Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 13 May 2015

Case Number: T 0837/13 - 3.2.08

Application Number: 01992086.7

Publication Number: 1341482

IPC: A61F2/915

Language of the proceedings: EN

Title of invention:
STENT HAVING HELICAL ELEMENTS

Patent Proprietor:
OrbusNeich Medical, Inc.

Opponents:
Boston Scientific Scimed, Inc.
Terumo Kabushiki Kaisha
Boston Scientific Medizintechnik GmbH

Headword:

Relevant legal provisions:
EPC Art. 108, 123(2), 84, 87(1), 54, 56, 107
RPBA Art. 13
EPC R. 99

Keyword:
Admissibility of appeal - notice of appeal - indication of the impugned decision
Admissibility of appeal - notice of appeal - name and address of appellant
Late-filed request - justification for late filing (yes)
Amendments - added subject-matter (no)
Claims - clarity - main request (yes)
Priority - (yes)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:
G 0003/14, T 0647/97

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0837/13 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 13 May 2015

Appellant: (Patent Proprietor)	OrbusNeich Medical, Inc. 5363 N.W. 35th Avenue Ft Lauderdale, FL 33309 (US)
Representative:	Jilderda, Anne Ayolt Octrooibureau LIOC B.V. Postbus 13363 3507 LJ Utrecht (NL)
Appellant: (Opponent 1)	Boston Scientific Scimed, Inc. One Scimed Place Maple Grove, MN 55311-1566 (US)
Representative:	Vossius & Partner Patentanwälte Rechtsanwälte mbB Siebertstrasse 3 81675 München (DE)
Appellant: (Opponent 2)	Terumo Kabushiki Kaisha 44-1, Hatagaya 2-Chome Shibuya-ku Tokyo 151-0072 (JP)
Representative:	Oser, Andreas Prüfer & Partner GbR Patentanwälte Sohnckestrasse 12 81479 München (DE)
Party as of right: (Opponent 3)	Boston Scientific Medizintechnik GmbH Daniel-Goldbach-Str. 17-27 40880 Ratingen (DE)
Representative:	Vossius & Partner Patentanwälte Rechtsanwälte mbB Siebertstrasse 3 81675 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted on 21 March 2013 concerning maintenance of the European Patent No. 1341482 in amended form.**

Composition of the Board:

Chairman I. Beckedorf
Members: C. Herberhold
M. Alvazzi Delfrate

Summary of Facts and Submissions

I. By its decision posted on 21 March 2013 the Opposition Division decided that European patent No. 1 341 482 in amended form according to the main request then on file and the invention to which it related met the requirements of the EPC.

II. The appellant (opponent 02, Terumo Kabushiki Kaisha) lodged an appeal against that decision in the prescribed form and within the prescribed time limit.

III. Further appeals were filed by opponent 01 (Boston Scientific Scimed, Inc.) and by the proprietor (OrbusNeich Medical, Inc.). Moreover, an intervention was filed by opponent 03 (Boston Scientific Medizintechnik GmbH).

IV. With letter dated 11 May 2015 (received on 12 May 2015), sent on behalf of opponents 01 and 03, the opposition and appeal of opponent 01 and the intervention of opponent 03 were withdrawn.

V. In view of the letter of the proprietor of 13 March 2015 and the main request mentioned therein (i.e. maintenance of the patent in amended form as upheld in the decision under appeal), the appeal of the proprietor was - as also accepted by the proprietor during the oral proceedings - deemed to be withdrawn.

VI. In view of the changes to the procedural roles mentioned in the two preceding paragraphs, in the following the opponent is referred to as the appellant and the proprietor as the respondent.

VII. Oral proceedings before the Board of Appeal took place on 12 and 13 May 2015. For the course taken by the proceedings, in particular the issues discussed with the parties and the parties' initial requests, reference is made to the minutes of the oral proceedings.

At the end of the oral proceedings the requests of the parties were as follows:

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

The respondent requested
that in setting aside the decision under appeal the patent be maintained in amended form on the basis of claim 1 of the (amended second new) main request and an adapted description, both filed during oral proceedings on 13 May 2015 (annexes E and F of the minutes).

VIII. The only claim of the main request reads as follows:

"A balloon expandable stent comprising a main body (11), wherein the main body has a generally cylindrical shape and a cylindrical axis (5) and, when the stent is unexpanded, the main body comprises a plurality of expandable helical segments (30, 40), wherein the main body further comprises a plurality of main body cylindrical elements (100) having collinear cylindrical axes, wherein the main body cylindrical elements (100) are adjacent to one another and attached to one another by the helical segments (30, 40), each main body cylindrical element (100) having a circumference (110) that is substantially identical to that of an adjacent

cylindrical element, and comprising a plurality of expandable circumferential segments (50, 60) positioned between consecutive connecting elements (250) which connect said cylindrical element to an adjacent cylindrical element, wherein the circumferential segments (50, 60) are joined together by portions of the helical segments (30, 40) to form the cylindrical elements (100), wherein the plurality of circumferential segments (50, 60) comprise a majority of the circumference (110) of each cylindrical element (100), characterized in that the cylindrical elements (100) comprise first circumferential segments (50) alternating with second circumferential segments (60), in that said second circumferential segments resemble a generally S-shaped structure, having three linear portions connected to each other by two curved portions, in that said first circumferential segments have five linear portions connected to each other by four curved portions, in that adjacent cylindrical elements are connected to one another by two connecting elements (250), in that second circumferential segments (60) of adjacent cylindrical elements are joined together by connecting elements (250) to form one of two first expandable helical segments (30, 40), in that first circumferential segments (50) of adjacent cylindrical elements are joined together by connecting elements (250) to form one of two second expandable helical segments (200, 210), in that said first expandable helical segments (30, 40) are generally parallel one to another and 180 degrees apart, and in that said second expandable helical segments (200, 210) are generally parallel one to another and 180 degrees apart, and wherein the first circumferential elements (50) comprise linear portions (320) and curved portions (328) that join the linear portions (320) together to form a repeating pattern, and wherein second helical

segments cross the first helical segments in shared connecting elements."

IX. The following documents played a role for the present decision:

D1: WO-A-94/17754;
D2: WO-A-98/20810;
D3: WO-A-00/30563;
D4: US-A-6,132,460;
D5: EP-A-0 876 806;
D7: EP-A-0 983 753;
D12: EP-A-0 884 029;
D14: WO-A-00/71053;
D16: = D2;
D18: EP-A-2 311 412;
D21: EP-A-0 540 290;
unpublished provisional application US 60/254,688 as claimed priority.

X. The essential arguments of the appellant can be summarised as follows:

Admissibility of the appeal

The name "Terumo Corporation" was nothing more than the translation of the Japanese name "Terumo Kabushiki Kaisha", the appellant being the same adversely affected party as in the opposition proceedings. In the publication number given, a single digit was incorrect, but the application number, the name of the corporation, the professional representative and the date of notification of the decision were consistent with the opposition proceedings, such that the appropriate correction of the publication number was

immediately evident. The appeal was therefore admissible.

