

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GREGORY M. CHRYSLER and RICHARD CHAO-FAN CHU

Appeal No. 1999-0421
Application No. 08/587,866

ON BRIEF

Before ABRAMS, McQUADE, and BAHR, Administrative Patent Judges.
BAHR, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-4, 6-10, 12 and 13. Claims 5 and 11, the only other claims pending in this application, stand objected to as depending from a rejected claim.

BACKGROUND

The appellants' invention relates generally to heat sink structures having high-performance cooling capabilities, more particularly to heat sinks having a large plurality of fin structures which exhibit a large surface area per unit volume and, even more particularly, to high-performance millifin heat sinks having improved structural rigidity, excellent thermal transfer characteristics and ease of manufacture (specification, page 1). Further understanding of the invention can be derived from a reading of exemplary claim 1, which appears in the appendix to the appellants' brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Minakami et al. (Minakami)	5,381,859	Jan. 17, 1995
Kashima	S64-38593	Feb. 8, 1989 ¹
(Japanese published unexamined patent application)		

The following rejection is before us for review.

Claims 1-4, 6-10, 12 and 13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Minakami in view of Kashima.

Reference is made to the main and reply briefs (Paper Nos. 15 and 17) and the answer (Paper No. 16) for the respective positions of the appellants and the examiner with regard to the merits of this rejection.

¹ An English language translation of this reference, prepared by the Patent and Trademark Office, is appended hereto.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. For the reasons which follow, we cannot sustain the examiner's rejection.

Claims 1 and 8, the only independent claims on appeal, both recite a heat sink comprising, inter alia, a base strip having long and short edges and a plurality of surface area enhancing projections extending outwardly from at least one of the long edges, the base strip being coiled so that the projections extend in substantially the same direction.

Minakami discloses a multi-layer heat sink (see Figures 1A, 1B, 42A, 42B, for example) comprising a plurality of heat sink fin elements 12 and spacers 13 bonded together in alternating layers. Each of the elements 12 is made of a thin plate 15 of thermally conductive material, such as aluminum or copper, having a number of slits 16 therein, with the remaining material between the slits forming a plurality of pin-fin sections 17. As conceded by the examiner (answer, page 4), Minakami fails to disclose the base strip (the bottom marginal portion of an element 12) being coiled as required by the claims.

Kashima discloses a latent heat accumulator comprising an accumulating tank 1 formed into a cylindrical shape and having an inlet 1a and an outlet 1b for passage of a heating medium through the tank and accumulating chambers 2 having accumulating material 3 sealed therein

which absorbs heat from the heating medium and changes phase from a solid to a liquid. The accumulating chambers are formed from a flexible sheet comprising a first sheet 11 having a rectangular wave shape and a flat second sheet 13 joined together and spirally wound. The resulting structure, as shown in Figure 1, has straight-line flow passages 4 which impose relatively low resistance to the flow of the heating medium and the heat transfer between the heating medium and the accumulating material is quite efficient (translation, page 4).

In rejecting the claims, the examiner takes the position that it would have been obvious to one of ordinary skill in the art to coil the Minakami spacer and base strips (elements 12) together for the purpose of maintaining a low resistance to fluid flow and improving the heat exchange efficiency between the heat sink/exchanger and the heat exchanging fluid flowing therethrough as disclosed in Kashima (answer, page 4).

Having reviewed the applied references, we fail to perceive any teaching, suggestion or incentive therein which would have motivated an artisan to modify Minakami in the manner proposed by the examiner so as to arrive at the subject matter of claim 1 or claim 8. In particular, while we appreciate that both Kashima and Minakami are directed to heat transfer devices, we also observe that the objective of Kashima to accumulate latent heat in the accumulator differs materially from that of Minakami to transfer heat from a heat generating device, such as a semiconductor chip, to the heat sink and then to the cooling fluid passing over and through the heat sink. Further, Minakami discloses a heat transfer device or heat sink

comprising a generally rectangular multi-layer structure defining a plurality of straight-line fluid flow passages (slits 16) bounded by fins 17 which present abundant surface area for heat transfer from the heat sink to the passing fluid. Thus, especially in light of the different objectives of Minakami and Kashima, as the Minakami heat sink appears to present a relatively low resistance to flow and good thermal transfer, it is not apparent to us why one of ordinary skill in the art would have been motivated by the teachings of Kashima to modify Minakami by coiling the heat sink fin elements thereof. From our perspective, the only suggestion for putting the selected pieces from the references together in the manner proposed by the examiner is found in the luxury of hindsight accorded one who first viewed the appellants' disclosure. This, of course, is not a proper basis for a rejection. See In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992).

Accordingly, we shall not sustain the examiner's rejection of claims 1 and 8 or claims 2-4, 6, 7, 9, 10, 12 and 13 which depend therefrom.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-4, 6-10, 12 and 13 under 35 U.S.C. § 103 is reversed.

REVERSED

NEAL E. ABRAMS)	
Administrative Patent Judge)	
)	
)	
)	
)	
)	BOARD OF PATENT
JOHN P. McQUADE)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
JENNIFER D. BAHR)	
Administrative Patent Judge)	

Appeal No. 1999-0421
Application No. 08/587,866

Page 7

LAWRENCE D. CUTTER
IBM CORPORATION
INTELLECTUAL PROPERTY LAW MS P386
522 SOUTH ROAD
POUGHKEEPSIE, NY 12601-5400

JDB:caw