UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALEXANDER HAYDUK

Appeal No. 2006-2154
Application No. 10/786,998
Technology Center 3700

ON BRIEF

Before FRANKFORT, OWENS and HORNER, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the examiner's final rejection of claims 1-3, all of the claims pending in the application.

We affirm.

BACKGROUND

The appellant's invention relates to a disc slide mounted between a feed pipeline and a discharge pipeline. As recited in claim 1, the disc slide includes a casing, a valve seat comprising two sealing discs, a slide plate, and an actuation element for the slide plate. The valve seat and the slide plate are provided with a surface made from a material selected from the group consisting of silicon and quartz glass. Claim 1 is representative of the subject matter on appeal. A copy of the claims on appeal can be found in the appendix to the appellant's brief.

The examiner relies upon the following as evidence of unpatentability:

Berchem (Berchem '004)	4,968,004	Nov. 06, 1990
Berchem (Berchem '427)	5,271,427	Dec. 21, 1993

The appellant seeks our review of the examiner's rejection of claims 1-3 under 35 U.S.C. § 103(a) as being unpatentable over Berchem '427 in view of Berchem '004.

Rather than reiterate in detail the conflicting viewpoints advanced by the examiner and the appellant regarding this appeal, we make reference to the final office action (mailed August 18, 2005) and the examiner's answer (mailed March 21, 2006) for the examiner's complete reasoning in support of the rejection and to the appellant's brief (filed January 23, 2006) and reply brief (filed April 25, 2006) for the appellant's arguments.

OPINION

In reaching our decision in this appeal, we have carefully considered the appellant's specification and claims, the applied prior art, and the respective

positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations that follow. It is our view that, after consideration of the record before us, the subject matter of the invention of claims 1-3 would have been obvious to one of ordinary skill in the art at the time the invention was made over Berchem '427 in view of Berchem '004.

In the rejection of independent claim 1, the examiner determined that Berchem '427 discloses all of the elements of the claimed invention except that the assembly of Berchem '427 lacks the shut off element being a slide plate and the valve seat being two sealing discs. The examiner relies on Berchem '004 to show that a ball valve (as disclosed in Berchem '427) is equivalent to a disc slide valve. The examiner found that it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the ball valve and valve seat of Berchem '427 as a slide plate with two sealing discs as disclosed by Berchem '004, because Berchem '004 shows that they are equivalent. (Final Office Action, p. 2)

The appellant contends that a ball valve and valve seat structure is not equivalent to a structure using a slide plate with two sealing discs. The appellant contends that there is no teaching or suggestion in either of the cited references that the materials used for a ball valve can be successfully imparted to a disc slide. (Brief, pp. 3-4 and Reply Brief, pp. 1-2)

To determine whether a prima facie case of obviousness has been established, we are guided by the factors set forth in *Graham v. John Deere Co.,* 383 U.S. 1, 17 (1966), *viz.*, (1) the scope and content of the prior art; (2) the

differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art.[1]

With regard to the scope and content of the prior art, we agree with the examiner that Berchem '427 discloses a valve seat (8) and shut-off element (2) made from quartz glass (Final Office Action, p. 2 citing Berchem '427, col. 2, lines 5-6 and col. 4, lines 61-63). Specifically, we find that Berchem '427 teaches that valves, such as flap-type valves, gate valves, slide valves, and rotatable cocks, which act as throttles, are commonly used in flow passages to control pressure or volume flow rate of the flowable medium (Berchem '427, col. 1, lines 32-46). Berchem '427 also teaches that it was known in the art to provide the flow passage of an assembly with an engineered ceramic to reduce abrasive wear caused by the composition and hardness of finely divided solids in a flowable medium and the velocity of the flowable medium (Berchem '427, col. 1, lines 58-66). Berchem '427 teaches that silicon dioxide is one such engineering ceramic that was commonly used in flow passages (Berchem '427, col. 2, lines 1-7). In the specific embodiment of the invention described in Berchem '427, throttles (1) is a rotatable cock valve having valve seats (8) and a valve member (2) that can be composed of an engineering ceramic, such as silicon dioxide (Berchem '427, col. 4, lines 61-63).

We find that Berchem '004 also relates to shutoff and control valves (Berchem '004, col. 1, lines 27-28). Berchem '004 similarly discloses that it was known in the art to make a valve element and valve seat of an engineering ceramic

[1] Although *Graham* also suggests analysis of secondary considerations such as commercial success, long felt but unsolved needs, failure of others, etc., the appellant presented no such evidence of secondary considerations for the Board's consideration.

to minimize wear (Berchem' 004, col. 1, lines 41-49). We agree with the examiner's reading of Berchem '004, and find that Berchem '004 teaches the equivalency of a ball valve with a disc slide valve (Answer, p. 3) inasmuch as Berchem '004 teaches that the same materials can be used to make both types of valves. Specifically, Berchem '004 teaches that the valve seat of the ball valve embodiment and the sealing discs of the disc slide embodiment can be made of the same material (Berchem '004, col. 4, lines 62-67 (teaching that the seating rings (5 and 6) of the ball valve embodiment can be made from silicon carbide or zirconium oxide) and col. 4, lines 39-41 (teaching that the sealing discs (14a and 14b) of the disc slide embodiment can similarly be made from silicon carbide or zirconium oxide). We also find that Berchem '004 teaches that the same materials can be used to make the ball of the ball valve embodiment and the slide plate of the disc slide embodiment (Berchem '004, col. 4, lines 3-5 (teaching that the ball (4) of the ball valve embodiment can be composed of one of: aluminum oxide, silicon carbide, silicon nitride, or zirconium oxide) and col. 4, lines 41-43 (teaching that plate (16) of the disc slide embodiment can similarly be made from aluminum oxide, silicon carbide or silicon nitride).

With regard to the differences between the prior art and the claimed invention, we find that Berchem '427 teaches the use of quartz glass[2] for the valve seat and shut-off element of a ball valve (Berchem, Figure 1). Berchem '427 does not explicitly teach, however, using quartz glass for the valve seat and slide element of a disc slide valve. As discussed above, although we find that Berchem

[2] The appellant does not contest the examiner's finding that "silicon dioxide is the chemical name for quartz glass." (Final Office Action, p. 2 and Brief, p. 4)

‘004 teaches the use of engineering ceramics for the valve seat and movable shut-off element of a control valve and further teaches that the same materials can be used in ball valves and disc slide valves, Berchem ‘004 does not explicitly teach using either silicon or quartz glass for the components of a disc slide valve.

With regard to the level of skill in the art, we find that a person of ordinary skill in the art would be presumed to know the relevant teachings of Berchem ‘427 and Berchem ‘004. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc*., 807 F.2d 955, 962, 1 USPQ2d 1196, 1201 (Fed. Cir. 1986) (The person of ordinary skill in the art is a hypothetical person who is presumed to know the relevant prior art). As such, a person of ordinary skill in the art would be presumed to know that engineering ceramics could be used for the valve seat and movable shut-off element of a ball valve or disc slide valve to reduce wear encountered by abrasive materials flowing through a flow passage (Berchem ‘004, col. 1, lines 41-49 and Berchem ‘427, col. 1, lines 58-66). A person of ordinary skill in the art would also be presumed to know that silicon dioxide, also known as quartz glass, is one of the engineering ceramic materials that could be used in a control valve (Berchem ‘427, col. 2, lines 5-6).

As part of our review of the *Graham* factors, we also considered whether there was a “teaching, suggestion, or motivation” to modify or combine the prior art teachings of Berchem ‘427 and Berchem ‘004. As recently described in *In re Kahn*, 441 F.3d 977, 78 USPQ2d 1329 (Fed. Cir. 2006):

> [T]he “motivation-suggestion-teaching” test asks not merely what the references disclose, but whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the

> inventor, would have been led to make the combination recited in the claims. From this it may be determined whether the overall disclosures, teachings, and suggestions of the prior art, and the level of skill in the art – i.e., the understandings and knowledge of persons having ordinary skill in the art at the time of the invention-support the legal conclusion of obviousness. (internal citations omitted).