Admission of the main request into the proceedings

In opposition proceedings the respondent had deliberately deleted the subject-matter of all dependent claims. By reintroducing some of their subject-matter, the respondent was reopening issues which had already been closed in the first-instance proceedings, contrary to the procedural principle that appeal proceedings should not open a fresh case.

Furthermore, the amendments made did not *prima facie* overcome the objections under Articles 84 and 123(2) EPC.

Consequently, the main request was not to be admitted into the proceedings.

Article 123(2) EPC

Claim 1 of the main request gave a detailed definition of the first and second circumferential elements. Even if one accepted page 5, lines 16 to 18 and 26 to 28 as a basis for these features, the passages did not disclose the claimed quantities of linear and curved portions to be joined. The quantities were only shown in the drawings, albeit in close structural and functional relationship with numerous other features, which were, however, not defined in the claim. In particular, in the drawings there were exactly two first and two second circumferential segments in each cylindrical element, with each single circumferential segment being connected to exactly one preceding and one following of the respective other circumferential

elements and with the connectors having a specific H-shape. Furthermore, the linear portions of the first circumferential element were parallel to each other and parallel to the longitudinal axis. The second circumferential segments were shown to be smaller than the first circumferential segments, leading to a particular 1:2 ratio of the pitch of the helices. It had also to be noted that the stent shown in the drawings comprised endzones at the proximal and distal ends. These endzones had the function of straddling the stent in place and thus could not be omitted. Also with respect to the general S-shape of the second circumferential segments, numerous characteristics disclosed in combination therewith were missing. The second element had originally been disclosed as being at an angle with respect to the longitudinal axis; it had a specific filament width, amplitude and period. Last but not least, the application as originally filed related to an expandable stent but did not disclose a balloon-expandable stent.

To conclude, when drafting the claim, the respondent had extracted features out of their specific functional and structural originally disclosed context, thereby arriving at a claim covering technically feasible structures which had however never been disclosed, and which therefore had to be considered an unallowable intermediate generalisation. This became even more evident when analysing the structure of the claims as originally filed. Dependent claims as filed defining linear and curved portions, such as claim 8, claim 16 or claim 24, were dependent on claims which defined either the stent to have end zones, or the stent to have second circumferential segments with a circumferential dimension less than the first expandable segments, or to have first and second

helices with different pitch. It was true that - for some of these features - the description stated that they merely may be present. However, this "may" language could not be seen as providing a reservoir of multiple features, from which arbitrary, allegedly originally disclosed, feature combinations could be assembled.

Therefore the subject-matter of claim 1 had to be considered amended beyond the disclosure of the application as originally filed and the claim was thus not allowable under Article 123(2) EPC.

Article 84 EPC

Even if the claim was to be considered originally disclosed, it was not clear.

Firstly, the term "consecutive connecting elements" was not mentioned in the original disclosure and allowed several contradictive interpretations. Secondly, even if one accepted the respondent's explanation that "consecutive" meant "consecutive within a cylindrical segment", these "consecutive connecting elements" did not connect a cylindrical element to an adjacent cylindrical element, but alternately to the upper and lower adjacent cylindrical element. Thirdly, the term "first circumferential segments alternating with second circumferential segments" did not make it clear whether one such segment was alternating with the other, or whether several first segments were alternating with several second segments, an interpretation at odds with the embodiment claimed, but also suggested by the wording "plurality of circumferential segments positioned between consecutive connecting elements". Fourthly, terms such as "connecting elements" or

"helical segments" were mentioned several times in the claim, albeit without correlation to each other and without appropriate back-reference to the respective antecedent, which made the claim incomprehensible and inconsistent. In particular, the circumferential segments were on the one hand part of the helical segments, but on the other hand joined to each other by portions of the helical segments. It was thus left open what these "portions of the helical segments" were. Fifthly, the terms "generally parallel" and "180 degree apart" were unclear, as was the term "repeating pattern".

Furthermore, there was an inconsistency between paragraph [0015] of the adapted description and the claim.

Priority

According to acknowledged case law, see e.g. T 647/97 of 1 February 2001, in order for a priority to be valid, the claimed invention must not only provide the same solution to a particular problem but also relate to the same technical problem. In the present case, however, neither the problem posed nor the solution was the same.

Whereas the present patent shared with the priority document the problem related to the prior-art Palmaz-Schatz stent, it did not even address the additional problem posed in the priority document with respect to the Cordis stent, namely to provide a wide range of design options.

Furthermore, also the solution as claimed in the patent was different from what was disclosed in the priority

document. In fact, the priority document did not even mention the second helical segments or the cylindrical elements, which the respondent had identified as the fundamental structures of the invention. Moreover, numerous features which the priority document disclosed in combination with the features claimed in the patent were not part of the claimed subject-matter, thus broadening the subject-matter and leading to an invention different from the one disclosed in the priority document. In particular, the invention as defined in the priority document required a uniform wall thickness. Moreover, it related to "a stent expandable from within" - a feature which was different from the claimed balloon-expandability. The stent pattern further comprised undulation elements and S-shaped elements, which had no correlation with the circumferential segments joined from linear and curved portions claimed in the patent.

Therefore, with the problem to be solved and the solution disclosed in the priority document being different from the subject-matter claimed in the patent, the priority was not valid.

Novelty

It was accepted that - should the priority be considered valid - document D18 did not form part of the state of the art. However, the claimed subject-matter was not new over documents D12 and D3.

D12 showed, in particular in Figure 6, a stent as claimed. The only possibly identifiable difference was in the cylindrical main body elements. These admittedly did not form rings, but were - although forming a full turn - open spiral elements. However, the patent

specification suggested a very broad interpretation of the term "cylindrical element": According to paragraphs [0013] or [0023], the elements needed only to be "generally cylindrically shaped", possibly having - see Figure 8 of the patent - some inclination with respect to the longitudinal axis of the stent. As also confirmed by the Merriam-Webster dictionary, the term "collinear" meant nothing more than passing through the same straight line - which could well be inclined. Thus, the stent shown in Figure 6 of D12 did have main body cylindrical elements having collinear axes in the sense of the attacked patent, the subject-matter of claim 1 consequently not being novel over the disclosure of D12.

Furthermore, the disclosure of document D3 had to be considered novelty-destroying. Figure 9 showed a plurality of collinear main body cylindrical elements attached to another by helical elements. The sequence of troughs and valleys qualified as forming a repeating pattern. Whereas the drawing admittedly showed four connecting elements, the disclosure was not limited in this respect. On page 8, lines 19-20, it was explicitly disclosed that, while a minimum of one connecting element was required to join adjacent band-like elements, two or more interconnecting elements were preferred. In this context it was self-evident to the person skilled in the art that such two connecting elements would need to be evenly spaced on the circumference of the stent. Furthermore, Figure 7 of D3 taught that when two connecting elements were foreseen, these were to be arranged in a staggered configuration from one cylindrical element interspace to the other. The person skilled in the art was thus clearly and unambiguously taught to provide the Figure 9 embodiment with only two connecting elements, evenly spaced and

staggered from one interspace to the next, which - see in this respect Annex 3B as filed with the grounds of appeal - inevitably led to a stent as claimed.

