United States District Court,
D. Delaware.

BIODEX CORPORATION,
Plaintiff.
v.
CHATTANOOGA CORPORATION and Chattecx Corporation,
Defendants.

Civ. A. No. 90-204-CMW

Feb. 5, 1991.

Walter L. Pepperman, II, of Morris, Nichols, Arsht & Tunnell, Wilmington, Del. (Peter T. Cobrin of Cobrin, Feingertz & Gittes, New York City, of counsel), for plaintiff.

Robert W. Whetzel of Richards, Layton & Finger, Wilmington, Del. (Charles B. Park, John J. Barnhardt, III, and Ernest B. Lipscomb, III, of Bell, Seltzer, Park & Gibson, Charlotte, N.C., of counsel), for defendant.

OPINION

CALEB M. WRIGHT**, Senior District Judge.**

The Plaintiff Biodex Corporation, brought this patent infringement action against the Defendants Chattanooga Corporation and Chattecx Corporation on May 2, 1990. The subject patent is United States Patent No. 4,628,910 (the " '910 patent"). FN1 The '910 patent relates to a muscle exercise and rehabilitation apparatus.

The Defendants have denied in their answer, filed June 21, 1991, the charge of infringement. In addition both Defendants have asserted in a counterclaim the invalidty of Plaintiff's '910 patent and Defendant Chattecx in its second counterclaim has asserted that it owns United States Patent No. 4,711,450 (the " '450 patent") and that Biodex has infringed this patent with its B-2000 device.

The Plaintiff, Biodex Corporation, filed a motion for summary judgment of noninfringement of the '450 patent on July 25, 1990. The Plaintiff asserts that it is entitled to summary judgment because there is not literal infringement since the claims of the '450 patent do not read on the Plaintiff's accused B-2000 device and there is no infringement under the doctrine of equivalents since Plaintiff's accused B-2000 device does not have substantially the same function, means, and result as recited in the claims of the '450 patent.

The parties have filed briefs in support of and in opposition to the pending motion, and this Court has heard oral argument. This motion is presently before the Court for determination. For the reasons which will be explained herein, the Court denies Plaintiff's motion for summary judgment.

Background

The '450 patent which is owned by Defendant Chattecx Corporation is entitled "Multi-Mode Exercising Apparatus" and relates to a multi-mode exercising apparatus for providing exercise in isometric, isotonic, isokinetic and constant power modes. The user of this apparatus is seated in a chair with his limb attached to a handle that is attached to an elongated arm. The amount and direction of force or resistance exerted on the exercise arm by the machine can be controlled in accordance with a predetermined program regardless of the amount, speed and direction of the force or resistance applied to the arm by the user. The '450 patent contains two independent claims, claim number one and claim number eight. These two independent claims, are the only claims of the '450 patent that the Court needs to be concerned with for purposes of this motion because if they are not infringed then the claims dependent on them cannot be infringed.

Claim 1 provides:

1. A multi-mode exercising apparatus comprising a central support housing,

a *rotary actuator* mounted to said support housing and adapted to be *hydraulically driven* in opposite rotational directions about a rotational axis, and including an output shaft extending along said rotational axis,

hydraulic pump means for pressurizing a hydraulic fluid,

servo valve means interconnected between said pressurized hydraulic fluid and said rotary actuator for *controlling fluid flow in each direction through said actuator* in response to an electrical input signal,

an arm extending radialy with respect to said rotational axis and having one end thereof fixed to said output shaft, and an opposite end spaced radially from said rotational axis,

a slider slideably mounted to said arm and including locking means for releaseably positioning said slider at an adjustable location along the radial length of said arm,

a user engageable handle adapted to be engaged by the body of the user during use of said apparatus,

block means mounting said handle to said slider and such that said handle extends in a direction generally parallel to said rotational axis, said *block means including load cell means for providing an electrical signal* which is proportional to the magnitude of the force exerted by the user on said handle during use of said apparatus,

position sensing means for generating an electrical signal representative of the rotational position of said actuator, and

control means for controlling the input electrical signal to said servo valve means in response to the signals from said load cell means and said position sensing means and in accordance with a predetermined control program, and whereby the positioning of said load cell means immediately adjacent the user handle serves to effectively avoid any force component from the weight of said arm and said slider from being included in the output signal of said load cell means.

