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Datasheet for the decision of 14 October 2008

Case Number: T 1383/06 - 3.3.05

Application Number: 00952733.4

Publication Number: 1210164

IPC: B01D 29/21

Language of the proceedings: EN

Title of invention:
Oil filter with center tube having a built-in snap

Patentee:
Purolator Products NA, Inc.

Opponent:
Filtrauto

Headword:
Oil filter/PUROLATOR

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step (main request) no - obvious combination"
"Inventive step (auxiliary request): yes - non obvious combination"

Decisions cited:
-

Catchword:
-

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Case Number: T 1383/06 **-** 3.3.05

D E C I S I O N
of the Technical Board of Appeal 3.3.05
of 14 October 2008

Appellant: (Opponent)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 27 June 2006 concerning maintenance of European patent No. 1210164 in amended form.

Composition of the Board:

Chairman: G. Raths
Members: J.-M. Schwaller
C. Vallet

Summary of Facts and Submissions

I. This appeal was lodged by the opponent against the interlocutory decision of the opposition division maintaining the European patent in amended form on the basis of the main request submitted on 11 May 2006, claim 1 of which reads:

"1. An oil filter assembly (20) comprising

a filter housing (22) formed to include filter chamber (34), the filter housing including a base (36) formed to include a release port (68) located to drain oil from the filter chamber and a removable cover (24) coupled to the base to form the filter chamber therebetween,

a release valve (52) mounted for movement relative to the base (36) between an opened position allowing flow of oil from the filter chamber through the release port (68) and a closed position blocking flow of oil from the filter chamber through the release port,

a filter module positioned to lie in the filter chamber (34), the filter module including an exterior portion (38) located in the filter chamber to contact oil admitted into the filter chamber through an oil inlet provided in the filter housing, the filter module being formed to include an interior portion (28) defining a filtered-oil region located in the filter module to receive oil that has passed through the filter module from the exterior portion to the interior portion and arranged to discharge oil from the filter chamber through an oil outlet provided in the filter housing (22), the filter module having a support (28) with a plurality of flexible fingers (54) extending therefrom

a first biasing element (70) arranged to urge the release valve (52) away from the release port formed in the filter housing, characterised in that there is provided a second biasing element (30) positioned to lie in a space formed between the filter module and the cover and arranged to urge the filter module in the filter chamber toward the base to move the release valve to the closed position against a biasing force generated by the first biasing element (70) to maintain the release valve (52) in the closed position, wherein the removable cover (24) includes a top wall, a side wall coupled to the top wall and to the base, and an engagement plug (60) appended to the top wall and positioned to lie in the filter chamber to mate with the filter module, the second biasing element (30) is arranged to extend into an annular space located between the engagement plug (60) and a portion of the top wall of the removable cover (24), and the plurality of flexible fingers (54) are arranged to surround a distal portion of the engagement plug (60) and mate with a channel formed in the distal portion of the engagement plug (60), a spring constant associated with the second biasing element (30) is greater than a spring constant associated with the first biasing element (70) so as to ensure that the release valve (52) is maintained in the closed position regardless of the exact dimensions of the parts of the oil filter assembly (20)."

II. During the opposition procedure, the parties *inter alia* relied upon the following documents:

Dl: GB-A-2 162 079

D6: US-A-5 695 633

D7: EP-A-0 612 549

D8: US-A-5 922 196

III. In the contested decision, the opposition division found claim 1 to be inventive, rejecting in particular the opponent's objection that its subject-matter would be obvious in the light of the disclosure of document D1 taken in combination with the teaching of either document D6 or document D7.

IV. Along with the grounds of appeal, the opponent (now the appellant) filed the following four new documents:

D9: EP-B-0 577 660

D10: US-A-5 374 355

D11: DE-A-199 61 579

D12: GB-A-2 354 721

The appellant objected to the patent as maintained under Article 100(a) EPC, arguing that the claimed oil filter lacked an inventive step over the content of document D1 in combination with the teaching of either of documents D6, D7, D9, D10, D11, D12.

V. The patent proprietor (now the respondent) replied on 16 May 2007 and 24 September 2008 and argued in favour of the patentability of the claimed subject-matter.

Under cover of its letter dated 24 September 2008, it also submitted a set of amended claims as an auxiliary request, claim 1 of which reads as follows (after amendment at the oral proceedings of 14 October 2008 of reference number (46) into (44)):

"1. An oil filter assembly (20) comprising

a filter housing (22) formed to include filter chamber (34), the filter housing including a base (36) formed to include a release port (68) located to drain oil from the filter chamber and a removable cover (24) coupled to the base to form the filter chamber therebetween,

a release valve (52) mounted for movement relative to the base (36) between an opened position allowing flow of oil from the filter chamber through the release port (68) and a closed position blocking flow of oil from the filter chamber through the release port,

a filter module positioned to lie in the filter chamber (34), the filter module including an exterior portion (38) located in the filter chamber to contact oil admitted into the filter chamber through an oil inlet provided in the filter housing, the filter module being formed to include an interior portion (28) defining a filtered-oil region located in the filter module to receive oil that has passed through the filter module from the exterior portion to the interior portion and arranged to discharge oil from the filter chamber through an oil outlet provided in the filter housing (22), the filter module having a support (28) with a plurality of flexible fingers (54) extending therefrom

a first biasing element (70) arranged to urge the release valve (52) away from the release port formed in

the filter housing, characterised in that there is provided a second biasing element (30) positioned to lie in a space formed between the filter module and the cover and arranged to urge the filter module in the filter chamber toward the base to move the release valve to the closed position against a biasing force generated by the first biasing element (70) to maintain the release valve (52) in the closed position, wherein the removable cover (24) includes a top wall, a side wall coupled to the top wall and to the base, and an engagement plug (60) appended to the top wall and positioned to lie in the filter chamber to mate with the filter module, the second biasing element (30) is arranged to extend into an annular space located between the engagement plug (60) and a portion of the top wall of the removable cover (24), and the plurality of flexible fingers (54) are arranged to surround a distal portion of the engagement plug (60) and mate with a channel formed in the distal portion of the engagement plug (60), a spring constant associated with the second biasing element (30) is greater than a spring constant associated with the first biasing element (70) so as to ensure that the release valve (52) is maintained in the closed position regardless of the exact dimensions of the parts of the oil filter assembly (20), wherein the base (36) is formed to include an outlet post (44) arranged to extend into the filtered-oil region located in the filter module and formed to include the oil outlet provided in the filter housing (22) and the filter module includes a filter seal (94) arranged to slidably engage the outlet post to establish a sealed connection between the filter module and the outlet post to block flow of oil from the filtered-oil region through the release port (68)

via the filter chamber and to maintain the sealed connection during movement of the filter module in the filter chamber relative to the outlet post."

VI. At the oral proceedings, which took place on 14 October 2008, the appellant maintained the following lines of argumentation regarding lack of inventive step:

- The subject-matter of claim 1 of the main request would be obvious in the light of D1 taken in combination with D9;

- The subject-matter of claim 1 of the auxiliary request would be obvious in the light of D1 taken in combination with i) D9 and ii) D8 or D12.

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

The respondent requested that the appeal be dismissed or, alternatively, that the patent be maintained on the basis of the claims 1 to 8 according to the auxiliary request filed at the oral proceedings.

Reasons for the Decision

1. *Main request - Inventive step of claim 1*

1.1 The patent in suit relates to an oil filter assembly having an oil filter positioned within a filter chamber of the assembly, with a need for a filter assembly having an improved quick relief system and allowing for greater dimension tolerances for replaceable filters and housings (column 1, lines 5 to 7 and 52 to 55).

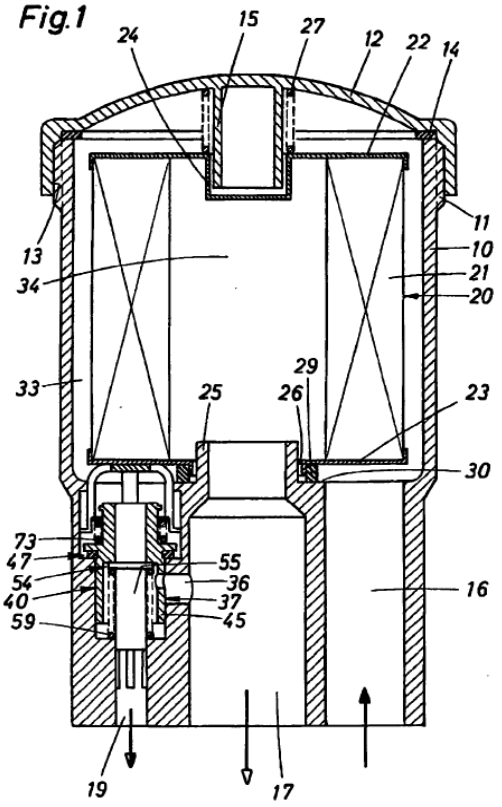
1.2 The parties agreed that the closest state of the art was represented by document D1, which relates to a filter for lubricating oil or fuel of an internal combustion engine provided with a liquid storage, said filter device including a housing sealed at its upper end by a removable housing cover; a removable annular radially traversable filter insert separating an unfiltered liquid chamber from a filtrate chamber in the filter housing; a duct for supplying the liquid to be filtered; a filtrate duct for discharging the filtered liquid; a drainage duct extending from the bottom of the filter housing and connectable to a fluid storage tank; a shut-off device associated with the drainage duct and exposing the drainage duct when the housing cover is loosened (page 1, lines 4 to 19).

In its claim 1, the shut-off device is defined as comprising a shut-off valve having a first valve member axially displaceable in a direction counter to a spring force acting upon a first valve seat and which is kept in its closed position by the lower end face of the incorporated filter insert; the shut-off valve including a second valve seat for a second valve body of a by-pass valve which combines with the shut-off valve to form a combination valve, said second valve body being axially displaceable in a direction counter to a spring force; a filtrate branch duct extending into the drainage duct in the region of the combination valve; whereby the combination valve closes the drainage duct upstream and downstream of the junction with the filtrate branch duct when a filter insert has been fitted; and the by-pass valve connecting the unfiltered liquid chamber to the filtrate branch duct above a pre-determined pressure.

An object of D1 was to provide by use of simple means a shut-off device which could indicate when an insert had not been fitted, so that there was no need to provide a separate by-pass valve.

In the specific embodiment illustrated in Figure 1,

Fig.1



a hollow cover extension portion (15) extends centrally downwardly from the housing cover and engages in a recess (24) formed in the upper end disc (22) of the filter insert 20 (page 2, lines 55 to 57 and 73 to 76). The filter insert is pressed against a housing shoulder portion (30) by means of a compression spring (27) in a sealed manner through the intermediary of a sealing ring (29). Compression spring (27) is supported at one end against the housing cover (12) and at the other end against the upper end disc (22) (page 2, lines 79 to

85). On the (upper) end face of the shut-off device facing the filter insert, a return spring (73) in the form of a compression spring presses a member against the filter insert (page 3, lines 31 to 41). On the (lower) end of the shut-off device is located a valve spring (59) in the form of a compression spring (page 2, lines 127 to 128).

The different compression springs are adapted so that, when the filter insert has been fitted, the **compression spring (27) exerts a greater force than the return spring (73)** and, in turn, the **return spring (73) exerts a greater force than the valve spring 59** (D1: page 3, lines 44 to 49).

1.3 As to the problem to be solved in the light of document D1, the respondent argued that the design of the sealing ring (29) used in D1 would not allow to compensate large dimension tolerances of the filter insert (20). The problem underlying the patent in suit in the light of this state of the art would therefore be seen in the provision of a filter assembly having an improved quick relief system and allowing for greater dimension tolerances for replaceable filters and housings (see also paragraph [0006] of the patent in suit).

1.4 The board cannot accept this argumentation for the following reasons:

1.5 Concerning the alleged "greater" dimension tolerances:

– The subject-matter of present claim 1, in particular because of the absence of any sealing means between the oil inlet and the oil outlet, does not allow any tolerance as regards the radial dimensions of the filter module (this argument was not contested by respondent).

– In the filter device of D1 (Figure 1), owing to the specific compression forces exerted on springs (27), (73) and (59) (see item 1.2 supra, last paragraph), the sealing ring (29) is inevitably maintained in a certain compressed state, with the consequence that at least axial dimension tolerances of the oil filter and of the filter housing would implicitly be compensated by the compression forces thus exerted on both the filter insert (20) and th sealing ring (29).

– In the filter assembly according to present claim 1, since the spring constant associated with the second biasing element is greater than the spring constant associated with the first biasing element, certain axial dimension tolerances of the oil filter and the filter housing can be compensated too; there is however no evidence that the subject-matter of present claim 1 allows for "greater" axial dimension tolerances in comparison with the filter device of D1.

Concerning the alleged "improved quick relief system" the board observes that in D1, the shut-off device associated with the drainage duct, which exposes the drainage duct when the housing cover is loosened, is a "quick" relief system, too.

1.6 It follows that the problem as defined by the respondent is already solved by D1. Consequently, the problem has to be reformulated in the provision of a filter system which allows for an easier removal of the filter module.

1.7 As a solution to this problem the patent in suit proposes an oil filter assembly according to claim 1 characterized in that the filter module has a support with a plurality of flexible fingers extending therefrom, the plurality of flexible fingers being arranged to surround a distal portion of the engagement plug and mate with a channel formed in the distal portion of the engagement plug.

1.8 For the board, it is credible that the filter assembly as proposed in claim 1 effectively solves the above problem, as the plurality of flexible fingers and their arrangement to the engagement plug allow the filter module thus connected to the cover to be removed more easily in comparison with the one of D1, which does not have such a connection with the cover.

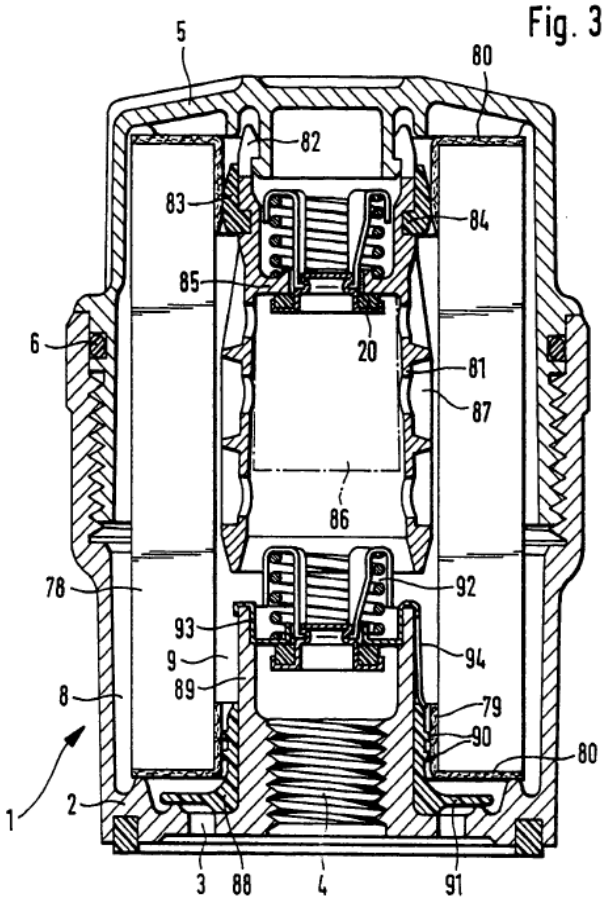
1.9 The remaining question to be answered is whether this technical solution involves an inventive step in view of the cited prior art.

In this respect, document D9 (claim 1) discloses a liquid filter consisting of a separable filter housing and different individual elements located therein such as at least one annular, exchangeable filter element, as well as inter alia several gaskets and possibly different valves, which are constructed as overflow and/or non-return valves, for receiving the individual

elements; a support part being mounted in the filter housing, which support part can be separated from the at least one filter element and extends at least partially centrally through the interior of the filter element and the raw chamber being separated from the clean chamber by means of radial internal gaskets located at the axial ends of the filter element; the separable filter element being folded in the shape of a star and sealed on the end face and for abutment against gaskets and provided internally respectively with a sleeve at its two ends.

The filter embodiment illustrated in D9, Figure 3,

Fig. 3



further comprises a support part (81) fixed on the housing cover (5) by means of a snap connection (82) (see also column 4, lines 43 to 45).

That said snap connection has "*a support with a plurality of flexible fingers extending therefrom*" and is arranged to "*surround a distal portion of the engagement plug and mate with a channel formed in the distal portion of the engagement plug*", as in present claim 1, has not been contested.

D9 discloses (column 3, lines 10 to 15) that the snap connection allows the removal of the filter element together with the support part when screwing off the housing cover from the filter housing.

In view of this teaching, the skilled person faced with the problem stated in item 1.5 supra would be prompted to apply the above snap connection of D9 to the filter device known from D1, all the more as there is no technical or constructional hindrance for implementing the snap connection illustrated in D9 (Figure 3) in the filter device illustrated in D1 (Figure 1).

1.10 For these reasons, the subject-matter of claim 1 of the main request is considered obvious to a person skilled in the art in the light of D1 and D9. Claim 1 therefore does not meet the requirements of Article 56 EPC.

2. *Auxiliary request*

2.1 Claim 1 of this request differs from that of the main request in that the base (36) is formed to include an outlet post (44) arranged to extend into the filtered-oil region located in the filter module and formed to include the oil outlet provided in the filter housing (22), and the filter module includes a filter seal (94) arranged to slidably engage the outlet post to

establish a sealed connection between the filter module and the outlet post to block flow of oil from the filtered-oil region through the release port (68) via the filter chamber and to maintain the sealed connection during movement of the filter module in the filter chamber relative to the outlet post.

2.2 No objections under Articles 54(1)(2) and 123(2)(3) EPC having been raised against the amended claims of this request and the board also considering that these requirements are met, no further comments on these issues are needed.

2.3 Concerning the appellant's objection under Article 56 EPC that the subject-matter of claim 1 of this request would be obvious in the light of D1 taken in combination with i) D9 and ii) D8 or D12, the following is observed:

2.3.1 In applying the problem-solution approach, it is firstly necessary to identify the closest state of the art, which for the subject-matter of claim 1 of the present request has been acknowledged as being D1, the object and relevant disclosure of which have already been summed up in item 1.2 *supra*.

2.3.2 As to the problem underlying the patent in suit in the light of document D1, the appellant held that the subject-matter of claim 1 of the present request would not solve a problem different to that solved by claim 1 of the main request, arguing in this respect that the sealing ring 29 in the filter device of D1 would implicitly allow for radial and axial dimension tolerance compensations.

2.3.3 This argumentation cannot be accepted, because although it can be acknowledged that the sealing device 29 would indeed compensate certain axial and radial dimension tolerances of the filter insert 20, its design - as a ring - manifestly would not allow to maintain a sealed connection at least during important axial movements of the filter insert relative to the socket 25.

2.3.4 Therefore, the problem underlying the patent in suit in the light of document D1 has to be reformulated as the provision of a filter device which allows for an easier removal of the filter module (see also item 1.5 supra), whereby the filter device maintains a sealed connection between the filter module and the outlet post whatever the position of the filter module along the outlet post.

2.3.5 As a solution to this problem the patent in suit proposes an oil filter assembly according to claim 1 of the auxiliary request characterized in that the filter module has a support with a plurality of flexible fingers extending therefrom, the plurality of flexible fingers being arranged to surround a distal portion of the engagement plug and mate with a channel formed in the distal portion of the engagement plug, and the base (36) is formed to include an outlet post (44) arranged to extend into the filtered-oil region located in the filter module and formed to include the oil outlet provided in the filter housing (22) and the filter module includes a filter seal (94) arranged to slidably engage the outlet post to establish a sealed connection between the filter module and the outlet post to block the flow of oil from the filtered-oil region through the release port (68) via the filter chamber and to maintain the sealed connection during movement of the

filter module in the filter chamber relative to the outlet post.

2.3.6 For the board, the technical problem identified in above item 2.3.4 is plausibly solved for the reasons already indicated in item 1.7 *supra*. Furthermore, it is credible that the combination of:

– an outlet post arranged to extend into the filtered-oil region located in the filter module and formed to include the oil outlet provided in the filter housing, and

– a filter seal arranged to slidably engage the outlet post to establish a sealed connection between the filter module and the outlet post to block flow of oil from the filtered-oil region through the release port via the filter chamber and to maintain the sealed connection during movement of the filter module in the filter chamber relative to the outlet post,

maintains a sealed connection between the filter module and the outlet post whatever the position of the filter module along the outlet post.

2.3.7 It remains to be decided whether the proposed solution to the above technical problem is obvious in view of the state of the art, in particular in the light of the documents D8 and D12.

2.3.8 D8 discloses (see column 2, lines 30 to 45) a filter comprising a housing having an inner end connected to a connection flange and an outer end connected to a

detachable cover, the filter housing and the detachable cover accommodating a filter insert. The inner end of the filter housing includes a filter inlet duct, a filter return duct and a plurality of coaxially spaced radial filter seals which provide a seal between the filter housing and the connection flange. The connection flange includes a connection inlet duct that matches with the filter inlet duct and a connection return duct that matches with the filter return duct. The connection flange further includes a plurality of coaxially spaced sealing surfaces, each of which matches with one of the radial filter seals, thus effectively providing a sealed connection between the filter housing and the connection flange.

In the embodiment illustrated in D8, Figure 1

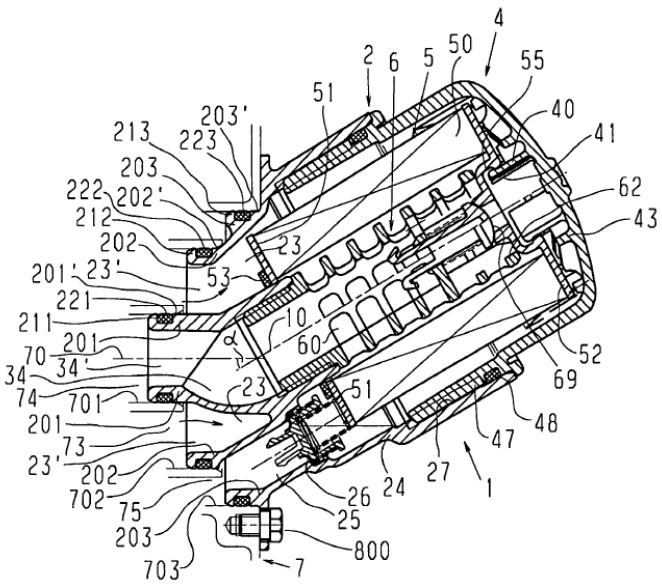


Fig. 1

(see also column 7, lines 23 to 41), the upper front disc (52) of the filter insert (5) comprises snap-in means (55) pointing to the cover (4) and cooperating

with snap-in locks (41) fastened at snap-in tongues (40) of the cover, thus providing for a transport of the filter insert out of the filter housing when taking off the cover. By means of front discs 51 and 52, the filter insert is connected in a sealing fashion at its lower and upper side.

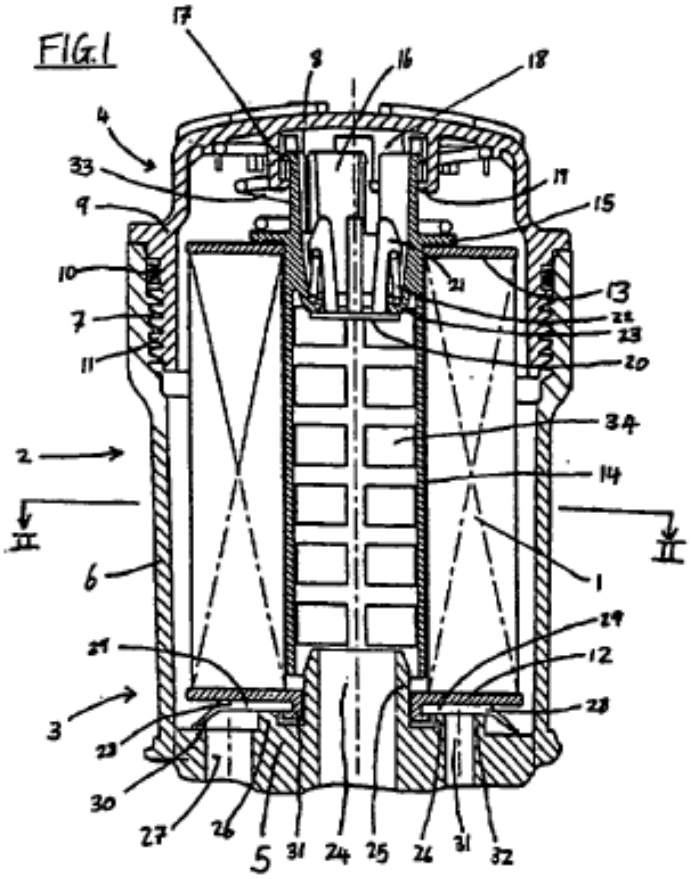
The lower front disc 51 carries **a seal 53** at its radial inner edge by means of which the disc 51 is inserted on a connection piece in the filter housing 2 in a sealing fashion (column 7, lines 28 to 31).

D8 does not address the problem of a filter insert which might be moving along the outlet post, so that the skilled person faced with the problem identified in item 2.3.4 would not have any incentive to look for a solution to this problem in document D8, let alone to use specifically the seal (53) for this purpose.

And even if, for the sake of argument, the skilled person would take D8 into consideration and note that the seal (53) could be a potential technical solution to the above problem, it is to be observed that its simple substitution to the seal (29) in the filtering device illustrated in Figure 1 of D1 would result in a filter which would not work in the way defined in present claim 1 because of the presence of the cylindrical extension of the aperture (26) in cover ring (23) engaging the outer walls of socket (25) (see D1, Figure 1) which would hinder seal (53) to be carried at the inner radial edge of the cover ring (23), and thus hinder its sealing function between the filter insert (20) and the outer wall of socket (25).

The appellant's conclusions as to the obviousness of the subject-matter of present claim 1 in the light of D8 are therefore not accepted.

2.3.9 Concerning D12, this document (claims 1 to 13; Figure 1) discloses a fluid filter comprising a housing (2) formed by a base (3) and a removable cap (4) fitted together, an annular filter element (1) being mounted on a support (12, 13, 14) within the housing between a fluid inlet (27) and a fluid outlet (24); the support including an annular end wall (12) extending around one end of the filter element and closing a drain outlet



(31) formed in the base and closed by the filter element support; a resilient coiled spring (33) provided between the support and the cap loading the

support against the drain outlet and the sealing faces (12, 13) of the support which seal the filter element between the fluid inlet and the fluid outlet; the support having a retaining portion protruding from the support and engaging the cap, and the spring coils encircling the retaining portion; wherein the annular end wall (12) of the support retains a resilient annular valve element (28) comprising a base portion (29) disposed adjacent the annular end wall of the support and constituting a non-return valve across the fluid inlet and sealing the drain outlet; a flexible flap extending from the base portion to close the fluid inlet and constituting the non-return valve; wherein the fluid outlet is disposed adjacent the drain outlet and has a rim (25) protruding into the housing beyond the drain outlet.

D12 does not address the problem of a filter insert which might be moving along the outlet post, so that the skilled person faced with the problem identified in item 2.3.4 would not have any incentive to find the solution to this problem in document D12.

If, for the sake of argument, the skilled person would consider - as stated by the appellant - that in the device illustrated in Figure 1 of D12, the annular end wall (12) of the support "slidably engages" the rim (25) protruding into the housing beyond the drain outlet, it is to be observed that *"a sealed connection"* in the sense of claim 1 of the present request would only be possible with the following combination of features from the filter device illustrated in D12 (see in this respect Figure 1):

- the annular end wall (12) of the support "slidably engaging" the rim (25),
- the circular wall (26),
- the resilient valve element (28),
- the flap (30), and
- the widened portion (32) of the circular wall across the drain outlet (31).

As the implementation of the above combination of features in the filtering device of D1 (Figure 1) would however necessitate substantial constructional modifications in order "*to maintain a sealed connection between the filter module and the outlet post to block flow of oil from the filtered-oil region through the release port via the filter chamber during movement of the filter module in the filter chamber relative to the outlet post*", in the absence of any hint either in D1 or D12 for carrying out such modifications, the skilled person faced with the problem identified in item 2.3.4 would indeed not be prompted to do so, too.

The appellant's conclusions as to the obviousness of the subject-matter of present claim 1 in the light of D12 are therefore not accepted.

2.3.10 In the board's judgment, the remaining documents cited during the opposition and appeal proceedings, which do not address the problem of a filter insert which might be moving along the outlet post, also do not contain further information which would point towards the claimed solution of the problem stated in item 2.3.4 *supra*.

2.3.11 Accordingly, for the reasons indicated above, the subject-matter of claim 1 and by the same token that of

dependent claims 2 to 8, which include all the features of claim 1, involves an inventive step within the meaning of Articles 52(1) and 56 EPC.

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 on the basis of claims 1 to 8 according to the auxiliary request filed at the oral proceedings and a description to be adapted.

The Registrar: The Chairman:

C. Vodz G. Raths