Id. at 988, 78 USPQ2d at 1337. We find that a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, would have been led to make the combination recited in the claims. In particular, both prior art references acknowledge the common solution of using engineering ceramics to alleviate wear, and both references disclose that it was known in the art to use ball valves and disc slide valves for the same purpose.[3] Because the appellant admits that these two prior art valves are used for the same purpose, and because the prior art Berchem '004 reference teaches that the valves can be made from the same engineering ceramic materials, we hold that it would have been obvious to one of ordinary skill in the art at the time the invention was made use quartz glass for the engineering ceramic to reduce wear, as taught by Berchem '427, in a disc slide valve. As such, we find that the examiner established a prima facie showing of obviousness of claim 1. The appellant did not separately argue the patentability of the remaining rejected dependent claims 2 and 3. As such, we treat these claims as standing or falling together with claim 1.

The appellant attempts to rebut the examiner's prima facie showing by arguing that Berchem '004 teaches away from using the same material for the

[3] The appellant also admits on page 3 of the Brief that "both structures can be used for the same

valve seat and slide plate of the disc slide valve. The appellant argues that Berchem '004 teaches that the valve seat and slide plate must be made of different materials to prevent adhesion between them. (Brief, p. 4)

> A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.

In re Gurley, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994).

Berchem '004 is directed to solving a problem of adhesion of a movable valve element to a valve seat in shutoff and control valves (Berchem '004, col. 1, lines 52-54). Berchem '004 teaches, "adhesion [of the valve seat and the valve element] depend[s] upon the fluid medium traversing the valve" (Berchem '004, col. 1, lines 54-56). The solution proposed by Berchem '004 is to use different materials for the valve element and the valve seat. The teaching from Berchem '004 at issue in this case states,

> I have found, most surprisingly, that while two low-roughness surfaces of the same engineering ceramic will develop the detrimental adhesion between them, when different engineering ceramics are paired in contact, the detrimental adhesion practically is eliminated. (Berchem '004, col. 2, lines 37-41.)

---

purpose."

While the passage clearly suggests that it is preferable to use different materials for the valve seat and the slide plate to eliminate adhesion, we find that Berchem '004 does not teach away from using the same material for both the valve seat and the slide plate. Specifically, although a person seeking to improve the art of shut-off valves, upon learning from Berchem '004 that valves made of all one material in certain instances are inferior to valve seats and shut-off elements made of different materials, might well be led to use different materials for improved valves, Berchem '004 also teaches that it was known in the prior art to use the same engineering ceramics for both parts in shut-off and control valves (Berchem, col. 1, lines 41-58). As such, the teaching of Berchem '004 that it is preferable to use different materials is not a teaching away. *See Gurley*, 27 F.3d at 553, 31 USPQ2d at 1132 ("A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use.")

Further, Berchem '004 teaches that the problem of adhesion is dependent upon the flowable medium passing through the valve (Berchem '004, col. 1, lines 54-56). The appellant has presented no evidence that adhesion was even a concern in the gas-tight fitting of the present invention, and thus has made no showing that Berchem '004 suggests that the use of the same material for the valve seat and slide plate of the disc slide valve is unlikely to have been productive for the result sought by the appellant. As such, we find that the statement in Berchem '004 to use separate materials for the valve element and valve seat to prevent adhesion would not have led one of ordinary skill in the art away from using the teaching in Berchem '004 to replace the silicon dioxide ball valve of Berchem '427 with a

silicon dioxide disc slide valve. Accordingly, we sustain the examiner's rejection of claims 1-3.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-3 is affirmed.

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

AFFIRMED

_____	)
CHARLES E. FRANKFORT	)
Administrative Patent Judge	)
	)
	)
	)
_____	) BOARD OF PATENT
TERRY J. OWENS	) APPEALS
Administrative Patent Judge	) AND
	) INTERFERENCES
	)
	)
_____	)
LINDA E. HORNER	)
Administrative Patent Judge	)

William Collard
Collard & Roe, P.C.
1077 Northern Boulevard
Roslyn, NY 11576

LEH/ki