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**Datasheet for the decision
of 12 June 2019**

Case Number: T 1213/16 - 3.2.08

Application Number: 04775473.4

Publication Number: 1670379

IPC: A61C8/00, A61B17/86, A61F2/46

Language of the proceedings: EN

Title of invention:
IMPLANT ARRANGEMENT WITH AN INTERNAL SOCKET FOR A TURNING TOOL

Patent Proprietor:
Nobel Biocare Services AG

Opponent:
Dentsply IH AB

Headword:

Relevant legal provisions:
EPC Art. 100(c), 123(2), 123(3), 84, 54

Keyword:

Amendments - added subject-matter (yes) - added subject-matter
(no) - broadening of claim (no)

Claims - clarity - auxiliary request (yes)

Novelty - auxiliary request (yes)

Decisions cited:

Catchword:



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Case Number: T 1213/16 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 12 June 2019

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
14 March 2016 concerning maintenance of the
European Patent No. 1670379 in amended form.**

Composition of the Board:

Chairwoman Y. Podbielski
Members: A. Björklund
M. Foulger

Summary of Facts and Submissions

- I. The appeal was filed by the opponent (appellant) against the interlocutory decision of the opposition division finding that, on the basis of auxiliary request 2, the patent in suit, and the invention to which it related, met the requirements of the EPC.
- II. Oral proceedings before the Board took place on 12 June 2019.
- III. At the end of the oral proceedings the requests were as follows:

The appellant 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 and the patent thus be maintained in the version held allowable by the opposition division (main request), or, as an auxiliary measure, that the patent be maintained on the basis of auxiliary request 1 filed with the reply to the grounds of appeal on 30 November 2016.

The other auxiliary requests filed in writing are not relevant for the present decision.

- IV. The following documents are referred to in the decision:

O1: US 2002/0177105 A1
O8: Print-out from Wikipedia about torque
O9: Print-out from [http://www.translatorscafe.com/cafe/ EN/units-converter/moment-of-force/v/](http://www.translatorscafe.com/cafe/EN/units-converter/moment-of-force/v/)

O10: "Vibration of Multi-span Thin Walled Beam Due to Torque and Bending Moment", Advances in Structural Engineering, Mechanics, Volume 1, pages 215 to 217

V. Claim 1 of the **main request**, with feature references and amendments compared to claim 1 as granted highlighted, reads:

- A) "A combination of an implant and a turning tool for screwing the implant into a hole for counteracting stresses in a portion (17) of the implant (12),
- B) said portion (17) being provided with an internal socket (2) for cooperation with the turning tool (11),
- C) said turning tool having first lateral surfaces (14)
- D) for cooperation with corresponding second lateral surfaces (15) in the internal socket (2) for generating a turning torque during screwing of the implant into the hole,
- E) wherein the tool is provided with a guide pin (18) which extends inside the implant and beyond the first and second lateral surfaces (14, 15) and are is arranged for completely or substantially taking up torques bending moments occurring at skewing between the implant and the tool (11) by cooperation with internal recesses (20, 21) of the implant;

- F) wherein said first lateral surfaces (14) and/or said second lateral surfaces (15) is/are completely or partially arranged with friction enhancing means (28, 29); and
- G) wherein the lateral surfaces, in a cross section, have non-round geometries (3 - 8), such as polygonal."

Claim 1 of **auxiliary request 1** differs from claim 1 of the main request in that feature E1) has been introduced after feature E) and before feature F). It reads:

- E1) "wherein the guide pin (18) is made up of two guide pin parts (18a, 18b) of different diameters and the internal recesses (20, 21) constitute guide surfaces for the guide pin parts (18a, 18b);"

VI. The appellant argued essentially as follows:

Admissibility of 08 to 010

Documents 08 to 010 were filed in reaction to the impugned decision, in particular how the skilled person would have understood the terms "torque" and "bending moments".

Although they were published after the priority date of the patent in suit, they corroborated the skilled person's understanding of the basic and long established terminology "torque" and "bending moments" in the field of mechanics.

They should therefore be admitted into the proceedings.