Therefore, claim 1 was also not novel over the disclosure of document D3.

Inventive step

Even if document D12 was not considered novelty-destroying, the claimed subject-matter was still not inventive over the disclosure of this document. As evidenced by documents D1, D2, D4, D7, D14, D16 and D21, the technical trend in the field after the publication of D12 was towards ring-type stents. It thus had to be considered obvious for the person skilled in the art to transform the spiral elements into closed cylindrical elements, thus arriving at the subject-matter claimed.

Also in the event that D3 was seen as not clearly and unambiguously disclosing the Figure 9-type stent with only two connecting elements per interspace, such a modification was at least obvious for the person skilled in the art. Starting from D3, Figure 9, the only possible difference was in the number of connecting elements. A reduced number of connecting elements had the technical effect of increasing longitudinal flexibility, thus solving the problem of easier stent delivery. The solution was, as outlined in the context of the discussion on novelty, already suggested in D3. The variation of the number of connecting elements in order to develop a desired longitudinal flexibility was also discussed in detail in D21, column 3, lines 16 to 28, with D21, Figure 9

suggesting the provision of two interconnecting elements in a staggered configuration from interspace to interspace. It was thus at least obvious to provide the D3, Figure 9 embodiment with two connecting elements per interspace in a staggered configuration, thus arriving at a stent as claimed. Consequently the subject-matter of claim 1 was not inventive.

The subject-matter of claim 1 was furthermore obvious when starting from prior art D4. The stent disclosed in said document was designed to be flexible along its longitudinal axis with minimal longitudinal shrinkage, see D4, column 1, lines 31 to 36, thus addressing the same problem as the invention. The embodiments shown in Figures 2 or 7 of D4 differed from the claimed subject-matter only in that their circumferential segments had an identical number of peaks and valleys throughout, leading to a 3-3 structure in Figure 2 and a 5-5 structure in Figure 7, whereas, according to the claim, the alternating circumferential segments had a different number of peaks and valleys, leading to the 3-5 structure claimed. The patent did not however indicate any technical effect associated with these features, and the claimed pattern therefore had to be seen as a design option arbitrarily chosen from the multiple equivalent patterns disclosed on page 5, lines 4 to 11 of the application as originally filed. The problem was thus to provide an alternative stent design. Such a modification of the stent design in order to vary the properties of the stent was explicitly suggested in D4, column 5, first paragraph. Looking for an alternative stent design, the person skilled in the art would consult document D12, which equally addressed the problem of increasing stent flexibility while preventing foreshortening, and would recognise the cell structure disclosed e.g. in Figure 6

to be an alternative. Contrary to the respondent's view, also the 3-5 structure of D12, Figure 6 would form a diamond pattern as aimed at in D4, such that the skilled person would apply the D12 cell structure to the teaching of D4, thereby arriving at a stent as claimed.

An alternative design option for the D4 stent was also suggested by the teaching of D21, Figure 11 and column 6, lines 36 to 49. Again, the obvious replacement of the D4 cell design with the cell design disclosed in D21, Figure 11 led to the stent structure as claimed. For all these reasons, the subject-matter of claim 1 of the main request was not inventive over the prior art.

XI. The essential arguments of the respondent can be summarised as follows:

Admissibility of the appeal

The notice of appeal had been filed in the name of Terumo Corporation, which was a different company from Terumo Kabushiki Kaisha which had been a party in the opposition proceedings. Furthermore, the publication number mentioned in the notice of appeal did not correspond to the patent allegedly under attack, and nor did the date indicated in the notice of appeal match the date on which the impugned decision was pronounced. It was thus questionable which decision or patent was under attack and whether the appellant was at all adversely affected. Therefore the appeal had to be considered inadmissible.

Admission of the main request into the proceedings

It was true that during opposition, for procedural reasons, the sub-claims had been deleted. However, their subject-matter had never been waived. Furthermore, the amendments made were clearly directed to overcoming the remaining objections under Articles 84 and 123(2) EPC. The main request was thus to be admitted into the proceedings.

Article 123(2) EPC

Firstly, it had to be emphasised that, when examining the requirements of Article 123(2) EPC, the overall disclosure of the patent application had to be taken into account, including the description, the drawings and the claims. It was thus not relevant whether a particular non-claimed feature was identifiable which had a certain function. What was decisive was whether said feature - and thus the functionality associated therewith – had been disclosed as optional or mandatory.

As could be seen from page 2, lines 13 to 19 of the description as originally filed, the present invention at its most general level was directed to a stent comprising a combination of helical segments and cylindrical elements, thus combining the two basic concepts of stent design, namely ring- and helix-type stents. Such a stent could optionally be provided with endzones, which had the functionality of straddling the main body. Nevertheless, the endzones remained optional – as the word "may" made clear. The same argument applied to all the other detailed features mentioned by the appellant. The description, in particular on pages 5 to 7 clearly identified those features as

optional, by stating that the stent "may" comprise such features, or by referring in their respect to "some embodiments", "in at least one embodiment", or "in an alternative embodiment".

Furthermore, on page 1, lines 17, 18, it was disclosed that there were typically two types of stents, self-expanding stents and balloon-expandable stents. With claim 1 as originally filed defining an expandable stent, it was thus clearly and unambiguously disclosed that this term was equivalent to a balloon-expandable stent.

To conclude, claim 1 had not been amended beyond the disclosure of the application as originally filed.

Article 84 EPC

When examining whether a claim was clear or not, it was not permissible to extract a particular feature out of its context and judge it in isolation. On the contrary, it was the complete claim, with the features in their appropriate context, which needed to be clear.

The term "consecutive connecting element" was used in the definition of the main body cylindrical elements. These elements were said to comprise a plurality of expandable circumferential segments positioned between consecutive connecting elements. It was thus clear from the context that the term "consecutive connecting elements" meant "consecutive within the cylindrical element". Even if, from a strictly grammatical point of view, the participle "positioned between" could relate to the "plurality of circumferential segments" as well as to the individual "circumferential segment", the further claim features called for only one of the

respective circumferential segments in between two consecutive connecting elements. This was evident from the existence of two connecting elements in between adjacent cylindrical elements, as well as from the existence of the two first and two second helical segments sharing connecting elements attaching the adjacent cylindrical elements. For the same reasons, it was also clear that the feature "first circumferential segments alternating with second circumferential segments" could mean nothing else than one of the first alternating with one of the second segments. Regarding the appellant's fourth point and in particular the term "portions of the helical segments", this term had been part of claim 1 as granted and could thus not be objected under Article 84 EPC. It was furthermore not unclear, because although the circumferential elements of the helices were coincident with the circumferential elements of the cylindrical elements, still only a portion of the connecting elements of the helices joined the circumferential segments within the cylindrical elements. Lastly, the terms "generally parallel", "180 degree apart" and "repeating pattern" were common English expressions which did not cause any interpretation problems.

