

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SCOTT E. BOATMAN and KIMBERLY D. BRUMMETT

Appeal No. 1999-0712
Application No. 08/748,669

ON BRIEF

Before CALVERT, FRANKFORT, 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 41-48 and 50-61, which are all of the claims pending in this application.

BACKGROUND

The appellants' invention relates generally to balloon expandable stents and, in particular, to a flexible stent having a waveform pattern formed from a sheet of biocompatible material and into a cylindrical surface or tubular shape (specification, page 1). Further understanding of the invention can be derived from a reading of exemplary claims 41 and 42, which are reproduced in the opinion section of this decision.

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

Wolff	5,104,404	Apr. 14, 1992
Samson	5,370,691	Dec. 6, 1994 (filed Jan. 26, 1993)
Schatz (European patent application)	364,787	Apr. 25, 1990

The following rejections stand before us for review.

1. Claims 41, 42, 46-48, 50-53, 55 and 58-61 stand rejected under 35 U.S.C. § 103 as being unpatentable over Schatz in view of Wolff.
2. Claims 43-45, 54, 56 and 57 stand rejected under 35 U.S.C. § 103 as being unpatentable over Schatz in view of Wolff, as applied to claims 41, 42, 46-48, 50-53, 55 and 58-61 above, and further in view of Samson.

Reference is made to the brief (Paper No. 14) and the answer (Paper No. 15) for the respective positions of the appellants and the examiner with regard to the merits of these rejections.

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. As a consequence of our review, we make the determinations which follow.

The appellants' brief (pages 4 and 5) states that claims 41, 51-54 and 58-61 stand or fall together and claims 42-48, 50 and 55-57 stand or fall together. Therefore, we have decided this appeal on the basis of representative claims 41 and 42, with claims 51-54 and 58-61 standing or falling with claim 41 and claims 43-48, 50 and 55-57 standing or falling with claim 42. See In re Young, 927 F.2d 588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978).

Representative claims 41 and 42 read as follows:

41. A stent comprising:

a sheet of biocompatible material having a pattern in a surface of said sheet, said pattern including in said sheet a plurality of cells, wherein said pattern further includes a radiopaque marker at an end of said stent.

42. The stent of claim 41 wherein said pattern includes an eyelet at said end of said stent and wherein said radiopaque marker is positioned in said eyelet at said end of said pattern.

Schatz discloses, in Figures 1A and 1B, an intraluminal vascular graft¹ or prosthesis 70 comprising a stainless steel tubular member 71 having a plurality of cells (slots 82) formed in its wall surface 74. Schatz also teaches that, for repairing blood vessels narrowed or occluded by disease or repairing body passageways, the length of the body passageway which requires repair, as by insertion of a graft, may present problems if the length of the required graft cannot negotiate the curves or bends of the body passageway through which the graft is passed by a catheter (column 3, lines 29-36). In order to address this problem, Schatz discloses (Figures 7 and 8) an intraluminal vascular graft or prosthesis 70' for use in curved body passageways or elongated sections of a body passageway when a graft 70' is required which is longer than the graft or prosthesis 70 of Figure 1A. The graft 70' includes a plurality of grafts or prostheses 70 connected by connector members 100 which permit bending or articulation of adjacent grafts 70 about the longitudinal axis of the graft 70'. Schatz does not disclose a radiopaque marker at an end of the graft or prosthesis, as required by claim 41.

Wolff discloses an articulated stent comprising stent segments (12 or 20) connected by hinges (14 or 22) which are either made of radiopaque material or coated with radiopaque material to permit observation of the angular orientation of the stent relative to a blood vessel in

¹ Schatz indicates that an "intraluminal vascular graft" is a device for use in expanding the lumen of a body passageway (column 6, lines 16-27 and 44-46).

which it is inserted (column 2, lines 22-25). As illustrated in Figure 3, where additional flexibility for a given hinge strength is needed, the hinge (22) can be coiled along its length (column 2, lines 34-37).

Samson discloses the provision of radiopaque markers (110, 112) on the distal end and the proximal end, respectively, of a stent and further teaches that these markers are necessary to determine the position of the stent during its installation (column 3, lines 12-22).² According to Samson, suitable radiopaque materials include platinum series metals, gold, silver, tantalum and certain stainless steels (column 3, lines 32-38).

