

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JUN YOSHIOKA

Appeal No. 2006-1440
Application No. 10/115,000
Technology Center 3700

Decided: August 30, 2006

Before OWENS, CRAWFORD and BAHR, *Administrative Patent Judges*.
BAHR, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal from the examiner's rejection of claims 1-20.
We AFFIRM-IN-PART and enter new grounds of rejection pursuant to 37
CFR § 41.50(b).

BACKGROUND

The appellant's invention relates to a spring biased check valve that reacts primarily to fluid flow rather than strictly in response to a pressure gradient across the valve. Claim 1 is illustrative of the claimed subject matter and reads as follows.

1. A hydraulic flow switch comprising:

a reservoir body having an opening to permit flow therethrough from inside said reservoir body to outside said reservoir body;

a valve body having a valve head and a valve stem, said valve stem being disposed within said opening and longitudinally slidable therein to facilitate displacement of said valve head between an open position to permit fluid flow through said opening and a closed position to substantially prohibit fluid flow through said opening, said valve head being positioned in an unconfined area of said reservoir relative to an area of said valve head;

a biasing member connected to said valve body and applying a biasing force to said valve body to bias said valve body in said open position,

wherein said area of said valve head is substantially larger than a passable area through said opening such that, when a pressure differential between said inside of said reservoir body and said outside [*sic*: of] said reservoir body is insufficient to overcome said biasing force, fluid flow across said valve induces a

significantly increased pressure gradient across said valve head to overcome said biasing force and cause said valve head to move to said closed position.

The examiner relies upon the following as evidence of unpatentability:

Beymer	US 2,647,533	Aug. 4, 1953
Morton	US 3,454,182	Jul. 8, 1969

The following rejections are before us for review.

Claims 1-3, 6-10, 13, 14 and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Beymer.

Claims 18 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Beymer.

Claims 4, 5, 11, 12, 15, 17 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Beymer in view of Morton.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding this appeal, we make reference to the examiner's answer (mailed June 29, 2005) for the examiner's complete reasoning in support of the rejections and to the appellant's brief (filed March 17, 2005) and reply brief (filed August 31, 2005) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art, and to the

respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the following determinations.

The examiner has rejected claims 1-3, 6-10, 13, 14 and 16 as being anticipated by Beymer, claims 18 and 19 as being unpatentable over Beymer, and claims 4, 5, 11, 12, 15, 17 and 20 as being unpatentable over Beymer in view of Morton. We recognize the inconsistency implicit in our issuance of a new ground of rejection, *infra*, of claims 1-17 and 20 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the invention, with a holding that any of these same claims are unpatentable under 35 U.S.C. § 102 or 103. Normally, when substantial confusion exists as to the interpretation of a claim and no reasonably definite meaning can be ascribed to the terms in a claim, a determination as to patentability under 35 U.S.C. § 102 or 103 is not made. *See In re Steele*, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962) and *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). However, in this instance, we consider it to be desirable to avoid the inefficiency of piecemeal appellate review. *See Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. App. 1984). For the reasons outlined below, we interpret appellant's claims as requiring that the area of the valve head be sufficiently larger than a passable area through the opening that the biasing force of the biasing member can be overcome by a combined force generated by a pressure differential between the inside and outside of the reservoir body and the flow of fluid across the valve. Therefore, we have

made a determination below as to the prior art rejections of the appealed claims in the interest of judicial economy.

Beymer discloses a drain plug for pipe lines, particularly portable or otherwise moveable pipe lines for field sprinkling systems, the drain plug comprising a circular opening 15 in the end wall 14 of a cylindrical sleeve 13 on the end of a pipe line, a grommet 16 seated in the opening, a valve stem 19, a disc valve head 20 and a spiral spring 22 bearing against the valve head to bias it inwardly to the open position. The outer end of the valve stem is threaded and supports a nut 21 whereby extent of inward movement of the valve may be adjustably limited. As explained by Beymer in the sentence bridging columns 2 and 3, adjustment of the position of the nut determines the extent of opening movement of the valve and therefore the rate of escape of water from the interior of the pipe line when the valve is open. The nut adjustment also permits the alteration of the pressure at which the valve opens and closes and the flow characteristics through the valve when it is opened (col. 1, ll. 52-55).

Appellant (brief, p. 7) argues that Beymer fails to disclose a valve head positioned in an unconfined area of a reservoir as called for in each of appellant's independent claims 1, 8 and 16. The area of any reservoir is necessarily to some extent confined in order to contain fluid therein so as to form a reservoir. As pointed out by the examiner (answer, p. 9), Beymer's valve is positioned in the end wall of the reservoir (sleeve 13, which is substantially the same diameter as the remainder of the pipe 10, and pipe 10) within the conduit defined by the

boundaries of the end wall and sleeve and is not in any way uniquely confined relative to the area of the sleeve 13 and pipe 10 (the reservoir). We also note that the cross-sectional area of the sleeve 13 is noticeably larger than that of the disc valve head 20. The examiner's determination that Beymer's drain valve is in an "unconfined" area of the reservoir relative to an area of the valve head is thus reasonably supported by the reference.

Appellant also argues that Beymer's valve head is not substantially larger than the opening but, rather, is only slightly larger than the opening (brief, p. 7). As discussed below in the new ground of rejection of claims 1-17 and 20 under the second paragraph of 35 U.S.C. § 112 as being indefinite, the only criterion appellant's specification provides to define what constitutes the valve head being *substantially* larger than the passable area of the opening is that the biasing force of the spring can be overcome by the combined force generated by a pressure differential between the inside and outside of the pipe (reservoir) and the fluid flow or velocity across the valve. As the pressure in Beymer's pipe 10 and sleeve 13 approaches the critical pressure at which the valve is set, by the adjustable nut 21, to close, a situation arises where the pressure differential itself is insufficient to overcome the biasing force but the component of force contributed by the pressure gradient resulting from fluid flow across the valve pushes it to or over the critical pressure, thereby shutting the valve. We therefore find that the area of Beymer's disc valve head 20 is *substantially* larger than a passable area of the opening as called for in the claims.

For the reasons set forth above, appellant's arguments fail to persuade us of any error on the part of the examiner in rejecting claims 1-3, 6-10, 13, 14 and 16 as being anticipated by Beymer. The rejection is sustained.

The rejections of claims 18 and 19 as being unpatentable over Beymer and claims 4, 5, 11, 12, 15, 17 and 20 as being unpatentable over Beymer in view of Morton, on the other hand, are not sustained. Our reasons follow.

With respect to claims 18 and 19, the examiner has not pointed to any teaching or suggestion in Beymer to modify the Beymer valve to satisfy the relative area dimensions called for in these claims. Rejections based on 35 U.S.C. § 103 must rest on a factual basis. In making such a rejection, the examiner has the initial duty of supplying the requisite factual basis and may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). Moreover, it is elementary that to support an obviousness rejection, all of the claim limitations must be taught or suggested by the prior art applied (*see In re Royka*, 490 F.2d 981, 984-85, 180 USPQ 580, 582-83 (CCPA 1974)) and that all words in a claim must be considered in judging the patentability of that claim against the prior art (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)). The examiner's mere dismissal of these limitations as being "an obvious design expedient" (answer, p. 7) is inappropriate.

With respect to the rejection of claims 4, 5, 11, 12, 15, 17 and 20 as being unpatentable over Beymer in view of Morton, we find absolutely no suggestion in Morton to modify Beymer's disc valve head 20 to provide bleed grooves on the inner surface thereof. The examiner's assertion with respect to permitting higher fluid pressure upstream of the valve to equalize with fluid pressure downstream of the valve once the upstream valve is shut off, permitting the valve to reopen automatically, is unsupported by the applied references.

NEW GROUND OF REJECTION

Pursuant to our authority under 37 CFR § 41.50(b), we enter the following new grounds of rejection.

Claims 1-17 and 20 are rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the invention.

The terms "substantially" and "significantly" are terms of degree. When a word of degree is used, such as the term "substantially" in independent claims 1, 4, 8 and 16 and the term "significantly" in claim 1, it is necessary to determine whether the specification provides some standard for measuring that degree. *See Seattle Box Company, Inc. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 573-74 (Fed. Cir. 1984).

Admittedly, the fact that some claim language, such as the terms of degree mentioned *supra*, may not be precise, does not automatically render the claim indefinite under the second paragraph of § 112. *Id.* Nevertheless, the need to cover what might constitute insignificant variations of an invention does not

amount to a license to resort to the unbridled use of such terms without appropriate constraints to guard against the potential use of such terms as the proverbial nose of wax (*see White v. Dunbar*, 119 U.S. 47, 51 52 (1886) and *Townsend Engineering Co. v. HiTec Co. Ltd.*, 829 F.2d 1086, 1089-91, 4 USPQ2d 1136, 1139-40 (Fed. Cir. 1987).

In *Seattle Box*, the court set forth the following requirements for terms of degree:

When a word of degree is used the district court must determine whether the patent's specification provides some standard for measuring that degree. The trial court must decide, that is, whether one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification.

Although appellant has sprinkled the term “substantially” quite generously throughout the claims, the occurrence of this term in the clause “wherein said area of said valve head is *substantially* larger than a passable area through said opening” in each of independent claims 1, 4, 8 and 16 is of particular concern to us. The term “substantially” appears in this context on page 6 of the specification, wherein it is stated that “ D_0 is substantially larger than the diameter of the opening D [*sic* D_1],” without any accompanying quantitative discussion of how much larger D_0 must be. Additionally, a numerical example, in which D_0 is 25 mm, D_1 is 5mm and D is 3 mm, is provided on page 8 of the specification. There is no indication

that this numerical example represents a minimum required ratio or has any other particular significance to the appellant's invention.

Appellant's specification (p. 1, ll. 8-10 and p. 10, ll. 8-12) describes the inventive valve as being one that reacts primarily to fluid flow as opposed to a strict reliance on a pressure gradient across the valve. We find that this would lead one of ordinary skill in the art to consider the area of a valve head to be "significantly" larger than a passable area through the opening, as recited in appellant's claims 1, 4, 8 and 16, if the valve reacts primarily to fluid flow as opposed to pressure differential across the valve. As illustrated by the expression of F in line 15 on page 7 of appellant's specification, the force on the valve head acting against the biasing spring to shut the valve is in part dependent on the pressure differential between inside and outside of the reservoir and in part dependent on forces from pressure gradients generated by fluid flow through the gap between the valve head and the reservoir wall. Accordingly, it certainly appears that a sufficiently large pressure differential between the inside and outside of the reservoir will produce sufficient force to overcome the bias of the spring regardless of the area of the valve head relative to the opening, especially where the gap g is sufficiently small that the fluid velocity through the gap is relatively high for a given fluid flow rate. In any event, appellant's specification does not give any guidance as to what is meant by the description that the valve reacts "primarily" to fluid flow as opposed to strict reliance on a pressure gradient across the valve. Stated differently, there are no standards provided in appellant's

specification by which one of ordinary skill in the art would be able to determine whether the contribution to force from the fluid flow or velocity is a sufficiently large portion of the entire force F exerted on the valve body that the valve is reacting “primarily” to flow or velocity as opposed to pressure differential so as to satisfy the limitation of claims 1, 4, 8 and 16 that the area of the valve head is substantially larger than a passable area through said opening or the limitation of claim 1 that fluid flow across the valve induces a *significantly* increased pressure gradient across the valve head.

In light of the above, we conclude that one of ordinary skill in the art would not be able to determine, with any certainty, the metes and bounds of independent claims 1, 4, 8 and 16 or claims 2, 3, 5-7, 9-15, 17 and 20 depending therefrom. Claims 18 and 19 more specifically recite the relative diameters of the opening and the valve head and thus do *not* suffer the same deficiency.

Claim 18 is rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter that was not described in the specification so as to convey to one of ordinary skill in the art that the appellant was in possession of the now claimed invention at the time the application was filed.

Claim 18 recites that the diameter of the valve head is “at least three times” that of the opening. As explained above, appellant’s specification does not give any quantitative requirements as to how much larger than the diameter of the opening the diameter of the valve head must be. The only quantitative dimensional information given about the opening and the valve head is in the “numerical

example” on page 8 of the specification, which provides a valve head diameter D_0 of 25 mm and an opening diameter D_1 of 5 mm. While this might provide support for a limitation that the valve head diameter is five times that of the opening and, when considered within the context of the entirety of the specification, might even provide support for a valve head diameter of at least five times that of the opening, it does not provide support for the rest of the claimed range, which includes a valve head diameter of from at least three times to less than five times that of the opening.

CONCLUSION

To summarize, the rejection of claims 1-3, 6-10, 13, 14 and 16 as being anticipated by Beymer is sustained and the rejections of claims 18 and 19 as being unpatentable over Beymer and claims 4, 5, 11, 12, 15, 17 and 20 as being unpatentable over Beymer in view of Morton are reversed. New rejections of claims 1-17 and 20 under the second paragraph of 35 U.S.C. § 112 and claim 18 under the first paragraph of 35 U.S.C. § 112 are entered pursuant to 37 CFR § 41.50(b).

Regarding the affirmed rejection(s), 37 CFR § 41.52(a)(1) provides “[a]ppellant may file a single request for rehearing within two months from the date of the original decision of the Board.”

In addition to affirming the examiner's rejection(s) of one or more claims, this decision contains new grounds of rejection pursuant to 37 CFR § 41.50(b)

(effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 CFR § 41.50(b) provides “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.”

37 CFR § 41.50(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

Should the appellant elect to prosecute further before the examiner pursuant to 37 CFR § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. § 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART; 37 CFR § 41.50(b)

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Administrative Patent Judge)	
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)	BOARD OF PATENT
MURRIEL E. CRAWFORD)	APPEALS
Administrative Patent Judge)	AND
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