[Emphasis added]

Claim 8 provides:

8. A multi-mode exercising apparatus comprising a central support housing,

an actuator assembly mounted to said support houseing, said actuator assembly including *rotary actuator adapted to be hydraulically driven* in opposite rotational directions about a rotational axis, and including an output shaft extending along said rotational axis, and with said output shaft having opposite ends which are positioned on respective opposite sides of said rotary actuator,

hydraulic pump means mounted to said support housing *for pressurizing a hydraulic fluid,*

servo valve means interconnected between said pressurized hydraulic fluid and said rotary actuator for *controlling fluid flow in each direction through said actuator* in response to an electrical input signal,

a radial arm,

means releasably and selectively mounting said radial arm to either one of said ends of said output shaft, and such that said radial arm extends radially with respect to said rotational axis,

a user engageable handle adapted to be engaged by the body of the user during use of said apparatus,

means mounting said handle to said radial arm and such that said handle extends in a direction generally parallel to said rotational axis,

load cell means for providing an electrical signal which is proportional to the magnitude of the force exerted by the user on said handle during use of said apparatus,

position sensing means for generating an electrical signal representative of the rotational position of said actuator, and

control means for controlling the input electrical signal to said servo valve means in response to the signals from said load cell means and said position sensing means and in accordance with a predetermined control program,

whereby the user may be positioned in either side of said actuator assembly and with said radial arm mounted to the adjacent end of said output shaft.

[Emphasis added]

Plaintiff, Biodex sells a muscle exercise and rehabilitation apparatus, the B-2000 device, which is accused of infringing the Defendant's '450 patent. The Plaintiff submits that the best description of this B-2000 machine appears in U.S. Patent No. 4,691,694 ("the '694 patent"). FN2 The B-2000 device relates also to an exercise and rehabilitation apparatus. This device is operative in isokinetic (voluntary) and passive (oscillation) modes. A user of this device is seated in a chair and their limb is secured to a handle which is located at the bottom end of an arm. The arm is driven by a shaft that is rotably journaled through a

transverse bore extending through an output shaft of a gearbox. The gearbox is driven by an electric DC servo motor. A torque sensing tube, which includes a central tube, is mounted between the shaft and the gearbox shaft and determines the amount of torque exerted on the shaft via the strain gauges which are mounted on the central tube. A closed loop servo feedback system controls the operation of the electric DC servo motor to control the movement of the arm and the user's limb which is attached thereto.

Declaration of Robert L. Boyd

The declaration of Robert L. Boyd was offered in support of Biodex' motion for summary judgment dismissing the charge of infringment of the '450 patent asserted against Biodex by the Defendant Chattecx Corporation. Robert L. Boyd ("Boyd"), is the first named inventor on U.S. Patent No. 4,691,694, which is representative of the accused B-2000 device. He is also an engineering consultant to the Plaintiff Biodex Corporation. Boyd represents that as to the elements of independent claims one and eight of the '450 patent, there are no corresponding or equivalent structures in the B-2000 device. He states in reference to each element of the independent claims of the '450 patent that there is nothing the same or substantially similar in function, means, or result in the B-2000 system.

Boyd bases his position primarily on the absence of hydraulics and the requisite hydraulic apparatus, such as a pump and a servo valve, in the B-2000. Boyd explains that because the B-2000 system uses an all electric servo motor and does not use hydraulic fluid, there is no need, in the B-2000 device, to pressurize hydraulic fluid by means of a pump, control the flow of such fluid by means of a servo valve, use such fluid to drive a hydraulic rotary actuator or have a positioning sensing means for generating an electrical signal representative of the rotational position of a hydraulic actuator.

