United States District Court,
N.D. Ohio, Western Division.

SULFUR-TECH WATER SYSTEMS, INC,
Plaintiff.
v.
Larry KOHLENBERG, et al,
Defendants.

June 8, 2001.

Owner of patent for method and device for removing hydrogen sulfide from water sued competitor for infringement. Construing claims, the District Court, Carr, J., held that: (1) "connection" called for in patent between water and inlet port did not have to be direct; (2) "water" referred to in patent did not have to be non-aerated; and (3) patent satisfied written description requirement, even though it did not describe means for mixing water and air in inlet channel prior to atomization.

Claims construed.

5,744,040. Construed.

William D. Arnold, Nathan, Roberts & Arnold, Toledo, OH, David d. Murray, Brinks, Hofer, Gilson & Lione, Ann Arbor, MI, for Larry and Sandra Kohlenberg.

Marshall A. Bennett, Jr., Stephen P. Evans, Michael S. Scalzo, Donald A. Schurr, Marshall & Melhorn, Toledo, OH, for Sulfur-Tech Water Systems, Inc.

ORDER

CARR**, District Judge.**

This is a patent infringement case in which the parties have requested that I interpret the plaintiff's patent pursuant to Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed.Cir.1995) (en banc).

I. The Patent and its Disputed Terms

The patent at issue, United States Patent No. 5,744,040, is a methods and apparatus patent relating to the removal of hydrogen sulfide from water. To accomplish this objective, the patented method and apparatus use a manifold into which pressurized air and water are introduced to aerate the water so that it can be atomized and sprayed into a tank, or series of tanks, whereby the hydrogen sulfide is precipitated. (Doc. 25). The water enters the first of two "inlet ports" in the manifold, becomes aerated in an "inlet channel,"and passes through the second "inlet port" and the atomizer to precipitate the hydrogen sulfide in the tanks.

The disputed terms of the patent, which are found initially in Claim 1 (describing the method), and are then repeated in Claim 7 (describing the apparatus), are:

A. "a manifold positioned within an open end" of an atomizing tank;

B. "said first inlet port being connected to a source of water containing dissolved hydrogen sulfide";

C. "said inlet channel further being connected to a source of air under pressure"; and

D. "said inlet channel defining means for mixing said water containing dissolved hydrogen sulfide and air under pressure to aerate said water".

II. The *Markman* Standard

[1] In *Markman* the Federal Circuit held that claim construction is a matter of law for the court to determine. 52 F.3d at 976. This process begins with consideration of intrinsic evidence relating to the claims. Intrinsic evidence consists of the: 1) claims themselves; 2) specification that describes the preferred embodiments of the invention; and 3) prosecution history. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996).

[2] [3] [4] In considering intrinsic evidence, controlling focus is given to the terms used in the claims. Thermalloy, Inc. v. Aavid Engineering, Inc., 121 F.3d 691, 693 (Fed.Cir.1997). The court examines the description of the preferred embodiment to determine if the patentee ascribed particular meaning to claim terms. If not, the ordinary meaning of the terms, as that meaning would be understood by one skilled in the art, controls. York Products, Inc. v. Central Tractor Farm & Family Center, 99 F.3d 1568, 1572 (Fed.Cir.1996). The court can examine the prosecution history for contemporaneous exchanges between the patent applicant and patent examiner to gain additional understanding about the meaning of the claims.

III. Interpretation of the Disputed Terms

A. "a manifold positioned within an open end" of an atomizing tank

[5] As shown in the figures included in the patent, the atomizer portion of the manifold (20) is inserted into the end of the atomizing tank (12). (Doc. 25, Exh. 1, figs.1-4). Defendants argue that the language of Claims 1 and 7 that states that the manifold is "positioned within an open end" of an atomizing tank means that the manifold must be "actually within" the open end or mouth of the tank.

This interpretation, according to the defendants, is mandated in light of an Amendment filed on April 11, 1997. The original application stated that the manifold was "adjacent" to the atomizing tank. The Amendment substituted the term "within" for "adjacent" to describe the location of the manifold.

The Amendment clarified the location, because "adjacent" does not precisely convey the structure of the invention, which involves injection of aerated water into the atomization tank through a nozzle (40). Atomization can occur only if the aerated water is introduced into the tank, which requires placement of the nozzle portion of the manifold into the tank.