Therefore, the claim was clear.

Furthermore, the description paragraph [0015] had been adapted to the claim by removing the reference to patterns which were not part of the claimed subject-matter and by explicitly mentioning the "repeating" pattern. The remaining part of the paragraph was fully in accordance with the claim and thus not in breach of Article 84.

Priority

The stents disclosed in the priority document and claimed in the patent clearly both addressed the problems of the Palmaz-Schatz stent, namely low stent-to-vessel ratio uniformity, comparative rigidity and limited flexibility. The problem to be solved was thus the same.

Furthermore, the claim of the patent basically defined the specific stent pattern shown in Figures 1, 2a, 2b, 3, 4, 6, 10 and 11 of the priority document. Even if a slightly different wording was used, the technical subject-matter claimed was the same as previously disclosed. A stent which was capable of acquiring a second diameter in an expanded and deformed state upon the application from the interior of a radially outwardly extending force was the same thing as a balloon-expandable stent. Even if the second helical elements were not specifically mentioned, their existence was clearly and unambiguously shown in the drawings, e.g. in Figure 1. The same was true for the circumferential elements and the cylindrical elements - even if referred to by the slightly different terms undulation element, S-shaped element or circumferential element.

As a result, the invention claimed was the same as that disclosed in the priority document, and the priority was thus validly claimed.

Novelty

As the priority was valid, document D18 was not prior art under either Article 54(2) or 54(3) EPC.

Document D12 showed in Figure 6 a stent with a continuous helix. Such a stent did not comprise the individual rings, i.e. cylindrical elements, claimed. Moreover, even if open-loop sub-structures were identified within the continuous helix and if these were to be considered cylindrical elements, their axes would be parallel but not collinear. Furthermore, Figure 8 of the patent - mentioned by the appellant - showed the rings in the endzones as being inclined, whereas the claim required the cylindrical elements of the stent main body to be collinear. Thus, D12 did at least not show the claimed cylindrical elements having collinear axes.

D3, Figure 9 showed cylindrical elements connected by four instead of two connecting elements, the stent thus having a 1-3 pattern instead of the claimed 3-5 pattern. The passage on page 8, lines 19, 20 as well as Figure 7, both cited by the appellant, related to a different embodiment. According to established case law the teaching of different embodiments could not be combined when evaluating novelty if, as in the present case, there was no indication to do so. Moreover, Figure 7 suggested connecting linear portion to linear portion and thus related to a situation different from the curved portion to curved portion connection shown in Figure 9. Even if one assumed that the person skilled in the art would use two connecting elements per interspace, the choice in Annex 3B submitted with the appellant's grounds of appeal was only one of several possibilities.

Therefore, D3 did not clearly and unambiguously disclose the subject-matter claimed.

Inventive step

D12 described a helical stent and thus a stent design completely different from the one claimed. It would be against the very teaching of D12, which - starting from a ring-type Palmaz-Schatz stent - had found the helical design to be advantageous, to go back to a ring-type design. Therefore, starting from D12, the person skilled in the art would not arrive at the subject-matter claimed.

With respect to D3 as closest prior art, in addition to the lower number of connecting elements, there were several further differences. The embodiment in D3, Figure 9 did not have two sets of expandable segments, because the single linear portion between two connecting elements - which led to a 1-3 pattern - could not expand. The connected single linear portions formed four linear spines, causing foreshortening of the stent upon expansion. A solution to prevent such foreshortening was known from D5 or D14, namely to provide expandable S-shaped connecting elements. Unlike in D5 or D14, however, the present invention taught to transfer the expandable S-shaped structures from the connecting elements to within the cylindrical elements, such that the rings could be closer together, while keeping the mechanically stable ring structure. The person skilled in the art would, however, keep at least some of the longitudinal, linear spines shown in D3, which prevented overlapping or interference in respect of adjacent cylindrical segments. This was evident from D3, page 2, second paragraph which explicitly mentioned overlapping or interference as problematic in the context of articulated stents such as the ones disclosed in D21. If - in spite of this clear teaching away - the skilled person nontheless consulted D21 in

order to solve the problem of increasing longitudinal flexibility, only with hindsight would he/she choose a solution with two connecting elements in a staggered configuration, although embodiments with one connecting element - aligned or not aligned in consecutive interspaces - or three connecting elements were equally envisaged in D21, Figures 7-11. Moreover, in the unlikely event that the skilled person decided to use two connecting elements per interspace, he/she would try to conserve the longitudinally aligned linear portions forming the longitudinal spine of the stent which prevented overlap and interference in respect of adjacent rings. This would result in a 1-7 structure of the cylindrical elements and not in the 3-5 structure claimed. Further with respect to the embodiment of D21, Figure 11, there was only one connecting element per interspace. Moreover, all circumferential segments with 5 longitudinal portions were longitudinally aligned, such that these elements did not form a helix.

Therefore, claim 1 was inventive over the teaching of D3 in combination with any of the disclosures discussed above.

With respect to document D4 as closest prior art, it had to be kept in mind that its fundamental teaching lay in the provision of a plurality of cells, i.e. bounded areas which were open and extended through the thickness of the stent, with a major axis perpendicular to the longitudinal axis of the stent, which upon expansion assumed a diamond shape as shown e.g. in D4, Figure 9. This required, as discussed in D4, column 5, lines 12 to 15, an odd number of peaks which allowed the connecting points to be longitudinally aligned. The document gave no hint whatsoever towards a 3-5 structure. Such a structure would be against the

teaching of D4, because it would not provide the symmetric diamond shape upon expansion, but instead would create torque on the vessel. In fact, even subtle changes in the stent pattern had a significant impact on flexibility, foreshortening and stability. Such changes could clearly not be considered a mere design option. Furthermore, the person skilled in the art had no indication to modify the pattern of the D4 stent, and even if he/she did look for an alternative pattern, he/she would certainly not consider D12 which related to a completely different type of stent. Moreover, only with hindsight was it at all possible to identify a 3-5 cell pattern in a stent with a helical basic structure like the one disclosed in D12. With respect to a combination with the teaching of D21, the same arguments applied as brought forward in the context of a combination of its teaching with D3 as closest prior art.

Therefore, all of the appellant's attacks were based on hindsight and could not render the claimed subject-matter obvious in view of the prior art.

Reasons for the Decision

1. Admissibility of the appeal

The term "Kabushiki Kaisha" refers to a defined legal company status in Japanese law, and is commonly translated into English as "Company", "Corporation" or "Incorporated". In the notice of opposition, the appellant already used both names synonymously: whereas "Terumo Kabushiki Kaisha" was inserted on Form 2300.1,

III, the very first page of the notice indicates "Terumo Corp. ./. EP 1 341 482 OrbusNeich Medical, Inc.". Thus, "Terumo Corporation" was simply used as a translation of "Terumo Kabushiki Kaisha" referring to the same (identical) legal entity, the appellant therefore having been party to the opposition proceedings, having been adversely affected by the decision under appeal and thus being entitled to appeal (Article 107 EPC).

