

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 ROBERT A. LAMPORT

Appeal 2006-2137
Application 10/375,748
Technology Center 1700

Decided: October 31, 2006

Before PAK, TIMM, and GAUDETTE, *Administrative Patent Judges*.
PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the Examiner's final rejection of claims 24 through 47, which are all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 134.

I. APPEALED SUBJECT MATTER

The subject matter on appeal is directed to a method of forming a molded friction material "suitable for use in the brake mechanisms of

automobiles, aircraft, railroad vehicles, industrial machines, etc....” *See* the Specification at 1. The method involves, *inter alia*, introducing a slurry composition having particular organic and inorganic ingredients into a die cavity and extracting the water from the slurry composition by pressing the slurry composition in the die cavity with a particular die punch. *See* the Specification at 3. According to the Appellant (Specification at 3-4):

By mixing the ingredients as a water slurry, the limitations of particle size and fiber length are effectively eliminated, as is the need for a high content of organic processing aids and liquid resins. The wet slurry mixing process has the ability to disperse long fibers and flakes and to suspend large particles without segregation.

Details of the appealed subject matter are recited in claims 24 and 38 which are reproduced below:

24. A method of forming a molded friction material, comprising:

placing a slurry composition in a die cavity, the slurry composition comprising water and 10-50% by weight solids, the solids comprising 2-15 vol.% organic fibers of 2-15 mm length, 2-20 vol.% organic pulp of up to 8 mm length, 2-10 vol.% inorganic fibers of 2-15 mm length, 2-15 vol.% metallic fibers of 2-15 mm length, 2-10 vol.% inorganic flake materials of ½-10 mm in the largest dimension, 5-20 vol.% carbonaceous particles of ½-10 mm in the largest dimension, and resin binder;

extracting the water from the slurry by pressing on the slurry in the die cavity with a die punch sized to form a gap between the punch and a sidewall of the die cavity whereby the water is extracted through the gap, followed by drying, resulting in the formation of a friction material preform; and

molding the friction material preform by applying heat and pressure thereto.

38. The method of claim 24 wherein placing the slurry composition in a die cavity includes the die cavity having a top-facing opening with the sidewall being vertically-oriented, and wherein pressing on the slurry is by pressing the die punch downward on a top surface of the slurry composition to force the solids toward a bottom of the die cavity while extracting the water upward through the gap between the vertically-oriented sidewall and the punch and out of the top-facing opening of the die cavity.

II. PRIOR ART

As evidence of unpatentability of the claimed subject matter, the Examiner relies upon the following references:

MacMurray	US 2,697,979	Dec. 28, 1954
Tabe	US 4,324,706	Apr. 13, 1982
Parker	US 4,656,203	Apr. 7, 1987

III. REJECTION

Claims 24 through 47 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Parker, Tabe and MacMurray.

IV. FINDINGS AND CONCLUSIONS

We have carefully considered the claims, specification and prior art references, including the arguments advanced by both the Appellant and the Examiner in support of their respective positions. This review has led us to conclude that the Examiner's § 103 rejection is well founded. Accordingly, we will sustain the Examiner's decision rejecting claims 24 through 47

under § 103 for the factual findings and conclusions set forth by the Examiner in the Answer and below.

Under 35 U.S.C. § 103, the obviousness of an invention cannot be established by combining the teachings of the prior art references absent some teaching, suggestion or incentive supporting the combination. *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). This does not mean that the cited prior art references must specifically suggest making the combination. *B.F. Goodrich Co. v. Aircraft Braking Sys. Corp.*, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996); *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988). Rather, the test for obviousness is what the combined teachings of the prior art references would have suggested to those of ordinary skill in the art. *In re Young*, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). In evaluating the prior art references for a suggestion, it is proper to take into account not only the specific teachings of the references, but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

Applying the above obviousness test to the present circumstance, we determine that the prior art references as a whole would have suggested the claimed subject matter within the meaning of 35 U.S.C. § 103. As correctly found by the Examiner (Answer 3-4):

Parker teaches a method of manufacturing low density friction products such as clutch facings, disk brake pads, brake linings, brake blocks and the like including mixing together a binder, reinforcing fibers, fillers, friction modifiers and water to

form a slurry of about 12% by weight solids (10-50% by weight solids); dispensing the slurry into an annular mold (placing a slurry composition in a die cavity); applying pressure to the slurry in the mold to dewater the slurry, via a top and bottom filter medium which forms pad [sic. part] of the mold, to about 30-40% by weight water content thereby forming a preform (extracting the water from the slurry by pressing on the slurry in the die cavity with a die punch); drying the preform in 150 degrees F to 1% by weight water level (followed by drying, resulting in the formation of a friction material preform); and pressing the dried preform between two hot mold plates in a hot press with sufficient pressure and for a sufficient length of time to form a final friction product having a desired density and the other desired properties ... (column 1 , lines 10-26; column 2, lines 16-20; column 4, lines 7-32; Example 2 in column 5).

As acknowledged by the Examiner (Answer 3-7) and argued by the Appellant (Br. 3-7), Parker does not mention the claimed diameter of friction and wear modifiers and fillers, the claimed proportions of solid materials, and the claimed die punch design. However, we concur with the Examiner that these features are necessarily present in Parker and/or suggested by the prior art references as a whole.

