

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 36

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RONALD H. NELSON,
DIMITRIJE MILOVICH,
WESTON M. WILCOX,
and
ROBERT F. READ

Appeal No. 1998-1537
Application No. 08/134,916

HEARD: SEPTEMBER 12, 2000

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

CALVERT, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 to 6, 21, 27 to 29, 32 to 36, 38 to 44 and 46, all the claims remaining in the application.

The claims on appeal are drawn to a vehicle frame (claims 1 to 6, 21, 27 to 29, 36, 38 to 41 and 44), a lug for joining

Appeal No. 1998-1537
Application No. 08/134,916

tubes (claims 32 to 35, 42 and 43), and a bicycle frame component (claim 46), and (except for the correction noted on page 16 of the examiner's answer) are reproduced in the appendix of appellants' brief. The particular vehicle with which appellants' disclosed invention is concerned is a bicycle having hollow frame tubes and lugs made of all-composite material.

The references applied in the final rejection are:

Clark	2,080,698	May 18, 1937
Derujinsky 1990	4,900,048	Feb. 13,
Tseng 1990	4,900,049	Feb. 13,
Kyokai (Japanese Kokai) 1988 ¹	63-185615	Aug. 1,

The claims on appeal stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over the following combinations of references:

(1) Claims 1, 4, 21, 27 to 29, 32, 34 to 36 and 46,

¹Although the inventor named in this reference is Mitsuo Asatani, appellants and the examiner refer to it as "Kyokai." A translation of this reference was prepared for the PTO in 1996, and a copy was supplied to appellants. Any references herein to "Kyokai" by page and line are to the translation.

Appeal No. 1998-1537
Application No. 08/134,916

Tseng in view of Kyokai.

(2) Claims 2, 3, 5 and 6, Tseng in view of Kyokai and
Clark.

(3) Claims 33 and 38 to 44, Tseng in view of Kyokai and
Derujinsky.

Appeal No. 1998-1537
Application No. 08/134,916

We will first consider the rejection of claim 1, which reads:

1. A composite light weight vehicle frame, comprising, a plurality of composite tubes disposed in spaced frame defining configuration and joined by a plurality of thin single wall, hollow, low void, all composite lugs, said lug wall consisting essentially of a plurality of fiber laminations in a substantially solid, cured resin matrix.

The basis of the rejection is stated at page 4 of the examiner's answer as:

Tseng teaches using composite materials to form tubing 2, 3, 5, and lugs for a bicycle. The lugs also include two cylindrical portions (one portion being the internal plugs at 11, 12, and the other portion forming part of the exterior of the frame, once assembled). The plug portion includes splines 13.

Tseng is silent regarding the type of composite material used.

Kyokai teaches using a fiber reinforced composite material for forming bicycle frames including each of the frame lugs g, I [sic: i], h, j. It teaches compacting the fiber-epoxy mix in a clamp and heating the material so that it reaches a 60% fiber content by weight (see page 5 of the translation) and attains greater strength than [sic: than] certain metal frames. The frame lug parts are hollow and cylindrical (as shown in Figure 1). A metal core is inserted during manufacture, then removed to produce completely hollow lug portions.

It would have been obvious to one of ordinary skill in the art to manufacture the Tseng frame out of high strength, low void, fiber reinforced composites, as taught by Kyokai, in order to attain high strength and lower weight frames.

Appeal No. 1998-1537
Application No. 08/134,916

Appellants argue at page 23 of the brief that Tseng discloses aluminum lugs, which are not hollow. However, while Tseng's emphasis is on aluminum components, it discloses that the same considerations are applicable to frames made of non-metallic composite materials (col. 2, lines 52 to 55), and that its method of joining components is suitable for use with carbon fibers or fiber glass (col. 3, lines 44 to 47). We consider that these disclosures of Tseng would have suggested to one of ordinary skill making the tubes and lugs of a bicycle frame of composite material.² Also, considering lug 1 of Tseng, which is shown in Figs. 2 to 4 (col. 3, line 1), the horizontal portion 12 is hollow, as shown in Fig. 4; likewise, the vertical portion is hollow, as shown at its ends in Figs. 3-1 to 3-3. The fact that the end of portion 12 is closed, as shown in Fig. 2, does not preclude it from being hollow, "hollow" being a somewhat broad term meaning "having an empty space or cavity within: not solid," such as a hollow tree or

²Although Tseng employs somewhat unconventional terminology, calling element 1, for example, the "front bar," it is evident that elements 1, 4 and 6 constitute what appellants designate as "lugs," comparable to appellants' lugs 31, 32 and 36, respectively.

Appeal No. 1998-1537
Application No. 08/134,916

sphere.³

³Webster's Third New Int'l. Dictionary (1971).

Appeal No. 1998-1537
Application No. 08/134,916

The Kyokai reference discloses a bicycle frame in which the lugs (called "legs") are made of carbon fiber-reinforced plastic. Kyokai focuses on construction of the "back claw" (i.e., rear dropout) (j), in which, as discussed on pages 7 to 9, prepregs (4a), (4b) are positioned in upper and lower dies (1), (2), with metal cores (3a), (3b) between them (Fig. 1). After the dies are closed and heat is applied to harden the resin, the back claw molding is taken out from between the dies, the metal cores are removed, and notch (j₁) is machined. This results in a carbon fiber-reinforced back claw as shown in Fig. 4, having a flat body with two protruding tubular or cylindrical portions, where the metal cores were located, for connection to back fork (e) and chain stay (f). Kyokai further discloses that (page 10, lines 6 to 9):

Moreover, the invented method for manufacturing joints is not restricted to the manufacture of back claw, but are [sic: is] also suitable in the manufacture of head leg [(g)], hanger leg [(h)], seat leg [(i)], etc.

