



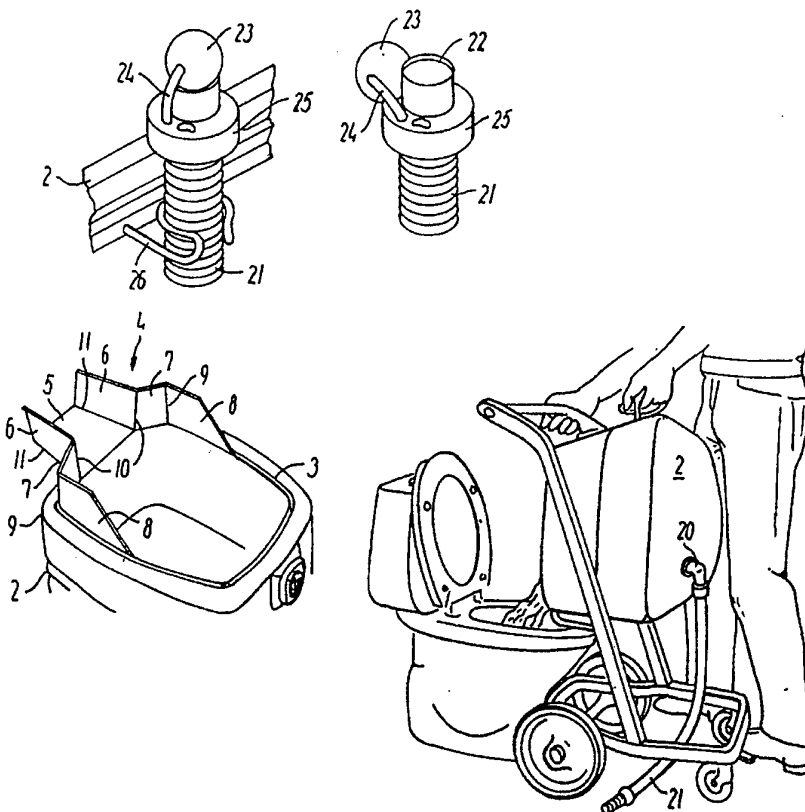
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁵ : A47L 7/00</p>	<p>A1</p>	<p>(11) International Publication Number: WO 94/27486 (43) International Publication Date: 8 December 1994 (08.12.94)</p>
<p>(21) International Application Number: PCT/DK94/00206 (22) International Filing Date: 26 May 1994 (26.05.94) (30) Priority Data: 0613/93 28 May 1993 (28.05.93) DK (71) Applicant (for all designated States except US): A/S FISKER & NIELSEN [DK/DK]; Peter Bangs Vej 30, DK-2000 Frederiksberg (DK). (72) Inventors; and (75) Inventors/Applicants (for US only): JOHANSEN, Steen, Birger [DK/DK]; Sideholmen 25, DK-2730 Herlev (DK). DALL, Hans [DK/DK]; Lærkenhøj 37, DK-2605 Brøndby (DK). (74) Agents: JØRGENSEN, Bjørn, Barker et al.; Internationalt Patent-Bureau, 23 Høje Taastrup Boulevard, DK-2630 Taastруп (DK).</p>		<p>(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KG, KP, KR, KZ, LK, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. In English translation (filed in Danish).</p>

(54) Title: AN ARRANGEMENT FOR EMPTYING A LIQUID RECEIVING CONTAINER

(57) Abstract

The emptying arrangement is on the collecting container of a wet vacuum cleaner and includes in a first aspect of the invention an element (4) secured to part of the edge of an emptying opening and arranged to occupy a position in which it is placed within the collecting container (2) and a second position in which it extends from the container (2) to constitute a pour spout. In a second aspect of the invention the collecting container includes an outlet hose (21) which at its outlet end is provided with a seat (22) for a valve member (23) which by means of an elastic means (24) is secured to the outlet end of the outlet hose (21) so that it may be moved between a closing position in the valve seat (22) and an opening position away from the valve seat (22).



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AN ARRANGEMENT FOR EMPTYING A LIQUID RECEIVING CONTAINER.

The invention relates to an emptying arrangement on the collecting container of a wet vacuum cleaner.

