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**Datasheet for the decision
of 7 November 2018**

Case Number: T 0531/14 - 3.4.02

Application Number: 05106506.8

Publication Number: 1715348

IPC: G01N35/00, B01L9/00, B01L3/00

Language of the proceedings: EN

Title of invention:
Handling unit for microfluidic devices with clamping means

Patent Proprietor:
Agilent Technologies, Inc.

Opponent:
Waters Technologies Corporation

Headword:

Relevant legal provisions:
EPC 1973 Art. 54(1), 56

Keyword:
Novelty - auxiliary request 6 (14:50 hours) (yes)
Inventive step - auxiliary request 6 (14:50 hours) (yes)

Decisions cited:

Catchword:



Beschwerdekammern

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Case Number: T 0531/14 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 7 November 2018

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Decision under appeal: **Interlocutory decision of the Opposition**
Division of the European Patent Office posted on
15 January 2014 concerning maintenance of the
European Patent No. 1715348 in amended form.

Composition of the Board:

Chairman R. Bekkering
Members: H. von Gronau
B. Müller

Summary of Facts and Submissions

I. The appeals of the patent proprietor and the opponent are directed against the decision of the opposition division concerning maintenance of the European Patent No. 1 715 348 in amended form. The opposition division was of the opinion that the subject-matter of independent claim 1 as granted was not new in view of document

E1: WO 2004/042383 A1.

Claim 1 of the auxiliary request 1, which is identical to claim 1 of the main request, was also considered not to be new in view of document E1. Claims 1 of auxiliary requests 2 and 3 were held not to be clear, contrary to Article 84 EPC, because of the expression "during the process of fastening". The opposition division was of the opinion that the patent according to auxiliary request 4 and the invention to which it related met the requirements of the EPC. In particular, the opposition division held that claim 1 involved an inventive step in view of documents E1 and

E4: WO 02/088671 A1.

II. Document

E6: Hongfeng Y. et al.: "Microfluidic Chip for Peptide Analysis with an Integrated HPLC Column, Sample Enrichment Column, and Nanoelectrospray Tip", Analytical Chemistry, Vol. 77, No. 2, January 15, 2005, pages 527 - 533,

was filed by the opponent in preparation for oral proceedings before the opposition division. The

opposition division was of the opinion that document E6 was late filed and not prima facie relevant and accordingly did not admit document E6 into the proceedings.

III. With the statement setting out the grounds of appeal, the appellant patent proprietor requested that the decision of the opposition division be set aside and the patent be maintained as granted (main request) or that the patent be maintained on the basis of the claims according to first to seventh auxiliary requests all filed with the grounds of appeal, wherein the claims of the fourth auxiliary request corresponded to the claims according to the patent as maintained by the opposition division.
As a further auxiliary request it requested that the appeal fee be reimbursed.

IV. With the statement setting out the grounds of appeal, the appellant opponent requested that the decision of the opposition division be set aside and that the patent be revoked in the entirety. It was also of the opinion that document E6 should have been admitted into the proceedings (cf. point 9 of the grounds of appeal dated 15 May 2014).

V. As a precaution, both parties requested that oral proceedings be held.

VI. In response to the respective grounds of appeal both parties filed their observations and counter-arguments.

VII. In a communication annexed to summons to oral proceedings the board expressed its provisional opinion, that inter alia the subject-matter of claim 1 of the main request was not new in view of document E1,

that the independent claims 1 of the first, second, fifth and seventh auxiliary requests were not clear because of the expression "during the process of fastening", and that the subject-matter of claim 1 of the third and fourth auxiliary request was not disclosed in the originally filed application documents. With respect to the sixth auxiliary request the board expressed the provisional opinion that claim 1 was clear and its subject-matter was originally disclosed and not suggested by the disclosure of the available prior art documents.

VIII. With a letter dated 4 October 2018 the appellant patent proprietor filed amended claims according to 11 auxiliary request (auxiliary requests 1, 1^{bis}, 2, 2^{bis}, 3, 4, 5, 5^{bis}, 6, 7, 7^{bis}), allegedly in reaction to the issues mentioned in the communication of the board, and put forward arguments as to why the claims were allowable.

IX. Oral proceedings took place on 7 November 2018. At the end of the oral proceedings the chairman of the board announced the decision.

