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**Datasheet for the decision  
of 19 June 2009**

**Case Number:** T 1084/06 - 3.3.05

**Application Number:** 97111656.1

**Publication Number:** 0818228

**IPC:** B01D 27/00

**Language of the proceedings:** EN

**Title of invention:**

System comprising a disposable fluid separation module and substrate with quick connect capability

**Patentee:**

Entegris, Inc.

**Opponent:**

Pall Corporation

**Headword:**

Disposable filtration module/ENTEGRIS

**Relevant legal provisions:**

EPC Art. 54(1)(2), 56, 123

**Relevant legal provisions (EPC 1973):**

-

**Keyword:**

"Main request: amendments extend beyond the content of the application as filed"

"Main request A, Auxiliary requests 1A and 2A: novelty (no)"

"Auxiliary requests 3A to 5A: Inventive step (no) -

reformulation of the problem in less ambitious terms (7.5)

redesigning for adaptation: routine work (7.11)"

**Decisions cited:**

T 0523/89, T 0015/91

**Catchword:**

-



Case Number: T 1084/06 - 3.3.05

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.05  
of 19 June 2009

**Appellant:**  
(Patent Proprietor)

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**Decision under appeal:**

Decision of the Opposition Division of the  
European Patent Office posted 2 May 2006  
revoking European patent No. 0818228 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** G. Rath  
**Members:** J.-M. Schwaller  
H. Preglau

## Summary of Facts and Submissions

I. This appeal was lodged by the patent proprietor (hereinafter "the appellant") against the decision of the opposition division revoking European patent No. 0 818 228.

II. In the contested decision, the opposition division concluded in particular that the subject-matter of claim 1 of the main and of the 2<sup>nd</sup> and 3<sup>rd</sup> auxiliary requests lacked novelty over document

D1: US 5 022 986;

that the subject-matter of claim 1 of the first auxiliary request contravened Article 123(2) EPC and that of claim 1 of the fourth auxiliary request did not involve an inventive step.

III. Along with the grounds of appeal dated 12 September 2006, the appellant filed six new sets of claims as main and 1<sup>st</sup> to 5<sup>th</sup> auxiliary requests, respectively.

IV. Under cover of a letter dated 7 May 2007, the respondent inter alia objected to the subject-matter of claim 1 of the main request under Article 123(2) EPC and filed among others document

D16: US 5 462 675.

V. In letters dated 7 September 2007 and 23 April 2008, the appellant requested, on the one hand, not to admit into the appeal proceedings four documents, among which

D16, and, on the other hand, it submitted an expert statement by Michael Clarke.

VI. On 19 May 2009, the respondent objected to the claims then on file under Articles 54 and 56, in particular on the basis of document D1.

VII. Under cover of a letter dated 19 May 2009, the appellant submitted seven amended sets of claims as main request, main request A and 1<sup>st</sup> to 5<sup>th</sup> auxiliary request, respectively.

Independent claim 1 of the main request (which in essence corresponds to claim 1 of the 3<sup>rd</sup> auxiliary request of the contested decision) reads as follows:

*"A system for the point-of-use purification of photochemicals used in the microelectronics manufacturing industry comprising a disposable fluid separation module (2;40) and a substrate, said disposable fluid separation module (2;40) comprising:*

*a housing (23;41) including a first set of connector means (21;42) located on one end of said housing and being in fluid communication with the interior thereof, said connector means (21;42) being parallel and spaced apart from one another and not sharing seals with each other and adapted to be engaged in fluid tight relationship with a second set of connector means (25;54) provided on said substrate and being positioned and sized and shaped to engage with said first set of connector means (21;42);*

*a separation element within said housing; and*

a first matable element (22;43) sized and shaped to be retained by a second reusable matable element (32;5;52;50) on said substrate;

characterized in that said disposable fluid separation module is connected to said substrate in a manner which provides essentially simultaneous engagement and fluid tight sealing between mating connectors with corresponding retention of the module by a single action without producing relative motion between the mating connectors except that defined by the common axis of engagement of the parallel connectors."