5 Wet vacuum cleaners are generally known and comprise generally a collecting container with a connecting stub for a suction hose arranged somewhat above the bottom and an opening for connecting a suction assembly. The collecting container is frequently shaped
10 as a vessel the upper opening of which is intended to receive the suction assembly and the connecting stub of the suction hose is mounted high in the side wall of the vessel. In use the collecting container is filled with water and dirt at a level below the hose connecting
15 stub, following which it must be emptied at least partially. This is frequently effected by removing the suction assembly whereafter the contents of the collecting container are discharged into an outlet, a slop sink, a toilet bowl or the like.

20 From International published patent specification No. WO-A-91/11952 it is known to mount the collecting container rotatably in a frame to facilitate the emptying operation.

It is moreover known from DE published Patent
25 Specification DE-A-28 11 139 to make the suction assembly blow down into the collecting container, thereby forcing the liquid therein to be passed out through the suction hose.

The object of the present invention is to provide
30 an emptying device on the collecting container of a wet vacuum cleaner which is simple and reliable to use.

To obtain this an emptying device on the collecting container of a wet vacuum cleaner, in which the collecting container includes an emptying opening with an edge

is according to a first aspect of the invention characterized by an element secured to part of the element and arranged to occupy a position in which it is positioned inside the collecting container, and a second position
5 in which it extends from the container to constitute a pour spout. This provides for obtaining that the collecting container may be emptied by discharging the contents at a high degree of security against spill outside the outlet, the slop sink etc. In use of the wet
10 suction device the element is positioned in the first position and will so in no way impede the operation and use of the wet vacuum cleaner while emptying the element is in the second position and constitutes a pour spout which facilitates the emptying operation and makes it
15 more secure.

The element may be substantially stiff and have the same shape whether it is in its position inside the collecting container or it is in its second position, in which it extends from the container. The element may
20 as such also be collapsible or foldable in fields.

In a preferred embodiment, the element is collapsible having several fields of sheet material, the fields being interconnected by hinge portions. The hinge portions may be formed by areas of sheet material with
25 a thickness that is reduced in relation to the fields and the sheet material may then comprise a thermoplastic elastomer or a rubberlike material.

In a second aspect of the invention an emptying arrangement on the collecting container of a wet vacuum
30 cleaner comprising an outlet stub positioned at the bottom of the collecting container and having a flexible outlet hose is characterized in that the outlet hose at its outlet end is provided with a seat for a valve member which by means of an elastic means is secured so
35 to the outlet end of the outlet hose that it may be

moved between a closing position in the valve seat and an opening position away from the valve seat. This makes it possible to easily empty the collecting container at least partially into a floor drain by placing the outlet
5 end of the outlet hose at the floor drain and move the valve member from the closing position to the opening position. By returning after emptying the valve member to the closing position it is ensured that liquid from the collecting container is not unintentionally emptied
10 through the outlet hose.

The valve member is preferably substantially spherical and the elastic member extends preferably from diametrically opposite points of the outlet hose near the outlet end thereof to diametrically opposite points
15 of the valve member. The elastic member may then extend diametrically through the valve member.

In a preferred embodiment the outlet hose is near its outlet end provided with a collar to which the elastic member is secured and on which the valve member
20 abuts in the opening position.

The invention will now be described in detail by examples with reference to the drawings, in which

Fig. 1 shows a wet vacuum cleaner,

Fig 2 shows the outlet end of an outlet hose
25 provided according to the invention with a valve member in a valve seat,

Fig. 3 shows the outlet end of the outlet hose from Fig. 2, the valve member being in the opening position,

Fig. 4 shows the collecting container of the wet
30 vacuum cleaner, the suction device being removed and the element being rotated so as to provide a pour spout,

Fig. 5 shows the emptying of the collecting container by pouring out the contents,

Fig. 6 emptying of liquid from the collecting con-
35 tainer through the outlet hose, and

Fig.7 an enlarged view of the element in a preferred embodiment.

Fig. 1 shows a wet vacuum cleaner 1 with a collecting container 2 which constitutes a lower part, 5 and an upper part 12 comprising for instance a suction assembly, such as this is generally known. The collecting container 2 comprises a connecting stub 13 for a suction hose not shown, and a handle 14.

The wet vacuum cleaner 1 is mounted on a carriage with a handle 15, wheels 16 and guide rollers 17. The wet vacuum cleaner 1 is mounted in the carriage so that the collecting container 2 is allowed to rotate about an axis near its rear edge, as described in the following.

Fig. 5 shows the emptying of the collecting container 2 into a toilet bowl after the upper part 12 has been removed. The collecting container is passed with the carriage to the toilet bowl, following which the collecting container 2 is rotated about the above mentioned axis by means of the handle 14, whereby the collecting container may be completely emptied. As it likewise appears from Fig.5 the collecting container is provided at its bottom with an outlet stub 20 with an outlet hose 21.

Fig. 4 shows the top of the collecting container 2, the upper part 12 being removed, and with an element 14 unfolded as a pour spout. In the illustrated embodiment element 4 includes a series of fields 5 to 8 of an elastic sheet material, preferably a thermoplastic elastomer or a rubber material. The fields 5 to 8 are interconnected by hinge portions 9 to 11, preferably constituted by areas of sheet material with a thickness smaller than the fields 5 to 8.

The element 4 thus includes a central element 5 secured to the edge 3 of the opening of the collecting

container 2 and adjacent fields 7 and 8, likewise secured to the edge 3. The adjacent fields 7 and 8 are interconnected by the hinge portion 9, while between the central element 5 and the adjacent fields 7 there are inserted intermediate fields 6 engaging the central field 5 through hinge portions 11 and engaging the adjacent fields 7 through hinge portions 10. With the illustrated design it is possible to rotate the element so that it from its unfolded position as shown is passed to a position inside the container, in which it substantially is adjacent to the inner side wall of the collecting container 2.

Fig. 7 shows a preferred embodiment for the element 4, in which the fields 6, 7, 8 are divided by hinge portions 36, 37a and 37b and 38, respectively, to make them more flexible in a controlled manner, thereby facilitating the rotation of the element between the two positions. The element shown in Fig.7 further comprises a skirt 39 for mounting on the collecting container and connected to the fields 6, 7, 8 through a hinge portion 40.

In the position shown in Fig. 4 the element 4 constitutes a pour spout which facilitates and ensures the function of the pouring operation shown in Fig. 5.

As it appears from Fig. 4 the element 4 extends in the example along a curved portion of the edge 3. This contributes to stabilize the element 4 in the illustrated unfolded condition.

The outlet hose 21 shown in Fig.5 is provided at its outlet end with a valve seat 22 (Figs 2 and 3) for a valve member 23 in the form of a sphere. The outlet hose 21 is further provided with a collar 25, in which an elastic member 24 is secured, e.g. in the form of a rubber band which at its one end is secured to the collar 25, extends diametrically through a hole in the

valve member 23 and is secured at its other end to the collar 25 at a point diametrically opposite the securing of the first end. A very simple and easily operable closing valve is thereby obtained for the outlet hose 5 21. The spherical valve member 23 is easily pushed laterally from the seat 22, thereby opening the outlet hose 21. To close the outlet hose the valve member 23 is easily pushed back to its home position in the seat 22, because the valve member 23 in the opening position 10 rests against the collar 25 and the end of the hose 21, whereby the movement between the opening position and the closing position in seat 22 has the character of a tilting movement across the edge of the seat 22.

Fig. 6 shows the emptying of liquid from the 15 collecting container 2 through the outlet hose 21. Its end is e.g. placed on the grid of a floor drain, following which the valve member is pushed away from the seat 22 and the outlet hose is open. After emptying the outlet hose is again closed so as to avoid unintentional 20 emptying. The outlet hose 21 may when not used be placed in a holder 26 on the collecting container 2 (see Fig.2).

P A T E N T C L A I M S.

