

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. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIE McMILLAN and PO-JEN CHENG

Appeal No. 1999-2737
Application No. 08/438,767

ON BRIEF

Before COHEN, ABRAMS, and STAAB, Administrative Patent Judges.
COHEN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 22 and 24 through 29. These claims constitute all of the claims remaining in the application.

Appellants' invention pertains to a tennis racquet. A basic understanding of the invention can be derived from a reading of exemplary claims 1 and 16, copies of which appear in the APPENDIX to the main brief (Paper No. 19½).

Appeal No. 1999-2737
Application No. 08/438,767

As evidence of obviousness, the examiner has applied the documents listed below:

Sol	5,211,691	May 18,
1993		
Garrett, Jr. et al.	5,540,434	Jul.
30, 1996		
(Garrett)		

Prior art racquet disclosed by appellants (specification, page 10, Table IV)

The following rejections are before us for review.

Claims 1 through 9, 12, 16, 18 through 22, and 24 through 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Garrett.

Claims 10, 11, 13, and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Garrett in view of Sol.

Appeal No. 1999-2737
Application No. 08/438,767

Claims 15 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Garrett in view of a prior art racquet (appellants' specification, page 10, Table IV).

The full text of the examiner's rejections and response to the argument presented by appellants appears in the office action mailed November 13, 1996 and the answer (Paper Nos. 10 and 21), while the complete statement of appellants' argument can be found in the main and reply briefs (Paper Nos. 19½ and 23).

OPINION

In reaching our conclusion on the obviousness issues raised in this appeal, this panel of the board has carefully considered appellants' specification and claims, the applied teachings,¹ the declaration of Willie McMillan dated March 26,

¹ In our evaluation of the applied prior art, we have considered all of the disclosure of each reference for what it would have fairly taught one of ordinary skill in the art. See In re Boe, 355 F.2d 961, 965, 148 USPQ 507, 510 (CCPA 1966). Additionally, this panel of the board has taken into
(continued...)

Appeal No. 1999-2737
Application No. 08/438,767

1997, and the respective viewpoints of appellants and the examiner. As a consequence of our review, we make the determinations which follow.

We sustain the examiner's rejection of claims 1 through 7 and 15 through 24, but do not sustain the rejection of claims 8 through 14 and 25 through 29. Our reasoning in support of these conclusions appears below.

At the outset, we appreciate from a reading of appellants' specification (page 3) that the present invention addresses widths of a tennis racquet frame just above the area where the yoke and Y-shaped arms of the throat merge with the inverted U-shaped portion of the head. The widths are of "at least 0.600 inch," "more preferably at least about 0.640 inch," with the ratio of width to height being "at least 0.50, and more

¹(...continued)
account not only the specific teachings, but also the inferences which one skilled in the art would reasonably have been expected to draw from the disclosure. See In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

Appeal No. 1999-2737
Application No. 08/438,767

preferably at least about 0.54." On page 8 of the specification, it is indicated that "good torsion or resistance to twisting in the portion of the frame most subject to twisting" is achieved with a width of "at least 0.600 inch, more preferably at least about 0.620 inch, and most preferably at least about 0.640 inch. With a W/L ratio of "at least 0.500 and more preferably at least about 0.540 to 0.542," "good torsion (resistance to twisting) and good stiffness (resistance to bending" is indicated. According to appellants (specification, page 5), the illustrated cross section of Figure 4 (4-4) has a length L of 1.181 inch and a width W of 0.640 inch with the ratio of width W to length L being 0.542. As revealed in TABLES I and II (specification, page 6), width L and height W of cross sections above 4-4 progressively decrease toward the top section.

Appellants bring to our attention application Serial No. 569,348 (specification, page 7), which application matured into the Garrett, Jr. patent now applied by the examiner. As stated by appellants, in the 95 square inch model of the racquet described in that application (patent), section 4-4

Appeal No. 1999-2737
Application No. 08/438,767

has a width (W) of 0.6084, a length (L) of 1.257 inch, and a W/L of 0.484, while in the 110 square inch model, section 4-4 has a width of 0.0609 inch, a length of 1.457 inch, and a W/L of 0.418.

Additionally, we are informed by appellants throughout the application as to the knowledge and level of skill in the art, at the time of the present invention, as revealed by the consequential design parameters and specifications, i.e., W, L, W/L (pages 7 and 8), Maximum String Width and Head Size (TABLE III), Polar Moment of Inertia (TABLE IV), Maximum String Length and SW/SL (TABLE V) of known racquets, i.e., Wilson's Sledge Hammer racquet, the Big Bang racquet, the Extender Thunder racquet, and the Extender Synergy racquet.

