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The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS R. DELCOURT,
JOHAN GULLICHSEN, RONALD G. BAIN
and
C. BERTIL STROMBERG

Appeal No. 96-3376
Application 08/164,889¹

ON BRIEF

Before MEISTER, FRANKFORT and McQUADE, Administrative Patent Judges.

FRANKFORT, Administrative Patent Judge.

¹ Application for patent filed December 10, 1993.

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Application 08/164,889

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 25, 27 through 32, 34, 36 and 38.² Claims 8 through 10, 13, 14, 21 through 24, 26, 33, 35 and 37, the only other claims remaining in the application, stand allowed. Claims 1 through 7, 11, 12 and 15 through 20 have been canceled.

Appellants' invention is directed to a mixer which, as disclosed, is used in the bleaching of cellulose pulp (paper pulp). Claims 30 and 31 are illustrative of the subject matter on appeal and a copy of those claims, as they appear in the Appendix to appellants' brief, is attached to this decision.

The prior art references of record relied upon by the examiner as evidence of obviousness under 35 U.S.C. § 103 are:

Forbes	2,645,464	July 14, 1953
Ahs	4,339,206	July 13, 1982
Gullichsen et al. (Gullichsen)	4,410,337	Oct. 18, 1983
Carre et al. (Carre)	4,416,548	Nov. 22, 1983

² Minor amendments to independent claims 30 and 31 on appeal were made in a paper filed subsequent to the final rejection on July 31, 1995 (Paper No. 14).

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Claims 28, 31 and 32 stand rejected under 35 U.S.C. § 103 as being unpatentable over Carre.

Claim 27 stands rejected under 35 U.S.C. § 103 as being unpatentable over Carre in view of Gullichsen.

Claims 29 and 34 stand rejected under 35 U.S.C. § 103 as being unpatentable over Carre in view of Ahs.

Claims 25, 30, 36 and 38 stand rejected under 35 U.S.C. § 103 as being unpatentable over Carre in view of Forbes.³

The full text of the examiner's rejections with regard to the appealed claims and rebuttal to the arguments presented by

³ The rejection of claims 25, 27 through 32, 34, 36 and 38 under 35 U.S.C. § 112, second paragraph, as found in the final rejection (Paper No. 13), has been withdrawn in view of the amendment filed July 31, 1995 (Paper No. 14). See the advisory action (Paper No. 15) mailed August 3, 1995.

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appellants appears in the examiner's answer (Paper No. 18, mailed March 11, 1996) and supplemental examiner's answer (Paper No. 20, mailed May 15, 1996). Rather than reiterate appellants' position

on the obviousness issues raised in this appeal, we make reference to the main and reply briefs (Paper Nos. 17 and 19) for the complete statement of appellants' arguments.

OPINION

Having carefully considered appellants' specification and claims, the applied references, and the respective viewpoints of appellants and the examiner, we have reached the conclusions which follow.

Turning first to the examiner's rejection of claims 28, 31 and 32 under 35 U.S.C. § 103 based on Carre, appellants have argued (brief, page 9) that since independent claim 31 calls for the ring to extend outwardly from the base "at least about three inches," and since this feature is admittedly not even remotely suggested in Carre, neither claim 31 nor claims 28 and 32 which depend therefrom, are even remotely suggested by the applied

prior art. We find this argument to be unpersuasive, because the embodiment of the mixer seen in Figures 7 and 8 of Carre is clearly suggestive of the claimed subject matter as broadly defined in claims 28, 31 and 32 on appeal.

In particular, we point to the ring (2) located intermediate the stator members (8) in Figures 7 and 8 of Carre, noting that it is substantially concentric with the base of the rotor and extends outwardly, in the axial flow direction, from the base. The ring (2) is disclosed as being spaced from the stator members by a distance (h) that is in the range of 1 to 30 millimeters, preferably between 2 and 10 millimeters (Carre, col. 3, lines 56-58). Since 1 inch equals 25 mm, it is apparent that this spacing range encompasses both the "0.5 inches or less" range of claim 31 and the "0.25 inches or less" range of claim 28. With regard to the length of the ring (2), seen best in Figure 8 of Carre, it is stated in column 3, lines 59-63, that the length of the gap, and thus the length of the ring in the mixer of Figure 8, should exceed (h) by several times "suitably between 3 and 25 times, preferably between 5 and 20 times." Accordingly, the length of the ring (2) in Figure 8 of Carre may be between 3 and 750 mm, or up to 30 inches (750 mm divided by

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25mm per inch), and preferably is between 10mm and 200mm, or up to 4 inches in length.

