

The opinion in support of the decision being entered today is
not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MANFRED SCHAUERTE

Appeal 2005-2547
Application 10/134,817
Technology Center 1700

Decided: July 25, 2007

Before BRADLEY R. GARRIS, CATHERINE Q. TIMM,
and JEFFREY T. SMITH, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 17-22. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

I. BACKGROUND

The invention relates to a method for continuously supplying drilling fluid suspension to a horizontal drill head. Claim 19 is illustrative of the subject matter on appeal:

19. A method for continuously supplying drilling fluid suspension comprising water and a drilling fluid additive medium to a horizontal drill head, said method comprising:

providing a continuous stream of water;

providing drilling fluid additive medium;

introducing said additive medium to said stream of water at a selected location to form a drilling fluid suspension stream;

pressurizing said water stream or drilling fluid suspension stream in the vicinity of said selected location by flowing such stream through a high pressure pump to enhance mixing of additive medium and water and to provide a pressurized drilling fluid suspension stream;

conveying said pressurized drilling fluid suspension stream through a static mixing chamber; and

continuously conveying said pressurized drilling fluid suspension stream to a horizontal drill head.

The Examiner relies on the following prior art references to show unpatentability:

Venema	US 4,051,065	Sep. 27, 1977
Landers	US 5,413,184	May 9, 1995

The rejections as presented by the Examiner are as follows:

1. Claims 17-22 are rejected under 35 U.S.C. § 112, ¶ 2 as indefinite;

2. Claims 17, 18, 21, and 22 are rejected under 35 U.S.C. § 112, ¶ 1 as lacking written descriptive support; and
3. Claims 17-22 are rejected under 35 U.S.C § 103(a) as unpatentable over Venema in view of Landers.

In reviewing the rejections, we consider the dispositive issues arising from the contentions in the Brief filed April 6, 2005, the Answer filed June 2, 2005, and the Reply Brief filed August 1, 2005.

II. DISCUSSION

A. *Indefiniteness under 35 U.S.C. § 112, ¶ 2*

Claims 17-22 are rejected under 35 U.S.C. § 112, ¶ 2 as indefinite. According to the Examiner:

- a. Claims 17 and 18 are rendered indefinite by the phrase “said swelling section having a length or width sufficient to allow swelling of the suspension stream” as recited in claim 17.
- b. Claims 17-20 are rendered indefinite by the use of the relative term “high pressure” in claims 17 and 19.
- c. Claims 21 and 22 are rendered indefinite by the phrase “a pressure sufficient to feed a horizontal drill head via a drill string” as recited in claim 21.

In each case, the issue before us is: Is there is a reasonable basis to believe that the ordinary artisan in the art of horizontal drilling would not be able to determine the scope of the claim? In each case, we answer this question in the negative.

“The legal standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope.” *In re Warmerdam*, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994); *see also Miles Lab., Inc. v. Shandon, Inc.*, 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993) (If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more). “The degree of precision necessary for adequate claims is a function of the nature of the subject matter.” *Id.*

With regard to the limitation on the length or width sufficient to allow swelling as recited in claim 17, the Examiner contends that it is unclear what length or width is required by the claims (Answer 4). The Examiner points out that the Specification does not disclose that there is a minimum length or width below which swelling will not occur (*id.*).

While the Specification does not recite a minimum length or width, the lack of such a disclosure is not enough in this case to support a conclusion of indefiniteness. The Examiner has failed to establish that one of ordinary skill in the art of horizontal drilling systems and processes would not understand what lengths and widths would infringe. *See All Dental Prodx, LLC v. Advantage Dental Products, Inc.*, 309 F.3d 774, 779-80, 64 USPQ2d 1945, 1949 (Fed. Cir. 2002)(“The primary purpose of the definiteness requirement is to ensure that the claims are written in such a way that they give notice to the public of the extent of the legal protection afforded by the patent, so that interested members of the public, e.g., competitors of the patent owner, can determine whether or not they infringe.”). This is because the Specification specifically describes a swelling

section (shown, e.g., at 16 in Fig. 1) which allows the drilling suspension to swell (Specification 7:15-17). The swelling section 16 is illustrated as having a length and width in the figures and, according to the Specification, it is a specific structure that “may consist of an intermediate container or a coiled tube, or ... the section of the drilling pipe 10.” (Specification 7:17-20). Any section of pipe downstream of the pump that would allow swelling will have “a length or width sufficient to allow swelling of the suspension stream” as claimed. The limitation is so broad as to be almost meaningless (based on changes in pressure, almost any length of pipe will allow swelling of a swellable material) but “breadth is not indefiniteness.” *In re Gardner*, 427 F.2d 786, 788, 166 USPQ 138, 140 (CCPA 1970).