The term "adjacent" describes something that is next to, but not necessarily a part of, an adjoining item,

artifact, or structure. Penetration into the atomizing tank, which would not necessarily be described through use of the term "adjacent," is an integral element of the patented method and apparatus. The Amendment, accordingly, clarified the description, and made it more accurate.

The Amendment did not limit the scope of the patent by requiring (as defendants contend) that the manifold be "actually within" the open end or mouth of the tank. (Doc. 27 at 4). Rather, as is clear from a reading of the patent and its figures, the atomizing nozzle and atomizing tank (i.e., outlet) tube (65), both of which are part of the manifold, are located in the open end of the atomizing tank. It is not necessary for any other portion of the manifold to occupy the opening, nor is it necessary that the nozzle and outlet tube take up the entire cavity formed by the opening and the open end of the atomizing tank. The figures clearly show that the cavity is sealed by a cap through which the atomizer and outlet tube are held in place, and the cap contains the actual openings through which each passes. As a result, and as described in Claims 1 and 7, the manifold is "positioned within an open end" of an atomizing tank.

B. "said first inlet port being connected to a source of water containing dissolved hydrogen sulfide"

The original patent application referred to the first inlet port (24) as "being *in communication* with aerated water containing dissolved hydrogen sulfide." The Amendment deleted that language and Claims 1 and 7 of the patent, as issued, refer to the "first inlet port being *connected to* a source of water containing hydrogen sulfide."

The defendants raise two issues with regard to this language. First, they contend that the inlet port must be connected directly (rather than by means of a pipe) with the source of the water. Second, they argue that the only water that is to pass into the inlet port must be water that has not been aerated before entering the port.

1. "connected to a source of water"

[6] The phrasing ("connected to a source of water") used to describe the relationship between the first inlet port (24) and the source of water is also used to describe the relationship between the second inlet port (26) and the atomizing nozzle (40) ("a one-piece atomizing nozzle ... connected to said second inlet port"). The connection between the second inlet port and the atomizing nozzle, as shown in figure 4, is direct, with the surfaces of the second inlet port and the atomizing nozzle in physical contact with each other.

Because the patent uses the same term ("connected to") to describe the relationship between the first inlet port and the source of water, the defendants argue that there must also be a direct connection between such source and the first inlet port, as there is between the second inlet port and the atomizing nozzle.

I disagree: there is nothing in the phrase "connected to" that, in ordinary usage, requires the two connected items to be joined physically or adjacent to each other. Two items often are located some distance from one another, and yet are connected by means of a line, pipe, or other medium. Indeed, when talking about a liquid, such as water, there would be relatively few instances where the point of its use for mechanical purposes is in direct contact with its source, without intermediate transmission by pipe or similar means. Faucets are far more commonplace than waterwheels.

To read the patent in the manner argued by the defendants would lead to the nonsensical requirement that the method and apparatus could be used primarily, if not only, in sub-marine applications, where water flowed directly into the first inlet port.

Replacement of the term "in communication with" with the term "connected to" clarifies the application's terms, rather than limiting its scope.

The fact, moreover, that the applicant continued to use the term "in communication with" in the specification does not compel adoption of the defendants' reading of the term "connected to.". In each instance, the terms are used with their ordinary meanings, no confusion or ambiguity arises, and the meanings are clear to all, including those skilled in the art.

Support for my interpretation of the term "connected to" is found in Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp., 93 F.3d 1572, 1575 (Fed.Cir.1996). That case involved a surgical stapler, in which a "lockout mechanism [is] connected to ... longitudinal slots for preventing ... pusher bars from passing more than one time through said longitudinal slots," so that only one staple would be ejected at a time. The allegedly infringing device employed a "cam bar retainer," which was not located at the point of ejection, to prevent multiple ejection of staples.

The patent holder argued that "connected to," as used in the patent, could "be read broadly to include two distant elements which are 'connected' by intervening elements." *Id*. at 1578. The Federal Circuit rejected this contention, stating:

the entire phrase "connected to said longitudinal slots" must be read narrowly. First, in what meaningful sense is it possible to "connect" the restraining member, which is a physical item, with the longitudinal slots, which are hollow passageways, unless "connected to" is understood to mean that the restraining member operatively interacts with the longitudinal slots by blocking them? Second, [the patentee's] argument proves too much. If, as [the plaintiff] argues, "connected to" should be read broadly to include elements which are connected directly or indirectly, then this language would read on a lockout mechanism located anywhere in the surgical stapler, and the "connected to" limitation would be meaninglessly empty.