With regard to the incorrect indication of the publication number of the attacked patent in the notice of appeal, it has to be noted that the further identifying data, i.e. the application number, the proprietor's name as well as the decision date are all consistent. In this context the Board notes that the date indicated by the appellant corresponds to the date printed on the decision itself, which is also the date from which the respective time limits are calculated. The alleged inconsistency in the date of the decision - brought forward by the respondent, who was of the opinion that the date of the announced order of the decision at the oral proceedings was decisive - is thus not present. Furthermore, the publication number identifying the patent only deviates in one digit from the correct one. From the consistent, redundant further information in the notice of appeal it is, however, immediately evident which decision was appealed, and the appeal is therefore admissible.

2. Admission of the main request into the proceedings

The present main request was filed during oral proceedings before the Board, and as such is an amendment which according to Article 13 RPBA may be admitted and considered at the Board's discretion.

While the respondent deleted dependent claims 2 to 31 during oral proceedings before the opposition division, it is evident from the minutes of said proceedings, point 13.1, that it did so only to speed up the procedure, without any intention of waiving the subject-matter defined therein.

The amended claim now defines that "the first circumferential elements comprise linear portions and curved portions that join the linear portions together to form a repeating pattern". This feature finds verbatim support on page 5, lines 16 to 18 of the application as originally filed and addresses objections under Article 123(2) EPC which had been discussed with respect to earlier versions of the main request.

The amendment is thus considered a low-complexity, *bona fide* response to the course of the proceedings. Thus, the Board exercises its discretion under Article 13 RPBA to admit the main request into the proceedings.

3. Article 123(2) EPC

3.1 The claims as filed

Claim 1 of the main request is based on claim 1 as filed and incorporates all the features thereof.

Claim 1 as filed is not restricted to a particular helical pitch, and nor does it specify a certain dimensional ratio of the first and second circumferential segments, or prescribe that endzones are present. On the contrary, the endzones are defined in a dependent claim (claim 5 as filed) and thus

optional features. Dependent claim 8 as filed - mentioned by the appellant - refers to alternating linear and curved segments of the rings in each endzone and not to linear and curved segments in the circumferential elements. Moreover, it is dependent on dependent claim 5 (defining the end zones) and the claim structure is therefore in accordance with the endzones being optional. Consequently, the argument that the structure of the claims as filed required the presence of end zones in combination with the particular claimed structure of the circumferential segments fails.

The further analysis of the claim structure as filed brought forward by the appellant is based on dependent claims which belong to different independent claims. It therefore cannot change the above analysis.

Therefore, from the analysis of the claim structure as filed, no unallowable broadening can be derived.

3.2 Features from the description and the drawings

With respect to claim 1 as filed, claim 1 of the main request has been further amended. These amendments will be analysed in the following:

3.2.1 The stent being balloon-expandable

Claim 1 as filed defines the stent to be an expandable stent. As disclosed in the description page 1, lines 17, 18, there are "typically two types of stents: self expanding stents and balloon expandable stents". Although this statement is made in the prior-art section of the description, it is considered to express the skilled person's general knowledge. With claim 1 as

filed referring to an expandable and not to an expanding stent, the claims as filed define a member of the second category, i.e. a balloon-expandable stent. Nothing more is expressed by the amendment.

3.2.2 The particular stent structure claimed - the definition of the circumferential elements

The further definition of the stent structure is based on the disclosure of a particular embodiment illustrated in Figures 1-7 and described on pages 4, line 3 to page 7, line 23. Whereas the figures show one specific way to realise said embodiment, the corresponding part of the description is worded in broader terms, referring to some features as optional ("may have", "may range", "in some but not all embodiments", etc.).

However, not every feature is referred to as optional. Regarding the structure of the first and second circumferential elements, the description refers to some features in the indicative: "In the embodiment shown in Figs. 1-5, the first circumferential elements 50 comprise linear portions 320 and curved portions 328 that join the linear portions 320 together to form a repeating pattern" (first circumferential segment, page 5, lines 16-18). "In the embodiment shown in Fig 6, the second circumferential element 60 comprises linear portions 412 and curved portions 414 having a filament width 407, and resembles generally an S-shaped structure" (second circumferential segment, page 5, lines 26-28). These features are part of the claimed subject-matter. In this respect it is considered an implicit property of a repeating pattern to have amplitude and period. Equally, a circumferential

segment joined from linear and curved portions implicitly has some filament width.

In contrast therewith, numerous other features are disclosed as being optional: the orientation of the linear portions (page 5, lines 18-19; page 5, line 32 to page 6, line 2), the specific amplitude and period and its relationship (page 5, lines 19-23; page 6, lines 2-8), the existence of an angled portion (page 5, line 28 to page 6, line 2), the contributions of the respective first and second circumferential elements to the overall circumference (page 6, lines 7-11), the H-shape of the connecting elements (page 6, lines 18-21), the particular pitch of the helices (page 6, lines 21-25), the existence of endzones (page 7, lines 24-25; page 4, lines 11-12) etc.

Thus, contrary to the appellant's view, the description does not simply provide a reservoir of optional features to arbitrarily choose from. Instead, it draws a fine line between some features which are part of the embodiment, and some others which may be part of the embodiment. For the features which "may" be part of the embodiment, the person skilled in the art thus clearly and unambiguously understands these to be optional. Even if a feature - such as the specific number of linear and curved elements - is only derivable from the drawings, it becomes clear to the skilled person - taking the combined teaching of the description and the figures into account - that said feature is not inextricably linked with the other features present in the drawing, but disclosed as optional in the corresponding part of the description.

While the respective number of linear and curved elements influences the size of the circumferential

elements, i.e. the contribution of these elements to the overall circumference, and while - because the circumferential elements are part of the helical segments - it also influences the pitch of the helices, the description discloses both these properties to be variable in the embodiment. The same is true for the angulation of the S-shaped structure shown in the drawings, which may vary, with an angle of zero degrees being explicitly disclosed (page 5, line 32 - page 6, line 2). Thus the specific number of linear and curved portions of the circumferential segments can be taken from the drawings (i.e. Figures 1-7) without unallowable intermediate generalisation.

