

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FRANK HSIAN HOK KHOUW, GEERT VAN DER HONING,
and WILLEM MACHIEL VAN POELJE

Appeal No. 96-0936
Application 08/230,173¹

ON BRIEF

Before MEISTER, McQUADE and NASE, Administrative Patent Judges.

McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Frank Hsian Hok Khouw et al. appeal from the final rejection of claims 8 and 10 through 16. Claims 1 through 7, the only other claims pending in the application, stand

¹ Application for patent filed April 20, 1994.

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withdrawn from consideration pursuant to 37 CFR § 1.142(b).

We reverse.

The subject matter on appeal relates to an "apparatus for introducing a stream of fluid into a fluid mass to rapidly attain uniform radial fluid distribution" (specification, page 1). Claim 8 is representative and reads as follows:

8. An apparatus for radial distribution of fluid into a fluid mass contained in a vessel comprising (a) a vessel containing a fluid mass; (b) disposed within said vessel and within said fluid mass, a centrally disposed fluid riser inlet conduit extending through a wall or floor of said vessel and oriented substantially vertically along the fluid riser inlet conduit's longitudinal axis, said riser inlet conduit having a plurality of fluid conveying arms each of said arms having an end remote from said fluid riser inlet conduit, and each of said arms extending radially and substantially horizontally outward from the vertical axis of said fluid riser inlet conduit and extending radially into the fluid mass wherein the arms have an enclosed length and (c) having along said enclosed length one or more outlet openings at or near the end remote from the fluid riser inlet conduit.

The reference relied upon by the examiner as evidence of obviousness is:

Castagnos, Jr. (Castagnos) 4,664,888 May 12, 1987

Claims 8 and 10 through 16 stand rejected under 35 U.S.C.

§ 103 as being unpatentable over Castagnos.²

Reference is made to the appellants' brief (Paper No. 11) and to the examiner's answer (Paper No. 12) for the respective positions of the appellants and the examiner with regard to the merits of this rejection.

Castagnos discloses "an apparatus for rapidly separating catalyst from vapor in the hot, high velocity reactor discharge in a fluid catalytic cracking process" (column 1, lines 7 through 9). As described by Castagnos,

[a] fluid catalytic cracking riser reactor 10 contains an upflow stream 15 comprising cracked product vapor and catalyst. Deflecting means 20, in FIG. 1 a right circular conical member [and] in FIG. 2 a four sided tapered plug, converts upflow stream 15 to deflected upflow stream 21 which is directed toward a semi-circular centrifugal separator 25 of radius 26 from horizontal axis of rotation 27. . . . Separator 25 comprises a semicircular surface 30 against which the stream travels and thereby causes the centrifugal disengagement or separation of the stream into a downward flowing predominantly catalyst phase 40 which is in contact with or near

² The examiner has withdrawn the 35 U.S.C. § 112, second paragraph, rejection of claims 8 and 10 through 16 which was set forth in the final rejection (see the advisory action dated April 7, 1995, Paper No. 8).

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the semicircular surface 30 and a predominantly cracked product vapor phase 45. The vapor phase 45 is spaced from the semicircular surface 30 by the presence of the predominantly catalyst phase 40. The semicircular centrifugal separator 25 is in flow communication with the reactor vessel 100 and therefore the predominantly cracked product vapor phase 45 is free to enter the vapor space 159 below the separator in flow communication with the vapor space 160 above the separator.

Scoop 55 separates the predominantly catalyst phase 40 by means of a shave edge 56 located proximate to the semi circular surface 30. The shave edge 56 catches predominantly catalyst phase 40 moving generally in contact with and proximate to the semicircular surface 30. The scoop directs the predominantly catalyst phase 40 away from the reactor vessel center line 120; which may or may not be coincident with the riser reactor center line 121, and deposits it adjacent the reactor vessel wall 110 where it continues to flow downward under the force of gravity to a stripping zone 300 [column 2, line 42, through column 3, line 8].

The examiner's reliance on this prior art disclosure to support the appealed rejection (see pages 4 through 6 in the answer) is unsound.

To begin with, Castagnos does not teach, and would not have suggested, an apparatus meeting the limitations in claim 8 requiring fluid conveying arms which extend substantially horizontally outward from the vertical axis of the fluid riser inlet conduit. The examiner's determination that these

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limitations find response in the fluid conveying segments or arms of the separator 25 shown in Castagnos' Figures 2 and 3 is unreasonable. These arms extend in a semi-circular arc from the vertical axis of fluid riser conduit 10 to effect centrifugal separation of the catalyst and cracked product vapor phases 40 and 45. By no stretch of the imagination can they be characterized as extending substantially horizontally outward from the vertical axis of the fluid riser conduit.

Castagnos also fails to teach, and would not have suggested, an apparatus meeting the limitations in claim 8 requiring the arms to extend radially into a fluid mass. As indicated above, the arms of the Castagnos separator extend into a vapor space 159, 160. The examiner's contention that "the recitation of 'a fluid mass' in the pending claims does not imply that this is a constructive element of the claims" (answer, page 5) is not well taken. The limitation in claim 8 calling for "a vessel containing a fluid mass" clearly incorporates the fluid mass as part of the claimed apparatus.

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For these reasons, Castagnos does not provide the factual basis necessary to conclude that the differences between the subject matter recited in claim 8 and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. Therefore, we shall not sustain the standing 35 U.S.C.

§ 103 rejection of claim 8, or of claims 10 through 16 which depend therefrom, as being unpatentable over Castagnos.

The decision of the examiner is reversed.

REVERSED

JAMES M. MEISTER)	
Administrative Patent Judge)	
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)	
JOHN P. McQUADE)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND

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