Boyd also asserts in reference to the "block means including a load cell means" element of the '450 patent that there is nothing the same or substantially similiar in function, means, or result in the B-2000. He bases this assertion on his explanation that the structural arrangement of the torque sensing load cell in the B-2000 brings about a different function, means, and result in the B-2000 device. At oral argument Plaintiff alleged that the load cell position in the '450 patent, whereby the load cell is attached to the arm to which the handle and the user's limb are attached, was mandated by the Patent Office in order to get the claim allowed. Plaintiff contends that prosecution history estoppel prevents the "block means including a load cell means" element of the '450 patent from encompassing the B-2000's load cell arrangement.

Boyd explains that the B-2000's torque sensing load cell, which is formed from strain gauges, is positioned on the torque sensing tube which is mounted between the shaft and the gearbox shaft. Boyd explains that by having the strain gauges, which form what is the load cell in the B-2000, on the tube rather than on the arm to which a person's limb is attached, as is the location in the '450 patent, an entirely different mode of operation is provided. He further explains that due to this location difference, the function is different because the load cell in the B-2000 measures the torque instead of the force exerted by the user on the handle.

The '450 patent recites a "control means for controlling the input electrical signal to said servo valve means in response to the signals from said load cell means ... immediately adjacent the user handle...." The different structural arrangement of the load cell in the B-2000 and the lack of a servo valve in the B-2000 are used to support why this "control means" element of the '450 patent is not present in the B-2000. Boyd states that in contrast to the '450 patent the load cell in the B-2000 is as far from the user handle as possible since it is on a tube, and the B-2000 has no servo valve and thus the function, means and result are not

substantially the same.

Declaration of Anthony Miscio

The declaration of Anthony J. Miscio was offered in support of defendant Chattecx Corporation's opposition to Plaintiff's motion for summary judgment. Anthony J. Miscio ("Miscio"), a Director of Engineering for Defendant Chattecx Corporation, states that both exercise and rehabilitation devices, the '450 and the B-2000, use a closed-loop servomechanism for controlling the speed, force and range of motion of an arm that is attached to an output shaft. The servomechanism described in the '450 patent is an electro-hydraulic system which includes a hydraulic pump that directs hydraulic fluid to a servo valve which is activated by an electric signal from a microprocessor which causes fluid flow from the servo valve to an actuator, resulting in rotation of the arm. He asserts that the elements in the claims of the '450 patent that are in dispute all relate to this closed-loop servomechanism.

He explains that a closed-loop servomechanism takes error signals from a load cell relating to the direction of the arm and the amount of force applied by the user to the arm and sends those signals to a computer resulting in an adjustment command that ultimately reaches the arm to which the user is applying force. He maintains that there are several types of closed-loop servomechanisms, but hydraulic and electrical are the most widely used for machine controls and are for the most part interchangeable.

Miscio views the '450 patent and the B-2000 device, as systems that both use closed-loop servomechanisms, except that the system in the '450 patent is an electro-hydraulic one and the system in the B-2000 device is electro-mechanical. He explains that the power drive or input for the '450 patent' s servomechanism is a rotary actuator, a servo valve, and a hydraulic pump power source which he asserts is analogous to a rotary actuator, servo amplifier, and electrical power source in the B-2000 device. Therefore, his position is that a comparison of the closed-loop servomechanisms of the two devices shows that they are the same element-by-element and perform identical tasks and that any differences in the physical structures of some of the elements for carrying out these identical tasks are equivalent.

Miscio explains that a rotary actuator is that part of the device which causes the output shaft to rotate and that in order for the force arm of either the device in the '450 patent or the B-2000 to move it is necessary for something to cause this movement. The '450 patent terms the element causing this movement a rotary actuator. He states that both devices have a rotary actuator and that they both function to control the arm and that the results are identical. Miscio states that they represent equivalent elements because the only difference is that the rotary actuator of the '450 patent is "adapted to be hydraulically driven" and the rotary actuator in the B-2000 is "adapted to be electrically driven".

Miscio explains that the rotary actuators of both the '450 patent and B-2000 must have some means to cause rotation to occur. He asserts that the elements doing this in each device do the same thing and are likewise equivalent. The '450 patent utilizes an element called a servo valve and the B-2000 uses an element called a servo amplifier. He states that the electric motor, the servo amplifier and the power line plug are essentially interchangeable and equivalent to the hydraulic counterparts of a pump, a servo valve and hydraulic fluid in the '450 patent.