(a) Main request

Added subject-matter

Features C) and D) of claim 1 specified that the lateral surfaces of the tool and the implant cooperated to generate a torque. This meant that a torque was created and not just transferred by the cooperation of the lateral surfaces. Such a creation of torque was possible by e.g. providing inclined lateral surfaces which would induce a rotation of the implant during relative axial movement of the tool to the implant. The skilled person would therefore understand the term "generate" in the normal sense "to create". However, the application as originally filed only disclosed that the lateral surfaces transferred a torque, and not that they created a torque. The features C) and D) therefore extended beyond the scope of the application as originally filed.

Furthermore, claim 1 as originally filed specified that the interacting parts were "arranged to completely or substantially take up bending moments which act in or on said portion or are directed toward said portion", where the "portion" was the part of the implant provided with the socket having lateral surfaces for cooperating with the lateral surfaces of the turning tool. This definition was omitted in feature E) of claim 1 of the main request, and the guiding pin and recesses - as specific interacting parts - were thus arranged to take up bending moments no matter of where they acted on the implant. This extended beyond the content of the application as originally filed.

Finally, feature E) specified that the guide pin of the tool cooperated with internal recesseses of the implant to take up bending moments. This was an unallowable intermediate generalisation since the application as filed only disclosed a plural of recesses in cooperation with a guide pin having two parts of different diameters.

Extension of protection

Claim 1 as granted specified that the guide pin was arranged for taking up torques occurring at skewing between the implant and the tool. In feature E) of claim 1 of the main request this had been changed to specify that the guide pin was arranged to take up bending moments.

As evidenced by O8 to O10, the terms "torque" and "bending moments" had different meanings. O8, page 2 under the headline "Terminology" explained that "torque" was defined mathematically as the rate of change of angular momentum of an object, whereas the term "moment" was used for fixed objects where the angular momentum did not change (e.g. a lateral force on a beam). O9, page 2, 6th full paragraph, explained by way of example that bending moments were internal moments in restrained beams and thus different from external torques or moments of force. Also the application as filed, pages 1 and 2, indicated that the terms had different meanings.

Due to this amendment, claim 1 of the main request covered embodiments which were not covered by claim 1 of the granted patent. The scope of protection had thus been extended contrary to Article 123(3) EPC.

(b) Auxiliary request 1

Added subject-matter

Claim 1 did not indicate the relative positions of the tools guide pin parts with different diameters. Leaving out the relative positions of the guide pin parts led to an unallowable intermediate generalisation since the claim covered embodiments where the guide pin part farthest from the lateral surfaces of the tool had the largest diameter, whereas the application as originally filed only disclosed a tool where the guide pin having the larger diameter part was closest to the lateral surface (page 6, lines 24 to 26).

Article 84 EPC

Claim 1 lacked essential features. There needed to be a clearance between the guide pin and the recesses in order to introduce the tool into the implant. It followed from this that the clearance between the respective lateral surfaces of the tool and the implant mentioned in column 3, lines 36 to 40 and column 5, lines 25 to 43 of the patent was essential for the guide pin to completely or substantially take up the bending moments. Without this clearance, the bending moments would be taken up by the lateral surfaces of the tool, and not by the guide pin in cooperation with the recesses. However, this clearance was not defined in claim 1.

Moreover, the claim defined that the guide pin was arranged for "substantially" taking up bending moments. However, neither the claim nor the description defined how large portion of the bending moments the pin should take up in order for this to qualify as

"substantially". Finally, the meaning of the wording "that the recesses constitute guide surfaces for the guide pin parts" was not clear as there was no definition or clear understanding of the term "guide surface". The scope of claim 1 was therefore not clear.

Novelty

O1, Figures 6 to 7 disclosed a combination of an implant and a turning tool according to claim 1.

It was undisputed that this combination showed the features A to D and G.