3.3 The particular stent structure claimed - the definition of the helices and cylindrical segments

According to the description, page 6, lines 14-15, the stent may have "a main body comprised of two (or more) first helical segments as well as two (or more) second helical segments". Furthermore, see page 6, lines 17 and 18, "in some, but not all embodiments, the first and second helical segments may share a common connecting element". Such a stent having exactly two first and two second helical segments, which respectively share a common connecting element, is depicted in Figures 1, 2, 3, 4 and 7. As further discussed on page 6, lines 21-34 and page 7, lines 11-17, the helical segments are (circumferentially) expandable, with the first helical segments being formed from a plurality of first circumferential elements that in turn are made up of linear and curved segments, and with the second helical segments being comprised of other (second) circumferential elements that are in turn comprised of linear and curved segments. With the circumferential segments being

formed of linear and curved portions respectively, the contribution of each helical segment to the overall circumferential dimension of each cylindrical element is greater than just the contribution of the filament widths of the individual segments (taking into account that for creating two linear portions which are side by side some material is disclosed to be removed inbetween, see page 9, last paragraph of the application as filed).

As shown in the drawings and as also disclosed on page 4, lines 18-20, the two first helical segments may be generally parallel to each other and opposite each other by 180 degrees. It can be appreciated in the drawings that such a configuration - in view of the above-discussed definition of the helices as comprising common connecting elements and being formed from the connecting elements and the respective circumferential elements - results in also the second helical segments being parallel to each other and 180 degrees apart. It further results in the cylindrical elements being formed of first circumferential elements alternating - i.e. one after the other - with second circumferential elements and being positioned between and connected to one another by consecutive connecting elements. Because the cylindrical elements are attached to one another by the helical segments - with two of the respective two first and two second helices sharing a respective connecting element - there are exactly two connecting elements which connect adjacent cylindrical elements to one another.

Consequently, all features stipulated in claim 1 find a basis in the disclosure as originally filed, the allegedly omitted features being either disclosed as optional or being implicitly present.

Therefore, claim 1 is in accordance with the requirements of Article 123(2) EPC.

4. Article 84 EPC

4.1 Consecutive connecting elements

The claim passage mentioning the "consecutive connecting elements" reads as follows: "...each main body cylindrical element (100) having a circumference (110) that is substantially identical to that of an adjacent cylindrical element, and comprising a plurality of expandable circumferential segment (50, 60) positioned between consecutive connecting elements (250)...". The Board agrees with the respondent that the term "consecutive", which is used here within the definition of the cylindrical element, can only be interpreted as "consecutive within the cylindrical element". It is true that grammatically the above passage covers situations with a single circumferential segment as well as situations with several circumferential elements positioned between two consecutive connecting elements. However, the second interpretation is in contradiction with the further claimed characteristic of the cylindrical elements comprising first circumferential segments alternating with second circumferential segments. In this context, the Board is of the opinion that two first circumferential segments followed by two second circumferential segments cannot be considered "first circumferential segments alternating with second circumferential segments", because then two respective first or second elements would be directly adjacent and thus not alternating. The second interpretation would also be at odds with the further claimed definition of

the first helix (formed of second circumferential elements and connecting elements) and the second helix (formed of first circumferential elements and connecting elements) crossing in shared connecting elements. Indeed, such connecting elements shared between a first and a second helix need to connect a first and a second circumferential element (and not two first or two second circumferential elements). With two first and two second helices crossing in only two connecting elements, every connecting element is in fact a "shared connecting element", such that - within a cylindrical element - every connecting element connects a single first with a single second circumferential element. Thus, in view of the further claim features just discussed, the meaning of the term "consecutive connecting elements" is clear.

4.2 Consecutive connecting elements which connect said cylindrical element to an adjacent cylindrical element.

As outlined in point 4.1 above, every one of the consecutive connecting elements is in fact a shared connecting element (in which the first and second helical segments cross). With the cylindrical elements being attached to one another by the helical segments, and with the circumferential element part of the helices also forming the cylindrical elements, it is clear that each connecting element connects a cylindrical element to an adjacent cylindrical element. Thus, the appellant's interpretation, wherein the consecutive connecting elements all connect "their" cylindrical element to the very same adjacent cylindrical element, is not in accordance with the further claim features. Consequently, the straight-forward interpretation of the feature, wherein a particular connecting element connects the cylindrical

element to an adjacent cylindrical element, the adjacent cylindrical element being either the preceding or the successive one, is the correct one. The feature is therefore clear.

4.3 First circumferential segments alternating with second circumferential segments

As explained in point 4.1 above, the feature is considered clear, both as such and in context with the further claim features.

4.4 Inconsistent handling of antecedents

It is true that, in the context of the definition of the cylindrical element, the claim introduces "consecutive connecting elements", whereas later on, in the definition of the first and second helices and with respect to the connection of two adjacent cylindrical elements, reference is only made to "connecting elements", without using the determined article. This is however due to the fact that only two of the "consecutive connecting elements" of the cylindrical element actually connect one adjacent element to the other and that only one of these "consecutive connecting elements" connects two circumferential segments in a particular helix. Using the determined article "the" would thus create unclarity, because it could be interpreted to the effect that all of the consecutive connecting elements of a cylindrical element or even all connecting elements were meant. Differentiating further between subgroups of the connecting elements would in fact only further define what - in the context of the claim - is anyhow derivable, thereby reducing the conciseness and readability of the claim without improving its clarity.

A similar argumentation applies to the term helical segments: the first and second helical segments are subgroups of the helical segments, which is evident from the wording. Again using a back-reference such as "wherein the first/second expandable helical segment is one of the plurality of expandable helical segments" would not improve clarity but make the claim longer und unnecessarily complicated.

With respect to the term "portions of helical segments" it has firstly to be noted that the wording is part of claim 1 as granted and thus - in accordance with the decision of the Enlarged Board of Appeal in case G3/14 of 24 March 2015 - cannot be objected to under Article 84 EPC. It is secondly consistent with the further features of the claim: because the circumferential elements form both the helices and the cylindrical elements, they cannot connect the circumferential segments. Thus, what joins together the circumferential segments needs to be the connecting elements or sub-portions thereof. As every sub-portion of a connecting element is also a portion of the helical segment, the claim wording is not in contradiction with the further feature that the helices are formed of cylindrical elements joined together by connecting elements, a feature which in itself is equally clear. Therefore, no objection under Article 84 EPC is justified.

4.5 "Generally parallel", "180 degree apart" and "repeating pattern"

With respect to the stent having a main body with a generally cylindrical shape, the feature that two helices are 180° apart and parallel is clear. Double helix structures are well known and frequently depicted, e.g. in representations of the DNA molecule.

Furthermore, in view of the particular structure of the helices, which are formed of circumferential segments joined by connecting elements, the attenuation of the strict mathematical term "parallel" by the term "generally" is justified. The Board also sees no problem in interpreting the term repeating pattern: it simply describes a pattern formed of particular sub-elements in repetition.

4.6 The description, paragraph [0015]

The reference to other patterns in the context of the description, paragraph [0015] has to be interpreted as patterns not forming a square wave form but having the features defined in claim 1. For example, a rectangular wave form with rounded corners would be conceivable, which is not a square wave form, but would fully comply with the features of the claim. Therefore the disclosure in paragraph [0015] as amended according to the main request is not in contradiction with the claim.

