Paper No. 16

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEVE L. LONG,
JOSEPH L. ROSS AND
GAUTHAM KRISHNAIAH

Appeal No. 94-2011
Application 07/874,590[1]

ON BRIEF

Before ABRAMS, JOHN D. SMITH, and FRANKFORT, Administrative Patent Judges.

FRANKFORT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 9 and 11. Claims 12 through 18 stand withdrawn from further consideration by the examiner under

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[1] Application for patent filed April 27, 1992.

37 CFR § 1.142(b) as not being directed to the elected invention. Claim 10, the only other claim remaining in the application, stands allowed.

Appellants' invention relates to a fluidized catalytic cracking system having a two-stage catalyst regeneration system associated therewith and a catalyst cooling apparatus associated with the second catalyst regeneration vessel of the regenerator. Independent claim 1 is representative of the subject matter on appeal and a copy thereof, as found 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 of the claimed invention under 35 U.S.C. § 103 are:

Harper	2,970,117	Jan. 31, 1961
Vickers et al. (Vickers)	4,219,442	Aug. 26, 1980
Lomas et al. (Lomas)	4,353,812	Oct. 12, 1982
Murphy	4,615,992	Oct. 7, 1986
Goelzer	5,009,769	Apr. 23, 1991

Lai Zhou Ping, "Catalyst Cooler for Residue Catalytic Cracking", Proceedings of the International Conference on Petroleum Refining and Petrochemnical Processing, Vol. 3, (Sept. 11-15, 1991).

Claims 1 through 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Goelzer in view of Harper.

Claims 6 through 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Goelzer in view of Harper as applied to claims 1-5 above, and further in view of Lai Zhou Ping.

Claim 9 stands rejected under 35 U.S.C. § 103 as being unpatentable over Goelzer in view of Harper and Lai Zhou Ping as applied to claims 6-8 above, and further in view of Vickers.

Claim 11 stands rejected under 35 U.S.C. § 103 as being unpatentable over Goelzer in view of Harper as applied to claims 1-5 above, and further in view of either Murphy or Lomas.

Rather than reiterate the examiner's full explanation of the basis for the above-noted rejections and the conflicting viewpoints advanced by the examiner and appellants regarding the rejections, we make reference to the examiner's answer (Paper No. 12, mailed December 23, 1993) for the examiner's reasoning in support of the rejections, and to the main brief (Paper No. 11, filed November 5, 1993) and reply brief (Paper No. 13, filed January 14, 1994) for appellants' arguments thereagainst.

OPINION

At the outset, we note that appellants' brief, at page 3, indicates that they "acknowledge and agree that the patentability of claims 1-9 and 11 will stand or fall together with claim 1, on which all of the additional rejected claims depend." Accordingly, we focus our discussions in this appeal on independent claim 1 and consider that dependent claims 2 through 9 and 11 will stand or fall with the independent claim.

In reaching our decision in this appeal, we have given careful consideration to appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by appellants and the examiner. Upon evaluation of all of the evidence before us, we find ourselves in agreement with the examiner's position that the subject matter sought to be patented by appellants would have been obvious to one of ordinary skill in the art at the time the invention was made based on the applied patents. Accordingly, we will sustain the examiner's rejections of the appealed claims under 35 U.S.C. § 103.

Like the examiner, we are of the opinion that it would have been obvious to one of ordinary skill in the art, in view of the collective teachings in Goelzer and Harper, to modify the second regeneration vessel (58) of Goelzer by providing it with a catalyst cooling system similar to that of Harper so as to remove heat from this stage of the regenerator thereby enabling a lower regenerator temperature as desired to control the heat balance restrictions of the catalytic cracking-regeneration operation. Note particularly, column 10 lines 14 through 41 of Goelzer wherein it is specifically suggested that the second regeneration zone of the two-stage regenerator therein be provided with a catalyst cooler like that of Harper (U.S. Patent No. 2,970,117).

Appellants' argument (reply brief, page 2) that Goelzer speaks generally about cooling catalyst in the second regenerator vessel, but without disclosing removal and return of the catalyst to the same regenerator vessel, is true to the extent that Goelzer does not expressly indicate that the cooled catalyst removed from the second regenerator vessel should be returned from the cooling system to the second regenerator vessel. However, we consider it to be a fair inference from the teachings in Goelzer that the cooled catalyst will be returned to the same vessel from which it was removed. Column 10 lines 23-26 of Goelzer expressly states that it is "the second regeneration zone 58 [which] can be provided with a means (not shown) for removing heat from the regenerator" (emphasis added). There is no mention in Goelzer of cooling means associated with the first regenerator vessel, and no mention therein that the cooled catalyst from the second regenerator vessel is, or may be, returned to the first regenerator vessel. In addition, the Harper patent, which is expressly noted in Goelzer (column 10 line 28-30) as a preferred heat removal means for the second regenerator vessel, shows removing catalyst to be cooled from a regenerator vessel (via line 15) at a point above the delivery of the oxidizing gas and at a level approximately equal to the level of the exit means (14) from which the regenerated catalyst is taken for delivery to

the reactor and shows return of the cooled catalyst to the regenerator vessel. Thus, it is our view that the combined disclosures of the applied patents to Goelzer and Harper would have been suggestive to one of ordinary skill in the art of having the catalyst to be cooled removed from and returned to the same regenerator vessel, and more specifically, removed from and returned to the second regenerator vessel of Goelzer.