At the beginning of the oral proceedings the appellant patent proprietor filed claims as a replacement for all previously filed claims according to a "main request ^{bis}", and auxiliary requests 1, 1^{bis}, 2, 2^{bis}, 3, 4, 5, 5^{bis}, 6, 7 and 7^{bis}, both as clean and marked-up versions in which a typing error in each of the independent method claims was corrected. The appellant patent proprietor subsequently withdrew the "main request ^{bis}" and auxiliary requests 3, 4, 5, 5^{bis}, 6, 7 and 7^{bis}, and filed an auxiliary request 6 (14:50 hours) filed at 14:50 hours comprising description pages 2-9, claims 1-14, drawing sheets 1/4 to 4/4.

The appellant patent proprietor also withdrew the request to reimburse the appeal fee.

As final request the appellant patent proprietor requested that the decision under appeal be set aside and that the patent be maintained as granted or on the basis of the claims of auxiliary requests 1, 1^{bis}, 2, 2^{bis} or 6 (14:50 hours), all auxiliary requests filed during the oral proceedings of 7 November 2018.

The appellant opponent requested that the decision under appeal be set aside and that the European patent No. 1715348 be revoked.

X. During the first-instance opposition proceedings the following further documents were cited:

E2: WO 2005/072353 A2

E3: US 2003/142291 A1

E5: WO 02/064247 A1

XI. Claim 1 as granted (main request) reads as follows (feature numbering in square brackets added by the board):

- [1] "A handling unit adapted for handling a microfluidic device (16), the handling unit comprising
- [2] a first clamping element (14) and a second clamping element (15), and
- [3] an actuation mechanism adapted for driving at least one of the clamping elements (14, 15),
- [4] wherein, when the at least one of the clamping elements is driven to a first position, a microfluidic device (16) may be placed between

- the clamping elements (14,15) or taken out of the clamping elements (14, 15),
- [5] when the at least one of the clamping elements (14, 15) is driven to a second position, the microfluidic device (16) is gripped and fastened by the clamping elements (14, 15), and
- [6] at least one of the clamping elements (14, 15) comprises one or more fluid connectors (28) adapted for establishing one or more fluid connections with corresponding fluid ports (29) of the microfluidic device (16) when the at least one of the clamping elements (14, 15) is driven towards the microfluidic device,
- [7] characterized in that at least one of the clamping elements (14, 15) comprises alignment facilities adapted for forcing the microfluidic (16) device [sic] into a predefined position."

Claim 1 according to auxiliary request 1 comprises in comparison to claim 1 of the main request the following additional feature at the end (feature numbering in square brackets added by the board):

- [8] "so that, during the process of fastening the microfluidic device (16), the microfluidic device (16) is aligned relative to the clamping elements (14, 15)."

Claim 1 of auxiliary request 1^{bis} (which corresponds to claim 14 of auxiliary request 1) reads as follows (feature numbering in square brackets added by the board):

- [1] "A method for detachably fastening a microfluidic device (16) in a handling unit,

- [2] the handling unit comprising a first clamping element (14) and a second clamping element (15), the method comprising
- [3] placing the microfluidic device (16) between the first (14) and the second clamping element (15) located at respective first positions,
- [4] driving at least one of the clamping elements (14, 15) from its first position to a second position, whereby the microfluidic device (16) is gripped and fastened by the clamping elements (14, 15),
- [5] forcing the microfluidic device into a predefined position by use of alignment facilities comprised by at least one of the clamping elements so that, during the process of fastening the microfluidic device (16), the microfluidic device (16) is aligned relative to the clamping elements (14, 15), and
- [6] using a fluid connector comprised in at least one of the clamping elements (14, 15) for establishing one or more fluid connections with corresponding fluid ports of the microfluidic device when the at least one of the clamping elements is driven towards the microfluidic device."

Claim 1 of auxiliary request 2 corresponds to claim 1 of auxiliary request 1 with the following additional feature at the end of the claim (feature numbering in square brackets added by the board):

"and

- [9] so that, after the microfluidic device (16) has been gripped, it is exactly located at the predefined position."

