SPECIFICATION enrolled 9th December, 1842, of a PATENT granted 9th June, 1842, to JOSEPH CHATWIN, of Birmingham, in the county of Warwick, lamp-maker, for "*certain improvements in the construction of cocks.*" (With a drawing.)

THIS invention relates to certain improvements in the construction of cocks, and consists in a novel and peculiar arrangement and construction of parts connected therewith. In the construction of cocks employed for drawing off liquids, it is desirable that the material employed for effectually closing the way or aperture through which the liquid passes, should be such as to withstand the chemical action of liquids generally, and not subject to leakage when employed for the purpose of cutting off steam of great pressure. Various materials have been employed, and forms of construction of cocks adopted for these purposes, but have failed. In the arrangement and

construction of cocks hereinafter described, the patentee proposes to obtain the advantages, and to obviate the imperfections of cocks, as hitherto constructed and employed for the purposes above mentioned, by a peculiar construction and arrangement of the valves or valve seats thereof.

In plate 6, figure 1 is an elevation of a cock.

Figure 2, a longitudinal section of the same, showing the internal arrangement and construction of parts.

Figure 3, a longitudinal section of a cock, showing another arrangement of parts to be employed for effecting the same.

Figure 4, a detached view of one of the parts.

Figure 5, shows a longitudinal section of another arrangement of cock.

In figures 1, 2, 3, 5, A A the shank at one end of which a piece of metal B B is screwed and made tight; C C the way or opening for the flow of liquid, or the passage of steam; D D a valve stem, having a screw cut around it, and working in a screwed hole E, being for the purpose of withdrawing or advancing the valve F F; this valve is constructed in the following manner: G G a series of washers of cloth or other suitable material (hempen by preference) placed one upon the other, and firmly held together by forced contact from the screw H, which passes through the washers and works in a screwed hole I, formed in one end of the valve stem D: the washers being thus placed and secured between the shoulders K L, are subsequently cut to any convenient angle, the shoulders or bearings K L differing in their diameters so as to suit such angle; it will appear evident that upon turning the handle M fixed upon the valve stem D in one direction, the smaller part of the valve will be pressed against the edge N N of the way or opening C (this edge should be slightly rounded

off to prevent the cloth washers from being cut), whence the communication between *a* and *b* will be effectually cut off, and an air or steam-tight fastening established. Figure 3 shows another arrangement of valve, to be employed for similar purposes to the foregoing, similar letters of reference being placed upon corresponding parts; it will be seen, upon referring to the drawing, that the construction of this valve differs from the foregoing, by substituting yarn or string in the place of cloth, by passing the same around the lower part of the stem as shown at D* in the detached figure 4, the surface thereof being jagged, and constructed with a collar at its lower end to prevent the yarn or string from slipping. The arrangement of the parts represented at figure 5, differ from the foregoing arrangements, inasmuch as the valve, which in the foregoing figures is represented as being packed with cloth, string, or other suitable material, is, in this case, made of any solid material, and one end of the opening or way c constructed as follows: against that end of the shank upon which the piece B is fixed, a series of washers are placed, and maintained in that position by a screwed cap O, passing over and around a corresponding screw, formed upon a projecting part of the shank, as represented by the drawing, by tightening which the washers are firmly held; these washers have a circular opening made through them in the direction of the water or steam-way, for the purpose of admitting the solid valve F, which is forced against the edges of the cloth washers by a screw, as in the foregoing arrangements, the solid valve being constructed of a similar form to that which the valves packed, as aforesaid, assume when forced against the edge N (figure 2).

The patentee claims as his invention of improvements in the construction of cocks, the application of valves or

valve seats, so constructed and arranged that the edges of the cloth, or other suitable material, may be made to act so as to cut off the communication with the steam or water-way, as herein before particularly described and represented, with such immaterial variations of form and construction as experience may suggest.

SPECIFICATION enrolled 10th December, 1842, of a PATENT granted 11th June, 1842, to ARTHUR HOWE HOLDSWORTH, of Brook Hill, in the county of Devon, gentleman, for "*improvements in constructing certain parts of ships and vessels, in order to arrest the progress of fire, and for regulating temperature.*"

THESE improvements relate to the peculiar manner of constructing the bulk-heads, partitions, floors, ceilings, and other parts of a ship or vessel. The drawings show these improvements as applied to the construction of a magazine; and consist in forming the top, bottom, and sides of such chamber, of boiler-plate iron; the whole of the chamber so formed is enclosed in a case of the same metal, so as to leave a space of a few inches between the two; this space is to be filled with water, which is caused to circulate in the following manner: to the lower part of this double case, forming the magazine, is connected a pipe, which passes up and through the side of the vessel, below water-mark. There is also another pipe, which proceeds in like manner from the top of the double case or chamber, and passes through the opposite side of the vessel; and these pipes are provided with stop-cocks, to shut off the communication when required. The hatch-way or door is also made double; and, besides being hung

with common hinges, has pipes in the form of hinges, provided with swivel joints, or stuffing boxes, so as to allow the door to open and shut; by these means, a communication for the circulation of water is established between the plates forming the door, and those forming the chamber. In order to ensure greater security, another iron door may be made to fit the hatchway behind the double door. The partitions forming the engine room are also shown as being constructed in the same manner; by means of which, the temperature of the engine room, and also of the apartments adjoining, is greatly reduced, and the same will also be protected from fire.

The inventor claims the mode of applying water spaces in hollow bulk-heads, partitions, floors, and ceilings, of metal, with means of obtaining the circulation of water therein, to various parts of ships and vessels, in order to reduce the temperature, and also to arrest the progress of fire, where such means are employed.

SPECIFICATION enrolled 13th December, 1842, of a PATENT granted 13th June, 1842, to DANIEL WILLIAMS, of Oxford, slater, for "*improvements in covering ridges and hips of the roofs of buildings.*" (With a drawing.)

THESE improvements, in covering ridges and hips of roofs, will be seen on reference to the drawings. In plate 6, figure 1 represents an end view of a block of slate, into which the inventor proposes to cut two inclined saw gates *a b*, *a b*, and also two other saw gates *c d*, *c d*; he then takes a splitting chisel, and after marking the end of the block, as seen by the dotted lines, splits it into four slates, the form of which will be seen in figure 2, A B, A B′; the slate B′ may, if desired, be rounded, although such rounding is not absolutely necessary; the bevil or inclination of the

saw gate *a b* should, in all cases, be suited to the inclination of the roof. Figure 3 shows the two slates A and B′ put together; and figure 4 represents a front view of the slates B′, the end being made to overlap each other; but they may be made with square joints; there are also holes drilled in the ends, into which are inserted pins, for the purpose of keeping them together. Figure 5 shows an end view of a roof, with the slates A B′ and flat slates applied thereto, the slates being secured in their places by means of screws or nails.

The patentee, in conclusion, remarks, "Although I have described the means of cutting a block of slate, so as to produce the parts A B with the least waste, yet I do not confine myself thereto; my invention consisting of forming slates into the forms A B, whereby the parts B may cover the ridge or hip of a roof, as described."

SPECIFICATION enrolled 13th December, 1842, of a PATENT granted 13th June, 1842, to THOMAS BANKS, of Manchester, in the county of Lancaster, engineer, for "*certain improvements in the construction of wheels and tires of wheels to be used upon railways.*"

THE first of these improvements relates to a method of constructing the nave or box of railway wheels whereby the wrought iron arms or spokes are more securely held. In order to carry out this part of the invention, the end of each arm or spoke is bent at right angles, the part so bent being made hollow to fit upon the periphery of a wrought iron ring, to which the arms are fastened. The arms, together with the ring, are then placed in a mould, and melted metal run about the ring and ends of the spokes, so as to form the nave or box. The inventor does not claim the exclusive use of running melted metal about

the ends of the spokes, except when the ends of such spokes are attached to a wrought iron ring, as described.

The second improvement consists in forming a groove, either dovetailed or otherwise, round the periphery of the tire, and inserting therein segments, or a hoop, or bar of steel iron or hard metal, either in one entire piece or in segments, placed end to end, so as to fill such groove. The groove which is shown in the drawing is dovetailed, and extends round the periphery of the wheel; the bar, hoop, or segments, are to be heated and placed in the groove, and hammered out, so as to increase the breadth of such bar or segments, and thereby fill the groove. A similar groove may be made in the flange, or the groove in question may be extended to that part of the flange which works against the rail.

The patentee says he does not claim the use of steel generally in tires for railway wheels, or the use of steel in such tires, when the iron and steel are welded together in the formation of a tire-bar, as such has before been employed, but he claims, as his invention, the improvement in the tires of wheels to be employed on railways, by inserting a hoop, bar, or segment of steel, or other hard metal, in a groove turned or formed entirely round the rim or tire of such wheels, as described.

SPECIFICATION enrolled 13th December, 1842, of a PATENT granted 13th June, 1842, to RICHARD GARRETT, of Leiston Works, near Saxmundham, in the county of Suffolk, agricultural implement maker, for "*improvements in the construction of horse hoes, scarifiers, drag rakes, and drills for cultivating land.*"

THE improvements in horse hoes consist, first, in suspend-

ing the guide bar which supports the levers, by means of chains passed over eccentric pullies, by turning which the hoes can be raised or lowered as may be required; the pullies to which the chains are attached are fixed on a horizontal shaft extending across the frame, having a handle at one end; the lower end of the chains are attached to a horizontal guide bar, having a number of slot plates or guides rivetted or otherwise affixed to the under side of the horizontal bar, through which slots the levers to which the hoes are affixed, pass; thus, by depressing the handle of the eccentric shaft the guide bar will be raised, and the levers resting on the bottom of each slot will be raised together with the hoes to any height required; and by reversing the motion of the handle, the levers, each of which is weighted, will depress the hoes so as to penetrate the ground to any depth required.

The second improvement consists in giving a lateral movement to the guide bars, by means of certain levers, and chains attached to each end of the guide bar, by which the hoes can, by the hands of the conductor, be guided in any particular course, independent of the direction pursued by the horse.

The third improvement relates to a mode of extending or contracting the distance apart of the running wheels of the drill machine, to suit the ridges of the land. Each of the wheels of the carriage works upon a stud fixed to the extremity of a bar of iron bent at right angles, which piece of iron is bolted to the under side of the axle tree; one of the bolts passes through a slot in one arm of the bent piece of iron, and through the axle tree, so that by slackening the bolts, the pieces of iron which support the wheels can be shifted further from or nearer to each other, so as to increase or diminish the distance apart.

The fourth improvement in drills relates to a mode of giving different inclinations to the cutting edges of the

hoes, so that they may be adapted to work in the land to the required depth, whether the ground be hard or soft; and lastly, to a mode of attaching and detaching blades of hoes, in order that they may be readily removed when required.

The improvements in scarifiers, intended to be employed in rendering the surface of the ground more uniform, consist in the means of raising or lowering the scarifying roller or rollers in the frame or carriage that supports them, in order that the roller or rollers may be made to cut more or less deep, and also to elevate the same entirely from the ground, when required. This apparatus runs upon ordinary wheels, capable of being raised or lowered by means of a screw, so that when the scarifier is intended to be used, the wheel, by means of the screws which pass through the frame side, can be raised from the ground, and the scarifying wheel or wheels rest upon the ground; and when not in use, the ordinary running wheels can be lowered so as to raise the scarifying wheel or wheels from the ground.

The improvements in drag rakes consist in a method of shifting the position of the tines, namely, placing them more or less erect, or at a greater or less angle with the surface of the ground. Each of the tines is attached to the end of a wooden beam or lever, capable of being raised or lowered at the opposite end to which the tines are fixed; by this arrangement, they can be fixed at any required angle; and in order to raise them entirely from the ground, each of the wooden beams is attached, by means of a chain, to a transverse beam, which latter is suspended by two chains, attached to the periphery of two eccentric pullies keyed on a shaft above the said beam and parallel with it; thus, by turning the shaft, the chains will be drawn up, and the tines will be raised from the ground,

so as to deposit the straw or other matter which may have accumulated on the points of the same.

The improvements in drills for cultivating land consist, first, in a mode of steering the carriage, independent of the course taken by the horse, for the purpose of causing it to pass over the required tracts, so that the rows of seeds may be placed parallel to each other in the successive courses of the drill; the body of the carriage is attached to the shafts, by means of a bent or curved piece of iron having a hole in the middle, through which passes a vertical stud or pin, which stud is fixed in the axle tree; by this arrangement, the body of the carriage is capable of moving partly round, independent of the shafts: this movement is effected by means of a horizontal shaft fixed in front of the carriage, having a pulley at each end, and over which pullies, in opposite directions, passes a chain, the end of such chain being fastened to the side shafts: thus, by giving motion to the said shaft, which is effected by a longitudinal shaft, a worm and worm wheel, and in consequence of the chains passing in opposite directions round the pullies, the body of the carriage or drill will be moved to the right or left, as may be required, which can be done with the greatest precision, by the attendant turning a handle fixed on the end of a longitudinal shaft, the opposite end having a worm taking into and driving a worm wheel keyed on to the horizontal shafts fixed in front of the carriage.

Secondly, an apparatus for agitating the manure in the box of the drill, in order that it may descend in an uniform quantity; on each end of the axis of a rotary agitator are fixed two eccentrics, which work a bar of iron having a number of projections, which bar passes through the upper part of the manure box.

Thirdly, an apparatus by means of which two kinds of

grain or seeds may be delivered at the same time through the respective tubes: for this purpose, the inventor puts the different kinds of seeds in separate compartments, with suitable apparatus for delivering the same.

Fourthly, the means of adapting rollers, upon a stationary axle, for forming and regulating the shape and height of the ridges, and lastly, a mode of guiding the coulters and spouts for enabling them to deposit the seeds accurately upon the middle of irregularly ploughed ridges, and consists in attaching the coulters and spouts to horizontal bars; these bars are made to swing upon vertical vibrating levers, worked by a crank, and are under the command of the attendant or conductor.

The mode of forming and regulating the shape and height of the ridges consists in the application of two concave rollers, shown applied to the front part of the drill, which are mounted and slide freely upon a horizontal shaft; these rollers act as a fore-carriage, and support part of the weight of the drill, and by freely sliding upon the axis, in lateral directions, will easily accommodate themselves to any irregularities in the furrows.

SPECIFICATION enrolled 13th December, 1842, of a PATENT granted 13th June, 1842, to WILLIAM MORRETT WILLIAMS, late of the Royal Military College, professor of mathematics, and now of Bedford Place, Commercial Road, in the hamlet of Mile End, Old Town, in the county of Middlesex, and of No. 163, Fenchurch Street, in the city of London, lock manufacturer, for "*certain improvements in the construction of locks and keys.*"

THESE improvements, as in all other patent locks, are

intended to render the lock more secure, and consequently less liable to be picked. The drawings show the improvements, in the first place, as being applied to a drawer lock. This lock is stated to be without a key-hole; the part where the key is applied for the purpose of locking and unlocking consists of a rectangular or oblong projection, standing from the face or front plate of the lock; there are three small round holes drilled through this projection, into which fit three stops, acted upon by a spring placed inside the lock, so as to cause the ends of the stops to stand flush with the face of the projecting piece; the inner ends of these stops are made flat, somewhat similar to a common key, each of which has one deep groove, nick or notch, cut in the end, and also two or more short notches, which the inventor calls false notches, the deep grooves being made at irregular distances with regard to each other: this part of the stops just described, moves or slides in a rack box, fixed inside the lock. The bolt of the lock is similar to those in common locks, except that one edge is made with a number of projecting teeth, which teeth, when the bolt is shot, pass through the deep grooves cut in the aforesaid stops; for this purpose, it will be observed, that the stops will require to be pushed forward or into the lock to an exact distance, in order to bring the deep grooves or nicks in a line with each other, and thereby allow the projections or teeth formed on the edge of the bolt to pass through them.

The key consists of a rectangular box made to receive the aforesaid projection; this part of the key is attached to the handle or bow by centre pins, so as to swivel round, and thereby present either end of the box for the purpose of locking and unlocking; one end, or one-half of the box, contains two projecting pins, of different lengths, and the other half contains three pins or projections. Suppose

the lock to be in a quiescent state, and it is required to shoot the bolt, or perform the act of locking, it is only necessary to apply that end of the box-key having two projecting pins to the rectangular projection on the front plate of the lock, and by pressing the key against the plate of the lock, the projecting pins enter two of the holes, and press upon the ends of the stops, so as to bring the long grooves, nicks or notches, in a line with each other, and allow the bolt, which is acted upon by a strong spring and driver, to pass through them; on removing the key, the stops will be forced, by means of a spring, to a level with the face of the projecting piece. When it is required to shoot the bolt in an opposite direction, or perform the act of unlocking, it will only be necessary to present the other end of the box-key having three projecting pins, when precisely the same result is obtained, except that the third projecting pin removes the driver and strong spring, and the bolt is forced back, or in an opposite direction, by a weaker spring.

There is another modification of this improved lock, in which the application of stops similar to those described are employed in the door lock; but in this case the stops slide into a circular rack-box, and are at equal distances around the circumference of the rack-box; the bolt is acted upon by a circular plate, having a projecting finger; the key in this case requires to be turned once round for the purpose of locking and unlocking. Another improvement is in the application of a circular rack-box, with sliding stops, to the plug of a tap or cock, for the purpose of retaining and drawing off liquor from butts and casks.

The patentee claims as his invention, the use and construction of a cylindrical rack-box, with its three stops, having false notches in each of them; and the said rack-box having a rotary motion, so as to enable the key to

turn quite round before it can be withdrawn from the lock after having performed the action of locking and unlocking; he also claims, as another part of his invention, the security produced by the use of three stops, having false notches therein, for the purpose of preventing the true ones being ascertained; and lastly, the use of the cylindrical rack-box when applied to a cock or tap, for the purpose of drawing off liquor from a cask or other vessel.

SPECIFICATION enrolled 13th December, 1842, of a PATENT granted 13th June, 1842, to ISAAC MOSS, of Macclesfield, in the county of Cheshire, silk trimming and button manufacturer, for "*improvements in the manufacture of covered buttons, ornaments, and fastenings of wearing apparel.*"

THIS invention relates, first, to a mode of making covered buttons, and consists in the application of a shell for the face of the button, which is to be covered with silk or other material. Within the shell is placed a "leek" button, consisting of a form or mould, covered by lapping thread or other material round it in the usual manner. The covered metal shell, with the "leek" button inclosed, is then submitted to the action of suitable dies, so as to turn the edge of the shell over the "leek" button; and the latter being covered with thread or other material, can be secured to the cloth.

The claim is, for the mode of making covered buttons, by employing a covered metal shell for the front of each button, the back of each button being composed of a leek button, formed by lapping thread on a form or mould.

The second improvement consists in the application of

woven wire cloth for the tuft or shank of the button: the woven wire cloth is inserted in a hole formed in the back, and secured in the ordinary manner. The wire cloth, which answers the purpose of a shank, may, if required, be previously covered, by cementing silk or other material upon it. Claim is, for the mode of constructing covered buttons, by employing woven wire cloth for the shank.

The third improvement consists in the application of a woven wire fabric for the purpose of covering buttons, the wire being previously lapped with some fibrous material. Claim is, the making of buttons of covered wire woven into a fabric, each button having a metal shell at the outer edge.

The fourth improvement consists in a method of constructing leek buttons: the improvement in this part is stated to be in forming the same with a metal edge. The leek button may be covered as the fancy or taste of the workman may suggest, and is then to be placed within a metal ring, and subjected to pressure between suitable dies, so as to press the ring flat upon the edge of the two surfaces of the button, and thereby present a metal border or edge. Claim is, the mode of constructing leek and such like covered buttons, by applying metal edges thereto.

The fifth improvement relates to the application of leather for the purpose of covering metal shells, the back collet of the button being made to lap over the edge of the front, and which latter is covered with leather. Claim is, the combining of a leather-covered surface with a metal shell in a die and pressure-made button.

The sixth improvement consists in making a covered button with a pasteboard or button-board back, having a hole in the centre, through which is passed the shank, the paper collet or back of the button being previously covered by winding cotton, silk, or other material thereon. Claim is,

the mode of making covered buttons by forming the back of each button with pasteboard or button-board, with a woven shank protruding through, together with the covering of the collet or back disc by winding fibrous material thereon.

The seventh improvement relates to a mode of ornamenting covered buttons, and consists in covering the button with an open woven fabric of wire, the wire being lapped previous to being manufactured into such open fabric; the front shell of the button, which is covered with the open woven fabric, is first covered with silk or some such material, which may either be of the same or a different colour to that of the material with which the wire is covered. Claim is, the mode of ornamenting covered buttons, by applying an open woven surface to the fronts of such buttons, when such open fabric is composed of covered wire, or covered yarn of fibrous materials.

The eighth improvement consists of another method of ornamenting buttons, by drilling or otherwise making a number of holes in the metal shell forming the front of the button, and then covering the same, by means of cement, with silk or other material, and placing inside the shell velvet or other suitable material, which, by the pressure of the back collet, presents a number of protuberances on the face or front of the button. Claim is, the mode of ornamenting covered buttons, by having the metal shell perforated with holes, and covered with silk or other fabric.

The ninth improvement relates to covering the forms, or wooden moulds, for tassels; and consists in covering or cementing on the same a woven fabric, in place of covering them in the manner hitherto practised. For this purpose the inventor provides a mould, consisting of a groove made of wood or metal, of the same form as the external

part of the mould for the tassel; into which the tassel, after the fabric has been cemented thereon, is rolled, so as to make the fabric adhere closely to all the parts of the mould. Claim is, the mode of covering forms or shapes for ornamental drops or tassels.

The tenth improvement consists in a mode of covering rings, by cementing a fabric upon a "shell ring," which is afterwards subjected to the action of suitable dies, in order to give it the form of a ring. Claim is, the mode of forming covered rings for furniture and other ornamental purposes.

The eleventh improvement consists in covering, by means of some adhesive matter, such as shellac dissolved in naphtha, the tags of stay laces with a woven fabric; and also in fixing tags of that description to the lace by means of the same adhesive matter; that is to say, employing such matter when putting the tag on the lace. Claim is, the mode of making tags, by covering the same with woven fabric, or with thread or such like materials and adhesive matter.

The twelfth improvement relates to a mode of constructing flexible eyes, or in constructing the eyes in such manner that their form is altered by the stress of the hook, and whereby the latter is more securely held. The sides of the eye are made to cross each other, and terminate in hooks, which, when the eye is drawn by the force of the hook, the said hook is held by that formed on the eye. Claim is, the mode of constructing eyes to be used with hooks.

The thirteenth improvement consists in a mode of bending wire for the purpose of forming a hook, in such a manner that two hooks will answer the purpose of a hook and eye. Claim is, the mode of constructing hooks to act as hooks and eyes for fastening parts of garments.

The fourteenth improvement consists of certain other

methods of constructing hooks and eyes for fastening parts of garments. Claim is, the combining the hook and eye, by bending wire into the forms described.

The fifteenth improvement relates to a mode of forming loops for vest bands.

The sixteenth improvement consists in the application of fringe for the purpose of ornamenting buttons, and in fixing the same, by means of a metal ring, round the edge of the button. Claim is, the mode of constructing covered buttons, by applying ornamental fringe or edging thereto; and lastly, the mode of forming hooks and eyes from wire which has been previously covered, by lapping or binding round the same some fibrous material.

SPECIFICATION enrolled 21st December, 1842, of a PATENT granted 21st June, 1842, to FREDERICK GYE, junior, of South Lambeth, in the county of Surrey, gentleman, for "*improvements in binding pamphlets, papers, and other documents.*"

THIS invention relates to the construction and application of a wire instrument, or instrument bent into suitable forms, for facilitating the binding of pamphlets, papers, and other documents, and consists of a piece of wire bent at each end, at right angles, and also in such a manner that between the parts which are at right angles there are two loop-holes. In order to fasten a number of papers with this instrument, the ends, which are made pointed, are pricked, or passed through the back of the sheets; after the whole of the sheets intended to be bound together have been passed on the ends of the instrument, the ends are folded down so as to hold the whole securely

together; and the same can be filed or hung up by means of the aforesaid loop-holes. When the papers are of great length, two of these wire instruments are to be employed. Another mode of fastening them is by forming two loop-holes on a piece of wire, and bending the same at the ends at right angles, in two directions, so as to allow of the points being passed through the whole of the sheets, that is to say, when the sheets are doubled; the ends of the wire after being passed through, are folded down so as to prevent them being withdrawn. Another instrument is also shown, somewhat similar to the last, but is intended to fasten the sheets by one corner, such for instance, as draft sheets, and legal documents. But in all cases the instrument consists of a piece of wire, pointed at each end, so as readily to penetrate the papers, and when passed through, the ends are folded down so as to hold or bind the papers together.

Claim is, the forming instruments, each of a piece of wire, for binding pamphlets, papers, and other documents, when the same are formed with loops, eyes, or openings, as described.

SPECIFICATION enrolled 21st December, 1842, of a PATENT granted 21st June, 1842, to HENRY HOUGH WATSON, of Bolton-le-Moors, in the county of Lancaster, consulting chemist, for "*certain improvements in bleaching, changing the colour of, and otherwise preparing, purifying, and refining tallow, and certain other organic substances, mixtures, compounds, and manufactures.*"

THE other organic substances alluded to in the title, besides tallow, are wax, and such other substances as are of a

greasy oleaginous nature, whether the same be compounds formed by mixing several such substances together.

The tallow or other substance to be operated upon, is first to be melted down in a leaden or other vessel capable of withstanding the action of the acid to be employed; to the melted tallow is added a compound, known to chemists by the name of "mineral chameleon," the same being constituted of manganesic or manganic acid and potash, soda, or other alkaline or earthy base; to this is added (observing to stir the same continually) sulphuric acid, diluted with from four to five times its bulk of water, or if preferred, the acid may be put in first; the temperature of the mixture is then to be kept up from 160° to 212° Fahrenheit, for about one hour, after which the heat is to be discontinued, and the mixture allowed to settle, when the tallow or other substance will be found to float on the surface; it is then to be taken off, when it will be fit to be used for the purpose for which it is afterwards intended. By this process, the tallow or other substance will be bleached or changed in colour, in a degree according to the mineral chameleon used. In place of mixing such mineral with the melted tallow or other substance under operation, and then adding the acid, the solution of mineral chameleon may first have as much of the diluted sulphuric or other acid mixed with it, for the saturation of the alkali contained therein, or as much as is required to make the mixture taste sour. This liquor, which will be of a purple or crimson colour, may then be mixed, and well agitated with melted tallow or other substance, which should be kept at a temperature of from 150° to 212° for about an hour, or until the desired whiteness or change of colour is obtained, which may be tested at intervals during the operation, by pouring a few drops upon a cold metallic substance, when the tallow will be observed to become

stiff, and the whiteness observable. If nitric, or any other powerful acid be used, it will be found necessary to make the vessel of some other material than lead, as such metal would be decomposed by the action of the acid. The vessel in which the operation is to be conducted, may be placed in a bath, and heated by steam or other means.

Instead of using the "mineral chameleon" for the purpose described, the tallow or other substance, may be bleached by means of a solution of red oxide, or of the deutoxide of manganese, or of a solution containing manganese, combined with more oxygen than is combined with it when in a state of protoxide. In order to carry this part of the invention into effect, a quantity of sulphuric acid is put into a leaden vessel, and diluted therein until its specific gravity is about 1.70; into which is to be sprinkled, by little at a time, the peroxide, or red oxide, or deutoxide, preferring the former, stirring the mixture all the time with a leaden rod. The liquor should then be allowed to stand for a few days, taking care to stir it occasionally, adding more water every day until the specific gravity is found to be 1.35. In preparing this liquor (which is of a crimson or claret colour), it will be found, that about 160 lbs. of peroxide of manganese, to about 500 lbs. of concentrated sulphuric acid, with the requisite quantity of water, will answer well; and that about 140 quarts of this liquor will bleach one ton of English tallow; the residual liquor (after the bleaching process) may be used in purifying and refining the fat as it comes from the butchers.