With regard to the use of the relative term “high pressure” in claims 17 and 19, the Examiner contends that this terminology is indefinite because no numerical examples were provided in the Specification and the record reflects that the term “high pressure” does not refer to a reasonably definite concept (Answer 4).

We agree with the Examiner that the term “high” is a term of degree. We also agree that the Specification provides no standard, numerical or otherwise, for measuring the degree of “high.” However, while the absence of a standard in the Specification for measuring what is “high” may have initially supported a reasonable basis for concluding that one of ordinary skill in the art would not have been reasonably apprised of the scope of the claim, *see Seattle Box Co. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 573-74 (Fed. Cir. 1984) (holding that “[w]hen a word of degree is used the district court must determine whether the patent’s

specification provides some standard for measuring that degree.”), Appellant has provided evidence that the metes and bounds of the terminology would have been reasonably understood by those of ordinary skill in the pertinent art, i.e., the art of horizontal drilling apparatus.

The evidence proffered by Appellant shows that, while the terminology may cover pressures of varying nature in varying situations, the term “high pressure” in the context of pumps used in horizontal drilling rigs had a customary meaning based not only on pressure levels but on location and use (see, e.g., Exhibit E (“[f]or example the hydraulic power pack for a rig will invariably be referred to as a ‘high pressure’ pump, yet a transfer pump scavenging recovered drilling fluid into a collection tank only a few feet above it will invariably be referred to as a ‘low pressure’ pump.”; see also Exhibit D, an information guide describing drilling fluid mixing and delivery systems as including, in the mixing system, a high-volume, low-pressure pump and, in the mud delivery system, a high-pressure, low-volume pump). The evidence supports Appellant’s Specification which indicates that, customarily, drilling fluid was “generally fed to the drill by a high-pressure pump.” (Specification 3:10). These pumps operate at pressures well above atmospheric (see, e.g. Exhibit A and the Schauerte Declaration, Exhibit C) and are distinguished from the high volume, low pressure pumps that were conventionally used for drilling fluid mixing (Exhibit D, p. 14).

The Examiner contends that the Appellant’s exhibits reflect contradictory notions of high pressure (Answer 9-10). We do not agree. While the exhibits reflect a certain looseness in the way the term is used, a general guideline emerges. Pumps that operate at pressures around

atmospheric pressure are “low-pressure pumps” while pumps that operate at higher pressures are “high-pressure pumps.” That some “high-pressure” pumps in horizontal drilling usually operate between 50 and 100 bar or even higher does not contradict the statement that a pump operating at about 1.5 atmospheres will also be termed a “high-pressure” pump.

The evidence as a whole supports the conclusion that “high pressure,” as applied to pumps used in horizontal drilling, has a reasonably precise meaning in the art. Mathematical precision should not be imposed for its own sake; Appellant may claim the invention in terms that would be understood by persons of skill in the field of the invention. *Modine Mfg. Co. v. U.S. Int’l Trade Comm’n*, 75 F.3d 1545, 1557, 37 USPQ2d 1609, 1617 (Fed. Cir. 1996).

With regard to the scope of pressure required by “a pressure sufficient to feed a horizontal drill head via a drill string” as recited in claim 21, the Examiner contends that the Specification provides no example of any pressure which would or would not satisfy this limitation (Answer 5). But the Examiner does not state why an example is required. It would seem that those of ordinary skill in the art would have understood what pressures are required to feed a horizontal drill head via a drill string.

We conclude that there is a reasonable basis to believe that the ordinary artisan in the art of horizontal drilling would be able to determine the scope of the claims.

B. Lack of Written Descriptive Support under 35 U.S.C. § 112, ¶ 1

Claims 17, 18, 21, and 22 are rejected under 35 U.S.C. § 112, ¶ 1 as lacking written descriptive support. According to the Examiner:

a. In claim 17, “said swelling section having a length or width sufficient to allow swelling of the suspension stream” is considered to be new matter.

b. In claim 21, “producing a pressure sufficient to feed a horizontal drill head via a drill string” and the further recitation of “drill string” later in the claim is new matter.

