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D E C I S I O N
of 1 April 2004

Case Number: T 0889/98 - 3.2.3

Application Number: 90904313.5

Publication Number: 0454794

IPC: E03F 1/00

Language of the proceedings: EN

Title of invention:
Vacuum drainage system

Patentee:
Hofseth, Olav

Opponent:
Metra OY AB

Headword:
-

Relevant legal provisions:
EPC Art. 56

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

Decisions cited:
-

Catchword:
-



Case Number: T 0889/98 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 1 April 2004

Appellant: Metra OY AB
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Respondent: HOFSETH, Olav
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 30 June 1998
rejecting the opposition filed against European
patent No. 0454794 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: C. T. Wilson
Members: J. B. F. Kollar
M. K. S. Aúz Castro

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal, received on 4 September 1998, against the decision of the opposition division, posted on 30 June 1998, to reject the opposition against the European patent No. 0 454 794. The fee for the appeal was paid on 4 September 1998. The statement of grounds of appeal was received on 10 November 1998.

II. The opposition had been filed against the patent as a whole in accordance with Article 100(a) EPC on the grounds that the subject-matter of the patent was not novel (Articles 52(1) and 54 EPC) or lacked an inventive step (Articles 52(1) and 56 EPC).

The most relevant prior art documents for the present decision are:

D1a: EP-A-0 287 350

D29: US-A-4 182 499

D32: US-A-4 159 550.

III. In response to a communication pursuant to Article 11(2) RPBA in which the board considering D1a to be the closest prior art set out its provisional opinion on the case with respect to the issues of novelty and inventive step the respondent (patentee) submitted a new claim 1 as his auxiliary request.

IV. During the oral proceedings held on 1 April 2004 the parties formulated their requests as follows:

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

The respondent requested that the appeal be dismissed, auxiliarily with the proviso that the patent be maintained on the basis of claim 1 filed on 26 February 2004 and claims 2 to 4, the description and the drawings as granted.

V. Claim 1 of the patent as granted reads as follows:

Vacuum drainage system for sanitary equipment such as toilets, urinals, sinks, etc, comprising branch pipes being connected to the sanitary equipment and which open into a collection pipe (5), a vacuum device (2) for producing a vacuum in the pipes for transporting sewer from the sanitary equipment through the system into an optional collecting tank (1), a mill or grinding device (11), the vacuum device comprising one or optionally several screw pumps (2), characterized in that the screw pump(s) (2) is/are equipped with the mill or grinding device(s) (11) for grinding solid particles in the sewer, the grinding device(s) (11) resp. the screw pump(s) (2) being directly connected to the collection pipe (5)."

Claim 1 of the auxiliary request differs from the granted claim 1 in that in column 4, line 34 of the patent documents the words "**at its inlet end**" are added after "screw pump(s) 2", and in that the second alternative in line 37 that the screw pumps are

directly connected to the collection pipe is cancelled by deletion of the words "resp. the screw pump(s) (2)".

VI. The arguments of the parties in the oral proceedings can be summarized as follows:

(a) appellant

- document D1a has to be seen as the nearest prior art disclosing not only all features of the preamble of claim 1 of the main request but also both its characterising features. The first characterising feature stating that the screw pump(s) (2) "is/are equipped" with the mill is understood as a functional feature which however is known from Figure 1 of D1a - cf. the reference signs 3 and 4. As to the second characterising feature stating that "the grinding device being directly connected with the collection pipe", this feature is known from Figures 1 and 2 of D1a showing that the grinder 3 is directly connected with the supply line 6. Both embodiments of D1a are thus novelty destroying of the subject-matter of claim 1 of the main request. The disclosure of D1a takes away as well novelty of the main claim of the auxiliary request;

- D1a relates to a vacuum sewage collecting system comprising a vacuum tank. The person skilled in the art starting from D1a and looking for a smaller system than the one of D1a would get from D29 incentive to make an integration of a macerator and a vacuum pump downstream of the macerator. The idea of using the system of D1a in

small scale and the recognition in D29 and D32, which offer systems particularly adapted for the intended use in vehicles and boats (column 1, lines 18 to 27 of D29 and column 1, lines 65 to 68 of D32), that no vacuum tanks are necessary in small drainage systems would automatically lead to elimination of the tank and to the integration of a vacuum pump and a grinder according to the present invention. As a result of the foregoing observations the subject-matter of claim 1 of the main request has to be seen as being an obvious combination of D1a and D29.

The aforementioned reasons apply also to the main claim of the auxiliary request which therefore does not involve an inventive step required in Article 56 EPC, either.

(b) respondent

- in D1a there is a path leading from the pipe 6 via the macerator 3, the pipe 11, the tank 1, the pipe 7 to the screw pumps 4. However, the screw pumps are not equipped with the grinder and the screw pumps are not directly connected to the collection pipe. Therefore the subject-matter of claim 1 according to the main request is new in view of the disclosure of D1a.

Since the screw pump(s) 4 disclosed in D1a at its/their inlet end is/are not equipped with grinding device(s) the subject-matter of claim 1 of the auxiliary request is novel over D1a.

