UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DUANE POWELL

Appeal 2008-3942
Application 11/145,636
Technology Center 1700

Decided: September 24, 2008

Before EDWARD C. KIMLIN, TERRY J. OWENS, and THOMAS A. WALTZ, *Administrative Patent Judges*.

WALTZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Primary Examiner's refusal to allow claim 7, the only claim pending in this application, as amended subsequent to the final rejection (*see* the amendment dated Feb. 28, 2007, entered as per the Advisory Action dated Mar. 28, 2007). We have jurisdiction pursuant to 35 U.S.C. § 6(b).

According to Appellant, the invention is directed to a process for the low-pressure production of sodium hypochlorite by constraining the sodium hydroxide and chlorine gas reactants to pass generally downward through a

specified type of static mixer (App. Br. 2-3). Independent claim 7 is the sole claim on appeal and is reproduced below:

7. A process for efficient, low-pressure production of sodium hypochlorite comprising:

introducing a liquid containing sodium hydroxide into a mixing chamber to create a dispersed liquid phase moving generally downward through the mixing chamber;

introducing $C1_2$ into the mixing chamber to create a continuous gas phase containing $C1_2$ moving in concurrent flow, while reacting, with the dispersed liquid phase to produce sodium hypochlorite;

and constraining the reactants to pass generally downward through a static mixer that aids the reaction as the reactants move generally downward through the mixing chamber without causing undesired foaming in aqueous sodium hypochlorite that collects at the bottom of the mixing chamber wherein the step of constraining the reactants to pass through the static mixer comprises constraining the reactants to pass through openings in the wall of a cone.

The Examiner has relied on the following prior art references as evidence of obviousness:

Aigueperse	3,287,233	Nov. 22, 1966
Grotheer	4,159,929	Jul. 3, 1979
Kahlert (DE '863)	DE 512863	Nov. 20, 1930[1]

[1] We rely on and cite from a full English translation of this document, listed as PTO 06-3688 and translated by FLS, Inc., previously made of record. We note that both Appellant and the Examiner incorrectly refer to this reference as "DE '893" (at least occasionally; *see* App. Br. 4, 7; Ans. 3-5). We consider all reference to "DE '893" as DE '863 to Kahlert.

ISSUE ON APPEAL

Claim 7 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Grotheer (Ans. 3).

Claim 7 stands rejected under 35 U.S.C. § 103(a) as unpatentable over DE '863, optionally further in view of Aigueperse (Ans. 4).[2]

Appellant contends that the Examiner considered the perforated conical wall mixer inventive in the corresponding PCT filing (App. Br. 6-7; Reply Br. 2).

Appellant contends that the Examiner admits that Grotheer lacks a static mixer as defined in the claim, and thus the rejection fails to make a prima facie case of obviousness (App. Br. 6). Appellant also contends that Grotheer discloses no particular flow but claim 7 requires downward flow (App. Br. 7).

Appellant admits that DE '863 discloses concurrent downward flow but contends that there is no factual basis that suggests the filling pieces disclosed by the reference correspond to the static mixer defined by claim 7 on appeal (App. Br. 7-8).

Appellant also contends that process claims can recite structural elements (Reply Br. 2-3).

The Examiner contends that the PCT application has no bearing on the prosecution in this application (Ans. 10).

The Examiner contends that Grotheer discloses the use of a static mixer, and the particular type of static mixer is within the ordinary skill in the art (Ans. 4, 7, and 9). The Examiner also contends that the horizontal

[2] The rejection of claim 7 under § 103(a) over Grotheer in view of DE '863 has been withdrawn by the Examiner (Ans. 11).

flow shown by Grotheer is merely a "schematic representation" and downward flow has not been alleged or shown to be critical (Ans. 4, 10).

The Examiner contends that the filling pieces as shown by DE '863 should be considered as a static mixer because the packing would promote the contact between reactants (Ans. 6, 11).

The Examiner contends that the "openings in the wall of a cone" is considered as an apparatus limitation and, as such, does not render the process of claim 7 novel or unobvious (Ans. 8).

Accordingly, we determine the following issue presented from the record in this appeal: has Appellant established that the Examiner committed reversible error in the determinations that Grotheer or DE '863 disclose and suggest all limitations as recited in claim 7 on appeal?[3]

From the record presented in this appeal, we determine that Appellant has established that the Examiner committed reversible error in the rejection over DE '863. Therefore, we do not sustain that rejection essentially for the reasons stated in the Briefs, as well as the reasons set forth below. However, we determine that Appellant has not established reversible error by the Examiner in the rejection over Grotheer. Thus, we sustain this rejection essentially for the reasons stated in the Answer as well as those reasons set forth below. Accordingly, the decision of the Examiner to reject claim 7 on appeal is AFFIRMED.

