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**Datasheet for the decision  
of 17 November 2016**

**Case Number:** T 1530/13 - 3.3.05

**Application Number:** 05713751.5

**Publication Number:** 1722880

**IPC:** B01D46/52

**Language of the proceedings:** EN

**Title of invention:**

AIR CLEANER ARRANGEMENTS; SERVICEABLE FILTER ELEMENTS; AND,  
METHODS

**Patent Proprietor:**

DONALDSON COMPANY, INC.

**Opponent:**

MANN + HUMMEL GmbH

**Headword:**

Air cleaner arrangements/DONALDSON

**Relevant legal provisions:**

EPC Art. 123(2), 123(3), 84, 56

**Keyword:**

Amendments - allowable (yes)

Claims - clarity (yes)

Inventive step - (yes)

**Decisions cited:**

G 0003/14

**Catchword:**



**Beschwerdekammern**  
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Case Number: T 1530/13 - 3.3.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.05**  
**of 17 November 2016**

**Appellant:** MANN + HUMMEL GmbH  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 30 April 2013  
rejecting the opposition filed against European  
patent No. 1722880 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chairman** E. Bendl  
**Members:** G. Glod  
R. Winkelhofer

### **Summary of Facts and Submissions**

- I. The appeal of the opponent lies from the decision of the opposition division to reject the opposition against European patent EP-B-1 722 880.
- II. In its statement of grounds of appeal and subsequent submissions the **appellant (opponent)** argued that the claims as granted did not meet the requirements of Articles 123(2), 54 and 56 EPC and relied *inter alia* on documents

D1: EP-A-0 391 019

D2: WO-A-03000385

D3: EP-A-1 364 695

D4: US-A-2004 0020177

D5: WO-A-01 91884

D6: WO-A-2004 071616

already discussed in opposition proceedings and additionally introduced

D10: US-A-5 820 646 and

D11: US-A-5 740 774.

- III. The **respondent (patent proprietor)** refuted the appellant's arguments and submitted auxiliary requests I to VII.
- IV. Independent claim 1 of the first auxiliary request reads as follows (amendment compared to claim 1 as granted highlighted by the board):

*"1. An air cleaner arrangement (5) including:*

*(a) a housing (10) having an inlet end (15, 25) and an opposite outlet end (16, 26);*

*(i) the housing sidewall (18) including an access cover*

(11) removable from a remainder of the housing (10);  
(b) a filter cartridge (30) comprising:  
(i) a z-filter media construction (300, 350) comprising media (200) formed from a fluted sheet (201) secured to a facing sheet (202); and, defining opposite inlet (203) and outlet (204) flow ends;  
(ii) a filter cartridge sidewall construction (40) surrounding the z-filter media construction (300, 350), and having first and second, opposite, sides (40a);  
(iii) a seal arrangement (45) comprising a rubber like member (45a) mounted on the filter cartridge (30) for sealing with the housing (10);  
(iv) a first projection arrangement (68, 69, 68a, 69a) extending outwardly from the first side of the filter cartridge sidewall construction (40); and, a second projection (68, 69, 68a, 69a) extending outwardly from the second side of the filter cartridge sidewall; and,  
(c) first and second biasing and lock blades (85, 86, 90, 97) secured to the access cover (11) and projecting along opposite sides of the filter cartridge (30);  
(i) the first biasing and lock blade (85, 90) having a non-straight, contoured, forward edge (91) in engagement with the first projection arrangement (68, 69, 68a, 69a); and,  
(ii) the second biasing and lock blade (86, 97) having a non-straight, contoured, forward edge (99) in engagement with the second projection arrangement (68, 69, 68a, 69a);  
(iii) the forward edges (91, 99) of the biasing and lock blades (85, 86, 90, 97) being shaped **to secure the filter cartridge in a sealing position with the forward edges (91, 99) of the biasing and lock blades (85, 86, 90, 97) being shaped** to engage the first and second projection arrangements (68, 69, 68a, 69a) on the filter cartridge (30) and move the filter cartridge (30) into a sealing orientation as the cover (11) is

*put in position."*

Claims 2 to 6 are directly or indirectly dependent on claim 1.

Independent claim 7 reads as follows:

*"7. An air filter cartridge (30) arrangement comprising: (a) a media pack (31) including z-filter media comprising fluted media secured to facing media and defining inlet (203) and outlet ends (204); (b) a sidewall arrangement surrounding the media pack (31) and secured to the media pack (31); (i) the sidewall having first and second opposite sides; (ii) the sidewall arrangement including a pair of first and second, axially and vertically spaced, projections (68, 69, 68a, 69a) on the first side; and (iii) the sidewall arrangement including third and fourth, axially and vertically spaced, projections (68, 69, 68a, 69a) on the second side."*

Claim 8 is dependent on claim 7.