Claim 1 of auxiliary request 2^{bis} corresponds to claim 1 of auxiliary request 1^{bis} and has the following additional feature between the penultimate and the last paragraph of the claim (feature numbering in square brackets added by the board):

"and

[5A] so that, after the microfluidic device (16) has been gripped, it is exactly located at the predefined position,"

Claim 1 of auxiliary request 6 (14:50 hours) reads as follows (feature numbering in square brackets added by the board):

- [1] "A handling unit adapted for handling a microfluidic device (16), the handling unit comprising
- [2] a first clamping element (14) adapted as a first clamping jaw and a second clamping element (15) adapted as a second clamping jaw, and
- [3] an actuation mechanism adapted for driving the clamping elements (14, 15),
- [4] wherein, when the clamping elements are driven to a first position, a microfluidic device (16) may be placed between the clamping elements (14, 15) or taken out of the clamping elements (14, 15),
- [5] when the clamping elements (14, 15) are driven to a second position, the microfluidic device (16) is gripped and fastened by the clamping elements (14, 15), and
- [6] at least one of the clamping elements (14, 15) comprises one or more fluid connectors (28) adapted for establishing one or more fluid connections with corresponding fluid ports (29) of the microfluidic device (16) when the clamping

elements (14, 15) are driven towards the microfluidic device, characterized in that

- [7] at least one of the clamping elements (14, 15) comprises alignment facilities adapted for forcing the microfluidic (16) device [sic] into a predefined position,
- [8] wherein the actuation mechanism is adapted for moving the first clamping jaw (14) and the second clamping jaw (15) towards the microfluidic device (16) and comprises a threaded rod (17) driven by a drive motor (18) via a drive shaft (19) so that, if the drive shaft (19) is rotated in a clockwise direction, the first clamping jaw (14) will be moved towards the microfluidic device (16) and the second clamping jaw (15) will be moved towards the microfluidic device (16)."

Independent claim 14 of auxiliary request 6 (14:50 hours) reads as follows (feature numbering in square brackets added by the board):

- [1] "A method for detachably fastening a microfluidic device (16) in a handling unit,
- [2] the handling unit comprising a first clamping element (14) adapted as a first clamping jaw, a second clamping element (15) adapted as a second clamping jaw, and an actuation mechanism adapted for moving the first clamping jaw (14) and the second clamping jaw (15) towards the microfluidic device (16) and comprising a threaded rod (17) driven by a drive motor (18) via a drive shaft (19) so that, if the drive shaft (19) is rotated in a clockwise direction, the first clamping jaw (14) will be moved towards the microfluidic

device (16) and the second clamping jaw (15) will be moved towards the microfluidic device (16), the method comprising

- [3] placing the microfluidic device (16) between the first (14) and the second clamping element (15) located at respective first positions,
- [4] driving the clamping elements (14, 15) from its first position to a second position, whereby the microfluidic device (16) is gripped and fastened by the clamping elements (14, 15),
- [5] forcing the microfluidic device into a predefined position by use of alignment facilities comprised by at least one of the clamping elements, and
- [6] using a fluid connector comprised in at least one of the clamping elements (14, 15) for establishing one or more fluid connections with corresponding fluid ports of the microfluidic device when the clamping elements are driven towards the microfluidic device."

Reasons for the Decision

- 1. Admission of late filed document E6
 - 1.1 Document E6 was filed by the opponent in preparation for oral proceedings before the opposition division. The opposition division was of the opinion that document E6 was not prima facie relevant, because it did not disclose the following two features:
 - actuation mechanism adapted for driving both of the clamping elements towards the microfluidic device,
 - arrangement of the alignment pins and the bore holes in the stator plate of the handling unit.

The opposition division was of the opinion that high pressure conditions would not necessarily imply that the second clamping element included bore holes and that document E6 was not more relevant than documents E1 or E3. Therefore document E6 was not admitted into the proceedings by the opposition division.

- 1.2 The opponent, however, was of the opinion that document E6 should have been admitted. It was novelty destroying for the subject-matter of independent claims 1 and 14 as granted. Document E6 was a brief scientific article, published by the patentee itself and ready to comprehend. The filing date of that document was such that the patentee not only had the opportunity to comment thereon but also did so (cf. point 9 of the grounds of appeal dated 15 May 2014).
- 1.3 The patent proprietor put forward that document E6 should be disregarded in the appeal proceedings as late filed, because it was not more relevant than the documents on file and therefore it did not prima facie prejudice the maintenance of the opposed patent, and it was only filed at the end of the first instance opposition proceedings. The opposition division exercised its discretion properly considering all these aspects (cf. point 2.3 of the response dated 19 September 2014).
- 1.4 The board follows the view expressed by the patent proprietor. The board considers that the opposition division properly exercised its discretion not to admit document E6 into the opposition proceedings. The board therefore, exercising its power under Article 12(4) RPBA, does not admit document E6 into the appeal proceedings.