The guide pin of the tool in front of the wings 50 had two parts of different diameters. As described in paragraph [0083], the tool may have less wings than the corresponding grooves of the implant. The tool may thus have only two opposite wings, and be able to pivot slightly around these wings. If a skewing between the tool and the implant occurred, the tool would pivot around the point of contact with the rim of the implant, and the guide pin would then contact the recess to substantially take up the torque, as required by feature E. The implant had a frustoconical surface followed by a cylindrical surface, which were guide surfaces as required by feature E1. The taper of the wing shaped elements 50 increased the friction between the tool and the implant. They were thus friction enhancing means as required by feature F.

Consequently, the subject-matter of claim 1 was not new.

VII. The respondent argued essentially as follows:

Admissibility of 08 to 010

The documents 08 to 010 were late filed. The meaning of the terms "torque" and "bending moments" had been subject to lengthy discussions already during the opposition proceedings. These documents could have been filed then.

Furthermore 010 concerned the remote technical field of bridge constructions and was irrelevant for establishing the skilled person's understanding of terms in the field of dentistry. It was also published in 2015, well after the priority date of the patent in suit.

Documents 08 to 010 should therefore not be admitted into the proceedings.

(a) Main request

Added subject-matter

Feature A) of claim 1 defined a combination of an implant and a turning tool for screwing the implant into a hole. The skilled person knew that such tools and implants basically functioned as screwdrivers and screws. Features C) and D) explained that the turning torque was generated during screwing of the implant into the hole. The skilled person reading the claim in its entirety would therefore understand the term "generating" in feature D) as a transfer of torque from the tool to the implant; this was disclosed on page 7, line 35 to page 8, line 1 of the application as originally filed.

The application as originally filed described on page 2, lines 12 to 23 that the invention aimed to solve the problem of forces acting on the socket portion during skewing of the tool relative to the implant. Page 7, lines 4 to 16 disclosed that the interacting parts - the guide pin and recesses of feature E - should take up bending forces or moments from skewing. This meant that the transfer of forces took place between the guide pin and the recesses. This passage was not limited to bending moments acting or directed toward the socket portion. In the application as originally filed the guide pin was therefore disclosed as being arranged to take up bending moments irrespective of their origin. Consequently, the specification of feature E) of claim 1 of the main request whereby the guide pin took up bending moments occurring at skewing between the implant and the tool by cooperation with internal recesses of the implant did not go beyond the content of the application as originally filed.

The different diameter parts of the guide pin were not relevant for the guide pin and the recesses to take up the bending moments. Page 3, lines 26 to 32 described that the part extending beyond the first [lateral] surface "can" have first and second parts with different diameters. A guide pin with one diameter would function for example with recesses where one of them was threaded and the other not. Consequently, feature E) which specified two recesses cooperating with the guide pin did not extend beyond the content of the application as filed.

Extension of protection

Whether the mathematical definitions of the terms "torque" and "bending moments" were different in some

other technical fields was irrelevant. What mattered was how the skilled person in the field of dentistry understood the patent. It was however to be noted that 08, page 2, last phrase under the headline "Terminology", explained that all moments could be called torques, whether or not they caused the angular momentum of an object to change, and 09, bottom of page 1, explained that torque and moment of force in most cases were used interchangeably. 010, which related to an entirely different technical area, did not explain the terms at all.

Granted claim 1 defined that the guide pin was arranged to take up torques occurring at skewing between the implant and the tool. The implant could not rotate freely if skewing occurred during screwing of the implant. The skilled person would therefore understand that the term "torque" of granted claim 1 did not define the rate of change of angular momentum, but rather a force around a center of rotation which was a widely recognised definition of torque. The term "bending moment" of claim 1 of the main request was described on page 7, lines 4 to 10 of the application as filed (which corresponds to column 5, lines 30 to 38 in the granted patent) in conjunction with figure 3. It also described the forces occurring at skewing between the implant and the tool. Finally, the use of the terms "torque" and "bending moments" did not affect the definition of the structure of the claimed implant and tool combination. Independent of which term was used, the skilled person would understand that the guide pin of the tool and the recesses of the implant in cooperation were configured to absorb forces originating from skewing between the tool and the implant. No additional embodiments would therefore fall within the scope of claim 1 of the main request.