Independent claim 1 of the main request A reads as follows (**differences with the main request emphasized by the board**):

"A system for the point-of-use purification of photochemicals used in the microelectronics manufacturing industry comprising a disposable fluid separation module (2;40) and a substrate, said disposable fluid separation module (2;40) comprising:

a housing (23;41) including a first set of connector means (21;42) located on one end of said housing and being in fluid communication with the interior thereof, said connector means (21;42) being parallel and spaced apart from one another and not sharing seals with each other **nor containing more than one sealing boundary and being** adapted to be engaged in fluid tight relationship with a second set of connector means (25;54) provided on said substrate and being positioned and sized and

*shaped to engage with said first set of connector means (21;42);*

*a separation element within said housing; and*

*a first matable element (22;43) sized and shaped to be retained by a second reusable matable element (32;5;52;50) on said substrate;*

*characterized in that said disposable fluid separation module is connected to said substrate in manner which provides essentially simultaneous engagement and fluid tight sealing between mating connectors with corresponding retention of the module by a single action without producing relative motion between the mating connectors."*

VIII. Oral proceedings took place on 19 June 2009. After discussion of the main request under Article 123(2) EPC, the appellant filed five new sets of claims labeled 1<sup>st</sup> to 5<sup>th</sup> auxiliary request in replacement of the five auxiliary requests dated 19 May 2009.

Claim 1 of the 1<sup>st</sup> auxiliary request A reads as follows **(differences with the main request A emphasized by the board)**:

*"A system for the point-of-use purification of photochemicals used in the microelectronics manufacturing industry comprising a disposable fluid separation module (2;40) and a substrate, said disposable fluid separation module (2;40) comprising:*

*a housing (23;41) including a first set of connector means (21;42) located on one end of said housing and being in fluid communication with the interior thereof, said connector means (21;42) being parallel and spaced apart from one another and not sharing seals with each other nor containing more than one sealing boundary and adapted to be engaged in fluid tight relationship with a second set of connector means (25;54) provided on said substrate and being positioned and sized and shaped to engage with said first set of connector means (21;42);*

*a separation element within said housing; and*

*a first matable element (22;43) sized and shaped to be retained by a second reusable matable element (32;5;52;50) on said substrate;*

***wherein*** *said disposable fluid separation module is connected to said substrate in a manner which provides essentially simultaneous engagement and fluid tight sealing between mating connectors with corresponding retention of the module by a single action without producing relative motion between the mating connectors*

***characterized in that the system comprises means of retention that are selected from the group consisting of: cams, levers, pins, latches and sliding plates."***

Independent claim 1 of the 2<sup>nd</sup> auxiliary request A reads as follows (**differences with the main request A emphasized by the board**):



"A system for the point-of-use purification of photochemicals used in the microelectronics manufacturing industry comprising a disposable fluid separation module (2;40) and a substrate, said disposable fluid separation module (2;40) comprising:

a housing (23;41) including a first set of connector means (21;42) located on one end of said housing and being in fluid communication with the interior thereof, said connector means (21;42) being parallel and spaced apart from one another and not sharing seals with each other nor containing more than one sealing boundary and adapted to be engaged in fluid tight relationship with a second set of connector means (25;54) provided on said substrate and being positioned and sized and shaped to engage with said first set of connector means (21;42);

a separation element within said housing; and

a first matable element (22;43) sized and shaped to be retained by a second reusable matable element (32;5;52;50) on said substrate;

**wherein** said disposable fluid separation module is connected to said substrate in a manner which provides essentially simultaneous engagement and fluid tight sealing between mating connectors with corresponding retention of the module by a single action without producing relative motion between the mating connectors,

**characterized in that fluid tight engagement between said first (21;42) and said second set of connector means (25;54) is effected through a first motion which**

*during said engagement is substantially linear and parallel to the axes of said first (21;42) and second set of connector means (25;54), and further including retention means for locking said disposable fluid separation module (2;40) to said substrate, wherein said locking is accomplished by a second motion which is substantially perpendicular to said first motion."*

Independent claim 1 of the 3<sup>rd</sup> auxiliary request A distinguishes from claim 1 of the 2<sup>nd</sup> auxiliary request in that the passage "*characterized in that the fluid separation module has three fluid connectors (21) on the top end of the module and in fluid communication with the separation element within housing (23)*" has been added at the end of claim 1.

Independent claim 1 of the 4<sup>th</sup> auxiliary request A distinguishes from claim 1 of the 3<sup>rd</sup> auxiliary request in that the three fluid connectors (21) on the top end of the module and in fluid communication with the separation element within housing (23) are *female* connectors.

Independent claim 1 of the 5<sup>th</sup> auxiliary request A distinguishes from claim 1 of the 4<sup>th</sup> auxiliary request in that the separation element *is a membrane filter*.

- IX. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims according to the main request filed with the letter dated 19 May 2009 or according to the main request A filed with the letter dated 19 May 2009 or according to one of the first to fifth auxiliary

request A filed during the oral proceedings of 19 June 2009.

The respondent requested that the appeal be dismissed.

## **Reasons for the Decision**

### 1. *Admissibility of documents*

1.1 The appellant requested the board not to admit into the appeal proceedings further four documents, among which two documents filed during the opposition procedure and two new documents, among which D16.

