

United States District Court,  
C.D. California.

**TILTON ENGINEERING, INC,**  
Plaintiff.

v.

**QUARTER MASTER INDUSTRIES INC,**  
Defendant.

No. CV00-9248 AHM (RNBx)

**Feb. 1, 2002.**

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## **ORDER RE CLAIM CONSTRUCTION**

A. HOWARD MATZ, **District Judge.**

### **I.**

#### **INTRODUCTION**

This matter comes before the Court for patent claim construction.

The parties do not dispute that Plaintiff Tilton Engineering owns United States Patent No. Re. 36,363 entitled "Carbon to Carbon Friction Clutch." On August 29, 2000, Plaintiff filed suit against Defendant Quarter Master alleging that Defendant manufactures and sells a clutch that infringes Plaintiff's ' 363 patent. Complaint para. 6. FN1

A carbon to carbon clutch is of "great value in automobile racing in that it permits easier braking, less sluggish gear shifting and greater rates of acceleration and deceleration." Col. 3: 11-14. FN2 As explained in the patent specification, these clutches use "driven" disks and "driver" disks that are both made out of carbon. Col. 1: 13-14. Carbon disks have two main advantages: the coefficient of friction increases with temperature (meaning that the disks get "stickier" as they are heated, causing less sliding between plates) and carbon is lighter than steel. Col. 1: 16-21.

Carbon also has two disadvantages: it has a relatively low compressional strength (i.e., it is brittle) and it

abrades easily. Col. 1: 22-23. The Tilton Clutch purportedly addresses both of these disadvantages, which are not addressed by the prior art: (1) it seeks to increase the clutch's ability to withstand a high compressional load by reinforcing the driven carbon plate; and (2) it seeks to minimize abrasion by incorporating an "axial 'floating' action in the clutch so that a uniform and low wear rate is achieved and the effects of initial axial misalignment are minimized." Col. 1: 54-60.

The parties ask the Court to construe several terms in the '363 patent.

## II.

### LEGAL STANDARDS GOVERNING CLAIM CONSTRUCTION

The court, not the jury, must construe the meaning and scope of patent terms. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed.Cir.1995) (en banc), *aff'd*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). Claim construction begins and ends with the actual words of the claim. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed.Cir.1998). In construing disputed claim terms, the court should look first to intrinsic evidence. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996.). Intrinsic evidence includes the language of the claims, the specification and the file history, if in evidence. *Id.* The file history is often important intrinsic evidence because any interpretation that is either provided or disavowed in the file history affects the claim scope. *Renishaw*, 158 F.3d at 1249 n. 3. In most situations, analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. *Vitronics*, 90 F.3d at 1583.

Absent a special and particular definition created by the inventor, e.g., the inventor acted as his own lexicographer, terms in a claim are to be given their ordinary and accustomed meaning. *Renishaw*, 158 F.3d at 1249. The court must review the specification to determine whether disputed terms have been used by the inventor in a manner other than their ordinary meaning. *Vitronics*, 90 F.3d at 1582. Technical terms are interpreted from the perspective of persons skilled in the art. *See Phillips Petroleum Co. v. Huntsman Polymers Corp.*, 157 F.3d 866, 871 (Fed.Cir.1998).

Extrinsic evidence refers to evidence that is external to the patent and its file history, such as expert testimony, inventor testimony, dictionaries, and technical treatises and articles. *Vitronics*, 90 F.3d at 1584. A court may rely on extrinsic evidence to construe claims, but only where the intrinsic evidence alone does not resolve any ambiguity. *Vitronics*, 90 F.3d at 1583. However, a court may consult extrinsic evidence to ensure that its claim construction is not inconsistent with how a person skilled in the art would understand the claim terms. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308-09 (Fed.Cir.1999). Moreover, the court may freely consult dictionaries and may rely on dictionary definitions when construing claims, to the extent the dictionary definition does not contradict a definition found in the patent documents. *Vitronics*, 90 F.3d at 1584 n. 6.

