

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte DALE F. SWARTS, WILLIAM L. ROHR JR., STEVE T. LIN  
THIRUMALAI DEVANATHAN, STEVEN L. KREBS, and PAUL D. SCHOENLE

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Appeal No. 97-2783  
Application 08/388,089<sup>1</sup>

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ON BRIEF

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Before COHEN, FRANKFORT and NASE, Administrative Patent Judges.  
FRANKFORT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 4 through 13 and 15. As noted on page 1 of appellants' brief (Paper No. 8), claims 2, 3 and 14 "are not presented for Appeal and their final rejection has been accepted by the Appellant."

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<sup>1</sup>Application for patent filed February 14, 1995.

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Appellants' invention relates to an acetabular cup used in an orthopaedic procedure to replace a worn or damage acetabulum (hip socket) of a patient. A copy of representative claims 1, 12 and 13 on appeal, as they appear in the Appendix to appellants' brief, is attached to this decision.

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

Morscher	4,769,041	Sep. 06, 1988
Frey et al. (Frey '355)	4,978,355	Dec. 18, 1990
Serbousek et al. (Serbousek)	5,336,265	Aug. 09, 1994

Claims 1, 4 through 11, 13 and 15 stand rejected under § U.S.C. § 102(b) as being anticipated by Morscher. According to the examiner, "Although Morscher does not explicitly state the tensile strength of the interface, it would be inherent that the socket of Morscher would meet the claimed limitations".

Claims 1 through 11, 13 and 15 stand rejected under 35U.S.C. § 102(b) as being anticipated by Frey '355.<sup>2</sup>

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<sup>2</sup> Of the claims rejected as being anticipated by Frey '355, claims 1 through 11 and 13 were rejected in a new ground of rejection in the examiner's answer, while claim 15 was finally rejected based on Frey '355. However, since appellants have not chosen to pursue the appeal as to claims 2 and 3, we consider this rejection only as to claims 1, 4 through 11, 13 and 15.

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Claim 12 stands rejected under 35 U.S.C. § 103 as being unpatentable over Morscher in view of Serbousek.

Rather than attempt to reiterate the examiner's full commentary with regard to the above-noted rejections and the conflicting viewpoints advanced by the examiner and appellants regarding the rejections, we make reference to the examiner's answer (Paper No. 9, mailed September 25, 1996) and to the supplemental answer (Paper No. 11, mailed December 19, 1996) for the examiner's reasoning in support of the rejections, and to appellant's brief (Paper No. 8, filed June 28, 1996) and reply brief (Paper No. 10, filed November 27, 1996) for appellants' arguments thereagainst.

#### OPINION

In reaching our decision in this appeal, we have given careful consideration to appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by appellants and the examiner. As a consequence of our review, we have made the determinations which follow.

Looking first at the examiner's rejection of claims 1, 4 through 11, 13 and 15 under § 102(b) based on Morscher, we are in

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agreement with appellants that Morscher fails to disclose, teach or suggest the limitation of independent claims 1 and 15 regarding the penetration of the polymeric material of the cup into the pores of the backing as required in these claims, so as to result in "an interface strength between said polymeric cup and said backing which is substantially equal to the tensile strength of said polymeric material." Even the examiner recognizes (answer, page 3) that Morscher does not disclose or explicitly state the tensile strength of the interface between the cup and the backing therein, or the depth of penetration of the polymeric material of the cup into the pores of the backing. The examiner's conclusion that this aspect of appellants' claimed subject matter and the specific level of penetration set forth in independent claim 13 (i.e., a distance of at least 0.05 inch) "would be inherent" in Morscher is totally without support in the reference and is entirely speculative on the examiner's part.

It is well settled that inherency may not be established by probabilities or possibilities, but must instead be "the natural result flowing from the operation as taught." See In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981). In the

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present case, neither the Morscher reference nor the examiner provides an adequate factual basis to establish that the natural result flowing from following the teachings of that patent would be an acetabular cup prosthesis like that claimed by appellants. Accordingly, since all the limitations of appellants' claims 1, 4 through 11, 13 and 15 are not found in Morscher, either expressly or under principles of inherency, it follows that the examiner's rejection of those claims under 35 U.S.C. § 102(b) relying on Morscher will not be sustained.

Turning next to the examiner's rejection of claims 1, 4 through 11, 13 and 15 under 35 U.S.C. § 102(b) as being anticipated by Frey '355, we must agree with the examiner that Frey '355 discloses and shows in Figure 3 an acetabular cup prosthesis comprising a polymeric cup (11) having a cavity (12) for receiving a femoral head, and a porous backing (2, 6) disposed about and attached to the polymeric cup. As is apparent from drawing Figures 1 and 2, and from the description in the patent, the porous backing of Frey '355 includes interstitial pores which are (a) sized to receive a portion of the polymeric

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cup in a radially inner portion thereof (e.g., 2) and (b) adapted for allowing ingrowth of bone in the radially outer portion thereof (e.g., 6). At issue in this case with regard to appellants' independent claim 13 is whether Frey '355 discloses or teaches an arrangement wherein

said polymeric cup extends into said pores at said radially inner portion a distance of at least .050 inch and wherein the bone may extend into said pores at said radially outer portion a distance of at least .035 inch

(claim 13, lines 7-9).