1.2 The board observes that the two documents filed during the opposition procedure were submitted on 21 February 2006 in reaction to amended claims submitted on 3 February 2005 and the other two documents were filed under cover of a letter dated 7 May 2007 in reaction to amended claims submitted with the grounds of appeal. Therefore, as regards the appeal proceedings, none of these documents were late filed.

All the documents having been submitted at the latest on 7 May 2007, the appellant had sufficient time for duly taking into consideration this material, and the board therefore does not see any reason not to admit them into the appeal proceedings.

### 2. *Main request - Amendments*

2.1 Claim 1 of the main request was objected to under Article 123(2) EPC. In this respect, the respondent

argued that in particular the feature "*said connector means being parallel and spaced apart from one another and not sharing seals with each other*" had no basis in the application as filed, because as could be seen from page 7, second paragraph, the feature that the connector means did not share seals could not be dissociated from the feature that the connectors did also not contain more than one sealing boundary.

2.2 The appellant argued that the amendment under dispute was supposed to describe the type of connector referred to as an "exclusive connector" in the application. The fact that such connectors did not share seals with each other was in particular supported in the passages at page 4, second paragraph; page 6, second paragraph and page 7, second paragraph.

2.3 The board observes that the passages at pages 4 and 6 belong to the part of the application headed "Background of the invention" and that these passages do not address the "exclusive connector" type of the invention described in the second paragraph at page 7, which reads (*bold and underlined added by the board*): "In accordance with an important aspect of the invention **necessary to achieve a reliable fluid tight connection**, the connectors of the module do not share seals, and therefore, their connector bodies and sealing boundaries, with any of the other connectors, **nor** do the connectors contain more than one sealing boundary. As used herein, this type of connector is referred to as an exclusive connector. The quick-connect modules of the present invention are such that the exclusive connectors do not require (and in fact prohibit) twisting action for their retention, since

exclusive connectors constrain the module in all directions except that defined by the common axis of engagement of the parallel connectors."

2.4 Since it is manifest from the above passage that both underlined features are "necessary to achieve a reliable fluid tight connection", and since the application as filed does not contain any indication that these two features might be dissociated, the board is of the opinion that the subject-matter of claim 1 of the present request extends beyond the content of the application as filed.

2.5 The appellant's argument that the feature "*nor containing more than one sealing boundary*" was redundant with the other feature and that it could therefore be omitted from claim 1 cannot be accepted by the board because both features are not synonymous one another.

2.6 Concerning the feature "*except that defined by the common axis of engagement of the parallel connectors*", , that the respondent held at the oral proceedings as extending beyond the application as filed, the board observes that the sole basis for it is to be found in the second paragraph of page 7 - reproduced in item 2.3 above - wherein the feature is however associated with other features which are neither recited in claim 1, nor do the other features have a synonymous counterpart in the subject-matter of present claim 1.

2.7 For the above reasons, claim 1 of the main request does not meet the requirements of Article 123(2) EPC.

3. Main request A - Novelty

3.1 The subject-matter of claim 1 of this request was objected to under novelty inter alia in the light of document D1 which relates to an apparatus for filtering products and chemicals from fluids, in particular those used to clean and coat eye glass lenses, the apparatus having a quick change disposable filter cartridge mounted on a manifold directing the fluid into and out of the filter cartridge (column 1, lines 6 to 10 and 45 to 48).

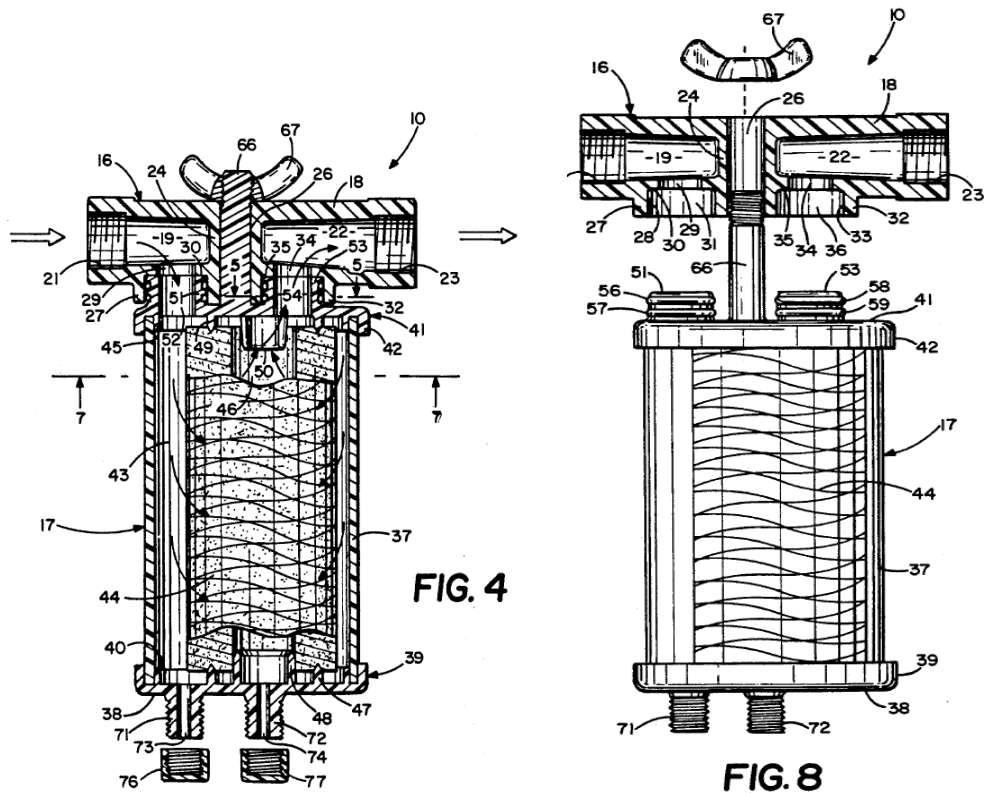
3.2 D1 - like the contested patent - discloses that the manifold and filter cartridge have cooperating sealing structures that prevent leakage of fluid from the manifold and filter cartridge and yet allow **rapid removal and replacement of the filter cartridge** relative to the manifold (column 1, lines 54 to 58).

The fluid filter assembly is a combination of a filter cartridge and of a manifold having a housing with fluid inlet and fluid outlet passages separated with a wall, the housing having a plurality of cylindrical inside surfaces surrounding pockets having an open end. Ports in the housing connect the passages with the pockets to direct fluid into and out of the filter cartridge. The filter cartridge has tubular members fitting into the pockets and having passages that carry fluid to and from a chamber accommodating a filter operable to separate foreign matter from the fluid flowing through the filter cartridge. Seals mounted on the tubular members are compressed into sealing engagement with the inside surfaces of the housing when the tubular members are located in the pockets and the passages in the

tubular members are aligned with the ports. The seals are O-rings under compression to provide a liquid tight relationship between the tubular members and housing and the filter cartridge is releasably retained on the manifold with a releasable connector assembly (D1, column 1, line 59 to column 2, line 12).

An example of one form of the connector assembly is a post extended through the hole in the wall of the housing. A holder, such as a nut, cooperating with the post and housing positions the tubular members in the pockets and maintains the sealing relationship of the seals between the tubular members and cylindrical inside surfaces. The holder is manually released from the post to allow the filter cartridge to be removed from the manifold. A replacement filter cartridge is mounted on the manifold by moving the post through the hole in the wall and inserting the tubular members in the pockets. This filter cartridge is retained on the manifold by replacing the holder on the post (D1, column 2, lines 13 to 26).

- 3.3 The fluid filter assembly with the above type of connector assembly - as illustrated in D1, Figures 4 and 8 - is reproduced hereinafter:



3.4 In this assembly, filter cartridge 17 is connected to manifold 16 by moving linearly the cartridge up onto the manifold. Then the wing nut 67 is threaded on the upper end of post 66 to clamp filter cartridge 17 on manifold 16. During this operation the O-rings 56, 57 and 58, 59 - which are not twisted nor turned during the mounting of the filter cartridge on manifold - ensure an even effective seal which prevents leakage of fluid from the manifold (D1, column 6, line 62 to column 7, line 20).

3.5 The appellant argued that the above fluid filter assembly did not anticipate the subject-matter of present claim 1 because:



- said assembly was unsuitable for the point-of-use purification of photochemicals used in the microelectronics manufacturing industry;
- the specific use claimed was clearly and unambiguously connected with the requirement to allow for the processing of hazardous substances without spillage and contamination;
- the use of threaded connectors and of T-line modules was excluded from the scope of protection;
- the retention of the filter module with a nut was not a single action but rather comprised the multi-step and cumbersome process of turning a fastener;
- the second matable element, i.e. the wing nut, was not on the substrate as required by claim 1.