In each case the issue is: Is the Examiner’s finding of lack of written descriptive support supported by a preponderance of the evidence?

As stated in *In re Kaslow*,

The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language. The content of the drawings may also be considered in determining compliance with the written description requirement.

In re Kaslow, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983) (citations omitted). The question is not whether the claims use the same words as the Specification, but whether the concept of the claim limitation is in the Specification. *See In re Anderson*, 471 F.2d 1237, 1244, 176 USPQ 331, 336 (CCPA 1973)(“The question, as we view it, is not whether ‘carrying’ was a word *used* in the specification as filed but whether there is *support* in the specification for employment of the term in a claim; is the concept of carrying present in the original disclosure?”).

With respect to the limitation in claim 17, “said swelling section having a length or width sufficient to allow swelling of the suspension

stream,” the Examiner finds this language to be new matter because the limitation presumes that there is some minimum length and/or width required to allow swelling, however, the Specification does not discuss such a minimum length and/or width (Answer 3).

We cannot agree that there is no support on the basis provided by the Examiner. The Specification describes a swelling section 16 which allows swelling and which is a container, coiled tube, or section of drilling pipe. Figure 1 illustrates a swelling section with a length and width. Inherently the swelling section must have a length and width sufficient to allow the swelling that is purported to take place within the structure.

With respect to the limitation in claim 21, “producing a pressure sufficient to feed a horizontal drill head via a drill string” and “drill string” in general, the Examiner contends this limitation contains new matter because (1) there is no discussion of a “drill string,” (2) no discussion of a relationship between a “drill string” and pressure, and (3) there is no discussion of “sufficient pressure” in the original Specification (Answer 3).

That one of ordinary skill in the art would understand that Appellant was in possession of what is claimed is evidenced from the description of the process as for horizontal drilling and that there is a section of drilling pipe 10 via which the suspension is fed to the drilling head 11 or the expansion tool 17 (Specification 7:17-20). “Drill string” is simply another name for the drill pipe 10. In order to accomplish the horizontal drilling described in the Specification, a sufficient pressure must be present to feed the drill head via the drill string (drill pipe 10) as claimed. That Appellant was in possession of what is claimed is evident from the original disclosure.

The Examiner's finding of lack of written descriptive support is not supported by a preponderance of the evidence. At best, the terminology used in the claims lacks antecedent basis in the Specification. While a lack of antecedent basis in the Specification may support an objection under 37 C.F.R. § 1.75(d)(1), see MPEP § 608.01(o), that alone does not support a rejection for lack of written descriptive support.

C. Obviousness under 35 U.S.C. § 103(a)

Claims 17-22 are rejected under 35 U.S.C § 103(a) as unpatentable over Venema in view of Landers.

The issue is: Has Appellant (1) shown that the Examiner's basis for the rejection is flawed or (2) overcome the rejection through a showing of secondary indicia of nonobviousness? *See In re Kahn*, 441 F.3d 977, 985-86, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of prima facie obviousness or by rebutting the prima facie case with evidence of secondary indicia of nonobviousness.").

Appellant has not convinced us of a reversible error in the rejection nor overcome the rejection with a showing of secondary indicia of nonobviousness.

The following facts are supported by a preponderance of the evidence.

Venema is directed to an apparatus and process for dissolving water soluble polymers and gums in water. The polymer may, for instance, serve as a stabilizer for drilling muds (Venema, col. 1, ll. 11-16). The process releases the polymer into water to produce an "activated solution," i.e., a swelled or thickened solution, that "can be readily employed for one or more

of the commercial applications previously mentioned” (e.g., as a drilling mud containing the polymer as a stabilizer) (Venema, col. 1, ll. 57-65).

In the process, water is introduced into water line 27 and, if necessary, the pressure is increased by pump 29 (Venema, col. 3, ll. 34-46¹). A surfactant mixes in-line with the water before an emulsion containing the polymer is added (Venema, col. 3, ll. 46-48). Venema illustrates the surfactant addition as taking place just downstream from the pump 29, valve 32, and water meter 34 (the Figure). Venema further illustrates feeding the polymer-containing emulsion into the water/surfactant mixture within conduit 16, at a point near the inlet end 3 of a Static Mixer 1 (the Figure; see also Venema, col. 2, l. 65 to col. 3, l. 20). “The placement of a surfactant into the water and subsequent mixing with the polymer emulsion in the Static Mixer causes the emulsion to rapidly invert and release the polymer in the form of an aqueous solution.” (Venema, col. 7, ll. 62-65). Activation of the polymer (swelling of the polymer to form a thickened solution) does not occur until 5 to 25 minutes after mixing in the Static Mixer (Venema, col. 9, 33-49).