2. Admission of the requests filed during the appeal proceedings

2.1 The opponent was of the opinion that the claims filed during the oral proceedings before the board comprised the amendment in feature 6 of the independent method claim defining that a fluid connector "comprised in at least one of the clamping elements (14, 15)" had already been filed during the first-instance opposition proceedings. At the oral proceedings before the opposition division, the patent proprietor had withdrawn that amendment (cf. minutes, page 2, last two paragraphs). The reintroduction of the amendment was an abuse of procedure and could therefore not be admitted into the appeal proceedings, or it should at least have been reintroduced with the grounds of appeal.

The opponent did not object to the correction of the typing error in feature 5 of claim 14 where the word "comprises" was replaced by the word "comprised".

2.2 The patent proprietor argued at the oral proceedings before the board that the feature defining that a fluid connector was comprised in at least one of the clamping elements was introduced into the method claims in the first instance proceedings to overcome the opponent's added-subject-matter objection. Since the opposition division did not share the opponent's view that the method claim went beyond the content of the originally filed application, the patent proprietor requested in the oral proceedings before the opposition division that the introduced feature be deleted for reasons of efficiency. In response to the preliminary opinion of the board of appeal that claim 14 as granted defined an inadmissible intermediate generalisation contrary to

Article 123(2) EPC, it was a legitimate reaction to reintroduce that feature.

- 2.3 The board notes that the amendment in the independent method claims was introduced in reply to the communication of the board annexed to the summons to oral proceedings. The board therefore has discretion under Article 13(1) RPBA to admit and consider any amendment to a party's case. Although it may seem efficient for the patent proprietor to wait for the board's assessment before filing possible amendments, all possible amendments should generally be filed with the statement of grounds of appeal or in response to the other party's statement of grounds of appeal. However, in the present case the board considers the complexity of the amendment to be low, both for the board and for the opponent, and the amended claims were still filed well ahead of the oral proceedings.
- 2.4 The board therefore exercised its discretion under Article 13(1) RPBA in admitting the auxiliary requests 1, 1^{bis}, 2, 2^{bis} and 6 (14:50 hours) filed at the oral proceedings before the board.
3. Main request - independent claim 1 as granted - novelty (Article 54(1) EPC 1973)
- 3.1 The opposition division was of the opinion that document E1 disclosed all features of claim 1 (cf. point 2.2.1 of the reasons of the contested decision).
- 3.2 The patent proprietor agreed that most of the features of claim 1 were known from document E1, but that E1 did not disclose the combination of features according to which the microfluidic device (16) was handled by driving the clamping elements (14, 15) to a position in

which the microfluidic device (16) was gripped and fastened by the clamping elements, wherein alignment facilities of the clamping elements 14, 15 forced the microfluidic device 16 into a predefined position. Firstly, document E1 did not teach gripping a microfluidic device by driving a clamping element. Furthermore, no such aligning force was applied by alignment features of document E1, i.e. slot 816, since microfluidic device 302A merely rested statically within slot 816 without a dynamic force acting thereon. Accordingly, the combined gripping and fastening and alignment procedure performed by driving a clamping element according to the combination of features 5 and 7 of claim 1 of the opposed patent was not disclosed by E1. In contrast thereto, document E1 firstly performed a procedure of aligning (sentence bridging pages 21 and 22 of E1) and then separately performed a second procedure of clamping (last sentence of the first paragraph of page 22 of E1) (cf. page 14, 2nd and 3rd paragraph of the statement setting out the grounds of appeal). The patent proprietor confirmed this view in the oral proceedings before the board.

- 3.3 The opponent in reply (cf. letter dated 14 August 2014, point 10) put forward that the opposition division rightly concluded that claim 1 was an apparatus claim and that accordingly the defined structural features did not contain any limitations of the kind alleged by the patentee, i.e. limitation in terms of process instructions calling for a "single motion", i.e. a process according to which gripping and fastening and aligning of the microfluidic devices was performed simultaneously. Accordingly, i.e. in the absence of any distinguishing features vis-a-vis the handling unit disclosed by document E1, the opposition division rightly regarded document E1 as a novelty destroying

disclosure for the subject-matter of claim 1. The opponent confirmed its view in the oral proceedings before the board and agreed to the corresponding provisional opinion of the board.

- 3.4 The board agrees with the view of the opponent and the opposition division. When in the apparatus disclosed in document E1 the clamping element 804 is driven to a second position, the microfluidic device 302A is gripped and fastened by the clamping elements (see figures 7D and 7E). Gripping of the microfluidic device can take place only when it is touched from both sides with a certain force. When the microfluidic device is introduced between the clamping elements it might touch, but not grip, one clamping element. Furthermore, the claim does not define that the alignment facilities force the microfluidic device into a predetermined position when it is gripped and fastened. The claim only defines that the alignment facilities are adapted for forcing the microfluidic device into a predetermined position.
- 3.5 The subject-matter of claim 1 therefore does not fulfill the novelty requirement of Article 54(1) EPC 1973.
4. Auxiliary request 1 - claim 1 - clarity (Article 84 EPC 1973)
- 4.1 The opposition division came to the conclusion that in the additional feature [8] (see above, at point XI) the wording "during the process of fastening" did not allow to clarify when the alignment was actually performed, and that "during the process" could be interpreted as taking place at the beginning, in the middle (somewhere) or at the end. Hence, the process of

alignment was not clearly defined (cf. point 4.2 of the reasons of the contested decision).

- 4.2 The opponent agreed with the view of the opposition division that the term "during the process of fastening" was completely unclear (cf. point 17 of the letter dated 14 August 2014). Furthermore, it defined a method step and it was not clear which limitations were imposed on the handling unit by this method step.
- 4.3 The patent proprietor put forward that the term "during the process of fastening" was not unclear but broad. The process of fastening was defined in the claim by the definition of feature 5 *"when the at least one of the clamping elements (14, 15) is driven to a second position, the microfluidic device (16) is gripped and fastened"* (cf. point 5.1 of the grounds of appeal dated 14 May 2014). The process of fastening related to the process of driving the at least one of the clamping elements from the first position to the second position and started exactly when the clamping element started to move towards the microfluidic device and stopped when the clamping element had reached the second position. Functional features were generally allowable in an apparatus claim as confirmed by the case law of the boards of appeal. Thus the added feature 8 made features 4 and 5 more specific and perfectly matched the claim language of features 4 and 5 and therefore met the requirements of Article 84 EPC (cf. in particular point 2.2 of letter dated 19 December 2014).
- 4.4 The board considers claim 1 not to be clear. Feature 5 in an apparatus claim should not be considered as defining a process but a position and characteristic of the clamping elements at the second position. Furthermore, the claim does not define a link between

feature 5 and the process of fastening. Therefore, it is not clear whether the process of fastening starts when the clamping elements are driven to a first position and the microfluidic device is placed between the clamping elements, when the clamping elements start to move to the second position, or only when they start to touch the device from both sides. The claim does not give a clear definition of "the process of fastening" and the process of fastening and the limitations imposed on the handling unit are therefore not clearly defined.

4.5 Accordingly, claim 1 lacks clarity, contrary to the requirements of Article 84 EPC 1973.

5. Auxiliary request 1^{bis} - claim 1 - clarity (Article 84 EPC 1973)

5.1 In the oral proceedings before the board the patent proprietor was of the opinion that the definition "during the process of fastening the microfluidic device" in a method claim was broad but perfectly clear. The claim already defined the step of "driving at least one of the clamping elements (14, 15) from its first position to a second position, whereby the microfluidic device (16) is gripped and fastened by the clamping elements". This process of fastening was then further specified by defining the alignment of the microfluidic device during this fastening process. The person skilled in the art could understand nothing else.

5.2 The opponent put forward that the definition "during the process of fastening" was also not clear in the method claim, because the claim also did not provide a clear teaching when the process of fastening started.

The assumption that the process of fastening started with the driving of the at least one of the clamping elements to the second position was just one option. Therefore the claim was not clear for the same reasons as those relating to the corresponding apparatus claim.

5.3 In the board's opinion the definition "during the process of fastening" is not clear, because, as in the corresponding apparatus claim of auxiliary request 1, the process is not clearly defined either. The claim does not define what the process of fastening involves. The assumption of the patent proprietor that the process of fastening consists of the driving of at least one of the clamping elements from its first position to a second position is only one possible option. Another option could even be that the process of fastening starts with the placing of the microfluidic device between the first and second clamping elements, i.e. the first step of the method for detachably fastening the microfluidic device. The board therefore concludes that the claim does not define what the process of fastening encompasses.

5.4 Claim 1 therefore does not meet the clarity requirements of Article 84 EPC 1973.

6. Auxiliary request 2 - claim 1 - clarity (Article 84 EPC 1973)

6.1 In addition to the lack-of-clarity objection raised for claim 1 of the auxiliary request 1 the opponent raised a lack of clarity objection with respect to newly added feature 9. Feature 7 already defined that the alignment facilities were adapted for forcing the microfluidic device into a predetermined position. It was therefore not clear what was meant by the additional definition

in feature 9 that the device was exactly positioned at the predefined position after the microfluidic device had been gripped (cf. letter dated 14 August 2014, point 24).

- 6.2 The patent proprietor put forward that the newly added feature 9 made clear what "the process of fastening" comprised. The definition "after the microfluidic device has been gripped, it is exactly located at the predefined position" made clear that the process of fastening spanned the time "when the at least one of the clamping elements is driven to a second position" and "the microfluidic device is gripped and fastened by the clamping elements" as defined in feature 5. For the person skilled in the art it was clear that this constituted the only possible meaning of the process of fastening.
- 6.3 The board considers claim 1 not to be clear for the same reasons as those given in relation to claim 1 of auxiliary request 1. The last feature provides an additional definition of the position of the microfluidic device when the at least one of the clamping elements is driven to a second position where it is gripped and fastened, but it does not define when the process of fastening starts.
- 6.4 Claim 1 therefore does not meet the clarity requirements of Article 84 EPC 1973.
7. Auxiliary request 2^{bis} - claim 1 - clarity (Article 84 EPC 1973)
- 7.1 The opponent does not consider claim 1 to be clear for the same reasons as those set forth for the corresponding apparatus claim of auxiliary request 2.

- 7.2 The patent proprietor was convinced that this claim 1 was also clear to a person skilled in the art for the same reasons as those given for claim 1 of the auxiliary request 2.
- 7.3 The board concludes that method claim 1 is likewise not clear for the same reasons brought forward for claim 1 of auxiliary request 2.
- 7.4 Claim 1 therefore does not meet the clarity requirements of Article 84 EPC 1973.
8. Auxiliary request 6 (14:50 hours) - claim 1 - amendments (Article 123(2) EPC)
- 8.1 The opponent identified an inadmissible intermediate generalisation. Features from paragraph 49 of the application as originally filed belonged to the embodiment described in paragraphs 48 - 56. The particular configuration of the clamping elements in combination with the particular implementation of the threaded rod was thus missing (cf. point 42 of letter dated 14 August 2014). In particular the clockwise rotation of the drive shaft was not disclosed in combination with a general threaded rod. Furthermore, the gripping device comprised first and second clamping jaws which, according to description paragraphs 0048 - 0056 of the original application, were particularly configured. Since the details of the threaded rod, like the thread or a screw nut, and the clamping jaws were essential, the claim was broadened in a vague way by leaving out the disclosed essential features of the specific and only embodiment of an actuation mechanism including a threaded rod.

- 8.2 According to the patent proprietor, the independent claims were based on the independent claims of the main request and additionally included features which were disclosed in original paragraph 49 (cf. point 6.7.1 of the grounds of appeal dated 14 May 2014). There was no structural and functional correlation between the claimed actuation mechanism and the remaining features cited by the opponent. The fitting, for example, had nothing to do with the actuation mechanism (cf. point 2.6 of letter dated 19 December 2014). Not every detail in relation to the threaded rod, like the kind of thread or the screw nut, had to be explicitly defined in a claim. These were details of a threaded rod that a person skilled in the art would inevitably consider when the threaded rod was defined. Not mentioning all the details in relation to a threaded rod did not lead to an inadmissible intermediate generalisation.
- 8.3 The board agrees with the opinion of the patent proprietor. The question is, according to established case law, whether the amended claim provides the person skilled in the art with new information that was not originally disclosed. The board is of the opinion that not defining all the details of the threaded rod and the clamping jaws as disclosed in particular in paragraphs 0048 - 0056 of the originally filed description does not give a person skilled in the art new information that was not originally disclosed.
- 8.4 The subject-matter of claim 1 therefore meets the requirements of Article 123(2) EPC.
9. Auxiliary request 6 (14:50 hours) - claim 1 - clarity (Article 84 EPC 1973)