(b) Auxiliary request 1

Added subject-matter

The positions of the guide pin parts with different diameters were implicitly defined in the claim. The only possibility was that the larger diameter part was closer to the lateral surfaces of the tool, otherwise the tool could not be removed after implantation. This was therefore inherently defined in claim 1. Consequently, there was no unallowable intermediate generalisation.

Article 84 EPC

The claim did not lack any essential features. The feature necessary for solving the problem of reducing or eliminating stresses on the internal socket of the implant in the case of skewing between the tool and the implant was that the guide pin was arranged to take up the bending moments by cooperation with the recesses of the implant. Any clearances necessary for this function were already included in this functional definition. For example with a long guide pin in tight contact with the internal wall of the recesses, no clearance was needed between the lateral surfaces of the tool and the implant in order for the guide pin to completely take up the bending moments.

The term substantially was used to account for minor deviations from the perfect theoretical case that the guide pin completely took up the bending moments. It meant that only insignificant moments were taken up by other parts than the guide pin, due to e.g. manufacturing tolerances. The skilled person would have

no difficulty to determine the scope of the claim and it was therefore clear.

The wording "the internal recesses constitute guide surfaces for the guide pin" was clear to the skilled person. It meant that the walls of the recesses defined surfaces which interacted with the guide pin parts. Each guide surface correlated to the respective guide pin part.

Novelty

The subject-matter of claim 1 of auxiliary request 1 differed from the combination of implant and turning tool shown in figures 6 to 7 of O1 in the features E, E1 and F. It was therefore new.

The function of the pin of the tool shown in figures 6 and 7 of O1 was not mentioned. While it was disclosed that the number of wings on the tool could be less than the number of corresponding grooves in the implant, it was not disclosed that the tool could have two opposite wings. Furthermore, as described in paragraph [0021], there was a press-fit between the lateral surfaces of the socket portion of the implant and the wings of the tool. Consequently, the socket portion and the wings would take up the forces occurring during skewing between the tool and the implant. That the guide pin would substantially or completely take up these forces was however not disclosed. The pin shown in the figures was therefore not a guide-pin according to feature E.

Furthermore, if the truncated cone of the guide pin was one of the guide pin parts, there was no guide surface surface for this part as required by feature E1.

Friction was a surface characteristic, and the wedge shape of the wings 50 was not a surface characteristic. Consequently, this was not a friction enhancing means according to feature F.

Reasons for the Decision

1. Admissibility of O8 to O10

It is true that the documents O8 to O10 have been published after the priority date of the patent in suit. However, they have been filed as evidence of how the skilled person would understand basic and long standing terminology in mechanics. The fact that O10 concerns a different technical field than dentistry does not mean that it is *prima facie* irrelevant for the skilled person's understanding of the terms in question.

The filing of these documents with the statement setting out the grounds of appeal is a legitimate reaction of the appellant to the impugned decision, in which the skilled person's understanding of the terms "torque" and "bending moments" was of large relevance.

The Board therefore decided to admit documents O8 to O10 into the proceedings.

2. Main request - Added subject-matter (Article 100(c) EPC)

2.1 Features C) and D) "generating torque"

The appellant is correct in that the application as originally filed does not explicitly disclose that the

cooperation of the lateral surfaces of the turning tool and the implant "generates" a turning torque in the literal sense of "produces, creates, causes to be". It is also true that an actual creation of torque by cooperation of inclined lateral surfaces on the tool and the implant may be feasible in theory.

However, when reading a claim, the skilled person tries to arrive at a technically sensible interpretation of the claim, taking into account the whole disclosure of the patent. The skilled person knows that the type of turning tools with which the patent is concerned transfers a torque to the implant to screw it into holes in the bone, similar to how a screwdriver acts on a screw. Features A) and D) define that the implant is screwed into a hole and thus underline that the turning tool acts on the implant in the same manner as a screwdriver acts on a screw.

The skilled person would therefore understand the wording "generating a turning torque during screwing of the implant" as a transfer of turning torque from the tool to the implant. This is disclosed on page 7, line 35 to page 8, line 1 of the application as originally filed. Consequently, features C) and D) do not extend beyond the content of the application as filed.