As to claimed diameter of friction and wear modifiers and filler, the Appellant does not challenge the Examiner's finding at page 4 of the Answer that Parker teaches conventional "friction and wear modifiers and fillers, such as graphite (carbonaceous particles) and vermiculite (inorganic flake materials)" which are useful for forming friction products. *See also* Parker, column 3, lines 23-30 and column 2, lines 3-9. These conventional friction and wear modifiers and fillers, as correctly found by the Examiner at page 5 of the Answer, necessarily have "a particle size of 50 mesh or smaller (1/2-10 mm in the largest dimension)" as explained by Tabe. *See also* Tabe,

column 9, lines 48-58 and col. 2, ll. 9-23. *Compare Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1328, 58 USPQ2d 1545, 1553 (Fed. Cir. 2001)(“[R]ecourse to extrinsic evidence is proper to determine whether a feature, while not explicitly discussed, is necessarily present in a reference.”) *with In re Baxter Travenol Labs*, 952 F.2d 388, 390, 21 USPQ2d 1281, 1284 (Fed. Cir. 1991)(“Extrinsic evidence may be considered when it is used to explain...the meaning of a reference.”). The Appellant does not contest that the claimed dimensions of carbonaceous particles and inorganic flake materials include the dimensions of the conventional friction and wear modifiers and fillers.

As to the claimed proportions of solid materials, there is no dispute that Parker teaches the claimed organic, inorganic and metallic fibers and pulp having the claimed lengths, the claimed resin binder and the claimed friction and wear modifiers and filers having the claimed dimensions. *Compare Answer 4-6 with Br. 3-10 and Reply Br. 1-5*. Nor is there any dispute that Parker teaches forming a slurry containing the above solid materials using the claimed solids to water ratio for purposes of making friction products. *Compare Answer 4 with Br. 3-10 and Reply Br. 1-5*. Although, as recognized by the Examiner, Parker does not specifically mention the claimed proportions of the above-mentioned solid materials, the Examiner correctly finds that Parker teaches that such proportions are result effective variables. *See the Answer 4-5*. Specifically, the Examiner finds that Parker teaches that the selection of appropriate proportions of the above-mentioned solid materials is dependent on desired manufacturing characteristics or properties. *See the Answer 4-5*, together with Parker, column 2, lines 60-66 and column 3, lines 8-12. Thus, we concur with the

Examiner that the determination of optimum proportions of the above-mentioned solid materials, such as those claimed, in the friction product forming process of the type discussed in Parker is well within the ambit of one of ordinary skill in the art. *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980) (“[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.”).

The Appellant asserts (Br. 4) that:

It is the Appellant['s] position that optimization of the result-effective variable was limited in the processes of Parker... as a result of the dewatering processes used in their methods. One skilled in the art could not simply change the quantities and sizes of the various components to arrive at the present invention due to the limitation in the dewatering step.
[Emphasis original.]

We are not persuaded by this assertion. First, the Appellant does not refer to any objective evidence to support his assertion that the dewatering step taught by Parker would direct one of ordinary skill in the art away from the claimed proportions. *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984). Second, as indicated *supra*, Parker not only specifically and inherently teaches the claimed sizes of solid fibers and particles, but also teaches that the amounts of solid fibers and particles employed can be varied to obtain friction products having desired manufacturing characteristics and properties.

As to the claimed punch design, there is no dispute that MacMurray teaches the claimed punch design which is used to dewater and compact a slurry in a die cavity. *Compare Answer 6, 10 and 11 with Br. 3-10 and Reply Br. 1-5*. Specifically, MacMurray teaches that its invention is directed

to “a press for separating liquids from slurries and sludges and compacting the solid materials...” *See* column 1, lines 15-17. This press is said to include a solid cylindrical anvil ram having a plurality of small liquid-conducting passages corresponding to the claimed die punch design. *See* column 4, lines 20-63. We find that MacMurray further teaches (col. 2, ll. 14-21) that:

It is an object of my invention to provide a press for simultaneously dewatering and compacting aqueous slurries and sludges and the like without exposing the solids to air. Another object is to provide a press of such character that can be operated rapidly in a substantially continuous manner. A further object is to provide a press that is relatively simple and strong in construction and simple in operation.

Thus, we concur with the Examiner that one of ordinary skill in the art would have been led to employ the press having the claimed punch design taught by MacMurray to carry out the dewatering and compacting step taught by Parker, motivated by a reasonable expectation of successfully obtaining the advantages stated above. Parker clearly teaches employing a press to remove water from its slurry.

The Appellant appears to argue that MacMurray is not analogous prior art, thus implying that it is improperly combined with Parker and Tabe. Reply Br. 1-2. We do not agree. Although as argued by the Appellant at pages 1 and 2 of the Reply Brief, MacMurray is particularly interested in “dewatering of sludges and slurries composed essentially of a mixture of finely-divided lead and about 3% or more by weight of water...,”¹ it clearly indicates that its press is directed to separating liquids from any slurries and

¹ MacMurray does not exclude slurries having the amount of water taught by Parker.

sludges as indicated, *supra*. As the Appellant's invention and Parker are directed to dewatering a slurry with a press, we find that MacMurray is at least "reasonably relevant to the particular problem with which the inventor was involved." *In re Clay*, 966 F.2d 656, 658-59, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992) ("Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problems addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.").

As to separately argued claim 38, we find nothing in MacMurray which indicates criticality of operating its press in a horizontal manner. Rather, as can be seen from column 4, lines 12-16, of Parker, pressing a slurry appears to be accomplished in a vertical orientation to retain 30 to 40 % by weight water content. Thus, notwithstanding the Appellant's arguments to the contrary, we concur with the Examiner that it would have been obvious to one of ordinary skill in the art to operate the press taught by MacMurray in a vertical manner in the dewatering (pressing) step of Parker to retain the desired water content in a slurry.

Based on the totality of record, including due consideration of the Appellant's arguments, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of 35 U.S.C. § 103. Accordingly, we affirm the Examiner's decision rejecting the claims on appeal under 35 U.S.C. § 103.

V. CONCLUSION

The decision of the Examiner is affirmed.

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VI. TIME PERIOD

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

AFFIRMED

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