The inventor claims the application of "mineral chameleon," or compound of manganesic, or manganic acid, and potash or soda, or other alkaline or earthy base, to wax, tallow, and other greasy substances, in a melted state, by mixing the same therewith; and the previous or subse-

quent application of sulphuric acid (or other acid having a stronger affinity than the manganesic acid for the earthy base of the chameleon), to the said mixture, for the purpose of bleaching and changing the colour of tallow, and other like substances; also the application of a solution or mixture, formed by adding sulphuric, or other acid alluded to, to a solution of mineral chameleon, previously to either of them being added to the substance to be operated upon; also the application of a solution (made by the aid of acid) of red oxide, or deutoxide of manganese, or of a solution of manganese, combined with more oxygen than it is combined with when in a state of protoxide, to melted tallow, and such like substance, for the purpose of bleaching and changing the colour of the same; together with the application of the residuary liquor, after having been used for bleaching, as described, to unrendered tallow or fat, by heating and mixing the same therewith, for the purpose of purifying and refining the tallow or fat, without being confined to the exact proportions of substances and chemical ingredients, nor yet to the particular method herein described.

SPECIFICATION enrolled 21st December, 1842, of a PATENT granted 21st June, 1842, to JOHN DICKSON, of Brook Street, Holborn, in the county of Middlesex, engineer, for "*improvements in rotary engines and boilers; in stopping railway carriages; and in machinery for propelling vessels; part of which improvements are applicable to propelling air and gases.*"

THE first part of this invention relates to certain improvements in propelling; and consists in the application of

two wheels fixed to the side of the vessel. Round the periphery of each of the wheels is a groove, into which works an endless chain, carrying a number of flat discs of metal or wood; these circular floats, when immersed in the water, and passing from one wheel to the other (which wheels have transverse openings in the periphery, for the purpose of receiving the floats, and also the part to which they are affixed), are drawn through a horizontal cylinder, supported from the side framings by means of straps and bolts, so as to be immersed a few inches below the water line; the internal diameter of the cylinders being such, that the floats may pass through without touching the sides thereof. The inventor states that this machine will be applicable to many purposes besides that of propelling vessels; such as raising water above its level to any given height, or draining fens or marshes, instead of the common fen or marsh wheels, by placing the machine at a suitable angle. It is also stated to be applicable to propelling gas or air in any direction.

Another improvement in propelling consists in making a paddle wheel, with its periphery composed of a number of semi-cylindrical cavities or buckets, extending across the wheel in the same manner as ordinary floats, each cavity or bucket having two ends; so that by the motion of the wheel the water will not recede or pass off in a lateral direction as in the flat float. The inventor states that a vessel fitted up with paddles of this description, will be propelled through the water with greater force than if fitted with paddle wheels of the ordinary construction.

The rotary engine consists of a horizontal cylinder, through which is passed a shaft mounted in suitable bearings; the form of the shaft inside the cylinder is that of a cam, whose point or outer edge forms a steam-tight junction with the cylinder. There are two flat metal slides,

one on each side of the cylinder, which are kept, by means of a cord and a weight, in contact with the cam, shaft, or piston of the engine. The two slides, it will be observed, alternately form abutments for the steam to act against; and as the piston or cam revolves, these plates or abutments will be caused to slide in and out of the cylinder. Steam being admitted through a four-way cock, passes along a horizontal passage to the interior of the cylinder; where its elastic force is exerted upon one of the sliding abutments, and one side of the cam or piston; which causes the latter to recede until it passes the next slide, where it is acted upon in a similar manner, the steam being allowed to escape from the opposite piston through the eduction port.

Another modification of this engine, which is stated to be applicable to the purposes of propelling gases, vapours, or fluids of any kind; such as blowing furnaces, or driving air into mines, or *vice versâ;* also in purifying gas, by bringing it from the retort, and forcing it through lime purifiers and condensers. In this machine, the form of the shaft within the cylinder is that of a double cam extending across the diameter of the cylinder, and touching each side. Above the piston, and at each end of the cylinder, there is a vertical groove, into which works a metal slide, its own weight causing it to be in contact with the cam (which should form an air-tight joint), and which latter causes it (the slide) to move up and down in the said grooves, and into a recess in the upper part of the cylinder. In the upper part of the cylinder there are two apertures formed on each side of the metal slide, through which the gas, air, or other fluid, is received and delivered by the rotary motion of the piston. The same apparatus is described as answering the purpose of an air pump, for receiving air and hot water from the condensers

of steam engines; in which case, there are two other apertures, or foot valves, leading into the cylinder, placed one on each side near the bottom, and opening inwards: the two openings at the top, which are provided with valves opening outward, lead to the hot well; thus, by giving a rotary motion to the piston, the air and hot water from the condensers will pass through the foot valves into the cylinder, and will be delivered by the piston into the hot well which is above the cylinder.

The improvements in boilers consist of a vertical cylindrical boiler with a double case, leaving a water space between the two of from three to four inches; concentric with the interior case is another cylindrical boiler, having a number of vertical tubes or passages for hot air and vapours; it is also provided at the top and bottom with suitable communications to the double case; in the annular space formed by the two, and at a short distance from the bottom, is a frame which supports the grate bars; to the under side of the frame is attached a cog wheel which takes into and is driven by a pinion, motion being communicated to the axis of the latter by means of a winch or handle, by turning which it will be seen that the frame, together with the grate bars, will be caused to revolve, so as to bring any part of the fire which may have been lighted on the annular grate, opposite the furnace door. Presuming the fire to be lighted on the grate in the annular space, the volatile inflammable parts of the fire which fill the space, pass in a vertical direction to the top and down the aforesaid tubes which extend below the fire bars, and from thence to the flue, which also forms a part of the boiler, it (the flue) being constructed of a double case having a communication with the boiler, and is attached to one side thereof, which makes the external part of the boiler of an elliptical form. Another modification

of the principle is shown as being applied to horizontal boilers.

With respect to that part of the title which alludes to "stopping railway carriages," there is no mention made of it in any part of the Specification.

The patentee claims the whole arrangement of the several parts described.

SPECIFICATION enrolled 21st December, 1842, of a PATENT granted 21st June, 1842, to JOSEPH BUNNETT, of Deptford, in the county of Kent, engineer, for "*certain improvements in pavements for streets, roads, and other surfaces, and in machinery for producing and repairing the same.*"

THE first part of these improvements consists in a new form of wooden blocks for pavement, whereby each block is connected to and supported by those blocks which are in contact with it, without the use of pins, keys, dowels, or tenons. The form of this improved block may be described as follows: take a square block of wood, and from the upper surface, at one edge, make an inclined saw-cut half way through the block; then from the side of the block, and parallel with its upper and lower surfaces, make another cut, extending into the block (as if dividing it in two), so as to separate from one side of the block a piece in the form of a wedge. By this means, an indent will be formed on one side of the block, into which a suitable projection formed on the side of the block, which is to be joined to it, fits and rests; so that one block supports the other. The patentee prefers that the fibres of the wood in each square block should form an angle with the surface of from 65 to 75 degrees. Claim, the application of the form of block as described.

The second part of this invention relates to a new mode of connecting wooden blocks by means of keys, tongues, or tenons, inserted in mortises cut in the sides of the block; by means of which, every block is connected to and supported by those blocks which are in contact therewith. This improvement consists of a square block with vertical sides, but having the ends inclined with the fibres of the wood at an angle of from 65 to 75 degrees. In the middle of each of the two vertical sides of each block is a cavity or mortise, which is made with a circular cutter, and in such manner that the mortises will correspond with each other. Into these mortises, when laying down the blocks, is to be inserted a key, tongue, or tenon, made of oak about one inch thick, and of a diamond form, the lateral corners of which fit tight into the aforesaid mortises formed in the side of each block, so as to connect and support each other; or metal keys may be employed, in which case they will not require to be more than half an inch thick; and in forming the key-blocks, for taking up when the road requires repairing, the mortises in such block are cut so as to come out at one end of the block or blocks. There are other modifications of this block, one of which consists in making the mortises in the four corners of the blocks of each alternate row. Claim is, the mode of connecting the blocks for pavements by means of tongues or tenons inserted into mortises, as described.

The third improvement consists in the adoption of a regular system of uniform grooving, in order that a good foothold may be obtained for horses and other animals; and also for the application of machinery for the purpose of renewing and deepening the grooves, and removing any dirt which may have accumulated. The grooves may be arranged in lines, so as to cross each other at right angles, each line being at an angle of 45 degrees with the

side of the road; or there may be a series of lines parallel to the side of the street, and others crossing them diagonally; but whatever be the form of such grooving, the blocks are to be cut so that the grooves may form continuous and unbroken lines, in order that any suitable tool or instrument may be passed from end to end for the purpose of clearing out and deepening them: and for which the patentee claims the system of uniform grooving of the upper surface of wood pavements, and its application in the manner and for the purpose described.

The fourth improvement relates to machinery for the purpose of preparing and cutting the wooden blocks described. Having prepared the square blocks, they are separately placed between two slides, in a horizontal machine, and are forced forward by suitable means, and over two circular saws fixed upon an inclined shaft (which shaft is below the slides upon which the blocks move), and at such a height as to cut the blocks on two sides half way through; they next come in contact with two horizontal saws, which make the saw-cuts, as described above, parallel with the upper and under surface of the block. There are also certain horizontal revolving cutters, which can be brought in contact with the sides of each block for forming the mortises, and V cutters for forming the grooves in the upper surface of the blocks. The claim is, the arrangement of machinery for cutting and preparing wooden blocks for pavements.

The fifth improvement consists in machinery for cleaning and repairing the grooves in the upper surfaces of wooden blocks. The apparatus for cleaning out the grooves is of the form of a rake, having a series of teeth or prongs, capable of being set to the proper width for the grooves in the surface of the road; the handle is also made or attached to the rake, so as to be set at any required

angle with the line formed by the teeth. In order to clean out the accumulated dirt, the teeth of the rake are placed in the grooves on one side of the road, and the instrument drawn across. Another machine consists of a frame running upon four wheels, with peripheries of a V form, which run in the grooves formed in the surface of the road; the upper part of the frame supports a cranked shaft, having a fly wheel with a flat periphery, round which is passed a strap, which gives motion to a pulley keyed on the end of a horizontal shaft, supported by the frame of the machine near the surface of the road; and upon this shaft there are three, four, or more V cutters, set at such distances apart as to correspond with the grooves in the surface of the road. The operation is as follows: a man stands upon a platform or frame of the machine, and, by means of the crank shaft, gives a rotary motion to the fly wheel; which motion is imparted, by means of the strap, to the cutters. During this operation another man pushes the machine forward, and in a direction of the grooves formed in the surface of the road. Claim is, for the machinery for clearing and repairing the grooves in the upper surface of wooden pavement.

SPECIFICATION enrolled 21st December, 1842, of a PATENT granted 23rd June, 1842, to HENRY BEWLEY, of the city of Dublin, licentiate apothecary and chemist, for "*an improved chalybeate water.*"

IT is well known, at least among the medical faculty, that iron is extensively used for medicinal purposes, prepared either according to pharmaceutical works, or according to the extemporaneous prescriptions of medical practitioners,

or as it exists in natural chalybeate waters. But of the artificial preparations of iron in common use, some are liable to rapid decomposition, and consequently varying in strength; while others are insoluble until they meet with an acid in the stomach, and therefore act with more or less efficacy: some, again, are liable to disorder the stomach, while most are nauseous to the taste. The natural chalybeate waters are also liable to rapid decomposition, and can seldom be transmitted as an article of commerce, without having their efficacy impaired by transport or keeping. The object, therefore, of the patentee is, to make a chalybeate water more agreeable to the palate, and capable of keeping for any length of time; which is effected by dissolving, in a mixture of ten pints of water and three ounces and a half of good commercial sulphuric acid, of about 1.840 specific gravity (the mixture being contained in a stone ware, porcelain, or other vessel, set in a sand bath), one pound of crystallized sulphate of iron, such as is sold by manufacturing chemists for medicinal purposes. The heat of the solution being raised to the boiling point, nitric acid, of specific gravity 1.340, is to be occasionally added, stirring the solution frequently, until it ceases to give off vapours of an orange colour, which is an indication that the iron has attained a state of peroxide. This peroxidized solution is then poured into about ten gallons of water; to which is to be added (stirring at the same time) water of caustic ammonia, to precipitate the peroxide of iron, until the ammonia is in excess. The precipitate is then collected in a filter, and well washed in water. The patentee then dissolves about eight ounces of crystallized citric acid in about four times its weight of water, in a stone ware or other suitable vessel, set in a sand bath raised to a temperature of from 160° to 180° Fahrenheit, and adds to the solution the peroxide

of iron, as above; and in this moist state continues to add the peroxide, with agitation, until it ceases to be dissolved; that is, until the citric acid is as fully saturated with the peroxide of iron as their affinities will admit of; and after that the solution is filtered. The exact strength of the solution of citrate of iron is then ascertained, by evaporating a certain quantity to dryness, and then weighing the dry ferruginous salt. Having ascertained the strength, it is then mixed with a weak simple syrup of sugar, or with syrup flavoured or aromatized according to the taste, and in proportions corresponding with the degree of ferruginous strength desired to be given to the mixture; which is stated to be in such proportions that each fluid ounce shall contain thirteen grains of citrate of iron. One ounce of this mixture is then put into a seven-ounce bottle, which is to be filled up with about five ounces of water, charged with three or four times its volume of carbonic acid gas, by means of a soda-water machine. When the bottle has been filled, it must be corked immediately, and the cork secured in the ordinary manner.

The inventor states that he also prepares a modified triple combination of citric acid with the oxide of iron, by adding to citrate of iron, as above described, ammonia, potash, or soda; and instead of citrate of iron, other suitable organic salts may be employed.

The patentee claims as his invention the manufacture of an improved chalybeate water, whether such be prepared by the particular method as herein before described, or by any other analogous method or process.

A DISCLAIMER and Memorandum of Alteration have been entered, on the 22nd December, 1842, with the Clerk of the Patents, in the matter of the Patent granted 27th May, 1835, to JOHN GEORGE BODMER, of Bolton-le-Moors, in the county palatine of Lancaster, civil engineer, for his invention of "*improvements in machinery for preparing, roving, and spinning cotton and wool.*"

The Patentee declares, that having, since the taking of such letters patent, and since the enrolment of his Specification, discovered that the improvements in the willow or opening machine, and also the feeding plate of the blowing machine, are not new, as regards their application to other materials than cotton, he disclaims, and omits the words "*and other fibrous materials,*" in the said Specification written; and for the reason aforesaid he also adds the words "*as applicable to working cotton only,*" after the words "*blowing machine,*" in his said Specification.

SPECIFICATIONS NOT ENROLLED.

MOSES POOLE, of Lincoln's Inn, gentleman, for "*improvements in obtaining the colouring matter from wool and woollens dyed with indigo,*" due 21st December, 1842.

THOMAS GAUNT, of No. 10, Dalby Terrace, City Road, for "*improvements in the means of applying any such power as is, or may be used, for propelling vessels or carriages, to produce locomotion thereof,*" due 21st December, 1842.

Scientific Notices, &c.

Practical Essays on Mill Work and other Machinery, by Robertson Buchanan, Engineer; with notes and additional articles containing new researches on various subjects, by Thomas Tredgold, C.E., and now revised into a Third Edition, with additions, by George Rennie, Esq., C.E., F.R.S. London, John Weale: 8vo., p. p. 479; 1842. With an Atlas of Plates, in folio.

Practical Examples of Modern Tools and Machines: Being supplementary to the edition of Buchanan on Mill Work and other Machinery. Now first published. Edited by George Rennie, C.E., F.R.S. London, John Weale: 8vo., p. p. 27. With an Atlas of Plates, in folio.

A SOUND practical work, elucidating the first principles, and exhibiting the progressive improvements in British machinery, particularly of that important class denominated TOOLS, has been long wanted. It is therefore we hail with sincere pleasure the completion of this elaborate, and, as regards the industrial prosperity of our country, truly national publication.

It has frequently been observed as a singular fact, that whilst France has produced many valuable aids to the mechanist, such for instance (we quote from memory, and are by no means sure we have selected the best examples) as the *Industriel;* the *Recueil des Machines qui servent à l'économie rurale et industrielle;* the *Choix de Modèles appliqués à l'enseignement du dessin des Machines;* the former edited by Messrs. Christian and Le Blanc, and the two latter, we believe, by M. Le Blanc alone. Great Britain, immeasurably superior in every department of mechanical engineering, has actually added little or nothing to the general stock of information, since, if we except Messrs. Blunt and Stephenson's "Machinist and Civil Engineer," Mr. Tredgold's accurate and splendid work "On the Steam Engine," Professor Willis's "Principles of Mechanism," with one or two other treatises of a secondary and very inferior character, such as Nicholson's "Operative Mechanic," we may ransack the vast resources of English literature in vain; the enquirer must not

look for assistance to direct his studies from the portfolios of his countrymen, whilst on the contrary he will find the pages of "L'Industriel," and similar foreign periodicals, teeming with representations of the rarest productions of British inventive genius. This is abundantly vexatious, still it is notoriously true that the case is as we have stated it. We know not to what source to attribute this strange apathy; it cannot be assumed that we are less industrious, or less enterprising than our Continental neighbours; on the contrary, we are more so. The deficiency we have pointed out must, we suspect, be attributed to the caution of the publisher, rather than an indolence on the part of the author,—said to be, and too often with truth, the concomitant of genius. This, we apprehend, to be the real cause of a dearth of works on practical mechanism, to which we have just alluded; but that the subject is extremely popular, nay more, so much so, as to render any treatise by a competent pen a safe speculation in a mercantile point of view, is, we think, clearly made apparent, by the publisher of the work before us, in his address, and in which he states with honest pride, the large numbers sold within given periods of time, of his own publications, nearly all of which fall within the category with which we started.

A better, at all events a more general, illustration may be deduced from the work now before us, and we trust the results will prove equally satisfactory. This volume is based on and contains the Essays of Robertson Buchanan; these are too well known to engineers to require any critical examination at our hands. Mr. George Rennie has reprinted these essays, and added a fund of very valuable information, derived from his own experience; this portion doubtless forms the most interesting part of the work; and it may be questioned, whether in the present advanced state of science an original treatise by Mr. Rennie would not have proved quite as satisfactory, as well to himself as to the student. An editor is, in a great measure, compelled to adopt the course indicated by his author; this necessarily operates injuriously, as it tends to cramp the energies of the mind, and too often reduces the functions of the intellect to the level of mere mechanical agency. This, as our readers must observe, is merely the expression of an abstract opinion, and has no reference whatever to the execution of the present

work, viewed as a reproduction; since Mr. Rennie, in his editorial capacity, affords abundant proof both of ability, research, and impartiality.

It has been objected, we believe, that the character of Buchanan's essays is far too elementary for men of science, at the present day; this, we confess, is an objection, the force of which we do not comprehend; if, nevertheless, it be worth while to refute an observation evidently dictated either by splenetic ill-will, or disappointed hopes, we need only refer the hypercritic to the distinct declaration embodied in the title-page of the book, viz., "*Practical Essays on Mill-work and other Machinery,*" as the most satisfactory answer to this extremely liberal criticism. The author tells us in his preface that his object has been "to collect and arrange facts, with a view to deduce rules to guide the millwright in a part of his business, which there is reason to suppose has hitherto, in most cases, been conducted at random; and again he remarks, "With a view to practical utility, I have endeavoured to adapt the style of these essays to the comprehension of such operative mechanics as have not had the advantage of mathematical instruction."—P. 5, 6.

This, we think, is so explicit, free too from all pretence, that we are bound to infer that no man, unless predetermined to cavil, could have expected any other than a plain elementary treatise, suited to the wants and capacities of millwrights; yet, although little is assumed, much is given. To enable our readers to appreciate the real value of this work, we shall extract from Mr. Rennie's able preface a brief detail of the essays themselves; which "consist of a series of treatises, seven in number, on several of the elementary parts of machinery." The first essay treats on the configuration of the teeth of wheels. In perusing it, we are at once struck with its resemblance to the admirable treatise of Camus, published in 1782, and which the author duly acknowledges. "The subject is divided into two parts; firstly, the principles as laid down by Camus; secondly, the application of these principles to different kinds of spur and bevil gear."—P. 7.

The second essay refers "to the shafts of mills, and is divided into five chapters, containing a general description of shafts most employed in mill-work, and the strains to which they are

subject from lateral stress and tension; the strength and stiffening of shafts, journals, and gudgeons, with reference to the strength of materials, according to the experiments of different authors. The subject of tension is briefly examined in conjunction with lateral stress; and the table of shafts, at the end of the fifth chapter, takes into consideration the two kinds of resistance."—P. 12.

The third essay is "on the construction and durability of the longitudinal connection of shafts denominated couplings."—P. 18.

The fourth essay relates "to the method of disengaging and re-engaging Machinery while in motion," and may be fairly included in the third essay on couplings, "with the exception of the fast and loose pullies, and friction clutches, which are found to be the simplest and best for engaging and disengaging Machinery without shocks."—P. 20.

The fifth essay is "on the mechanism for equalizing the motion of Mills, and relates to the changes of velocity to which every first mover is subject, either from an increase or diminution in the supply of power, or where the power is uniform, from the increase or diminution of the resistance required to be overcome. This is accomplished by means of double or conical pendulums or balls, either for regulating the supply of wind, water, or steam, according to the quantity of action required."—P. 21.

The sixth essay "relates to the changing the velocity in Machinery by means of alternating pullies, alternating cones, friction wheels, mules, and double speeds, as applied to cotton spinning."—P. 30.

The seventh essay "treats of the framing of Mill-work and small Machinery, according to the principles of Robison and Tredgold. The object of framings in mill-work is to support and maintain the different parts of machines in their proper and relative distance, so that all the wheels shall work as smoothly as possible, and without shocks or vibrations; for this purpose it is necessary that the framings be made in conformity to the strictest rules of science, that is, with reference to the composition and resolution of forces, that the resultants of these forces should be represented by ties or struts; in short, that all

pressure should be so distributed and resisted as to maintain a perfect state of equilibrium throughout."—P. 33.

An eighth essay, although not in the original edition of Buchanan is added; this treats of the geometrical and practical methods of finding the centres of gravity of Mill Wheels, illustrated by examples of two, three, or four wheels keyed upon the same shaft.—P. 33.

Mr. Rennie has not contented himself with a mere verbal reprint of these essays, with occasional corrections and illustrations; a large amount of new and valuable matter is condensed in the shape of appendixes, and he would seem to have undertaken the responsible charge of editor, with a feeling of enthusiastic attachment to his profession, and a sincere desire to inculcate sound practical knowledge to all who are willing to receive it at his hands. Thus from the well-replenished garner of his own matured experience, aided by the willing contributions of scientific friends, he has raised a noble and enduring monument to the mechanical genius of Great Britain.

One word more, ere we conclude; the plates, nearly one hundred in number, are intended to exhibit the progressive improvements in mechanical science, more especially as regards tools, those wonderful specimens of human skill, which enable this country to compete successfully with the whole civilized world. A very interesting communication on this subject, by Mr. Nasmyth of Manchester, is appended to the work, and we are sure it will be sufficient to mention that the plates, engraved in a superior style, by Lowry, exhibit the best specimens of modern machinery from the works of Messrs. Nasmyth, Gaskell and Co., Messrs. Sharp and Roberts, Mr. F. Lewis, Messrs. Fairbairn and Co., Messrs. Benjamin Hick and Son, Messrs. Maudslay and Field, Messrs. Maclea and March, Messrs. Whitworth and Co., Messrs. Carmichael, and others, to recommend this work to every practical engineer. In fine, our best thanks are due, both to the editor as also to the spirited publisher, for the share each has borne in the production of a volume which should, and we doubt not will, find a place on the shelves of every machinist, whether professional or amateur.

List of New Patents.

PATENTS GRANTED IN ENGLAND, FROM DECEMBER 28th, 1842, TO JANUARY 28th, 1843.

Six Months allowed for Enrolment of Specification, unless otherwise expressed.

Alonzo Grandison Hull, of Clifford-street, Middlesex, doctor of medicine, for "improvements in electrical apparatus for medical purposes, and in the application thereof to the same purposes." Sealed December 28.

Thomas Thompson, of Coventry, weaver, for "certain improvements in weaving figured fabrics." Sealed December 28.

Henry Crosley, of the city of London, civil engineer, and George Stevens, of Limehouse, gentleman, for "certain improvements in the manufacture of sugar and the products of sugar." Sealed December 28.

Edward Thomas, Lord Thurlow, of Ashfield-lodge, Ixworth, Suffolk, for "an improvement or improvements in bits for horses and other animals." Sealed December 29.

Benjamin Bailey, of Leicester, frame-smith, for "improvements in machinery employed in the manufacture of stockings, gloves, and other frame-work knitted fabrics." Sealed December 29.

John Stephen Bourlier, of Sherborn-street, Blandford-square, engineer, for "certain improvements in machinery used in printing calicoes, silks, paperhangings, and other fabrics." Being a communication. Sealed December 29.

Joseph Rock, junior, of Birmingham, factor, for "improvements in the construction of locks." Sealed December 29.

Henry Samuel Rush, of Sloane-street, Middlesex, for "improvements in apparatus for containing matches for obtaining instantaneous light." Sealed December 29.

Baron Victor de Wydroff, of Old Bracknell, Berkshire, for "improvements in the construction of railways, and in wheels to run on railways, and in apparatus for cleaning the rails." Sealed December 29.

John Bishop, of Poland-street, Westminster, jeweller, for "improvements in apparatus for portioning steam power, and also improvements in plugs, cocks, or taps, for steam, gases, and liquids." Sealed December 29.

Crawshay Bailey, of Nant-y-Glo Iron Works, Monmouth, esquire, for "certain improved construction of rails for tramways and railways." Sealed January 11.

James Harvey, junior, of Regent-street, goldsmith, for "certain improvements in steam engines." Being a communication. Sealed January 11.

William Ritter, of 106, Fenchurch-street, gentleman, for "improvements in crystallizing and purifying sugar." Being a communication. Sealed January 11.

Julian Edward Disbrowe Rodgers, of Upper Ebury-street, Middlesex, chemist, for "certain improvements in the separation of sulphur from various mineral substances." Sealed January 12.

William John Loat, of Clapham, Surrey, builder, for "an improved mode of constructing floors and roofs." Sealed January 12.

Pierre Armand, Le Comte de Fontainemoreau, of Skinner's-place, Size-lane, for "a certain process, or processes, of combining clay with some other

substances, for the production of a certain 'ceramic paste,' capable of being moulded into a variety of forms; and in the application thereof to several purposes." Being a communication. Sealed January 14.

James Harvey, of Bazing-place, Waterloo-road, timber merchant, for "improvements in paving streets, roads, and other places; some of which improvements are his own invention, and others have been communicated to him by a foreigner residing abroad." Sealed January 14.

William Snell, of Northampton-square, gentleman, for "improvements in machinery for the manufacture of farina." Sealed January 14.

Nathaniel Card, of Manchester, candle-wick manufacturer, for "certain improvements in the manufacture of candle-wicks, and in the machinery or apparatus for producing such manufacture." Sealed January 14.

Henry Hussey Vivian, of Singleton, Glamorgan, esquire, and William Gossage, of Birmingham, manufacturing chemist, for "certain improvements in treating or reducing ores of zinc; also certain improvements in furnaces to be used for reducing ores of zinc; part of which improvements are applicable to other furnaces." Sealed January 14.