Since Carre clearly discloses embodiments of the mixer therein which have a ring sized and positioned like that broadly set forth in appellants' claims 28, 31 and 32 on appeal, we are of the opinion that Carre (Figures 7 and 8) actually anticipates the subject matter of appellants' claims. As has been made clear on numerous occasions, anticipation or lack of novelty is the ultimate or epitome of obviousness. See, in this regard, In re Fracalossi, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982); In re Pearson, 494 F.2d 1399, 1402, 181 USPQ 641, 644 (CCPA 1974). Accordingly, we will sustain the examiner's rejection of claims 28, 31 and 32 under 35 U.S.C. § 103 based on Carre.

As for the examiner's rejections of dependent claims 27, 29 and 34 under 35 U.S.C. § 103, we will sustain these rejections also. In our opinion, one of ordinary skill in the art would have realized from the collective teachings of Carre and Gullichsen that under certain conditions it is desirable to remove gas from the fiber suspension during the

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mixing process, and that degassing means for this purpose may be provided in the rotor base for removing gas "from adjacent said axis of rotation within said housing to the exterior of said housing," as in appellants' claim 27 on appeal. We also agree with the examiner that the disclosure of Ahs, at column 4, lines 12-23, considered together with the teachings of Carre, would have

provided ample suggestion to one of ordinary skill in the art to put a means for introducing a treatment fluid at a location remote from the inlet of the mixer of Carre, in addition to the means (6) therein for introducing a treatment fluid adjacent the inlet of the mixer.

The next rejection for our consideration is that of claims 25, 30, 36 and 38 under 35 U.S.C. § 103 based on Carre in view of Forbes. Independent claim 30 sets forth a mixer wherein the rotor comprises

a substantially disc-shaped base having a center about which said rotor can rotate, and a diameter; a hub at said center of said base for connecting said base to said rotary drive mechanism; and a first ring substantially concentric with said base and extending outwardly from said base, said first ring having

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a cross-sectional shape corresponding to that of a truncated right circular cone frustum.

In this particular case, we look to the embodiment of the mixer seen in Figures 4 and 6 of Carre, noting that the rings (13) therein are substantially concentric with the base of the rotor (2) and extend outwardly in a radial direction from the base. However, as recognized by the examiner, the cross sectional shape of the rings in Carre Figures 4 and 6 is rectangular, not that of a "truncated right circular cone frustum," as in appellants' claim 30 on appeal. The examiner turns to Forbes for the teachings of this feature in a mixing device, noting that the rings (90) of the rotor flange (54) and the rings (94) of the stator plate (75) therein have complementary shaped cooperating surfaces spaced to define annular mixing volumes and cross sectional configurations in the form of a truncated right circular cone frustum. In column 5, line 65, through column 6, line 10, Forbes notes that the complementary surfaces of the rings/ridges (90, 94) force the materials being mixed to pass therebetween in the form of a thin undulating stream and create a shear field to further reduce the particle size of the dispersed phase of the dispersion. The

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examiner concludes from the collective teachings of the applied references that

[i]t would have been obvious to one having ordinary skill in the art, at the time applicants' invention was made, to have substituted the rings of rectangular cross-section in Carre et al. with rings having a cross sectional shape of a truncated right circular cone frustum as disclosed by Forbes for the purpose of creating a shear field to enhance the shearing of the material being processed (answer, page 5).

In the paragraph bridging pages 12 and 13 of the answer, the examiner further urges that one of ordinary skill in the art would have recognized that a ring of rectangular cross section and a ring having a cross section of a truncated right circular cone frustum are each

well known types of rotor and stator projections used in the mixing art (as evidenced by the prior art of record), and that such projections are generally alternative mechanical structures used for establishing turbulence and creating shear fields in the prior art to Carre et al. and Forbes and as claimed by applicant [sic].

With this as background, the examiner concludes that the selection of either the rectangular cross section ring or the ring having a cross section of a truncated right circular cone

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frustum would have been a matter of design choice to one of ordinary skill in the art and thus does not serve to patentably distinguish the claimed invention over the prior art. In further support of this position, the examiner notes that appellants' own specification (page 3, lines 16-18) establishes that one of ordinary skill in the art would have understood rings of such cross sectional shapes to be of interchangeable character, since the specification notes that the rings "may have" a cross sectional shape corresponding to that of a truncated right circular cone frustum, or "may have a rectangular cross-sectional shape."