## III.

### DISPUTED TERMS

#### A. Slots and Fingers

The parties most heavily dispute the meaning of the terms "slots" and "fingers," which appear repeatedly in Claim 1 and less frequently in Claims 2 and 3 of the '363 patent. Quarter Master argues, and the Court agrees, that these terms should be considered together, because these elements are defined by the patent in a way that requires them to have complementary shapes. In the claim specification, for example, the patentee refers to the "slots and corresponding fingers." Col. 3: 26. In Claim 1, the "fingers" are described as "fitting into the slots in the second set of carbon disks." Col. 3: 55-56. In Claim 2, the "fingers" are "adapted to fit into the slots of each driven disk." Col. 4: 24.

The terms "slots" and "fingers" appear in the following sections (among others) of the patent claims:

We claim:

1. A carbon to carbon friction clutch for attachment to an engine flywheel comprised in combination of:

[a. through e. lists several elements of the clutch]

f. a first set of carbon disks which are ... alternately spaced between and in selectively engageable contact with a second set of carbon disks, each of the second set being provided with a central aperture and a plurality of evenly spaced **slots** extending radially from the central aperture;....

h. a relatively flat, circular, metallic hub having oppositely facing end surfaces with a splined, circular opening at its center and formed with radial **fingers** on said end surfaces, the **fingers** fitting into the **slots** in the second set of carbon disks....

2. A hub for a friction clutch wherein the friction clutch has a set of driven disks wherein the clutch has a set of driven disks, each driven disk having a central aperture and a plurality of radially-extending **slots**, the hub comprising:

oppositely facing end surfaces;

a splined circular opening at the center of the hub; and

a plurality of radial **fingers** on the end surfaces, the fingers being adapted to fit into the **slots** of each driven disk....

3. A coupling mechanism ... comprising:

at least one first disk, each first disk having a plurality of radially-extending **slots** ...

a hub ... with radially extending elements ... shaped so as to fit within the slots in each first disk.

Generally speaking, Tilton would have the Court construe the terms "slots" and "fingers" broadly, while Quarter Master urges a narrow construction. The subtext of the disagreement between the parties is that Quarter Master has a carbon to carbon clutch that uses a "splined connection" FN3 between the hub and driven disks. If the connection between "slots" and "fingers" as claimed in the ' 363 patent encompasses a splined connection, then it is more likely that the Quarter Master clutch infringes the Tilton Clutch.

The alleged difference between the two clutches (i.e. between a splined connection and a slot/finger connection) is best illustrated by comparing the exploded pictures of the parties' respective clutches, attached as Exhibit A (Tilton Clutch) FN4 and Exhibit C (Quarter Master Clutch) to Tilton's Opening Brief. In the Tilton Clutch, the hub 9 has fingers 16 and 16' that engage the slots 20 of the driven disks 5 and 6. *See* Pl.'s Exhibit A. In the Quarter Master Clutch, the hub 6 has spline teeth on its outer periphery that engage the spline openings on the inner periphery of the driven disks 4 and 8. *See* Pl.'s Exhibit C.

### **1. Tilton's Position**

Tilton maintains that "slots are simply radially extending openings, or gaps, into which fit the radially extending fingers, or elements, of the hub." Opening Br. at 6. According to Tilton, neither the claims nor the patent's specification places any limit on the size or shape of the fingers or slots. Claim Construction Chart ("CCC") at 1. Tilton argues that the '363 patent does not suggest or define any particular length-to-width ratio of the "slots" and "fingers." Tilton bases this contention on the following language in the specification: "The number of slots in the carbon driven plates can be chosen to vary the area of contact with the hub and thus control the compressional load." Col 2: 5-8. The specification also states: "In [Figure 1] there are six slots in the carbon driven plates with six fingers on each side. Many variations in the number and shape of the slots and corresponding fingers are possible within the scope of the invention." Col. 3: 24-28.

### **2. Quarter Master's Position**

Quarter Master argues that "slots" are "elongated openings substantially greater in length ... than in width ...; specifically, longer than openings for spline teeth." CCC at 1. Similarly, "fingers" are "elongated projections substantially greater in length ... than in width...." CCC at 2. In support of its argument, Quarter Master relies on three sources: (1) dictionary definitions of "slots" and "fingers"; (2) the use of the terms in the patent specification; and (3) the prosecution history of the '363 patent.

### **3. The Court's Construction of Slots and Fingers**

The Court construes "slots" to be openings extending radially from the central aperture into which fit the radially extending projections of the hub, which openings are not limited in number, size or relative shape (e.g., length-to-width ratio). Similarly, the Court construes "fingers" to be radially extending projections which fit into the openings in the second set of carbon disks, and which projections are not limited in number, size or relative shape (e.g. length-to-width ratio).

The Court is most persuaded by the plain language of the patent specification, which states: "Many variations in the number and shape of the slots and corresponding fingers are possible within the scope of the invention." Col. 3: 25-28. This broad language indicates that slots and fingers are not limited to openings and projections, respectively, that are elongated. Rather, many shapes are possible within the scope of the invention.

Second, Claim 6 of the patent discloses "[a] coupling mechanism as defined in claim 3 wherein the elements extend further in their radial direction than in their circumferential direction." Under the doctrine of claim differentiation, courts should interpret a dependent claim to have a different meaning than the independent claim. "Under the doctrine of claim differentiation, each claim in a patent is presumptively different in scope. This presumption can be strengthened under certain circumstances. One of those circumstances was espoused in *Wenger Manufacturing, Inc. v. Coating Machinery Systems, Inc.*, [239 F.3d 1225, 1233, 57 USPQ2d 1679, 1685 (Fed.Cir.2001) ], wherein this court stated that "[c]laim differentiation, while often

argued to be controlling when it does not apply, is clearly applicable when there is a dispute over whether a limitation found in a dependent claim should be read into an independent claim, and that limitation is the only meaningful difference between the two claims.' " *Intermatic Inc. v. The Lamson & Sessions Co.*, 273 F.3d 1355, 1364 (Fed.Cir.2001) (citation omitted).

Claim 6, which is dependent on Claim 3, contains a limitation on the relative size of the "elements:" they must be longer than they are wide. Under the doctrine of claim differentiation, the "radially-extending elements" in Claim 3 are presumed not limited in terms of their relative size: they need not be longer than they are wide. This presumption is strengthened by the fact that Claim 6 exists solely to disclose elongated elements; there is no other way to differentiate it from Claim 3.

Although Claim 3 does not use the word "fingers," it does use the word "slots," and the "radially extending elements" in Claim 3 "fit within the slots in each first disk." Col. 4: 35-38. If (as the Court concludes) the "radially extending elements" in Claim 3 need not be elongated, then the "slots" do not need to be either. And because (as Quarter Master urges) the "slots" and "fingers" have complementary shapes, then "fingers" need not be elongated either.

The Court has consulted the dictionary definitions proffered by Quarter Master, but does not find them helpful in construing the meaning of "slots" and "fingers." First, the dictionary definitions do not clearly support Quarter Master's argument that "fingers" must be elongated. The Webster's Unabridged Dictionary (2nd Ed.) has two possibly applicable definitions of "finger": (1) "a part shaped like or used as a finger: some device which serves the function of a finger"; and (2) "in mechanics, a projecting part coming into contact with another part and controlling its motion." Moy Decl. Ex. B at 12. The first definition does not clearly support Quarter Master's position because the "part" may either be "shaped like *or* used as a finger." *Id.* (emphasis added). If the part is "shaped" like a finger, then it is elongated. But, under the first definition, the part is also a "finger" if it is "used" as such, without reference to any particular shape. The second dictionary definition of "finger" appears more applicable, because it explains in mechanics what it means to use a part as a finger. However, that definition does not support Quarter Master's position at all, and, in fact, supports Tilton's position because the "finger" is not required to have any particular shape. Rather, something is a "finger" so long as it comes into contact with another part and controls its motion.