Miscio also explains that a load cell comprised of strain gauges that sends electrical signals to a control means is used in both the '450 patent and the Biodex device to determine the direction and amount of force applied by the user to the arm. In reference to the different placement of the load cell in the two devices, he

states that the placement becomes immaterial since both load cells are formed of strain gauges for the purpose of sending signals to a control means that results in the control of the arm. The only difference resulting from the location is in the output provided by the load cell. The output from a load cell placed on the arm near the user handle, as is the location in the '450 patent, does not include any force component from the arm, whereas, the output from a load cell placed on a torque tube, as is the location in the Biodex device, requires that the weight of the handle be taken into account.

Miscio's opinion after studying and comparing the '450 patent and '694 patent, the representative patent of the Biodex B-2000 device, is that for each element of the '450 patent there is a structure in the B-2000 device that is the same or equivalent. In his opinion, a multi-mode physical exercise machine built in accord with the '694 patent would also be described by claims 1 and 8 of the '450 patent and would, therefore, infringe these claims.

Discussion

At the outset the Court will note that this case is unusual in that a summary judgment motion has been pursued in the absence of any discovery. Plaintiff, the party bringing this motion, states in its brief that discovery is still in its incipient stage. However, summary judgment under F.R.C.P. 56(c) is proper if "there is not genuine issue of material fact and.... the moving party is entitled to judgment as a matter of law." Wilmington Housing Authority v. Pan Builders, Inc., 665 F.Supp. 351, 353 (D.Del.1987) (citing Adickes v. Kress Co., 398 U.S. 144, 157 (1970)). Summary Judgment is as proper in a patent case as in any other case, if the conditions of Rule 56 have been satisfied. *See* Chemical Engineering Corp. v. Essef Industries, 795 F.2d 1565, 1571 (Fed.Cir.1986).

"Although the same standard for summary judgment is used in patent cases as in other cases, the standard is somewhat more difficult to meet in patent cases, because not only must no genuine issues of material fact exist, but to grant summary judgment properly, the trial court must in addition construe the claim correctly and conclude that it would not be possible for the trier of fact to find infringement." Safe Flight Instrument v. Sunstrand Data Control, 706 F.Supp. 1146, 1149 (D.Del.1989). As will be explained further in the following discussion, there exist genuine issues of material fact that should be resolved before this Court may correctly construe the scope of the claims at issue, thus the requisite showing has been made in this case, to withstand a motion for summary judgment.

Infringement

"The infringement inquiry is broken down into two steps: first, the scope of the claims must be ascertained, and then the trier must decide whether the claims cover the accused device. The latter step, which is the ultimate determination of infringement, is a fact issue, and a motion for summary judgment on that issue should be approached with great care by the district court." Palumbo v. Don-Joy Co., 762 F.2d 969, 974 (Fed.Cir.1985). An accused product or process may infringe a patent in one of two ways. Literal infringement occurs when the accused product or process is within the literal terms of the claim, in other words where the construed claim of the patent "reads on" the accused product or process. Infringement under the doctrine of equivalents occurs when an accused product or process, though outside the literal terms of the claim, does the same work in substantially the same way to accomplish substantially the same result as the patented product or process. 4 D. Chisum, *Patents, A Treatise on the Law of Patentability, Validity and Infringement,* s. 18.01 (1990).

The first step, of construing the scope of a claim can be determined as a matter of law if the language of the

claim is not disputed. However, "when the meaning of a term in the claim is disputed and extrinsic evidence is necessary to explain that term, then an underlying factual question arises, and construction of the claim should be left to the trier...." Palumbo, 762 F.2d at 974. This two step analysis of patent infringement "applies whether claims are asserted to be infringed literally or by application of the doctrine of equivalents." Texas Instruments v. U.S. Intern. Trade Com'n, 805 F.2d 1558, 1562 (Fed.Cir.1986).

