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Datasheet for the decision of 16 January 2007

Case Number: T 0226/04 - 3.2.01

Application Number: 97912805.5

Publication Number: 0932515

IPC: B60H 3/06

Language of the proceedings: EN

Title of invention:
A filter device for filtering a fluid

Patentee:
3M COMPANY

Opponent:
Behr GmbH & Co. KG

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 110

Keyword:
"Novelty - yes - schematic drawings"
"Inventive step - general technical knowledge"
"Inventive step - skilled person"
"Examination of appeals - admissible (yes)"

Decisions cited:
T 0748/91

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0226/04 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 16 January 2007

Appellant I: (Patent Proprietor)
3M COMPANY
3M Center
P.O. Box 33427
St. Paul, MN 55133-3427 (US)

Representative:
VOSSIUS & PARTNER
Postfach 86 07 67
D-81634 München (DE)

Appellant II: (Opponent)
Behr GmbH & Co. KG
Mauserstraße 3
D-70469 Stuttgart (DE)

Representative:
Gleiss, Alf-Olav
Gleiss Grosse Schrell & Partner
Patentanwälte Rechtsanwälte
Leitzstraße 45
D-70469 Stuttgart (DE)

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 13 January 2004 concerning maintenance of European patent No. 0932515 in amended form.

Composition of the Board:

Chairman: S. Crane
Members: J. Osborne
G. Weiss

Summary of Facts and Submissions

I. Appeals filed by the patent proprietor and both opponents, were directed against the decision posted 13 January 2004 according to which, account being taken of the amendments made by the patent proprietor in its auxiliary request 2a during the opposition procedure, European patent No. 0 932 515 and the invention to which it relates were found to satisfy the requirements of the EPC. With a letter dated 22 October 2004 opponent I withdrew its opposition.

II. Opponent II objected that the appeal by the patent proprietor was inadmissible. It argued that the appeal had been filed in the name of Minnesota Mining and Manufacturing Company which at a later date had merged and changed its name. The name change having been duly registered by the EPO, there no longer existed a legal entity having the name Minnesota Mining and Manufacturing Company. The company having that name therefore no longer could act as appellant and the appeal was inadmissible.

III. The following state of the art played a role during the appeal procedure:

D2: US-A-3 082 587

D3: US-A-2 889 183

D4: DE-A-24 29 474

D5: WO-A-94/21350

D7: CA-A-1 196 606

D8: DE-A36 26 457

D9: DE-A-34 39 255.

IV. The opposition division found that the subject-matter of claim 1 as granted was not new in the light of the disclosure of D4.

V. The board summoned the parties to oral proceedings to be held on 16 January 2007 and indicated in a communication pursuant to Article 11(1) RPBA its provisional opinion that the appeal of the patent proprietor was admissible. No further objection in this respect was made by opponent II.

VI. During the oral proceedings the patent proprietor requested that the decision under appeal be set aside. Its main request was that for all designated contracting states except DE the patent be maintained as granted and that for DE it be maintained on the basis of a set of claims filed as a main request with a letter dated 21 May 2004 and received on the same date. In the alternative it requested that the patent be maintained for all designated contracting states on the basis of a set of claims filed during the oral proceedings (auxiliary request). Opponent II requested that the decision under appeal be set aside and that the patent be revoked.

VII. Claim 1 according to the main request of the patent proprietor (as granted) reads as follows:

"A filter device for filtering a fluid, in particular for filtering the air flowing into the passenger compartment of a vehicle, comprising
– a filter element (lO;60) comprising a filter material (12;62) with a border (14;64) and
– a filter element frame (20;70) connected to the filter material (12;62) and extending at least partly along the filter material border (14;64), the filter element frame (20;70) being provided with a projecting resilient sealing lip (24;74) for abutting a device (42,44,48) receiving the filter element (l0;60), characterized in that
– the sealing lip (24;74) having at least one bending section (26) of a first thickness (30) facing the filter element frame (20;70) and at least one enlarged section (28) adjoining the at least one bending section (26) and facing away from the filter element frame (12;62), at least a part (40) of the enlarged section being of a second thickness (32) greater than the first thickness (30) in the at least one bending section (26)."