3.6 The board disagrees with the above arguments for the following reasons:

- The question of anticipation of a claim to a device (a "system" in present claim 1) for a particular use is dealt with in e.g. the unpublished decisions T 523/89 (Reasons, item 2, paragraph 10) and T 15/91 (Reasons, item 3), from which it is clear that the indication of intended use is only to be seen as limiting to the extent that the device has to be suitable for this use. In other words, the disclosure of an apparatus without an indication of the particular use claimed, which apparatus would nevertheless be suitable therefor, would destroy

the novelty of a claim to the device for that particular use.

In the present case, the appellant explained that a system "for the point-of-use purification of photochemicals used in the microelectronics manufacturing industry" implicitly necessitated pumps as indicated in paragraph [0022] of the patent in suit and a "separation element" specific to the intended use. The board observes that in D1 the specific use - separating and collecting foreign materials from liquid chemicals used to clean and coat eye glass lens - defined at column 1, lines 45 to 48 - inevitably needs pumps as well, and even in the unlikely case that pumps were not needed, the board has no doubt that the filter assembly disclosed in D1 would be plainly able to work in association with pumps. Concerning the "separation element" allegedly specific for the above intended use, the board was not able to identify in the patent specification any mandatory limitation as regards the structure, porosity or composition of said "separation element". Under these circumstances, the board has therefore no doubt that the assembly disclosed in D1 is plainly suitable for the "purification of photochemicals used in the microelectronics manufacturing industry".

- That the specific use claimed would be clearly and unambiguously connected with the requirement to allow for the processing of hazardous substances without spillage and contamination and that this feature serves as a technically relevant limitation

vis-à-vis the state of the art is a desiderata feature which is not recited in present claim 1 and which therefore cannot be considered as a limitation.

- The use of threaded connectors or T-line modules, which may appear undesirable from the content of paragraphs [0007] and [0009] of the patent in suit, are however in no way excluded from the scope of protection of present claim 1.
  
- Even if the action of tightening a nut on a threaded post might comprise multiple steps - such as positioning the nut onto the post and turning several times the nut with the fingers - the board understands that in D1 retention of the disposal filter cartridge (17) is provided by the single action of tightening the wing nut (67) onto the threaded post (66), because in the absence of a clear definition in the patent specification of the expression "single action", it is not excluded that a single action might include the individual steps identified above.
  
- As claim 1 does not require that the second reusable matable element be permanently attached to the substrate, the board is satisfied with the respondent's argument that after being screwed on the threaded post, the nut manifestly will be on the substrate, as required by claim 1.

3.7 The other features of claim 1 can be read as follows in the filter assembly illustrated in Figures 4 or 8 (in parentheses the reference numbers as disclosed in D1):

- a housing (37, 38, 41) including

- a first set of connectors (51, 53) located on end (41) of the housing and being in fluid communication with the interior thereof, the connectors being parallel and spaced apart from one another and the seals (56, 57, 58, 59) satisfying the conditions defined in claim 1;
- a separation element (44) within said housing; and
- a first matable element (66) sized and shaped to be retained by a second reusable matable element (67) on said substrate.

3.8 For the reasons indicated above and as all the features of claim 1 can be read in combination in the filter assembly illustrated in Figures 4 or 8 of D1, the subject-matter of claim 1 of the present request lacks novelty (Article 54(1)(2) EPC).

4. First auxiliary request A - Novelty

4.1 In comparison to claim 1 of main request A, claim 1 of this request recites the additional feature that the system comprises means of retention that are selected from the group consisting of: cams, levers, pins, latches and sliding plates.

4.2 The board observes, as explained hereinafter, that in the two specific embodiments of the patent in suit (reproduced below), the means of retention is never a single element selected from either a cam, a lever, a pin, a latch or a sliding plate, but **comprises** such an element.

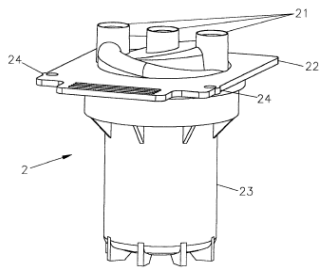


Fig. 2

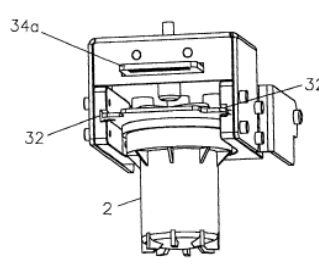


Fig. 3b

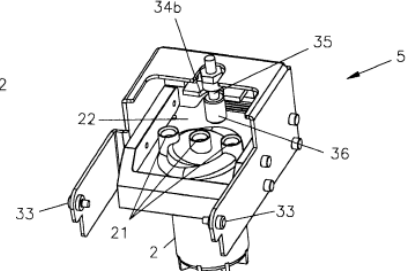


Fig. 3a

In the first embodiment - as illustrated in Figures 2, 3a and 3b above - the retention means comprises a flange (22), slots (32) and an articulated module (5) carrying the slots.