- V. The board issued a communication pursuant to Article 15(1) RPBA stating its preliminary opinion.
- VI. Oral proceedings took place on 17 November 2016; in the course thereof the respondent dropped the then pending main request and made auxiliary request 1, submitted with the reply of 20 January 2014 to the statement of grounds of appeal, the main request.
- VII. The arguments of the **appellant** as relevant to the present decision may be summarised as follows:

Article 123(2) EPC

The passages in the description disclosing that the forward edges were shaped to secure the filter cartridge all related to filter cartridges having two projections; so the feature added to claim 1 was an unacceptable generalisation of the original disclosure.

Article 123(3) EPC

The terms "*sealing position*" and "*sealing orientation*" were used side by side in claim 1, apparently expressing different meanings. This led to an extension of the protection conferred.

Article 84 EPC

The meaning of the expression "*sealing position*" was not clear, especially since it was supposed to differ from "*sealing orientation*".

Article 56 EPC

The subject-matter of claim 1 lacked an inventive step in view of D3 in combination with the skilled person's knowledge, or in combination with D10.

D3 disclosed in figure 6 an air cleaner arrangement according to claim 1 of the patent in suit, except for the z-filter, which was not explicitly mentioned. It was evident from figure 6 that parts 3a and 3b of cover 3 had a non-straight, contoured, forward edge. Paragraph 28 in combination with paragraph 32 of D3 made clear that there had to be projection arrangements on cover 10 that secured the filter in a sealing position once it had been moved inside chamber 11. The

problem to be solved was to provide an alternative air cleaner. It was evident from figures 5 and 6 that the filter 9 had a great depth and a core in the middle. A person skilled in the art would recognise that z-filters such as those shown in figures 17 and 18 of D10 were suitable for use in the air cleaner of D3. Therefore, the combination of D3 with D10, the latter representing the skilled person's general knowledge, led to the subject-matter of claim 1 in an obvious manner.

With respect to claim 7, the appellant's arguments may be summarised as follows:

The subject-matter of claim 7 lacked an inventive step in view of D4 in combination with D2. The difference between D4 and claim 7 was that the projections were not set up separately. Such a construction was a common modification and was also shown in figure 3 of D2.

In addition, the subject-matter of claim 7 lacked an inventive step in view of D1 in combination with D2 and in view of D5.

The arguments of the **respondent (patent proprietor)** may be summarised as follows:

D10 should not be admitted into the proceedings.

Article 123(2) EPC

It was unambiguously derivable from the application as filed (page 8, last paragraph, page 11, lines 5 to 10, page 12, first full paragraph, page 16, lines 9 to 15) that the forward edges of the biasing and lock blades



were shaped such that they secured the filter cartridge in a sealing position.

Article 123(3) EPC

The amendment led to a restriction of the subject-matter of claim 1, so the requirements of 123(3) EPC were fulfilled.

Article 84 EPC

The skilled person would understand that the forward edges allowed the filter first to be moved into a sealing orientation and subsequently to be secured in a sealing position. Thus, there was no ambiguity due to the use of two different expressions.

Article 56 EPC

D3 disclosed neither a z-filter nor a projection arrangement on the filter cartridge sidewall nor a securing action due to the forward edges of the elements 3a or 3b.

The problem to be solved was to provide a higher filtration capacity with an improved mechanism for bringing the media into a sealing orientation.

The prior art did not provide any teaching towards the combination of biasing and lock blades having contoured forward edges with projection arrangements on the filter cartridge walls to solve the posed problem. Further D3 did not provide any incentive to use a z-filter.

With respect to claim 7, D4 did not disclose a media pack including z-filter media and any projections on opposite sides of a sidewall arrangement.

D2 related to a filter assembly for airplane cabin air, and the skilled person had no motivation to combine D4 with D2.

The same applied to the combination of D1 with D2.

Finally, it would not be possible to exchange the filter media construction of D5 with z-filter media and provide a sidewall construction.

VIII. The **appellant (opponent)** requests that the decision under appeal be set aside and that the patent be revoked in its entirety.