Venema includes an example in which the pressure drop across the Static Mixer was approximately 20-25 psig (Venema, col. 4, ll. 37-39), and Venema further discloses that the pressure drop can vary depending on various factors but usually should be within the range of 5-40 psig (Venema, col. 4, ll. 39-40). In order to convey the solution through the Static Mixer, the pressure within conduit 16 must be greater than the pressure drop within

¹ The word “weather” as used in column 3, line 34 of Venema is clearly a typographical error properly corrected to read “water.”

the mixer. Pump 29, when needed, pressurizes the water stream in conduit 16 that feeds the Static Mixer. Pumps 10 and 21 pressurize conduits 13 and 24, respectively, to allow addition of the polymer and surfactant to the water in conduit 16. Pump 29 is the main conveying force in the system.

As surfactants, Venema discloses that any water soluble surfactant can be used (Venema, col. 9, ll. 3-5). Venema also discloses that other surfactants including clays can be used (Venema, col. 9, ll. 28-32).

Landers is directed to a method and apparatus for horizontal well drilling. Landers evinces the well known aspect of using a drilling fluid in horizontal well drilling. Landers describes the fluid 56 as generally a mixture of a surfactant and water (Landers, col. 4, ll. 11-12).

Appellant's Specification further indicates that use of a drilling fluid in horizontal drilling was conventional in the art (Specification 2:6-10). The clay bentonite was commonly used as a drilling fluid additive as were polymers (Specification 2:11-20)

Appellant argues claims 17, 19, and 21 as a group and claims 18, 20, and 22 as a second group. We select claim 19 as representative for the first group and 20 as representative for the second group.

1. Claim 19

Upon reviewing the arguments of Appellant, we find that many of the arguments raise the question of what the claims encompass. For instance, according to Appellant, the surfactant of Venema cannot be considered a "drilling fluid additive medium" as claimed (Br. 42). Further according to Appellant, Venema's pump 29 does not pump pressurized drilling fluid suspension to a horizontal drill head (Br. 43-44), nor pressurize the water

stream “in the vicinity of” the selected location (Br. 45-46; Reply Br. 14-16), nor is it a “high pressure” pump (Reply Br. 14). These arguments raise issues of claim interpretation.

During examination, “claims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art.” *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004). Absent claim language carrying a narrow meaning, we only limit the claim based on the specification when those sources expressly disclaim the broader definition. *In re Bigio*, 381 F.3d 1320, 1324-25, 72 USPQ2d 1209, 1210-11 (Fed. Cir. 2004).

Looking to the Specification, we find no language particularly limiting the identity of the claimed “drilling fluid additive medium.” The Specification mentions “additives, such as the pulverulent bentonite,” talks of providing a feed line for the “additive medium,” and names “supplementary additives such as, for example, polymers or soda ash.” (Specification 3:20-31). The Specification is, therefore, open ended with regard to the identity of the additive medium.

We, therefore, analyze the plain language of the words. The broadest reasonable interpretation of “drilling fluid additive medium,” based on the language itself, includes any compound or composition added to a fluid destined to be used as a drilling fluid.

From the above analysis, we determine that both the surfactant and the polymer of Venema are “drilling fluid additive mediums” within the meaning of claim 19.

With regard to Appellant’s contention that Venema’s pump 29 does not pump pressurized drilling fluid suspension to a horizontal drill head (Br. 43-44), we note that claim 19 contains no such limitation. Claim 19 merely requires that the pump “provide a pressurized drilling fluid suspension stream.” The claim is open to any destination including those other than the horizontal drill head.

Turning to the language “pressurizing said water stream or drilling fluid suspension stream in the vicinity of said selected location by flowing such stream through a high pressure pump,” this language requires “*pressurizing ... in the vicinity of said selected location,*” (claim 19 (emphasis added) not *placing the pump* “in the vicinity of said selected location.” The pressurization must occur “by flowing such stream through a high pressure pump” but placing the pump upstream will pressurize the stream at all points downstream until there is a significant pressure drop. In the context of Venema, the water in throughout conduit 16 is pressurized by pump 29. Venema introduces both the surfactant and polymer additives at selected locations within the pressurized conduit 16. Therefore, Venema teaches “pressurizing said water stream ... in said vicinity of the selected location” as claimed.