It is additionally particular worthy of noting that declarant McMillan indicates (section 7.) that

Appeal No. 1999-2737
Application No. 08/438,767

[w]hen the Quad Taper² racquet was designed, it was not obvious to me or to my co-workers at Wilson that increased resistance to torsion could be obtained by significantly decreasing the height of Section 4-4 and increasing the width so that the ratio of width to length was at least 0.5.

We turn now to independent claims 1 and 16.

Independent claim 1 is drawn to a tennis racket comprising, inter alia, a frame, a shaft including a pair of diverging arms, and a head including a yoke portion, wherein the length and width of the cross-section of an upper portion of the head is at a maximum adjacent the merger between the yoke portion and the arms and decreases toward the top of the frame, the dimension of the maximum width being at least 0.620 inch.

Independent claim 16 sets forth a tennis racket comprising, inter alia, a frame, a shaft including a pair of

² In section 2. of the declaration, it is pointed out that the Quad Taper racquet is made generally in accordance with the Garrett patent, the reference relied upon by the examiner.

Appeal No. 1999-2737
Application No. 08/438,767

diverging arms, and a head including a yoke portion, wherein the width of the cross section of an upper portion of the head is at a maximum adjacent the merger between the yoke portion and the arms and decreases toward the top of the frame, the ratio of the maximum width to the length of the cross section of the upper portion of the head adjacent the merger being at least 0.5.

At this point, it is appropriate to recognize that an obviousness question cannot be approached on the basis that an artisan having ordinary skill would have known only what they read in references, because such artisan must be presumed to know something about the art apart from what the references disclose. See In re Jacoby, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). Further, a conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference. See In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

Appeal No. 1999-2737
Application No. 08/438,767

In light of the above, we attribute to those having ordinary skill in the art, when the present invention was made, knowledge and a level of ordinary skill reflected by the known racquets and their parameters, as revealed throughout the present specification, and as highlighted above.

As to claim 1, we share the examiner's point of view to the effect that, based upon the knowledge of a width of 0.607 reflected by the Garrett patent and the level of skill in this art, the claimed maximum width of at least 0.620 inch would have been obvious to one having ordinary skill in the art. Like the examiner, we are of the opinion that the knowledge of those practicing this art at the time of the present invention would have given them the reasonable expectation that increasing width would yield improved resistance to torsion.³ This clearly is the reason why in a quad taper racquet, like that of Garrett, it is known to increase racquet width to a

³ This point of view is corroborated by appellants' acknowledgment in the background section of the specification (page 2) that a circular cross-section "or a wider frame thickness (viewed in plan) provides increased torsion, i.e., resistance against twisting."

Appeal No. 1999-2737
Application No. 08/438,767

maximum at the cross section where the greatest torsion or twisting is expected. Accordingly, as we see it, ordinary testing and experimentation carried out by one having ordinary skill in the tennis racquet art would have reasonably been expected to yield good results as to twisting parameters for widths greater than Garrett's 0.607 inches, e.g., 0.620 inch, as now claimed.⁴ We are also of the opinion that the content of each of claims 2 through 7, and 15, directly or indirectly dependent from claim 1, would also have been obvious to one having ordinary skill in this art based upon the knowledge and level of skill in this art reflected in the evidence before us.

The rejection of claim 8, and claims 9 through 14, and 28 and 29 directly or indirectly dependent thereon, is not sustained since claim 8, dependent from claim 1, addresses a racquet wherein a maximum width of a least 0.620 inch is

⁴ As we earlier noted, and worthy of again mentioning, appellants' specification (page 8) explicitly reveals that with a width of "at least 0.600 inch" in the area just above the merger between the yoke and arms, the frame has "good torsion or resistance to twisting in the portion of the frame which is most subject to twisting."

Appeal No. 1999-2737
Application No. 08/438,767

specified in conjunction with a ratio of maximum width to maximum length of at least 0.5. From our perspective, the Garrett patent, considered as a whole, simply would not have been suggestive to one having ordinary skill in the art of a maximum width of at least 0.620 inch when the ratio of maximum width to maximum length is at least 0.5.