The **respondent (patent proprietor)** requests that the patent be maintained in amended form on the basis of the set of claims of the main request filed in the course of the oral proceedings of 17 November 2016 (corresponding to auxiliary request I as filed on 20 January 2014) or alternatively on the basis of auxiliary requests II to VII submitted with the reply of 20 January 2014 to the statement of grounds of appeal.

## Reasons for the Decision

### Main request

1. Article 123(2) EPC

The board is of the opinion that the requirements of Article 123(2) EPC are fulfilled for the following reasons:

According to claim 1(c) (iii) of the application as filed (WO-A-2005/079954), *"the forward edges of the biasing and lock blades" engage "the filter cartridge to secure the filter cartridge in a sealing orientation"*. The wording introduced into claim 1 of the main request differs therefrom by the use of the expression *"sealing position"* instead of *"sealing orientation"*.

Claim 1 further specifies that *"the forward edges (91, 99) of the biasing and lock blades (85, 86, 90, 97)" are "shaped to engage the first and second projection arrangements (68, 69, 68a, 69a) on the filter cartridge (30) and move the filter cartridge (30) into a sealing orientation as the cover (11) is put in position"*.

Thus the skilled person understands from claim 1(c) (iii) of the main request that the forward edges (91, 99) of the biasing and lock blades allow the filter cartridge (first) to be moved into a sealing orientation and to be secured there (in a sealing position).

It needs to be established, in this context, whether it is directly and unambiguously derivable from the application as filed that forward edges allow the

filter to be oriented in a position that allows it to be sealed and secured in that position.

The skilled person understands from page 8 (last paragraph) of the application as filed, figure 3, that a biasing and lock mechanism allows the filter to be brought into a sealing engagement with the housing. This lock mechanism is further described on page 11 (last paragraph) to page 12 (second paragraph). The contoured edges of the blades allow the cartridge to be brought into a sealing engagement against a portion of the housing (page 12, lines 5 to 11). In other words, the forward edges of the blades allow the filter cartridge to be brought into such a position that it can be sealed. This is also what is reflected in claim 1 by "*move the filter cartridge into a sealing orientation*". In addition, it is further indicated that when the cartridge 30 is pressed in the direction of arrow 61 the cartridge 30 is **maintained** in the sealing position as a result. Therefore the structures 85, 86 of the blades act as a biasing and lock arrangement for the cartridge (page 12, lines 11 to 15). This means that the forward edges also have to allow the cartridge to be maintained in a sealing position, which is synonymous with securing the filter in a sealing position as worded in claim 1.

This explanation of the lock mechanism is made with reference to claim 3, which relates to a specific embodiment wherein the filter sidewall construction has two projection arrangements on each side. The board understands that figure 3 is used only to exemplify how the lock mechanism works, but this mechanism is not restricted to the specific set-up of figure 3, as is evident from the wording "*can be understood by reference to Figure 3*" (page 11, lines 29 and 30). This

understanding is in line with the penultimate paragraph on page 9, which indicates that the particular number of projections from each side is not critical, and with lines 3 to 5 of page 6, stating that alternatives to the particular configuration are possible. The board also fails to recognise that the lock mechanism is inextricably linked to the presence of two projection arrangements per side of the filter.

Therefore, the feature added to claim 1 cannot be considered as a generalisation of the specific example that would lead to an intermediate generalisation in claim 1.

2. Article 123(3) EPC

The requirements of Article 123(3) EPC are fulfilled for the following reasons:

The feature introduced in claim 1 requires the forward edges to be shaped such that they are able to secure the filter cartridge in a sealing position. This requirement was not present in claim 1 of the patent as granted. It is evident that the forward edges have now to be able not only to move the filter cartridge into a sealing orientation, but also to maintain it there ("to secure").

Therefore, the added feature further limits the shape of the forward edges, thereby limiting the scope of the claim. It does not extend the protection conferred.

3. Article 84 EPC

In view of G 3/14 (Reasons 81) only an amendment to the claims of the patent as granted is open to an objection

under Article 84 EPC. The point of debate in the present case was whether the amended expression "*sealing position*" in claim 1 was clear.

The board considers that the skilled person would understand that the expression "*to secure the filter cartridge in a sealing position*" means that the filter cartridge has to be maintained such that it seals against the housing. The continued presence of the expression "*sealing orientation*" in claim 1 does not question that interpretation, since the skilled person understands that the filter cartridge is first brought into a sealing orientation prior to being secured there, which leads to the sealing position.

Therefore, the requirements of Article 84 EPC are fulfilled.

4. Article 54 EPC

The appellant has withdrawn its objections under Article 54 EPC, and the board has no reason to take a different stance.

