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**Datasheet for the decision
of 16 December 2015**

Case Number: T 2646/11 - 3.2.02

Application Number: 05076395.2

Publication Number: 1576931

IPC: A61B17/70

Language of the proceedings: EN

Title of invention:

Medical device having a reverse-angle thread

Patent Proprietor:

Warsaw Orthopedic, Inc.

Opponent:

Synthes GmbH

Headword:

Relevant legal provisions:

EPC Art. 54, 56, 87, 100(c)

RPBA Art. 13(1)

Keyword:

Late-filed counter-statement - admitted (yes)

Added subject-matter - main request (yes)

Added subject-matter - auxiliary request (no)

Priority - auxiliary request (yes)

Novelty - availability to the public (no) -

auxiliary request (yes)

Inventive step - auxiliary request (yes)

Decisions cited:

G 0002/98, T 0528/93

Catchword:



**Beschwerdekammern
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Chambres de recours**

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Case Number: T 2646/11 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 16 December 2015

Appellant: Synthes GmbH
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 25 October 2011
rejecting the opposition filed against European
patent No. 1576931 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman E. Dufrasne
Members: C. Körber
P. L. P. Weber

Summary of Facts and Submissions

- I. On 25 October 2011 the Opposition Division posted its decision to reject the opposition against European patent No. 1 576 931.
- II. An appeal was lodged against this decision by the opponent, by notice received on 16 December 2011, with the appeal fee being paid on the same day. The statement setting out the grounds of appeal was received on 23 February 2012.
- III. By communication of 1 October 2015, the Board forwarded its provisional opinion to the parties and summoned them to oral proceedings.
- IV. Oral proceedings were held on 16 December 2015.

The final requests of the parties were as follows:

The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed or, in the alternative, that the decision under appeal be set aside and that the patent be maintained on the basis of one of the auxiliary requests No. 1 to No. 8 filed on 19 July 2012.

- V. The following documents are of importance for the present decision:

D1: US-A-5 607 304
D2: US-A-5 005 562
D5: US-A-5 672 176

D6: DE-U-298 10 798

D9: WO-A-98/12977

D10: WO-A-98/52482

D11: US-A-5 605 458

D15: Product leaflet "Click'X" of Synthes

D16: WO-A-98/12976.

VI. Claim 1 of the main request (patent as granted) reads:

"A medical device (10; 100; 110; 120) comprising:

a receiver member (11; 104; 114; 122) including a plurality of wall sections (24) separated by a transverse channel (16), said wall sections (24) defining a longitudinal bore (15; 126) in said medical device (10; 100; 110; 120); and

a closure member (12; 106; 116; 128) including a substantially cylindrical engagement portion (34) having a longitudinal axis (43), a forward end (64), and a screw thread (46) formed on said engagement portion (34) so that said engagement portion (34) is adapted to be threadedly engaged within said bore (15; 126) to said wall sections (24), characterised in that said screw thread is a reverse angle screw thread (46) and in that said closure member (12; 106; 116; 128) has a through-hole (42) extending to said forward end (64)."

Claims 2 to 16 are dependent claims.

Claim 1 of auxiliary request No. 1 corresponds to that of the patent as granted with the phrase "for engaging a tool" inserted after the word "through-hole (42)" in the penultimate line.

VII. The appellant's arguments relevant for the decision are summarised as follows:

In the first-instance proceedings, the appellant (then opponent) at no time had any request on file other than that the patent be revoked. This request had not been withdrawn. The statement in the impugned decision that the request concerning the ground of opposition according to Article 100(c) EPC had been withdrawn was not clear. In any case, the appellant was not prevented from pursuing this objection in the appeal proceedings, in particular in view of the fact that the arguments it had advanced concerning entitlement to priority were also applicable to the question of added subject-matter in the special situation underlying the present case.

In claim 1 of the patent as granted, the feature of the transverse channel (16) separating the wall sections (20) was only supported for the case of **two** wall sections, as depicted in all of Figures 1 to 5 of the parent application as originally filed. There was no basis in the original disclosure for a transverse channel separating a plurality of wall sections as claimed. Also, there was no mention of a through-hole (42) that extended to the forward end (64) of the engagement portion. In Figures 1, 3 and 6C depicting this hole, it was always shown with a flared forward end. The internal taper that gave rise to this flare was matched by an external taper on the engagement portion, so that the forward end (64) of the engagement portion (34) was formed as a ring with a substantially triangular radial cross-section. The informed reader would note this characteristic because it was quite a conventional arrangement and he would understand that the purpose of this ring was to bite into the rod in order to fix it, as was the case in D2, D6 and D9. The

through-hole was in fact only created by the internal flare at its forward end, and it was impermissible to extract the feature of the through-hole in isolation, i.e. without specifying that it had a flared forward end. Moreover, the hole (42) was only disclosed in the paragraph bridging pages 7 and 8 as being provided for engaging a tool. The omission of this feature also resulted in an impermissible intermediate generalisation.