2.2 Feature E) "guide pin taking up bending moments"

The application as originally filed discloses on page 2, lines 12 to 23 that the invention aims to solve the problem of bending loads acting upon the socket portion of the implant. Figure 3 and page 7, lines 4 to 16, describe that the guide pin takes up most of the bending moments, such that the drive part [of the tool]

is largely prevented from pressing on the [socket] portion [of the implant].

The skilled person understands from these passages that a transfer of forces or bending moments between the tool and the socket portion of the implant is to be significantly reduced, preferably avoided. Instead the forces and moments should, as far as possible, only be transferred between the guide pin and the recesses of the implant.

Contrary to the appellant's submission, the skilled person would not understand this as limited to forces and moments acting "in or on said [socket] portion or directed towards said portion". Since the guide pin and recesses should be the principal means of transfer of bending moments, this would apply for the transfer of any bending moment between the tool and the implant, regardless of where it acts on the implant.

That the wording "act in or on said portion or are directed toward said portion" of claim 1 as originally filed is not present in claim 1 of the main request does therefore not extend beyond the content of the application as filed.

2.3 Feature E) "recesses"

The original application, page 2, lines 29-39 and claim 1 disclose that interacting parts on the tool and the implant extending inside the implant take up bending moments occurring at skewing. These passages do not mention a plurality of recesses and neither does page 3, lines 26 to 32.

The recesses are only disclosed in Figures 3 and 4, and on page 6, lines 21 to 35. This passage discloses that the guide pin is made up of two guide pin parts of different diameters and that the implant has recesses for these guide pin parts. Consequently, the recesses were only disclosed in combination with a guide pin made up of two guide pin parts of different diameters.

Claim 1 of the main request which omits the guide pin parts of different diameters and only defines the recesses therefore covers embodiments which were not disclosed in the application as originally filed. Consequently, its subject-matter extends beyond the content of the application as filed, contrary to Article 123(2) EPC.

3. Main request - Extension of protection (Article 123(3) EPC)

The appellant argued that the terms "torque" and "bending moments" have different meanings and referred to documents O8 to O10 in this respect. O8 highlights that there are differences between the mathematical definition of torque, which does not include bending moments, and the terminology in physics, where all moments are called torques. O9 discusses differences between moments of force and torque and notes that in most cases both refer to the same concept and are used interchangeably. O10 refers to bending moments and torque as different concepts, but does so in the context of structural engineering. The Board notes that there is no clear and consistent definition or use of the terms "torque" and "bending moments" that can be derived from these documents. They thus neither show the skilled person's understanding of the terms "torque" and "bending moments" nor do they support the

argument that these terms were always used differently. The documents have thus no bearing on the decisive question of how the skilled person in the field of dentistry would understand these terms in the context of the disputed patent.

Granted claim 1 defines that the guide pin is arranged to take up torques occurring at skewing between the tool and the implant. Since the implant is screwed into a hole it is not able to rotate freely in a direction perpendicular to the axis around which it is screwed, but is restricted therefrom due to interaction with the walls of the hole. It is therefore clear to the skilled person that the term "torque" can not be understood according to the mathematical definition "the rate of change of angular momentum" given by O8. Rather, torque must be understood in the sense of the forces which act between the guide pin and the recesses and which originate from skewing between the tool and the implant.

The meaning of the term "bending moment" in the context of the disputed patent is disclosed e.g. in figure 3 and column 5, lines 30 to 38 in the granted patent. From this disclosure, it is clear that the term "bending moments" does not describe an internal reaction in the guide pin as it is described in paragraph 6 on page 2 of O9. It rather describes the forces which originate from the skewing between the tool and the implant and which act between the guide pin and the recesses.

The terms "torque" and "bending moments" in the sense of the disputed patent therefore both describe the forces which act between the guide pin and the recesses and which occur at skewing between the tool and the

implant. Both claim 1 as granted and claim 1 of the main request require that the guide pin of the tool in cooperation with the recesses of the implant is arranged to take up these forces.