In rejecting claims 41, 42, 46-48, 50-53, 55 and 58-61, the examiner (answer, pages 3 and 4) takes the position that it would have been obvious to coat the connector members 100 of Schatz with radiopaque material in order to determine the location and orientation of the stent assembly within the blood vessel and to shape the connector member 100 of Schatz as a coil to increase its bending flexibility in view of the teaching to do so by Wolff. With regard to claims 43-45, 54, 56 and 57, the examiner (answer, page 4) further asserts that it would have been obvious to use gold as the radiopaque material incorporated into the Schatz stent in view of Samson's teaching of using gold as a radiopaque material on a stent.

² While this teaching of providing radiopaque markers on the distal and proximal ends of a stent has not been specifically relied upon by the examiner in rejecting the claims, we note it of interest, in particular because of its pertinence to the subject matter of claim 41 ("a radiopaque marker at an end of said stent") at issue in this appeal.

The appellants do not contest the examiner's position with regard to these proposed modifications. Rather, the appellants argue (brief, pages 5-10) that, even if the Schatz device were modified as proposed by the examiner, the radiopaque material coated on the connector members would be located internally of the whole device 70' and thus between and spaced from the ends thereof, rather than "at an end of the stent" as required by claim 41. This argument is based on the appellants' assertion that

[t]here is no logical or rational basis to believe that someone having even rudimentary skills in the arts of making and implanting stents would consider the so-called central "graft" 70 shown in Figs. 7 and 8 of the Schatz reference to be, by itself, a complete and implantable stent, since it has additional implantable members connected to it. Instead, those skilled in the art would refer only to the entire graft or prosthesis '70 [sic: 70'] as a stent, and not to its individual constituents [brief, page 9].

In proceedings before it, the PTO applies to the verbiage of claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification. In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). Moreover, absent an express definition in their specification, the fact that appellants can point to definitions or usages that conform to their interpretation does not make the PTO's definition unreasonable when the PTO can point to other sources that support its interpretation. Id., 127 F.2d at 1056, 44 USPQ2d at 1029.

While Schatz uses the term "graft" or "prosthesis" rather than "stent" as recited in claim 41, we understand the terms "graft" and "stent" as used in the field of the appellants' invention to be synonyms which refer to devices which are inserted into a body passageway in order to expand the lumen therein which has been narrowed by disease or a condition known as stenosis. Our understanding of the terms "graft" and "stent" as synonyms in the art is confirmed by such use of these terms by Samson (abstract, line 1, and column 1, line 5), for example. Therefore, given the interchangeability of the terms "stent" and "graft" in the art, Schatz' repeated use (column 13, line 14, to column 14, line 41) of the same term "graft" to describe each subcomponent graft 70 (tubular member 71) as well as the more comprehensive graft 70' leads us to conclude that the examiner's characterization of the central graft 70 of Figure 7 of Schatz as a "stent" (answer, pages 3 and 4) is reasonable in this instance.

Having determined that the central graft 70 is a "stent" as used in claim 41, we also observe that this graft has two ends³, each of which is connected to a connecting member 100 which, as modified in view of the teachings of Wolff as discussed above, is coated with radiopaque material to form a "radiopaque marker." From our perspective, each of these radiopaque markers, by virtue of being connected to the end of the central graft (or stent) 70 is "at an end of the stent" as required by claim 41.

³ As correctly pointed out by the examiner (answer, page 4), the claims do not preclude the end of the stent being connected to other stents.

We have considered the appellants' argument (brief, pages 7-9) that the appellants' device achieves an important advantage over the Schatz and Wolff references in that a surgeon can immediately determine, using the appellants' device, whether the stent lies across the whole stenosis, regardless of the angle the stenosis makes with respect to the direction of imaging, merely by viewing the imaging, since the radiopaque markers identify the ends of the device (i.e., no stent structure extends beyond the markers), but we do not find it persuasive. Initially, we note that an articulated graft 70' as illustrated in Figure 7 of Schatz is capable of being used to treat a stenosis which is shorter than the length of the central graft 70, in which case the surgeon can quickly determine from the imaging whether the central graft 70 lies across the whole stenosis, since the ends of the graft 70 are identified by the radiopaque connector members 100, as modified by Wolff. Moreover, as the argued advantage can only be achieved by providing a radiopaque marker at each end of the stent, the appellants' argument is not commensurate in scope with claim 41, which only requires a radiopaque marker at an end of the stent. To the extent that the appellants' argument is directed to use of the device to treat a stenosis which is of approximately the same length as the entire device, since the asserted advantage results from the fact that no part of the device extends beyond the radiopaque markers, it is not commensurate in scope with any of the claims on appeal, which do not preclude the ends of the "stent" being connected to other stents.

For the foregoing reasons, we shall sustain the examiner's rejection of claim 41, and claims 51-53 and 58-61 which stand or fall therewith, under 35 U.S.C. § 103 as being unpatentable over Schatz in view of Wolff. As claim 54 also stands or falls with claim 41, we shall also sustain the examiner's rejection of this claim under 35 U.S.C. § 103 as being unpatentable over Schatz in view of Wolff and Samson.

With regard to the rejection of claim 42 under 35 U.S.C. § 103, the examiner's determination (answer, pages 3 and 4) that it would have been obvious to shape each of the connector members 100 of Schatz as a coil to increase its bending flexibility and to coat the members with radiopaque material in order to determine the location and orientation of the stent assembly within the blood vessel in view of the teaching to do so by Wolff is not contested by the appellants, as discussed above. The appellants (brief, pages 10 and 11) do, however, dispute the examiner's assertions (1) that the coil is an "eyelet" as claimed and (2) that the radiopaque material taught by Wolff is positioned "in said eyelet" since it coats the radial inner portion of the coil (see answer, page 4).

An "eyelet" is a small hole for receiving a shoestring, rope, cord, hook, etc. or a metal ring or short tube for reinforcing such a hole.⁴ As a coil defines a small hole in the interior therein capable of receiving a rope or cord and forms a short tube capable of reinforcing a small hole, we agree with the examiner's determination that the coil-shaped connector member

⁴ Webster's New World Dictionary, Third College Edition (Simon & Schuster, Inc. 1988).

of Schatz, as modified in view of Wolff, is an "eyelet" as broadly claimed. While it may be true that eyelets frequently comprise closed or substantially closed rings, the broadest reasonable meaning of the term "eyelet" does not appear to require this and the appellants' specification does not set forth any express definition of "eyelet." Therefore, the examiner's position that each of the coiled connecting members of Schatz is an "eyelet" strikes us as reasonable.⁵

With regard to the limitation in claim 42 that the radiopaque marker be "positioned in said eyelet," the appellants argue that no one skilled in the art would consider a coating material, such as paint, positioned "in" the eyelet "unless, of course, the paint extended across and filled the central opening of the eyelet" and that the only reasonable understanding of the relationship between the paint and the eyelet is that the paint is "on" the eyelet, not "in" the eyelet (brief, page 11). We do not agree. The term "in" is generally understood to mean contained or enclosed by, inside or within⁶ and does not, as we see it, require that the marker extend across or fill the central opening of the eyelet. While radiopaque coating material coated on the inner radial surface of the coiled connector member may, as the appellants suggest, be considered to be positioned "on" the member by virtue of its contact with the surface thereof,

⁵ See Morris, 127 F.2d at 1056, 44 USPQ2d at 1029.

⁶ Webster's New World Dictionary, Third College Edition (Simon & Schuster, Inc. 1988)

such material is also positioned inside or "in" the coiled member or eyelet as recited in claim 42.⁷

Accordingly, we shall sustain the examiner's rejection of claim 42 and claims 46-48, 50 and 55 which stand or fall therewith, under 35 U.S.C. § 103 as being unpatentable over Schatz in view of Wolff and the examiner's rejection of claims 43-45, 56 and 57, which also stand or fall with claim 42, under 35 U.S.C. § 103 as being unpatentable over Schatz in view of Wolff and Samson.

CONCLUSION

To summarize, the decision of the examiner to reject claims 41-48 and 50-61 under 35 U.S.C. § 103 is affirmed.

⁷ We note, in fact, that the radiopaque material as disclosed by the appellants is affixed to the surface of the eyelet by melting (specification, page 24) and, thus, might also be considered to be positioned "on" the eyelet.

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

AFFIRMED

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

Appeal No. 1999-0712
Application No. 08/748,669

Page 13

Richard J. Godlewski
P.O. Box 2256
West Lafayette, IN 47906