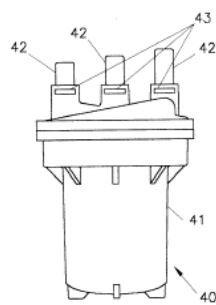


Fig. 4a

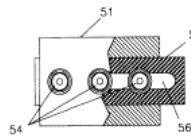


Fig. 5b

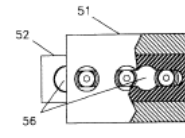


Fig. 5d

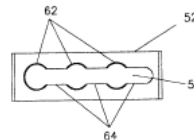


Fig. 6

In the second embodiment - illustrated in Figures 4a and 6 above - the retention means comprises slots (43) in the side walls of the connectors (42) and a moveable latch (52) attached to the substrate.

Thus, the wording of claim 1 of this auxiliary request is to be interpreted in such a manner that the retention means comprises a cam, a lever, a pin, a latch or a sliding plate.

4.3 In Figures 4 and 8 of D1, the filter cartridge 17 is being retained on manifold 16 with a releasable

connector comprising a threaded rod or post 66 joined to cap 41 (D1: column 6, lines 62 to 64). The retention means in this case hence comprises a pin, namely the rod or post 66.

The other features of the claim being - as established in items 3.1 to 3.7 - also disclosed in combination in the device illustrated in Figures 4 and 8 of D1, the subject-matter of claim 1 of the first auxiliary request A thus lacks novelty (Article 54(1)(2) EPC).

5. Second auxiliary request A - Novelty

5.1 Claim 1 of this request differs from claim 1 of the main request A by the additional feature that fluid tight engagement between the first and second set of connector means is effected through a first motion which during said engagement is substantially linear and parallel to the axes of said first and second set of connector means, and further including retention means for locking said disposable fluid separation module to said substrate, wherein said locking is accomplished by a second motion which is substantially perpendicular to said first motion.

5.2 In the embodiment according to Figures 4 and 8 in D1, the filter cartridge 17 is connected to the manifold 16 by moving linearly the cartridge up onto the manifold. This motion is linear and parallel to the axes of the tubular members 51 and 53 and of the pockets 31 and 36, as required by claim 1 under dispute. Then the wing nut 67 is threaded on the upper end of post 66 to clamp filter cartridge 17 on manifold 16 (D1, column 6, line 62 to column 7, line 11).

5.3 The board is of the opinion that the action of threading the wing nut on the post 66, which action locks the filter cartridge to the manifold, can manifestly be considered as "a second motion substantially perpendicular to the first motion", because even if the threading action includes a rotation, this rotation is carried out in a plane which is substantially perpendicular to the axis of the tubular members 51 and 53.

The other features of the claim being - as established in items 3.1 to 3.7 - also disclosed in combination in the device illustrated in Figures 4 and 8 of D1, the subject-matter of claim 1 of the second auxiliary request A thus lacks novelty (Article 54(1)(2) EPC).

6. Third, fourth and fifth auxiliary requests A - Novelty

6.1 Claim 1 of the third auxiliary request A differs from that of the second auxiliary request A by the additional feature that the number of connectors (21) on the top end of the module and in fluid communication with the separation element within housing (23) is three.

Claim 1 of the fourth auxiliary request A differs from that of the third auxiliary request A by the additional feature that the three connectors are female.

Claim 1 of the fifth auxiliary request A differs from that of the fourth auxiliary request A by the additional feature that the separation element is a membrane filter.

6.2 The novelty of these claims has not been disputed. The board also considers that the subject-matter claimed is novel over the known prior art, in particular over document D1 which instead of the three connectors on one end of the housing, as required in the claims 1 of the third to fifth auxiliary requests, only has two such connectors. Regarding the third, fourth and fifth auxiliary requests A, the requirements of Article 54(1)(2) EPC are fulfilled.

7. Third auxiliary request A - Inventive step

7.1 The patent in suit relates to a fluid separation apparatus, and more particularly to an apparatus which includes an easily replaceable and disposable fluid separation module capable of being engaged and retained in fluid tight relationship with a mating connection device. The purpose is to provide a disposable fluid separation means capable of connecting in a quick-connect fashion (page 1, lines 5 to 7; page 3, lines 56 to 58).

7.2 First the closest state of the art document has to be identified. In this respect, the appellant argued that D1 could not be considered as representing the closest state of the art because on the one hand, the filter assembly of D1 was not suitable for the specific purpose claimed, and on the other hand, the connecting system of D1 was not of the "quick connect" type.