Consequently, the protection conferred by claim 1 of the main request does not extend beyond the protection of the patent as granted.

4. Auxiliary request 1 - Added subject-matter (Article 123(2) EPC)

While the relative positions of the guide pin parts with the larger and the smaller diameter is not explicitly defined in claim 1 of auxiliary request 1, the only working possibility is that the part with the larger diameter is located closest to the drive part. Otherwise, the tool could not be removed from the implant after insertion. The respective positions of the guide pin parts with different diameters is therefore inherent from the wording of claim 1 and need not be defined explicitly.

The subject-matter of claim 1 of auxiliary request 1 therefore fulfils the requirements of Article 123(2) EPC.

5. Auxiliary request 1 - Article 84 EPC

For solving the problem of preventing fracturing of the socket portion of the implant at skewing between the tool and the implant, it is essential that excessive forces are not transferred from the tool to the socket portion - in other words, that the bending moments are taken up substantially or completely by the guide pin by cooperation with the internal recesses.

It is true that a slight clearance will always be present between the guide pin and the recesses in order for the tool to be insertable into the implant. This also means that a clearance is necessary between the lateral surfaces of the tool and the implant. How large the clearance must be depends *inter alia* upon the length of the guide pin and how tight it is in contact with the recesses of the implant.

The functional definition of feature E, that the guide pin is arranged for completely or substantially taking up bending moments implies the physical characteristics of the tool and the implant necessary for ensuring this function, such as the required clearance between the drive part of the tool and the opposing inner wall of the implant. An explicit definition of the clearance is therefore not necessary.

It is correct that neither the claim, nor the description explicitly state which proportion of the bending moments must be taken up by the guide pin in order for it to be "substantially" taken up by the guide pin. However, the skilled person understands that the word "substantially" means a large proportion, and just accounts for minor and unavoidable deviations from the theoretically perfect case that the guide pin completely takes up the bending moment. The skilled person is therefore able to distinguish whether an implant and tool combination is covered by the claim or not.

The wording that "the internal recesses constitute guide surfaces for the guide pin parts" in feature E1 is also clear to the skilled person. It means that the wall of the recesses constitute surfaces which guide

the guide pin parts. In view of feature E, it is clear that these surfaces interact with the guide pin parts during skewing between the tool and the implant.

6. Auxiliary request 1 - Novelty (Article 54(1) and (2) EPC)

It is common ground that Figures 6 and 7 of O1 disclose features A to D and G. Moreover, the tool of the implant and turning tool combination disclosed in these figures has a sort of guide pin in front of the lateral surface with the wing shaped elements 50.

However, neither this pin nor its function are described. Furthermore, it is not disclosed that the tool could have two opposite wing shape elements, and thus pivot around them. But even if the tool could pivot with respect to the implant, Figures 6 and 7 do not show how, if at all, the guide pin would contact the recesses during skewing. It can therefore not be deduced from the figures alone that this pin in combination with the internal recesses of the implant in which it is located would completely or substantially take up bending moments occurring at skewing between the tool and the implant. In view of the press-fit between the tool and the implant mentioned in paragraph [0021], it rather seems that forces or moments occurring at skewing would be taken up by the lateral surfaces. The tool and implant combination of O1 does therefore not have a guide pin according to feature E.

Friction is a surface characteristic. While the tool and the implant of O1 have cooperating wings and splines which transfer the rotation of the tool to the implant, the wedge shape of the wings and the friction

fit described in paragraph [0021] of O1 are not characteristics of the surfaces of the tool or the implant. They are therefore not friction enhancing means according to feature F.

Consequently, the subject-matter of claim 1 differs from the implant and turning tool combination disclosed in O1 at least by features E and F. It is therefore new (Article 54(1) and (2) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division with the order to maintain the patent with the following claims and a description to be adapted thereto:
Claims 1-9 of auxiliary request 1 filed on 30 November 2016.

The Registrar:

The Chairwoman:



D. Magliano

Y. Podbielski

Decision electronically authenticated