The pressurizing is accomplished “by flowing such stream through a high pressure pump” as claimed. (Claim 19). We note that, as established above with regard to the rejection under 35 U.S.C. § 112, ¶ 2, “high

pressure” is not limited to any particular ranges of pressure, but is customarily so named on the basis of location and function in addition to pressure. Pump 29 of Venema can reasonably be called a high pressure pump according to its location and function as well as the pressure drop it must overcome. Pump 29 is located in the main conveying line that supplies the water and polymer solution to the Static Mixer and discharge line (see the Figure). While other pumps, namely, pumps 10 and 21, provide the pressure required to feed the additives to the mainline, it is the pump 29 that must provide the bulk of the pressure of conveyance through the Static Mixer. This is evident from its location in the mainline. Pump 29 must be capable of overcoming the Static Mixer pressure drop. That drop is at least 20-25 psig (35-40 psia) and can be 40 psig (55 psia). The fact that it must be able to pressurize to 40-55 psia levels (2.7-3.8 bars), and functions to convey fluid through the system rather than mix, makes it reasonable to term it a “high pressure pump” in accordance with the customary language of the art of horizontal drilling.

Appellant states in passing that Venema illustrates pump 29 as a centrifugal pump, not a positive displacement pump (Reply Br. 14). But Appellant offers no evidence that a circle with a “P” within as illustrated by Venema is commonly used to illustrate a centrifugal pump.

We determine that “high pressure pump” as claimed reasonably encompasses pump 29 of Venema.

Appellant further contends that the combination of Venema and Landers is improper because Venema’s polymer-in-water “stabilizer”

requires further mixing to form a drilling mud whereas Landers teaches drilling mud that is already mixed (Br. 43-44, 49-50; Reply Br. 15).

First, we do not agree with Appellant's interpretation of Venema. Venema describes the water-soluble polymer as a stabilizer for drilling mud (Venema, col. 1, ll. 8-16). This polymer is incorporated into a solution in the process of Venema which activates the polymer, i.e., swells it, as it is released into the water. Venema states that "the resultant activated solution can be readily employed for one or more of the commercial applications previously mentioned." (Venema, col. 1, ll. 63-65). In other words, the polymer is a stabilizer, and the solution product of Venema is a drilling mud. Venema further indicates that the surfactant can be a clay. Appellant's own Specification indicates that it was well known to use such mixtures as drilling muds in horizontal drilling, and that in these processes the drilling fluid is fed to the drill from a tank (Specification 2:7-20). While Venema does not describe how the drilling mud is provided to the drilling head, it would be conveyed to the drilling head by some means. One way evident from the art is by discharging the activated solution into a tank such as that taught by Landers.

Nor can we agree that Landers teaches away from the combination. The premix 56 of water and surfactant residing in container 54 of Landers must be formed somehow. Venema describes a method of making a surfactant and water solution.

2. Claim 20

Appellant's contention with regard to the second group of claims is that Venema's pump 29 is upstream, not downstream from the selected

location of additive addition and, therefore, the pump 29 cannot provide the claimed pressurization (Br. 51-53; Reply Br. 16-17). Taking claim 20 as representative, we determine that this claim does not require that the pump be located downstream of the selected location. Claim 20 is directed to “[t]he method of claim 19 in which *said pressurizing* occurs downstream of said selected location.” (emphasis added). Pumping causes pressurizing, but pressurizing is not limited to the pump location, it continues along the piping system. In Venema, pressurizing occurs all along conduit 16 including downstream of the selected locations of surfactant and polymer addition. Therefore, the claim encompasses the pressurizing of Venema.

Appellant does not rely upon evidence of secondary indicia of nonobviousness.

Appellant has neither shown that the Examiner’s basis for the rejection is flawed nor overcome the rejection through a showing of secondary indicia of nonobviousness.

III. CONCLUSION

We do not sustain the Examiner’s rejection of claims 17-22 under 35 U.S.C. § 112, ¶ 2, nor the rejection of claims 17, 18, 21, and 22 under 35 U.S.C. § 112, ¶ 1 as lacking written descriptive support. However, we do sustain the Examiner’s rejection of claims 17-22 under 35 U.S.C. § 103(a) as unpatentable over Venema in view of Landers.

IV. DECISION

The Examiner’s decision to reject the claims is AFFIRMED.

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V. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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