5. Admissibility of D10 and D11

D10 was submitted with the statement of grounds of appeal. According to Article 12(1), (2) RPBA it therefore forms part of the appeal proceedings.

However, the question was raised whether this document and the reasoning based thereon could have been presented in the first-instance proceedings (Article 12(4) RPBA).

D10 was cited in the grounds of appeal as a specific example of the skilled person's general knowledge (grounds, page 13, last paragraph). As the decision under appeal also referred to this general knowledge and therefore to the general teaching of this document without explicitly citing it (page 8, last paragraph), the board considers the introduction of this document and the reasoning based on it to be a reaction to the grounds given in the decision of the opposition division, which refers to the (allegedly obvious) replacement of the filter of D1 by a z-filter (see the decision under appeal, page 9, last full paragraph).

Being filed together with the grounds of appeal, reference to this document was made at the earliest opportunity in the appeal procedure.

The board sees no reason not to take D10 into account.

Against this backdrop, it can be left open whether the mere mention of US-A-5 820 646 (D10) in the specification of the patent in suit, and the appellant's reference thereto in its notice of opposition without submitting any further substantial arguments, might already have introduced D10 into the first-instance proceedings.

Since D11 was submitted by the appellant at a very late stage of the appeal proceedings (with the appellant's third submission in the appeals proceedings of 14 July 2015), the respondent also objected to its admissibility.

As this document is not relevant to the present decision (the appellant's reasoning with regard to claim 1 was not maintained in the oral proceedings;

with regard to its potential relevance vis-à-vis claim 7 see in particular point 6.9, *infra*), the question as to its admissibility, however, does not need to be discussed.

6. Article 56 EPC

Claim 1

6.1 Invention

The invention relates to air cleaners usable for cleaning intake air for engines (paragraph 1 of the patent in suit).

6.2 Closest prior art

The appellant considers D3 to be the closest prior art. D3 discloses in figure 6 an air cleaner arrangement comprising a filter 9, a sidewall construction 10, a cover 3 that has wedges 3a and 3b that are introduced into chamber 11 during assembly. They lie between the interior wall of chamber 11 and the outer surface of the sidewall construction 10 (column 7, lines 11 to 20). D3 also discloses that cooperating landings on the surface of the sidewall construction and on the cover ensure an axial locking of the filter and the sidewall construction 10 (column 7, lines 20 to 25). The wedges can be considered as a locking device that can be borne in a part present on the sidewall construction so that it is pushed against the seal of the filter when closing the cover (column 6, lines 27 to 32). The appellant was of the opinion that this meant that there was a projection arrangement on the sidewall construction and that it was the shape of the forward edges that ensured that the filter and the sidewall



construction were put in the right position and sealed against the chamber 11.

The board cannot see why it is inevitable that there was a projection on the sidewall construction 10 of D3, since the set-up and effect described in D3 could also be obtained by different means such as a kind of pocket present on the sidewall or knobs on the upper part 3c of the cover. It is also not unambiguously derivable that it is the forward edge that is shaped such that it is responsible for moving the filter into a sealing orientation. At most it can be accepted that the wedges 3a and 3b possibly secure the filter in a sealing position.

It can be left open whether the wedges 3a and 3b can be considered as having a non-straight, contoured, forward edge.

### 6.3 Problem

For the sake of an argument in favour of the appellant the board starts from the least ambitious problem, namely to provide an alternative air cleaner arrangement.

### 6.4 Solution

As a solution to this problem an air cleaner arrangement according to claim 1 is proposed, characterised in that it has a z-filter media construction (300, 350) comprising media formed from a fluted sheet secured to a facing sheet; and, defining opposite inlet and outlet flow ends it has a first projection arrangement extending outwardly from the first side of the filter cartridge sidewall

construction; and, a second projection extending outwardly from the second side of the filter cartridge sidewall; and, (iii) the forward edges of the biasing and lock blades are shaped to engage the first and second projection arrangements on the filter cartridge and move the filter cartridge into a sealing orientation as the cover is put in position.

#### 6.5 Success of the solution

The board has no doubt that such a construction is an air cleaner arrangement alternative to the one described in D3.

#### 6.6 Obviousness

6.6.1 Even when accepting to the benefit of the appellant that a z-filter was an obvious alternative in view of D10, the solution to the problem would still not be considered obvious for the following reasons:

6.6.2 D3 is completely silent about projections on the sidewall construction 10 and about the shape of the wedges 3a and 3b so that they could move the filter 9 and the sidewall construction 10 into a sealing orientation.

