UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BERNHARD STALDER, ROLAND HALTER,
WALTER ALMER, and ROLAND TSCHUDY

Appeal 2008-1734
Application 10/440,259
Technology Center 1700

Decided: March 26, 2008

Before CHARLES F. WARREN, CATHERINE Q. TIMM, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 the final rejection of claims 1-17 and 30-34. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

INTRODUCTION

Appellants claim a method for producing printing ink or printing ink concentrate that includes, in relevant part, adding a lipophilic binder and an aqueous slurry containing a lipophilic colored pigment to a first processing area and imposing shear flows and strain flows upon the aqueous slurry and binder in the first processing area (claim 1). Appellants' claimed invention permits the pigments to be flushed into the lipophilic phase first, and then salts are washed out of the product (Spec. ¶ [00013]).

Claim 1 is illustrative:

1. A method of producing a printing ink or a printing ink concentrate comprising, in the following order:

adding a lipophilic binder and an aqueous slurry containing a lipophilic colored pigment to a first processing area;

in the first processing area, imposing shear flows and strain flows upon the aqueous slurry and the binder which were added to the first processing area, so that at least partial flushing of the lipophilic colored pigment out of the aqueous slurry is accomplished with the lipophilic binder;

after the first processing area, removing water originating from the aqueous slurry for a first time;

sending a partially dehydrated free-flowing mass obtained from the first processing area to a second processing area where the free-flowing mass is exposed to a shearing, straining and compression effect and, for a second time, removing water released as a separate phase by the partial flushing in the first processing area from the free-flowing mass; and

removing and collecting, as an intermediate product or as an end product, the free-flowing mass which has been at least partially rid of water and in which the lipophilic colored pigment is dispersed in the lipophilic binder;

wherein the first processing area and the second processing area are connected along a closed system, and the free-flowing mass travels through the closed system between the first and second processing areas in a fluid state.

The Examiner relies on the following prior art references as evidence of unpatentability:

Waitkins	US 3,861,946	Jan. 21, 1975
Rouwhorst	US 4,309,223	Jan. 5, 1982
Higuchi	US 4,474,473	Oct. 2, 1984
Dienst (as translated[1])	DE 3729236 C1	Jun. 23, 1988
Nemeh	US 4,767,466	Aug. 30, 1988
Booth	US 5,041,163	Aug. 20, 1991
Affeldt	US 6,348,091 B1	Feb. 19, 2002

The rejections as presented by the Examiner are as follows:

1. Claims 1, 9, 11, 12, 14-17, 31, and 34 are rejected under 35 U.S.C. § 102(b) as being unpatentable over Affeldt.
2. Claims 2, 30, and 32 are rejected under 35 U.S.C. § 103 as being unpatentable over Affeldt in view of Rouwhorst.
3. Claims 3 and 6-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Affeldt in view of Booth.
4. Claim 4 is rejected under 35 U.S.C. § 103 as being unpatentable over Affeldt in view of Booth and Waitkins.
5. Claim 5 is rejected under 35 U.S.C. § 103 as being unpatentable over Affeldt in view of Booth and Nemeh.

[1] We refer to the translation of Dienst prepared for the USPTO by The McElroy Translation Company (PTO 09-0014 October 2007), and made of record in the PTO-892 attached to the Office Communication mailed October 16, 2007.

6. Claims 10 and 13 are rejected under 35 U.S.C. § 103 as being unpatentable over Affeldt in view of Higuchi.
7. Claim 33 is rejected under 35 U.S.C. § 103 as being unpatentable over Affeldt in view of Dienst.

Appellants separately argue claims 1-5, 9, 10, 13, and 30-34.

OPINION

35 U.S.C. § 102(b) REJECTION OVER AFFELDT

CLAIMS 1 and 34

Appellants argue that Affeldt does not disclose the "aqueous slurry" and "shear flows" claim features (App. Br. 6). Appellants contend that Affeldt's disclosure of "fluidizing" the press cake does not form an aqueous slurry, but merely pulverizes the press cake to fine particles so that it may behave like a fluid (App. Br. 7).