- The nearest prior art of D1a represents the state of the art of vacuum sewage collecting systems comprising a vacuum tank while D29 and similarly D32 do not relate to a vacuum system but to macerator pumps adapted to work under atmospheric pressure. The impeller vacuum pump according to the system described in D29 serves only for transporting material and is not intended to build up vacuum in the whole system as is the case in the system of D1a. Document D29 thus represents a conventional atmospheric system and by no means a vacuum system. These two documents thus relate to two different fields so that combining the teachings of said documents by one skilled in the art is not obvious and would furthermore not lead to the subject-matter of claim 1 of the present patent.

Reasons for the Decision

1. The appeal is admissible.
2. *Main request*

In one of the alternatives of claim 1 it is stated that "..., the grinding device(s) (11) being directly connected to the collection pipe (5)". From Figures 1 and 2 of D1a, covering all features of the preamble of claim 1, it can be clearly seen that the macerator 3 is directly connected to the collection pipe 6 as claimed in the patent in suit. Furthermore, in D1a it is mentioned in column 3, lines 36 to 40 that it is in particular the macerator which enables the use of the

screw pumps, because the solids are macerated before reaching the vacuum pumps. This thus expresses a functional correlation between macerator and pump as it is to be understood from the term "... is equipped with ..." of the characterising feature of claim 1.

The board comes, therefore, to the conclusion that the subject-matter of claim 1 is not novel over the disclosure of D1a and that the main request thus cannot be allowed (Article 54 EPC).

3. *Auxiliary request*

3.1 Amendments

Claim 1 differs from the granted claim 1 in that in column 4, line 34 of the patent documents it is added that the screw pump(s) (2) "**at its inlet end**" is/are equipped with the mill and in that the second alternative in line 37 stating that **the screw pumps** are directly connected to the collection pipe has been cancelled.

The above amendment is based on the statement to be found in column 2, last line to column 3, lines 1 and 2 of the patent specification. By cancelling said alternative no broadening of the claim occurred.

The amended claim 1 is therefore not open to objection under Articles 123(2) and (3) EPC.

3.2 Novelty

The added specification "at its inlet end" defines a constructional feature which contributes to novelty of the subject-matter of claim 1 over the disclosure of D1a so that the claim satisfies the requirement of Article 54 EPC.

3.3 Inventive step

3.3.1 It was agreed throughout the proceedings that document D1a relating to a vacuum sewage collecting system forms the nearest prior art. More particularly, this system comprises a vacuum tank with two chambers and a separately driven grinder. Sewage is supplied to the first chamber of the tank and is ground and transferred to the second chamber by using the grinder. A vacuum pump, *inter alia* a screw pump, produces vacuum in the tank and pumps the contents of said second chamber out of the tank. Even if the problems of clogging by textiles, sanitation utensils etc, have been solved with this system, it is comparatively expensive to build and requires a relatively large amount of space.

3.3.2 The problems of expense and space are solved by the following features stated in claim 1:

- (i) the screw pumps(s) (2) at its inlet end is/are equipped with the mill or grinding device(s) (11) for grinding solid particles in the sewer,
- (ii) the grinding device(s) (11) being directly connected to the collection pipe (5).

The claimed system is simpler to manufacture and more compact since it does not require the vacuum tank.

- 3.3.3 As stated in the preamble of claim 1 the vacuum drainage system of the present invention includes a plurality of toilets, urinals, sinks, etc., being interconnected to a common collection pipe and this means that in order to maintain the vacuum in the system the vacuum device comprising the vacuum pump must be continuously running. This requires a pump with a design that enables sufficient high and stable vacuum depending on the size of the system and which can run over long periods of time without being damaged by heat or wear.
- 3.3.4 Document D29 is irrelevant in respect of the problem to be solved since the pump disclosed in this document is significantly different in type and configuration from that of the patent in suit. The pump of D29 is a small positive displacement pump based on an impeller (see column 2, lines 48 to 50) with flexible rotor fingers, namely a rubber impeller. Such a pump is not adapted to generate the above required vacuum, to be used in a vacuum drainage system and cannot run for long periods since the impeller without the supply of liquid will become overheated when dry and the rubber will be damaged.
- 3.3.5 The board cannot accept the appellant's argument that D29 provides the incentive of improving the system according to the D1a citation in order to delimit the scale of the system and to simplify its construction. This submission is based upon *ex post facto* reasoning

since as mentioned above the pump and grinding unit of D29 are not adapted to be successfully used in connection with a vacuum drainage system of the present invention. The teaching of D32 is similar to D29 in that it is adapted to work under atmospheric pressure and not under a stable vacuum. Being aware of this fact the skilled person would not combine documents D29, D32 and D1a since such a combination would not work.

There is thus no disclosure or suggestion in the cited prior art of the above distinguishing features (i) and (ii) under elimination of the intermediate vacuum tank which was part of the state of the art according to D1a. Therefore, even if the skilled person considered applying the teaching given in D29 or D32 to the known drainage system in D1a, it would not lead to the claimed teaching.

- 3.3.6 Accordingly, in the board's judgement the subject-matter of claim 1 cannot be derived in an obvious manner from the cited prior art and consequently involves an inventive step (Article 56 EPC).
4. Dependent claims 2 to 4 concern particular embodiments of the vacuum drainage system claimed in claim 1 and are likewise allowable.

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 in amended form on the basis of claim 1 filed on 26 February 2004, claims 2 to 4, the description and the drawings as granted.

The Registrar:

The Chairman:

A. Counillon

C. T. Wilson