4.7 Therefore, the main request fulfils the requirements of Article 84 EPC.

5. Priority

5.1 Identical technical problem

It is uncontested that both the patent and the priority document aim at solving technical problems of the Palmaz-Schatz stent, i.e. a low stent-to-vessel ratio uniformity, comparative rigidity and a limited flexibility. The problem posed in the patent is thus identical to one of the problems posed in the priority document.

The appellant argues however that the priority document solved a second problem which was not even addressed in the contested patent, namely to provide a wide range of design options.

The priority application derives this further problem with respect to the drawbacks of the Cordis coronary stent, which consists of a single piece of wire that is wrapped to form a continuous sine wave and helically wound along a longitudinal axis, with the ends of the wire being weld-terminated. Such a stent design does not have cylindrical elements and therefore is fundamentally different from the stent as claimed in the present main request. Due to the fundamentally different design, the omission of the further problem is justified.

Furthermore, there is no reason why the priority-claiming application would need to solve all problems raised in the priority document. In fact, the priority-claiming application may well relate to only one aspect of the disclosure in the priority document, not to its full disclosure. What may be objected to - see case T647/97 cited by the appellant - is a situation where the priority-claiming application solves a new problem different and not derivable from the problem posed in the priority document. In the present case there is however no doubt that the problem solved in the patent is the same as at least one of the problems posed in the priority document.

It is further noted that the stent of the present invention, which is typically made by removing various portions of the tube's wall (paragraph [0029] of the specification), does not suffer from the bemoaned

restriction in design options. During the discussion on Article 123(2) EPC, the appellant complained that the wording of the claim of the main request still allowed a wide range of modifications, which indicates that the subject-matter claimed - although it is not explicitly stated - still solves the problem of providing a wide range of design options.

Thus, the appellant's attack on the validity of the priority based on an alleged non-identity of the problems posed fails.

5.2 Identity of the solution to the problem posed

As correctly pointed out by the respondent, the overall disclosure of the priority document has to be taken into account. Even if the wording of the two documents does not exactly match, the technical content of the claimed features - which is the decisive criterion - is disclosed. Figure 1 of the priority document shows the two first helices formed of S-shaped circumferential elements joined by connecting elements. Although it is true that second expandable helical segments are not explicitly mentioned, they are - for the person skilled in the art - clearly and unambiguously shown in Figure 1. Thus explicitly claiming these second expandable helical segments only puts in words what the skilled person clearly and unambiguously recognises in the figures (see Figures 1, 2a, 2b, 3, 4, 6, 10, 11) of the priority document. First and second circumferential elements as claimed are further individualised in Figure 2 (Nos. 2.01, 2.02), as are the cylindrical elements. This disclosure is also supported by the description, albeit using the terms circumferential element instead of cylindrical element, undulation element instead of first circumferential segments, and

S-shaped element instead of second generally S-shaped circumferential segments.

With respect to a uniform wall thickness - considered essential by the appellant - the description of the priority document on page 11, second paragraph, provides support for this feature being optional ("The wall of the stent may have a substantially uniform thickness").

The stent is furthermore explicitly referred to as "the balloon expandable stent of the invention" ("Summary of the invention", page 4, first sentence), which is brought into the expanded / deformed state upon the application from the interior of the tubular member of a radially outwardly expanding force ("Summary of the invention", third sentence). Therefore, the alleged difference between balloon-expandability and "expandable from within by application of a radially outwardly expanding force" is not present.

Although not contested by the appellant, the Board notes that the endzones shown in some of the drawings are not at all mentioned in the description or in the claims, such that they are recognised by the skilled person as not essential to the invention disclosed in the priority document. Furthermore, the description states that the helices and the circumferential elements intersect at "one point", thereby indicating that also the H-shape of the connecting elements shown in the drawings is not an essential feature.

Consequently, the invention claimed is the same as the one disclosed in the priority document, and the priority is therefore validly claimed.

6. Novelty

6.1 D18

The Board agrees with both parties that at least in view of the validly claimed priority, D18 - a divisional application of the patent in suit - is not prior art under Article 54(3) EPC.

6.2 D12

As explicitly confirmed during the oral proceedings, the elements identified by the appellant as being "cylindrical elements" are in fact sub-segments of the continuous helix making up the stent shown in Figure 6. This means that these sub-segments are, although covering full 360°, an open spiral structure. Such an open structure does not qualify as a "cylindrical element". Consequently, the subject-matter of claim 1 is novel over D12.

6.3 D3

It is uncontested that Figure 9 shows an embodiment with four connecting elements. On page 8, lines 19 and 20, document D3 further discloses that "while a minimum of one connecting element is required to join adjacent band-like elements, two or more interconnecting elements are preferred". However, this disclosure is made in the context of the embodiment shown in Figures 2 and 3, which is considerably different from the Figure 9 embodiment. In fact, reference to the particular embodiment of Figures 2 and 3 is made repeatedly in the passages surrounding the citation

reproduced above, starting at page 7, lines 17-21, and continued on page 8, lines 13, 15, 21 and 32. It is only on page 9, line 3 that the description turns to a different embodiment ("In another embodiment...."). There is furthermore no indication to combine the teaching of the Figure 9 embodiment with the statement made in the specific context of the embodiment of Figures 2 and 3.

Thus, D3 does not clearly and unambiguously disclose a stent as defined in claim 1 of the main request.

6.4 Accordingly, the subject-matter of claim 1 is novel.

7. Inventive step

7.1 D12 as closest prior art

As discussed above with respect to novelty, the stent disclosed in D12, Figure 6 comprises at least one pattern which advances substantially helically along a longitudinal axis of the tubular body (D12, column 3, lines 18-31). In order to arrive at cylindrical elements (i.e. closed structures), the person skilled in the art would have to break up this fundamental helical structure, thus returning to the concept of a ring-type stent. This is considered non-obvious for the following reasons:

The aim of D12 was to overcome problems related to ring-type stents such as the Palmaz-Schatz stent (column 2, second paragraph). It thus teaches against returning to such a stent design. If the trend in stent development was towards ring-type stents - as allegedly shown by documents D1, D2, D4, D7, D14, D16 or D21 - then one of these documents would be a much more

promising springboard towards the invention than D12, from which the person skilled in the art would have to omit the fundamental functional and structural element, i.e. the continuous basic helix, in order to arrive at the claimed stent - a development step which would only be undertaken in knowledge of the invention, i.e. with hindsight. Realistically, the further development of a stent having a spiral element as fundamental pattern will result in a stent having possibly further or different interconnections, but still having the basic spiral element.

Therefore, the stent claimed is non-obvious in view of D12 as closest prior art.

7.2 D3 as closest prior art

D3, Figure 9 shows a balloon-expandable stent comprising a cylindrical main body, with a plurality of main body collinear cylindrical elements ("bands", No. 720), connected to each other by four connecting elements (No. 744). As discussed above with respect to novelty, the claim requires the presence of two connecting elements, which is a first difference.