- 9.1 The opponent put forward that it was not clear what was meant by the wording "clamping element adapted as a ... clamping jaw" (cf. point 45 of letter dated 14 August 2014).
- 9.2 The patent proprietor could not recognize a clarity problem with the expression "clamping jaw" (cf. point 2.6 of letter dated 19 December 2014). In the oral proceedings before the board the patent proprietor further stated that the wording "clamping element adapted as a ... clamping jaw" only meant that the clamping element equated to a clamping jaw.
- 9.3 The board agrees with the opinion of the patent proprietor. The definition that a (first) clamping element is adapted as a (first) clamping jaw may be linguistically unusual, but the skilled person immediately recognizes that it means that the clamping element is designed as a clamping jaw.
- 9.4 The board therefore concludes that claim 1 fulfills the clarity requirements of Article 84 EPC 1973.
10. Auxiliary request 6 (14:50 hours) - claim 1 - novelty (Article 54(1) EPC 1973)
- 10.1 The patent proprietor put forward that claim 1 specified that a common threaded rod as part of the actuation mechanism acted on both clamping elements simultaneously to move both clamping elements along opposite directions towards the microfluidic device.

Each of documents E1 to E5 failed to disclose two moving clamping elements being driven via a common threaded rod for performing the corresponding driving tasks for both clamping elements at the same time (cf.

point 6.7.2 of the statement setting out the grounds of appeal dated 14 May 2014). The patent proprietor also pointed to pages 13 - 26 of the statement setting out the grounds of appeal for further details of the disclosure of the cited documents.

10.2 The opponent did not raise any lack-of-novelty objection with respect to the subject-matter of the claims.

10.3 The board is of the opinion that the subject-matter of claim 1 is new.

- Document E1, in particular figures 7D - 7F and paragraph 0094, discloses a handling unit for handling a microfluidic device in which the top-plate 804 is adapted to be moved up and down by the top-plate actuator 808 so that the microfluidic device 302A may be secured within the interface 314. Document E1 does not disclose that the base plate can be moved.
- Document E2, in particular figure 12A and paragraph 0123, discloses that the upper clamping element 1207 is urged against upper face 1221 of the microfluidic device 1205 by movement of an arm 1211. It is not disclosed that the platform 1217 is movable.
- Document E3, in particular figure 1 and paragraphs 0047 - 0049, discloses a handling unit with a base 16, a cover 18 and a hinge 20 that attaches the base to the cover. A removable cartridge is inserted into the housing when the cover is in the open position and then the cover is moved into the closed position where the cover provides controlled

pressure to the removable cartridge. Document E3 does not disclose that the cover and the base are driven. A threaded rod is not mentioned.

- Document E4, in particular figures 1A, 1B, 1C and page 14, line 29 to page 15, line 8, discloses a device 300 for mounting a separation unit 100 in a separation apparatus. After insertion of the separation unit 100, the lower part 302 of the device and the upper part 304 are clamped together, thus creating a pressure that seals the grooves of the separation unit against the membrane support. Either one of the upper and lower parts 302 and 304 may be movable, or they may both be movable. The parts can be manually moved by mechanical means, which may be electrically, pneumatically or hydraulically supported. However, document E4 does not disclose to use a threaded rod for moving both parts of the device simultaneously.

- Document E5, in particular figure 1 and page 4, lines 12 - 24, discloses a holder consisting of a U-shaped accommodation part 1 having two arms 11, 12 and a base part 13 which connects the arms 11, 12. The U-shaped accommodation part 1 is arranged on an assembly plate 14, which can in turn be attached to a larger overall system with the aid of holes 17. Threaded holes 15, 16 are provided on the front faces of the arms 11, 12, enabling a pressure plate 4, which is provided with through-holes 18, to be attached with the aid of screws 19. The document does not disclose to move the pressure plate and the accommodation part simultaneously and with the help of a threaded rod.

- 10.4 Therefore, the board comes to the conclusion that none of the cited prior art documents discloses all the features of claim 1 and that the subject-matter of claim 1 fulfills the novelty requirement of Article 54(1) EPC.
11. Auxiliary request 6 (14:50 hours) - claim 1 - inventive step (Article 56 EPC 1973)
- 11.1 The patent proprietor put forward that none of the prior-art documents suggested a threaded rod in a handling unit that drove both clamping jaws simultaneously in opposite directions. The provision of a common threaded rod made it possible to move both clamping elements in a compact way from a hardware point of view and in a simple way in terms of operation (cf. points 6.7.2, 6.7.3 of the grounds of appeal dated 14 May 2014).
- 11.2 The opponent did not raise a lack-of-inventive step objection with regard to the claims of auxiliary request 6 (14:50 hours).
- 11.3 The board considers document E4 to be the closest prior art document, because it is the only document that discloses a handling unit for handling a microfluidic device where both clamping elements are driven towards the microfluidic device. It discloses a handling unit adapted for handling a microfluidic device (document E4, abstract), the handling unit comprising a first clamping element (feature 302) and a second clamping element (feature 304), and an actuation mechanism adapted for driving both of the clamping elements (cf. page 15, lines 5-6), wherein, when the clamping elements are driven to a respective first position, a microfluidic device may be

