

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(2) is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SOICHI KATO and TAKASHI SUGITA

Appeal No. 1998-1425
Application 08/437,808

ON BRIEF

Before CALVERT, FRANKFORT, and GONZALES, Administrative Patent Judges.

CALVERT, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 and 2, all the claims in the application.

The claims on appeal are drawn to a method of manufacturing flat tubes for a tube-stacking heat exchanger,

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and are reproduced in the appendix of appellants' brief.

The prior art applied in the final rejection is:

Kawase	4,852,233	Aug. 1,
1989		

The admitted prior art disclosed in appellants' application (AAPA).¹

Claims 1 and 2 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over AAPA in view of Kawase.

The basis of the rejection, as stated on page 2 of the final rejection (Paper No. 6), is:

AAPA teaches a method of making a heat exchanger essentially as claimed but lacking a teaching of applying the flux in the manner as claimed. AAPA does teach applying flux to all of the surfaces, just not in the same spraying manner. Kawase teaches applying a coating to heat exchangers of the same type as claimed, however the material applied is zinc rather than flux. However, it is applied in the same manner as claimed for the same purpose as claimed, i.e., uniform coverage. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method as

¹ The examiner does not identify any particular portions of the application as constituting the AAPA; presumably she intended to refer to the "Background of the Invention" section on pages 1 and 2, as well as Figs. 9 and 10 (which are not labeled "Prior Art" as required by Manual of Patent Examining Procedure § 608.02(g)).

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taught by AAPA by applying the flux in the manner claimed since this manner of application is old and well known in the heat exchanger art for the purpose of uniform application.

The examiner further states on pages 4 and 5 of the answer:

The only step which is missing from AAPA is the step of applying the coating by spraying. AAPA teaches applying the coating by brushing or rolling. Kawase is used to teach only this, applying the coating to a tube by spraying. The particular direction the spray is facing and the tube parts are facing would clearly be a matter of mechanics, i.e., what direction is easiest for the application. This would be true whether the method were by brush, roll, or spraying.

After fully considering the record in light of the arguments presented in appellants' brief and reply brief, and in the examiner's answer, we conclude that claims 1 and 2 are patentable over the applied prior art.

As a general proposition, we consider that it would have been obvious, in view of the AAPA's disclosure of applying flux by brushing or rolling, to apply flux to the plate material from which the tubes are to be formed by spraying, spraying being a notoriously well known method of applying a

coating.² However, claims 1 and 2 require that the flux be sprayed in a particular manner, namely, that prior to forming the tube the plate material be placed with its inner surface facing downwardly and the flux material be sprayed upwardly to flux the inner surface of the plate material as the plate material passes over the flux material spray nozzle. We find nothing in the applied prior art to support a finding that it would have been obvious to have sprayed the flux material of the AAPA in this manner. In the first place, while Kawase does disclose an upwardly-directed nozzle 2 for spraying heat exchanger tubes 1, we do not consider that this disclosure would have taught or suggested the claimed flux spraying method to one of ordinary skill because the Kawase apparatus is used for the flame spraying of zinc (to prevent corrosion), rather than for spraying flux. Second, we do not agree with the examiner that Kawase applies the zinc "in the same manner as claimed," because Kawase discloses spraying the tubes 1

² Also, although not applied by the examiner, we note that several of the references of record disclose spraying flux onto heat exchanger parts prior to brazing. See, e.g., Saperstein et al. (Pat. No. 4,688,311), col. 5, lines 51 to 55, and Barten et al. (Pat. No. 5,322,209), col. 1, lines 28 to 35.

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after they have been formed (by extrusion), while claims 1 and 2 call for spraying the plate material before the tubes are formed. As a result, in Kawase only the outer surface of the tubes is sprayed, whereas in appellants' claimed process the flux is sprayed on the inner surface of the plate material. As appellants state on page 4 of the brief,³ "[i]n Kawase, it is impossible to spray the flux to the inner surface of a flat tube because the extruded flat tube is already closed." Thus, modifying the AAPA in view of the teachings of Kawase would not result in the process recited in claims 1 and 2.

In the above-quoted excerpt from pages 4 and 5 of the examiner's answer, the examiner seems to take the position that, in effect, the particular spraying direction would have been an obvious matter of choice. We disagree. As far as can be gleaned from the AAPA, in the prior art method the flux would be brushed or rolled onto an upwardly facing tube plate inner surface. We perceive no suggestion or motivation in the prior art for one of ordinary skill to invert the plate material and then apply the flux from underneath. Also,

³ All references herein to the brief are to the Amended Brief on Appeal filed on July 22, 1999.

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spraying upwardly from below as recited in claims 1 and 2 is not simply an arbitrary choice of direction but rather, as disclosed in appellants' specification in the paragraph bridging pages 4 and 5, as well as on page 9, last paragraph, it is done in order to assure flux application to the entire inner surface of the tube, with unnecessary extra flux material dropping by its own weight.

Accordingly, the rejection of claims 1 and 2 will not be sustained.

Conclusion

The examiner's decision to reject claims 1 and 2 is reversed.

REVERSED

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Administrative Patent Judge)
)
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