Second, to the extent the dictionary definition of "slot" supports Quarter Master's position that slots are elongated, it is at odds with the patent specification which states that "many variations in the ... shape of the slots ... are possible within the scope of the invention." Col. 3: 25-27. The dictionary defines "slot" as "a narrow notch, groove, or opening, as a keyway in a piece of machinery, a slit for a coin in a vending machine, etc." Moy Decl. Ex. B at 13. This definition lends some support to Quarter Master's position because the word "narrow" is ordinarily understood to mean "longer than wide." However, the Court declines to rely on this dictionary definition to contradict the plain language of the patent specification, which states that slots need not have a particular shape. *Vitronics*, 90 F.3d at 1584 n. 6 (stating that judges may rely on dictionaries in construing claim terms "so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents"); *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1478 (Fed.Cir.1998) (cautioning against use of non-scientific dictionaries "lest dictionary definitions ... be converted into technical terms of art having legal, not linguistic significance"). The Court also notes that relying on the dictionary in this instance invites more trouble than it resolves: the parties have submitted an avalanche of expert testimony relating to the meaning of "keyway." The dictionary in the first instance is extrinsic testimony; to interpret the dictionary would require yet another layer of extrinsic testimony. The Court declines to tread this path. "Slots" need not be elongated.

Quarter Master argues that the prosecution history supports its position because Tilton distinguished its clutch from the prior art by arguing that a "slot and finger" connection is not a "splined connection." The prosecution history cited by Quarter Master is intensely confusing and, as presented in its Responsive Brief, taken out of context. Based on the claim specification's explanation of how the Tilton Clutch improved over prior art, and Tilton's presentation at the hearing, the Court finds Tilton's explanation of the prosecution history more persuasive than Quarter Master's. Tilton explains that it distinguished the prior art based not upon the shape of the fingers and slots, but based upon the ability of the claimed "floating hub" (which uses a finger/slot connection) to directly engage disks comprised of brittle friction material, while avoiding compressional failure and minimizing abrasive wear. As the patent specification states: "A carbon drive plate which depends on carbon teeth to mesh with steel splines in an output shaft would fail in shear as the load became high, even with the improved carbon material." Col. 1: 35-38. The Tilton Clutch addressed this problem-i.e., the problem of directly connecting carbon plates to the steel output shaft-because it uses a hub that permits the driving and driven plates to "float" during clutch disengagement. Col. 1: 46-47. The carbon plates no longer directly engage the output shaft. The really key innovation of the Tilton Clutch is the "floating hub," not the shape of the slots and fingers. Therefore, Quarter Master's interpretation of the prosecution history is not convincing.

Quarter Master makes much of the fact that the preferred embodiment of the Tilton Clutch depicts elongated slots and fingers. It is settled law, however, that the claims are not limited by the preferred embodiment. *Gart v. Logitech, Inc.*, 254 F.3d 1334, 1343 (Fed.Cir.2001) ("It is well established that broad claims supported by the written description should not be limited in their interpretation to a preferred embodiment."). Given the language in the claim specification stating that "slots" and "fingers" can have various shapes, the Court declines to construe "slots" and "fingers" as elongated because they are so depicted in the preferred embodiment.

## **B. Oppositely Facing End Surfaces**

The parties seek to have the Court construe "oppositely facing end surfaces" as used in the following sections of the '363 patent.

Claim 1: "a relatively flat, circular metallic hub having **oppositely facing end surfaces** ... formed with radial fingers on said end surfaces." Col. 3: 53-56.

Claim 2: "the hub comprising **oppositely facing end surfaces** ... [and] a plurality of radial fingers on the **end surfaces**." Col. 4: 21-23.

Claim 3: "a hub having **oppositely facing end surfaces** with radially-extending elements on at least one of the **end surfaces**." Col. 4: 35-36.

Both parties agree that in the preferred embodiment of the Tilton Clutch depicted in Figure 1, the oppositely facing end surfaces are in the form of "webbing" between the fingers 16 and 16' of the hub 18. Opening Br. at 8; Responsive Br. at 12. Tilton alleges that Quarter Master's clutch's hub also has "oppositely facing end surfaces" which "are formed by the snap rings (Ex. C, 5) which protrude from three slots in the outer circumference of the metallic hub." Exhibit 2 (Tarozzi Decl.) para. 7.

At the hearing, the parties agreed that they do not dispute the *meaning* of "oppositely facing end surfaces."

Rather, the parties dispute the *function* of the end surfaces. Both parties agreed that "oppositely facing end surfaces" should be construed to mean "axially opposing facing surfaces of the hub." Because the parties agree that this term should be construed in this manner, the Court does not see a need to give further meaning to this term.