Moreover, in the claim the definition of the circumferential segments within the cylindrical elements is based on the position of the connecting elements, which leads to further differences:

In D3, each band is made up of alternating first circumferential segments having a single linear portion, and second circumferential segments having three linear portions - referred to as a 1-3 structure by the parties. Of these two circumferential segments, only the second one is expandable (a single linear

portion cannot be expanded). This structure is very different from the claimed one, which defines first circumferential segments with five linear portions and second circumferential segments with three linear portions, referred to as a 5-3 structure. Because the single linear portion first circumferential segments of D3, Figure 9 are not expandable, the helix formed when joining these elements together by connecting elements is likewise not expandable. Instead, these joined linear portions form several "spines" extending longitudinally around the cylindrical body. These spines keep the different bands apart, but cause foreshortening of the stent upon expansion. Furthermore, not only is there no second expandable helical segment, but the stent has four instead of two first helices.

However, because all these structural properties depend on the number and location of the connecting elements, if two connecting elements are chosen of the type and at the locations indicated in Annex 3B provided by the appellant, then the definition of the segments and thereby of the helices changes to something falling under the scope of the claim. The question is whether it was obvious to select such two connecting elements of the type and in the locations proposed by the appellant.

In a first step, the skilled person would need to limit the number of connectors to two. In D3, with respect to the Figure 9 embodiment, there is no indication to do so. The disclosure made in the context of other embodiments mentions using possibly one (as a minimum) but preferably two or more (page 8, line 19 and 20). On D3, page 11, five interconnecting elements are mentioned (although the respective drawings appear to

suggest three connectors per interspace), with additional or fewer interconnecting elements also contemplated. On page 17, lines 17-18, at least three interconnecting elements are disclosed as preferred, with fewer or additional interconnecting elements again being a possibility.

Nor can any clear guidance be derived from D21 with respect to the number of interconnecting elements to use. As can be seen from D21, Figures 7-11, one, two or three interconnecting elements are disclosed, with the number and location "to be varied in order to develop the desired flexibility" (D21, column 3, lines 17-20).

Even assuming that the skilled person decided to create a stent having two connectors per interspace, there is no teaching as to which connecting element(s) to omit or even that partial omission of the connectors shown in D3, Figure 9 was the solution. As shown in D3, Figures 5 or 7, or in D21, Figure 5, differently designed connecting elements are well within the disclosure of the prior-art documents cited.

Furthermore, even if the skilled person decided to reach the number of two connecting elements by omitting some of the D3, Figure 9 connectors, he/she would still have to select which ones to omit. In adjacent inter-cylindrical element junctions, again different omissions would be conceivable. D3 and D21 disclose connecting elements in adjacent interspaces to be either staggered (e.g. D3, Figure 7; D21, Figures 8 to 10) or aligned (e.g. D3, Figure 5; D21, Figure 7). As discussed by the respondent, keeping the connected linear portions - which form spines extending longitudinally around the stent, see e.g. the upper drawing on page 39 of the proprietor's letter dated

18 November 2013 - may be beneficial in order to prevent band overlap.

To conclude, to arrive at the claimed subject-matter, the person skilled in the art has to make a sequence of consecutive particular selections, a process which is hindsight-driven and cannot be considered obvious.

7.3 D4 as closest prior art

D4 discloses a stent having a plurality of main body cylindrical elements (see Figure 6, formed by the undulating segments on axes Xa), which are connected by connecting elements (No. 27). The longitudinal elements (e.g. Nos. 22, 24 and 26) connected by curved elements (Nos. 23, 25) form circumferential segments, which via the connectors form different helices. The drawings disclose a 3-3 (Figure 2, 6) as well as a 5-5 pattern (Figure 7), but not the mixed 3-5 pattern claimed.

This difference has not been contested by the appellant. However, it was of the opinion that there was no technical effect associated with it and that - encouraged by the passage on D4, column 5, lines 1 to 15 - the person skilled in the art would, as an alternative, use the 3-5 pattern disclosed in D12, Figure 6 and thereby arrive at a stent as claimed.

The Board does not follow this argumentation for the following reasons:

Replacing a symmetric 3-3 or 5-5 pattern with an asymmetric 3-5 pattern has an influence on the expansion behaviour of the stent. Even if the patent does not explicitly state a technical effect associated with the particular 3-5 pattern, this does not mean

that the person skilled in the art - using his/her technical knowledge - would not realise that a difference will exist. The technical problem derived by the appellant, i.e. to find a technically equivalent alternative, thus does not hold.

It may however be accepted that the person skilled in the art wishing to vary the properties of the stent will consider alternative stent designs.

However, the Board comes to the conclusion that, when looking for alternative stent designs, the person skilled in the art would not rely on the disclosure of D12. As already discussed in the context of novelty, D12 relates to a fundamentally different stent design with a continuous helical basic structure. There is no reason to consult such a document when aiming at developing a ring-type stent like that of D4.

Furthermore, the basic concept of D4 is a novel cell structure (see e.g. D4, Figure 6), i.e. a bounded area which is open. These cells have a major axis perpendicular to the axis of the stent (see the description for Figures 1 and 8), and a minor axis perpendicular thereto. Nothing suggests considering a configuration with non-perpendicular major and minor axes, or with an inclined major axis, to be a "cell" in the sense of D4. Thus, only with hindsight will the person skilled in the art interpret the meshes formed by the adjacent 3-5-structured sub-parts of the continuous helical basic structure and the respective connecting elements to be "cells" in the sense of D4.

The appellant has further argued that the invention was also obvious when the teaching of D21, Figure 11 was taken into account. However, the stent shown therein

has only one connector per interspace and thus at best a single "cell" in the sense of D4. There is no indication to transfer such a single cell design to the multiple cells per perimeter embodiments of D4. Moreover, its 3-5 structure has all first and second circumferential segments longitudinally aligned and thus does not result in the first and second helices claimed. It is true that according to D21, column 6, lines 36-49, the pattern may be varied. However, the variations suggested, including the number of undulations, the placement of the interconnecting elements, e.g. at the peaks of the undulation or along the sides of the undulations, firstly still have the first and second circumferential elements longitudinally aligned and secondly (e.g. by changing the placement of the interconnecting elements) may result in stent designs completely different from the one claimed. Only with hindsight could the person skilled in the art extract from this disclosure a stent design which - when applied in the D4 stent - would fall under the claim.

Consequently, claim 1 is not obvious in view of D4, even taking into account the teaching of D12 or D21.

7.4 Thus, the subject-matter of claim 1 involves an inventive step.

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 in amended form on the basis of the following documents:

   - Claim 1 filed as main request during the oral proceedings on 13 May 2015 (Annex E to the minutes)

   - Description pages 2 to 6 filed during the oral proceedings on 13 May 2015 (Annex F to the minutes)

   - Figures 1 to 15 of the patent specification.

The Registrar: The Chairman:

V. Commare I. Beckedorf

Decision electronically authenticated