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**Datasheet for the decision  
of 28 June 2018**

**Case Number:** T 0933/13 - 3.5.02

**Application Number:** 08019653.8

**Publication Number:** 2184828

**IPC:** H02H3/20, H02H11/006

**Language of the proceedings:** EN

**Title of invention:**

A detection circuit and a method for detecting a wrong power line connection

**Applicant:**

Electrolux Home Products Corporation N.V.

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

Inventive step - main request (yes)



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Case Number: T 0933/13 - 3.5.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.02**  
**of 28 June 2018**

**Appellant:** Electrolux Home Products Corporation N.V.  
(Applicant) Raketstraat 40  
1130 Brussels (BE)

**Representative:** Meissner Bolte Partnerschaft mbB  
Bankgasse 3  
90402 Nürnberg (DE)

**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted on 28 November  
2012 refusing European patent application No.  
08019653.8 pursuant to Article 97(2) EPC.

**Composition of the Board:**

**Chairman** R. Lord  
**Members:** H. Bronold  
R. Cramer

## **Summary of Facts and Submissions**

- I. The appeal of the patent applicant lies from the decision of the Examining Division of the European Patent Office posted on 28 November 2012 refusing European patent application No. 08019653.8. Reasons for the decision were *inter alia* lack of inventive step of the subject-matter of claim 1 according to the main request.
- II. With the statement setting out the grounds of appeal, the appellant (patent applicant) requested that the decision under appeal be set aside and that a patent be granted based on the claims of their then main request, or if that was not possible that a patent be granted on the basis of the claims of one of their first to third auxiliary requests. The then main request corresponded to the main request underlying the decision under appeal.
- III. The examining division had cited a single document, D1 (US 2007/0159738 A1), during the whole proceedings and had based all its objections on this one document D1.
- IV. In a communication under Rule 100(2) EPC dated 12 February 2018, the board informed the appellant that it considered independent claims 1 and 6 of the main request allowable but had concerns whether independent claim 11 met the requirement of Article 83 EPC. The board suggested to delete claim 11, the references to it on pages 6 and 9 of the description as well as the very last paragraph of the description directed to the "spirit of the invention".

V. With letter dated 7 June 2018 the appellant filed an amended main request including a set of amended claims and an amended description in accordance with the proposals of the board. The appellant requested that a patent be granted based on the amended main request. Oral proceedings were requested only as an auxiliary measure.

VI. Independent claim 1 of the main request reads:

"A household appliance with a detection circuit for detecting a wrong power line connection, wherein said detection circuit is integrated within the household appliance and comprises:

- a power supply unit (10) connectable to an external supply voltage (U),
- at least one relay (12), wherein the secondary side of said relay (12) is connected to the power supply unit (10) and connectable to the external supply voltage,
- detection means (14) for detecting a residual voltage (UR) at the secondary side of the relay (12), wherein said residual voltage (UR) depends on the supply voltage (U),
- at least one analogue-digital converter (16) for converting the detected residual voltage (UR) into a digital signal (UD), wherein an input of the analogue-digital converter (16) is connected to the detection means (14), and
- at least one microcontroller (18) for processing the digital signal (UD), wherein the microcontroller (18) is connected to an output of the analogue-digital converter (14), wherein
- the relay (12) is controlled by the microcontroller (18) in order to avoid that the relay (12) will be closed, if the supply voltage (U), the residual voltage

(UR) and/or the digital signal (UD) exceed a predetermined value, and wherein  
- the microcontroller (18) is connected to an acoustic device in order to display an acoustic signal, if the supply voltage (U), the residual voltage (UR) and/or the digital signal (UD) exceed the predetermined value."

Claims 2 to 5 are dependent on claim 1

VII. Independent claim 6 relates to a corresponding method for detecting a wrong power line connection provided for a household appliance.

Claims 7 to 10 are dependent on claim 6.

VIII. The first to third auxiliary requests are not reflected in the summary of facts and submissions since this decision is based on the main request filed with letter dated 7 June 2018.

IX. The arguments of the appellant, in so far as they are relevant for this decision, can be summarised as follows:

The subject-matter of claim 1 according to the main request involved an inventive step over the disclosure of document D1 in combination with the common general knowledge of the person skilled in the art.

In particular, document D1 neither disclosed nor suggested to avoid an electrical connection being established in the case that the supply voltage was too high. To the contrary, document D1 concerned an overvoltage protection circuit that opened an

electrical connection if a sustained excessive voltage above a threshold was detected.

## **Reasons for the Decision**

1. The appeal is admissible
  
2. Patentability
  - 2.1 The examining division argued that the subject-matter of claim 1 according to the main request was obvious in view of the disclosure of document D1 in combination with the common general knowledge of the person skilled in the art. In particular, the examining division argued that the subject-matter of claim 1 differed in three features from the disclosure of document D1. These features were defined by the examining division on page 4 under section 2.2 of the contested decision as follows:
    - (i) the detection circuit is comprised within a household appliance;
  
    - (ii) the microcontroller is connected to an acoustic device in order to display an acoustic signal, if the supply voltage, the residual voltage and/or the digital signal exceed the predetermined value; and
  
    - (iii) the microcontroller avoids that the relay is closed, if the supply voltage, the residual voltage or the digital signal exceed the predetermined value.

2.2 Comparing the reasoning of the examining division regarding the main request with the facts of the case, the board has arrived at the conclusion that none of the features (i), (ii) and (iii) is rendered obvious by the cited prior art, document D1, and the common general knowledge of the person skilled in the art.

With respect to features (i) and (ii) the examining division merely alleged that the person skilled in the art would readily implement or use those features without providing further evidence as to why the person skilled in the art would do so, see page 5, sections 2.3 and 2.4 of the contested decision.

With respect to feature (iii) the examining division argued on the one hand on page 4, section 2.2 of the contested decision, that document D1 did not disclose that "the microcontroller avoids that the relay is closed if the supply voltage, the residual voltage or the digital signal exceed a predetermined value" since this feature is listed as one of the three differences over the disclosure of document D1. On the other hand, the examining division argued on page 5, section 2.5, that paragraph [0025] of document D1 disclosed the same behaviour as the detector in the present application, which implies that the respective feature was considered to be disclosed in document D1.

Obviously, only one of these two contradictory lines of argument of the examining division regarding feature (iii) can be correct.

The cited paragraph [0025] on page 2 of document D1 merely discloses that "if a sustained excessive voltage above a predetermined threshold for a predetermined

time is detected, the receptacle 2 opens one or both sets of separable contacts 18, 20 to disconnect any attached load(s) or downstream loads from the source of the excessive voltage".

The board considers this to imply that the circuit according to D1 starts to operate after an electrical connection has been established. This is completely different from the behaviour of the invention as defined in claim 1, which avoids establishing an electrical connection if an excessive voltage is detected. Thus, contrary to the reasoning of the examining division, D1 contains no teaching about how to ensure that a relay will not be closed at all, since according to D1 the relay is already closed in the initial state.

D1 deals with the prevention of damage due to an arc fault or ground fault, see page 2, paragraph [0018]. As such, D1 needs to measure the supply voltage during the operation of a load. The subject-matter of claim 1 however, is explicitly directed to measures that are to be taken before the electrical connection of the household device with the power supply is established. Nothing similar can be found or read into the disclosure of document D1.

For the reasons given above, the arguments of the examining division with respect to the appellant's main request do not hold up against the judicial review of the board.

2.3 Considering the presented facts and evidence, the board agrees with the argument of the appellant that the subject-matter of claim 1 of the main request involves an inventive step.



The appellant argued on page 8 of the statement setting out the grounds of appeal that the objective technical problem solved by the subject-matter of claim 1 was "to provide ... protection against wrong power line connections for a household appliance".

Considering the factual disclosure of document D1 as discussed above under section 2.2, the board sees no reason to deviate from this formulation of the objective technical problem.

The appellant argued further that none of the three distinguishing features (i) to (iii) of claim 1 as set out above under section 2.1 were obvious for the person skilled in the art.

The board, having regard to the factual disclosure of document D1 as set out above under section 2.2, sees no reason to deviate from the appellant's conclusion also in this respect.

2.4 Thus, the board has arrived at the conclusion that the subject-matter of claim 1 according to the main request involves an inventive step in the sense of Article 56 EPC.

The same applies *mutatis mutandis* to the subject-matter of independent method claim 6, which is directed to a corresponding method for detecting a wrong power line connection.

Claims 2 to 5 and 7 to 10 are dependent on claims 1 and 6, respectively and define limitations with respect to the claims on which they are dependent. Thus, the

subject-matter of these claims also involves an inventive step in the sense of Article 56 EPC.

In the description, the references to former independent claim 11 objected to under Article 83 EPC in the board's communication have been deleted. The last paragraph of former page 9 of the description directed to the "spirit of the invention", which had been objected to under Article 84 EPC, has also been deleted.

Therefore, the main request is allowable.

- 2.5 As the board considers the main request to be allowable, a judicial review of the reasoning in the contested decision regarding the subject-matter of the auxiliary requests is unnecessary.

## 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 grant a patent with the following documents:

Description pages 1 to 9 of the main request filed as annex 1 of the letter dated 7 June 2018;

Claims 1 to 10 of the main request filed as annex 1 of the letter dated 7 June 2018;

Figure 1 as originally filed.

The Registrar:

The Chairman:



D. Magliano

R. Lord

Decision electronically authenticated