1. An emptying arrangement on the collecting container (2) of a wet vacuum cleaner (1), the collecting container (2) comprising an emptying opening with
5 an edge (3), characterized by an element (4) secured to part of the edge (3) and arranged to occupy a position in which it is placed within the collecting container (2) and a second position in which it extends from the container (2) to constitute a pour spout.
- 10 2. An emptying arrangement according to claim 1, characterized in that the element(4) is substantially stiff and has the same shape whether it is in its position inside the collecting container (2) or it is in its second position in which it extends from the
15 container (2).
3. An emptying arrangement according to claim 1, characterized in that the element (4) is collapsible.
4. An emptying arrangement according to claims 1 or 3, characterized in that the element (4) comprises
20 several fields (5 to 8) of sheet material, said fields being interconnected by hinge portions (9 to 11).
5. An emptying arrangement according to claim 4, characterized in that the hinge portions (9 to 11) are formed by areas of the sheet material with a reduced
25 thickness in relation to the fields (5 to 8).
6. An emptying arrangement according to claim 4 or 5, characterized in that the sheet material comprises a thermoplastic elastomer or a rubber material.
7. An emptying arrangement according to claims 4
30 to 6, characterized in that the element (4) includes a central field (5) intended to extend from the edge (3) when the element (4) is in the second position, and at either side of the central field (5) at least one field (7, 8) adjacent the edge(4) and arranged to extend up
35 from the edge (3) when the element (4) is in its second

position, and intermediate fields (6) between the central field (5) and the adjacent fields (7), intended to form sides of the pour spout, when the element (4) is in its second position.

5 8. An emptying arrangement on the collecting container (2) of a wet vacuum cleaner(1) comprising an outlet stub (20) placed at the bottom of the collecting container (2) and having a flexible outlet hose (21), characterized in that the outlet hose (21) at its outlet
10 end is provided with a seat (22) for a valve member (23) which by means of an elastic means (24) is secured to the outlet end of the outlet hose (21), so that it may be moved between a closing position in the valve seat (22) and an opening position away from the valve seat
15 (22).

9. An emptying arrangement according to claim 8, characterized in that the valve member (23) is substantially spherical.

10. An emptying arrangement according to claim 8
20 or 9, characterized in that the elastic means (24) extends from diametrically opposite points of the outlet hose (21) near the outlet end thereof to diametrically opposite points of the valve member (23).

11. An emptying arrangement according to claims 8
25 to 10, characterized in that the elastic means (24) extends diametrically through the valve member (23).

12. An emptying arrangement according to claims 8
30 to 11, characterized in that the outlet hose (21) near the outlet end thereof is provided with a collar (25) to which the elastic means (24) is secured and on which the valve member (23) abuts in the opening position.