placed between the clamping elements or taken out of the clamping elements (cf. figure 1A), when both of the clamping elements are driven to a respective second position, the microfluidic device is gripped and fastened by the clamping elements (cf. page 15, lines 2-5), and at least one of the clamping elements comprises one or more fluid connectors adapted for establishing one or more fluid connections with corresponding fluid ports of the microfluidic device when both of the clamping elements are driven towards the microfluidic device (cf. page 14, lines 30-34).

- 11.4 Document E4 furthermore addresses the issue that wrong positioning of the microfluidic device should be prevented (cf. page 15, lines 1 - 2), but it does not explicitly disclose alignment facilities at one of the clamping elements. However, the board considers the provision of some kind of alignment means at the clamping elements to force the microfluidic device into the predefined position to be obvious to a person skilled in the art in view of the teaching of document E4.
- 11.5 Furthermore, the subject-matter of claim 1 differs from the disclosure of document E4 in that the actuation mechanism comprises a threaded rod driven by a drive motor via a drive shaft so that, if the drive shaft is rotated in a clockwise direction, both the first and second clamping elements adapted as clamping jaws are moved towards the microfluidic device.
- 11.6 This differing feature has the effect that an actuation mechanism is realized that allows to position both clamping elements (cf. paragraph 0049 of the originally filed application documents).

- 11.7 With document E4 as closest prior art document the subject-matter of claim 1 solves in particular the problem to provide a suitable actuation mechanism for the handling unit.
- 11.8 The claimed actuation mechanism allows fastening in a simple way by means of a compact arrangement of the mechanism. None of the other cited documents suggests an actuation mechanism in form of a threaded rod that allows to move both clamping elements simultaneously towards the microfluidic device (cf. point 10.3 above). Therefore, the claimed solution is not suggested by these documents. Even if one considered another of the cited documents to constitute the closest prior art, the person skilled in the art would not arrive at the claimed solution because none of the cited documents discloses the claimed actuation mechanism.
- 11.9 The board concludes therefore that the combination of features of claim 1 is not suggested by the cited prior art documents and the subject-matter of claim 1 therefore meets the inventive-step requirement of Article 56 EPC 1973.
12. Claim 14 relates to a corresponding method for detachably fastening a microfluidic device in a handling unit in which a threaded rod is driven by a drive motor via a drive shaft so that, if the drive shaft is rotated in a clockwise direction, both clamping elements adapted as clamping jaws will be moved towards the microfluidic device.
- 12.1 The board is of the opinion that not defining all the details of the threaded rod and the clamping jaws as disclosed in particular in paragraphs 0048 - 0056 of

the originally filed description in the method claim either does not give a person skilled in the art new information that was not originally disclosed (cf. point 8.3 above, Article 123(2) EPC).

- 12.2 The board also considers the definition in the method claim that a (first) clamping element is adapted as a (first) clamping jaw to be sufficiently clear (cf. point 9.3 above, Article 84 EPC 1973).
- 12.3 The subject-matter of the method claim also includes the features of the special actuating mechanism and is therefore also new and involves an inventive step. (cf. points 10.4 and 11.8 above, Articles 54(1) and 56 EPC 1973).
- 12.4 The board concludes therefore that claim 14 and its subject-matter meet the requirements of the EPC.
13. Claims 2 - 13 are dependent from claim 1 and concern preferred embodiments of the subject-matter of claim 1. The subject-matter of these claims therefore also involves an inventive step.
14. The description is adapted to the amended claims and the relevant prior art documents are cited in the description. The description therefore fulfills the requirements of Rule 27(1) EPC 1973.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent in amended form in the following version:
- Claims: Nos. 1 to 14,
 - Description: Pages 2 to 9,
 - Drawings: Sheets 1/4 to 4/4,
- all according to auxiliary request 6 (14:50 hours) as filed during the oral proceedings of 7 November 2018 at 14:50 hours.

The Registrar:

The Chairman:



M. Kiehl

R. Bekkering

Decision electronically authenticated