Appellants' position (main brief, pages 5-6) that other prior art teachings, as exemplified by Vickers, Lai Zhou Ping, etc., teach away from a catalyst cooler associated solely with the second stage of a regenerator, is not persuasive of error on the examiner's part. While these patents show other alternatives for return of cooled catalyst to the regenerators therein, we find no teachings, and appellants have pointed to none, which indicate that the cooled catalyst cannot, or should not, be returned to the second regenerator vessel, as we consider is fairly taught or suggested in the collective teachings of Goelzer and Harper.

Appellants' argument, on page 3 of the reply brief, that even if Goelzer and Harper did teach removal and return of cooled catalyst to the second regenerator zone, they do not teach the particular arrangement for removal and return as claimed by appellants, because Harper shows "removal and return of cooled

catalyst at a point above delivery of oxidating gas (designated 11 in the Figure of Harper)" (emphasis in original), is also not persuasive. While it is true that cooled catalyst which is returned to the regenerator (10) of Harper through the pipe (20), as seen in the drawing figure, would apparently be returned to the vessel above the point of delivery of the oxidizing gas, we note that column 4 lines 63-66 of Harper describes an alternative arrangement for returning the cooled catalyst to the regenerator. In the unillustrated alternative arrangement, the pipe (19) from the heat exchanger (17) is connected directly to the pipe (11) and returns the cooled catalyst to the regenerator via pipe (11), and thus arguably at a point below the charging point where the oxidizing gas is delivered to the regenerator. In addition, we observe that Goelzer also suggests that the cooled catalyst may be returned to the regenerator by being reintroduced into a lower port of the regenerator (column 10, lines 36-38). In the final analysis, it is our conclusion that the examiner has established a prima facie case of obviousness with regard to the invention as defined in claim 1 on appeal, and that appellants have not rebutted the prima facie case.

Based on the foregoing, we will sustain the examiner's rejection of appellants' independent claim 1 on appeal under 35 U.S.C. § 103. In accordance with appellants' statement in the brief (page 3), dependent claims 2 through 9 and 11 are considered to fall with the independent claim. See also In re Nielson, 816 F.2d 1567, 2 USPQ2d 1525 (Fed. Cir. 1987).

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 CFR § 1.136(a).

AFFIRMED

NEAL E. ABRAMS)
Administrative Patent Judge)
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JOHN D. SMITH)
Administrative Patent Judge) BOARD OF PATENT
) APPEALS AND
) INTERFERENCES
)
CHARLES E. FRANKFORT)
Administrative Patent Judge)

Appeal No. 94-2011
Application 07/874,590

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APPENDIX

1. In a fluidized catalytic cracking system including a cracking reactor and a two-stage catalyst regeneration system, the first stage of said regeneration system comprising a first regeneration vessel having a catalyst bed, means to deliver spent catalyst from the cracking reactor to the first regeneration vessel, means to charge an oxidizing gas to the first regeneration vessel where oxidation of the catalyst takes place, said second stage comprising a second regeneration vessel having a catalyst bed therein where the catalyst from the first stage is delivered, means to deliver the catalyst from the first regeneration vessel to the second regeneration vessel, means to charge an oxidizing gas to the second regeneration vessel to complete regeneration of the catalyst, and means to deliver the regenerated catalyst from the second regeneration vessel to the reactor including exit means from the second regenerator vessel, wherein the improvement comprises a catalyst cooling system associated with the second regeneration vessel comprising a heat exchanger, means for delivery of catalyst from said second regeneration vessel to the heat exchanger including outlet means to the heat exchanger located on the second regeneration vessel at a point above the delivery of the oxidizing gas and at a level approximately equal to the level of the exit means from which the regenerated catalyst is taken for delivery to the reactor, means for return of cooled catalyst from the heat exchanger to the second regeneration vessel including cooled catalyst inlet means to the second regeneration vessel at a point below the means to charge an oxidizing gas, said heat exchanger comprising indirect cooling means within a heat exchange vessel for indirect heat exchange between the catalyst and a cooling medium.