6.6.3 D1 relates to an air cleaner arrangement having a pleated paper filter (column 2, lines 19 to 21). The skilled person starting from D3 and having chosen a z-filter as alternative filter would not turn to an air cleaner arrangement **not** having a z-filter when trying to further modify the set-up of the air cleaner. Since different kinds of filter media require different designs of the whole air cleaner arrangement, the details of the housing and sealing for a pleated paper

filter do not apply to a z-filter that has fluted sheets and a sealing at the beginning and the end of the flutes.

6.6.4 For the same reasons, the skilled person would also not consider D2, D4 and D5, since these documents also relate to air filter arrangements **not** having a z-filter.

6.6.5 D10 discloses the z-filter, but is completely silent about any sort of biasing and lock blades having non-straight, contoured forward edges.

6.6.6 To summarise, even if it were accepted that a z-filter represented an obvious alternative to the filter 9 shown in D3, the skilled person would not find any teaching in the available prior-art documents D1, D2, D4, D5 towards the proposed solution, since these documents are silent about z-filters.

6.7 The subject-matter of claim 1 involves an inventive step. Consequently the same applies to dependent claims 2 to 6.

#### Claim 7

6.8 Invention

The invention relates to an air filter cartridge for air cleaners usable for cleaning intake air for engines (paragraph 1 of the patent in suit).

6.9 Closest prior art

It is established jurisprudence that the closest prior art is normally a prior-art document disclosing the

same purpose or aiming at the same objective as the claimed invention and having the most features in common with the claimed subject-matter.

In the present case, the board considers D1 to be the closest prior art, since it discloses an air cleaner filter with (see figure 1) a filter cartridge (20) comprising a flat pleated filter media construction (20) comprising a pleated filter media strip (21) (column 2, lines 19 to 21); a filter cartridge sidewall construction (30) surrounding said filter media construction (20), and having first and second, opposite, sides; a first and second projection arrangement (36, 38) extending outwardly from the first side of the filter cartridge sidewall construction; and, a third and fourth projection (36, 38) extending outwardly from the second side of the filter cartridge sidewall. These projections are considered to be axially spaced.

D4 does not disclose a z-filter and the board cannot recognise from figure 1 a pair of first and second or third and fourth axially and vertically spaced projections. Therefore it is less relevant than D1.

Concerning D5, the board agrees with the opposition division. The element 13 does not appear to qualify as a sidewall construction surrounding the cylindrical filter media construction 12; so D5 has fewer features in common than D1.

Even if D11 were part of the proceedings, it would not be more relevant than D1, since it does not disclose a z-filter medium and the edge surface does not extend outwardly from the sidewall.

6.10 Problem

6.11 According to the patent, the problem to be solved is the provision of an alternative air filter cartridge (see paragraphs 8 and 9 of the patent in suit).

6.12 Solution

As a solution to this problem an air filter cartridge according to claim 7 is proposed, characterised in that it comprises a media pack including a z-filter media comprising fluted media secured to facing media and defining inlet and outlet ends and the sidewall arrangement including a pair of first and second, and a pair of third and fourth, respectively, vertically spaced projections on the first and second sides.

6.13 Success of the solution

It is accepted that such an arrangement is an air filter cartridge alternative to the one described in the closest prior art.

6.14 Obviousness

It needs to be decided whether there is any indication of the proposed solution in the prior art.

6.14.1 D1 does not indicate that a different filter than the pleated filter can be used. It is not credible that a z-filter can simply replace the pleated filter without changing the overall set-up of the air filter system of D1 (see above point 6.6.3). In addition, the position of the elements 36 and 38 is especially adapted to the system of D1, so that there is no reason to change them. Furthermore, the replacement of ridge 38 by

individual pins such as the ones shown in D2 will not lead to the same stability.

6.14.2 D2 discloses a different type of filtering system than D1; so the skilled person would not consider it when starting from D1. In addition, the pegs 60 relate to the special set-up of D2; so there is no reasons why the skilled person would think that such pegs could be of use in a different air filter system.

6.14.3 Neither D4 nor D5 discloses z-filter media and vertically spaced projections; so they do not teach towards the solution of the problem.

6.15 The subject-matter of claim 7 also involves an inventive step. The same applies to dependent claim 8.

## 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 on the basis of the main request filed in the course of the oral proceedings of 17 November 2016 (corresponding to auxiliary request I as filed on 20 January 2014), and the description to be amended, if necessary.

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated