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Datasheet for the decision of 11 September 2013

Case Number: T 2526/10 - 3.3.05

Application Number: 05019585.8

Publication Number: 1728542

IPC: B01D 29/48

Language of the proceedings: EN

Title of invention:
Notched wire, notched wire element and filtration apparatus

Applicant:
Kanagawa Kiki Kogyo Co., Ltd.

Headword:
Notched wire/KANAGAWA

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step: main request, improvement not derivable from the combination of documents underlying the contested decision; remittal for further prosecution"

Decisions cited:
-

Catchword:
-

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Case Number: T 2526/10 - 3.3.05

D E C I S I O N
of the Technical Board of Appeal 3.3.05
of 11 September 2013

Appellant: (Applicant)
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Decision under appeal:
Decision of the Examining Division of the European Patent Office posted on 20 July 2010 refusing European patent application No. 05019585.8 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: G. Raths
Members: J.-M. Schwaller
P. Guntz

Summary of Facts and Submissions

I. This appeal lies from the decision of the examining division refusing European patent application No. 05 019 585.8.

II. The contested decision was a decision according to the state of the file, the applicant (now appellant) having requested such a decision by a letter dated 5 July 2010. As to the grounds for the decision, the examining division referred to its communication dated 11 March 2010.

III. Independent claims 1 and 4, which underlie the contested decision (now claims 1 and 4 of the main request), were filed with letter dated 15 October 2009. They read as follows:

"1. A filter element comprising a notched wire disposed in layers in a filtration apparatus:
a filter frame (3) of a filtration apparatus; wherein the notched wire is wound around the filter frame (3) spirally in layers;
first projection stripes (4d) formed on one surface of a band plate (4a) at prescribed intervals in a longitudinal direction of the band plate so as to extend in a direction that is approximately perpendicular to the longitudinal direction of the band plate (4a) or has a prescribed inclination angle with respect to the longitudinal direction of the band plate; and
second projection stripes (4e) extending between the first projection stripes (4d), a height of the second projection stripes (4e) being smaller than that of the

first projection stripes (4d) and a width of the second projection stripes (4e) being shorter than a length of the first projection stripes in a width direction of the band plate, wherein each of the second projection stripes (4e) has a convex surface between a peak and an outer end in a width direction thereof, characterized in that each of the second projection stripes (4e) has a generally semicircular cross section."

"*4. A filtration apparatus comprising: a main body (1); and the filter element according to claim 1, disposed in the main body (1)*".

Claims 2 and 3 represent specific embodiments of the subject-matter of claim 1 on which they depend.

IV. In its communication of 11 March 2010, the examining division held the subject-matter of above claim 1 to lack inventive step under Article 56 EPC in the light of the disclosure of document

D1: DE 1 003 184

taken in combination with the teaching of document

D4: WO 93/07944 A2.

The examining division considered in particular that starting from document D1, the problem to be solved could only be seen in the provision of an alternative filter element, because the differentiating feature, which did not provide any particular effect, was obvious from D4.

V. In the grounds of appeal dated 29 November 2010, the appellant filed observations in which it contested in particular the problem as defined by the examining division. It stated in this respect that the problem lay in the provision of an improvement, because the fluid pressure loss in case of a projection having a generally semi-circular cross-section was 70% of that of a projection having a generally triangular cross-section.

Along with its observations, the appellant submitted a set of amended claims as an auxiliary request.

VI. As to the requests on file, the appellant requested that the contested decision be set aside and that a patent be granted on the basis of the claims according to the main request filed with letter dated 15 October 2009, or alternatively on the basis of the set of claims according to the auxiliary request submitted on 29 November 2010.

Reasons for the Decision

1. Main request – amendments

The board is satisfied that the subject-matter of the claims of this request meets the requirements of Article 123(2) EPC. In particular, amended claim 1 has a basis in claim 7 and in the passage at page 3, lines 10 to 14 of the application as filed.

2. Main request – Novelty

The board is satisfied that the claimed subject-matter is not anticipated by any of the documents cited in the search report, and so meets the requirements of Article 54(1) and (2) EPC.

3. Main request - inventive step

Applying the problem-solution approach, the board has come to the following conclusions.

3.1 The invention concerns a filter element comprising a notched wire and a filtration apparatus.

3.2 As to the starting point for assessing inventive step, the board concurs with the examining division's conclusion that document D1 represents the closest state of the art.

D1 discloses in particular a filter element comprising a stack of notched wires (1) as illustrated in Figures 1 and 2, reproduced here.

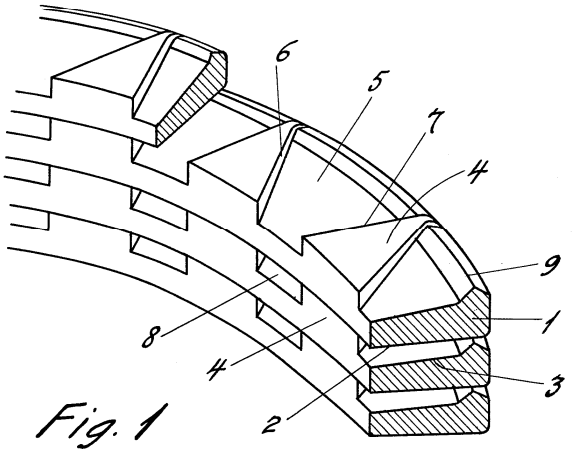

Fig. 1

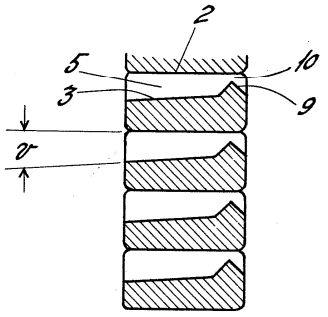

Fig. 2

The figures show that the above filter element comprises in particular first projections (4,6) extending perpendicularly to the length of the wire (1) and second projections having a triangular cross-section (9) and formed in a longitudinal direction between the first projections.