In view of Kyokai's teaching of lugs made of carbon fiber-resin composite material, Tseng and Kyokai, as combined by the examiner, supra, would appear to establish a prima facie case of obviousness. However, appellants contend that Kyokai does

Appeal No. 1998-1537
Application No. 08/134,916

not

Appeal No. 1998-1537
Application No. 08/134,916

teach how to make hollow lugs, such as the bottom bracket lug
(h) (brief, pages 21 to 23).

It is well settled that:

References relied upon to support a rejection under 35 USC 103 must provide an enabling disclosure, *i.e.*, they must place the claimed invention in the possession of the public. [Citation omitted]. An invention is not "possessed" absent some known or obvious way to make it.

In re Payne, 606 F.2d 303, 314, 203 USPQ 245, 255 (CCPA 1979).

See also Beckman Instruments, Inc. v. LKB Produkter AB, 892 F.2d 1547, 1551, 13 USPQ2d 1301, 1304 (Fed. Cir. 1989) ("In order to render a claimed apparatus or method obvious, the prior art must enable one skilled in the art to make and use the apparatus or method"). In the present case, Tseng does not disclose how to make the disclosed hollow lugs 1, 4, 6 out of composite materials, and we do not consider that Kyokai would have enabled one of ordinary skill to do so without undue experimentation. In particular, it is not apparent how Kyokai's disclosed method of making the back claw, using metal cores for the two cylindrical portions each of which is attached to a flat body, would be applicable to making hollow lugs of the type disclosed by Tseng, which consist of a

Appeal No. 1998-1537
Application No. 08/134,916

plurality of cylindrical portions connected directly to each other. Although Kyokai does contain the broad statement, quoted above, to the effect that the method of making the back claw is suitable for manufacturing the head, hanger and seat lugs, the structure of these lugs is so different from that of the back claw that Kyokai would not, in our view, enable one of ordinary skill to make them. We accordingly conclude that a prima facie case of obviousness as to claim 1 has not been made out.

Since a prima facie case of obviousness is lacking, it is unnecessary to consider the evidence submitted by appellants. See In re Rinehart, 531 F.2d 1048, 1051-52, 189 USPQ 143, 147 (CCPA 1976). However, if such evidence were considered, it would bolster our conclusion that the Tseng/Kyokai combination is non-enabling. As the examiner acknowledges at page 13 of the answer, appellants have "presented a substantial amount of evidence concerning long-felt need and failure of others,"⁴

⁴Much of this evidence consists of copies of magazine articles, attached as exhibits to the declaration of Weston M. Wilcox dated January 3, 1995. The examiner seemingly dismisses this evidence, characterizing it as being directed to appellants' method of manufacture, and not to the claimed

Appeal No. 1998-1537
Application No. 08/134,916

and such evidence indicates that prior to appellants' invention, those of ordinary skill did not know how to make the claimed frame structure; for example, Exhibit 12⁵ states that "Trek^[6] has wrestled with and seemingly solved the carbon lug puzzle with the development of an astonishing vacuum-forming process," and Exhibit 14⁷ describes the carbon fiber lugs of the Trek 5500 bicycle as "a breakthrough for framebuilding in general."

Accordingly, the rejection of claim 1 will not be sustained. Likewise, we will not sustain the rejection of independent claims 27, 32, 36 and 46, nor the rejection of dependent claims 4, 21, 28, 29, 34 and 35, to which the above discussion is equally applicable.

structure (answer, page 14), but even if this characterization is correct, the evidence still tends to show that a method of making the claimed structure was not known to those skilled in the art.

⁵Doug Roosa, "Carb Fiber," The Middle/Carbon Fiber, 56-59 (Aug. 18, 1992).

⁶Trek Bicycle Corp. is the assignee of the present application (brief, page 2).

⁷Keith Mills, "Trek 5500," Bicycle Guide, 51-55 (July 1992).

Appeal No. 1998-1537
Application No. 08/134,916

The Clark and Derujinsky patents do not overcome the deficiencies of the combination of Tseng and Kyokai, and therefore the rejections of claims 2, 3, 5, 6, 33 and 38 to 44 will not be sustained.

Appeal No. 1998-1537
Application No. 08/134,916

Conclusion

The examiner's decision to reject claims 1 to 6, 21, 27 to 29, 32 to 36, 38 to 44 and 46 is reversed.

REVERSED

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IAN A. CALVERT))
Administrative Patent Judge)	
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)	BOARD OF PATENT
CHARLES E. FRANKFORT)	
Administrative Patent Judge)	APPEALS AND
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)	INTERFERENCES
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JENNIFER D. BAHR)	
Administrative Patent Judge)	

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Appeal No. 1998-1537
Application No. 08/134,916

DAVID C. BREZINA
LEE, MANN, SMITH, McWILLIAMS,
SWEENEY & OHLSON
P.O. Box 2786
Chicago, IL 60690-2786