Literal Infringement

Literal infringment involves a comparison of the asserted claims with the product accused of infringement. The independent claims, one and eight, of the '450 patent utilize "means plus function" language directed to a described result (e.g., "hydraulic pump means for pressurizing a hydraulic fluid," "servo valve means ... for controlling fluid flow" and "load cell means for providing an electrical current"). The first inquiry of the infringement analysis requires that these functional claims be interpreted and in order to do this it is necessary to refer to paragraph six of 35 U.S.C. s. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material or acts described in the specification and *equivalents thereof*. [Emphasis added.]

The Federal Circuit has given much guidance on the interpretation and application of this statute. In Palumbo, 762 F.2d at 974, the Court explained that this statute entitles the patentee to a claim covering equivalents as well as the *specified* "structure, material or acts," and that it is recognized "that such a patent claim [should be] construed to cover *both* the disclosed structure *and* equivalents thereof ..." because "[to] interpret 'means plus function' limitations as limited to a particular means set forth in the specification would be to nullify the [intent] of s. 112...." However, in Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed.Cir.1987), the Federal Circuit stated that "[to] determine whether a claim limitation is met literally, where expressed as a means for performing a stated function, the court must compare the accused structure *with the disclosed structure,* and must find equivalent *structure* as well as *identity* of claimed *function for* that structure." The Court went on to explain that it is erroneous to assume per se structural equivalence just because an accused structure performs the function required by a claim limitation in the means-plus-function form. *Id*.

The Defendant has asserted that the scope of the "means plus function" claims of the '450 patent must be construed to cover s. 112 equivalents and that the B-2000 device employs such equivalents. Defendant contends that Plaintiff's motion is an effort to restrict the claims of the '450 patent to the preferred embodiment set forth in the specification which is contrary to the intent of paragraph six of s. 112.

The Defendant argues, as was explained in the declaration of Anthony Miscio, that the '450 patent's means for moving and controlling the speed, force and range of motion of the arm, in the form of an electro-hydraulic servomechanism finds an equivalent in the electro-mechanical servomechanism of the B-2000 device. Whether the accused B-2000's servomechanism performs the same functions specified in the claims of the '450 patent and whether it has structural equivalency to the 450 patent's servomechanism and whether it is a s. 112 equivalent are questions of fact. Palumbo, 762 F.2d at 975. "[The] statements, made by [Miscio,] one skilled in the art, constitute a reasonable interpretation of claim coverage sufficient to raise a genuine material issue of fact as to whether the [B-2000] is a s. 112 'equivalent'. They are not mere conclusory statements but facts set forth in sufficient detail by a knowledgeable declarant." Palumbo, 762

F.2d at 976.

"An important factor [in the determination of equivalence] is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was." Palumbo, 762 F.2d at 975 (citing Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 609 (1950)). In the present case additional proof is necessary to ascertain what one of ordinary skill in the art would consider as interchangeable with the hydraulic embodiment of the '450 patent and therefore equivalent. The forms of proof for the fact determination of equivalence "can be made in any form: through testimony of experts or others versed in the technology; by documents, including texts and treatises; and, of course, by disclosures of prior art. Like any other issue of fact, final determination requires a balancing of credibility, persuasiveness and weight of evidence." Graver Tank & Mfg. Co., 339 U.S. at 609-10.

In the present case, there exist questions of fact concerning the scope of the "means plus function" claims of the '450 patent and of equivalents. Extrinsic evidence is necessary to explain these claims. Therefore, the construction of these claims and the determination as to whether the accused device is a s. 112 equivalent of the described embodiment, should be left to the trier, since these are questions of fact.

Also, as to Plaintiff's argument of prosecution history estoppel raised at oral argument in reference to the location of the load cell means in the '450 patent, a further question of fact arises as to the construction of the "means plus function" claims of the '450 patent. The proceedings before the examiner, as to the location of the load cell means in the '450 patent appear ambiguous. In addition, the Defendant argues, as was explained in the declaration of Anthony Miscio, that the location of the load cell means is irrelevant in terms of its effect on function and disputes in the first instance the legitimacy of Plaintiff's estoppel argument.