D1 discloses (column 3, lines 22 to 24) that the cross-section of the second projections can be triangular, blade-shaped ("schneidenförmig") or otherwise differently shaped (without any further detail).

3.3 The application-in-suit (page 2, lines 16 to 20) defines the technical problem to be solved as being to provide a strong notched wire element for capturing foreign substances having smaller particle diameters and preventing increase in flow resistance of the fluid to be filtered.

3.4 As a solution to this problem, the invention proposes the notched wire filter element defined in claim 1 at issue (i.e. of the main request), which is in particular characterised in that each of the second projection stripes has a generally semi-circular cross-section.

3.5 As to the question whether the problem identified in the application-in-suit has been solved by the above proposed solution, the examining division reasoned that D1 already solved this problem by using second projections having a triangular cross-section. There was however no recognisable specific effect underlying the generally semicircular cross-section, so that the objective problem underlying the application boiled down to the provision of an alternative filter element.

The appellant contested the above conclusions of the examining division on the basis of the argument – provided for the first time with the grounds of appeal - that the fluid pressure loss on a projection stripe with a generally semi-circular cross-section was 70% of the fluid pressure loss on a projection stripe with a generally triangular cross-section.

The board takes note of this technically credible argument, with the consequence that the problem can be defined in more ambitious terms, the solution proposed giving rise to an improvement as regards the fluid flow resistance, since in comparison with the triangular cross-section according to D1, the claimed configuration of the projection stripe gives rise to a decrease in flow resistance of the fluid to be filtered.

3.6 The above problem is thus plausibly solved since the claimed filter element provides for more filtration capacity owing to the smooth fluid flow engendered by the shape of the second projection stripes, and thus an improvement can be acknowledged over D1.

3.7 On the question whether the solution proposed in claim 1 at issue was derivable - as stated by the examining division - from the teaching of document D4, the board makes the following observations.

D4 discloses (claims 1 and 4) a filter element comprising a wire having a generally rectangular cross-section wound into a helical coil with adjacent turns in contact with each other. According to a specific embodiment (claims 5 and 6), the wire is formed with a longitudinal apex and a side of the wire is formed with projections or indentations spaced apart along its length. In the particular embodiment disclosed in figure 5, the wire comprises a longitudinal projection 32 with a semi-circular cross-section.

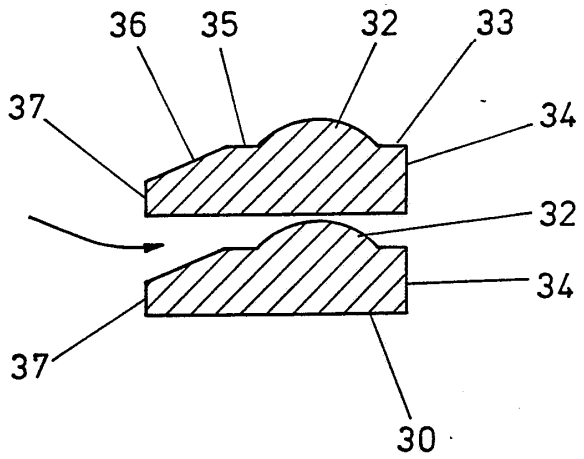

FIG. 5

In the board's view, the skilled person faced with the problem identified in point 3.5 above – namely the development of a filter element having a reduced flow resistance - would not find in D4 a solution to this problem, because D4 (page 1, lines 29 to 31) addresses a different problem, namely the devising of a filter

element which can be backwashed more effectively and in less time than prior art filter elements.

Even if the skilled person looked at D4, he would not arrive at the solution defined in claim 1, because D4 neither discloses that the semicircular projection extends between first projections nor that the semicircular projection has a height smaller than that said first projections.

3.8 It follows from the above that the subject-matter of claim 1 of the main request cannot be held to be derivable in an obvious manner from the disclosure of document D1 taken in combination with the teaching of document D4.

The same conclusion applies to claim 4, directed to a filtration apparatus comprising the filter element according to claim 1, and to claims 2 and 3 which depend on claim 1.

In the board's view, the other documents cited in the European search report do not disclose or suggest the claimed subject-matter either.

3.9 The board observes that it limited its investigations to the documents on file. Notwithstanding, the question arises whether or not the solution proposed in claim 1 at issue is obvious in the light of common general knowledge. In the absence of any evidence on file, this question is left open and the case is remitted to the first instance.

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 for further prosecution on the basis of the claims according to the main request dated 15 October 2009.

The Registrar: The Chairman

C. Vodz G. Raths