Id.

Although "connected to" in *Ethicon* was interpreted to mean proximate, or in direct contact with, the court made clear that the phrase "connected to" did not always convey such a limited meaning: "We acknowledge that the term 'connected to' could, in other contexts, be broadly construed." *Id*.

This is such a case. Whereas in *Ethicon,* the patented device could only function if the referenced components were in contact, in this case the method and apparatus will work only if "connected to a source of water" allows the water to be piped into the inlet port from some distance from the port. *Cf*. Hay & Forage Industries v. New Holland North America, Inc., 25 F.Supp.2d 1170, 1177 (D.Kan.1998) (phrase "connected to" did not denote an inflexible connection; the "definition of connected as 'joined or fastened together,' ... cannot preclude all relative movement."); United States v. LaBerge, 267 F.Supp. 686, 690-91 (D.Md.1967) (shed located about 190 feet from a house was "connected to" the house, as that term was used in a statute prohibiting distillation of spirits in any dwelling house or in any shed, yard, or inclosure connected with such dwelling house).

I conclude, accordingly, that the term "connected to," as used in Claims 1 and 7, does not require the source of the water to be proximate, or in direct contact with, the first inlet port. Instead, the water source can be located elsewhere, with the source and the inlet port being connected by an intermediate means of transmission.

2. Non-aerated water

[7] As originally submitted, the patent application referred to "aerated water containing dissolved hydrogen sulfide." The Amendment deleted that language and Claims 1 and 7 of the patent, as issued, refer to "water containing hydrogen sulfide." The defendants argue that the result of the Amendment was to render the patent inapplicable where the water has been aerated before entering the first inlet port.

In support of this contention, the defendants point out that the application was rejected on the basis of prior art, in which aeration occurred at some point prior to introduction of the water into a sprayer. (See Doc. 25, Exh. 2, Bates Nos. S 0034-38). However, as the plaintiff points out, the examiner's critique made no reference to aeration or the point at which it occurred. The examiner, rather, focused on the atomizer:

Smith alone is considered to disclose the instant invention substantially as recited. The "claims differ, if at all, in the recitation of atomization .... [and] Smith alone is considered to disclose the instant invention...." Since a fogging nozzle is felt to introduce a fine spray, Smith alone is considered to disclose the instant invention. If necessary, however, Jacuzzi discloses the use of a diffuser nozzle *99* (note also the manifold of Jacuzzi), which Chandler et al disclose spraying. It would have been obvious to utilize the nozzle of Jacuzzi in the device of Smith to introduce a coarser spray as taught by Chandler et al. The use of the manifold of Jacuzzi in the method of the modified reference is considered to have been obvious to save space.

* * * * * *

Smith is considered to disclose the instant invention substantially as claimed as discussed above. The claims differ in the recitation of the manifold. Jacuzzi discloses this feature as discussed above. It would have been obvious to utilize the manifold of Jacuzzi in the device of Smith to save space. Regarding the atomizing nozzle, while the fogging nozzle of Smith is felt to be an atomizer as taught by Webster's ..., Jacuzzi discloses a diffuser nozzle while Chandler et al discloses spraying. It would have been obvious to utilize the nozzle of Jacuzzi in the device of the modified reference to introduce a coarser spray as taught by Chandler et al.

(*Id*. S-0036-37).

Absent any indication that the deletion of the term "aerated" in the Amendment responded to an objection by the examiner, that change can not, without more, be viewed as having narrowed the scope of the patent.

A common-sense reading of the Amendment, whereby the modifying (and thus, limiting) term, "aerated," was deleted, is, moreover, to broaden, not narrow the scope of the patent. Thus, I disagree with the defendants' contention that only non-aerated water is to enter the inlet port, so that the only aeration that occurs takes place in the inlet channel (22) of the manifold (20).

Thus, I conclude that there is no limitation on the character or content of the water that is introduced into manifold through the first inlet port.

C. "said inlet channel further being connected to a source of air under pressure"

The patent describes the inlet channel (22) as "being connected to a source of air under pressure."

The defendants' arguments regarding the phrase "connected to" are essentially the same as their arguments with regard to the phrase "connected to" a source of water. I reach the same decision, accordingly, with regard to the phrase, "connected to a source of air"-namely, that the term "connected to," as used in Claims 1 and 7, does not require the source of the air to be proximate, or in direct contact with, the inlet channel. Instead, the air source can be located elsewhere, with the source and the inlet channel being connected by an intermediate means of transmission.

D. "said inlet channel defining means for mixing said water containing dissolved hydrogen sulfide and air under pressure to aerate said water"

The defendants argue that this language, standing alone as it does in the patent, fails to describe the "means for mixing" the water and air in the inlet channel (22). Defendants' argument is based on 35 U.S.C. s. 112, which provides in pertinent part:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

As stated by the Federal Circuit in Kennecott Corp. v. Kyocera Intern., Inc., 835 F.2d 1419,1421 (Fed.Cir.1987), the purpose of this provision "is to ensure that there is an adequate disclosure of the invention for which patent rights are sought ... [by stating] what is needed to fulfil the enablement criteria."

The patent, as argued by the plaintiff, fails to state expressly that air and water are mixed in a turbulent manner in the inlet channel, thereby causing the water to become aerated. Nonetheless, under the doctrine of inherency the patent nonetheless makes its method of mixing air and water sufficiently clear to enable one skilled in the art to make the apparatus and perform the method.

[8] [9] The doctrine of inherency provides that "[b]y disclosing in a patent application a device that inherently performs a function, ..., a patent applicant necessarily discloses that function ... even though they say nothing concerning it." Kennecott, supra, 835 F.2d at 1422. To rely on this doctrine, the patentee must show that "the missing feature is necessarily present, and that it would be so recognized by persons of ordinary skill in the relevant art." Telemac Cellular Corp. v. Topp Telecom, Inc., 247 F.3d 1316, 1328 (Fed.Cir.2001) (citations omitted).

[10] [11] [12] The doctrine of inherency may not be applied where the missing element "does not flow undeniably and irrefutably from the express disclosures." Hughes Aircraft Co. v. United States, 15 Cl.Ct. 267, 271 (Cl.Ct.1988). "The test for inherency is [that] a person skilled in the relevant art, reading a parent application, ... would not have to undertake any independent experimentation in order to" find the missing discussion "inherent in the disclosures of the patent." Stearn v. Superior Distributing Co., 674 F.2d 539, 544 (6th Cir.1982). To apply the doctrine of inherency, the party relying on the doctrine must prove that the challenged circumstance "inevitably occurs when the process steps ... are followed," Kooi v. DeWitt, 546 F.2d 403, 409 (Cust. & Pat.App.1976), or are "inevitable." Application of Wilding, 535 F.2d 631, 636 (Cust. & Pat.App.1976); *see also* Kropa v. Robie, 38 C.C.P.A. 858, 187 F.2d 150, 154-55 (Cust. & Pat.App.1951) ("Inherency does not mean that a thing might happen one out of twenty times.... It must inevitably happen for the doctrine to apply."). In sum, the doctrine of inherency is satisfied where the patent "inherently discloses the invention ... so that one skilled in the art could produce the results claimed in the [patent]

simply by practicing the [patent], i.e., the result flows naturally from the express disclosures" of the patent. Rosco, Inc. v. Mirror Lite Co., 139 F.Supp.2d 287 (E.D.N.Y.2001).

[13] I conclude that the means for mixing air and water, despite, as noted by the defendants (Doc. 27 at 7), "the absence of any specific disclosure, definition or explanation of any means for mixing [the] water containing dissolved hydrogen sulfide and air under pressure to aerate [the] water ... [in] the inlet channel of the manifold" is inherent in the patent. The patent makes clear that water flows into the inlet channel, encounters pressurized air, and, thereafter is expelled in the form of an atomized mist. Anyone skilled in the art would comprehend that the confluence of water and pressurized air in the confined space of the inlet channel results in aeration, which is a precondition to atomization and ensuing precipitation of the hydrogen sulfide.

I conclude, accordingly, that the means by which the water in the inlet channel becomes aerated preparatory to ejection through the atomizer nozzle is discernable in the patent as approved.

Conclusion

For the foregoing reasons, I reach the indicated interpretation of the disputed provisions of the patent at issue in this case.

So ordered.

N.D.Ohio,2001.
Sulfur-Tech Water Systems, Inc. v. Kohlenberg