Claim 1 according to the auxiliary request of the patent proprietor contains the following additional wording in the characterising portion:

"and wherein the enlarged section (28) is one to five times the length of the bending section (26)."

Claim 1 according to the auxiliary request of the patent proprietor is followed by claims 2 to 12 which define features additional to those of claim 1, claims 13 and 14 relating to a vehicle comprising *inter alia* a filter device according to any one of claims 1 to 12 and claim 15 relating to the use of a filter device of one of claims 1 to 12.

VIII. The submissions of the parties in respect of novelty of the subject-matter of claim 1 according to the main request may be summarised as follows:

Patent proprietor - there is no disclosure in either D4 or D5 of the sealing lip having the features of a bending section and a relatively thicker enlarged section. A sealing lip is illustrated in the schematic drawings of figures 5 and 7 of D4. The sealing lip of figure 7 is described in the text as corresponding to the one of figure 5 but there is no explanation of any differences. The apparently reduced thickness at the lower end of the figure 7 sealing lip results merely from the failure of the draughtsman to show the full contour of the lip extending to the end. The drawing anyway contains obvious inaccuracies and the skilled person is unable to attribute a technical teaching to the illustration of the shape of the sealing lip which therefore is to be regarded as not being disclosed. Moreover, claim 1 requires a "bending section" which, in contrast to a hinge point, implies a portion of some longitudinal extent over which the bending takes place. This is not present in the sealing lips of D4 and D5. As regards D5 not only does it also not disclose a frame within the meaning of present claim 1, but it is stated in the text that both sides of the sealing lip

are "similarly" slanted, which is a teaching that there is no enlarged section.

Opponent II - both D4 and D5 disclose the subject-matter of claim 1 according to the main request. The statement in D4 that the sealing lip according to figure 7 "corresponds" to that of figure 5 draws the skilled person's attention to the differences illustrated in the drawings. A reduced cross-section spaced from the free end of the sealing lip, which implicitly is a bending section, is clearly derivable from a visual inspection of figure 7. There is no contradiction between the drawing and the text and what the patent proprietor sees as inaccuracies in fact relate to realistic tolerances. D5 shows a filter element having a frame which is formed as two end pieces having integral sealing lips. Each sealing lip is thicker at its end remote from the frame than at its base adjacent to the frame.

IX. The parties essentially argued as follows in respect of inventive step of the subject-matter of claim 1 according to the main and auxiliary requests:

Opponent II - the closest state of the art is known from either D4 or D5. These disclose the features set out in the preamble of claim 1 according to the main request. The features of the characterising portion solve the problem set out in the description, to improve sealing and reduce costs by greater ease of manufacture. The skilled person wishing to solve this problem would not restrict himself to the technical field of filters. It is already known from D8 that a section having a relatively narrow neck portion and a

thicker section beyond it is easier to injection mould than a section which tapers towards its tip. Each of D3, D5, D7 and D8 discloses injection moulded sealing lips having the presently claimed form. As regards claim 1 according to the auxiliary request the additional feature of the range of length ratios is merely the result of detail design considerations in dependence on the size of the gap to be sealed. Moreover, the ratio derivable from the sealing lip of D5 is close to the claimed range.

Patent proprietor - the claimed seal is relatively simple and the skilled person would have no reason to look beyond the technical field of filters. He therefore would not consider any of D3, D7 and D8. Even if he were to, none of them would lead him to the feature of a bending section which has a significant longitudinal extension. This longitudinal extension is implicit from the wording of claim 1 according to the main request and explicit in that according to the auxiliary request. D3 relates primarily to the retention of seals on pistons. The seals are of a particular design intended to act as valves and the disclosed cut-out is too short to result in a bending section within the meaning of the claim. D7 primarily relates to a seal having parallel sides. That seal together with a secondary one forms a sealing system and the skilled person would have no reason to select just the one. Even if he were to do so, the secondary seal does not comprise a bending section. The teaching of D8 is directed towards using moulded sections to retain an object on the edge of a metal sheet. Once again, there is no bending section. Whilst D5 belongs to the same broad technical field as the present

invention, the seals are relatively complex in as far as they are energised by a differential pressure. Moreover, there is no disclosure of either a bending section or a section of relatively large thickness.

Reasons for the Decision

Admissibility of the patent proprietor's appeal

1. The patent was granted on 5 September 2001 in the name of Minnesota Mining and Manufacturing Company. With effect from 8 April 2002 the patent proprietor merged with 3M Company which name was adopted for the company resulting from the merger. This change of name was notified to the EPO on 29 January 2004 and registered with effect from that date (Rule 20(3) EPC). The appeal by the patent proprietor was filed on 22 January 2004 in its name as registered on that date. The change of name from Minnesota Mining and Manufacturing Company to 3M Company was applicable to the party in its status both as patent proprietor and appellant. Both this appeal and that of opponent II satisfy the requirements of Articles 106 to 108 and Rule 64 EPC and therefore are admissible.

Substantive matters

2. The patent relates to a filter such as an air filter for use in a vehicle and which typically would comprise a pleated filter element mounted in a frame. A sealing strip is generally provided on the frame to seal against a device when the filter is installed. It is explained in the patent specification that the need to

ensure that the material of the sealing lip remains elastically deformable during bending requires that the cross-section be relatively thin. On the other hand, a thin cross-section is difficult to manufacture by injection moulding of the relatively viscous plastics material which is desirable for such a sealing lip.

Main request

3. The claims for this request comprise one modified set of claims for DE (Rule 87 EPC) and a second set of claims as granted for all other designated contracting states. The board finds it appropriate to begin by considering novelty and inventive step of the subject-matter of claim 1 as granted.

Claim 1 as granted - novelty

4. The board agrees with both parties that D4 in its preferred embodiments discloses an annular filter device which comprises all features of the preamble of the claim. In the embodiments of figures 5 and 7 the filter device is enclosed in a cylindrical housing having a central tubular portion which projects into the housing and around which the central aperture of the filter device fits. A sealing lip provides a seal between the filter device frame and the outer surface of the tubular portion.

4.1 Figures 5 and 7 both show the filter device in position in the housing. In figure 5 the essentially planar annular frame of the filter device is in a horizontal position. The sealing lip extends from the inner edge and bends over a relatively short length to a vertical

position to lie parallel with the surface of the tubular portion. The sealing lip reduces in thickness towards the tip. According to the description the sealing lip is injection moulded in an angled position and is deformed into the vertical position. In an alternative construction in figure 7, on the other hand, the sealing lip, which in the description is merely said to correspond to that of figure 5, extends almost vertically from the frame and inclines towards the centre-line to contact the tubular portion over only the uppermost part of its length. The inner and outer profiles of the sealing lip in figure 7 are different and together give the impression of a narrower cross-section adjacent the frame than at the upper, sealing end. It is this which opponent II sees as a teaching of the features in present claim 1 of a bending section and an enlarged section.

4.2 The board agrees with opponent II as regards the disclosure in D4 of a bending section. There is nothing in the claim or in the description of the present patent which supports the view of the patent proprietor that the term "bending section" implies any significant longitudinal extension. Indeed, in the specification column 3, lines 17 to 20 it explicitly states that in order to ensure elastic deformation the bending section either should be of an appropriate length or the lip should be "provided with a corresponding number of shorter bending sections …".

4.3 It is undisputed between the parties that the figures of D4 are merely schematic representations. Consistent case law of the boards requires that in the event of a feature being visible in a schematic drawing this can

be considered as a disclosure of the feature only if *inter alia* the structure of the feature is shown sufficiently clearly and the technical function achieved is derivable. In this case the board considers that neither of these requirements is fulfilled.

4.3.1 As regards the first requirement the drawing of figure 7, which essentially is a full cross-section through the filter device and housing, clearly is inaccurate and unsymmetrical when viewed with the naked eye. In this respect the board cannot accept the argument of opponent II that figure 7 represents realistic tolerances since there is no support in either the description or the other figures to support such a notion.

4.3.2 The second requirement relates to the technical function of, in this case, the combination of relatively thin and thick sections. It is not clear to what extent the respective sealing lips of figures 5 and figure 7 are deformed when brought into their operative positions. The configuration of the sealing lip in figure 7 would lead the skilled person to understand that it would be subject to relatively little bending and there certainly is no cause for him to understand that the sealing lip of that embodiment would be deformed further than is that of figure 5. However, the section of the figure 5 sealing lip is at its greatest in the area of maximum curvature so that there is no implicit teaching of a reduced thickness in order to accommodate bending. In the absence of any indication in the description that the sealing lip of figure 7 is configured to accommodate a larger degree of bending the skilled person aware of both embodiments

would not attribute any function to the apparent combination in figure 7 of a thinner and thicker section.

4.4 It follows from the foregoing that the subject-matter of present claim 1 must be considered as new with respect to the disclosure of D4.

5. D5 relates to seals in a cylindrical filter device. The compressible seals are provided between each end of the filter element and the respective end face of a cylindrical housing. The seal elements are generally frusto-conical having their larger diameter ends facing away from the filter element for sealing with the housing and their smaller diameter ends integral with an annular member for attachment to the filter element. The inner and outer walls of the frusto-conical section are shown in each drawing as diverging somewhat in the direction towards the sealing end.

5.1 The board considers that the feature in present claim 1 of a "frame" is not disclosed in D5. The filter element of the embodiment of the present patent is relatively thin, pleated material formed of a plastics supporting scrim with a non-woven material applied thereon. The frame surrounds the circumference of the filter material and implicitly provides mechanical stability, thereby fulfilling the function normally implied by the term. The filter element disclosed in D5, on the other hand, is a relatively rigid, self-supporting, thick-walled tubular member composed entirely of resin-impregnated and bonded fibrous materials. The annular attachment member is disclosed merely as a means of attaching the sealing lip to the filter element. This

applies equally in respect of figure 5 in which the annular element extends from the end face of the filter element along the circumferential wall. This extension merely serves the purpose of permitting a mechanical rather than adhesive attachment of the annular element to the filter element.

5.2 Moreover, there is no direct and unambiguous disclosure in D5 of the characterising features of present claim 1. The minimal divergence of the two sides of the sealing lip which is visible in the figures is described only by the wording "similarly slanted". In the board's view this is not an unequivocal disclosure that the two sides are not parallel. Furthermore, the seal has a generally uniform section over most of its length and bending will take place to a varying degree throughout this length. As a result, there is no clearly defined bending section in combination with an adjacent enlarged section.

6. The board concludes from the foregoing that the subject-matter of claim 1 is new with respect to D4 and D5 (Article 54 EPC).

Claim 1 as granted - inventive step

7. The closest state of the art is disclosed in the embodiment of figure 7 of D4 which, as agreed by both parties, discloses the features of the preamble of present claim 1. As already discussed in respect of novelty, the sealing lip of that embodiment is indicated as being inclined at a small angle to the surface to which it seals. The board is satisfied that the characterising features solve the problem set out

in the patent specification, namely to provide the filter device at low cost and being capable of reliable sealing between the filter element frame and a housing receiving it.

7.1 The first matter to be considered is whether the person skilled in the art of filters wishing to improve the form of the sealing lip disclosed in D4 would limit himself to that same technical field, as asserted by the patent proprietor, or consult others skilled in the art of seals. It is an established aspect of consideration of inventive step at the EPO that the skilled person is in appropriate cases to be considered as a team of skilled persons, each having the general knowledge of his own technical field (Case Law of the Boards of Appeal at the European Patent Office, 4th edition 2001, I.D.5.1.1 and I.D.5.1.2). In the present case if the person skilled in the art of filtration were unaware of a satisfactory solution to the set problem within his own technical field he would be expected to consult a person skilled in the art of seals before attempting to create a novel seal for the purpose. A survey of the state of the art relating to seals therefore will serve to establish what the resulting team of skilled persons would know.

7.1.1 D3 relates to seals of a rod or piston sliding in a cylinder. The particular problem addressed concerns the mounting of the seal in order to ensure satisfactory performance when used in a cylinder of standard quality which may be not exactly circular. Various embodiments are disclosed, some acting additionally as a one-way valve. One feature common to all is the arrangement of the sealing lip generally parallel to the wall of the

cylinder. A second feature common to all embodiments is a portion of reduced thickness provided at the junction point between the sealing and retention portions of the lip in order to confer greater flexibility.

7.1.2 D7 relates to a sealing arrangement between the interior of a bottle cap and the neck of the bottle. The sealing primarily is provided by a seal portion which contacts the outer surface of the bottle neck and which is pressed inwardly by deformation of the cap in abutment against the top of the bottle. An optional secondary seal is in the form of a lip which extends generally parallel to and contacts the inner surface of the neck of the bottle. This secondary seal comprises a section of reduced thickness at its connection to the cap and a section of increased thickness adjacent thereto. As confirmed by a comparison of figures 2 and 3, the section of reduced thickness provides an area in which the lip may bend.

7.1.3 D8 relates to a sealing profile to be mounted on the edge of sheet metal. The generally U-shaped profile has on one of its inner walls one or more sealing lips of generally triangular shape each connected by one of its corners to the main profile for easy flexure. The object of D8 was to provide a sealing profile which could be easily applied to the metal sheet and thereafter would resist removal. The final sentence states that an additional benefit is that such sealing lips are more easily manufactured than sealing lips which taper towards the tip.

7.2 In the board's view the existence of sealing lips having the same general form in such diverse technical fields as those of D3, D7 and D8 is an indication that this form belongs to the general technical knowledge of the person skilled in the art of seals. Moreover, the statement in D8 regarding ease of manufacture shows that this advantage was already known. It follows that it would be obvious for the skilled person beginning from D4 and wishing to solve the set problem, in consultation with the person skilled in the art of seals, to arrive at the subject-matter of present claim 1.

8. On the basis of the foregoing the board concludes that the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC). The main request therefore must be refused and consideration of the amended claims for DE would be superfluous.

Auxiliary request

9. The subject-matter of claim 1 according to this request contains the additional feature that the enlarged section is one to five times the length of the bending section. This was disclosed in the description as originally published on page 9, second paragraph and the requirement of Article 123(2) EPC is satisfied. This feature requires a significant longitudinal extent of the bending section and does not extend the protection conferred by the claim (Article 123(3) EPC).

10. Each of D3, D7 and D8, which in the board's view together indicate general knowledge of the person skilled in the art of seals, is silent as regards the

relative lengths of the thinner and thicker portions of the lip. It has already been decided in decision T 748/91 (not published in OJ EPO) that, subject to certain conditions being satisfied, size ratios can be inferred from a schematic drawing. However, even if this were done using the respective drawings of D3, D7 and D8 the resulting ratios would be far removed from that presently claimed. As regards D5, as already set out in respect of novelty, the seal shown therein does not exhibit a clear combination of a bending section and an enlarged section and so cannot serve as the basis for disclosing the claimed ratio. Furthermore, as may be deduced from a comparison of figures 1 and 2, the outermost portion of the seal is substantially expanded when being deformed from its free frusto-conical condition into its sealing condition. As a result, the skilled person aware of D5 would not understand that the inner portion of the seal which opponent II sees as constituting a bending section would have a significant influence in determining the performance of the seal and so would pay no attention to it. Finally, the claimed ratio is not merely the result of trial and error experimentation or dimensioning based on detail design considerations since it serves to establish that the thinner, bending section of the lip is not similar to a hinge, such as is particularly taught in D3, but has a length of at least 20% of the longitudinal extension of the enlarged section of the lip. In the absence of a teaching to provide a bending section of such extent the skilled person would not be in a position to optimise its dimensions.

11. The board concludes from the foregoing that the subject-matter of present claim 1 is not rendered obvious by the cited prior art. Claims 2 to 14 contain all features of claim 1. The features of claim 1 are also a pre-condition for claim 15 which specifies the use of a filter according to any one of claims 1 to 12. It follows that the subject-matter of all of claims 1 to 15 involves an inventive step (Article 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 first instance with the order to maintain the patent on the basis of the following documents:

   – claims 1 to 15 and modified description presented at the oral proceedings;

   – drawings as granted.

The Registrar: The Chairman:

A. Vottner S. Crane