Relative to claim 16, we are of the opinion that ratios of maximum width to maximum length greater than the ratio of 0.417 of Garrett would have been obvious to one having ordinary skill in the tennis racquet art, e.g., a ratio of at least 0.5, as now claimed. This conclusion is based upon the readily perceived knowledge and level of skill in the tennis racquet art when appellants' invention was made.⁵ It is also our view that the subject matter of each of dependent claims 17 through 24 addresses parameters that would have been

⁵ Our opinion is supported by appellants' acknowledgment of a 95 square inch model based upon the Garrett disclosure having a width of 0.6084 inch, a length of 1.257 inch, and a W/L of 0.484 (specification, page 7). As further evident from appellants' specification (pages 7 and 8), those having ordinary skill in the art understood that the range of W/L ratios reaching 0.487, 0.486, and 0.491 were common.

Appeal No. 1999-2737
Application No. 08/438,767

obvious to one having ordinary skill in the art, based upon the prior art evidence before us.

As to claims 25 through 27, which each depend from claim 16, we cannot sustain the rejection thereof under 35 U.S.C. § 103.

Consistent with the view articulated above relative to claim 8, in particular, it is apparent to us that the Garrett patent would not have been suggestive of a ratio of maximum width to length of at least 0.5 when the maximum width was at least 0.600 inch, 0.620 inch, or 0.640 inch, as now claimed in respective claims 25, 26, and 27.

We turn now to the argument advanced by appellants.

As to the rejection of claims 1 through 7, 15 through 22, and 24 which we have sustained, the appellants' argument in the main (pages 7 through 15) and reply briefs has simply not convinced us that the content of these claims is patentable over the evidence before us. Appellants' refer to Garrett (column 3, lines 9 et seq.) as teaching that both width and

Appeal No. 1999-2737
Application No. 08/438,767

height should be increased to resist twisting (main brief, page 8 and reply brief, pages 2 and 5). However, we note in comparing the (h) and (w) values in the table of Garrett (columns 3 and 4) with the length and widths values in appellants' TABLES I AND II (page 6 of specification) that, as is the case with Garrett (position 16), appellants' lengths and widths both increase leading to section 4-4. Additionally, the argument (main brief, pages 8 and 9) addressing a "boxier and more rectangular shape" derived from decreasing height and increasing width is seen to be relevant only to the claims whose rejection we have not sustained. As to the McMillan declaration, we note that appellants' argument relying thereon (main brief, page 11) references claims which describe the combination of a minimum width and a minimum W/L ratio, the rejection of which claims we have not sustained. In the matter of the argument addressed to claims 4, 6, 9, 21, and 24 (main brief, pages 11 and 12), we do not share appellants' point of view that the Garrett patent would not have been suggestive of the claimed string width and ratio of string width to string length. Consistent with the view articulated above, we are of the opinion, based upon the

Appeal No. 1999-2737
Application No. 08/438,767

overall knowledge of those having ordinary skill in the tennis racquet art, that the determination of string length and the ratio of string width to length, as now claimed, would have been readily obtainable through ordinary experimentation and, hence, obvious. We need not address the Sol patent and appellants' argument relative to claims 10, 11, 13, and 14 (main brief, pages 12 through 14) since the rejection of these claims has not been sustained. As to the rejection of claims 15 and 17 based upon the combined teachings of Garrett and prior art racquets (appellants' specification, page 10), the argument is based upon the respective other features of claim 1 (maximum width of at least 0.620 inch) and claim 16 (ratio of at least 0.5). In light of the argument presented for claims 15 and 17, we sustain the rejection thereof for the reasons addressed above relative to respective parent claims 1 and 16.

In summary, this panel of the board has:

sustained the rejection of claims 1 through 7, 16, 18 through 22, and 24 under 35 U.S.C. § 103(a) as being

Appeal No. 1999-2737
Application No. 08/438,767

unpatentable over Garrett, but has not sustained the rejection of claims 8, 9, 12, and 25 through 29 on the same statutory ground;

not sustained the rejection of claims 10, 11, 13, and 14 under 35 U.S.C. § 103(a) as being unpatentable over Garrett in view of Sol; and

sustained the rejection of claims 15 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Garrett in view of a prior art racquet (appellants' specification, page 10).

Appeal No. 1999-2737
Application No. 08/438,767

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

The decision of the examiner is affirmed-in-part.

AFFIRMED-IN-PART

IRWIN CHARLES COHEN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
NEAL E. ABRAMS)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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Appeal No. 1999-2737
Application No. 08/438,767

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APPEAL NO. 1999-2737 - JUDGE

APPLICATION NO. 08/438,767

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DECISION:

Prepared By:

DRAFT TYPED: 24 Jun 02

FINAL TYPED: