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D E C I S I O N
of 11 December 1997

Case Number: T 0787/95 - 3.2.4

Application Number: 90850022.6

Publication Number: 0382692

IPC: A47L 15/42

Language of the proceedings: EN

Title of invention:
Drain device for a dish-washer

Patentee:
AKTIEBOLAGET ELECTROLUX

Opponent:
BOSCH-SIEMENS HAUSGERÄTE GMBH, München

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - yes"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0787/95 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 11 December 1997

Appellant: (Opponent)
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Representative:
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Respondent: (Proprietor of the patent)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 14 July 1995 rejecting the opposition filed against European patent No. 0 382 692 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: C. A. J. Andries
Members: H. A. Berger
J. P. B. Seitz

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal, received on 18 September 1995, against the decision of the Opposition Division, dispatched on 14 July 1995, rejecting the opposition against the patent No. 0 382 692. The appeal fee was also paid on 18 September 1995. The written statement setting out the grounds of appeal was received on 10 November 1995.

Opposition was filed against the patent as a whole and based on Article 100(a) and (b) EPC. The following prior art documents were cited during the opposition proceedings and have again been taken into account in the appeal proceedings:

D1: US-A-3 346 000
D2: US-A-3 382 891
D3: DE-A-2 023 299

II. Claim 1 reads as follows:

"Device for a dish-washer which comprises a tub (10) in which liquid is circulated for cleaning dish, a drain pump (14) having an inlet which is placed near the bottom of the tub and a conduit (16) through which the liquid is emptied from the machine the conduit having a highest point which is situated at the upper part of the machine,
characterized
in that the conduit has at the highest point a constriction itself connected to the tub such that by emptying the tub a negative pressure is created in the connection which draws air from the tub."

III. Oral proceedings were held on 11 December 1997.

IV. The appellant argued as follows:

The most relevant prior art document is document D1, which discloses all the features of the preamble of Claim 1 and in addition an air hole at the highest point of the discharge conduit (25) through which the liquid of the dish-washer is emptied, and which is connected to the tub by a vent pipe (26). The obvious disadvantage of the device of document D1 is the fact that water from the discharge pipe can flow back through the vent pipe into the tub (see column 3, lines 44 to 52). The skilled person who tries to overcome this deficiency learns from document D2 that firstly air can be sucked from the tub by a jet of the sewage without a reverse flow through the connection opening (34) with the tub, when the washing liquid is drained from the tub by the drain pump (20), and that secondly a reverse siphoning of the liquid through the drain passage can be precluded therewith (see column 4, lines 6 to 11). This system of document D2 functions according to the principle of an air gap vent. Such an air gap vent is already mentioned in the introductory part of document D1. Having regard to the teaching of document D1 and the teaching of document D2, the appellant considers it obvious to provide a constriction at the highest point of the sewage passage such that by emptying the tub a negative pressure is created in the vent pipe which draws air from the tub.

V. The respondent is of the opinion that none of the cited prior art documents leads to the subject-matter of Claim 1, either alone or in combination with one another.

VI. Requests

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

The respondent (patentee) requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty*

The board ascertained during the examination of the cited prior art documents that none of them discloses an apparatus with all the features of Claim 1.

Novelty was not disputed by the appellant during the appeal proceedings.

3. *Closest state of the art*

Document D1 discloses all the features of the preamble of Claim 1 and in addition the feature that a vent passage connects the highest point of the discharge conduit with the tub. The vent device of document D3 is not connected with the tub. The deflector of document D2 is not provided at the highest point of the drain passage. Therefore, document D1 is taken as the closest state of the art in assessing inventive step.

4. *Problem and Solution*

4.1 Problem

The problem which the invention sets out to solve is to create a dish-washer where the quantity of water remaining in the tub is limited, where the siphon effect is prevented and where the air supply to the drain pump is safeguarded (see column 1, line 56 to column 2, line 2 of the disputed patent).

4.2 Solution

The solution of the problem is achieved by the characterising features of Claim 1. Because of the waterflow through the constriction (17) in the meaning of the disputed patent a negative pressure is created which draws air from the tub through the opening (19) of the tub, into the vent pipe to the constriction. When the water in the dish-washer has reached a level where air is drawn through the pipe (12) the pumping effect will cease. When thereafter the velocity of the water in the outlet pipe has ceased the constriction will lose its sucking capability and instead air will leak into the constriction through the vent hose (18) from the tub (10) which means that the water column which is present in the drain hose (16) is divided into two smaller columns. The siphon effect can no longer be created.