The Federal Circuit stated in Palumbo, 762 F.2d at 976-7, that "[at] the very least, if ambiguity is thought to surround the prosecution history in [a] case, that could give rise to a question of fact underlying the legal question of claim construction. In light of the complexity of the proceedings before the examiner, and need under the facts of [a] case for a careful interpretation of [the] proceedings by one of ordinary skill in the art, explanatory testimony [may] aid the trial court (if it ha[s] doubt) in ascertaining the scope of the 'means' claim and of 'equivalents'." This Court finds that a clearer interpretation of the proceedings in the Patent and Trademark Office is necessary in order to construe the scope of the claims in this case. As the discussion in this Opinion illustrates, genuine issues of material fact underly the legal question of claim construction in this case and therefore, summary judgment of noninfringement can not be granted.

The Doctrine of Equivalents

The Defendant has also asserted that summary judgment of noninfringement is inappropriate in this case because infringement under the doctrine of equivalents raises material issues of fact. "Under the doctrine of equivalents, infringement *may* be found (but not necessarily FN3**) if an accused device performs substantially the same overall function or work, in substantially the same way, to obtain substantially the same overall result as the claimed invention."** Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed.Cir.1987)**. Under this doctrine the focus is on each limitation or element in the context of the entire claim and whether every element or its substantial equivalent is present in the accused device. "To be a 'substantial equivalent,' the element substituted in the accused device for the element set forth in the claim must not be such as would substantially change the way in which the function of the claimed invention is performed."** Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1533 (Fed.Cir.1987)**.**

This Court agrees that infringement under the doctrine of equivalents presents material issues of fact. The range of equivalents a device is entitled, presents material fact issues relating to the nature and the history of the relevant technology. Defendant claims that the '450 patent is a pioneer patent and that the Biodex machine is simply a cheaper version of the preferred embodiment of the '450 patent. Defendant argues that the accused Biodex B-2000 device simply does with electricity what the '450 patent claims doing with hydraulics. Since the range of equivalents depends upon and will vary with the degree of invention, the determination of whether a patent is or is not a pioneer patent will effect the range of equivalents it is entitled and ultimately whether infringement under the doctrine of equivalence has occurred.

This Court has not yet determined whether the claims of the '450 patent are literally infringed in terms of 35 U.S.C. s. 112 since the scope of the "means plus function" claims can not be ascertained until the disputed factual issues surrounding the construction of these claims can be resolved by the trier with the aid of extrinsic evidence. Nevertheless, the Court notes that the Defendant presented this alternative argument. This Court recognizes that "when literal infringement under section 112 paragraph 6 is not present the doctrine of equivalents may nevertheless apply, and thereby secure to the patentee the fair scope of the patent." Texas Instruments v. U.S. Intern. Trade Com'n, 805 F.2d 1558, 1571 (Fed.Cir.1987).

It is premature at this point for the Court to comment any further on the merits of infringement under the doctrine of equivalents in the present case, until the first step of the infringement inquiry, that of ascertaining the scope of the claims at issue can be accomplished. The Plaintiff's motion for summary judgment of non-infringement of the '450 patent is denied as there are genuine factual issues that properly can be resolved only by a finder of fact because they may reasonably be resolved in favor of either party.

FN1. In the complaint Plaintiff Biodex also charged the Defendants with infringement of United States Patent No. 4,691,694. The parties filed a stipulation on January 9, 1991 dismissing without prejudice the claims of infringement, and the declaratory judgment counterclaim, relating to this Patent. These claims were dismissed by this Court's Order of January 14, 1991.

FN2. For purposes of this motion the '694 patent is deemed to be representative of the B-2000 device. The Court notes that there were no fact issues presented at oral argument as whether the '694 patent is representative of the B-2000 device.

FN3. The italicized portion of this quote was footnoted to footnote one on page 934 in the *Pennwalt Corp*. Opinion. In footnote one the court stated the following: "The doctrine of equivalents is limited in that the doctrine will not extend (1) to cover an accused device in the prior art, and (2) to allow the patentee to recapture through equivalence certain coverage given up during prosecution." (citing Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 870 (Fed.Cir.1985)).

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