OPINION

A. The Rejection over Grotheer

[3] A discussion of Aigueperse is unnecessary to our decision since this reference is not relevant to claim 7 on appeal (App. Br. 7; Ans. 6).

We determine the following Factual Findings (FF) from the record in this appeal:

(1) Grotheer discloses a process for preparing a reaction product of alkali metal chloride, chlorate, and hypochlorite by mixing and chemically reacting an alkali metal hydroxide solution with chlorine gas (Grotheer, Abstract; col. 2, ll. 22-31);

(2) Grotheer discloses that the reaction mixture comprising caustic soda, chlorine, and recycled reaction product is fed into mixer/reactor 5, which may be a static in-line mixer, and hypochlorite is prepared (col. 3, ll. 16-19);

(3) Grotheer teaches that the in-line static mixers operate under turbulent conditions to ensure good contact between the reactants, exemplifying the mixer as a horizontal chamber (col. 5, ll. 44-48; *see* the sole Figure).

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations, if any. *See Graham v. John Deere Co.,* 383 U.S. 1, 17-18 (1966). "[A]nalysis [of whether the subject matter of a claim would have been obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l Co. v. Teleflex, Inc.,* 127 S. Ct. 1727, 1740-41 (2007). "When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason

to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product … of ordinary skill and common sense." *KSR,* 127 S. Ct. at 1742. "[W]hen a patent 'simply arranges old elements with each performing the same function it had been known to perform' and yields no more than one would expect from such an arrangement, the combination is obvious." *KSR,* 127 S. Ct. at 1740, *quoting Sakraida v. Ag Pro, Inc.,* 425 U.S. 273, 282 (1976).

Applying the preceding legal principles to the Factual Findings (FF) in the record of this appeal, we determine that the Examiner has established a prima facie case of obviousness, which prima facie case has not been adequately rebutted by Appellant's arguments. As shown by FF (1), (2), and (3) listed above, we determine that Grotheer discloses the process as recited in claim 7 on appeal with two differences: (1) Grotheer teaches use of a static mixer (FF (2)) but does not disclose a static mixer in the form of a cone with openings in the cone wall as claimed; and (2) Grotheer exemplifies horizontal flow of the reactants through the mixer (FF (3)) but is silent as to the claimed downward flow.[4] With regard to the first difference, we determine that the Examiner has stated that the claimed "cone" static mixer is one of many static mixers known and available in the art (Final Office Action dated Nov. 30, 2006, p. 8). On this record, Appellant has not disputed the Examiner's statement. Therefore, we determine that the use of any known static mixer available in the art, such as a perforated cone, for its well known function of creating turbulence and promoting the reaction in the process of Grotheer (*see* FF (3)) would have been obvious to one of ordinary

[4] Appellant only presents arguments against these two differences (App. Br. 6-7).

skill in this art, yielding no more than would have been expected. *See KSR,* 127 S. Ct. at 1740 and 1742.

With regard to the second difference, we determine that Grotheer is not limited to the drawing exemplification, but one of ordinary skill in this art would have recognized the benefits of a gravity flow for a vertical mixer, as well as other possible advantages. *See* Grotheer, col. 2, ll. 49-53; Ans. 4, 10; and DE '863:5, 8. Accordingly, in the absence of any evidence of unexpected results, we determine that the direction of flow of the reactants through the mixer would have been well within the ordinary skill in this art. *See KSR,* 127 S. Ct. at 1740-41.

We agree with the Examiner that prosecution in any other application has no bearing on the prosecution in this application (Ans. 10). For the foregoing reasons and those stated in the Answer, we sustain the rejection of claim 7 under § 103(a) over Grotheer.

B. The Rejection over DE '863

As discussed above, the Examiner contends that the "filling pieces" packing the tower of DE '863 are considered as a "static mixer" as required by claim 7 because the packing would promote the contact between the chlorine gas and the absorption liquid, thereby promoting the reaction (Ans. 6, 7, 9, and 11). Appellant asserts that there is no factual basis for this finding (App. Br. 7-8). We agree with Appellant. The Examiner has failed to provide any evidence or technical reasoning to support the determination that the filling pieces (prism-like synthetic stones)[5] taught by DE '863 would have been considered a "static mixer" as that term was known in the art and used in the claims. *See* Spec. 3:24-27; 9:9-12; 11:22-25. Therefore,

[5] DE '863 7:8-10.

we cannot sustain the Examiner's rejection based on DE '863. As noted above, the Aigueperse reference was only cited to show the known concentrations of hypochlorite solution (Ans. 6) and does not remedy the deficiency of DE '863. We also find no basis for the Examiner's contention that the "openings in the wall of a cone" in claim 7 is an apparatus limitation that does not render the process claim "novel or unobviousness [sic]" (Ans. 8).

C. Summary

The decision of the Examiner 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)(1)(iv).

AFFIRMED

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