The board cannot accept these arguments because, as explained in item 3.5, the filter assembly of D1 appears to be plainly suitable for the "purification of



photochemicals used in the microelectronics manufacturing industry". Furthermore, D1 (column 1, lines 50 to 53) indicates that the filter cartridge is "**releasably** mounted on the manifold so that the filter cartridge can be manually removed and replaced with **minimum amounts of time and labor** and without the use of tools" (emphasis added by the board) and the board is therefore convinced that D1 also aims at providing a "quick-connect" system, all the more insofar as the patent in suit does not indicate how quick the system claimed is supposed to be. For these reasons and since D1 has the most relevant technical features in common with the subject-matter of the claims 1 of the third (and also of the fourth and fifth) auxiliary request A, this document is to be taken as the starting point for assessing inventive step.

- 7.3 The appellant stated that starting from D1 as the closest state of the art, the problem to be solved was to be seen in the provision of a retention mechanism that avoided cumbersome and difficult engagement of threaded fasteners and that provided reliable sealing without contamination during the connection event (see also paragraphs [0014] and [0019] of the granted patent).
- 7.4 The board does not accept this formulation of the problem because the wording of claim 1 of the 3<sup>rd</sup> auxiliary request A in no manner excludes threaded fasteners. Furthermore, as can be seen from the statement at column 1, lines 54 to 56 of D1: "the manifold and filter cartridge have cooperating sealing structures that prevent leakage of fluid from the manifold", a retention mechanism that provides reliable

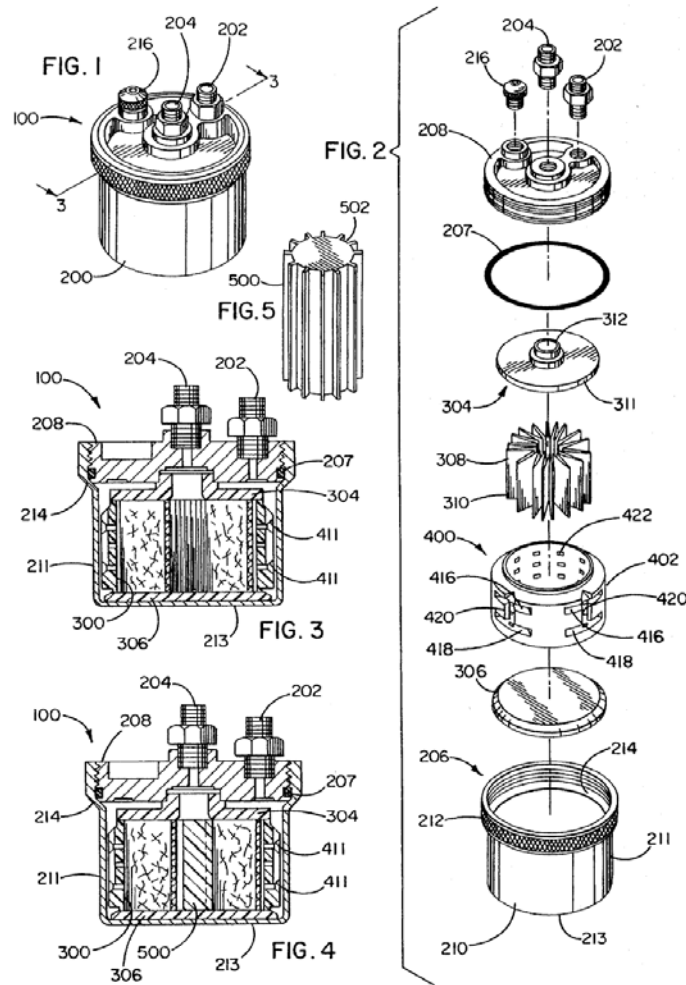
sealing without contamination during the connection event is already known from D1. The appellant stated in this respect that female connectors would however have better efficiency over male connectors as regards protection against contamination, but this statement has no support in the dispute patent. Quite the contrary, the patent in suit seems to place both types of connectors on an equal footing, since it discloses one embodiment with female connectors on top of the module (see Figures 1 to 3a) and one embodiment with male connectors on top of the module (see Figures 4a to 6), without any preference for the one or the other embodiment. The appellant also argued that female connectors would have a broad receiving rim that protected better against contamination, but the board observes that this feature finds no basis in the wording of claim 1 under dispute.

7.5 Accordingly, as the problem mentioned in item 7.3 has already been solved in D1, it has to be reformulated in less ambitious terms, namely in the provision of a disposable separation module suitable for the point-of use purification of photochemicals used in the microelectronics manufacturing industry which avoids or minimizes the formation of bubbles or dead-space within the separation element.

7.6 As a solution to this problem, the patent in suit now proposes the system according to independent claim 1, characterized in particular in that the fluid separation module has three fluid connectors (21) on the top end of the module and in fluid communication with the separation element within housing (23) (emphasis added by the board to identify the features

distinguishing the subject-matter of claim 1 of this request from that of claim 1 of the 2<sup>nd</sup> auxiliary request A).

- 7.7 For the board, this technical problem is credibly solved by the fluid separation module as defined in present claim 1.
- 7.8 To the question whether the above proposed solution is obvious or not in view of the state of the art, the respondent argued that it would be rendered obvious by the teaching of document D16 and the board concurs with the respondent's opinion for the following reasons.
- 7.9 First of all, the skilled person faced with the problem indicated in item 7.5 would indeed not ignore D16, because the filter assembly described therein is in particular designed for the purification of photoresist (a light sensitive chemical mixture) used in the integrated circuit industry (D16: column 1, lines 22 to 26), which use is embraced by the broader use defined in claim 1 under dispute, namely the "point-of use purification of photochemicals used in the microelectronics manufacturing industry", so that the filter assembly described in D16 is plainly suitable for the use presently claimed.
- 7.10 The filter assembly disclosed in D16 (Figures 1 to 5 - reproduced hereinafter - and column 3, line 6 to column



4, line 4) comprises a housing 200, a filter element 300 and a sleeve 400, with the housing including a container 206 - itself housing the filter element - and a cover 208 including inlet and outlet ports (202, 204) in the form of threaded male connectors and defining a fluid flow path through the filter assembly. The filter element comprises a filter 302 which can be formed from any filter medium utilized for fluid filtration, for example inter alia a porous membrane.

In the embodiment illustrated in Figures 1 to 5, in addition to the two threaded male connectors is also provided a vent 216 in the cover.

7.11 The vent 216 being provided on the same end of the housing as the two other connectors and its purpose being to vent air or any other gas from the filter housing (column 3, lines 39 to 44), the board is of the opinion that the skilled person faced with the problem identified under 7.5 thus obviously finds the solution to its problem in D16.

It is furthermore to be noted that the vent of D16 can directly and without any hindrance be inserted into the cover of the filter assembly known from D1, and no incompatibility between this feature and the filter assembly of D1 can be identified. In order to adapt the vent of D16 to the quick-connect system known from D1, its structure has to be made similar to that of the two connectors already on the cover of the filter assembly of D1. This means that it is made parallel and spaced apart from the other connectors so that it does not share seals with them nor contains more than one sealing boundary and that it is adapted to be engaged in fluid tight relationship with a connector on the manifold. Redesigning the structure for adaptation is according to the board's judgement merely a matter of routine work for the skilled practitioner which in the absence of any unexpected advantages or effects associated with the said adaptation cannot contribute to inventive step.

7.12 For the above reasons, the board concludes that the subject-matter of claim 1 of the third auxiliary request A is obvious to a person skilled in the art in the light of documents D1 and D16, and therefore said claim does not meet the requirements of Article 56 EPC.

8. Fourth and fifth auxiliary requests A - Inventive step

8.1 The reasoning under items 7.1 to 7.12 applies mutatis mutandis to claim 1 of the fourth and fifth auxiliary requests A, respectively.

8.2 Concerning the two features characterizing the respective claim 1 of these two requests, namely that the three connectors are female connectors (fourth auxiliary request A) and that the separation element is a membrane filter (fifth auxiliary request A) the board can also not see in them any contribution to an inventive step for the following reasons:

- As explained in item 7.4, the choice of a female connector does in the present case not provide for any unexpected advantage or effect in comparison to a male connector, so that the choice of the female connector type just amounts to an arbitrary choice among a very limited number (namely two) of commonly known and basic alternatives (i.e. male and female).
- Concerning the "membrane filter" (fifth auxiliary request A) as the separation element, the board observes that this technical feature does also not in the present case provide for any unexpected advantage or effect in comparison to other separation elements and therefore corresponds to an arbitrary choice among the multitude of commonly known filter media, in particular those disclosed in the passage at column 3, lines 63 to column 4, lines 16 of D16.

8.3 It follows that the subject-matter of claim 1 according to the fourth and fifth auxiliary requests A lacks an inventive step in the light of the disclosures of documents D1 and D16.

9. In conclusion, since none of the sets of claims on file meets the requirements of Article 52(1) EPC, none of the appellant's requests is allowable.

### **Order**

#### **For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

C. Eickhoff

G. Rath