We agree with the examiner's view that it would have been obvious to one of ordinary skill in the art to make the cross sectional shape of the rings (13) in Carre Figures 4 and 6 that of a truncated right circular cone frustum as seen in Forbes and as a known alternative to the rectangular cross sectional shape seen in Carre so as to ensure a turbulent mixing and shearing action as recognized in both Carre and Forbes, and to achieve the increase in mixing capacity noted in Carre column 4,

lines 47-58. The fact that Forbes may refer to the zone including the rings (90, 94) as a "refining zone" is, in our opinion, of no moment, since one of ordinary skill in the art would have recognized that such a zone would still provide the increased shearing and mixing of the material passing through this zone as desired in both Carre and Forbes. While appellants have argued in their brief (page 10) that the truncated elements of their invention "are not provided in any way, shape or form to provide a refining zone as is the purpose in Forbes," we find such argument to be unpersuasive. One of ordinary skill in the art would certainly view the zone in appellants' mixing device which includes the truncated ring elements to be broadly a "refining zone" where the coarse pulp entering through the inlet (32) is subjected to fluidization and disruption of fiber flocks so as

to expose individual fibers and to thereby maximize the direct gas to fiber contact needed when using ozone as the bleaching agent.

Regarding appellants' argument that there is no suggestion of providing an increased pathway length in Carre

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(brief, pages 10-11), we observe that if the height of the rings (13) of Carre remains the same as in Carre Figure 6, but the cross section is altered as noted above to be that of a truncated right circular cone frustum, then the length of the pathway through the rings seen in Figure 6 of Carre would of necessity be longer, since the lengths of each of the sides of the rings would be slightly longer.

In light of the foregoing, we will sustain the examiner's rejection of independent claim 30 under 35 U.S.C. § 103 based on the collective teachings of Carre and Forbes. Following appellants' indication on page 4 of the brief, we consider that claim 36 will fall with claim 30.

We will not sustain the examiner's rejection of claims 25 and 38 under 35 U.S.C. § 103 based on Carre and Forbes.

We find no teaching, suggestion, or incentive in the applied references which would have made it obvious to one of ordinary skill in the art to make the rings (13) seen in the mixer of Figures 4 and 6 of Carre of a length to extend outwardly from the base "at least about three inches," as required in appellants'

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claims 25 and 38 on appeal. Given the express limitation on the height of the gap (h) in Carre column 3, lines 56-59, and the showing in Figure 6 of Carre, it appears that the height of the rings seen therein would be only slightly greater than 30 millimeters (i.e., about 1.2 inches), the maximum gap height. Moreover, we find nothing in Carre to indicate that the height of the rings therein would be considered by one of ordinary skill in the art to have been a result effective variable. Accordingly, we cannot agree with the examiner's position that the height of the rings as expressed in appellants' claims 25 and 38 on appeal would be considered by one of ordinary skill in the art to have been merely an "optimum" choice arrived at through routine experimentation.

To summarize, the decision of the examiner rejecting claims 25, 27 through 32, 34, 36 and 38 under 35 U.S.C. § 103 is affirmed as to claims 27 through 32, 34 and 36, but is reversed as to claims 25 and 38. Accordingly, the decision of the examiner is affirmed-in-part.

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

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AFFIRMED-IN-PART

JAMES M. MEISTER)
Administrative Patent Judge)
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CHARLES E. FRANKFORT)
Administrative Patent Judge)
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JOHN P. McQUADE)
Administrative Patent Judge)

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APPENDIX

30. A mixer comprising:

a rotor and a stator disposed in said housing, said stator and rotor having complimentary [sic] shaped cooperating surfaces spaced to define annular mixing volumes;

a rotor drive mechanism having a drive shaft, for rotating said drive shaft at a speed of at least 1000 rpm

said rotor connected to said drive mechanism drive shaft, said drive mechanism rotating said rotor about an axis of rotation;

means for mounting said stator with respect to said rotor so that the spacing between said cooperating surfaces is 0.5 inches or less substantially throughout said annular mixing volumes; and

said rotor comprising: a substantially disc-shaped base having a center about which said rotor can rotate, and a diameter; a hub at said center of said base for connecting said base to said rotary drive mechanism; and a first ring substantially concentric with said base and extending outwardly from said base, said first ring having a cross-sectional shape corresponding to that of a truncated right circular cone frustum.

31. A mixer comprising:

a housing having an inlet for pulp and an outlet;

a rotor and a stator disposed in said housing said stator and rotor having complimentary [sic] shaped cooperating surfaces spaced to define annular mixing volumes;

a rotary drive mechanism having a drive shaft;

said rotor connected to said drive mechanism drive shaft, said drive mechanism rotating said rotor about an axis of rotation;

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means for mounting said stator with respect to said rotor so that the spacing between said cooperating surfaces is

0.5 inches or less substantially throughout said annular mixing volumes; and

said rotor having a substantially disc shaped base having a center about which said rotor can rotate, and a first ring substantially concentric with said base and extending outwardly from said base at least about three inches.