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**D E C I S I O N**  
**of 8 May 2001**

**Case Number:** T 0151/00 - 3.2.4

**Application Number:** 93116250.7

**Publication Number:** 0590690

**IPC:** A47L 9/04

**Language of the proceedings:** EN

**Title of invention:**  
Suction nozzle

**Patentee:**  
Hitachi, Ltd.

**Opponent:**  
Wessel-Werk GmbH

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 123, 54, 56

**Keyword:**  
"Inventive step (yes)"

**Decisions cited:**  
T 0056/87

**Catchword:**  
-



**Case Number:** T 0151/00 - 3.2.4

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.4**  
**of 8 May 2001**

**Appellant:** Wessel-Werk GmbH  
(Opponent) Im Bruch 2  
D-51580 Reichshof (Wildbergerhütte) (DE)

**Representative:** Albrecht, Rainer Harald, Dr.-Ing.  
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**Respondent:** Hitachi, Ltd.  
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**Representative:** Beetz & Partner  
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**Decision under appeal:** Interlocutory decision of the Opposition Division  
of the European Patent Office posted 14 January  
2000 concerning maintenance of European patent  
No. 0 590 690 in amended form.

**Composition of the Board:**

**Chairman:** C. A. J. Andries  
**Members:** R. E. Gryc  
H. Preglau

## Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal, received at the EPO on 26 January 2000 against the interlocutory decision of the Opposition Division, dispatched on 14 January 2000, which maintained the European patent No. 590 690 in an amended form. The appeal fee was paid simultaneously and the statement setting out the grounds of appeal was received at the EPO on 17 May 2000.

II. The opposition was filed against the patent as a whole and based on Article 100(a) EPC. The Opposition Division held that the grounds for opposition did not prejudice the maintenance of the patent in the amended version submitted with letter of 11 February 1998 having regard mainly to document:

D1: GB-A-2 002 864 considered as the closest to the claimed invention.

During the appeal proceedings, the appellant filed in addition the following documents:

D6: DE-C-2 737 013 (corresponding to D1) and

D7: DE-A-2 539 755.

III. In his statement setting out the grounds of appeal, the appellant contended in particular that the skilled person would learn from D1/D6 that the duct for accommodating the electric lines should be separate from the suction air duct and that the teaching of the patent in suit differs from the state of the art disclosed in said documents in that the assembly

rotatably connected to the casing comprises a separable cover. The appellant pointed out, that D1/D6 disclosed already a suction nozzle comprising a separable cover provided on its casing so that, starting from said state of the art, the solution taught by the opposed patent consisted solely to form the access to the space guiding the cables differently i.e. to provide the cover not on the casing of the connecting device but on the rotatably connected bent coupling. In his opinion, such a modification of the state of the art was a technical measure which did not involve the exercise of any skill beyond that to be expected of the skilled person and did thus not involve an inventive step.

The appellant also contended that, in comparison with the state of the art disclosed in D7, the teaching of the opposed patent did not involve an inventive step.

IV. Oral proceedings took place on 8 May 2001.

The respondent (patentee) filed new claims 1 for the main, the first and second auxiliary requests.

The appellant did not object against novelty.

He contended that a combination of the teachings of D1 and D7 would lead the skilled person to the invention. He pointed out that claim 6 of D7 taught that the electric conductors could also be in the form of wires and that the skilled person would learn from D1 the general teaching of using loose electric wires.

In his opinion, the solution proposed in Claim 1 of the opposed patent was for a skilled person nothing else as a routine technical measure and therefore not

inventive.

- V. At the end of the oral proceedings the appellant requested that the decision under appeal be set aside and that the European patent be revoked.

The respondent requested that the decision under appeal be set aside and that the patent be maintained on the basis of one of the claims 1 filed during the oral proceedings (main and first and second auxiliary requests).

- VI. Claim 1 of the main request reads as follows:

"A suction nozzle of a vacuum cleaner comprising

- a suction nozzle main body (1) being formed with a long sideways suction opening (4) which opens towards a floor surface,
- an electrical wiring (48),
- a casing (18) provided at a central portion of a rear portion of said suction nozzle main body (1), connected to said main body (1) rotatably in the up and down directions and having a suction passage formed in it,
- a turnable bent coupling (6) connected to said casing (18) rotatably in the right and left directions, and
- a protection cover (49, 50) defining a space for guiding the wiring (48),

characterized in that

- the suction nozzle has a rotary brush (3) rotatably arranged facing the suction opening (4),
- the suction nozzle has an electric motor (2) for driving the rotary brush (3), power being supplied to the motor via the electrical wiring (48),
- the wiring is disposed outside the bent coupling (6),

and

- the cover (49, 50) is separable from and disposed outside of the bent coupling (6) to define said space, the space accommodating slack of the electrical wiring (48) between the outside of the bent coupling (6) and the cover (49, 50)."

## **Reasons for the Decision**

### 1. *Admissibility of the appeal*

The appeal is admissible.

### 2. *Main request (Claim 1 as filed during the oral proceedings)*

#### 2.1 Modifications (Article 123 EPC)

Amended Claim 1 as filed during the oral proceedings differs from Claim 1 as granted as follows:

- column 11, lines 43 and 44 of the specification, the sentence: "the cover (49, 50) is disposed outside the bent coupling (6)", has been replaced by: "the cover (49, 50) is separable from and disposed outside of the bent coupling (6)".

This modification is supported by the description and the drawings of the application as originally filed, in particular on page 7, lines 18 to 19 and page 17, lines 14 to 16 and in Figures 1, 11 and 12.

- column 11, line 46 of the specification, the following sentence has been added: "between the outside of the bent coupling (6) and the cover

(49, 50)."

This modification also is supported by the description and the drawings of the application as originally filed (see page 17, lines 3 to 6 and Figures 1, 11 and 12).

Since these modifications have a counterpart in the application as originally filed and reduce the protection conferred by the claim, they fulfill the requirements of Article 123 EPC and are allowable.

## 2.2 Interpretation of Claim 1

In view of the description and the drawings, the following expressions of claim 1 should be interpreted accordingly:

- column 11, lines 25 to 26 of the specification: "a casing (18) ... connected to said main body (1) rotatably in the up and down directions".

This means that, when the suction nozzle main body lies on a floor surface in its working position, the casing is pivotable in a vertical plan about an horizontal axis of the main body.

- column 11, lines 28 to 30: "a turnable bent coupling (6) connected to said casing (18) rotatably in the right and left directions".

This means that the bent coupling (6) is connected to the casing (18) pivotably about an axis perpendicular to the longitudinal axis of rotation of the casing (18).

2.3 Novelty (Article 54 EPC)

Lack of novelty was not brought forward by the appellant. Since moreover the Board has, a priori, no particular reason to doubt the novelty, the subject-matter of Claim 1 is considered as novel in the meaning of Article 54 EPC.

2.4 The closest state of the art

Either D1/D6 or D7 can be considered as disclosing the state of the art closest to the invention.

2.4.1 If the electrically-powered suction head of D1/D6 is considered as the most relevant prior art, the subject-matter of Claim 1 differs therefrom in that:

- the suction nozzle has a rotary brush (3) rotatably arranged facing the suction opening (4),
- the wiring is disposed outside the bent coupling (6),
- the cover (49, 50) is separable from and disposed outside of the bent coupling (6) to define a space for guiding the wiring and
- the space accommodates slack of the electrical wiring (48) between the outside of the bent coupling (6) and the cover (49, 50).

2.4.2 If the disclosure of D7 is taken as a starting point, the subject-matter of Claim 1 differs therefrom in that:



- the suction nozzle has a rotary brush (3) rotatably arranged facing the suction opening (4),
- the wiring is disposed outside the bent coupling (6),
- the space accommodates slack of the electrical wiring (48) between the outside of the bent coupling (6) and the cover (49, 50).

## 2.5 Problem and solution

Starting either from D1/D6 or from D7, the problem to be solved appears to be to simplify the manufacture of the components of the connecting devices for the electrically-powered multi-parts suction nozzles disclosed by said documents, and also to provide an alternate solution to those proposed in these documents for facilitating the assembly of the components.

The Board is satisfied that the combination claimed in Claim 1 does solve this dual problem.

## 2.6 Inventive step (Article 56 EPC)

- 2.6.1 D1 describes a suction nozzle comprising all the features described in the precharacterising portion of Claim 1 and having an electric motor supplied with power via electrical wires, said wires being accommodated in a duct (7) leading them through the walls of rotatably engaged parts which form the connecting device (see D1, page 1, lines 86 to 94) and correspond respectively to the casing and the bent coupling claimed in Claim 1.

In order that the electric wires not be harmed by the relative rotational movement between the engaged parts, D1 teaches to give the duct (7) a part-annular section inside each part i.e. respectively section 7A in part (3) and section 7B in part (4) (see D1: page 1, lines 106 to 118 and 127 to 130 and Figures 3 and 4) so that, on relative rotation between said parts, the wires are free to move and "gently treated" (see D1: page 2, line 1).

As regards facilitating threading of the wires through the duct (7), D1 teaches to provide a cover (10) to the duct in part (3) i.e. the part corresponding to the casing claimed in Claim 1 (see D1: page 1, lines 95 to 99).

Therefore, the skilled person searching to simplify the connecting device of D1 and to facilitate threading of the electrical wires through the device would find in said document neither a hint for passing the wires completely outside the second part (4) (i.e. the part corresponding to the bent coupling according to the invention), nor a hint for enclosing slack of the wiring in a cover fixed outside said second part. On the contrary, in the German patent D6 corresponding to D1, the skilled person would learn that the provision of a separate outside cover should be considered as a disadvantage (see D6: column 2, lines 27 to 30).

2.6.2 D7 also discloses (see Figures 1 and 2) a suction nozzle comprising all the features described in the precharacterising portion of Claim 1 and having an electric motor supplied with power via electrical wires. In order not to harm the wires by the rotational movement between the parts of the connecting device, D7

proposes to helically wrap the electrical lines in several grooves provided around the portion of the inner part (3) surrounded by the outer part (2), said inner and outer parts corresponding respectively to the casing and the bent coupling of Claim 1. A cover is provided separable from and fixed outside the outer part (2). The slack of wiring is provided in D7 by the helically wrap, and not in the space under said cover, since there is no relative movement between the outer part (2) on the one hand and the electrical wire located in the outer wall of the outer part (2) on the other hand during the rotation of the inner and outer parts.

However, the provision of such a cover does not seem to facilitate the threading of the wires through the connecting device by the fact that the helical turns of the wires are disposed inside the outer part (2) of the device (see D7: Figure 2) and not outside as according to the invention. In order to connect the wires to connecting pins the wires have to be brought through an opening in the outside wall of the outer part (2), (see Figure 2).

2.6.3 The solution taught by D7 appears to be an alternative of a different conception to that described in D1/D6, however it does not seem to be less complicated than that one. Also the assembly of the engaged parts of the connecting device of D7 does not seem to be easier relative to the assembly of the components of the nozzle disclosed by D1/D6.

Therefore, the skilled person starting from the nozzle described in D1/D6 would have, a priori, no reason for consulting D7, and even if he would do it, he would

find in said document neither a hint for passing the wires completely outside the second part (4 in D1) nor a hint for accommodating additional slack between said second part and the cover.

Furthermore (see decision T 56/87, OJ EPO 1990, 188), it would not be justified arbitrarily to isolate a part of D7 (i.e. the space between the outside of the bent coupling and the cover) from its context in order to derive therefrom the teaching to use this space for accommodating slack of the wiring, since the integral teaching of D7 is to provide slack of the electrical wiring through the helical turns around the portion of the inner part (3) surrounded by the outer part (2).

Moreover, even if it is admitted that, at the priority date, the skilled person would have consulted D7, he could not arrive at the invention by a mere transposition of the electric lines and the outer cover of the device of D7 to the nozzle of D1/D6. On the contrary, a plurality of additional adaptations would be necessary so that the electrical wiring would be disposed outside the bent coupling in totality and not just partially as according to D7 and that slack of the wiring would be accommodated in totality inside the space defined by the outer cover and not partially inside the bent coupling as according to D7.

Therefore, it cannot be considered that the combination of features claimed in Claim 1 follows plainly and logically from the addition of the teachings of D1/D6 and D7.

2.6.4 The same reasoning remains valid if the skilled person would start from the state of the art of D7 and would

try to find in D1/D6 a solution to his dual problem of simplification and ease of assembly because neither the manufacture of the duct with its semi-circular sections inside the parts 3 and 4 of D1/D6 nor the threading of the wires through the duct (7, 7A and 7B) appears to be respectively more simple and easier than the manufacture and the threading according to D7.

2.7 For the foregoing reasons, the Board considers that the invention as claimed in Claim 1 involves an inventive step in the meaning of Article 56 EPC and that the reasons given by the appellant do not prejudice the maintenance of the patent in its amended version submitted as the main request at the oral proceedings.

3. *Respondent's auxiliary requests*

Since the board has acknowledged the main request as allowable, there is no need to consider the respondent's auxiliary requests.

**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 the following version:
  - Claim 1 of the main request as filed during the oral proceedings,

- description, columns 1 to 11 as granted, and
- Figures 1 to 13 as granted.

The Registrar:

The Chairman:

G. Magouliotis

C. Andries