

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte KIYOSHI NISHIO, MAKOTO FUJII,  
YUTAKA OKAMOTO and TAKUYA ISHIDA

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Appeal No. 2000-1917  
Application 09/076,863

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HEARD: January 24, 2001

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Before STAAB, MCQUADE, and LAZARUS, Administrative Patent Judges.

MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Kiyoshi Nishio et al. originally took this appeal from the final rejection of claims 1 and 6 through 10. The appellants have since amended claim 1 and canceled claim 9. Thus, the appeal now involves claims 1, 6 through 8 and 10, the only claims currently pending in the application.

THE INVENTION

The invention relates to "a heat exchanger employed for exchanging heat between two fluids, for example, one fluid, that is a strong acidic or a strong alkaline medical fluid employed in an Integrated Circuit production line (i.e., IC production line) inside a clean room ... and another fluid, that is a heat transfer medium" (specification, page 1). Representative claim 1 reads as follows:

1. A fluoro-resin heat exchanger employed in a clean room for an IC circuit producing line, comprising:

a plurality of resin tubes for mutually exchanging heat between a fluid flowing through an inside of the heat exchanger and a fluid flowing through an outside thereof; and

a holding plate having plural independent tube holding holes,

wherein: said plural resin tubes have ends respectively arranged at said plural independent tube holding holes of said holding plate, a longitudinally predetermined length of said resin tube from each end of said plural resin tubes being integrally fused into said holding plate; said holding plate has ring-spaces for emitting heat, respectively located around a periphery of each resin tube, except a fusing portion for fusing each end of said resin tubes into said holding plate; a diameter of each tube holding hole is almost the same as an external diameter of the end of each resin tube; and an outer end face of said holding plate and an end face of said resin tube having each end arranged at the tube holding hole at the same level.

#### THE PRIOR ART

The items relied on by the examiner as evidence of obviousness are:

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Johnson	3,489,209	Jan. 13,
1970		
Engler et al. (Engler)	1,103,944	Apr. 6,
1961		
German Patent Document <sup>1</sup>		

The prior art shown in Figures 8 through 10 and discussed on specification pages 1 through 4 of the appellants' disclosure (the admitted prior art)

#### THE REJECTIONS

Claims 1, 6 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the German reference in view of Johnson.

Claims 7 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the German reference in view of Johnson and the admitted prior art.

Attention is directed to the appellants' brief (Paper No. 12) and to the examiner's answer (Paper No. 13) for the respective positions of the appellants and the examiner with regard to the merits of these rejections.<sup>2</sup>

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<sup>1</sup> An English language translation of this reference, prepared by the United States Patent and Trademark Office, is appended hereto.

<sup>2</sup> Since it has not been restated in the answer, the 35 U.S.C. § 112, second paragraph, rejection set forth in the final rejection (Paper No. 7) is assumed to have been withdrawn by the examiner in light of the amendments made subsequent to final rejection (see Ex parte Emm, 118 USPQ 180, 181 (Bd. App. 1957)).

DISCUSSION

The German reference discloses a heat exchanger particularly designed to eliminate problematic joints between tubes and tube plates made of metal such as high alloy steel (see pages 1 through 4 in the translation). One of the noted problems is corrosion. According to the reference,

[t]he tube plate 1, including the tube 2, is to be connected by welding . . . . The tube 2 to be welded is provided on the weld side with a welding bevel 3. The tube plate 1 is provided on the side facing away from the weld site with a bore 5 which has a significantly greater diameter than the tube 2. However, the bore 5, is arranged only so deeply in the tube plate that the collar 6, which contacts the tube, remains at the welding site 4.

In order to form the weld seam, this collar is also provided with a welding bevel. The joint of the tube and the tube plate is obtained by making an autogenic or electrical weld 4 [translation, pages 4 and 5].

As conceded by the examiner (see page 3 in the answer), the German heat exchanger does not meet the limitations in claim 1 requiring the heat exchanger recited therein to be a "fluororesin" heat exchanger comprising a plurality of "resin" tubes.

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Johnson discloses "a heat exchanger in which corrosion-resistant plastic components are used for surfaces which are exposed to corrosive fluids and in which metal components are used for rapid thermal transfer from the plastic components to a thermal disposal or secondary fluid" (column 1, lines 14 through 19). Among the plastic components are "plastic tube sheets 12, 13 to which thin-walled plastic tubes 14 are secured in sealed relationship, as by providing exteriorly protruding sleeves 15 on the tube sheets and fusing the ends of the tubes to the sleeves, as at 16" (column 2, lines 35 through 39). Johnson teaches that such components can be made of various plastics including fluorocarbon polymers such as polytetrafluoroethylene (see column 4, lines 14 through 47).

In proposing to combine the German reference and Johnson to reject claim 1, the examiner concludes that it would have been obvious at the time the invention was made to a person having ordinary skill in the art "to employ in [the German reference] components composed of polytetrafluoroethylene (PTFE) for the purpose of improving corrosion resistance"

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(answer, page 4). The result presumably would be a fluororesin tube and holding plate arrangement having the joint structure recited in claim 1.

The problem here, however, is that the joint structure disclosed by the German reference, which is necessary to meet the structural limitations in claim 1, is designed to overcome problems specific to joints between metal tubes and tube plates. The examiner has not cogently explained, nor is it evident, why a person of ordinary skill in the art would have found it obvious to utilize such joint structure in conjunction with tubes and tube plates made of fluororesins. Indeed, it is not even clear that fluororesins would be suitable for use with the autogenic or electrical weld component of the German joint structure. We are therefore constrained to conclude that the only suggestion for combining the German reference and Johnson in the manner proposed by the examiner stems from impermissible hindsight knowledge derived from the appellants' disclosure.

Accordingly, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claim 1, or of claims 6 and 8 which

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depend therefrom, as being unpatentable over the German reference in view of Johnson.

Inasmuch as the admitted prior art does not cure the foregoing flaw in the basic reference combination, we also shall not sustain the standing 35 U.S.C. § 103(a) rejection of claims 7 and 10, which depend from claim 1, as being unpatentable over the German reference in view of Johnson and the admitted prior art.

SUMMARY

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The decision of the examiner to reject claims 1, 6  
through 8 and 10 is reversed.

REVERSED

LAWRENCE J. STAAB	)	
Administrative Patent Judge	)	
	)	
	)	BOARD OF PATENT
	)	
	)	APPEALS AND
JOHN P. MCQUADE	)	
Administrative Patent Judge	)	INTERFERENCES
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RICHARD B. LARARUS	)	
Administrative Patent Judge	)	

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