### **C. Isolation From Shear Forces**

The parties ask the Court to construe the following clause in Claim 1 of the '363 patent: "whereby said metallic hub isolates the second set of carbon plates from shear forces which would otherwise be encountered if said second set of carbon plates were provided with splines and directly engaged to a splined shaft." Col. 4: 12-16. Tilton proposes the following construction: "Dispersal of torque through the increased surface area of a metallic hub isolates the second set of carbon plates from shear forces that would otherwise be encountered if said second set of carbon plates were directly engaged to an output shaft." CCC at 4. Quarter Master proposes a different construction: "Transmission of torque through disk slots engaging hub fingers prevents a carbon disk from encountering the shear forces that would be exerted by a splined connection." Id.

The Court holds that Tilton's construction is correct. As Tilton explained at the hearing, this piece of Claim 1 states that the hub distributes the load by acting as a buffer between the carbon disks and the output shaft. If the carbon plates were "directly engaged" to the shaft-albeit through a splined connection-they would break. This is explained in the claim specification, which states: "A carbon drive plate which depends on carbon teeth to mesh with steel splines in an output shaft would fail in shear as the load became high, even with the improved carbon material." Col. 1: 35-38. The hub protects the carbon disks by dispersing the torque-albeit through a "slot and finger" connection.

Quarter Master's construction is incorrect because it reads the hub element out of the claim. It does this by dropping the word "shaft" after "splined," and substituting "connection" instead. But this clause in Claim 1 neither says nor implies anything about how a "slot and finger" connection is better than a "splined connection" between the "second set of carbon plates" and that output shaft. Its focus instead is on the contribution of the hub in protecting the carbon plates from shear forces by acting as a buffer.

For these reasons, the Court agrees with Tilton' construction of this clause.

### **D. Disks**

Tilton seeks a construction of the term "disk" as used in Claims 2 and 3 of the patent. Plaintiff proposes the following construction: "'Disks' refer to disks made of friction material which directly engage[ ] the hub." CCC at 5. Quarter Master proposes a different construction: "'A 'disk' is a flat circular machine element of no particular material or construction." Id.

At the hearing, Tilton agreed that a "disk" is a flat circular machine element. The dispute between the two parties is whether the '363 patent limits the material of which the "disk" must be made. Although Quarter Master is correct that the language of Claims 2 and 3 does not place any limitation on the material of which the disks must be made, the patent specification does. In particular, the specification states: "These mechanisms [carbon to carbon friction clutches] employ carbon disks for both the driver and driven plates...." Col. 1: 13-15. Moreover, as the Court has already concluded in Sections A.3 and C above, the principal problem addressed by the Tilton Clutch is the design of a hub that will not cause the compression failure of lighter, high-friction coefficient carbon disks at the point of contact with the hub. Col. 1:10-2:10.

The Court disagrees with Tilton that the word "disk" should be interpreted to mean a disk made of any friction material. Even though "Tilton is not attempting to limit the type of friction material which comprises the disk," Reply at 13, the patent specification (that Tilton relies on so heavily) clearly states that the disks in the invention are made out of carbon. The specification repeatedly refers to a "carbon to carbon" clutch. Therefore, the Court construes "disk" in Claims 2 and 3 to be a flat, circular machine element made of carbon. Tilton asks the Court to further construe "disk" to mean an element that directly engages the hub. Tilton has not clearly or persuasively supported its request for this further construction (devoting only one paragraph in its opening brief and one paragraph in its reply brief to the meaning of "disk"), and the Court therefore declines to give "disk" a further construction.

IT IS SO ORDERED.

FN1. On March 12, 2001, the Court (per Judge Hupp) denied Defendant's to dismiss for lack of personal jurisdiction.

FN2. The '363 patent is Exhibit 1 to Plaintiff's Opening Brief.

FN3. A "spline" is "[a] machine element consisting of integral keys (spline teeth) or keyways (spaces) equally spaced around a circle or portion thereof." McKibben Decl.Ex. C at 023.

FN4. The picture presented in Exhibit A is also the "preferred embodiment" of the Tilton Clutch, attached to the claim specification as Figure 1. *See* Tilton's Opening Br., Exhibit 1 at 14.

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