Given the disclosure in Frey '355 (col. 2, lines 50-52), that the wires (3) of the inner portion (2) of the grid seen in Figure 1 are each made from a metal wire having a diameter of "between 0.2 and 1.5 millimeters," we must agree with the examiner that Frey '355 clearly meets the requirement of appellants' claim 13 concerning penetration of the polymeric material of the cup into the pores of the inner portion of the backing "a distance of at least .050 inch." Figure 1 of Frey '355 shows the top surface of the polymeric material which penetrates into the pores of the inner portion (2) of the backing at (5). Thus, it is apparent that the polymeric material extends

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into the inner portion of the backing a distance almost equal to two wire diameters (e.g., within the range of approximately 0.4 to 3 millimeters). Given that 1 inch equals 25.4 mm, 3mm translates to 0.118 inches and clearly demonstrates that the level of penetration of the polymeric material of the cup into the pores of the inner portion of the backing of Frey '355 falls within the range set forth in appellants' claim 13 on appeal.

As for the recitation in claim 13 regarding the degree of bone penetration into the outer portion (6) of the backing, we note that the language of claim 13 is permissive, stating only that the bone "may extend into said pores... a distance of at least .035 inch" (emphasis added). Looking to the disclosure of Frey '355 at column 2, lines 53 through column 3, line 8, and particularly at the stated sizing of the wires of the layers (7a, 7b) of the outer portion (6) of the backing as indicated therein, it is apparent that the pores of the outer portion of the backing in Frey '355 clearly will allow bone penetration into the outer portion (6) of the backing to a depth in excess of .035 inches.

Independent claim 1 on appeal sets forth that the portion of the polymeric material of the cup that extends into the pores of

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the backing is such as to result in an interface strength that is "substantially equal to the tensile strength of said polymeric material." Given appellants' disclosure at page 5, line 22, through page 7, line 30, it is apparent that the language "substantially equal to the tensile strength of said polymeric material" is to be understood as encompassing a range of between 70 to 100 percent of the tensile strength of the polymeric material, and to reach "a maximum value at a penetration depth of about 0.050 inch, corresponding to the tensile strength of UHMWP [ultra-high-molecular weight polyethylene]" (page 7, lines 26-30). UHMWP is apparently a material that is conventionally used in making these types of prosthetic acetabular cups. While Frey '355 does not expressly mention interface strength, we note that the examiner has taken the position that since the cup of Frey '355 is made of the same polymeric material as appellants' cup and, as discussed above, has a polymeric material penetration depth into the backing pores of at least .050 inches, it follows that the acetabular cup prosthesis of Frey '355 has an interface strength between the polymeric cup and the backing which falls within the claimed range. We agree with the examiner, and

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observe that appellants have provided no convincing line of argument or evidence to the contrary.

Since in the present case, all the limitations of appellants' independent claims 1 and 13 are found in Frey '355, either expressly or under principles of inherency, the examiner's rejection of these claims under 35 U.S.C. § 102(b) will be sustained. Given appellants' statement in the "GROUPING OF CLAIMS" on page 3 of the brief, that "Claims 1-11 and 15 should be grouped together as Group I," it follows that claims 4 through 11 and 15 on appeal will fall with claim 1.

The last of the examiner's rejections for our review is that of claim 12 under 35 U.S.C. § 103 as being unpatentable over the combined teachings of Morscher and Serbousek. Like appellants', we find no reasonable teaching, suggestion, or incentive in the applied references which would have led one of ordinary skill in the art to make a first and second acetabular cup prosthesis wherein the first and second cups have a different outside diameter at a rim thereof, and with

at least one of said backing thickness and said penetration depth varying between said first acetabular cup and said second acetabular cup, whereby each of said first acetabular cup and said second acetabular cup have substantially the same stiffness in a radial direction,

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as required in appellants' claim 12 on appeal. Based on appellants' disclosure (specification, page 8), we understand that it is appellants' intent to "equalize" the stiffness between the two acetabular cups (10) and (42) in a radial direction, and we understand the language of Claim 12 on appeal to mean that such radial stiffness of the two recited cups will be equal, at least to the extent that manufacturing tolerances will allow.

The examiner's position that Serbousek "teaches making femoral implants of varying sizes with a stiffness equivalent to bone to reduce stress despite the length or diameter" (answer, page 4), is without clear support in the reference. As is explained in column 3, lines 25-31, of Serbousek, the dimensions of the groove (46) in the stem of the femoral implant

are chosen so as to obtain a predetermined stiffness profile of the stem between the proximal and distal ends. In either event, the stem has a magnitude of stiffness no greater than that at which stress shielding of the first bone has been clinically identified by radiographic methods.

Moreover, at lines 44-48, of column 3 in Serbousek, it is noted that by reducing the stiffness of the femoral implant, "more load is borne by the surrounding bone," which, in turn, will reduce bone mineral loss caused by stress shielding and promote the

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longevity of the hip arthroplasty. Thus, the intent of Serbousek is actually to allow more stress loading of the bone and prevent "stress shielding" caused by rigid femoral implants of the prior art. Serbousek never mentions an acetabular cup prosthesis, or the sizing and radial stiffness of such components.

Since we are of the view that the examiner's conclusion of obviousness with regard to claim 12 on appeal is based on a hindsight reconstruction using appellants' own disclosure as a blueprint to arrive at the claimed subject matter, it follows that we will not sustain the examiner's rejection of claim 12 under 35 U.S.C. § 103 based on Morscher and Serbousek.

In light of the foregoing, the examiner's rejection of claims 1, 4 through 11, 13 and 15 under 35 U.S.C. § 102(b) as being anticipated by Morscher has been reversed; the examiner's rejection of claims 1, 4 through 11, 13 and 15 under 35 U.S.C. § 102(b) as being anticipated by Frey '355 has been affirmed; and the rejection of claim 12 under 35 U.S.C. § 103 as being unpatentable over Morscher in view of Serbousek has been reversed.

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

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

AFFIRMED-IN-PART

IRWIN CHARLES COHEN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
CHARLES E. FRANKFORT	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
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JEFFREY V. NASE	)	
Administrative Patent Judge	)	

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