BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS
BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE
CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

A		B		C	X

File Number: T 575/92 - 3.4.2

Application No.: 87 301 691.9

Publication No.: 0 236 071

Title of invention: Filtering apparatus

Classification: B01D 27/02

D E C I S I O N
of 24 February 1993

Applicant: PALL CORPORATION

Headword:

EPC Article 56

Keyword: "Inventive step (yes, after amendment)"

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 575/92 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 24 February 1993

Appellant : PALL CORPORATION
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Decision under appeal : Decision of the Examining Division of the European Patent Office dated 29 October 1991, written decision sent by post on 30 January 1992 refusing European patent application No. 87 301 691.9 pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : E. Turrini
Members : R. Zottmann
L.C. Mancini

Summary of Facts and Submissions

I. European patent application No. 87 301 691.9 was published under No. 0 236 071 and refused by the Examining Division at the end of oral proceedings. The decision was based on Claims 1 to 16 filed with the letter dated 1 May 1991.

II. According to the decision, the independent Claims 1 and 14 did not involve an inventive step essentially in the light of a combination of the disclosure of documents

(A) US-A-4 540 489 and
(C) FR-A-2 346 035.

III. An appeal was lodged against this decision.

IV. The Board sent a communication in which it expressed its provisional view that the subject-matters of the independent claims of the first two of three requests (filed together with the Statement of Grounds of Appeal) did not involve an inventive step in the sense of Article 56 EPC, having regard to (A) and

(B) Brock, Thomas D.: "Membrane Filtration", Springer-Verlag, 1983, page 8 from third paragraph on, chapter 2.8 on pages 22 and 23, page 74 and page 100, fourth paragraph to page 102,

and that Claim 1 of the third request could be allowable.

V. In further letters, the Appellant changed the third request into the main request and requested amendments of the specification.

VI. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of

the **main request**:

Claims 1 to 11 filed with the letter dated 13 November 1992,
Claims 12 to 14 filed with the letter dated 5 February 1993,
description: pages 1 to 7 and 10 to 12 filed with the letter dated 13 November 1992, pages 8 and 9 filed with the letter dated 5 February 1993, page 9 lines 24 to 26 being replaced by "properties. These membranes have a pore rating in the range from 0.02 micrometer to 0.5 micrometer. The downstream".
drawings: sheet 1/3 as originally filed, but renumbered to 1/2,
sheet 2/2 filed with the letter dated 21 April 1987,

the **first auxiliary request**:

Claim 1 as filed with the letter dated 4 June 1992 whereby the last phrase: ", the fibrous filter ... mass" is deleted; Claims 2 and 3 as filed with the letter dated 4 June 1992; Claim 4 as filed with the letter of 1 May 1991; Claims 4 to 15 as filed with the letter of 4 June 1992 but renumbered to Claims 5 to 16 the reference to preceding claims being adapted accordingly, and

the **second auxiliary request**:

Claims 1 to 15 as filed with the letter of 4 June 1992.

VII. Independent Claims 1 and 12 according to the **main request** read as follows:

"1. A filter assembly for removing contaminants from water flowing through the filter assembly, the filter assembly

including a fibrous filter (50) for removing particulate contaminants from the water, a sorbent bed (51) for removing chemical contaminants from the water downstream of the fibrous filter (50), and a member (52) for removing microbiological contaminants from the water and arranged downstream of the fibrous filter (50) and the sorbent bed (51) and the fibrous filter (50) and the sorbent bed (51), and the downstream member (52) being cylindrically shaped and arranged for radial flow of water therethrough characterized in that the downstream member comprises a microporous membrane (52) having a pore rating in the range from 0.02 micrometer to 0.5 micrometer, the fibrous filter (50) comprising a microfibrous mass including a downstream portion and an upstream portion having a larger pore size than the downstream portion.

12. A filter cartridge incorporating the filter assembly of any one of claims 1 to 11 and comprising a housing (11) having a water inlet (22) and a water outlet (30) and defining a water flow path therebetween, the filter assembly (35) being disposed within the housing (11) in the water flow path; a first end cap (36) enclosing a first end (40) of the filter assembly (35); and a second end cap (37) enclosing a second end of the filter assembly (35), the second end cap including an aperture (44) communicating with the outlet (30)."

Claims 2 to 11 and 13 and 14 are respectively dependent on Claims 1 and 12.

Claim 1 according to the **first auxiliary request** corresponds to Claim 1 of the main request, with the exceptions that "water" is replaced by "liquid" and that the last phrase ", the fibrous filter ... than the downstream portion" is deleted. Independent Claim 14 according to the first auxiliary request corresponds to

Claim 12 of the main request, with the exceptions that "water" is replaced by "liquid" and that "claims 1 to 11" is replaced by "claims 1 to 13".

Claims 2 to 13 and 15 and 16 are respectively dependent on Claims 1 and 14.

Claim 1 according to the **second auxiliary request** corresponds to Claim 1 of the main request, with the exceptions that "water" is replaced by "liquid" and that the last phrase "including a downstream ... than the downstream portion" is deleted. Independent Claim 13 according to the second auxiliary request corresponds to Claim 12 of the main request, with the exceptions that "water" is replaced by "liquid" and that "claims 1 to 11" is replaced by "claims 1 to 12".

Claims 2 to 12 and 14 and 15 are respectively dependent on Claims and 13.

VIII. The essential arguments presented by the Appellant were as follows:

The different pore size configuration of the fibrous filter is highly effective for removing certain micro-organisms and other fine particulates while delaying the onset of clogging due to gross contamination components in the inlet stream. Such a filter member is not disclosed in (A). There is also no suggestion to replace the paper filter of (A) which is the outermost filter member by a microfibrous mass with two portions as defined in Claim 1 of the application in suit.

Reasons for the Decision

1. The appeal is admissible.

2. Allowability of the amendments

The Board finds that all features of the claims of all requests can be identified in the originally filed documents. In particular, the assembly of Claim 1 of the main request is based on originally filed Claims 1, 4 and 11 to 13.

The amendments made to the description are restricted to those necessary to bring this into line with the new claims of the main request, to take into account the most relevant prior art and to remove minor errors.

Hence, there are no objections to the amended documents under Article 123(2) EPC.

3. Main Request

3.1 Novelty

Document (A) discloses a water purifier comprising a pleated paper filter or a tube formed of a rigid foam acting as a prefilter for removing large particles, an activated carbon filter for the absorption of chemicals and a ceramic microscreen, preferably a closed-ended tube, preferably containing a bacteriostatic agent and arranged downstream of the prefilter and the carbon filter. The water flows radially inward through the prefilter, the carbon filter and the ceramic microscreen. Thus, the assembly of Claim 1 is distinguished from the device of (A) by the features defined in the characterising clause of the claim.

Publication (B) (see particularly page 8 at the bottom) recommends the use of a microporous membrane instead of a depth filter to remove microbiological contaminants, the membrane being arranged downstream of a prefilter suitable to remove larger particles from a liquid in order to reduce the clogging of the membrane filter. A filter assembly comprising three successive filter elements, let alone with a prefilter including a downstream portion and an upstream portion having a larger pore size than the downstream portion (last feature of Claim 1) cannot be taken from said document.

(C) refers to the use of membranes in a radial flow filter member for removing bacteria. This filter member possibly consists of a plurality of filter layers with the porosity decreasing in the direction of flow. It is stated there that, to remove bacteria, a pore size below 0.3 μm is required.

The remaining documents of the search report are less relevant than (A), (B) and (C).

Thus, none of the documents (A), (B) and of the documents of the search report discloses an apparatus with all the features of Claim 1. This applies also to Claim 12, since it contains, due to its reference to Claim 1, not only the features of Claim 1 but also additional features which restrict the scope of Claim 12 with respect to Claim 1.

Therefore, the Board is of the opinion that the subject-matters of Claims 1 and 12 are novel.

3.2 Inventive step

It is undisputed that the closest prior art with respect to the subject-matter of Claim 1 is contained in (A).

The subject-matter of Claim 1 differs from (A) in that

(a) the downstream member comprises a microporous membrane (52) having a pore rating in the range from 0.02 micrometer to 0.5 micrometer,

(b) the fibrous filter (50) comprises a microfibrous mass

(c) the microfibrous mass of the fibrous filter includes a downstream portion and an upstream portion having a larger pore size than the downstream portion.

This has the effect that the filter assembly presents a low resistance to the flow of water through it and is highly effective for removing fine particles while delaying the onset of clogging due to gross contamination components in the influent stream.

The objective problem underlying the invention according to Claim 1 is therefore to improve the filter assembly of (A) in such a manner that the above-mentioned effects are achieved.

The Board finds that the definition of said problem is per se obvious for the person skilled in the art of constructing filter assemblies for water purification and thus cannot contribute to inventive step.

Though it seems that, in view of the teachings of (A) and (B), provision of features (a) and (b) may be obvious, there is no obviousness for provision of feature (c) which considerably restricts the scope of Claim 1 or any suggestion in documents (B) or the documents cited in the search report to use a filter with feature (c) just in the first filter step.

Document (C) provides a filter assembly comprising only one filter member. Though this member is possibly formed of a plurality of filter layers with decreasing pore sizes, it is a pharmaceutical membrane suitable for removing bacteria and thus this member corresponds to the third filter member (the microporous membrane (52)) of Claim 1 of the patent in suit but not to the first filter member (the fibrous filter (50)) of Claim 1.

Document (B) is silent about a particulate filter with two portions according to feature (c), see paragraph 3.1 above.

Accordingly, the Board comes to the conclusion that the subject-matter of Claim 1 cannot be derived in an obvious manner from the prior art.

This applies also to Claim 12, since it contains, due to its reference to Claim 1, the features of Claim 1 and additional features which restrict the scope of Claim 12 with respect to Claim 1.

Therefore, the subject-matters of Claims 1 and 12 of the main request involve an inventive step as defined in Article 56 EPC, and consequently said claims are allowable (Article 52(1) EPC).

3.3 Dependent Claims 2 to 11 and, respectively, 13 and 14 concern particular embodiments of the apparatuses according to Claims 1 and, respectively, 12 and are, therefore, likewise allowable (Article 52(1) EPC).

4. First and second auxiliary requests

Since the main request is allowable, the subsequent first and second auxiliary requests need not be further considered by the Board.

5. In the result, the Board takes the view that the application in the form of the main request and the invention to which it relates meet the requirements of the 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 grant a patent based on the documents of the main request:

Claims 1 to 11 filed with the letter dated 13 November 1992,
Claims 12 to 14 filed with the letter dated 5 February 1993,
description: pages 1 to 7 and 10 to 12 filed with the letter dated 13 November 1992, pages 8 and 9 filed with the letter dated 5 February 1993, page 9, lines 24 to 26 being replaced by "properties. These membranes have a pore rating in the range from 0.02 micrometer to 0.5 micrometer. The downstream".
drawings: sheet 1/3 (Figure 1) as originally filed, but renumbered to 1/2;
sheet 2/2 (Figures 2 and 3) filed with the letter dated 21 April 1987.

The Registrar: The Chairman:

P. Martorana E. Turrini

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