For these reasons, claim 1 of the patent as granted was further not entitled to the priority date claimed, since the parent application as originally filed and the priority document were in all relevant aspects identical.

Claim 1 of the patent as granted and of auxiliary request No. 1 was anticipated by the embodiment of Figure 1 as well as that of Figure 9 of D10. The embodiment of Figure 1, which clearly disclosed a closure member (Spannschraube 23) having a through-hole as claimed, was covered by claim 27 of D10, which depended upon claim 23 and, through it, ultimately upon claim 1. Claim 40, due to its dependence upon every preceding claim, i.e. in particular also upon claim 27, specifically disclosed that also the embodiment of Figure 1 might possess buttress threads with a flank angle of between 87° and 93° to prevent spreading of the sleeve (10), with the lower limit value of 87° corresponding to a reverse angle thread. The fact that the embodiment of Figure 1 comprised a swivel ring or sleeve (22) for avoiding splaying did not imply that a reverse angle thread could not be used for the same purpose in combination therewith. The last sentence of page 13 could not be understood to the effect that both possibilities were mutually exclusive. Since the

through-hole in the closure member (21) also comprised an internal thread for the tension screw (23), it was furthermore suitable "for engaging a tool" as defined in claim 1 of auxiliary request No. 1 (which did not comprise any further specification of the kind of tool). The embodiment of Figure 9, described in the last paragraph of page 13, did not comprise a sleeve for avoiding splaying and it was clear that the disclosure of a reverse angle thread in claim 40 of D10 applied to this embodiment. From claims 32 and 33, read in combination with claims 30 and 31 which related to the embodiment of Figure 8, it became clear that it had to be possible to tighten the tension screw (23) to block the pedicle screw (2) before the stud bolt (45) was tightened to block the rod (1) against longitudinal movement. This implied that the latter had to be accessible through the hole in the tension screw (23) which thus had to possess a through-hole.

It was perfectly obvious to the dispassionate reader that the marking "1/98" of the imprint at page 5 of D15 represented the month of January 1998. D15 was intended for and destined for publication and plainly described a product that was fully developed. New products were announced to potential customers even before they were launched. It was vanishingly unlikely that its publication was delayed even by ten months. The date of publication of D15 was thus prima facie established on the balance of probabilities, and the burden was shifted to the patentee to prove otherwise.

The subject-matter of claim 1 was not inventive when starting from D2. D2 failed to disclose a through-hole that extended to the forward end of the engagement portion. The technical effects of the through-hole were that better engagement with the tool could be achieved

and that the weight of the closure member was reduced. The second possible difference was that claim 1 called for a reverse angle thread, whereas D2 described a saw-tooth thread profile that avoided the spreading of the two side branches or flanks (4) by completely eliminating the radial component of the load on screwing up. No specific value of the angle of the saw-tooth thread was disclosed in D2. A flank angle of 90° would in fact not completely eliminate the radial component of the load when the plug was tightened by means of a tool, resulting in a flank angle of greater than 90° due to elastic deformation of the contacting surfaces of the thread. Accordingly, the only thread form that could achieve the effect of completely eliminating the radial component of load on screwing up was in fact a reverse angle thread. Moreover, due to the necessarily occurring manufacturing tolerances, the flank angle disclosed in D2 was not exactly 90° but slightly above or below this value, thus anticipating a reverse angle thread. If the reverse angle thread was nevertheless regarded as a distinguishing feature over D2, the underlying technical effect was that splaying could be avoided even better by creating inwardly pulling forces instead of only eliminating outwardly directed forces. This effect was entirely unrelated to the above-mentioned technical advantage achieved by the through-hole. The (possibly) distinguishing features thus represented a mere aggregation without any synergistic properties, allowing the teaching of D2 to be combined with that of two different documents. Reducing the weight of the plug was a perfectly obvious step to take, and it was equally obvious if the objective was to allow a tool to engage the plug more securely, since it deepened the recess. Indeed, a plug with such a through-hole was already known from Figure 2 of D5. The provision of a reverse angle thread was

rendered obvious by D11, where the problem of avoiding splaying was explicitly addressed in paragraph 2 of columns 2 and 4. An identical disclosure of the effectiveness of a reverse angle thread could be found in column 3, line 59 to column 4, line 12 of D1.

The subject-matter of claim 1 of auxiliary request No. 1 was also obvious when starting from D9 or D16 which both disclosed devices comprising the features of the preamble. As discussed with reference to D2, it would have been obvious to extend the hole below the tool recess (57) so that it joined the corresponding recess in the forward end of the plug (55), so as to reduce its weight. If there was a need for readjustment after the driving head of the set screw had been broken off, it was obvious to provide a tool-engaging hole extending to the forward end of the plug. As regards the reverse angle thread, the objective technical problem was simply to prevent the spreading of the receiver member. References D1 and D11 solved that problem with a reverse angle thread.

VIII. The respondent's arguments relevant for the decision are summarised as follows:

The response to the statement of grounds of appeal should be considered since, due to an isolated and unfortunate mistake, it had been filed shortly after the expiry of the deadline and still very early in the proceedings.

Since the appellant had withdrawn its objections relating to the ground of opposition under Article 100(c) EPC during the first instance proceedings, objections relating to this ground were not to be considered in subsequent appeal proceedings

in view of the jurisprudence cited in sections IV.E.3.2.1(f) and IV.E.3.6 of "Case Law of the Boards of Appeal of the EPO", 7th edition 2013.

Claim 1 of the patent as granted was supported by the parent application as originally filed. In particular, it was not necessary in the claim, which was directed to a product, to specify that the through-hole was provided "for engaging a tool" since this was merely the intended use which was anyhow evident to the skilled person.

The objection of lack of novelty based on the embodiment of Figure 9 of D10 had only been presented in the oral proceedings and should therefore not be admitted by the Board. If it was nevertheless admitted, the oral proceedings should be adjourned or at least be interrupted in order to give the respondent sufficient time to analyse the exact operation of this embodiment.

The remaining arguments of the respondent are essentially those on which the following reasons of the decision are based.

Reasons for the Decision

1. The appeal is admissible.
2. Admissibility of the respondent's counter-statement

The respondent's response to the statement setting out the grounds of appeal was filed shortly (less than two weeks) after the expiry of the deadline imposed by the Board's invitation to reply. No objection was presented by the appellant to consideration of this late-filed statement. In view of this situation, the Board finds

it appropriate to exercise its discretion under Articles 12(1)(b) and 13(1) RPBA to admit this submission.

3. Main request (maintenance of the patent as granted)

3.1 Admissibility of objections under Article 100(c) EPC

The opposition was based, *inter alia*, on the ground for opposition under Article 100(c) EPC. According to point 3 of the minutes of the oral proceedings before the Opposition Division, the opponent had withdrawn "the opposition against the main request under Article 100(c) EPC". In point 6.1 of the minutes it is further stated that withdrawal of the "request based on Article 100(c) EPC" was confirmed. A similar statement can be found in point 15 of the reasons for the impugned decision. No request for correction of the minutes was filed.

The fact that the objections relating to the ground for opposition under Article 100(c) EPC were withdrawn during the first-instance proceedings does not however imply that objections relating to this ground may not be considered in subsequent appeal proceedings, even if the wording of the claim to be assessed is the same. The respondent's reference to decision T 528/93 as cited in section IV.E.3.2.1(f) of "Case Law of the Boards of Appeal of the EPO", 7th edition 2013, is not applicable to the present situation since that decision relates to a previously withdrawn claim request. The reference to section IV.E.3.6 is even less pertinent since it relates to the review of first-instance discretionary decisions.

It follows that there is no reason for the Board not to admit the consideration of objections relating to the ground of opposition under Article 100(c) EPC.

3.2 Amendments

The patent was granted on a divisional application of the PCT application published as WO-A-00/27297. Reference will be made in the following to this published version of the parent application.

Compared to claim 1 of the parent application, claim 1 of the patent as granted comprises the amendment that the plurality of wall sections **are separated by a transverse channel**. In the description these "wall sections" are also termed "legs" (e.g., page 2, lines 12 and 20). With reference to Figures 1 to 5 it is stated in lines 17 to 22 of page 7 that the transverse channel 16 "is bounded on both sides by legs 20 of receiver member 11". The Board does not share the appellant's view that a transverse channel is only disclosed as separating two wall sections as shown in Figures 1 to 5, yet not as separating a plurality of wall sections as claimed. The amendment is supported by the "Summary of the invention" at page 4 where it is stated in lines 3 to 7 that "a plurality of legs or wall sections define ... a transverse channel", which implies that these wall sections are separated by the transverse channel as claimed. A similar statement is made in line 14 of page 4.

Claim 1 was further amended in that the closure member has a through-hole (42) extending to the forward end (64) of the substantially cylindrical engagement portion (34). In the paragraph bridging pages 7 and 8, reference is made to a hole (42) which is depicted in

Figures 1 and 3 as being a through-hole, extending to the forward end (64) of the substantially cylindrical engagement portion (34) of the closure member (12), as shown in Figure 3. The Board does not accept the appellant's argument that the extraction of this feature in isolation from the drawings represents an intermediate generalisation in that the through-hole is always depicted as flaring outwardly towards the forward end, this flare being matched with an external taper to form a ring of substantially triangular radial cross-section. From the prior art, e.g. from D2, D6 or D9, it was argued to be clear that the purpose of the hole extending as far as the forward end was to create such a ring that could bite into the surface of the rod in order to secure it in place. However, as correctly observed by the respondent, the description of the parent application is entirely silent about this flare or taper and any ring having a biting function, let alone this being presented as an essential feature. In the absence of any such statements in the description, the extraction of the feature of a through-hole as claimed from the drawings does not constitute an intermediate generalisation extending beyond the content of the parent application as published.

On the other hand, it is explicitly stated in the only passage of the description dealing with the hole(s) at page 7, line 29, to page 8, line 9, that the holes 40 and 42 are "for engaging tools" and have specific shapes for this purpose. Accordingly, what is disclosed is a hole (42) designed to engage a tool. The hole is provided to allow a tool to screw the closure member down against a rod in the transverse channel. The phrase "for engaging tools" implies certain limitations with regard to the shape of the holes which must be

adapted to co-operate with a tool. Claiming simply a "through-hole" without specifying this purpose would cover holes, for instance of cylindrical shape, which are not suitable for this purpose and which do not form part of the original disclosure. The Board does not share the respondent's view that "for engaging tools" is merely an "intended use" kind of feature which is anyhow evident to the skilled person and thus not required to be included in a claim which is directed to a product such as a medical device.

Accordingly, the omission of this feature from claim 1 of the main request results in an impermissible generalisation contrary to Article 100(c) in combination with Article 76(1) EPC.

4. Auxiliary request No. 1

4.1 Amendments

Claim 1, which specifies the through-hole as being "for engaging a tool" as disclosed in the description of the parent application, is no longer objectionable under Article 100(c) EPC.

4.2 Priority

The priority document corresponds to the parent application as originally filed. In such a situation it is clear from G 2/98 that the question of entitlement to priority and the question of added subject-matter are one and the same. It follows that claim 1 is entitled to the claimed priority (Article 87 EPC).

4.3 Novelty

Since the priority date of the patent in suit is valid, as indicated above, document D10 is relevant only for novelty under Article 54(3) EPC.

4.3.1 Embodiment of Figure 1

Figure 1 of D10 depicts a closure member (21) including a substantially cylindrical engagement portion having a longitudinal axis (4), a forward end, and a screw thread (20) formed on said engagement portion. The closure member (21) has a through-hole extending to said forward end (viz. the bore through which the tension screw (23) is inserted). Since the through-hole thus comprises a screw thread (for the tension screw (23)), it is considered to be suitable "for engaging a tool" as claimed (e.g. for engaging a tool having a complementary thread). However, it is not directly and unambiguously derivable from D10 that the screw thread (20) formed on the cylindrical engagement portion is a reverse angle thread.

The part of the description at pages 8 to 10 specifically dealing with Figure 1 does not disclose any further details about the characteristics of the thread (20). The Board shares the appellant's view that feature B) of claim 40 of D10 discloses that the screw thread formed on the engagement portion, denoted as "komplementäre[s] Gewinde" in claim 40, may be a buttress thread, which, in combination with the lower limit value of the range of angles between 87° and 93° as defined in feature C), constitutes a "reverse angle screw thread" as claimed. However, in the Board's view, it is not directly and unambiguously derivable from D10 that the features of its claim 40 are indeed disclosed as being applicable to the embodiment shown in Figure 1. The Board does not accept that this may be derived

from the fact that claim 40 depends inter alia on claim 27 (relating to the tension screw (23) integrated into the closure member (21)), which latter is directed to Figure 1 where these components are depicted. The reason is that the embodiment shown in Figure 1 comprises a swivel ring or sleeve (22) for avoiding splaying of the wall sections of the receiver member (10), as stated in the first paragraph of page 10. Accordingly, the problem of avoiding splaying as addressed in claim 40 for the specific kind of thread defined therein is already solved in Figure 1 in an alternative way, viz. by means of the sleeve (22). There is no direct and unambiguous disclosure in D10 that both possibilities for avoiding splaying may in fact be combined. On the contrary, the last sentence at page 13 gives a clear indication that the two possibilities represent mutually exclusive alternatives ("entweder ... oder").

Accordingly, the embodiment of Figure 1 fails to disclose a reverse angle screw thread.

4.3.2 Embodiment of Figure 9

A novelty objection based on the embodiment of Figure 9 was brought forward by the appellant only at the oral proceedings. This new argument represents an amendment to the appellant's case. However, in view of the fact that D10 is a relatively simple and short document comprising only 13 pages of description (much of it having already been discussed with respect to the embodiment of Figure 1), the Board exercised its discretion under Article 13(1) RPBA to admit this new objection and interrupted the oral proceedings for a break of more than one hour, as required by the

respondent in order to give it sufficient time to prepare its response.

The embodiment of Figure 9 is described in the second paragraph of page 13. In its last sentence it is explicitly indicated that the internal thread (19) may be a buttress thread (in case splaying is not avoided by means of a sleeve (22)). In that case the complementary external thread of the tension screw (23) must also be a buttress thread. In contrast to the above finding with respect to the embodiment of Figure 1, there is no reason under these circumstances why the teaching of claim 40 should not be applicable to this embodiment, which thus discloses a reverse angle screw thread.

The crucial point to be clarified is whether the tool-engaging hole depicted in the tension screw (23) as shown in Figure 9 is a through-hole extending to the forward end of the tension screw (which corresponds to the claimed closure member). The appellant argued that this must be the case since it could be derived from claims 32 and 33 in conjunction with claims 30 and 31 and the embodiment of Figure 8 that it had to be possible to tighten the tension screw (23) to block the pedicle screw (2) before the stud bolt (45) was tightened to block the rod (1), implying that the latter had to be accessible through the hole in the tension screw (23) which thus had to possess a through-hole. The Board does not share this view for the following reasons. In claim 33, which refers to the embodiment of Figure 9, it is stated that the stud bolt (45) presses against the rod (1) and that during the tightening operation the movement of the rod (1) is not to be impeded by the opening (11). In claim 30, which refers to the embodiment of Figure 8, it is stated that

the nut (42) presses against the rod (1) and that during the tightening operation the movement of the rod (1) is not to be impeded by the channel (12). The tightening operation ("Spannvorgang") mentioned in claims 30 and 33 is to be understood as referring to the tightening of the spring chuck ("Spannzange 7") by means of the insert (9) for blocking the head (5) of the pedicle screw (2) as explained in lines 4 to 20 of page 9 (albeit in relation to the embodiment of Figure 1). In the embodiments of Figures 8 and 9, this tightening is achieved by tightening the tension screw (23) and results in a vertical downward movement of the insert (9) into sleeve (10). With the rod (1) being inserted in the channel (12) of the insert (9) and blocked by means of the stud bolt (45), its downward vertical movement could in principle be blocked by the opening (11) when the tension screw (23) is tightened to block the head of the pedicle screw (if the opening (11) is not located sufficiently far downward to the bottom of the sleeve (10)). It is this movement which is not to be impeded according to claim 33. As mentioned in the second sentence of the second paragraph of page 13, the opening (11) and channel (12) are designed such that the rod (1) always bears against channel (12). This corresponds to what is shown in Figure 9, where the opening (11) is seen to be located sufficiently far downward such that the channel (12) remains above it even when the insert (9) is moved downwardly by tightening the tension screw (23). It is therefore consistent to understand claim 33 as requiring that the **vertical** movement of the rod (1) is not to be impeded by the opening (11) during the tightening operation achieved by the tension screw (23). Accordingly, it is not the horizontal or longitudinal movement of the rod which is not to be impeded, as argued by the appellant. There is no

disclosure in D10 indicating that it has to be possible to tighten the stud bolt (45) when the tension screw (23) is already in place. The resulting presence of a through-hole in the tension screw (23) was only deduced by the appellant on the basis of an inappropriate reading of claim 33. In connection with the embodiment of Figure 8 (last paragraph of page 12 to the first paragraph of page 13), it is further noted that the order in which the screws are tightened is explicitly mentioned, viz. at first the tension screw (23) blocking the rod (1) and afterwards the spring chuck (7) blocking the pedicle screw (2). The Board sees no reason why this order should be reversed in the embodiment of Figure 9.

It follows that the embodiment of Figure 9 fails to disclose a through-hole extending to the forward end of the tension screw (23), the latter corresponding to the claimed closure member.

4.3.3 Accordingly, neither embodiment of D10 discloses in combination all the features of claim 1 of auxiliary request No. 1 and its subject-matter is therefore novel within the meaning of Article 54 EPC.

4.4 Availability to the public of document D15

D15 is a brochure of a product apparently manufactured by the appellant. It possesses an imprint "Art.-Nr. ... 1/98 ...". In the Board's view, this marking does not necessarily represent the month of January 1998, as argued by the opponent. "1/98" could equally well represent the first version of this brochure produced in 1998. Moreover, no evidence was presented by the opponent/appellant that this document was actually made available to the public, nor that the corresponding

device was sold or publicly distributed before the priority date.

Accordingly, D15 does not form part of the state of the art within the meaning of Article 54(2) EPC.

4.5 Inventive step

4.5.1 Document D2 as starting point

D2 relates to the same technical field as the patent in suit and also addresses (column 2, lines 54 to 58) the problem of avoiding splaying of the wall sections (flanks 4) of the receiver member (2), as mentioned in paragraph [0001] of the patent in suit. Undisputedly, it discloses the features of the preamble of claim 1. In the Board's view, it thus presents the closest prior art.

D2 fails to disclose that the hole (14) for engaging a tool is a through-hole extending to the forward end of the plug (8), which latter corresponds to the closure member as claimed, and that the screw thread (9) is a reverse angle thread. From Figure 3 it can be seen that the hole (14) is a blind hole, and in lines 54 to 58 of column 2 it is stated that the thread (9) can be made with a saw-tooth pitch in order to avoid the spreading of the flanks (4).

The technical effects of the tool-engaging hole being a through-hole instead of a blind hole are that the contact area for engaging the tool is increased and that the weight of the closure member is reduced. The technical effect of the thread being a reverse angle thread is that the risk of splaying of the legs or wall members due to outwardly directed radial forces that

may occur during tightening is reduced. The legs may thus be realised with a lower thickness. Accordingly, both effects make it possible to reduce the weight and size of the medical device comprising these components.

The objective technical problem to be solved by the distinguishing features is to minimise the profile and bulk of the components of the medical device while still preventing splaying, as mentioned in paragraphs [0006] and [0019] of the patent in suit.

Accordingly, there is a synergistic effect among the distinguishing features which therefore do not simply represent an aggregation, contrary to the appellant's view.

The Board does not share the respondent's view that D2 teaches away from extending the blind hole (14) to the forward end of the plug (8) since this would eliminate the means of gripping and attaching the plug to the rod disclosed in column 2, lines 39 to 43. As is evident from the following paragraph, these means are constituted by a central point (12) and a peripheral ring (13). Extending the blind hole would only eliminate the central point (12). Moreover, this latter feature is merely optional, as becomes clear from column 1, lines 51 to 57, column 4, lines 11 to 12, and claim 2. On the other hand, D2 itself gives no incentive to the skilled person to further extend the blind hole.

The Board also does not share the appellant's view that it would be obvious from D2 itself to reduce the angle of the saw-tooth thread (which was anyhow not necessarily equal to 90°) in order to even better eliminate outwardly directed forces and thus create a

reverse angle thread. D2 clearly states in lines 54 to 58 of column 2 that the saw-tooth pitch avoids spreading "by **completely** eliminating the radial component of the load on screwing up" [emphasis added]. Accordingly, D2 regards the problem of splaying as entirely solved, with no further need for improvement. The Board does not accept the appellant's argument presented in the statement of the grounds of appeal that a flank angle of 90° does not in fact completely eliminate the radial component of the load when the plug is tightened by means of a tool, resulting in a flank angle of greater than 90° due to elastic deformation of the contacting surfaces of the thread, and that the only thread form that can achieve the effect of completely eliminating the radial component of load on screwing up is in fact a reverse-angle thread. These issues are not at all addressed in D2 and also not immediately evident to the skilled person reading the disclosure of D2. The Board also does not share the appellant's argument that in view of necessarily occurring manufacturing tolerances the flank angle disclosed in D2 is not exactly 90° but slightly above or below this value, thus anticipating a reverse angle thread. The relevant teaching of D2 is to eliminate the radial component of the load, nothing more. In particular, the advantage of a reverse angle thread has not been recognised in D2.

With respect to the feature of the through-hole, the appellant referred to Figure 2 of document D5 where this feature is disclosed in terms of a hexagonal recess (47) depicted as a through-hole extending to the forward end of the locking member (45), the latter corresponding to the claimed closure member, yet without mentioning any specific technical advantages achieved therewith. In any case, D5 fails to disclose a

reverse angle thread. Splaying is avoided by a swivel nut embracing the outside of the two lateral legs (11, 12). Accordingly, the subject-matter of claim 1 is not rendered obvious in view of D5.

With regard to the reverse angle thread, the appellant referred to documents D1 and D11 which are closely related and both disclose this feature in Figures 3 and 4. In spite of the fact that the implants (14) corresponding to the claimed receiver member do not comprise legs or wall sections separated by a transverse channel, the purpose of avoiding splaying is explicitly stated, for instance in column 2, lines 33 to 40 of D11. Even though D11 does not only relate to a dental implant, but also to an orthopaedic implant as depicted in Figure 2, the Board is of the opinion that the skilled person starting from D2 would not be incited to consider this document. D2 deals with implants for spinal osteosynthesis with a rod fixed to the vertebrae by means of a plurality of these implants, requiring various re-adjustment and tensioning possibilities, e.g. for effecting compression or detraction of the vertebrae. D1 and D11, on the other hand, mainly relate to dental implants or, as shown in Figure 2 of D11, to a single implant for instant attachment of a singular component to the bone where such re-adjustment is not at all an issue. In any case, D1 and D11 fail to disclose a through-hole extending to the forward end of the abutment (16) which corresponds to the claimed closure member. Accordingly, the subject-matter of claim 1 is not rendered obvious in view of D1 or D11.

In view of the synergistic effect achieved by the through-hole and the reverse angle thread as explained above, the skilled person gets no hint to combine the

teaching of D2 with two different documents such as D5 and D1 or D11 in order to demonstrate a lack of inventive step.

4.5.2 Documents D9 or D16 as starting points

D9 and D16 (which are very similar, with Figures 1 to 6 being identical) both disclose a device according to the preamble of claim 1. However, they are more remote than D2 as starting points in that they do not at all deal with the nature of the thread of the plug (55), which corresponds to the claimed closure member, and do not address the problem of splaying. Moreover, the plug (55) itself does not comprise any tool-engaging hole. A tool recess (57) is provided within a driving head (56) which is severed from the plug (55) at a shear zone (58) when a predetermined torque is applied, as described in lines 7 to 20 of page 12 and lines 9 to 14 of page 15 of D9. Further extending this tool recess (57) into the plug (55) would compromise the explicitly desired feature of the set screw being of a break-off type. There is also no hint whatsoever in D9 or D16 to provide a tool-engaging hole in the plug (55) itself after the head (56) is broken off, in order to readjust the rod if necessary, contrary to the argument put forward by the appellant. Accordingly, the subject-matter of claim 1 is not rendered obvious for the skilled person, even when additionally taking into account the teachings of D1 or D11.

4.5.3 The subject-matter of claim 1 of auxiliary request No. 1 is therefore based on an inventive step within the meaning of Article 56 EPC.

5. It follows that there is no need for the Board to deal with the lower-ranking auxiliary requests.

6. The description has been brought into conformity with the set of claims of auxiliary request No. 1.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of:
 - claims 1 to 16 of auxiliary request No. 1 filed on 19 July 2012;
 - adapted description:
columns 1 and 2 filed during the oral proceedings and columns 3 to 8 of the patent as granted; and
 - figures 1 to 6C of the patent as granted.

The Registrar:

The Chairman:



D. Hampe

E. Dufrasne

Decision electronically authenticated