We have considered Appellants' arguments and are unpersuaded for the reasons below.

Affeldt discloses a method in which a pigment in press cake form is flushed by transferring the pigment particles from the aqueous press cake to an organic medium (Affeldt, col. 4, ll. 30-33). Affeldt discloses that the press cake is composed of pigment and water (Affeldt, col. 4, ll. 33-42). Affeldt discloses applying a shear to fluidize the press cake and form a "pasty or plaster-like consistency" (Affeldt, col. 4, ll. 44-55). Affeldt further discloses that the press cake feed system applies shear to the press cake "to convert the crumbly, agglomerating material into a smooth fluid dispersion," which is then transferred to a twin-screw extruder (Affeldt, col. 3, ll. 27-33).

From the above disclosures, we determine that Affeldt discloses the "aqueous slurry" claim feature. Specifically, Affeldt discloses that the press cake is converted into a "smooth fluid dispersion." The *McGraw-Hill Dictionary of Scientific and Technical Terms* defines "slurry" as "[a] free-flowing pumpable suspension of fine solid material in liquid."[2] Affeldt's conversion of the press cake into a "smooth fluid dispersion" constitutes a free-flowing pumpable suspension of pigment (i.e., fine solid material) in water (i.e., a liquid). Moreover, Affeldt's disclosure that that the fluidized press cake may be pumped (Affeldt, col. 5, ll. 10-18) further supports the Examiner's finding that the fluidized press cake constitutes an aqueous slurry.

Regarding the "shear flows" claim feature, Affeldt clearly discloses applying shear to the press cake to fluidize it (Affeldt, col. 3, ll. 29-31; col. 4, ll. 51-55). Accordingly, we agree with the Examiner's finding that Affeldt discloses the argued claim 1 features.

We sustain the Examiner's § 102(b) rejection of claims 1, 11, 12, 14-17, and 34 over Affeldt.

CLAIMS 9 AND 31

Claims 9 and 31 recite ranges of shear rates in the first processing area.

The Examiner finds that Affeldt's disclosure that the amount of shear applied to fluidize the press cake should not be excessive indicates that a low

[2] *McGraw-Hill Dictionary of Scientific and Technical Terms* 1846 (5th ed. 1994).

shear rate is used (Ans. 3). The Examiner then submits that a low shear rate is 1000 s^{-1} (Ans. 3).

Appellants argue that Affeldt does not disclose any particular numerical values for shear rates applied to the press cake (App. Br. 7). Appellants further argue that the Examiner's has provided no evidence to support a finding that Affeldt inherently discloses the claimed shear rate ranges (Reply Br. 2-3).

In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ2d 1461, 1464 (BPAI 1990).

In the present appeal, the Examiner has not provided any evidence (i.e., a basis in fact and/or technical reasoning) to support the finding that Affeldt's disclosure of a non-excessive shear rate necessarily includes a shear rate of 1000 s^{-1} such that the shear rate ranges of claims 9 and 31 are anticipated. Accordingly, we cannot sustain the Examiner's § 102(b) rejection of claims 9 and 31 over Affeldt.

35 U.S.C. § 103 REJECTION OVER AFFELDT IN VIEW OF ROUWHORST

CLAIMS 2 AND 30

Appellants argue that Affeldt teaches away from using Rouwhorst's slurry having lower pigment content (App. Br. 7). Appellants argue that Affeldt discloses that using more water in the press cake creates additional aqueous waste and makes it difficult to get a clean break or separation

between the phases (App. Br. 7). Appellants contend that Affeldt discloses avoiding an extra dilution step to produce a low pigment content slurry as an advantage, which would be thwarted if such a slurry were made (App. Br. 8).

Although a reference that teaches away is a significant factor to be considered in determining unobviousness, the nature of the teaching is highly relevant, and must be weighed in substance. *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). 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. *Id*.

Affeldt discloses that Rouwhorst's low pigment content slurry makes it difficult to get a clean break between the phases and more aqueous waste may be produced (Affeldt, col. 2, ll. 15-19). Affeldt further discloses that the disclosed process of using press cakes makes it "possible" to eliminate evaporating or diluting the press cake (Affeldt, col. 3, ll. 50-56).

As the Examiner indicates (Ans. 11), the nature of Affeldt's teachings does not constitute a teaching away from combining Rouwhorst's low pigment content slurry with Affeldt's method of making pigment flushes. Rather, Affeldt clearly indicates that using press cakes makes it "possible" to avoid the diluting step. That is, the diluting step can be avoided, but it need not be avoided. If the diluting step is not eliminated, then, as Affeldt discloses, added difficulty with achieving a clean break may ensue along with added waste. However, the nature of such a teaching is merely that greater difficulty may be encountered, not that the low-pigment content slurry would not work. Accordingly, we are unpersuaded by Appellants' teaching away argument.

We sustain the Examiner's § 103 rejection of claims 2 and 30 over Affeldt in view of Rouwhorst.

CLAIM 32

Appellants argue that Affeldt teaches away from using a temperature between 40-90°C in the first processing area as disclosed by Rouwhorst (App. Br. 8). Appellants contend that Affeldt discloses increasing the temperature from 98.8°C (i.e., 210°F) throughout the zones until the last zone such that one of ordinary skill would not have been motivated to decrease the temperature to 71°C (i.e., 160°F) as disclosed by Rouwhorst in the first zone (App.Br. 8-9).

Appellants do not contest that Affeldt discloses monitoring and adjusting the temperature in the zones of the extruder (App. Br. 8). Affeldt discloses in Example 1 that the temperature in zones 3-5 is 210°F (98.8°C) (Affeldt, col. 12). Affeldt discloses monitoring, for example, temperature to control the properties of the material being processed (Affeldt, col. 9, ll. 5-30).

The nature of such disclosures does not constitute a teaching away from a lower temperature. *Gurley*, 27 F.3d at 553. Affeldt's Example 1 merely exemplifies a particular temperature profile for the lithol rubine press cake being processed. As Affeldt indicates, the material being processed will determine the various control parameters (Affeldt, col. 9, ll. 5-30). Accordingly, we do not view Affeldt's disclosure as teaching away from the using Rouwhorst's lower temperature in the first processing area.

We add that Appellants do not contest that Affeldt discloses monitoring and adjusting the temperature in the zones of the extruder (App.

Br. 8). Specifically, Affeldt discloses monitoring the temperature and other parameters, and using the temperature to adjust the viscosity, the moisture content of the flush, or the color properties, for example (Affeldt, col. 9, ll. 57-64; col. 10, ll. 18-21, 39-44). In other words, Affeldt recognizes temperature as a result-effective variable for the process. *In re Antonie*, 559 F.2d 618, 620 (CCPA 1977) (Only result-effective variables may be optimized.). Accordingly, it would have been obvious to determine optimum values for Affeldt's temperature in the first processing zone to provide the desired viscosity, for example. *Id*.

For the above reasons, we sustain the Examiner's § 103 rejection of claim 32 over Affeldt in view of Rouwhorst.

35 U.S.C. § 103 REJECTION OVER AFFELDT IN VIEW OF BOOTH &
35 U.S.C. § 103 REJECTION OVER AFFELDT IN VIEW OF BOOTH AND NEMEH

CLAIMS 3 AND 5

Appellants argue that Affeldt teaches using other techniques to adjust the conductivity of the material being processes other than adding water to the material (App. Br. 9). As with claim 1, Appellants argue that Affeldt teaches away from adding water (i.e., the diluting step) during the processing of the press cake (App. Br. 9-10 and 11). Appellants contend that Affeldt uses a dam effect in the extruder to remove the water, which enables more of the salts to be removed with the liquid water such that there would have been no motivation to add additional water to decrease the salt content of the pigment flush (App. Br. 10 and 11).

With regard to Appellants' previous argument made with regard to claim 1 that Affeldt teaches away from adding water, we are unpersuaded for the same reasons discussed above with regard to claim 1.

We are unpersuaded by Appellants' argument that Affeldt's dam effect removes more of the salts such that there is no motivation to add more water. Affeldt discloses the dam effect enables more of the water to drain out and take with it salts, so that the purity of the product improves (Affeldt, col. 8, ll. 1-5). Affeldt further discloses that the final product has a lower salt content than prior art methods (i.e., there is still some residual salt left in the product, but the amount is lower than achieved with prior art methods) (Affeldt, col. 8, ll. 1-5).

Booth discloses a method of making a flushed pigment (Booth, col. 2, ll. 3-5). Booth further discloses using water to wash a flushed cake until all soluble salts are removed (Booth, col. 5, ll. 9-10).

These disclosures indicate that one of skill in the art would have been motivated to combine Booth's water washing of the flushed pigment with Affeldt's method of producing a flushed pigment in order to improve the purity of the product. Affeldt discloses that the salt concentration is lower than conventionally achievable, but there are still salt impurities left in Affeldt's flushed pigment. Booth discloses that using the water wash enables all of the impurities to be removed, thus yielding a more pure product.

We also agree with the Examiner that using the wash water to remove impurities is well known and would have resulted in an adjustment of the conductivity of the product by removing salts (Ans. 12). Accordingly, though Affeldt describes using other techniques (i.e., the dam effect) to

adjust conductivity of the product, such is not a teaching away from using additional wash water to improve product purity and, thus, conductivity.

For the above reasons, we sustain the Examiner's § 103 rejection of claims 3 and 6-8 over Affeldt in view of Booth, and the Examiner's § 103 rejection of claim 5 over Affeldt in view of Booth and Nemeh.

35 U.S.C. § 103 REJECTION OVER AFFELDT IN VIEW OF BOOTH AND WAITKINS
CLAIM 4

Appellants argue that there is no motivation to use Waitkin's distilled water wash for nacreous pigments with Affeldt's method of making printing inks because Waitkins is concerned with high cost nacreous pigments (App. Br. 10-11). As with claim 1, Appellants argue that Affeldt teaches away from adding water during the processing of the press cake (App. Br. 10).

We are unpersuaded by Appellants' argument that Affeldt teaches away from adding water for the same reasons discussed with regard to claim 1.

With regard to Appellants' motivation argument, we agree with the Examiner that using higher purity water (i.e., distilled water) will yield a higher purity pigment (Ans. 12) regardless of the cost of the pigment being produced. The contaminants present in tap water would be removed in the distilled water further enhancing the purity of the pigment. Accordingly, we agree with the Examiner that there would have been motivation for using Waitkins' distilled water to wash the filtered press cake of the pigment flush with Affeldt's method of making pigment flushes to enhance the purity of the pigment.

Therefore, we sustain the Examiner's § 103 rejection of claim 4 over Affeldt in view of Booth and Waitkins.

35 U.S.C. § 103 REJECTION OF CLAIMS 10 AND 13 OVER AFFELDT IN VIEW OF HIGUCHI

CLAIMS 10 AND 13

Appellants argue that there is no motivation to combine Higuchi with Affeldt because Higuchi uses an evaporation step, which Affeldt seeks to eliminate (App. Br. 11). Appellants argue that Higuchi does not disclose increasing the shear flow and/or strain flow and then decreasing the shear and/or strain flow as recited in claim 10 (App. Br. 12). With regard to claim 13, Appellants argue that Higuchi does not teach optimizing the number and geometry of the barrels to obtain optimum shear values (App. Br. 12).

Regarding Appellants' motivation argument, the Examiner has not proposed combining Higuchi's evaporation step with Affeldt's method of making pigment flushes. Rather the Examiner focuses on Higuchi's particular well known screw and barrel design for processing pigment flushes as the basis for the combination with Affeldt's process (Ans. 8). Accordingly, Appellants' motivation argument is without persuasive merit.

We are unpersuaded by Appellants' arguments that Higuchi does not teach the subject matter of claim 10, and that Higuchi does not teach optimizing the barrel design. Higuchi discloses that the screw profile is designed for the purpose of feeding press cakes and organic media into an extruder for flushing of the pigment (Higuchi, col. 3, ll. 43-47). Higuchi further discloses that the barrels and screw profile are designed based upon

the purpose of the particular section of the extruder barrel (e.g., flushing, dehydrating, or feeding of material) (Higuchi, col. 3, ll. 48-53). Higuchi discloses that the flushing section (barrels 2-4 in Figure 3) requires a screw profile that provides sufficient kneading, mixing, and surface renewing functions (i.e., sufficient shear to flush the pigment from the aqueous phase to the organic phase)(Higuchi, col. 5, ll. 53-66). Higuchi further discloses the grooves in the screw taper from deep grooves (i.e., less shear) in the feed barrels 1 and 2 to shallow grooves in the flushing barrels 3 and 4 (i.e., greater shear)(Higuchi, col. 5, ll. 61-66; Figure 3). Higuchi further discloses that the groove depth gradually changes from shallow (i.e., greater shear) to deep (i.e., less shear) in dehydrating barrel 5 of the extruder (Higuchi, col. 6, ll. 14-24; Figure 3).

Affeldt also recognizes that the level of shear and screw design are significant to provide adequate mixing in the first processing area (Affeldt, col. 4, ll. 51-60; col. 7, ll. 1-15). Like Higuchi, Affeldt discloses that the grooves in the screw taper from deep (i.e., less shear) to shallow (i.e., greater shear) in the flushing section of the barrel (Affeldt, col. 7, ll. 5-8).

In other words, both Affeldt and Higuchi recognize that shear rate is a result-effective variable. *Antonie*, 559 F.2d at 620. Accordingly, because shear rate is an art recognized result-effective variable, it would have been obvious to determine an optimum shear profile (i.e., the screw and barrel design) tailored to the purpose of the particular section of the extruder. *Id*.

Therefore, Appellants' claims to the particular shear rate profile in claim 10 and shear rate relationship in claim 13 would have been readily optimized from the prior art disclosures. *Id*. Moreover, as noted above, Higuchi discloses a shear rate profile that steadily increases in intensity from

a minimum to a maximum (i.e., tapers from deep grooves in the screw to shallow grooves in the screw) and then decreases steadily in intensity (i.e., from shallow screw grooves to deep screw grooves) (Higuchi, col. 5, ll. 61-66; col. 6, ll. 14-24; Figure 3) as recited in claim 10.

For the above reasons, we sustain the Examiner's § 103 rejection of claims 10 and 13 over Affeldt in view of Higuchi.

35 U.S.C. § 103 REJECTION OVER AFFELDT IN VIEW OF DIENST

With regard to the § 103 rejection of claim 33, Appellants advance the same argument made with regard to claim 1. Specifically, Appellants argue that neither Affeldt nor Dienst disclose using an aqueous slurry (App. Br. 13). However, we are unpersuaded by such an argument for the same reasons discussed with regard to the § 103 rejection of claim 1.

Accordingly, we sustain the Examiner's § 103 rejection of claim 33 over Affeldt in view of Dienst.

DECISION

We sustain the Examiner's § 102(b) rejection of claims 1, 11, 12, 14-17, and 34 over Affeldt.

We do not sustain the Examiner's § 102(b) rejection of claims 9 and 31 over Affeldt.

We sustain the Examiner's § 103 rejection of claims 2, 30, and 32 over Affeldt in view of Rouwhorst.

We sustain the Examiner's § 103 rejection of claims 3, and 6-8 over Affeldt in view of Booth.

We sustain the Examiner's § 103 rejection of claim 4 over Affeldt in view of Booth and Waitkins.

We sustain the Examiner's § 103 rejection of claim 5 over Affeldt in view of Booth and Nemeh.

We sustain the Examiner's § 103 rejection of claims 10 and 13 over Affeldt in view of Higuchi.

We sustain the Examiner's § 103 rejection of claim 33 over Affeldt in view of Dienst.

The Examiner's decision is affirmed-in-part.

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-IN-PART

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