5. *Inventive step*

5.1 The most relevant prior art is disclosed in document D1. According to this document the discharge pipe however is valveless and unrestricted (see Claim 1 of document D1), i.e. there is no constriction at the highest point of the discharge pipe. When the discharge pump (20) is operating and fluids are being pumped through the discharge conduit (25) a small amount of water will be pumped back into the wash chamber (14) through the vent conduit (26) (see column 3, lines 44 to 52). Therefore, a negative pressure is not created in the venting connection when the discharge pump is actuated, i.e. during emptying of the tub, and no air is drawn from the tub. Air only is drawn into the vent pipe when the pump is switched off. Such a vent conduit is used in order to avoid among other things, anti-siphon devices using an air gap vent arrangement (see column 1, lines 34 to 55).

5.2 Document D2 discloses an anti-siphon device with deflector means in an enclosure (30). It is true that during the discharge period air is drawn from the tub into the enclosure by the fluid jet at the inlet (27) of the drain passage (26) because of the ejector effect. However, the system of document D2 is basically different from the system of document D1. Indeed document D2 discloses a recirculation pump and a drain pump being driven together by an unidirectional motor (17, see column 1, lines 35 to 39 and 60 to 63), whereas document D1 discloses a reversible motor driving the recirculation pump in one rotation-direction and the drain pump in the other rotation-direction (see column 2, line 50 to 57). During the recirculation period it is necessary to prevent fluid delivered by the drain pump (20) from flowing out of the drain passage (26). Therefore, the deflector is set to the position in which the fluid is diverted in the direction of the opening (34) of the tub. Furthermore, the venturi mentioned in column 3, lines 1 to 3, which is provided in the inlet end (27) of the drain passage (25), might have the effect of constricting the fluid jet which passes the deflector chamber (enclosure 30) in a free distance, but no hint is given in document D2 to connect the constriction of the venturi itself with the tub.

5.3 In the device of document D1 no fluid is pumped into the discharge conduit (25) if the recirculation pump is pumping, so that no deflector device in the drain passage is necessary. Therefore already according to this aspect, it would not be obvious to incorporate the system of document D2 in the device of document D1. Furthermore, since it is indicated in document D1 that the vent conduit (26) is provided in order to avoid among other things an air gap vent arrangement as an anti-siphon device, the use of an air gap arrangement according to document D2 in this device of document D1

would not be taken into account. However even the combination of both systems would not lead to the device of the impugned Claim 1, i.e. to connect the constriction in the drain passage with the tub.

5.4 The appellant argued that a skilled person reading document D2 would firstly understand that air is sucked from the tub into the drain conduit (25) due to the ejector-function of the jet stream leaving the transfer passage end (24) and secondly that due to that sucked air an anti-siphon device is obtained. To provide in the device of document D1 at the highest point of the discharge conduit (25) other specific features, putting into practice these general ideas, namely creating an air flow from the tub to that conduit, and thereby maintaining the anti-siphon effect already obtained in document D1, can therefore not involve an inventive step, in the view of the appellant.

According to the board, such an approach is guided by the knowledge of the present invention, and the specific teaching of document D2 is no longer taken into account but is generalized in such a way as to generate a completely new teaching. Indeed, document D2 provides firstly a solution to the problem of reversible pump motors and secondly combines that solution with known measures or features to obtain an anti-siphon effect. This feature creating that anti-siphon effect is not a constriction as presently claimed, but is a known system (see document D1, column 1, lines 34 to 52) which involves a gap in the discharge conduit vented to the atmosphere. In the Board's view, there is no obvious reason why a person skilled in the art, not knowing the present invention, would find in document D2 another specific anti-siphon device which is not disclosed either explicitly or implicitly in this document D2.

5.5 Document D3 is of less relevance than the systems of documents D1 and D2 and can also not lead to the device of Claim 1, in an obvious manner.

5.6 The subject-matter of of Claim 1 therefore involves an inventive step (Article 56 EPC).

6. Claim 1 therefore is patentable in the meaning of Article 52 EPC, so that the patent can be maintained unamended.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

N. Maslin C. Andries