James Hamer, of Wardour-street, engineer, for "improvements in propelling vessels." Sealed January 19.

Thomas, Earl of Dundonald, of Regent's-park, for "improvements in rotary or revolving engines, and in apparatus connected with steam engines, and in propelling vessels." Sealed January 19.

Joseph Kirkman, junior, of Soho-square, piano-forte manufacturer, for "improvements in the action of piano-fortes." Sealed January 19.

Thomas William Bennett, of Gray's-inn-road, timber merchant, for "improvements in paving or covering roads, streets, and other ways or surfaces." Sealed January 19.

Luke Hebert, of Dover, civil engineer, for "certain improvements in machines for grinding, and for dressing or sifting grain and other substances." Sealed January 19.

William Bates, of Leicester, fuller and dresser, for "improvements in the dressing and getting up of hosiery goods, comprising shirts, drawers, stockings, socks, gloves, and other looped fabrics, made from merino, lamb's wool, worsted, cotton, and other yarns; and in machinery for raising the nap or pile on the same." Sealed January 19.

Thomas Sunderland, of Albany-street, Regent's-park, esquire, for "improvements in moving floating bodies through water and air, and in accelerating the flow of water, air, and other fluids, through shafts, pipes, and other channels." Sealed January 19.

Uriah Clarke, of Leicester, dyer, for certain improvements in frame-work knitting machinery, and a new frame-work knitted fabric." Sealed January 21.

Frederick Albert Winsor, of Lincoln's-inn-fields, barrister at law, for "a new apparatus for the production of light." Being a communication. Sealed January 26.

Charles Frederick Bielefeld, of Wellington-street North, Strand, papier maché manufacturer, for "improvements in suspending or hanging swing looking glasses, and other articles requiring like movements." Sealed January 26.

William Palmer, of Sutton-street, Clerkenwell, manufacturer, for "improvements in the manufacture of candles." Sealed January 26.

Henry Chapman, of Arundel-street, Strand, for "a fabric for maps, charts, prints, drawings, and other purposes." Sealed January 26.

Francis Mc Getrick, of Ernest-street, St. Pancras, artisan, and Matthew Bailey Tennant, of Henry-street, Regent's-park, gentleman, for "improvements in apparatus for preventing the engines and carriages from going off railways, and for removing obstructions on railways." Sealed January 26.

Edward Smallwood, of North-lodge, North-end, Hampstead, gentleman,

for "improvements in covering roads, ways, and other surfaces." Sealed January 26.

Robert Goodacre, of Ullesthorpe, Leicester, gentleman, for "certain improvements in weighing apparatus, applicable to cranes and other elevating machines, whereby the weight of goods may be ascertained while in a state of suspension." Sealed January 26.

James Boydell, junior, of Oak Farm Works, near Dudley, Stafford, iron master, for "improvements in the manufacture of metals for edge tools." Sealed January 26.

George Parker Bidder, of Great George-street, civil engineer, for "an improved mode of cutting that kind of slates commonly called roofing slates, though sometimes used for other purposes." Sealed January 26.

William James Granstreet, of Blackfriars-road, gentleman, for "certain improvements in machinery or apparatus for producing or obtaining motive power." Sealed January 26.

Joseph Kirby, of Banbury, Oxford, gentleman, for "improved apparatus for manufacturing bricks, tiles, and other articles from clay or earthy materials." Sealed January 26.

George Phillips Bayly, of 146, Fenchurch-street, brush maker, for "certain improvements in brushes." Sealed January 26.

Martyn John Roberts, of Brynycaeran, Carmarthen, esquire, for "improvements in dyeing wool and woollen fabrics." Sealed January 26.

William Weild, of Manchester, engineer, for "certain improvements applicable to window blinds and curtains; parts of which improvements are also applicable to doors." Sealed January 28.

David Isaac Wertheimber, of West-street, Finsbury-circus, gentleman, for "improvements in calculating machines; part of which improvements is applicable to purposes where wheel-work is required." Being a communication. Sealed January 28.

John Barrow, of East-street, Manchester-square, engineer and smith, for "certain improvements in the manufacture and hanging of window sashes." Sealed January 28.

PATENTS GRANTED FOR SCOTLAND, FROM DECEMBER 25th, 1842, TO JANUARY 25th, 1843.

Robert Wilson, manager at the works of Messrs. Nasmyth, Gaskell and Company, Patricroft, near Manchester, in the county of Lancaster, engineer, for "certain improvements in the construction of locomotive and other steam engines." Sealed December 27.

Gabriel Hippolyte Moreau, of Leicester-square, in the county of Middlesex, gentleman, for "certain improvements in propelling vessels." Sealed December 27.

James Morris, of Cateaton-street, in the city of London, merchant, for "improvements in locomotive and other steam engines." Being a communication. Sealed December 27.

Henry Samuel Rush, of Sloane-street, in the county of Middlesex, mechanic, for "improvements in apparatus for containing matches for obtaining instantaneous light." Sealed December 29.

John Rand, of Howland-street, Fitzroy-square, in the county of Middlesex, artist, for "improvements in making and closing collapsable vessels." Sealed December 29.

Henry Beaumont Leeson, of Greenwich, in the county of Kent, doctor of medicine, for "improvements in the act of depositing and manufacturing

metals and metal articles, by electro-galvanic agency, and in the apparatus connected therewith." Sealed December 30.

Robert Logan, of Blackheath, in the county of Kent, esquire, for "improvements in obtaining and preparing the fibres and other products of the cocoa nut and its husks." Sealed January 9.

Charles Hancock, of Grosvenor-place, in the county of Middlesex, artist, for "certain improvements in printing cotton, silk, woollen and other fabrics." Sealed January 11.

James Gardner, of Banbury, in the county of Oxford, ironmonger, for "improvements in cutting hay, straw, and other vegetable matters for the food of animals." Sealed January 11.

John Stephen Bourlier, of Sherborn-street, Blandford-square, in the county of Middlesex, engineer, for "certain improvements in machinery used in printing calicoes, silks, paper hangings, and other fabrics." Being a communication. Sealed January 12.

George Wilton Turner, of Gateshead, in the county of Durham, doctor in philosophy, for "improvements in the manufacture of alum." Sealed January 12.

William Wood, of Holborn, in the county of Middlesex, carpet manufacturer, for "a new mode of weaving carpeting and other figured fabrics." Sealed January 13.

Mathew Gregson, of Toxteth-park, Liverpool, in the county of Lancaster, esquire, for "an invention or improvement applicable to the sawing or cutting of veneers." Sealed January 16.

Samuel Hall, of Basford, in the county of Nottingham, civil engineer, for "improvements in the combustion of fuel and smoke." Being a communication. Sealed January 18.

Joseph Beamon, of Smethwick, in the parish of Harborne, in the county of Stafford, iron master, for "an improvement in the manufacture of malleable iron." Sealed January 18.

Alexander Johnson, of Hillhouse, in the county of Edinburgh, esquire, for "improvements on carriages, which may also be applied to ships, boats, and other purposes where locomotion is required." Sealed January 20.

John Thomas Betts, of Smithfield-bars, in the city of London, gentleman, for "improvements in covering and stopping necks of bottles and other vessels." Being a communication. Sealed January 23.

Thomas Thompson, of Coventry, in the county of Warwick, weaver and mechanist for "certain improvements in weaving figured fabrics." Sealed January 23.

Julian Edward Disbrowe Rodgers, of Upper Ebury-street, in the county of Middlesex, chemist, for "certain improvements in the separation of sulphur from various mineral substances." Sealed January 25.

PATENTS GRANTED IN IRELAND FROM 25th DECEMBER, 1842, TO 25th JANUARY, 1843.

Isham Baggs, of Wharton-street, in the county of Middlesex, chemist, for "an improvement or improvements in the production of light." Sealed December 29.

Samuel Carson, of York-street, Covent-garden, in the county of Middlesex, gentleman, for "improvements in purifying and preserving animal substances." Sealed December 29.

William Coley Jones, of Vauxhall-walk, in the parish of Lambeth, in the county of Surrey, for "improvements in treating or operating upon a certain

unctuous substance in order to obtain products therefrom for the manufacture of candles and other purposes." Sealed December 29.

GEORGE EDMUND DONISTHORPE, of Bradford, in the county of York, top manufacturer, for "improvements in combing and drawing wool and certain descriptions of hair." Sealed December 30.

CHARLES MAURICE ELIZEE SAUTTER, of Austin-friars, in the City of London, gentleman, for "improvements in the manufacture of sulphuric acid." Being a communication. Sealed December 30.

JAMES MORRIS, of Cateaton-street, in the City of London, merchant, for "improvements in locomotive and other steam engines." Being a communication. Sealed December 30.

WILLIAM COLEY JONES, of Vauxhall-terrace, in the county of Surrey, practical chemist, and GEORGE FERGUSSON WILSON, of Vauxhall, in the same county, gentleman, for "improvements in operating upon certain organic bodies or substances, in order to obtain products or materials therefrom for the manufacture of candles and other purposes." Sealed December 30.

GABRIEL HIPPOLYTE MOREAU, of Leicester-square, in the county of Middlesex, gentleman, for "improvements in steam generators." Sealed January 9.

GABRIEL HIPPOLYTE MOREAU, of Leicester-square, in the county of Middlesex, gentleman, for "improvements in propelling steam vessels." Sealed January 14.

THOMAS WRIGLEY, of Bridge-hall Mills, in the county of Lancaster, paper manufacturer, for "improvements in machinery or apparatus for manufacturing paper." Sealed January 20.

THOMAS RIDGWAY BRIDSON, of Great Bolton, in the county of Lancaster, for "improvements in machinery or apparatus for stretching, drying, mangling, and finishing woven fabrics." Sealed January 21.

The Record

OF

PATENT INVENTIONS.

No. VI.

SPECIFICATION enrolled 5th January, 1843, of a PATENT granted 12th July, 1842, to THOMAS DEAKIN, of Sheffield, in the county of York, merchant and manufacturer of hardware, for "*improvements in the manufacture of parts of harness and saddlery furniture.*"

THESE improvements relate to the manufacture of several parts of harness and saddlery furniture, which may or may not be combined with metallic substances, such as hooks, turrets, stands, loops, frontlets, rosettes, circles and guards for the back part of harness saddles, parts of ames, buckles, and other parts of saddlery; which are made by cutting a piece of horn of the required size and shape for the article intended, and boiling or softening the same, and then placing it between a pair of dies of the required form, and submitting the same to the action of a press, and afterwards finishing the same, by turning, filing, or scraping. The turrets may be made by uniting a metallic screw to that part where the reins pass through, and to the shank of the turret, by boring a hole, and then

inserting the screw, which, when submitted to the action of a press, unites them firmly together. Another method of making turrets is, by providing a metal skeleton, and covering the same with horn; or the same may be covered with whalebone, by lopping, in the same manner as in lopping the handles of whips.

SPECIFICATION enrolled 6th January, 1843, of a PATENT granted 6th July, 1842, to JOHN HARRISON SCOTT, of Somers Town, in the county of Middlesex, engineer, for "*certain improvements in metal pipes, and in the manufacture thereof.*"

THESE improvements in metal pipes consist in casting upon one end thereof a male screw, and at the opposite end a small projecting flange; and upon any part of the pipe, a nut, having a female screw of the same pitch as the male screw, and in such manner, that when taken from the sand the nut shall turn freely on the pipe, but will be prevented slipping off the same by the raised part, which forms the male screw at one end, and the projecting flange at the other. This is effected by preparing a pattern or mould of the same form as the external part of the nut, an impression of which will be made in the sand at the same time as the pipe is made; a core of loam or sand is then provided for the pipe in the usual way, and another for the nut, which latter has a hole through it, of the same diameter as the external diameter of the pipe; the external diameter of the core, which is equal to the internal diameter of the nut to be cast, has a screw formed upon it, of the same pitch as that formed on the end of the pipe, which screw forms the female screw of the nut; in placing

the core in the mould, the core for the nut is slipped upon that of the pipe, and the two cores are supported by templets in the usual manner, and the melted metal poured into the mould; it will therefore be seen, by those conversant with moulding, that the nut will be cast so as to work loosely upon the pipe. When it is required to join two or more of these pipes together, it is only necessary to place that end of the pipe having the small projecting flange, against that end of the other having the male screw; and by placing a leather washer between them, and then slipping the nut over the pipe, and screwing it upon the end, the ends of the two will be drawn together so as to form a perfect joint. Another mode is by casting the pipe first, and then casting a loose nut upon it.

With respect to wrought iron pipes, the mode pursued is as follows:—a nut being slipped upon the pipe, the end is made red hot, for the purpose of what is technically termed by smiths, "jumping," or forming a collar thereon, which is of such diameter, as to allow the screwed part of the nut to slip over it, in order to be screwed on to the end of the pipe to which it is to be connected, precisely in the same manner as the joints of pipes in fire engines are made.

The same method is adopted in leaden pipes, except that the collar may be formed by cold hammering.

The last improvement consists in making a joint in pipes, to allow of the expansion and contraction caused by variations in temperature. One of the pipes forming such joint is lapped with hemp or tow, and fits into a socket formed on the end of another pipe, made of three different diameters, the first of which is equal to the bore of the pipe, the second to the external diameter of the pipe, and the third somewhat larger, for the purpose of receiving

the packing of hemp or tow, which is forcibly compressed between two rings, and upon the pipe which fits into the socket, by means of a nut, as above described, somewhat similar to a stuffing box for a piston, the pipe sliding in and out of the socket, and through the packing, by expansion and contraction in the same manner.

The inventor claims, first, the mode of casting at one operation, metal pipes, with nuts loosely encircling the same, and inseparable from them; secondly, the mode of casting pipes within nuts or screws which have been previously cast, and joining such pipes together; thirdly, the mode of casting nuts upon pipes, which pipes have been previously cast; fourthly, the mode of raising flanges on the end of wrought iron and other soft metal pipes, after the nuts have been slipped thereon; fifthly, the mode of providing for the contraction and expansion, or lengthening of metal pipes, from variations of temperature.

SPECIFICATION enrolled 6th January, 1843, of a PATENT granted 6th July, 1842, to GEORGE EDWARD DONISTHORPE, of Bradford, in the county of York, for "*improvements in combing and drawing wool, and certain descriptions of hair.*"

THIS invention relates, first, to the construction of combs employed in machinery for combing wool and certain descriptions of hair, and consists in making such combs with teeth set at a coarser gauge at that end where the combs first commence to work the wool or hair, and of a finer gauge at the other end, at which the teeth are caused to penetrate the wool closer up to the head of the comb containing the wool, the working comb being set nearer

at one end than at the other to the comb containing the wool or hair to be combed.

The second improvement consists in combing working combs, with combs which move in a circular or endless course. Thirdly, in apparatus for filling combs with wool or hair. Fourthly, in applying steam or hot water to the heads of combs which are placed on revolving axes, where such combs have a movement to and from their axis of motion, in addition to their rotary motion. Fifthly, in the application of drawing off rollers.

The sixth and last improvement relates to using two or more rotary combs, with a moving endless comb.

This machine consists of a comb, which may be composed of a number of segments, so as to form a circular or endless comb, supported in a horizontal position by a suitable frame; the rim or circle which supports the teeth of the comb is made hollow, so as to admit of the circulation of hot water or steam. The periphery of this circular comb forms a continuous rack or wheel, into which gear the teeth of a pinion, which gives a slow rotary movement to the endless comb; on one side of this comb is a pair of fluted drawing rollers, each having an endless belt of woollen or felted cloth; the object of these rollers, which have a greater speed than the circular comb, is to draw the wool from the comb as it moves round, and form it into a sliver; on the opposite side, or thereabouts, of the drawing rollers, is fixed the delivering apparatus, consisting of two pair of rollers, through which the wool passes; the axes of the rollers are supported by means of two side plates, the ends of which are attached to an horizontal shaft, receiving, by means of a bevil wheel and sector, an alternate backward and forward motion, so as to move the delivery rollers through a portion of a circle, and thus produce a lashing motion, which lashes the wool upon the

circular comb. These rollers, besides having the motion described, have a continuous rotary motion for delivering the wool; and also a running back or retrogade motion, which takes place when the wool has been lashed on to the circular comb.

The construction of the combs alluded to in the fourth part of these improvements, is as follows: upon a hollow axis are keyed two wheels, having hollow arms, and also hollow rims or peripheries, supporting three hollow shafts, equidistant from each other, and parallel with the axes of the wheels which support them; these shafts are supported by suitable bearings formed in the peripheries of the wheels, and in such manner as to establish a communication for the circulation of steam or hot water, which passes through the axes of the wheels and into the arms thereof, and from thence through the peripheries to each of the three shafts, for the purpose of heating the combs which are attached to them. These shafts, together with the combs, besides having a motion round the axes of the wheels which carry them, turn upon their own axes, by means of eccentrics or tappets actuating the shafts upon which they are fixed, in such manner that the points of the combs when piercing the wool, are drawn towards the axis of rotation, or that of the wheels.

The last improvement shows the application of two or more rotary working combs, to the circular or endless comb.

The inventor claims, first, the mode of constructing working combs, with the teeth set coarser at one end than at the other; secondly, the combining rotary combs with a curved or endless comb, when such combs have movement towards their axes when revolving, and at the time of combing the wool; also the causing rotary combs to work nearer at one end than at the other to a circular comb

with which they are working, when the combs are filled by other means than by revolving combs; also the combing an endless comb with working combs, so that the swell or convexity of the comb produces an angular spuce between it and the working comb, whereby the wool or hair will be first combed at the ends, and progressively up to the head of the comb; thirdly, the mode of lashing and filling the comb, as described; fourthly, the application of steam or hot water to heat rotary combs, when such combs have a movement towards the axes of motion, as described; fifthly, the application of drawing rollers, for drawing off the wool from combs; sixthly, the combining two or more axes with fixed combs, with an endless moving comb, as described.

SPECIFICATION enrolled 6th January, 1843, of a PATENT granted 7th July, 1842, to JOHN BIRD, of Manchester, in the county of Lancaster, machinist, for "*certain improvements in machinery or apparatus for raising or forcing water and other fluids; which said improvements are also applicable as an engine, to be worked by steam, for propelling vessels, and other purposes.*"

THE first part of this invention relates to a machine or apparatus for raising and forcing water and other fluids; and consists of a horizontal cylinder, through which is passed a shaft supported in suitable bearings. This shaft, which is of peculiar external form, contains three sliding pistons, equidistant from each other, which fit and slide into recesses formed in the shaft, and are kept in close contact with the internal diameter of the cylinder, by

means of suitable springs. The induction pipe passes through the underside of the cylinder in a vertical direction; and at right angles to it (in a horizontal position), is the eduction pipe. In the inside of the cylinder, between the eduction and induction ports, and extending the whole length of the cylinder, is a projection, which also contains a sliding stop or piston, kept in contact with the periphery of the shaft by means of springs. This projection, which is bevilled off at each side, serves to force the three sliding pistons, as the shaft revolves, into their recesses. The action is as follows: motion being given to the shaft by means of a handle, one of the three pistons, in leaving the aforesaid projection, will be forced out of its recess by means of its springs, and will be in contact with the interior diameter of the cylinder; and in leaving the aforesaid projection, will form a partial vacuum; which space will be filled with water from the induction pipe, and the water will be carried forward by the succeeding piston, which in its rotation will also produce a similar effect; and in this manner the water is carried partially round the cylinder, and finally delivered through the eduction pipe.

Another modification of this engine is as follows: it consists of a cylinder with a shaft passing through it in the form of a double cam, extending across the cylinder, and touching each side. Below the cylinder is a recess, into which works a metal slide which is kept in contact with the cam or piston by means of springs placed within the recess. In the lower part of the cylinder are two apertures, one on each side of the metal slide, through which the water, or other fluid, is received and delivered by the rotary motion of the piston; the peculiar form of the piston (which has been stated to be like that of a cam), causes the metal slide to move into the recess at each

half-revolution of the shaft or piston, so as to allow the latter to pass, and also to form a stop between the eduction and induction pipes.

Another improvement is for the construction of a paddle-wheel, with floats to slide in and out of recesses by means of a piece of metal placed eccentric with the wheel; the object being to force each float into its recess before leaving the water.

The inventor, in describing a ship's pump constructed as above, proposes, in cases where the pump is considerably above the water-line, to let the water from such pump or pumps fall upon a water-wheel; and employ the power thus obtained to some useful purpose, such as assisting in the working of the pumps.

Improvements in valves.—This part of the invention consists in the application of a ball of cork, wood, or a hollow ball of copper, to be attached to a foot-valve to act as a float, and thereby assist in raising the same when required.

The last part of this invention relates to improvements in pistons, and certain novel methods of working the same. The pistons are made with two discs of metal, having a washer of cork between them, similar to the packing of an ordinary piston; the edge or rubbing surface of the cork is then bound round with a piece of sheet-brass; which latter is forced against the sides of the cylinder by the elasticity of the cork.

The peculiar mode of working pistons for raising or forcing water, and other purposes, is as follows: through the top part of a cylinder is a horizontal shaft, upon which and within the cylinder are two loose bosses, each having a stud which projects into a spiral slot formed in the shaft; the arrangement being such, that on giving a rotary motion to the shaft by a handle or winch, the two bosses

simultaneously approach and recede from each other; to each of these bosses is connected the end of a lever; these levers cross each other, and are connected together by a pin-joint; and at the extreme ends of these levers are two other levers, crossing each other and connected together by pin-joints; the whole consisting of a series of levers jointed together in the manner described, and finally to the piston, which cause the same, by the rotation of the shafts, to be raised and depressed in the cylinder. The water is admitted to the cylinder on the underside of the piston, by means of a pipe provided with a valve, which enters the cylinder at one side, and is delivered through a pipe at the other side.

Another mode of obtaining a rectilinear traverse motion of a piston or pistons is as follows: in this case, there are two pistons in the same cylinder, which is provided with eduction and induction passages at both ends. The piston rod forms a screw having several threads, and commencing from the middle, with right and left-hand threads; the pistons, which are connected together with rods, have each a pair of dies, corresponding with the threads formed on the piston rod. Suppose one pair of these dies to be in gear with the right-hand screw of the piston rod, and a rotary motion to be given to the same, the effect would be, that the pistons would move in one direction towards the end of the cylinder; and on arriving at that point, the dies which forced the pistons forward would be thrown out of gear, and the dies of the other piston thrown into gear with the left-hand screw, which would have the effect of forcing the pistons in an opposite direction, and so on alternately.

Another improvement consists in connecting the pistons of two cylinders together, by means of gearing; the cylinders are parallel to each other, and the piston rods are

made with spiral grooves or screws having several threads. These grooves receive a projecting pin or pins attached to the piston. On admitting steam into one of the cylinders, the piston is forced from one end of the cylinder to the other; by which means, a rotary motion is imparted to the piston rod, and also, by means of the spur wheels, to the piston rod of the other cylinder, thereby causing the piston in this cyliuder to traverse in a direction of its length; which latter cylinder is for the purpose of raising and forcing the water; the steam is then reversed in the steam cylinder, and the piston rods and pistons are driven in an opposite direction, and so on alternately.

The patentee claims, first, the construction and combination of revolving vanes or pistons, also the paddle-wheel; secondly, the arrangement of levers for working the pistons, together with the peculiar construction of the same; thirdly, the arrangement of parts for converting the rectilinear traverse of a piston into a rotary motion in the piston rod, also the application of the buoyant valve introduced at the foot valve.

SPECIFICATION enrolled 6th January, 1843, of a PATENT granted 9th July, 1842, to JOHN PETER BOOTH, of the county of Cork, merchant, for "*certain improvements in machinery and apparatus for working in mines, which are applicable to the raising, lowering, and transporting of heavy bodies, and also affording assistance in promoting a more perfect ventilation of the mine.*"

THE first of these improvements relates to a mode of arresting the descent of a car or box in a mine in the event

of the suspension rope or chain breaking. The box or car is guided in its ascent and descent in the mine by brackets or projections at the top and bottom of the car, which are made to clip or embrace a vertical square bar of iron fixed to the side of the mine, and extending from top to bottom thereof; that side of the square bar which is adjacent to the car forms a series of ratchet teeth. The top guides of the box carry the axis of a lever, having a short and long arm, which latter projects over the car and is held in an inclined position by means of a short chain, one end of which is attached to the said lever, and the other made fast to the suspension rope; another chain is also attached to the long arm of the lever which supports the platform within the car or box; by this arrangement, if the suspension rope should break, the inclined bar will be drawn down by the weight of the platform falling, and its opposite or short end raised and thus be brought in contact with the ratchet teeth, so as to arrest the progress of the falling body; for the purpose of ensuring a more instantaneous action of the lever, an auxiliary rope may be employed, which passes over the pulley at the top of the shaft in the same manner as the suspension rope, the former being attached to the short arm of the lever so as to raise and bring the same into action immediately the principal or suspension rope breaks. The top of the car or box is covered with a grate or bars of wrought iron, in order to prevent the rope from falling upon any person who might happen to be on the platform.

The second improvement relates to the application of a screw-shaft for raising the car or box in mines; this consists of a screw shaft, or a shaft having a number of consecutive inclined planes formed thereon extending the whole depth of the mine, and supported from the side by suitable brackets, a portion of the thread being cut away

in order to receive the same; to the side of the car or box are two anti-friction pullies which enter the space formed in the thread and rest upon the thread or inclined plane, or planes thereof, thus by giving motion to the screw by means of a bevil wheel keyed on the top, and also other suitable machinery, the rotary motion of the screw will cause the ascent or descent of the box as may be required; and by having two anti-friction rollers, one placed above the other, one will always be in contact or rest upon the inclined part of the screw, while the other is passing over the opening formed for the reception of the brackets. The anti-friction wheels of the car or box are kept in contact with the screw by means of a guide rod and guide pullies attached to the car.

The third improvement consists in the employment of the power derived from the revolving screw-shaft for the purpose of making a fan or air pump apparatus for injecting pure air into or abstracting foul air from mines during the operation of working, in order to assist the ventilation. The patentee claims, first, the apparatus for arresting the descent of the car or box in the event of the suspension chain or rope breaking; secondly, the employment of a screw-shaft or shafts for working the carriage or box, also the mode of enabling some of the rollers of the car to keep constantly in contact with the surface of the screw whilst others are passing over the open parts of the thread; and thirdly, the derivation of the power for working the ventilating apparatus from the rotary motion of the screw-shaft.

SPECIFICATION enrolled 6th January, 1843, of a PATENT granted 6th July, 1842, to JOSEPH HALL, of Cambridge, in the county of Cambridge, agricultural implement maker, for "*certain improvements in machinery for tilling land.*"

THE first part of these improvements relates to a crushing or delving machine, and consists of a frame supported by ordinary wheels; to each side of the frame is affixed what the patentee calls a "parellel motion and tilting frame;" these latter frames support two horizontal shafts or axles extending across the machine, and upon the first or foremost of these axles are keyed three wheels, to the peripheries of which are attached a number of delvers or crushers in such manner that they may have a little play endways, and also forwards and backwards, but not so as to turn over. These blades, delvers, or crushers, are also affixed in an inclined position with respect to the axis of the wheel, in such manner that they come in contact with the ground end foremost; the second or after axle contains two of these wheels keyed on the shaft in such a manner that they work between the spaces formed by the two outside and middle wheels of the fore axle; the parallel motion and tilting frames which support these axles are constructed of several parts, so that they may preserve their parallelism with respect to the line of motion, and also with respect to one another under every circumstance, and the frames, together with the wheels, are capable of being raised or lowered by means of a screw so as to regulate the depth to which the delvers and crushers shall penetrate the ground. This machine is drawn by a horse or other power, and the hind wheels being placed on the axle so as to enter the spaces of the other

three on the foremost axle, serve, besides crushing and breaking up the soil, to clear the three wheels of any earth or rubbish which may adhere thereto. Note.—This machine can, if required, be constructed with one set of delvers instead of two.

The inventor claims the connecting the axles of wheels carrying delvers or crushers with parallel motion, and tilting frames, together with the mode of elevating and depressing the same by means of a screw rod, whereby the depth to which the delvers are to penetrate the ground can be regulated.

The second part of the invention consists of an improved harrowing machine, the construction of which is similar to that before described, so far as regards the frame work and parallel motion and tilting frames, but with a single axle, which, instead of carrying the delvers and crushers, is armed with tines capable of being set to any angle required with respect to the ground.

Claim, is the harrowing machine, constructed on the same principle as the delving and crushing machine, and the application to such machine of a parallel motion and tilting frame.

The third part of the invention is for a rolling machine, which is constructed on the same principle as that last described, only that instead of tines, a plane roller is substituted.

Claim, the rolling machine, as being constructed on the same principle.

The fourth improvement consists of a double ploughing machine, of the same construction as that last described, but that the axle carries two ploughs instead of the roller, so that in ploughing, two furrows shall be made parallel to each other.

Claim, is for the ploughing machine, in which two or more ploughs are employed.

The fifth improvement relates to a harrow and dibbling machine, and consists in making the harrows circular instead of square, and inserting at equal distances in the periphery thereof a number of tines, so that the circular harrow only requires to be turned on its edge to convert it into a dibbling machine.

Claim, the harrowing and dibbling machine, so far as respects the combination of the two operations in one machine.

The sixth improvement is for an expanding spade, which consists of a handle of ordinary construction, having three prongs, spikes, or blades attached to the end thereof; the middle one is connected to the handle in the usual manner, the other two being connected to the middle one by means of levers or arms moving upon pin joints; to the ends of these spikes are other two levers, connected in like manner to the spikes and also to a hoop or ferule which slides upon the handle, and is provided with a set-screw for the purpose of affixing it to any part of the same; thus by sliding the hoop on the shaft of the spade, the two lateral spikes will be moved further from or nearer to the middle or centre one, as may be desired, still keeping parallel to each other.

The seventh improvement consists of an expanding rake, the construction of which is exactly similar to that of the expanding spade.

The eighth improvement is for a land crab or weed extractor, and consists of a handle similar to a common spade, provided at the end with two prongs, at the root of which there is a gripper in form of a $\overset{e}{\underset{i}{S}}$ attached to the instrument by a pin-joint passing through the middle of

the gripper, the top part of it, as at *e*, branches out in two parts, and to the lower part, as at *i*, is attached a slender rod which passes through loops formed on the under side of the handle of the instrument. The action of this instrument is as follows: when the weed has been uprooted by the two prongs of the fork, the slender rod is pulled up towards the handle of the instrument, which brings the end *e* of the forked gripper down upon the prongs and thus secures the weed.

Claim is, for the land crab or weed extractor, and the several parts of which the same is composed.

SPECIFICATION enrolled 7th January, 1843, of a PATENT granted 7th July, 1842, to WILLIAM FAIRBAIRN, of Manchester, in the county of Lancaster, engineer, for "*certain improvements in the construction of metal ships, boats, and other vessels; and in the preparation of metal plates to be used therein.*"

THESE improvements consist in preparing or rolling the iron intended to be used in the construction of ships and vessels, by forming at each edge, and the whole length of the plate, a raised border, or in other words, the plate is made at each side or edge where the rivets pass through, something like double the thickness of any other part of the plate; one side of the plate being plain, which is to be the outside in the construction of a vessel, the other side having two projecting edges or borders. The rivet-holes on the plain side of each plate are to be countersunk, so that the head of the rivet may be flat or flush with the face of the plate; and in joining two or more plates together, they are not to overlap each other, as hitherto practiced, but the plates are placed with their edges

together; and behind the two is placed a metal band, bar, or rib, perforated with a double row of holes, to correspond with the holes in the edge of each plate, and the whole are firmly rivetted together so as to form a water-tight joint; and where greater security or strength is required, the metal bands or bars are made in the form of a T, or with a projection on the back side; by this arrangement, the resistance of a vessel in the water will not be so great, and the plates at the parts where the rivets pass through will be equal in strength to any other part of the plate; whereas in those of ordinary construction, the plates are considerably weakened by making the rivet-holes, as such parts have always been found to give way when the plate itself has remained entire.

The Claim is for the construction of metal ships, boats, and other vessels, and the preparation of plates to be used therein, and the manner of uniting them by bands, bars, or ribs and rivets, as hereinbefore described.

SPECIFICATION enrolled 7th January, 1843, of a PATENT granted 7th July, 1842, to JAMES TIMMINS CHANCE, of Birmingham, in the county of Warwick, glass manufacturer, for "*improvements in the manufacture of glass.*" Being a communication.

THE object of this invention is to construct a kiln for flattening sheets or plates of glass which have been previously blown and formed into cylinders, and which are afterwards split or cut open and formed into plates; so that such plates after having left the flattening chamber, may not pass at once into a cold temperature and become stiff, but be subjected to a regular decrease or gradation

of cooling, and also that the sheets of glass may not be lifted up before they have become stiff and rigid; the plates being conveyed directly from the flattening chamber to the annealing oven. By this arrangement, also, the workmen may be successively employed in flattening sheets in the same kiln, and at the same time as the others are cooling.

The annealing and flattening chambers, as constructed according to this invention, consist of two circular buildings, having a communication from one to the other. In the centre of each building is a piece of masonry or brickwork, so as to form an annular space between the said brickwork and the external walls. Each of these annular spaces is provided with a cast-iron plate or frame, mounted upon wheels or castors; the inner edge of each of the frames forms an internal wheel, which takes into, and is driven by a pinion keyed upon a vertical shaft connected to suitable machinery for giving a rotary motion to the frames, one of which supports the "lagres" and flattening stones, which are eight in number, arranged round the face or upper surface of the circular or annular plate.

The plate in the next chamber, or annealing kiln, presents a surface of copper, or other metallic wires, stretched upon the frame so as to form radial lines, and upon which the plates of glass, after leaving the flattening kiln, are placed. The mode of operation is as follows:—each of the kilns is heated by a stove or grate; the cylinders of glass are inserted through a hole in the external wall, and deposited on one of the flattening stones; the frame is then moved round, so as to bring that flattening stone upon which the cylinder is placed opposite another hole, through which the flattener introduces suitable instruments for opening out the cylinder, in the ordinary man-

ner; after which the sheet of glass, together with the frame, moves on still further; the like operation being performed on the next succeeding stone, until it finally arrives at the aperture where the two buildings join together; at which time, the sheet or plate will have become sufficiently stiff and rigid to be removed from the flattening stone on to the wire frame of the annealing chamber. This part of the building is lighted with gas, so that the workman is enabled to conduct the operation of moving the glass from one table to the other, a small hole being made between the two buildings for that purpose. The flattening kiln is provided with another grate, having a fire, for the purpose of re-heating the flattening stone from which the plate has been removed previous to placing another cylinder on the same. The said sheets of glass will be carried upon the wires round the annealing chamber, until they arrive opposite a door or opening, where they are withdrawn in an annealed state: the whole operation being conducted without interrupting any part of the process.

Another modification of the above consists in connecting a long gallery, or annealing arch, with flattening and cooling chambers, which are built at one end of the arch, in which the plates of glass, which are piled up on suitable carriages, are drawn by means of a chain along the annealing arch.

The patentee claims the mode of constructing and arranging a flattening chamber, so that each sheet of glass may, without being lifted, be carried through a succession of temperatures, between the high temperature of the flattening chamber, and the temperature suitable for rendering such sheet of glass stiff and rigid; and in such manner, that the workmen may go on flattening several cylinders in the same furnace, during the interval occupied

in conveying each sheet of glass through a succession of temperatures; also the combining with a flattening kiln such an annealing kiln that the sheets or plates will not remain stationary during the annealing process; and lastly, the arranging of apparatus for conveying sheets of glass along an annealing kiln combined with a flattening kiln, so that the sheets may be kept isolated, thereby shortening the time occupied in annealing such plates.

SPECIFICATION enrolled 7th January, 1843, of a PATENT granted 7th July, 1842, to CHARLES AUGUSTUS PRELLER, of Eastcheap, in the city of London, merchant, for "*improvements in machinery for preparing, combing, and drawing wool, and goats' hair.*" Being a communication.

THIS invention relates to the preparing, combing, and drawing of wool, or hair of a short staple, and consists in submitting the same, after it has been washed with soap and water in the usual manner, to certain mechanical operations, in which heat or oil is not required to be employed during such process of preparing, combing, and drawing.

The first process to which the wool or hair is submitted, is that of being carded; this operation is performed by a machine, consisting of two carding cylinders, each about nineteen inches wide, the first being covered entirely with fillets, and the second with sheet cards, of about four inches wide, with about a quarter of an inch of space between each sheet; from this latter cylinder, there will be a series of films of wool or hair produced, which are to be doffed in the ordinary manner; the films or slivers

are, by means of suitable apparatus, wound very tightly round a large bobbin, on which they remain for twelve or fourteen days, which will have the effect of taking out the natural curl of the wool or hair, without the application of heat; and the wool or hair will then be ready for the subsequent operation of drawing and combing. The wool or hair, after the process of carding as above, is passed through the feed rollers of a combing machine, and is there acted upon by combs, fixed at intervals in the periphery of a large wheel or drum, the combs being fixed so as to form lines parallel with a tangent of the said drum, and at every revolution the combs come in contact with a cylinder having a slow rotary motion, and covered with wire cards; the fibres retained by these cards are stripped from the same, and again passed through the feed rollers, to be acted on by the combs. The arrangement of the card cylinder is such, that it gradually recedes from the combs as they (during the rotary motion of the comb cylinder) become filled with wool or hair; and when full, the machine stops, and the combs are emptied of the wool by means of hand combs, and the wool taken to the drawing apparatus.

This machine consists of an inclined endless chain of combs, placed back to back, with their teeth in a horizontal position, and a multiplicity of wheels for giving motion to the various parts of the apparatus. The endless chain of combs, after having been regularly and evenly filled by certain manipulations, motion is given or communicated to the machine, and the wool is drawn from the aforesaid combs by means of rollers, and afterwards passed along an endless cloth, at the end of which there is a large revolving drum, round which the fibres or slivers of wool or hair are wound; on the axis of this cylinder is a worm, taking into and driving a worm wheel, or count

Plate I.

Ja.s Crutchett's Imp.ts in the Manufacture of Gas.

Fig. 1.

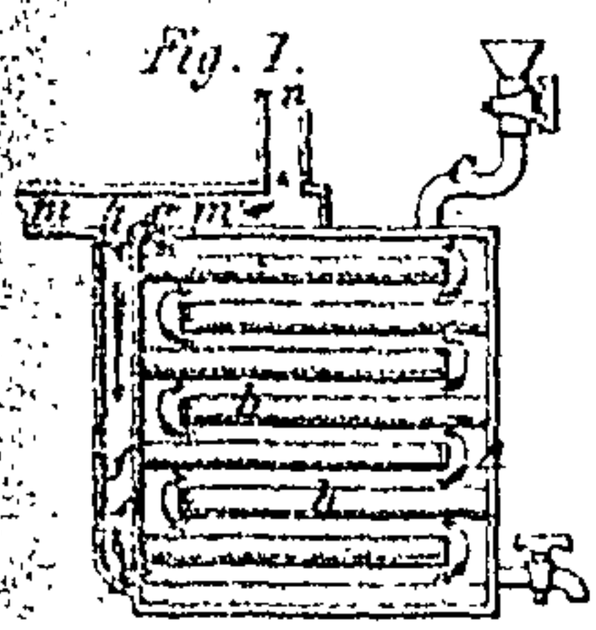
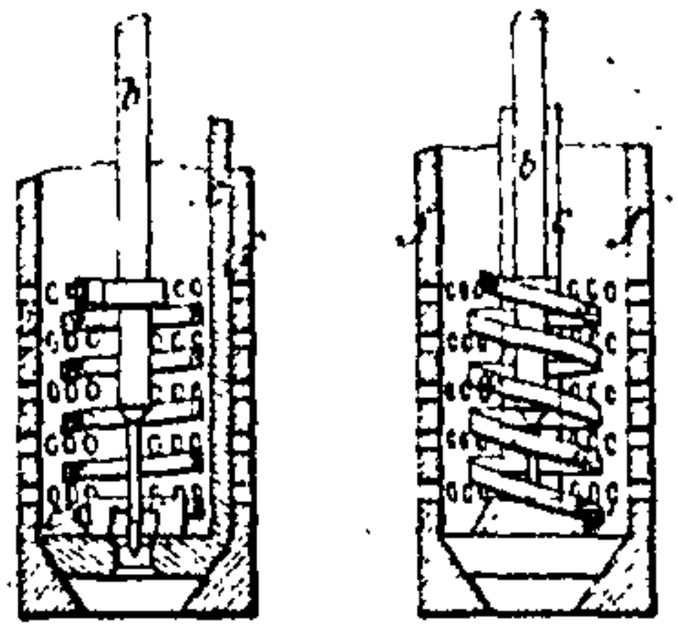


Fig. 2.

Fig. 3.

T. S. Clement's Imp.t in Thermometers.



Hodgson's Imp.ts in obtaining images.

Fig. 1.

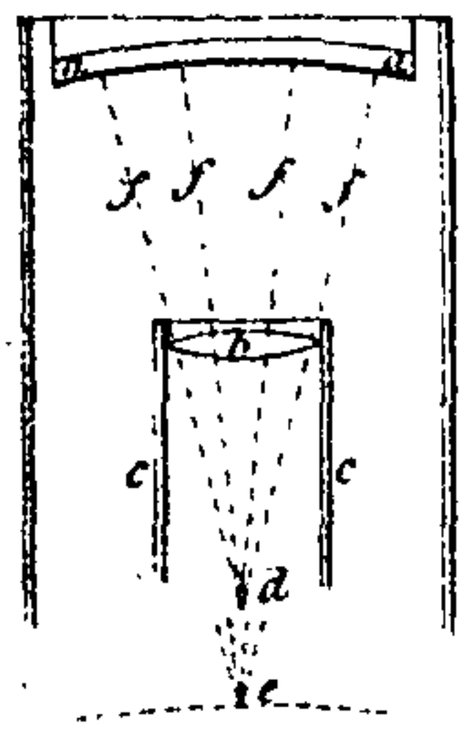


Fig. 2.

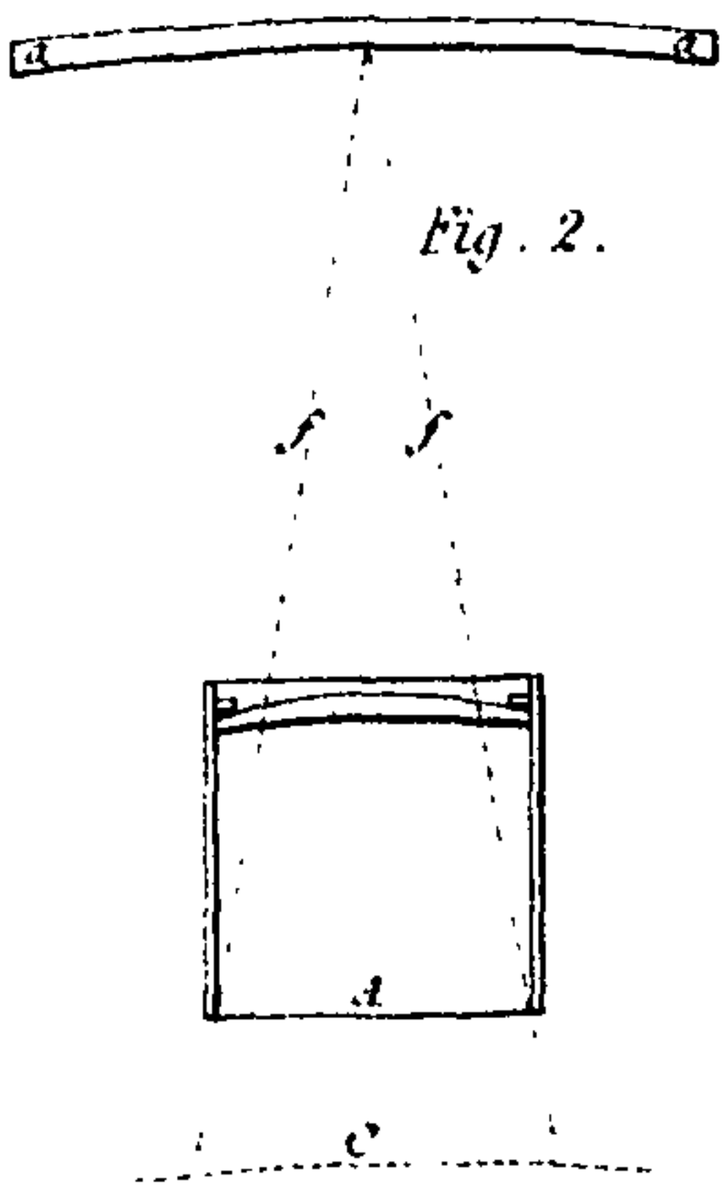
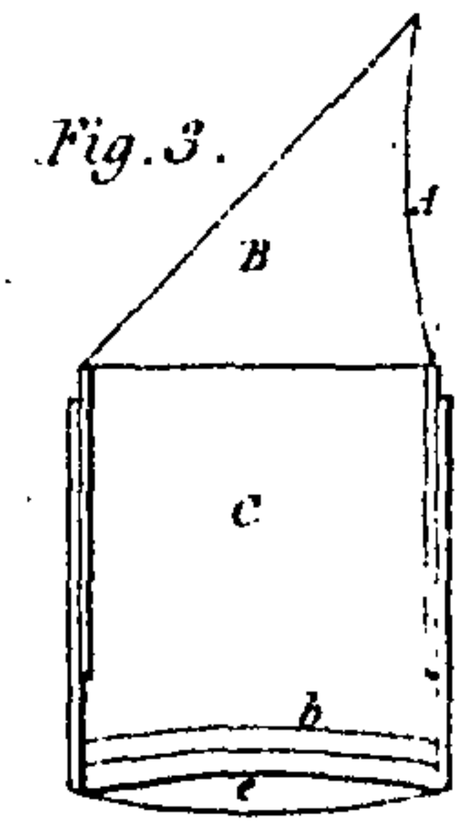


Fig. 3.



J. B. F. Jouannin's Imp.ts in regulating the speed of Engines.

Fig. 1.

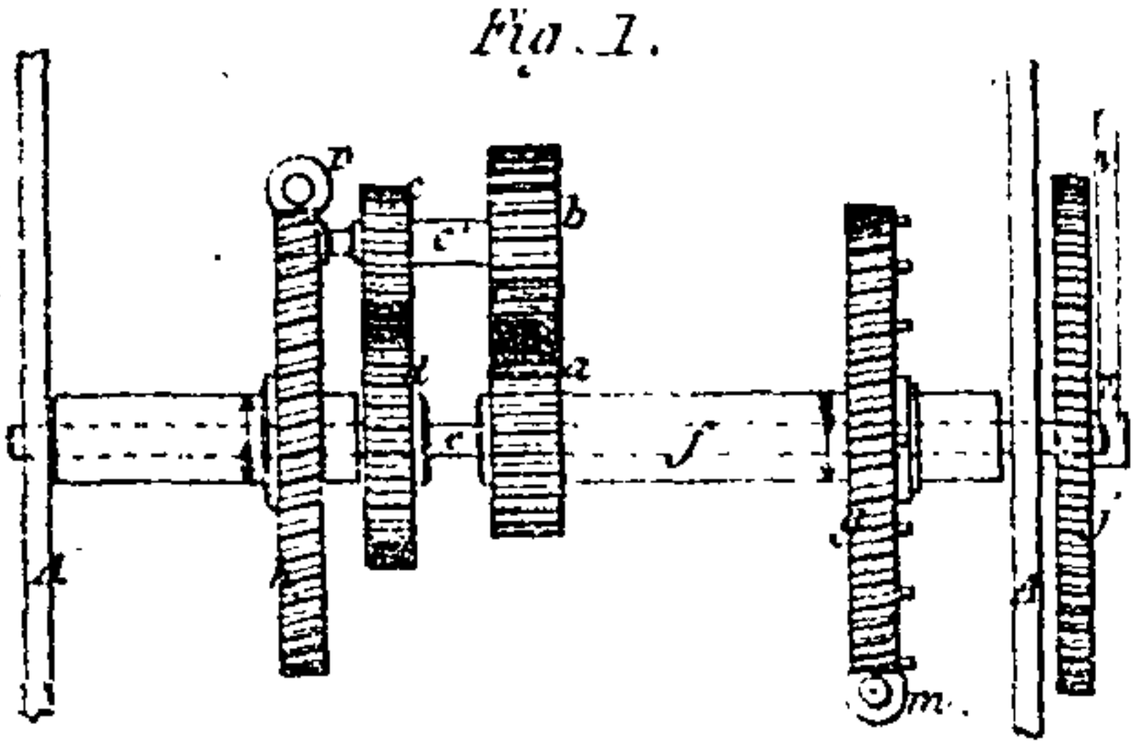
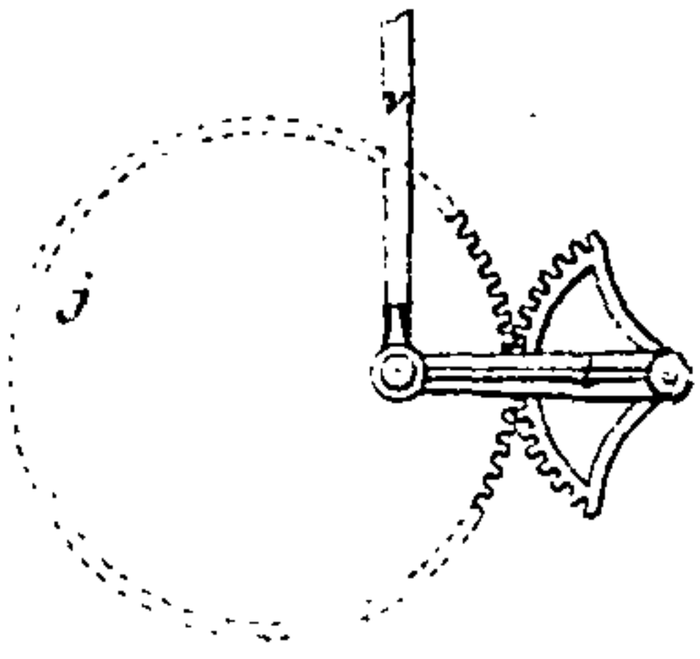


Fig. 2.



F Man. Rec.

wheel, which, when a certain quantity of wool has been wound on the drum, rings a bell; the sliver is then taken off, being ready for the subsequent operations of the various machines employed in the manufacture thereof.

The patentee claims, as his invention, the mode of arranging the combing operations of machinery, that slivers or rovings of wool or hair may be wound on bobbins, and there remain for several days, in order to remove the curl, and then to be combed out, and the successive layers to be acted on by a card; the wool or hair being afterwards drawn from the combs: also the arranging of combing machinery, that the combs may be filled with successive quantities of wool or hair, each quantity being operated on by a card surface, which recedes from the comb or combs as they gradually become filled.

SPECIFICATION enrolled 7th January, 1843, of a PATENT granted 7th July, 1842, to RICHARD HODGSON, of Montague Place, in the county of Middlesex, gentleman, for "*improvements in obtaining images on metallic and other surfaces.*" (With a Drawing.)

THE first part of these improvements relates, first, to those optical instruments, where images are obtained on surfaces by means of reflecting mirrors, and consists in causing images which are reflected to pass through a lens or lenses, which lens is interposed between the mirror and the receiving surface; and also in passing an image from a mirror through a tube, which is between the mirror and the receiving surface; and secondly, to improvements in refracting cameras, by applying lens or lenses.

In plate 7, fig. 1 is a camera box, 12 inches long, having a mirror *a*, ground with two different curvatures, the face

being 10 inches in radius, and the back or silvered surface 16 inches in radius; *b*, an achromatic lens of about 10 inches focus; *c*, a tube containing the lens; *d*, the point of focus; *e*, the point of focus of the mirror, without the correcting lens; *f*, *f*, *f*, *f*, the rays of the mirror. Supposing the object to be at an infinite distance, such as the sun, or a star, the rays of which are parallel before they become reflected, but converge afterwards to the point *e*, but by the interposition of an achromatic lens *b*, the rays *f*, *f*, *f*, *f*, converge to the focus on the point *b*, and in passing through the lens, not only is the spherical aberration corrected, but the chromatic is said to suffer a greater diminution.

Fig. 2 is intended to show a mirror in a similar box, and which is also of the same radius; in this case the object is supposed to be at a distance of about 8 or 10 feet; the lines *f*, *f*, are supposed to be the rays from the extreme points of the object, which, after reflection, would form a curved image of the object on the line *c*, but by the interposition of a correcting lens, which in this case is a meniscus of about 14 inches focus, the curvature of the rays is increased, and much of the spherical aberration is said to be done away with, the image being formed upon the line A. By the introduction of a correcting lens, the patentee states, that a mirror of any dimensions may be employed; whereas, in the present reflecting cameras the apertures are obliged to be diminished, by means of diaphragms, in order to cut off the aberration; besides several other advantages which are mentioned in the Specification; the object of the invention being principally in the introduction of a correcting lens or lenses, either simple or compound, between the mirror and the receiving surface, for the purpose of abating the chromatic and spherical errors, which lenses are to be inclosed in a tube capable

of sliding and adjusting as may be required, although the inventor does not confine himself to the use of a tube or tubes.

Fig. 3 is a tube for a refracting camera, consisting of a prism A and B of different glasses; the first, A, being a double convex lens of crown glass, forming, with the prism B, of flint glass, an achromatic object glass, the rays from which would form a focus of about 8 inches beyond them. The lenses *b* and *e* form a correcting lens; *b* is a concave convex flint glass, with its convex side towards the object; *e* is a double convex crown glass, of unequal radii, the lesser radius being towards the image; these correcting lenses of 12 inches focus, increasing the concentration of the rays, will form the image about 4 inches beyond it, increasing at the same time its intensity; *c* is a tube, which holds the prism, sliding within another tube, which latter holds the lenses, and enables the same to be adjusted according to the distance of the object. These improvements are stated to consist in the introduction of a prism, with curved surfaces, which prism may be either single or compound, with silvered or unsilvered surfaces; and also for the introduction of a lens or lenses, placed beyond the prism, to correct and gather the rays to a shorter focus.

The inventor claims the construction of an optical instrument, described, where images are obtained on surfaces by reflecting mirrors, in which the images reflected are caused to pass through a lens or lenses, interposed between the mirror and the receiving surface; and he also claims the passing of the image or images through a tube interposed between the said mirror and the receiving surface; and lastly, the mode of combining a prism of curved surfaces, with lens or lenses, in refracting cameras.

SPECIFICATION enrolled 7th January, 1843, of a PATENT granted 7th July, 1842, to WILLIAM REVELL VIGERS, of Russell-Square, in the county of Middlesex, for "*a mode of keeping the air in confined places in a pure or respirable state, to enable persons to remain or work under water, and in other places, without a constant supply of fresh atmospheric air.*" Being a communication.

THESE improvements in purifying or rendering the air in confined places, such as holds of ships, cellars, vaults, courts, theatres, diving apparatus, and so forth, respirable, consist in absorbing the carbonic acid gas, whereby such air has become more or less contaminated by the breathing of men or other animals, or burning of candles, lamps, fires, or blasting with gunpowder; and also in supplying to the air from which the carbonic acid gas has been absorbed, so much oxygen gas as may be requisite for replacing the oxygen which may have been abstracted during such breathing and burning. The absorption of carbonic acid gas from the air which may have become contaminated is effected by causing the air to pass through an alkali, rendered caustic by mixing it with quicklime, which has been recently burned, and mixing these substances with water. To restore in confined places oxygen to air which may have become deficient thereof, is effected by preparing oxygen gas by any of the well known means, and by forcibly compressing it in a vessel of iron or other suitable material provided with a stop-cock, so as to allow the gas to escape into such air; or the same may be effected by potash previously prepared in a state of peroxide of potassium, that is potassium charged with an additional portion of oxygen beyond what is contained in

caustic potash. Fragments of such potash, when put into water, will give out the said additional portion of oxygen. But the most important feature of the invention is the removal of carbonic acid gas from the air in confined places, and that alone will be capable of keeping the air in a respirable state. The manner in which this is effected is as follows:—in a room or other place where the air is impregnated with carbonic acid gas, is to be placed a bucket or pail containing the mixture of lime and potash, into which is made to dip the end of a pipe proceeding from a pair of bellows, which may be of any desired construction; by working the bellows, the air in the room will be brought in contact with, and forced through the mixture, and will rise in bubbles to the surface, and pass off into the room again in a pure state: the lime having, by its recent burning, been deprived of carbonic acid, has a strong tendency to absorb carbonic acid, and when the lime is mixed with the potash, the latter is absorbed by the lime and deprived of its carbonic acid and rendered caustic; and this mixture will have a strong tendency to absorb the carbonic acid from the air which is brought into contact with it. The inventor states that the proportion of the above mixture for each person in the room, (and the same quantity or thereabouts may be allowed for every lighted candle) is four oz. of potash, (or soda of good commercial strength will answer,) twenty oz. of newly burnt quicklime and twelve lbs. of fresh water, which, when mixed, will be in a milky or creamy state. The Specification is accompanied with three sheets of drawings, with a description of various modifications of apparatus for receiving or extracting the air from confined places, and forcing the same through a solution as above described, some of which are effected by a double pair of bellows similar to those employed in musical or-

gans and others, by a cylinder having a piston, which apparatus can be placed in any convenient part of a mine, with pipes leading to and from the several parts where the air is required to be purified; and in combination with such apparatus the mode, as described, of supplying oxygen may be employed, or a quantity of common atmospheric air may be forcibly compressed into a suitable vessel, and allowed to escape, as may be desired. The drawings also describe a diving bell somewhat of an elliptical form, and having a box or compartment at each end capable of withstanding a great pressure, into each of which is to be forcibly compressed common atmospheric air; above these compartments are two other boxes of smaller dimensions which may be filled in the same manner with oxygen: a small apparatus for absorbing the carbonic acid gas, having a pair of bellows worked by means of a spring or clock-work, may also be employed. The compartments, each of which is provided with a stop-cock, are to be filled with atmospheric air and oxygen, as described, previous to going down, and as the water, by the superincumbent weight, rises in the bell, the pressure inside the bell may be restored by opening one of the stop-cocks leading to the air chambers, and when a greater supply of oxygen is required, it will only be necessary to open one of the cocks leading to the chambers above, the carbonic acid gas being absorbed in the manner described; the bell is also provided with a stop-cock for letting out the air when required, which can be renewed by that contained in the air chambers.

The patentee claims, first, the mode of keeping the air in confined places in a pure and respirable state by causing the air to pass in currents through, and in contact with, caustic alkali and quicklime, or with quicklime alone without alkali, for the purpose of absorbing the

Plate 8.

Perring's Wood Paving

Fig 12.

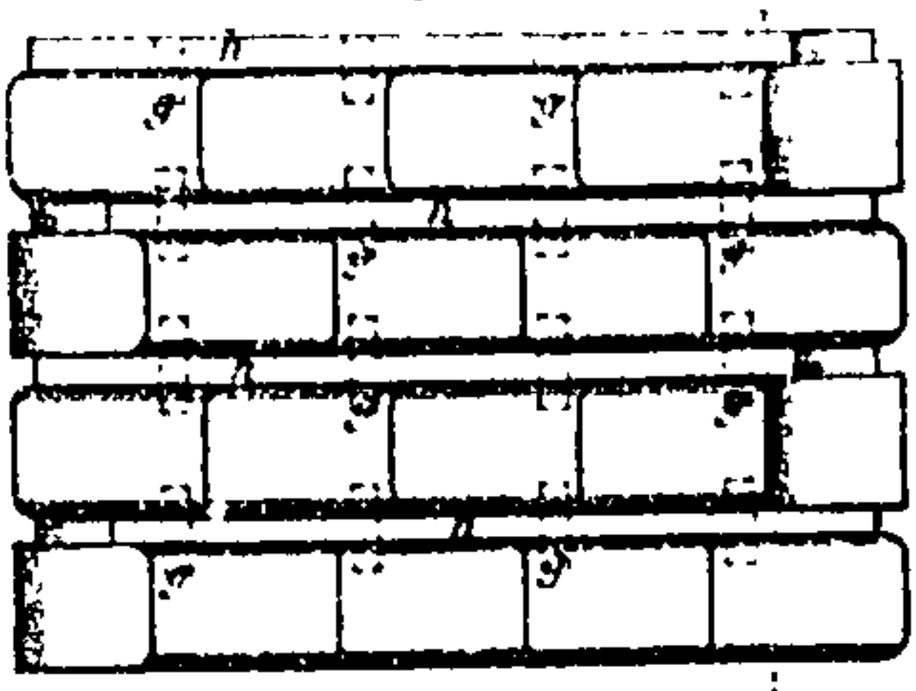


Fig. 13.

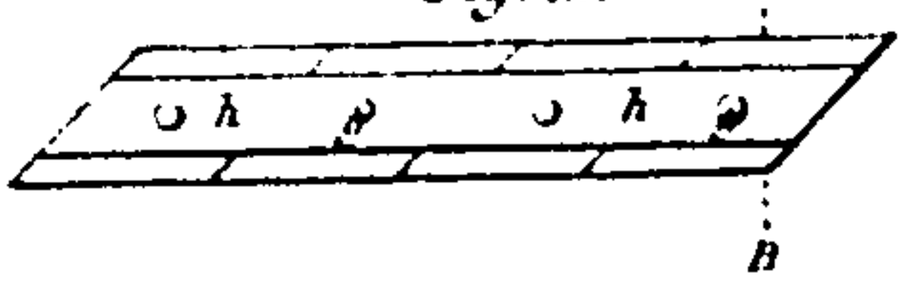


Fig. 1.

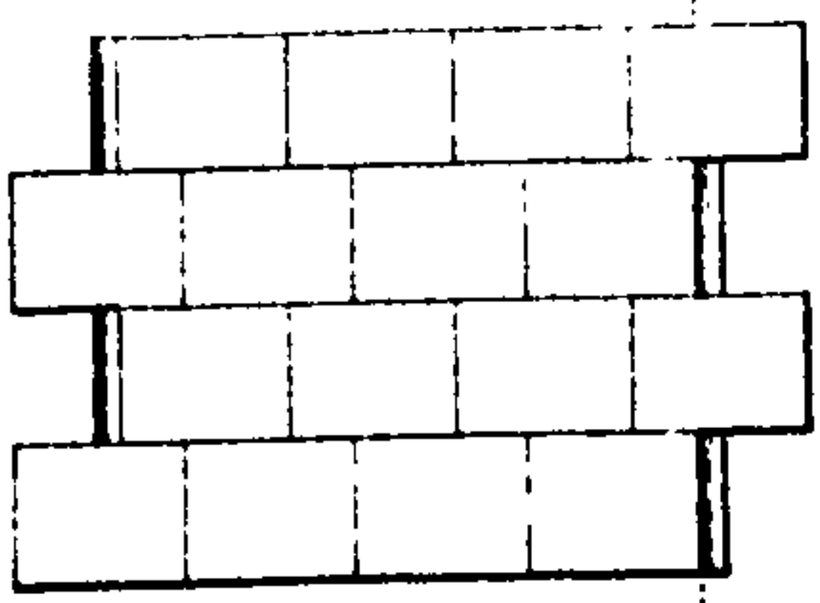


Fig. 3.

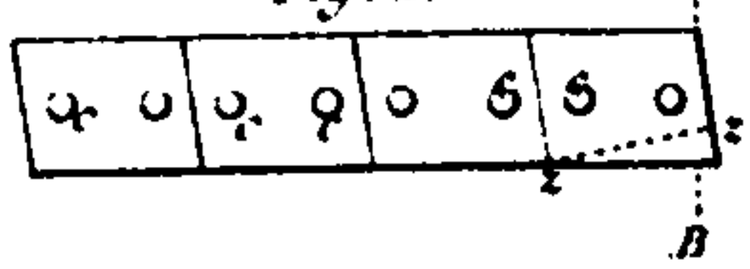


Fig. 5.

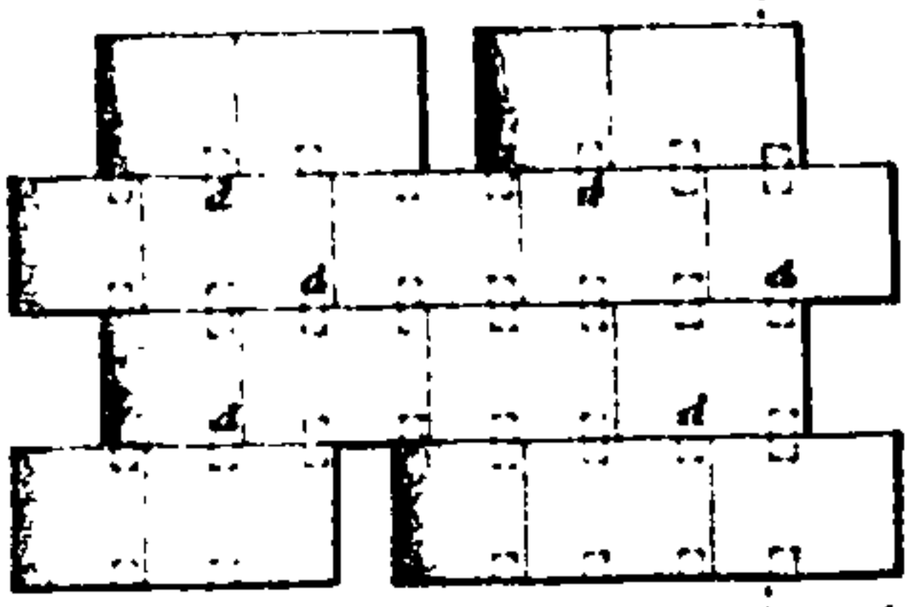


Fig. 6.

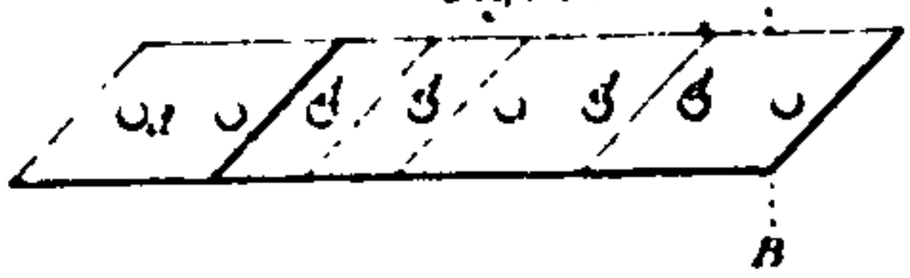


Fig. 8.

Fig. 7.

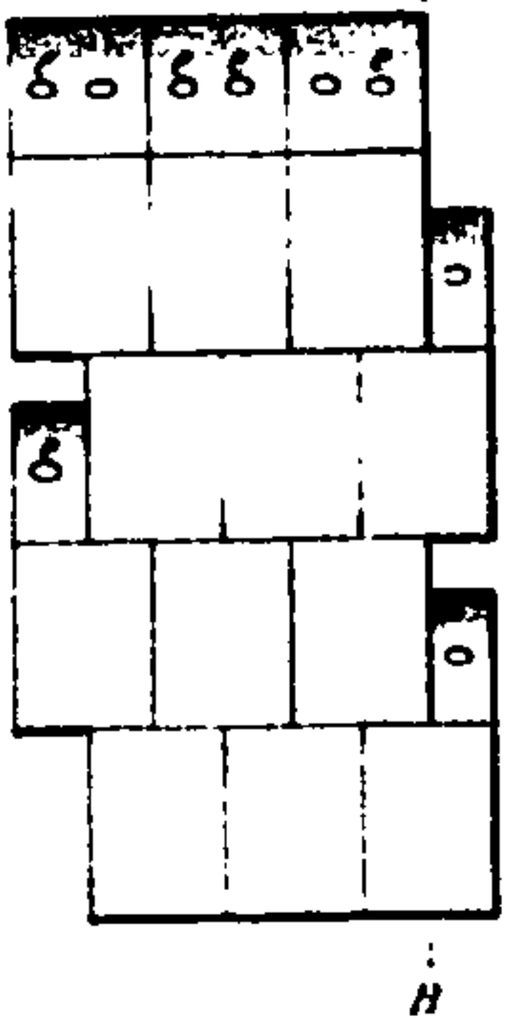


Fig. 2.

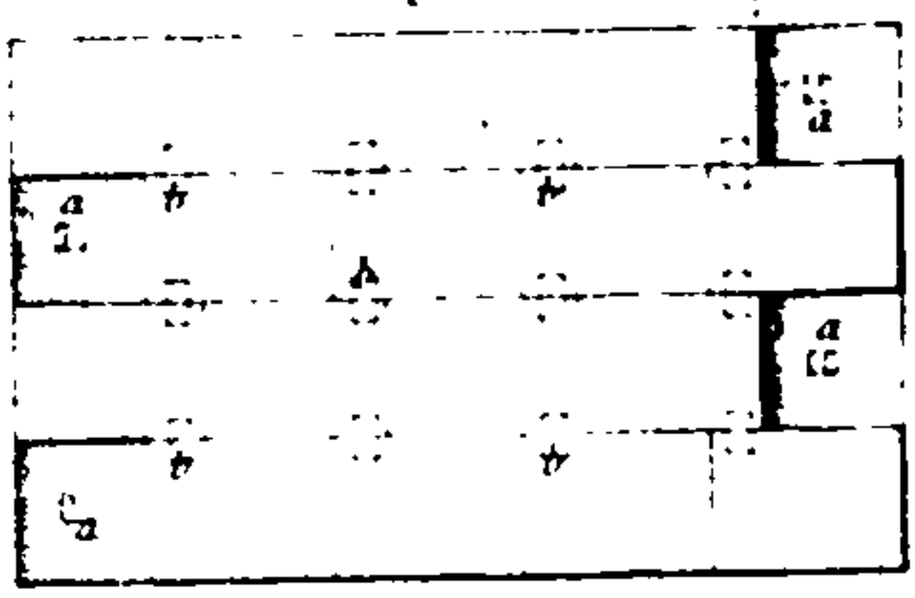


Fig. 11

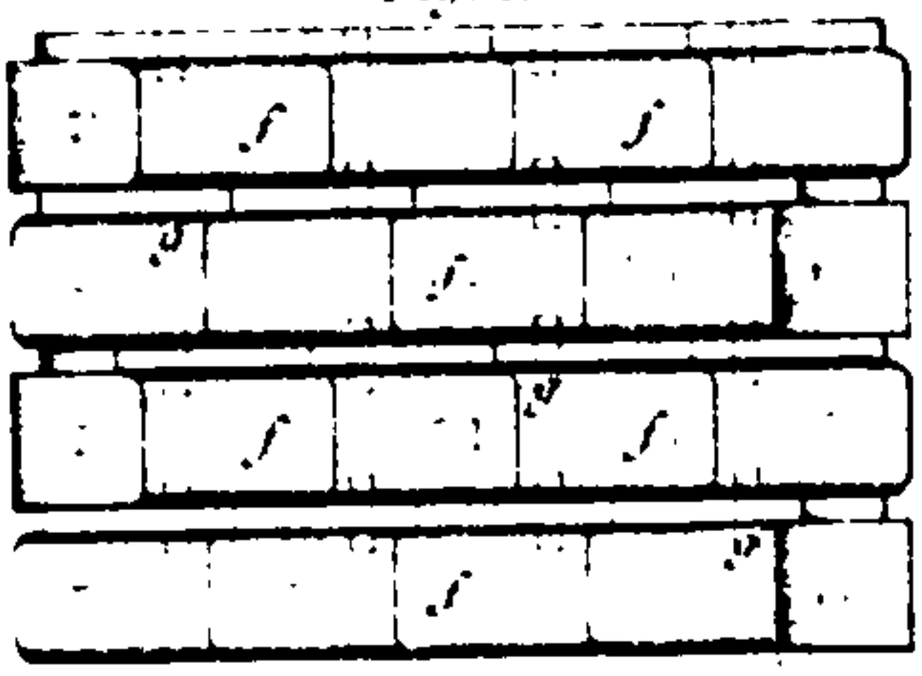


Fig. 4

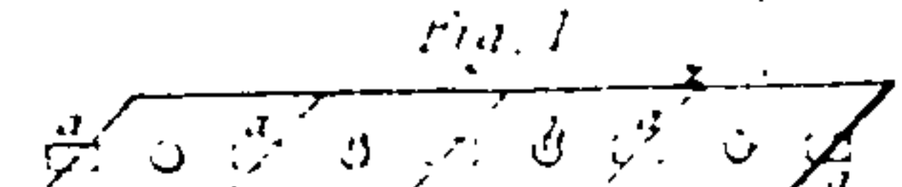


Fig 10.

Fig. 9

carbonic acid gas, in order to keep it in a respirable state; secondly, the mode of restoring to the air in confined places after such air has been freed from the contamination of carbonic acid gas, as much oxygen as may be deficient, by a suitable closed vessel, or by the means above described; thirdly, the mode of letting out into the air, in confined places, a copious influx of common atmospheric air from some suitable strong vessel, into which it has been previously forced or compressed by any of the means already known.

SPECIFICATION enrolled 7th January, 1843, of a PATENT granted 7th July, 1842, to JOHN PERRING, of Cecil House, Strand, hat manufacturer, for "*improvements in wood paving*."

1. In plate 8, fig. 1 is a side view or elevation of a course of four blocks, cut across the grain to a mitre or angle of 45°, with their surfaces.

2. These blocks I pin or peg together at the centres of their sloped sides as marked *a a*, and at the centres of their vertical sides as marked *b b*, by pegs or pins placed at the points of intersection of lines drawn diagonally across the sloped and vertical sides; and it is an essential feature of this part of my improvements in wood paving, that the blocks should be connected together by pegs or pins situate as nearly as possible at the centres of their sloped and vertical sides.

3. Fig. 2 is a plan of four courses of blocks, each alternate course inclining from channel to channel, or from one side of the road to the other in opposite directions, in

which the central connections are also shown by the dotted lines *a* and *b*.

4. By this arrangement, the joins or joints both at the upper and under surface of the blocks will be broken or bonded throughout in the direction of the line of traffic, and when one plane or surface becomes worn, the other may be brought into use. The surfaces may be grooved in any convenient manner.

5. When the blocks are to be laid upon a concrete or other artificial substratum in a place where the traffic is considerable, I make them six inches in depth, and the pins or pegs not less than one inch in diameter. The channel blocks, which are formed of two courses of blocks united as before described, should be one inch shallower than the blocks for the carriage-way.

6. Although any required area of carriage-way may be covered with blocks from channel to channel, and in the direction of the line of traffic, in a perfectly united mass, yet it is in most cases desirable for the greater facility of the laying down, removing, and replacing of the blocks, that they should be pinned or pegged together in slabs or masses, say of from sixteen to twenty-four blocks each. And in commencing to lay these slabs or masses down, the blocks must be cut off as in the line of A B, so as to abut firmly against the channels, and to agree with the curve of the carriage-way in the line of traffic.

7. It will be obvious that the blocks will be best united at their sloped sides first, and then, course by course, at their vertical sides.

8. I cut the blocks from squared timber, having the core as nearly as possible at the centre. Supposing the timber to be six inches square, I cut it at distances of six inches, measured perpendicularly between the planes of the sections, so that when the block is placed in its proper posi-

tion in the paving, the vertical depth of the block will be equal to the depth of the timber, as it lies horizontally prepared for cutting, that is, equal to the distance z z, measured at right angles to the sloped sides; my rule being, that the vertical depth of the block shall be equal to, or not less than the distance measured at z z.

9. If the blocks are cut of the dimensions, and at the angle above described, the pressure on the outer, or younger and weaker fibres, will be supported in a vertical line, by the central and stronger fibres of the wood; and a similar advantage will attend the use of timber cut at angles less than 45°, such as any angle between 40° and 45°, provided the same dimensions of block be used. And I consider the adoption of some angle between 40° and 45°, with the dimensions above mentioned, an important feature of my invention, as it enables me to use comparatively young or open grained timber, since, in blocks cut of the dimensions, and at the angles above mentioned, there will be no part of the more tender fibre which is unsupported, in a vertical line, by that which is harder.

I claim, as part of this invention, so far as the same is stated in the above paragraphs, firstly, the improvement in wood paving, whereby the blocks are cut and placed so that the central or stronger fibres shall always assist in supporting the external or weaker fibres; whereby also the blocks are arranged so as to break joint, and be bonded together continuously throughout, at both surfaces; and whereby also the blocks are pegged together at the centres of both their vertical and sloped sides. And I claim, secondly, as of my invention, the improvements in wood paving, whereby the blocks are pinned or pegged together, by pins or pegs at the centres both of their sloped and vertical sides, in the manner described, at whatever angle the block may be cut.

10. Fig. 3 is a side view or elevation of a course of four blocks, cut across the grain at an angle of 80° with their surfaces. Fig. 4 is a plan of four courses of such blocks, each alternate course inclining from channel to channel, or from one side of the road to the other, in opposite directions. These blocks are pinned or pegged together in a central line, intermediate between the two surfaces, at their vertical sides only, by pins or pegs marked *c c*.

11. The observations in the paragraphs marked 4, 5, 6, and 8, as applicable to figs. 1 and 2, are also applicable to figs. 3 and 4.

12. In wood paving constructed of blocks cut at the angle of 80°, the principle before adverted to, of having the external or weaker fibres supported by the central or stronger fibres, does not exist in the same manner as in blocks cut at angles of from 40° to 45°, since the fibres of the blocks cut at an angle of 80° will deviate only 10° from the vertical; and, consequently, it is necessary to use older and closer grained wood, or timber of such a size that the blocks cut from it shall have their fibres of, as nearly as possible, uniform strength throughout. If the wood be of the best quality, as to fibre, I prefer cutting the timber at an angle of 80°; but if the timber be not of the best quality, a somewhat smaller angle may be adopted with advantage: the angles may range from 75° to 80°.

I claim, as my invention, so far as the same is stated in the above paragraphs 10, 11, and 12, firstly, the improvement in wood paving whereby blocks cut at angles varying from 75° to 80° are united together by pegs at their vertical sides, as above described; and secondly, the improvement in wood paving by the use of two pegs on the central line, as above described, of the vertical sides, whatever the angle of the blocks.

13. Fig. 5 is a modification, in which the blocks incline in the same direction from side to side of the carriage-way. The joins or joints are broken or bonded alike throughout, at both surfaces, and the blocks are connected together in a central line, intermediate to the two surfaces, at their vertical sides only, by pins or pegs marked *d d*. Fig. 6 is an elevation of four of these blocks.

14. Fig. 7 is a modification, in which the blocks incline in the same direction lengthwise of the carriage-way. The joins or joints in this modification are broken or bonded throughout at both surfaces. But the blocks are connected together, in a central line, intermediate to the two surfaces, at their sloped sides only, by pins or pegs marked *e e*. Fig. 8 is an elevation of four of these blocks.

15. In the modification, fig. 5, where the pavement is laid down in slabs or masses, I prefer that they should be occasionally keyed at the sides, by the intersection of projecting blocks with the adjoining slabs or masses, so that they may be kept steady in their places. And in the modification, fig. 7, it will be advisable, when laid in slabs or masses, so to let them intersect each other, that the joins or joints of the slabs or masses may also be broken from side to side of the carriage-way.

16. A peculiar advantage of these two modifications, as shown in figs. 5, 6, 7, and 8, consists in the facility with which any number of slabs or masses may be removed and replaced.

17. The observations in the paragraphs numbered 4, 5, 6, 7, and 8, as applicable to figs. 1 and 2, are also generally applicable to figs. 5, 6, 7, and 8.

I claim, as of my invention, so far as the same is stated in paragraphs 14, 15, 16, and 17, the improvements in

wood paving, consisting in the modifications of arrangements and connection therein described.

18. Fig. 9 is a side view or elevation of a course of four blocks, having slips of wood attached to them of about one inch in thickness, and coming to within about one inch of the upper and lower surfaces of the blocks, either of which surfaces may be placed upwards. Fig. 10 is an end view of a block having such a slip of wood attached, and fig. 11 is a plan in which sixteen blocks are united by pegs *f* on the sloped sides, and by pegs *g* on the vertical sides, and having such slips of wood arranged between the courses, and in a direction transverse to the line of traffic. Slips of wood may also be fixed by similar means to the sloped sides of the blocks, although not shown in the Drawing.

19. These slips of wood are for the purpose of separating the blocks, so that a sure foot-hold may be afforded to horses and other animals without reducing the substance of the blocks. It is desirable that in these slips the fibre or grain of wood should run horizontally: and it will be generally found that they can be made from the comparatively waste material formed in squaring the wood in the manufacture of the blocks, by which a considerable saving can be effected in the cost of the wood pavement.

20. Fig. 12 is a plan of four courses of blocks, connected together at their vertical sides by pins or pegs marked *g*, and held together in a transverse direction by the slips of wood marked *h*, which slips of wood, instead of being separated at the sloped line of junction between each block, run the full length of the course of blocks. Fig. 13 is a side view or elevation of four blocks thus connected. I prefer having the holes in the slips of wood for this purpose as much larger than the circumference

of the pins or pegs, as will admit of a little play, so that each mass or slab may take the required curve across the carriage-way.

21. The slips of wood on the outer sides of each mass or slab may be of half the thickness of those at the inner sides of the blocks; but if used as laid down in the Drawing, the blocks at the side not connected by a slip of wood may be held together by iron cramps.

22. The observations contained in the paragraphs numbered 4, 5, 6, 7, and 8, as applicable to figs. 1 and 2, are generally applicable to figs. 9, 10, 11, 12, and 13.

23. But I must here remark, that where the wood paving is to be laid on an inclined plane, I prefer increasing the number of interstices formed from channel to channel, by the application of slips of wood in the manner already described, reducing thereby the thickness of the block in the direction of the line of traffic, and thus still further securing the foot-hold.

24. It will be obvious that other elastic substances besides wood may be used between the blocks, but I believe that none will be found so economical as wood.

I claim as my invention, so far as the same is stated in paragraphs 18, 19, 20, 21, 22, 23, and 24, the improvement in wood paving by the use of slips of wood, or other elastic substances, between blocks of whatever shape, for the purpose of affording a secure foot-hold.

In witness, &c.

JOHN PERRING.

SPECIFICATION enrolled 9th January, 1843, of a PATENT granted 9th July, 1842, to JEAN BAPTISTE FRANÇOIS JOUANNIN, of Upper Ebury Street, Pimlico, in the county of Middlesex, mechanic, for "*certain improvements in apparatus for regulating the speed of steam, air, or water engines.*" (With a Drawing.)