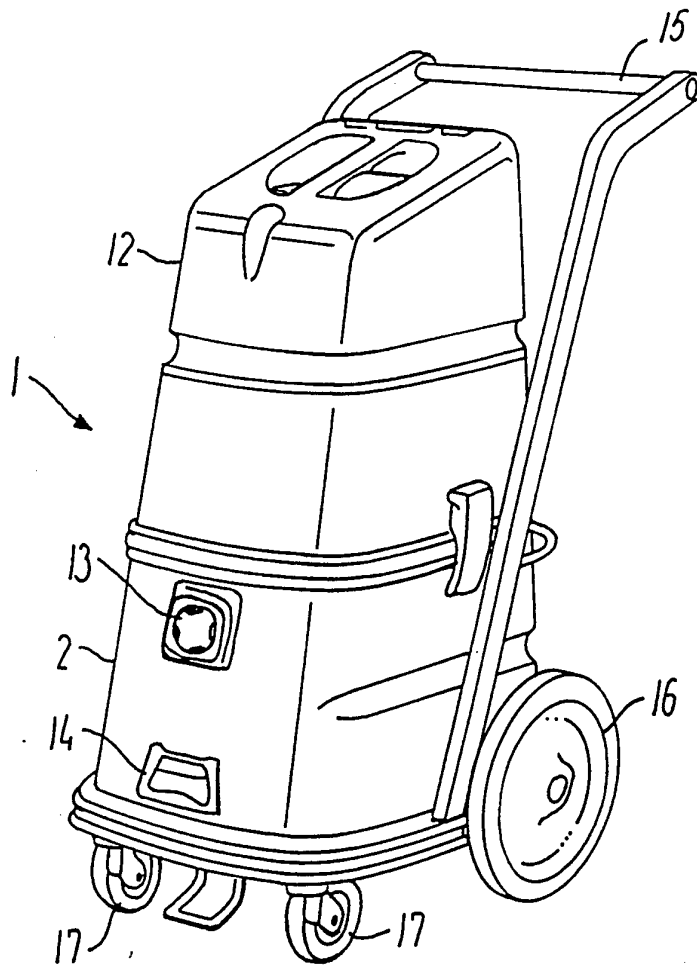


FIG. 1

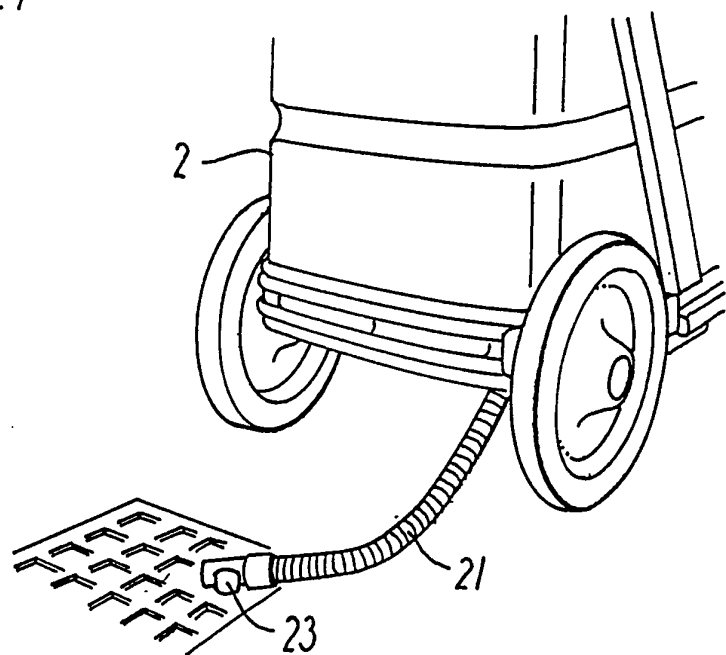


FIG. 6

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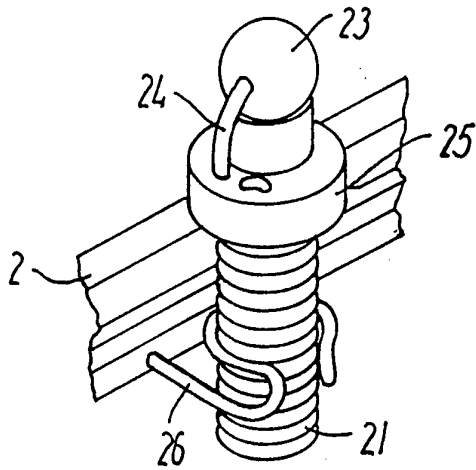


FIG. 2

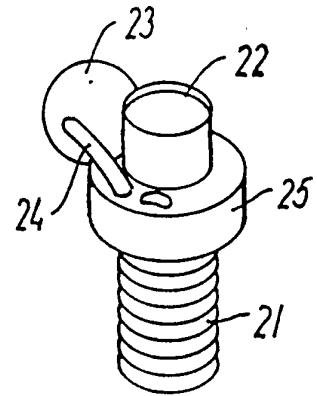


FIG. 3

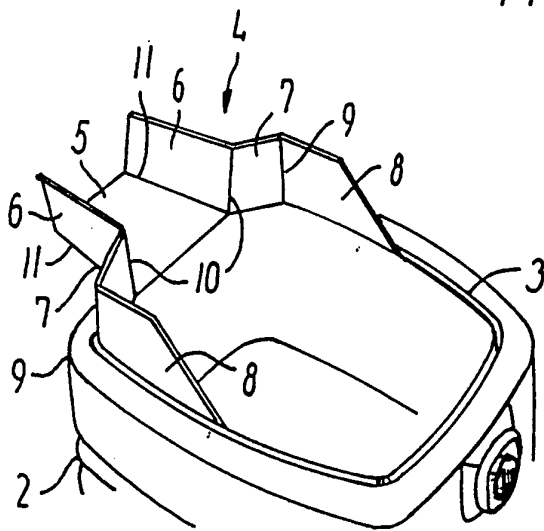


FIG. 4

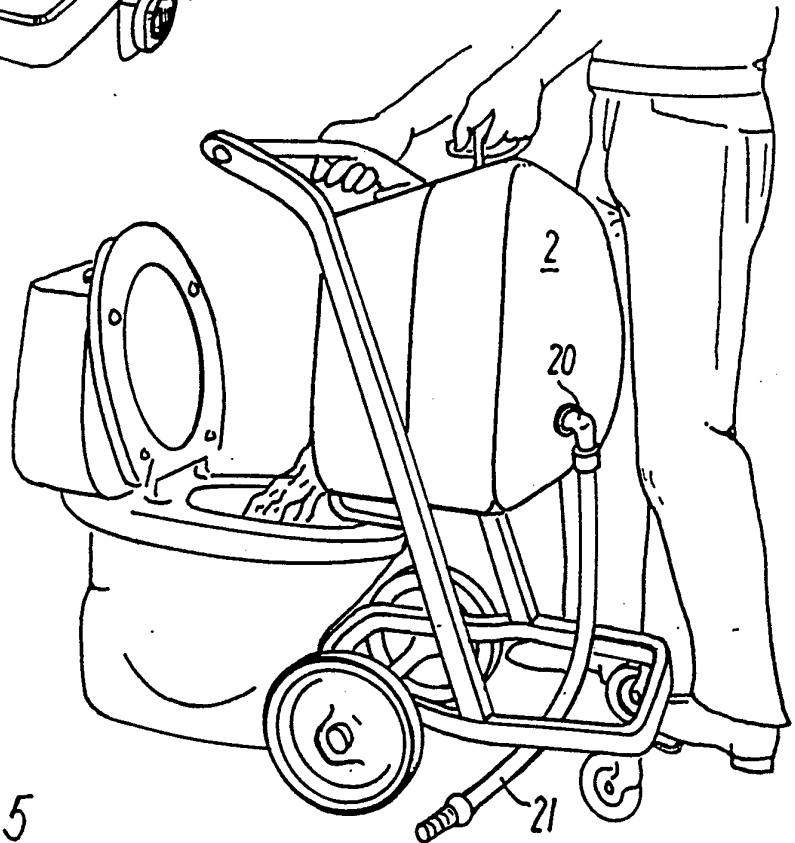


FIG. 5

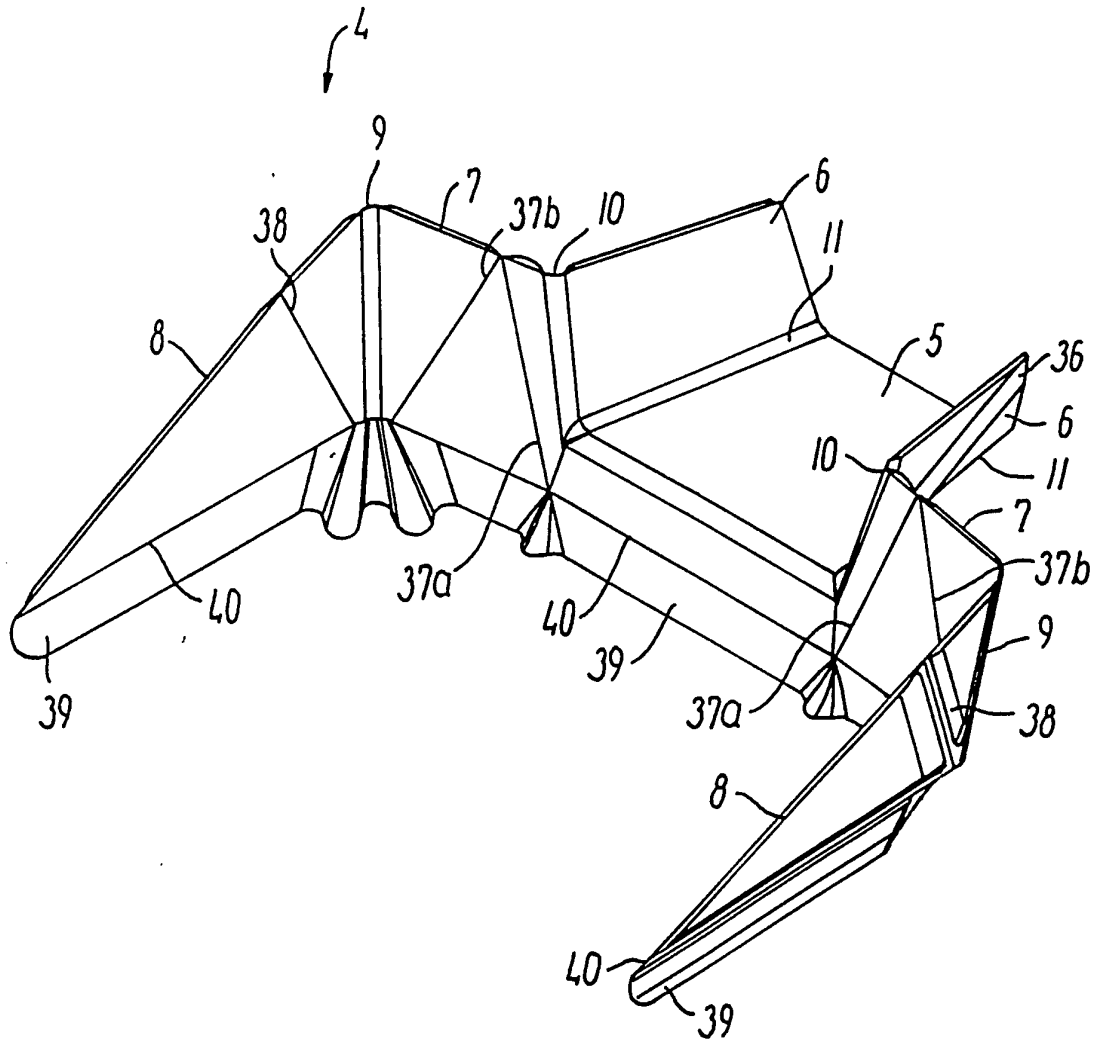


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 94/00206

A. CLASSIFICATION OF SUBJECT MATTER

IPC⁵: A47L 7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁵: A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	SE, B, 465998 (KARL-AKEKARLSSON), 2 December 1991 (02.12.91), abstract --	8-12
Y	US, A, 4800615 (OSTROSKI ET AL), 31 January 1989 (31.01.89), column 4, figures 1-2 --	8-12
Y,P	US, A, 5263225 (WINTERS), 23 November 1993 (23.11.93), figure 1 --	8-12
A	DE, A1, 2811139 (AB ELECTROLUX), 21 Sept 1978 (21.09.78), page 6 - page 8, figures 3-4 --	1-12

 Further documents are listed in the continuation of Box C.
 See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

1 Sept 1994

Name and mailing address of the ISA/
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Date of mailing of the international search report

08 -09- 1994

Authorized officer

Björn Kallstenius
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 94/00206

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO, A1, 9111952 (NUMATIC INTERNATIONAL LIMITED), 22 August 1991 (22.08.91)</p> <p style="text-align: center;">--</p>	1-7