THIS apparatus for regulating steam, air, or water engines, consists of a machine composed of clock work, and also of certain combinations of wheel work, which the inventor calls differential gearing; this gearing is placed between the clock and the engine to be regulated; and in order to effect the above, the axle, upon which the differential wheels work, is caused to move in one way or the other with a certain speed, when the movement is produced by one power alone, but with double the speed when another power is added to that already in action, provided both powers are acting the same way; but if those powers are made to act with the same power in an opposite direction the axle will remain stationary; again, if the speed of the two forces should not be equal, the axle will have such an amount of motion as will correspond to the difference between the two speeds. The following is a description of the differential wheels: in plate 8, fig. 1, A A represents a portion of the two sides of an ordinary going clock, the works of which are below the axle *e*; *a* is a wheel gearing into the wheel *b*, which has fifteen teeth; *c* is a wheel having ten teeth, and is in gear with the wheel *d*, which has twenty teeth; the wheels *c* and *b* are each fixed on a hollow axle *c'*, which turns loosely on a pin or stud fixed to the worm wheel *h*, which worm wheel is keyed on the end of a hollow axle turning loosely upon the common axle *e*, as will be seen by the dotted lines; *g* is also a worm wheel keyed on the

hollow axle *f*, which also turns loosely upon the axle *e*. Suppose the wheel *g* as a first mover to make one revolution, and that the wheel *h* remains stationary, the wheel *a*, which is mounted upon the same axle as the wheel *g*, will also make one revolution, and the same amount of motion will also be given to the wheels *b* and *c*; this latter wheel gears into the wheel *d* fixed on the common axle *e*, which will cause such wheel and axle to make half a revolution; again, suppose the first mover *g* to remain stationary, and the wheel *h* to be in motion, such wheel will carry round with it the two wheels *c* and *b*, which are connected together, thus making an orbicular motion round the wheels *a* and *d*, therefore, as the wheel *b* is of the same diameter as the wheel *a*, and the wheel *c* must revolve with the wheel *b*, the wheel *d*, which gears into the wheel *c*, will make for every rotation of the wheel *c* one-half revolution, as also the axle *e*, as in the former case; it will therefore be seen by those conversant with mechanics, that if the wheels *g* and *h* revolve together and with the same speed, that the wheel *d* and axle *e* will remain stationary; but the instant there is any increase or decrease in the velocity of either, then a certain amount of motion will be given to the wheel *d* and axle *e*. The wheels *g* and *h* have been considered as first movers, but in reality they are not, as the one is connected with the engine, and the other with the clock work. We have also considered the Drawing as being an elevation, but will now suppose it to be a plan of the differential wheel and clock work: *m* is a screw with two threads, and fixed on to a vertical shaft and taking into the wheel *g*, which shaft and worm are actuated by the engine, so as to produce 150 revolutions of the wheel *g* per hour in the direction of the arrow; *p* is also a screw which takes into the wheel *h*, and is fixed on a vertical shaft, the threads of the screw being so much inclined as to allow of the shaft being

driven by the weel *g*; on the top of the shaft there is an escapement, actuated by a pendulum, connected with the pendulum of the clock, and which consequently partakes of the same movements or vibrations; these, in this case, are 4,500 beats per hour, and these vibrations allow the wheel *h* to make 150 revolutions per hour; therefore, if the wheel *g* is turned by the engine at the rate of 150 revolutions per hour, and the wheel *h*, which is connected with the clock, makes 150 revolutions in the same time, there will be no motion imparted to the wheel *d* or axle *e*, but, if from any increase or decrease in the pressure of steam, or from any other cause, the speed of the engine should be greater or less, the same alteration will take place in the wheel *g*, and motion will be given to the axle *e*; and the same will be imparted to the throttle valve in the following manner: *j* is a wheel keyed on the end of the common axle *e*, and geared into a segment wheel, as will be seen in fig. 2; on the axis of the segment wheel is an arm *t*, to the end of which is attached by a pin-joint the rod *v*, which rod is connected to the throttle valve in the ordinary manner.

Claim.—The differential wheel work, as described, for regulating the speed of any motive power, or when such wheel work is acted upon by two powers.

SPECIFICATION enrolled 12th January, 1843, of a PATENT granted 12th July, 1842, to WILLIAM HENRY STUCKEY, of Saint Petersburgh, but now of Upper North Place, in the county of Middlesex, esquire, for "*a pneumatic engine, for producing motive power.*"

THIS machine or apparatus consists of a wheel having four hollow or tubular arms affixed to a horizontal axis; this

axis consists of a cylinder having a division in the middle, and provided with two pistons, the rods of which work through stuffing boxes at each end of the double cylinder or axis of the wheel. The outer end of each of the tubular arms also terminates in a cylinder, each of which (they being four in number) is provided with a piston; these cylinders, it will be observed, are open at one end to the atmosphere, and at the other end to the tubular arm; to the ends of each of the piston rods, which pass through guides, is attached, by a pin-joint, the short arm of a bent lever, and to the long arm of each of the levers is attached a weight. These weights and levers are connected together, by two cords passing over certain pullies and extending across the wheel, so as to connect the lever of each piston on one side of the wheel with that of the other; the arrangement being such that when one of the four pistons is forced outwards, the weight and end of the lever of that piston will be forced inwards towards the centre of the wheel, the lever and weight on the opposite side of the wheel being forced outwards, or in a direction from the centre of the wheel.

In preparing this engine for action, the wheel is to be turned so as to bring two of its arms in a vertical position, and as much mercury poured into that cylinder which is on the top side of the wheel (the piston being previously removed) as will fill that arm, from the part where it joins the axis or horizontal cylinder up to the bottom of the other (the outer) cylinder, which mercury will force the piston in the horizontal cylinder to the extreme of its range; the piston of the top cylinder is then replaced, and the wheel turned round so as to bring the next arm in a vertical position, which, it should be observed, communicates with the other horizontal cylinder forming the axis; during such motion of the wheel, the mercury will have

passed into the other arm, and by its pressure forced out the piston and altered the position of the weights, as described, and also formed a vacuum in one part of the horizontal cylinder, viz., between the piston and that part which divides the cylinder; the next arm is then filled in like manner, and the same result obtained. It should be observed that each of the arms is provided with a cock, the action of which will be described hereafter. The patentee, after describing the apparatus, adds, that it will be understood, from what has been stated, that when any two of the tubes are in a vertical position, and the mercury or other suitable fluid has descended to the bottom of the lower tube, its pressure on the piston of the outer cylinder will cause the weight connected with that piston to turn inwards towards the centre of the wheel, by which movement a strain is exerted on the cord, which throws up the top weight and causes it to force down the piston of the top cylinder on the surface of the mercury or other fluid in the upper tube, whereby any excess of pressure at the bottom of the lower tube is transferred to the top piston, where it acts in aid of the atmospheric pressure on the vacuum obtained, as described. The four cocks have regulating rods connected to them, so that as each tube or arm comes into a vertical position the cock is opened, but as the arm moves to a horizontal position the cock is closed, so that the mercury always keeps its proper position in the tubes or cylinders, and is acted on by a pressure of the atmosphere, at that point only where such pressure can be of service. The power of this engine is stated to be in proportion to the vacuum produced, and to the altitude of the column of mercury employed. The inventor states that the inner cylinder may be dispensed with, the tubes being made to communicate directly with each other, in which case ec-

centrics should be used, to turn the weights to the extent of about half a circle.

The patentee claims, the producing of motive power by an engine, as described, however such engine may be varied in its constructive details, as long as the same general system of action is followed, and the same elements are employed to produce it.

SPECIFICATION enrolled 12th January, 1843, of a PATENT granted 12th July, 1842, to JEAN LEANDER CLEMENTS, of Saint Martin's Lane, in the county of Middlesex, engineer, for "*improvements in apparatus for ascertaining the temperature of fluids, and also the pressure of steam.*" (With a Drawing.)

THIS invention relates to the constructing of a thermometrical apparatus, by causing a compound bar of two materials to be fixed at one end to a vertical spindle or shaft, round which the bar is made to coil, and fixed at the other end to a fixed point; and secondly, to an apparatus for ascertaining or indicating the temperature of the water in which a ship or other vessel is sailing, by causing a compound bar to be subjected to the action of the temperature of the water, which compound bar gives motion to an axis or rod passing into the ship or vessel, and also to an arrangement of mechanism for indicating or pointing out, on a suitable graduated scale, the varying temperatures by means of which persons on board a ship or vessel may be enabled to ascertain whether the vessel is passing from deep to shallow water, or *vice versâ*, or the approach of ice, by the degrees of temperature indicated by the thermometer. In plate 8, *a* is the compound bar of silver and platina,

soldered together, and in the form of a coil, the silver being inside and the platina outside. The bottom end of this compound bar is screwed to a fixed point *c'* of the bar or foot step *c*, the other end being fixed in like manner to the axis or rod *b*, which rod can be extended to any length required, so as to reach upon deck, and for the sake of greater security, is inclosed in a tube *f*, the bottom end of which, together with the coiled bar, pass through the ship's bottom in such manner that the bar may be immersed in the water. There are brackets or bearings which project from the rod *c*, for the purpose of supporting the rod or axis *b*.

The action of this apparatus, and its application to steam boilers for ascertaining the temperature of the steam within the boiler, will be readily understood by the following description: to the top of the axis or rod *b* is connected a train of wheel work, inclosed in a box, which gives motion to index hands moving over a graduated index plate; thus, upon any variation of temperature, the coil, by its contraction and expansion, will give motion to the axis or rod *b*, which motion is, with the greatest precision, indicated by the hand or hands on the dial plate.

The inventor claims, the mode of constructing a thermometrical apparatus, by means of a coiled bar, which is made to give motion to an axis or rod turning in bearings; secondly, the mode of constructing such apparatus for ascertaining the temperature of water in which ships or vessels are moving, by means of a compound bar below the surface of the water, which bar is to give motion to an axis, which axis points out the temperature of the water acting upon the compound bar.

SPECIFICATION enrolled 12th January, 1843, of a PATENT granted 12th July, 1842, to JAMES CRUTCHETT, of William Street, Regent's Park, in the county of Middlesex, engineer, for "*improvements in manufacturing gas, and an apparatus for consuming gas.*" (With a Drawing.)

THESE improvements in manufacturing gas consist in mixing with coal, oil, or other gas, certain proportions of atmospheric air, oxygen, or of oxygen and atmospheric air, in order to cause more perfect combustion, and also for introducing, as an additional element, vapours of naphtha or other volatile hydro-carbon, so as to form a triple combustion. The patentee states that he has used with advantage as much as 25 per cent. of atmospheric air with coal gas, but from 5 to 15 is preferable, and with oil gas, various proportions, up to 80 per cent., according to the quantity of gas required.

In order to mix atmospheric air with gas, the patentee employs a meter of ordinary construction, except that the meter is constructed with two compartments, and the shaft or axis of the drum is elongated; upon this elongated part is fixed another drum, similar to that for measuring gas, the size of which must be regulated according to the quantity of air intended to be admitted for the purpose of mixing with the gas; it will be evident that a station meter of this construction could be erected at the gas works, or the meters of the consumers might be constructed on the same principle. When the combination of air with volatile naphtha is to be introduced, the inlet pipe of the gas meter, or that pipe which previously admitted the atmospheric air, is connected with an apparatus shown at fig. 1, plate 8; A A is a rectangular air-tight box having a number of trays *b b*; these trays, and also the bottom

of the box, are filled with naphtha by means of a pipe *c*; the cock *d* is intended to carry off the overflow; *f* is a pipe attached to the case A A, which enters or communicates with the bottom thereof; at *g*, *i* is a valve which, when in a horizontal position, closes the openings *k l*, and when in a vertical position, opens the passages *k l*, but closes the passage *m m'*, so as to stop all communication; but through the rectangular box, as will be seen by the direction of the arrows, the pipe *n*, which is a continuation of the pipe *m m'*, to be connected with that pipe of a meter which admitted atmospheric air. Suppose the valve *i* to be in a vertical position the atmosperic air will pass down the pipe *f* through the opening *g* and over the trays containing the naphtha, and will pass through the pipe *m' n* to the meter impregnated with the vapours from the naphtha, which admixture can be regulated to any amount by means of the valve *i*.

The improvements in consuming gas consist in employing a burner of the form shown in fig. 2, by means of which the light is concentrated as much as by concentric ring burners, with this further advantage, that the light is not intercepted by any horizontal parts, and only one inlet is required, and the same will be more readily made; the section of this burner may be flat, although the patentee prefers it to be conical, and to rise spirally, as shown at fig. 3.

The patentee claims, first, the admixture of atmospheric air, or other supporter of combustion, and in any proportions with coal or other gas, previous to its issuing from the meter; secondly, the mode of employing the pressure of gas by the intervention of suitable parts to draw in the air; thirdly, the use of a drum revolving in water for drawing in the air or other vapour, and the mode of connecting the same with the meter; fourthly,

the triple compound of combustible gas with air, or gas capable of supporting combustion, and vapour of volatile hydro-carbon, for the purpose of combustion, together with the mode of forming burners.

SPECIFICATION enrolled 16th January, 1843, of a PATENT granted 16th July, 1842, to JOHN BENTON, of Birmingham, land agent, for "*certain improvements in propelling, retarding, and stopping carriages on railroads.*"

THIS invention relates, first, to a mode of propelling carriages on railroads by the application of stationary power; and consists in forming an excavation the whole length of the line. At intervals, in the brickwork forming the excavation, and at each side thereof, are plummer blocks supporting the two ends of a horizontal axis extending across the excavation; each of these axes, or horizontal shafts, supports two large wheels, and also a drum placed between the two wheels, round which pass two endless chains. These chains also pass round the drums of the two adjacent shafts, and so on throughout the whole line; which is to be divided into sections of about a mile in length. In the middle of each of these lengths is a stationary engine, for the purpose of giving motion, by means of the aforesaid endless chains, to the train of wheels; a suitable piece of metal is bolted to the underside of each carriage, and at each side thereof, to receive the peripheries of the wheels, which are rounded, and upon which the carriages rest; so that by giving motion to the wheels, the said train of carriages will be "carried" or propelled over the rotary railroad. There is also a certain arrangement described in the Specification for

retarding the progress of the carriages, by applying a break attached to the carriage to the sides of the rotary wheels; there are other wheels to each carriage, which work in tracks formed on each side of the brickwork, but without touching such tracks; the object of these wheels is to support the carriage, in case of accident to any of the rotary wheels or axes.

Another improvement is stated to consist in a novel mode of applying stationary power, whereby carriages can be brought up inclines of much greater acclivity than is practicable by the use of locomotives, and whereby tunneling and embankments will be avoided. The inventor proposes to effect this by having stones, or other ponderous substances, placed on any convenient number of carriages, on another line of rail, at the summit of the incline, and reserved there until the arrival of the train at the bottom of the incline. A rope is then connected to the ballast-waggon, and is passed round a drum fixed on a vertical axis and attached to the train; the ballast-waggon is then allowed to descend, which will draw the train up the incline; when the train has reached the summit, the ballast-waggons are to be drawn back to the top of the incline, either one at a time or all together, by means of a steam engine or other stationary power, ready for the next train. Instead of using a ballast-waggon, the inventor prefers using water, where such can be conveniently obtained; for this purpose, he places a water-wheel at the top of the incline, and connects the same to a drum working on a horizontal axis at the top of the line of rails up which the train is to be drawn; the water-wheel may be driven by a stream from an artificial reservoir, at a proper altitude, and in any convenient situation. The water, after passing the wheel, is received into a second reservoir, situated at a lower level, from which it

is to be pumped back again by a steam engine or other power.

In order to ensure a good foundation for the stationary axles, the inventor employs a mastic composition of slaked lime; after it is cool, about one-third of its weight of powdered quicklime is to be added, and also as much water as will form it into a pulp, which will cause the same to effervesce; whilst in this state, the mixture is to be used for fixing the wall-plates or casings, adding thereto about an equal quantity of pebble stones, or small pieces of brick, with cows' hair, rushes, or other tenacious matter, the whole being mixed well together during the effervescence.

The Specification also describes a mode of giving signals, by means of the train or carriage acting upon a lever in some determined point of the line; which lever, by means of a wire, rings a bell at the station or engine-house of the stationary engine; by means of which the distance of the train of carriages will be ascertained. The drag or break consists of two levers, jointed together and acted upon by a train of wheel-work, so as to force the ends of the levers out in a lateral direction, and against side plates formed in the brick-work at each side of the excavation before referred to, or the same may be caused to act against the sides of common rails.

Another improvement consists in the application of an axle, supported by two arms, in front of the driving wheels of the engine, when running on common rails. Upon the axle, and just above the rails, are two pullies with concave peripheries: the object of this apparatus is to support the engine in case of its axle breaking; in which case, the pullies would drop on the rails, and, in consequence of their peripheries being concave, would keep

the engine in a direct course until the same could be stopped.

The Claims are, first, the arrangement of a rotary rail-road, as described; secondly, the construction of carriages to be propelled on the same, having grooved slides, which receive the periphery of the wheels, and also the projecting wheels which are attached to the beds or framework of the carriages, for running in the safety-grooves or tracks; thirdly, the peculiar construction of the endless chains; fourthly, the mode of preparing and using the mastic or cement; fifthly, the mode of using the force of gravity, through the medium of ballast-waggons, in connection with steam power, for propelling railway trains up inclines, and the mode of returning to the summit of the incline such ballast-waggons, by means of stationary power; sixthly, the mode of employing water power; seventhly, the mode of retarding and stopping trains by pressure levers; eighthly, the peculiar mode and application of signals, as described; and lastly, the application of safety-rollers, with concave surfaces, in front of locomotive engines, to support the engine in case of accident.

SPECIFICATION enrolled 16th January, 1843, of a PATENT granted 16th July, 1842, to JOSEPH SCHLESINGER, of Birmingham, manufacturer, for "*certain improvements in ink-stands and in instruments for filing or holding papers and other articles.*"

THE first of these improvements consists in forcing the ink from a cylindrical vessel or reservoir into a dipping cup or cups attached to the side of such vessel by means

of a piston pressing on the surface of the ink, which piston is actuated by a screw.

Claim is, the construction of inkstands, in which ink is raised into a dipping cup by the descent of a piston on the surface of the ink contained in a cylindrical reservoir.

Another modification of this inkstand consists in forcing the ink from a cylindrical reservoir into two dipping cups which are on each side of the reservoir by means of a plunger, which is raised and lowered in the same manner as the piston above described.

Claim is, for the construction of inkstands, in which the descent of a plunger in the reservoir causes the ink to be displaced, and thereby raise the ink into a dipping cup or dipping cups.

There is also another modification of the foregoing, which consists of two cylindrical reservoirs, each having a plunger actuated by screws. These screws are attached to the lid or cover of each vessel; on the top part of each of the screws is fixed a spur wheel, and between these wheels and gearing into them is a pinion, by turning the axis of which the plungers will be simultaneously raised or lowered according to the direction of motion of the pinion, so that the ink from each of the vessels can be forced into a dipping cup or dipping cups as may be required.

Claim, the mode of combining two inkstands in such a manner that the ink from two reservoirs is made to flow simultaneously, by one operation, into a dipping cup or dipping cups communicating with such reservoir.

The improved letter file consists of a bar of metal, to each end of which is rivetted the one end of a bent spring, the other end being in like manner fixed to the edge of a square board of paper or other material to the middle of the bar, and at right angles to it is attached an orna-

mental lever moving upon a fulcrum or joint. By press ing on the end of the lever, the bar will be raised from the board, so that the edge of a sheet of paper may be placed under it, or between such bar and the square paper board, and on removing the finger from the lever, the springs will cause the bar to be pressed upon such sheet of paper, and thereby hold the same: if deemed necessary, the underside of the bar may be serrated.

Another modification of this apparatus consists in making the bar which holds the papers to move on pivots, working in cylindrical cups or steps, each step containing a convolute spring, one end of which is attached to the axis, and the other to the step; this bar is also raised by pressing the finger on a lever, and is forced upon the papers by means of the aforesaid springs.

Claim, the mode of constructing letter clips or apparatus hereinbefore described, by means of which letters, papers, or other articles, such as ladies' work, &c., can be held together.

SPECIFICATION enrolled 16th January, 1843, of a PATENT granted 16th July, 1842, to JOHN CHATWIN, of Birmingham, in the county of Warwick, button manufacturer, for "*improvements in the manufacture of covered buttons.*"

THIS invention relates to those buttons which are made by dies and pressure. In making covered buttons, the material of which they are covered is generally very expensive, and according to the present mode of manufacturing such buttons, a large portion of the material is folded within and inclosed in the interior of the button; the object of this invention is to cover such buttons with

less material, and consequently to have less waste. For this purpose, the inventor provides a disc of brass or other suitable material (preferring brass) and subjects it to the action of several pairs of dies, so as to cause the edge of the disc, all round, to be turned back, or in other words to be parallel with the face of such disc, but not to touch the face. A disc of the covering material is then placed under the edge so turned, and the metal and covering material are then placed in suitable dies, whereby the edge is forced upon the said material, and the proper form is given to that part of the button which forms the face; so that in place of the covering material being folded into the interior of the button as heretofore practised, the outer circumference of the covering material is securely held by the folding over of the metal at the outer edge of the metal shell, by which means that quantity of covering material which was heretofore necessary for folding into the interior of the button will be saved. The Specification also describes the mode of covering both sides of metallic buttons; which mode, in addition to saving material, will be found very useful, when the covering material has a central pattern.

The inventor claims, as his invention, first, the mode of manufacturing pressure-made buttons, by causing the covering of the fronts to be fixed to the metal shell by folding the edge thereof over; secondly, the mode of forming the shells of such buttons, by causing the shells to be pressed into a form after being covered.

SPECIFICATION enrolled 16th January, 1843, of a PATENT granted 16th July, 1842, to JOSEPH BARLING, of High Street, Maidstone, in the county of Kent, watchmaker, for "*certain improvements in producing rotary motion in machinery worked by manual labour.*"

THIS invention relates to certain improvements in producing rotary motion in machinery worked by manual labour, and consists in a peculiar combination and arrangement of levers, whereby the muscular power of men is capable of being advantageously employed, and more uniformly imparted than when similar power is applied to a winch or handle, as commonly used in machines worked by manual labour; and it seldom occurs that the power of more than three men can be exerted upon a winch or handle at the same time, an objection which is entirely obviated by the before mentioned arrangement of levers, as it will appear evident, that the power being exerted alternately in a vertical direction (such as that employed in a fire engine) instead of a continuous circular direction, presents a more favourable position to the body, and consequently produces greater effect of the muscular power; this is very considerable when a number of men are employed, which this peculiar arrangement admits of.

To a horizontal axis, supported in a suitable framing, is firmly fixed a lever or levers, having eye-holes at each end, through which are passed two wooden handles, in the same manner as the vibrating lever of a fire engine; at some convenient distance between one of the handles and the axis of the lever, is fixed, by a pin-joint, one end of a vertical connecting rod, the lower end of which is attached in like manner to one end of a horizontal lever, which works at its opposite end upon a stud, fixed to the

framing of the machine; this last mentioned lever, which is of the second order, gives motion, by means of a vertical connecting rod, to a crank fixed upon a horizontal shaft, upon which is keyed a fly wheel for carrying the crank past its dead points, or top and bottom centres; by this arrangement, it will be observed that any number of men can be employed to work this apparatus; and on giving a reciprocating movement to the handles of the machine, rotary motion will be imparted to the crank and crank shaft, which motion can, by any of the well known means, be employed in driving machines worked by manual labour.

The patentee does not claim any of the separate parts referred to, except when the same are combined and arranged in the manner described and represented by the Drawings, for the purposes of producing rotary motion in machinery worked by manual labour.

SPECIFICATION enrolled 23rd January, 1843, of a PATENT granted 23rd July, 1842, to CHARLES ROBERT AYERS, of John Street, Berkeley Square, in the county of Middlesex, architect, for "*improvements in ornamenting and colouring glass, earthenware, porcelain, and metals.*" Being a communication.

THIS invention consists in applying the colour in a state of powder through screens of perforated metal or other material, or through lace or other reticulate or open fabric; or the design may first be impressed on the surface of the glass or other material, by a suitable block, with any adhesive matter, and then, by dusting over the powdered colour so that it adheres only to those parts printed by the block, the colour is then fixed in the ordinary manner.

In applying lace or other open fabrics, by means of

which very cheap and ornamental grounds may be obtained on glass, earthenware, &c. The inventor first spreads on with a soft brush any suitable adhesive matter, such as the essence of lavender; after which, the lace or other reticulate fabric or perforated screen is laid over the surface to be covered or ornamented, and the colour applied, which will adhere to those parts only which are uncovered; the screen or fabric is then removed, and the colour fixed by fire. For the purpose of laying on the colour, the patentee prefers to have it in a box or closed case, in a pulverized state, in which a dust is to be raised, so that the particles of colouring matter will be in suspension, then, by inserting the article to be coloured, such colouring matter will be evenly deposited over the surface. It will therefore be seen, that any pattern may be applied in the same manner as stencilling. In ornamenting convex and concave surfaces, such pattern or screens are to be employed as will yield, such as ornamental lace or paper screens; the colour being applied, the same may be fixed by burning, in the ordinary manner; the patterns or screens in this case being left on, will be consumed by the process, and the article coloured in those places which were left uncovered by the screen.

The patentee claims, first, the mode of colouring and ornamenting glass, china, earthenware, porcelain, or metal, by applying colour in a state of powder, or through perforated screens, or through lace or other open fabric, when combined with fixing such colour by heat; secondly, the mode of colouring or ornamenting glass, &c., by causing the surface to be impressed with the desired pattern, by a wooden or other block, with adhesive matter applied thereto, and then dusting over the desired colour in a state of powder, when such process is combined with the subsequent process of fixing the colours by heat.

SPECIFICATION enrolled 23rd January, 1843, of a PATENT granted 23rd July, 1842, to JOSEPH PARTRIDGE, of Bowbridge, near Stroud, in the county of Gloucester, dyer, for "*certain improvements in cleansing wool.*"

THESE improvements consist in certain arrangements in machinery for removing the extraneous matter from wool after it has been dyed, or after coming from the scouring lye, by means of which the matter which adheres to the fibres of the wool will be effectually removed. The first machine described consists of a double cylindrical vessel, or a vessel consisting of two cylindrical parts, so as to leave an annular space between them; in the centre of the vessel is a vertical shaft provided at its lower part with two arms, to which are attached, by means of pin-joints, the axes of two rollers of wood, stone, or other suitable material, weighing from 500 to 600 lbs.; by giving motion to the vertical shaft, which is effected by a pair of bevil wheels, actuated by some first mover, the two rollers are caused to travel round the annular space of the cylindrical vessel similar to a cyder mill. The process of washing or cleansing wool after coming from the scouring lye or dyeing process is as follows: the machine is fixed in a situation adjacent to a stream of water, which is allowed to run in at one side of the vessel and out at the other, through a reticulate wire work or perforated plate; the wool to be operated upon being put into the vessel, motion is given to the vertical shaft which causes the rollers to pass over the wool, and thus compress the fibres, which are subsequently opened by the rush of water passing through the vessel; and in this manner the process is continued, the fibres being alternately compressed and

opened, together with the stream of water passing through the machine, have the effect of carrying off and entirely removing the extraneous matter which adheres to the wool. The second machine, which is intended to be used where the supply of water is not very plentiful, consists of an oblong box, the sides of which are lined with perforated plates or reticulate wire work; the wool to be cleansed is placed in the box, and is operated upon by two stampers, which are alternately raised and let fall on the wool by means of tappet wheels or other suitable contrivance. These wheels act on projecting pieces affixed to the vertical stampers. Water is also employed in this case, but not in such large quantities. The third machine consists of an oblong box with rounded ends, and is provided with two peculiar formed drums or beaters on each side, which are turned by bevil gearing; this box is so constructed as to form a channel all round it, in which the wool is placed, and through which a stream of water is allowed to pass; below each of these rotary drums or beaters, which have spikes, is an inclined plane or block of wood, capable of adjustment, against which the wool, as it floats, and is carried round the channel or trough, is beaten and pressed by the rotary action of the beaters.

The inventor claims the use of the machines described, for the sole purpose of cleansing wool from the scouring lye and other matter; which machines may be used either separately or alternately as may be found necessary, except for white wool, which is to be cleaned with the machine last described.

SPECIFICATION enrolled 23rd January, 1843, of a PATENT granted 23rd July, 1842, to EUGENE DE VARROC, of Bryanstone Street, Portman Square, in the county of Middlesex, for "*apparatus to be applied to chimnies to prevent their taking fire, and for rendering sweeping chimnies unnecessary.*"

THIS invention relates to the application of reticulated metal surfaces, at the commencement, or near the entrance, of the chimney, in order to prevent the passing of the flame, and also to intercept the soot.

The apparatus consists of two cylinders of wire-cloth, one within the other, but so constructed that the surfaces of the two cylinders touch, or are in contact, with each other. The inventor prefers to make the cylinders of wire-cloth, having sixty-four holes to the square inch, or closely perforated metal plates may be employed, but such will not be found as useful as wire-cloth. The cylinder, which is mounted upon an axis, is fixed in the chimney, as near the fire as convenient, the flue or chimney being so constructed as to prevent any passage for the smoke but through the double-wire cylinder, the wires forming the reticulate, or open work, of one cylinder, being made to cross those of the other cylinder. By this arrangement, the flames and soot will be prevented from passing through the cylinder; but there will be sufficient draught through the cylinder for the fire, and the chimney beyond the apparatus will not be coated with soot, the same being deposited on or about the apparatus, which will require to be brushed off every morning, and, if desired, the cylinder can be turned partially round, so as to present another part of its periphery.

A modification of this apparatus, composed of a number

of perforated plates, and arranged in a rectangular form, is shown, as being applied to the chimney of a steam engine boiler; in which case, there are brushes constructed for clearing the same occasionally from soot.

The claim is, for an apparatus composed of woven wire-cloth, or perforated plates of metal, near to, or at the entrance, into chimnies.

SPECIFICATION enrolled 23rd January, 1843, of a PATENT granted 23rd July, 1842, to ALEXANDER JOHNSTON, of Hillhouse, in the county of Edinburgh, esquire, for "*certain improvements in carriages; which may also be applied to ships, boats, and other purposes where locomotion is required.*"

THIS invention consists in the application of pullies or rollers to the underside of locomotive engines and carriages; which rollers act against the side or edge of the rails, in order to reduce the friction caused by the flanges of the wheels binding on such part of the rails in turning curves, &c. To a four or six-wheeled engine, the patentee employs four of such rollers, that is to say, two on each side, which are to be supported on the underside, or frame-work of the engine or carriage, by suitable stays, so as to come in contact with the side or edge of the rail. With respect to common carriages or carts, having two wheels, the patentee employs two (instead of four) rollers, and proposes to lay rails along the common roads or streets; in this case, the stays, or other supports of the rollers, should be so constructed, as to be capable, by the application of a lever or other mechanical contrivance, of raising the said rollers from the ground when the carriages

are passing over common roads, where no rails are employed; in four-wheeled carriages, four rollers are to be employed, two for guiding the fore-wheels, and two for the hind wheels; or the rails may be made with a hollow or concave face, so as to receive the periphery of the wheels, and thereby guide them in the proper course or track.

The inventor claims the exclusive use of rollers, for the purpose described, either on railroads or lines of rails laid on common roads or streets.

The patentee has, by a Disclaimer entered with the Clerk of the Patents, 23rd January, 1843, disclaimed all that part of the title containing the following words:—"which may also be applied to ships, boats, and other purposes where locomotion is required."

SPECIFICATION enrolled 28th January, 1843, of a PATENT granted 29th July, 1842, to JULES LEJEUNE, of North Place, Regent's Park, in the county of Middlesex, engineer, for "*improvements in accelerating combustion; which improvements may be applied in place of the blowing machines now in use.*"

THE first part of these improvements relates to those furnaces, (either for smelting iron or other purposes,) in which anthracite coal is used, and consists in creating a blast of air by the application of a jet of steam, whereby the ordinary blowing machine will not be required. For this purpose the patentee introduces into the tuyere iron the end of a small pipe leading from a boiler, in which steam is generated at a pressure depending on the force of blast required, which blast or current of air is obtained by

permitting the steam to issue from the pipe into the tuyere iron, or hole of the furnace, which causes the air to rush in simultaneously with the steam.

The claim for this part of the invention is the mode of accelerating the combustion of anthracite coal in furnaces, by combining therewith a blast of air caused by steam, as described.

The second part of these improvements relates to a mode of accelerating the blast of furnaces where blowing machines are employed, and consists in making the outer end of the tuyere iron or pipe considerably larger than the end of the blast pipe which enters it, observing that the tuyere pipe should be parallel (or tubular,) or at least so near parallel that the sides do not make an angle of more than fifteen degrees, or the beneficial effect will be destroyed; by this arrangement, an increase of blast will be obtained by the rush of air entering the annular space formed by the tuyere pipe, and the end of the pipe leading from the blowing machine.

The claim for this part of the invention is the mode of obtaining an increase of volume of air by causing a blast of air to be passed through a tube or tubular opening into a furnace or other apparatus, the sides of which are parallel, or so nearly parallel that they do not make an angle of more than fifteen degrees.

SPECIFICATION enrolled 28th January, 1843, of a PATENT granted 29th July, 1842, to THOMAS BELL, of Saint Austell, in the county of Cornwall, mine agent, for "*improvements in the manufacture of copper.*"

THE copper ore to be operated upon is first reduced, so as to pass through a sieve having four holes to the square

inch; the ore is then thrown into an air or smelting furnace together with a portion of lime, say from one to two parts of lime to every twenty parts of copper ore, which may be either slaked or unslaked; the lime and ore are then spread evenly on the bottom of the smelting furnace; after the whole is melted and mixed together, which mixing may be effected by introducing a suitable tool through a hole in the brickwork, made for that purpose, another charge of copper ore of from one ton to one ton and a half, according to the size of furnace, is then thrown in together with a quantity of lime-stone, chalk, or other carbonaceous matter, the quantity of which will depend upon the judgment of the smelter; after the second charge is melted, which will be in a few hours, this melted ore is drawn off into moulds of sand. This melted mass will be composed of vitrified copper ore, iron, sulphur, earthy or calcareous matter, &c., and when cold is broken into pieces of about ten or twelve pounds weight. The Drawing shows a double air or smelting furnace worked with one fire, the advantage of which is stated to be economy of fuel. The mode of working both furnaces is the same as in the case of a single furnace.

After the ores have been broken into pieces as above described, the vitrified copper is put into a cupola, in which a fire has been lighted with coke, wood, charcoal or anthracite coal, and melted down by means of a blast obtained from a fan or ordinary blowing machine, the melted mass being allowed to run out at an aperture at the bottom of the cupola, from which it falls into a reservoir containing water, which is kept cool by means of a stream of water, which is continually running in; by this process the copper and earthy matter is separated; after which, the granulated copper goes through the necessary operations of washing and cleansing, and finally through

the usual process of smelting, for the purpose of further reducing it into fine copper.

The advantages of the processes described are stated to be a saving of time in bringing the copper contained in the ore into a granulated fine pink metal, together with a saving of fuel, and also of expence in the number of furnaces required to smelt a given quantity of ore, and moreover a saving of copper obtained from a given quantity of ore; for which the inventor claims the mode of treating copper ore, by causing it to be melted in order to get it into suitable sized blocks or lumps, and then smelting the same in a blast furnace, and subsequently melting the same from the product therefrom by washing apparatus, as described; the inventor, in conclusion, states that he does not claim such processes when separately considered.

SPECIFICATIONS NOT ENROLLED.

LADY ANN VAVASOUR, of Melbourne Hall, York, for "*certain improvements in tilling land,*" due 7th January, 1843.

EDWARD COBBOLD, of Melford, Suffolk, Master of Arts, Clerk, for "*certain improvements in the means of supporting, sustaining, and propelling human and other bodies on and in the water,*" due 28th January, 1843.

Scientific Notices, &c.

On the recent application of Electricity to the Arts and Manufactures of the Country; from a paper read at the Society of Arts, on the 3rd February, 1843, by Francis Whishaw, Esq.

It is at all times a pleasing task to trace the gradual improvement in any particular branch of the arts, and more especially of that from which so many and vast benefits have already been derived, and in which the interests of mankind at large are so deeply involved.

Electricity has of late years engaged the attention of some of the most scientific persons of the present age.

The numberless purposes to which it may hereafter be applied, and the benefits which may in future days flow plenteously from this prolific source, it is not in the power of man even to conjecture.

Among the principal uses to which Electricity has already been applied, may be mentioned the following, viz.—Telegraphs—Sub-marine Operations—Electro-Metallurgy—The Electrotype and Electro-tint—Copper Sheathing—and Electro-plating and Gilding.

With what success its application to the above branches of the Arts and Manufactures has been attended, I shall endeavour to show, in the present and in future communications.

And first, with regard to Telegraphs.—Any one who is acquainted with the old system of transmitting signals by means of the Semaphore, and which is still in use between London and Portsmouth, must be aware of the numerous failures and disappointments which, from various causes, occur continually in the practical working of this uncertain system. Indeed, at times, the communication is entirely cut off for days together: and at other times the Semaphoric dispatch is stopped half way, and then post-horses are required to carry it forward.

It is no wonder, then, that so important a subject should have attracted the attention of professor Wheatstone and Mr. Cooke,

who had both been labouring in the same field of extensive usefulness for a long time, before they became associated as joint patentees of the Electric Telegraph.

Mr. Cooke has, for some time past, been engaged in extensive experiments on his own grounds at Kidbrooke, near Blackheath, and entirely at his own expence, with a view to reducing the cost of constructing and laying down this simple yet beautiful contrivance; the results which he has obtained from these experiments are indeed highly satisfactory; and he is now enabled to lay down the Telegraph complete, at something like half the original estimated cost.

On this improved plan is the extensive line of Telegraph on the Great Western Railway constructing at the present time; six miles of which are already completed, and the remaining few miles will very shortly be laid down. The iron tubes hitherto found necessary to protect the wires, are now dispensed with, and the insulated wires are suspended between, and carried over, iron or wooden standards, ranged at convenient distances along the Railway. Where the standards are of iron, they are capped with wood. On the Great Western Railway the standards are nine feet high above the ground; some being of iron and others of wood; but where the Telegraph is to be carried across a district of country, irrespective of a railway, the standards are intended to be twenty-five feet in height.

Before practically carrying out this great improvement, Mr. Cooke consulted some of the first railway engineers of the day, as to the liability of the wires being injured, and the electric current thus cut off, either by wanton or mischievous persons.

The opinion of the authorities thus applied to, were sufficiently satisfactory to induce him to proceed with his new and economical mode of constructing and laying down the Telegraph, for it is obviously of less importance to preserve a never-failing electric communication between any given points, than to preserve the lives of our fellow-men. So long, therefore, as every precaution is taken by managers of railways furnished with the Telegraph to prevent the occurrence of accidents to the latter, so long will the former be guarded by an equal amount of protection.

The Electric Telegraph has, for some time past, been in daily

use on the Blackwall, Manchester and Leeds, and Edinburgh and Glasgow Railways; it has also been laid down on the Great Western Railway, in the London division; and an additional extent, as already adverted to, will shortly complete the communication between London and Windsor. Mr. Cooke has an order to lay it down on the railway now in course of construction between Norwich and Yarmouth; and it is not very improbable, that within a comparatively brief space of time, the Government of this great country will cause it to be introduced between London and the Naval Depôt at Portsmouth. From professor Wheatstone's well known experiments, it is ascertained that electricity travels at the rate of 200,000 miles in a second of time; so that four signals may be transmitted and answered, through the agency of the Electrical Telegraph, a distance equal to twice round the globe, in a second of time.

Mr. Cooke, in his proposition for working single lines of railway under the protection of the Telegraph, thus describes the principles on which it is constructed:—

It was discovered by Oersted, that a magnetic or compass needle may, through the agency of a voltaic current, be invested with an artificial polarity. Thus a natural stream of electricity passing round the circumference of the earth, causes magnetic needles in general to be deflected at right angles to its course, or towards the North and South poles; so an artificial stream of Electricity of adequate strength, will cause magnetic needles, placed within its influence, to be similarly deflected at right angles to its course, whatever that may be.

If then, a magnetic needle were placed parallel, and near to any part of a conducting wire, which we will suppose to be laid down between London and Blackwall, the transmission of an Electric current from a voltaic battery, would cause the needle to change its position, so as to stand, during the continuance of the current, at right angles to the wire; being turned in one direction or the other, according to the course of the current. If this deflection of the needle were limited by two fixed stops, placed respectively at the two sides of one of its poles, the motion of that pole to one stop might evidently constitute one signal, and its motion to the other stop, another signal.

On these principles, the Telegraph on the Blackwall Railway

is constructed, and not fewer than 2,500 signals are daily transmitted on that line by means of the Telegraph. Before, however, describing the mode of telegraphing on that Railway, it may be as well to give an outline of the peculiar system of working the Railway itself; from which it will appear to the most casual observer, that without the aid of the Electric, or some equally efficient Telegraph, it would be impossible, with any degree of safety, to carry on the traffic of that line.

The Blackwall Railway is worked by a pair of marine condensing engines, placed towards either end of the line; those for the *up* traffic being fixed beneath the line of the Railway at the Minories station, and those for the *down* traffic on the west side of the Brunswick Wharf Road, at Blackwall; the distance between the engine stations being about 5466 yards, (3·105, or 3 $\frac{1}{10}$ miles.) The whole length of each rope is equal to twice the distance between the engine-houses, added to about fourteen turns of the rope on each drum; and while the London engine is winding up the rope with the Blackwall and intermediate traffic, the drum of the Blackwall engine is giving it off at the other end.

We may for the sake of illustration, suppose the engines and ropes to be at rest. It is required to work the *up* traffic, or, in other words, to draw the carriages from Blackwall and the intermediate places, to London; the Blackwall carriages, and one carriage at each of the intermediate stations, are attached to the rope; the London engine is set in motion, and the rope is wound up on the large drum at the Minories station, at the rate of about twenty-six miles an hour. The first carriage which arrives in London is that from Shadwell; the next, that from Stepney; and so on, at intervals in proportion to the respective distances between the intermediate stations and that of London. So much for drawing all the traffic to one point. But it is requisite to leave the passengers at several different points, or which is the same thing, at the several intermediate stations, as well as the terminal station.

The *down* train, that is, the train from London to Blackwall, and the intermediate places, is arranged in the following order:—First, the carriages intended to proceed the whole distance; then the Poplar carriage; afterwards the West India Dock, Limehouse, Stepney, and Shadwell carriages. As in the case of the *up* train, all the carriages are attached to the rope,

and the Blackwall engine set in motion; the Shadwell carriage is first detached from the rope, at a sufficient distance from that station to allow of its reaching its destination by the impulse acquired in its course from London; next, the Stepney carriage is detached; and so on, till the arrival of the first carriages of the train at the Blackwall terminus.

Now these operations are not merely performed once or twice, but a great many times every day. How, therefore, could the Blackwall Railway be worked according to the system now in use, without a most certain and complete communication being kept up between all the different officers of the Railway. This certain and complete communication is effected in a beautiful manner, by the Electric Telegraph laid down by Mr. Cooke; and it may be seen in daily practical operation.

The system of Telegraphs adopted for carrying on the traffic of the Blackwall Railway, and which is worked by lads, or porters, or breaksmen, has been the means of preventing any accident, worthy of notice, to millions of passengers, during the two years and a half in which the railway has been at work; for it is absolutely necessary that a complete understanding should exist between the breaksman at one terminus, and the engine-man at the other, "as a very skilful adjustment of the quantity of rope released, is requisite to preserve it from injury."

Again, in stopping a train, or part of a train of carriages, even more care is necessary; for if the engine-man at the Blackwall engine-house "were to turn off his steam before the breaksman at the Minories station, had begun to apply his break," the rope must suffer from over-slackness; or if the breaksman were to put on his break while the engine at the distant terminus was still exerting its full power, it might be broken by the excessive strain. "Even the ordinary stopping of a train could not be effected without danger to the rope;" and an unexpected stoppage (now a matter of almost every day occurrence and perfect facility, even while the rope is at its full speed,) would, without this beautiful apparatus, be attended with certain injury.

The signals are given by pointers, each suspended vertically on an axis moving freely through the face of a dial. Behind this dial, a magnet is fixed on the same axis as the pointer, so that both move together. A portion of the conducting wire is

coiled many times longitudinally round a frame on which the magnet moves, so as to subject the magnet to the multiplied deflecting force of the voltaic current. The motion of the magnet is limited, on both sides, by fixed stops.

We may suppose three of these exceedingly simple instruments, included in the same conducting wire, to be placed, the first at the Minories, the second at Limehouse, and the third at Blackwall. The general effect of this arrangement is, that the transmission of electricity along the conducting wire, and consequently through the convolutions of wire surrounding the respective magnets, deflects those magnets with a sudden and decided motion, to one of the stops, and causes the pointers to indicate corresponding and simultaneous signals upon the dials of each of the instruments at the Minories, Limehouse, and Blackwall stations.

Each instrument is provided with a battery and a handle, by which a porter or policeman is enabled, at pleasure, to connect the conducting wire with his battery. By moving the handle to the right or left, either of the signals can be instantaneously transmitted from any one of the instruments to all the others, which, by means of their own handles, have the power of sending back signals in reply.

Correctness is insured by the simultaneous appearance of the signal in the instrument of the operator and that of the recipient. The signals in the case before us are, "Go on" and "Stop," in reference to the starting and stopping of the engines. Eight signals can be given by means of the materials used on the Edinburgh and Glasgow railway. Each needle is marked by its distinct handle. If the signal answering to No. 1 is to be transmitted, then the two pointers are made to converge upwards at the same instant. If the signal answering either to No. 2 or No. 3 is required to be given, then the left-hand pointer will effect the object. If the signal corresponding either with No. 4 or No. 5 is wanting, then the right-hand pointer is moved towards the one or other of these figures, as may be required. If the pointers are made to rest diagonally in one direction, the signal corresponding with No. 6 is indicated; and if in the other, that corresponding with No. 7 is transmitted. And lastly, the signal corresponding with No. 8 is effected, by causing the pointers to converge downwards at the same time. Thus, by

different arrangements of the figures or letters in the dials, any required number of signals may be given.

From the experience which Mr. Cooke has had in working the Telegraph on the Great Western Railway, he is enabled to state positively that electro-telegraphic communications may be transmitted to the extent of seventy-eight miles, without any intermediate stations; and that the most complete and extensive correspondence can be carried on with only two or three wires.

Law Reports on Patent Cases.

IN THE COMMON PLEAS, 8th February, 1843.

(Before Mr. Justice Coltman.)

ELLIOT v. HAMMOND AND OTHERS.

The Attorney General and *Mr. Serjeant Richardson* were for the Plaintiff; *Sir T. Wilde, Mr. Serjeant Bompas, Mr. Allen*, and *Mr. Roach*, for the Defendants.

This was an action brought by the Plaintiff, who is the patentee of a "satin flexible button, with a figured centre," against the defendants, as the manufacturers of the "Italian twist button," for an infringement by them of his patent. The Court was occupied during the whole of Tuesday with the Plaintiff's evidence, and yesterday the case was closed on the part of the defendants. The testimony of the witnesses, as to the objects in dispute, was so mixed up with technical descriptions of the process of cloth and button manufacture, and bore such constant reference to a variety of samples produced in Court, that it is impossible to give it in anything like connected detail, and even if it were possible, it would have no general interest when given. The Defendants' evidence attempted to establish, that the buttons manufactured by the Defendants were made of twisted silk; that those of the Plaintiff were of organzine; and that organzine and twist are distinct and separate fabrics, the former being suited for the manufacture of satin, which the latter was not. The evidence also attempted to establish, that the Plaintiff had acknowledged buttons of twisted silk, such as those manufactured by the Defendants, to be without the limits of his patent; and further, that the Plaintiff had actually purchased from one of the witnesses buttons manufactured by the Defendants. In 1840 a verdict was recovered by the present Plaintiff against one Aston, on an infringement of this same patent; but in that case it was proved that the Defendant along with the twist had also mixed up some organzine thread in the manufacture of his buttons.

The Court was occupied with the examination of the witnesses to so late an hour that it was at first doubtful, on the closing of the Defendants' evidence, whether the case should proceed; but

The Jury expressed a wish to finish it, and, at a late hour, found a verdict for the Defendants.

HALL COURT.—11th February, 1843.

(Sittings at Nisi Prius, before Mr. Justice Wightman and a Special Jury.)

HALL v. HUTCHINSON AND OTH.

The Plaintiff is the patentee of an improved steam condenser, by which the power of the engine can be increased without increasing the danger, and which

produces other advantages of an important character in the efficiency and economy of the steam-engine. The Defendants are two of the Directors of the St. George Steam Packet Company, who are the owners of a great many steam vessels trading from this country to Ireland, the continent of Europe, and America; and the question between the parties in the action, which was of great importance to themselves but of little or none to the public, turned entirely upon the construction of an agreement as to the terms upon which the Defendants were to be at liberty to apply to their vessels the patent machinery of the Plaintiff. It was in the first instance agreed that the Defendants should, in consideration of paying £1. per horse power per annum, have the enjoyment of the Plaintiff's invention, during the continuance of his patent, in sixteen vessels, which were named in the contract, and that in certain events they were to have the power of substituting other vessels in the room of those expressly named in the bargain. They applied the new condenser to two only of the sixteen; but subsequently used the patent in the case of six other vessels, none of which was included in the original contract. It was in reference to these latter vessels that the present action was brought.

The Solicitor-General (with whom were Mr. Erle and Mr. Cowling) stated the Plaintiff's case, and contended, that as, according to the original contract, the Defendants would be entitled to use the patent machinery in the six vessels in question for the remainder of the time during which the patent was to run, so the Plaintiff had a right to receive £1. per horse power for every one of the six vessels, and for every year of that time, except in some contingencies, which it is unnecessary to mention.

Mr. Kelly (with whom were Mr. Knowles, Mr. Crompton, and Mr. Corry) appeared upon the part of the Defendants, and, in answer to the case which had been made upon the part of the Plaintiff, upon what may be called the first contract, set up a second one, which was to be deduced by inference from some correspondence which took place between the parties, and by which, according to the learned counsel, it was agreed between them that the Defendants should be at liberty to apply the improved machinery to other vessels to the extent of the horse-power of the fourteen vessels to which the patent condensers were not applied. The learned counsel further contended, that, supposing this view of the case not to be correct, he should insist that the utmost amount which the Plaintiff could recover was that which resulted from calculating the amount of the horse-power of those six vessels, and the time for which the patent condensers had been used therein with reference to the sum of 8s. per horse-power per year—as the Plaintiff had allowed the Waterford Company to use his patent at that rate, and had originally contracted, that, if ever he reduced his terms to any other party, he would make the same reduction to the Defendants.

The Solicitor-General, in reply, contended that there was no second contract at all, and that the correspondence had no effect upon the original bargain, and was not entered into with any reference to it. With regard to the proposed reduction of the terms upon which the calculation was to be made, the learned gentleman showed that the charge to the Waterford Company, all things being considered, was really higher than that which had been made to the Defendants.

The learned Judge having left the whole case to the Jury, and expressed his own opinion to be in favour of the view taken by the Solicitor-General,

The Jury found a verdict for the Plaintiff in general; finding, moreover, that the amount of the damages ought to be calculated upon the principle contended for upon that side of the case.

It was agreed that the particular amount for which the verdict was to be finally entered up, and which ranged between £1,700. and £2,000. should be settled out of Court.

List of New Patents.

PATENTS GRANTED BY THE FRENCH GOVERNMENT DURING THE SECOND QUARTER OF 1842.

(Continued from page 255.)

Ledru and Co., 40, Rue d'Angoulême du Temple, for "a simple means of preserving iron and steel from the action of rust."

Miller, at M. Truffaut's, for "improvements in steam-engines."

Pigeot fils, of Rouen, for "improvements in cotton looms."

Riolle, of St. Chamond (Loire), for "a new wheel for locomotives."

Rohaelt and Boby, 16, Rue Mandar, for "a new gas-burner, the flame of which remains always steady."

Tardy, Rue et Hotel Montesquieu, for "a new mode of manufacturing casks."

Venet, Rue Traversiere Saint Antoine, 9 Bis, for "a new oil-mill."

Zang, 92, Rue Richelieu, for "improvements in the making of bread."

Bedouin, of Marseilles, for "a new system of draw-bridge."

Beslay, 17, Rue Nve. Popincourt, for "improvements in the manufacture of oil cloths."

Bigot, sen., of Elbeuf, for "improvements in the apparatus for evaporating liquids."

Bosson, at M. Feron's, 2, Place Scipion, for "improvements in spinning machines."

Bouin, 26, Rue des Saints Peres, for "a new lamp, called Lampe a air sans renversement."

Collard-Nouon, at M. Perpigna's, Rue de Choiseut, 2 Ter, for "improvements in the manufacture of baskets for the package of wines."

Cournac fils, and Arman, of Bordeaux, for "a new system of constr icting dry docks."

Delaunay, of Marseilles, for "a grease for carriages, etc., called suif oxygene."

Ducret, of Cambray, for "a new mode of lighting by gas extracted from soot."

Escoffier and Campistron, of Aix, for "a new furnace to heat irons."

V. Fenierre, of Rouen, for "a substitute for the leather employed in carding-combs."

Gobert and Chaplain, at M. Leblanc's, 285, Rue St. Martin, for "addition to the wheels of carriages, which shall enable them to remove all obstacles lying in their way."

Goyneau, 129, Avenue des Champs-Elysees, for "a new printing ink."

Guilbert, of St. Quentin, for "improvements in the manufacture of muslins."

Hale, at M. Perpigna's, for "an improved means of packing gunpowder and provisions."

Jean, Rue St. Denis, Passage Basfour, 7, for "a new apparatus for lighting called appareil solaire."

Kuhsler, of Soultz-sous-Forets (Bas-Rhin), for "a water-proof paper."

Laur, 10, Rue du Four St. Honoré, for "a new plough."

Lecointe, at M. Perpigna's, for "improvements in furnaces."

Legrand, 5, Rue Vivienne, for "a mode of purifying whale oil."

Loysel, Rue Bretonvilliers, for "improvements in chess-boards."

Manigot, of Lyons, for "improvements in the manufacture of tulle."

Ozanne, 11, Rue d'Orleans Saint-Marcel, for "a mode of imparting the qualities of age to new wines."

Pithay, 110, route d'Allemagne, at La Villette, for "improvements in tanning, so as to render the leather waterproof."

Platen, of Muthausen, for "improvements in the manufacture of files."

Rex, at M. Perpigna's, for "a means of obtaining a moving-power in navigation from the wind and the waves."

Ricard, of Rouen, for "a new mull jenny for cotton or wool."

Rigollot, of Lyons, for "a gas regulator or governor."

Rockel, of Metz, for "improvements in lamps."

Rolland, of Tours, for "a new mode of boring wells, so as to obtain a constant supply of clean and pure water."

Schmitz, of Arras, for "improvements in water-wheels."

Smith, at M. Perpigna's, for "improvements in the manufacture of gas-burners."

Tisserand, of Auxonne, for "a new hydraulic pump."

Barbaux, of Lambres, (Pas-de-Calais), for "improvements in the crystallisation of beetroot-sugar."

Baudon Porcher, of Lille, for "a new calorifère."

Cabarit, of Mazanet (Tarn), for "an apparatus for the oiling of wool."

Carlier, of Lyons, for "improvements in the manufacture of iron steam boats."

Coxhead, at M. Lefort's, 2, rue Neuve des Mathurins, for "a new spirit lamp."

Disaulle, 66, Faubourg St. Martin, for "a machine to grind colours, chocolate, &c."

Duval, Rue Amelot, 52, for "a mode of making clasps by machinery."

Fano, 21, Rue Pastourelle, for "a case with divisions for various purposes."

Gaudon Aubry, of Reims, for "a new percussion gun to discharge several times without reloading."

Gautier, at M. Ramelin's, Allée des Veuves, 99, for "a complete system of fabrication of indigenous sugar."

Guillot, Rue St. Avoye, 57, for "a cellular van for the conveyance of prisoners."

Janisset, 55, Rue Neuve des Petits Champs, for "a new cosmetic, called Crème du Liban."

Jerome, of Plachy-Buyon (Somme), for "a machine to clean wheat."

Lecavpentier, 18, Rue St. Pierre Popincourt, for "a new mode of washing metallic residuum."

Lefrançois, 72, Rue St. André des Arts, for "a composition to take out grease and stains, without injury to the colour."

Lemaire, of Arras, for "improvements in ploughs."

Lemarquirre and Reclus, Rue Montpensier, 34, for "improvements in pumps to give a continuous flow."

Meurs, at M. Rattier's, 4, Rue des Fossés-Montmartre, for "the means of extending and improving the uses of wool."

Michaud, of Luxeuil (Haute-Saone), for "a new economical kitchen stove."

Millot, 77, Rue Neuve des Petits Champs, for "a new busk for stays."

Misich, at M. Perpigna's, for "a new Calorifère."

Molinie, at M. Armengaud's, 34, Rue St. Louis, au Marais, for "a machine to cut corks."

Pion, at M. Leblanc's, Rue St. Martin, 285, for "a new process of washing wool."

Rebigou, of Havre, for "a ship-pump."

Schneider & Co., of Creuzot (Saône-et-Loire), for "a machine called Marteau vertical à vapeur."

Simon, 18, Rue Neuve St. Martin, for "a machine to dress boot legs."
Souty, at M. Reynaud's, for "a new composition for picture-frames," &c.
Stephenson, at M. Martin's, 11, Rue Chaptal, for "improvements in locomotives."
Stocker and Rowley, at M. Coutan's, 18, Rue Bautreillis, for "an improved mode of making clasps."
Vielcoq and Dureuille, 7, Rue Nve. Saint Augustin, for "a process of painting and gilding over cement."
Boignes, 27, Rue Neuve des Mathurins, for "an instrument to ascertain the temperature of steam in boilers."
Colladon, at M. Dassier's, 7, Rue Bergère, for an instrument to ascertain the power of naval steam engines."
Davies, at M. Perpigna's, for "improvements in the construction of drawing-plates."
Dumont and Journet, 8, Rue de Grenelle St. Honoré, for "an instrument for taking profiles."
Durand de Monestrol, 30, bis, Rue de Rivoli, for "a system of railroad of diminished curves."
Fournier, 3, Barrière des Martyrs, for "a new system of fire-hearths."
Gas, of Ruch (Gironde), for "a self-regulating and economical calorifère."
Huet, of Rouen, for "an apparatus to facilitate the passage of smoke from chimnies."
Kirk, at M. Perpigna's, for "improvements in the manufacture of lace."
Launay, 64, Rue des Fossés du Temple, for "an improved means of purifying syrups."
Lona, at M. Reynaud's, for "improvements in the making of paste."
Meyer & Co., Mulhausen, for "improvements in steam-engines."
Micon, Rue de Meaux, Barrière du Combat, for "movable paper-hangings."
Pape, 19, Rue-des-bons-enfans, for "a new system of tuning musical instruments."
Poirier, 19, Rue-pont-aux-Choux, for "a substance for cleaning gloves."
Quinet, 6, Rue-du-coq, St. Honoré, for "the application of filigrane to various branches of industry."
Reich & Co., 12, Rue-de-l'Echiquier, for "a machine for the manufacture of leaf-metal and bronze powder."
Renoux, at M.M. Marchaud and Lhomme, 26, Rue-de-Charonne, for "an apparatus for printing stuffs, cottons, &c."
Staite, at M. Perpigna's, for "a new steam engine."
Wagner, at M. Perpigna's, for "a mode of printing on leather, &c., by lithography."
Walsh, at M. Truffaut's, for "a means of preserving vessels from injury by sea water or insects."
Wood, at M. Perpigna's, for "improvements in the manufacture of steam-valves."
Aury and Favard, of Lyons, for "improvements in the manufacture of silks, &c."
Badin, 12, Rue-des-Ecouffes, au Marais, for "a substitute for horse-hair and bristles."
Barley, 3, Rue-St.-Fiacre, for "the application of the Jacquard roller to bobbin lace looms."
Barthelemy, 19, Rue-de-Rivoli, for "a means of producing steam of great intensity."
Batilliat, of Màcon, for "a new aromatic composition, called Orientale."
Beaudoin, at M. Reynaud's, for "improvements in the uses of bitumen."
Beau, 12, Rue-St.-Pierre-Montmartre, for "an instantaneous copying machine by simple contact without rollers."
Bellan, of Toulouse, for "a new lamp."
Benayme, at M. Gadebled's, 5, Quai-Voltaire, for "improvements in clock work."

Biggs, at M. Bouy's, 23, Rue-St.-Laurent, at Belleville, for "the means of securing hats, caps, &c., on the head."

De Bourgoing and Du Tremblay, Rue-du-chemin-de-Versailles, 8, for "a new process of enamelling."

Milles. Charrason, 11, Rue-du-Dauphin, for "improvements in stays, gowns, &c."

Fore and Tissot, of Lyons, for "improvements in the unwinding of silks, &c."

Delebarre, of Rouen, for "a new loom."

Doguée, jun., at T. Teste's, jun., Ministry of Public Works, for "a new brick-making machine."

Ferry, 34, Rue-de-beaune, for "diaphanous and coloured paintings to be used as screens, etc."

Godde de Liancourt and Lebrun, 34, Rue-neuve des Mathurins, for "a girdle, as a means of safety in case of shipwreck."

Guillard-Meynier, of Lyons, for "improvements in the preparation of bitumen and resinous substances."

Guyot, 10, Rue-de-la-victoire, for "improvements in the manufacture of liquid-hydrogen."

Jay, 5, Rue-des-Fossés-montmartre, for "an instrument to measure the head and ascertain its conformation, called Jayolype."

Kessler, of Nancy, for "improvements in looms."

Lamoire-Gautier, of Daigny (Ardennes), for "improvements in the manufacture of shovels."

Laurot, 4, Place Ste. Opportune, for "an instrument to test the purity of oils."

Maquet and Payat, of Valence, for "an instrument called Métromètre, to take the measure for clothes."

Marcadee, 4, Rue-de-la-chaussée-d'antin, for "an improved umbrella."

Mareste, of Cognac, for "an improved still."

Myevre, of Lyons, for "an improvement in carding-combs."

Neville, Nash & Co., 19, Passage-saulnier, for "improvements in the preparation of silk."

Ristroph & Co., of Nancy, for "a new paper, called Papier à reflet métallique."

Smith, at M. Perpigna's, for "improvements in chains."

Taylor, at M. Perpigna's, for "improvements in locomotion."

Thomas, at M. Perpigna's, for "a remedy against sea-sickness."

Villain, of Havre, for "an improved port-hole for ships."

Vallon and Petel, at MM. Cavé and Tollié, 147, Rue-St.-Martin, for "improvements in the manufacture of the fecula of potatoes."

De Wodrol, of Saumur, for "a machine to beat hemp and flax."

Wurmser, 9, Passage-saulnier, for "a mode of making charcoal, called Charbon refait."

Aroux, of Etheuf, for "a new stuff of mixed cotton and wool."

Aubaric and Coxmer, of Montpellier, for "winter shoes of continued warmth."

Berendorf, 300, Rue-douffetard, for "a machine to reduce dye-woods to powder."

Blanchet, 42, Rue-St.-Louis, for "improvements in the manufacture of chocolate."

Boas, 5, Rue-Bourbon-Villeneuve, for "improvements in the manufacture of shawls without waste."

Carr, at M. Bouy's, for "a new break for railway-carriages."

Chemery and Giraudot, of Sedan, for "a new loom."

Mlle. Chillot, Rue-neuve-Truffault, 2, at Batignolles-Monceaux, for "the manufacture of mattresses and cushions stuffed with cork, bladders, or tubes."

Cochrane, at M. Duret's, Rue-vide-gousset, 4, for "improvements in candlesticks."

Constance, 9, Rue-de-l'eperon, for "a system of reproduction in typography."

Croutelle, of Reims, for "improvements in the manufacture of thread."

Dalmont, 63, Rue-St.-Nicolas-d'Antin, for "a new water-closet."

Fauquet, of Bolbec, for "improvements in cotton printing."

Fortant, 24, Rue-Dupetit-thouars, for "an improved coffee-filterer."

Fournier and Pontremoli, 240, Rue-St.-Denis, for "a cloth for collars."

Fyfe, at Landron's, 3, Rue-des-Fossés Montmartre, for "a code of signals for railways or at sea."

Hanriot, 7, Rue-de-grenelle, St. Honoré, for "new gas and oil-lamp apparatus."

Heilmann, 11, Rue-geoffroy-Langevin, for "buttons without sewing, &c."

Herbelot, fils, and Genet-Dufay, at M. Boulay's, 5, Rue-neuve St. Eustache, for "improvements in the manufacture of bobbin-net, &c."

Huguin, 23, Rue-de-bondy, for "a system of vidange inodore."

Japy, fils, of Berne (Doubs), for "improvements in stamping with machinery."

Laury, 29, Rue-trouchet, for "improvements in calorifères and stoves."

Lebarbier, of Lille, for "an improved means of using anthracite coal."

Lerchan, at M. Poundu's, 15, Rue-des-Maçons-Sorbonne, for "an instrument, called chrononome, for reading music."

Lee, at M. Truffaut's, for "improvements in the manufacture of sulphate of soda and chlorine."

Le-grand, of Bar-sur Aube, for "a machine for dressing mill-stones."

Lehoult & Co., of St. Quentin, for "improvements in the jacquard loom."

Leistenschneider, of Pencey-les-Pellercy (Côte-d'Or), for "the manufacture of continuous paper."

Lemire, 52, Rue-des-Martyrs, for "improvements in the manufacture of soap."

Leroy, 11, Rue-d'Anjou, Au-Marais, for "improvements in window-shutters."

Maides, at M. Truffaut's, for "improvements in furnaces and fire-places."

Mathey, of Thann, (Haut-Rhin), for "improvements in looms."

Monrosier, of Entrechaux (Vaucluse), for "improvements in the manufacture of sulphate of lime."

Montal, 36, Rue-Dauphine (passage Dauphine), for "improvements in musical instruments."

Ollat, of Lyons, for "a means of figuring velvets, &c."

Passenger, at M. Truffaut's, for "improvments in the manufacture of lamps."

Constant, Pougeot & Co., of Audincourt (Doubs), for "a new ventilator."

J. Salmon, at M. Pommier's 25, Rue-Coquillière, for "a new manure called végéto-salin-azoté."

Schmitt, of Valenciennes, for "a new corn mill."

T. Stopford, at M. Landron's, 3, Rue-des-Fossés-Montmartre, for "improvements in steam navigation."

Vauris, of Lyons, for "a new mode of making wigs."

Mme. P. Warenier, of Roubaix, for "improvements in the making of floors, &c."

D. Warren, of Roubaix, for "improvements in the manufacture of screws."

J. Yonge, at M. Truffaut's, for "machinery for cleaning and tanning skins."

Benini, 18, Galerie Colbert, for "improvements in bonnets."

J. Broise, of Lyons, for "improvements in wig-making."

X. Bronikowski, at General Ben's, 5, Place-de-l'Odéon, for "a mode of making flour from cooked potatoes."

J. Chegutt, at M. Gourlet's, 171, Foubourg St. Martin, for "an improved mode of making pâte de guimauve."

Mlle. M. Chiris, 23, Foubourg St. Honoré, for "improvements in the Bramah pump."

J. Constantin, at Perpigna's, for "improvements in the manufacture of artificial flowers."

B. Fourneyron, at Perpigna's, for "improvements in steam engines."

C. Guillonet, 28, Rue-de-l'Ecole Vaugirard, for "a machine to beat and sweep carpets."

Kaull, Vicard & Co., of Marseilles, for "the purification of oil."

E. Lebreton, at M. Perpigna's, for "an apparatus for burning resinous oils, &c."

F. Libault, 14, Rue-des-Lombards, for "a new irrigator."

T. Lobstein, of Strasbourg, for "an improved stove."

H. Pape, 19, Rue-des-Bons-Enfans, for "a machine to cut felt, &c."

E. Phillippe and L. Villeseque, 19, Rue Château-Landon, for "a machine to press grapes."

L. Lhen, of Lyons, for "improvements in silk manufacture."

Poelmann, at M. Digweed's, 35, Faubourg St. Honoré, for "improvements in the jacquard loom."

Mme. la Marquise de Raincourt, of Fallon, (Haute Saône), for "a new stove."

Vichrat, jun. at M. Reynaud's, for "a portative calorifère."

A. Badon, 52, Rue-Lafitte, for "a new system of paving, and the composition of bricks of asphaltum."

F. Barthelemy, 8, Rue-Mandar, for "an anti-electric plate to cure nervous affections."

G. Belegue, Donarnenez (Finistere), for "improvements in ship rigging."

M. Cretenier, of Epernay Marne, for "improvements in the preparation of wool."

Cretenier, of Epernay, for "improvements in the process of carding and cleaning wool, &c."

De Bergue & Spreaficos, 228, Quai de Jemmapes, for "a machine whose moving power is voltaic electricity."

Dumont, 39, bis, Rue de Flandre, at La Villette, for "the manufacture of a charcoal for the blanching of syrups and other liquids."

Enerle, of Nay (Basses-Pyrénees), for "a machine to clean the refuse of cotton, &c."

Erhard, of St. Louis (Haut-Rhin), for "an economical evaporating apparatus."

Fauquet, of Rouen, for "improvements in the printing of cravats."

Friou, of Haroue (Meurthe), for "a cure for epilepsy."

Girault, 13, Rue Descartes, for "an improved system of constructing bridges, &c."

Guimbal, of Issoire (Puy de Dôme), for "a machine for making nails."

Guyon, of Dôle (Jura), for "an improved kitchen culinary apparatus."

Guyon, of Dôle (Jura), for "an apparatus to prevent the smoking of chimnies."

Luc Hebert, of Roubaix, for "improvements in iron and other metal bedsteads."

Labourlat, 340, Rue St. Honoré, for "an improvement in the manufacture of clasps."

Lecoq and Co., 2, Rue du Harlay, au Marais, for "an improvement in scales."

Lemesre, of Roubaix, for "improvements in looms."

Meeus, at Lemoine's, of Wazemmes (Nord), for "an application of caoutchouc in the manufacture of cloths."

Perrot, 4, Rue St. Patrice, for "an improvement in tools, for working in wood, and various metals."

Prince, at M. Duret's, for "an improved method of supporting bodies in water."

Raisal, 42, Rue Neuve St. Denis, for "an apparatus to place two bedsteads in space now occupied by one."

Roux Duremerr, 33, Rue Michel-le-Comte, for "the application of caoutchouc and air to articles of saddlery."

De Saillet, 1, Rue du faubourg St. Honoré, for "a cork-cutting machine."

Servieu, at M. Reynaud's, for "improvement in the making of trowsers."

Andre, of Sedan, for "an economical mode of heating boilers."

Barrabe, of Domfront (Orne), for an improved mode of raising heavy bodies."

Barruel, at the Sarbonne, at Paris, for "an improved method of making liquid magnesia."

Bergeron, Passage-du-Grand-Cerf, 44,. Rue-St. Denis, for "an apparatus to give support to the uterus."

Briet, 29, Rue-Notre-Dame-de-Nazareth, for "a new lamp-glass."

Constantin, Avenue-de-Clichy, 38, for "a improved means of excavation."

Coltiau and Boissard, 8, Rue-Ste.-Croix-de-la-Bretonnerie, for "a new lamp."

Dantin, of Auxerre, for "an improved candlestick."

D'Arbois and David, 55, Rue-de-la-Roquette, for "a rotative steam engine."

De Labarussias, of Rouen, for "an improved lithographic press."

Landgraber, at Perpigna's, for "artificial asphaltum."

Marneur, of Senonches (Eure-et-Loir), for "a means of polishing iron of the first fusion."

Magnus, of Besançon, for "a machine called Voiture-cheval-mécanique, having a hold on the ground, and impelled by steam or other power."

Tauvin, 50, Rue-de-la-Chaussée-d'Antin, for "candles without wicks."

Valle, 3, Rue-de-l'Arbre-Sec, for "a substitute for size for canvass."

Rossignol, of Lyons, for "an improved method of fixing bolts."

Sterlingue & Co., 37, Rue-Poissonniére, for "a machine to beat leather."

Tardy & Co., of Valence, for "an improved mode of working silk."

Corder, of Reims, for "improvements in the preparation of wool and cotton."

Armand and Brossard, of Lyons, for "an improved mode of making military gaiters."

Arnox, of Bourges, for "a wire basket for the use of mines."

Baudoin, at M. Armengaud's, 31, Rue-St. Louis, for "a means of rendering shoes and boots waterproof."

Bois, at M. Reynaud's, for "an improved rotative engine."

Bose and Thillier, 17, Rue-Montorgueil for "improvements in locomotives, &c."

Boulon, 315, Rue St. Honoré, for "an improved method of copying letters, &c., without press."

Cerizians and Co., 64, Rue Ménilmontant, for "a machine for the purpose of excavating."

Colas, 102, Rue St. Honoré, for "a machine called Sécateur à engrenage."

Daly, 6, Rue Furstemberg, for "a new system of paving."

George, 36, Boulevard de la Barrière Montmartre, for "a machine for excavating, &c."

Lejeune, 97, Rue St. Honoré, for "an improved method of making silk hats."

Liorens, at the Comte de Septeun's, 11, Rue Neuve des Capucines, for "a remedy for ague."

Manoky, of Lyons, for "a piano combining the properties of the organ."

Pidault, 11, Rue St. Louis, at Batignolles-Monceaux, for "an improved fowling-piece."

De Precorbin, 12, Rue de Castiglione, for "an improved machine for striking coins and medals."

Rogeat, of Lyons, for "improved stoves and furnaces."

Tripot, 93, Allée des Veuves, for "making stained paper by mechanism."

Birch, at M. Truffaut's, for "improvements in the making of shoes."

Dewilde, of Arras, for "a condenser applicable to all kinds of steam engines."

Lagrange, at M. Perpigna's, for "a new system of the mechanical application of the action of man."

De St. Gilles, Rue St. Nicolas St. Martin, 22, Passage Chausson, 10, for "improvements in looms."

Schmidt, of Strasbourg, for "an improved method of taking measure of the human body."

Wilkins, at M. Truffaut's for "the employment of certain substances to improve soils."

Abribat, of Bordeaux, for "improvements in the manufacture of sugar."

Berthou and Couturier, 3, Rue J. J. Rousseau, for "a mosaic on wood and card board."

Srulley, 14, Rue-Hauteville, for "a new canvas, called Canevas des Gobelins."

Corbie, 41, Rue-des-Amandiers, at Belleville, for "improvements in stoves, &c."

Deslandes, 12, Rue-du-Petit-Lion St. Sauveur, for "a gas regulator."

Duquesnoy, 85, Faubourg St. Denis, for "an improved Biberon."

Esmein, of Nantes, for "artificial manures."

Fontaine Perrier and Naudin, 7, Rue-chapon, for "a feet par mer, called Caloripède."

Morel, of Vinne (Isère), for "an improved clog."

Pivant, at M. Armengaud's, for "an improved mode of soldering."

Poole, at M. Truffaut's, for "improvements in the dressing of wool."

Romanet, Barraud & Co., at M. Perpigna's, for "an improved steam boiler."

PATENTS GRANTED IN ENGLAND, FROM JANUARY, 31st, TO FEBRUARY 25th, 1843.

Six Months allowed for Enrolment of Specification, unless otherwise expressed.

George Benjamin Thorneycroft, of Wolverhampton, iron-master, for "improvements in furnaces used for the manufacture of iron, and also in the mode of manufacturing iron." Sealed January 31.

William Maugham, of Newport Street, Lambeth, chymist, for "an improvement in preparing aerated water." Sealed January 31.

William Barnard Boddy, of Saint Mary, Newington, surgeon, for "improvements in apparatus and means for opening, shutting, and fastening every description of sliding and lifting window sashes, windows and window shutters." Sealed January 31.

William Robinson Shaw, of Leeds, engineer, for "certain improvements in feeding or supplying steam boilers with water." Sealed January 31.

Samuel Kirk, of Halybridge, Lancaster, cotton spinner, for "certain improvements in machinery, or apparatus for preparing cotton and other fibrous substances for spinning." Sealed January 31.

Charles Hancock, of Grosvenor Place, artist, for "an improved means of dyeing or staining cotton, woollen, silk, and other fabrics, and rendering them repellant of waters and moisture." Sealed January 31.

Charles Clark, of Great Winchester Street, London, merchant, for "an improved pyro-hydro pneumatic apparatus, or means of generating, purifying, and condensing steam and other vapours, and of extracting from vegetable

substances the soluble portions thereof; as also the application of parts of the said apparatus to other heating, evaporating, and distilling purposes." Sealed January 31.

James Clark, of Glasgow, power-loom cloth manufacturer, for "an improved mode of manufacturing certain descriptions of cloths." Sealed February 1.

John Hill, of Manchester, machine maker, for "certain improvements in, or applicable to looms for weaving carpets and various other fabrics, in which raised loops or a raised pile constitute the face or the figure of the fabric." Sealed February 11.

Robert Hicks, of Old Burlington Street, Middlesex, surgeon, for "certain improvements in apparatus for impregnating liquids with gas." Sealed February 11.

Joseph Morgan, of Manchester, manufacturer of patent candle-making machines, for "improvements in the manufacture of candles." Sealed February 11.

Jonathan Badger, of Sheffield, carpenter and builder, for "improvements in the construction of bedsteads for invalids." Sealed February 11.

Christopher Nickels, of York Road, Lambeth, gentleman, for "improvements in the manufacture of fabrics made by lace machinery." Sealed February 11.

Thomas Ensor, of Milbourne Port, glove manufacturer, for "improvements in the manufacture of leather gloves." Sealed February 11.

Henry Du Bochet, of South Mall, Ireland, piano-forte tuner, for "a new method of making piano-fortes." Sealed February 11.

Thomas Wolverstan, of Salisbury, iron founder, for "certain improvements in axle-trees and axle-tree boxes." Sealed February 11.

Alfred Brewer, of Surrey-place, Old Kent Road, wire weaver and felt manufacturer, for "improvements in machinerey for manufacturing paper." Being a communication. Sealed February 11.

George Ebenezer Doudney and Edward Phillips Doudney, of Mile-end, Portsea, candle manufacturers, for "improvements in the manufacture of dip and mould candles." Sealed February 17.

James Boydell, junior, of Oak Farm Iron Works, near Dudley, iron-master, for "improvements in apparatus for retaining the wheels of carriages, in the event of an axis breaking, or otherwise." Sealed February 17.

Henry Ross, of Leicester, worsted manufacturer, for "improvements in combing and drawing wool and other fibrous substances." Sealed February 17.

Charles Brook, of Meltham Mills, York, cotton spinner, for "certain improvements in the apparatus used for purifying gas." Sealed February 17.

William Newton, of Chancery-lane, civil engineer, for "an improved system of working coal mines, and quarries of stone marble and slate; which may also be applied to the making of tunnel borings, or to other purposes of the like kind." Being a communication. Sealed February 20.

John Kymer, of Pontardalais, South Wales, coal proprietor, and Thomas Hodgson Leighton, of Llanelly, Carmarthen, chemist, for "improvements applicable to the burning anthracite or stone coal and other fuel for the purpose of obtaining heat." Sealed February 21.

Joseph Crannis and Robert Kemp, both of Southwark, furriers, for "certain improvements in wood paving." Sealed February 21.

Benjamin Brunton Blackwell, of Newcastle-upon-Tyne, gentleman, and William Norris, of the city of Exeter, civil engineer, for "an improvement in coating iron nails, screws, nuts, bolts, and other articles made of iron, with certain other metals." Sealed February 21.

Lawrence Holker Potts, of Greenwich, doctor of medicine, for "a new or improved method or methods of conveying goods, passengers, or intelligence." Sealed February 21.

Henry Clarke, of Drogheda, Ireland, linen merchant, for "improvements in machinery for lapping and folding all descriptions of woven textures and surface fabrics." Sealed February 23.

Francis Roubiliac Conder, of Highgate, engineer, for "improvements in the cutting and shaping of wood, and in the machinery for that purpose." Being a communication. Sealed February 23.

John Haggerston Leathes, of Norwich, gentleman, and William Kirrage, of the same place, asphalte manufacturer, for "certain improvements in coffins." Sealed February 25.

PATENTS GRANTED FOR SCOTLAND, FROM JANUARY 25th, TO FEBRUARY 25th, 1843.

George Benjamin Thorneycroft, of Wolverhampton, iron-master, for "improvements in furnaces used for the manufacture of iron, and in the mode of manufacturing iron." Sealed February 1.

James Boydell, Jun., of Oak Farm Works, near Dudley, in the county of Stafford, iron master, for "improvements in the manufacture of metals for edge tools." Sealed February 1.

James Clark, power loom cloth manufacturer, in Glasgow, in that part of Great Britain called Scotland, for "an improved mode of manufacturing certain descriptions of cloths." Sealed February 2.

Taverner John Miller, of Millbank-street, Westminster, oil merchant, for "improvements in apparatus for supporting a person in bed or when reclining." Sealed February 13.

Samuel Kirk, of Stalybridge, in the county of Lancaster, cotton spinner, for "certain improvements in machinery or apparatus for preparing cotton and other fibrous substances for spinning." Sealed February 13.

Charles Thatcher, of Midsomer Norton, in the county of Somerset, brewer, and Thomas Thatcher, of Kilmersdon, in the said county, builder, for "certain improvements in drags or breaks to be applied to the wheels of carriages generally." Sealed February 22.

PATENTS GRANTED IN IRELAND FROM JANUARY 25th, TO FEBRUARY 25th, 1843.

John George Bodmer, of Manchester, in the county of Lancaster, for "certain improvements in the manufacture of metallic hoops and tyres for wheels, and in the method of affixing the same for use, and also improvements in the machinery or apparatus to be employed therein." Sealed January 27.

James Clark, of Glasgow, power loom manufacturer, for "an improved mode of manufacturing certain descriptions of cloths." Sealed February 1.

Julian Edward Dismowe Robglas, of Upper Ebury-street, in the county of Middlesex, esquire, for "improvements in the separation of sulphur from various mineral substances." Sealed February 18.

Thomas Thompson, of Coventry, in the county of Warwick, weaver and machinist, for "certain improvements in weaving figured fabrics." Sealed February 18.