A	<p>US, A, 4827562 (BLASE ET AL), 9 May 1989 (09.05.89), figure 9, abstract</p> <p style="text-align: center;">--</p>	1-7
A	<p>DK, B, 64133 (CARL EINAR OLSEN), 3 December 1945 (03.12.45)</p> <p style="text-align: center;">--</p>	1-7
A	<p>US, A, 5078872 (DURANT ET AL), 7 January 1992 (07.01.92)</p> <p style="text-align: center;">-- -----</p>	1-7

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 94/00206

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Invention I: Claims 1-7: Wet/dry vacuum cleaner with a collection bucket with a foldable spout for emptying.

Invention II: Claims 8-12: Wet/dry vacuum cleaner with a flexible drain hose attached to the bottom of the collection bucket and ball valve for closing of the drain hose.

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/07/94

International application No.

PCT/DK 94/00206

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
SE-B- 465998	02/12/91	NONE	
US-A- 4800615	31/01/89	CA-A- 1300831 US-A- 4858269	19/05/92 22/08/89
US-A- 5263225	23/11/93	NONE	
DE-A1- 2811139	21/09/78	US-A- 4179768	25/12/79
WA-A1- 9111952	22/08/91	NONE	
US-A- 4827562	09/05/89	US-A- 4847943 US-A- 4854544 US-A- 4864680 US-A- 5087018	18/07/89 08/08/89 12/09/89 11/02/92
DK-B- 64133	03/12/45	NONE	
US-A- 5078872	07/01/92	NONE	