Nov. 26, 1957 C. C. HURD 2,814,065

SUCTION CLEANERS

Filed April 5, 1954 4 Sheets-Sheet 1

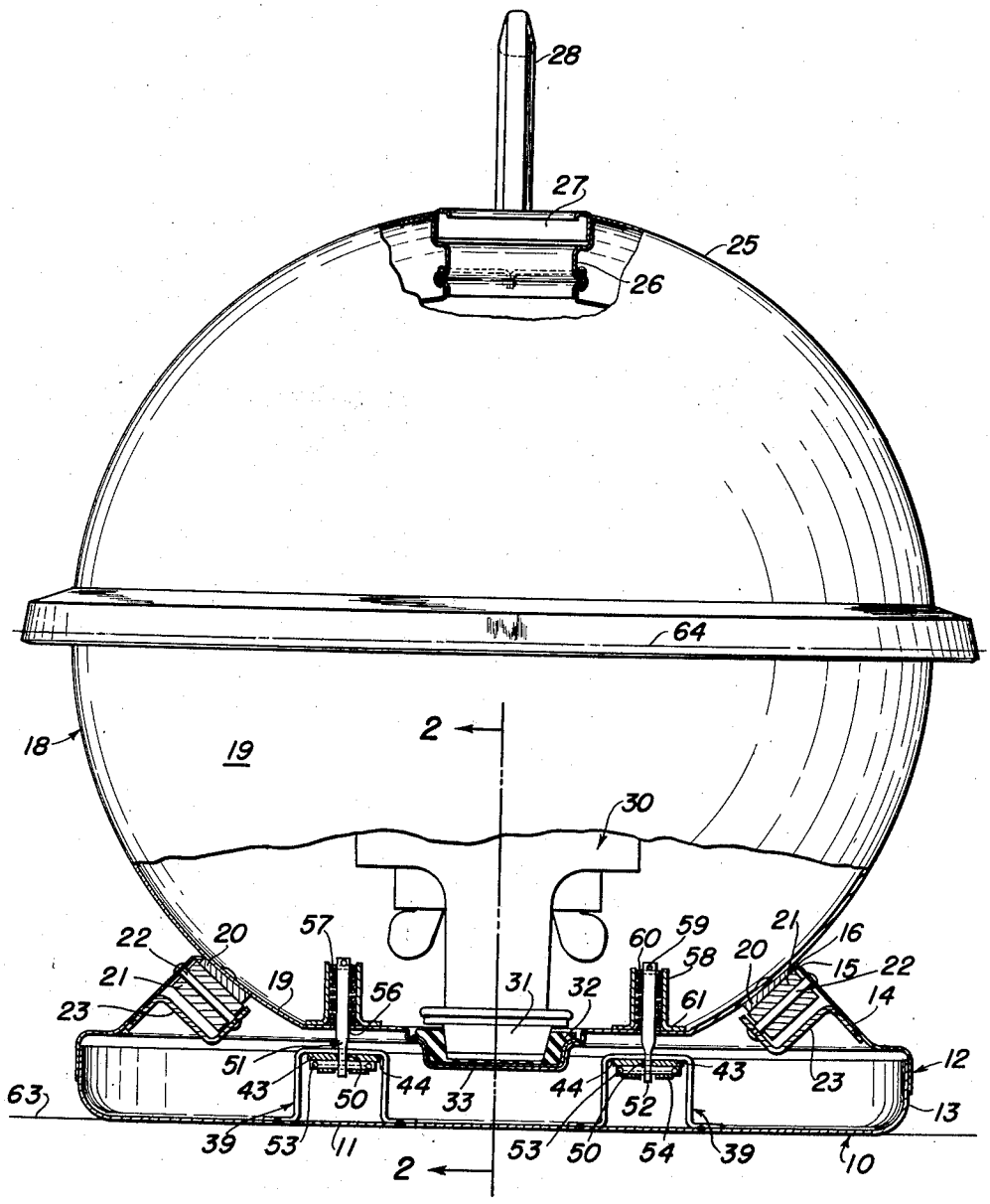


Fig. 1

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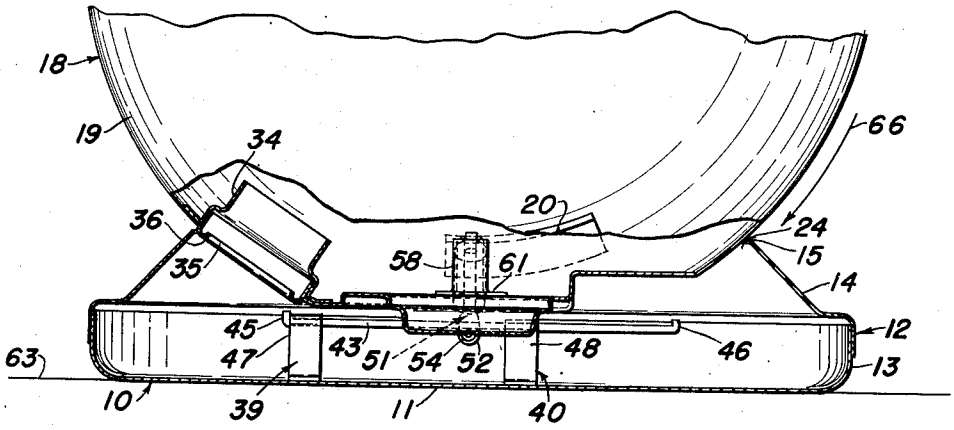


Fig. 2

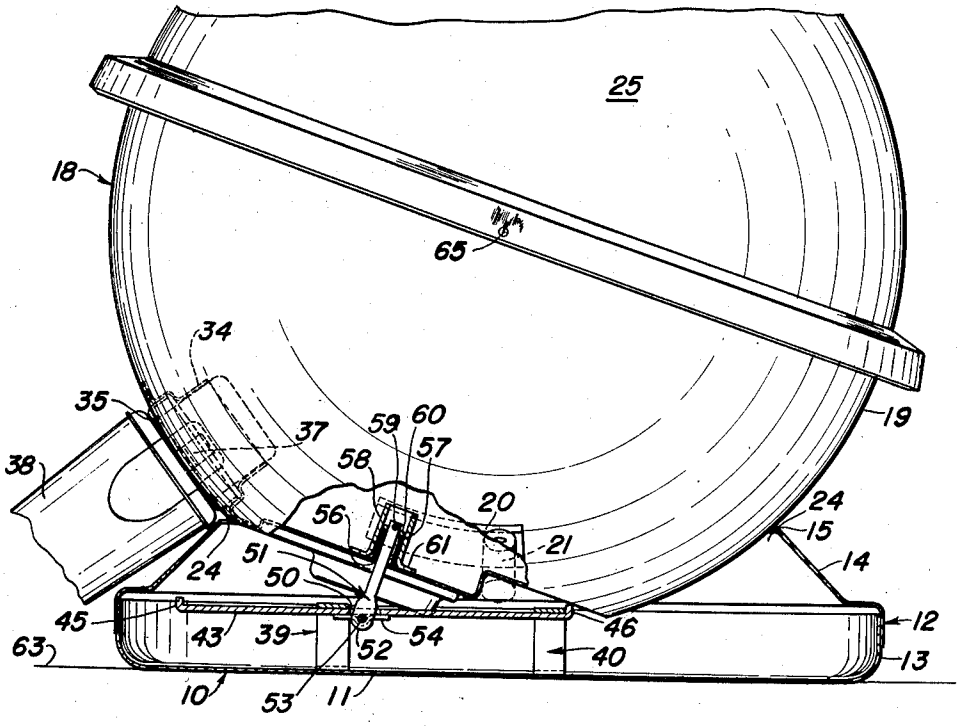


Fig. 3

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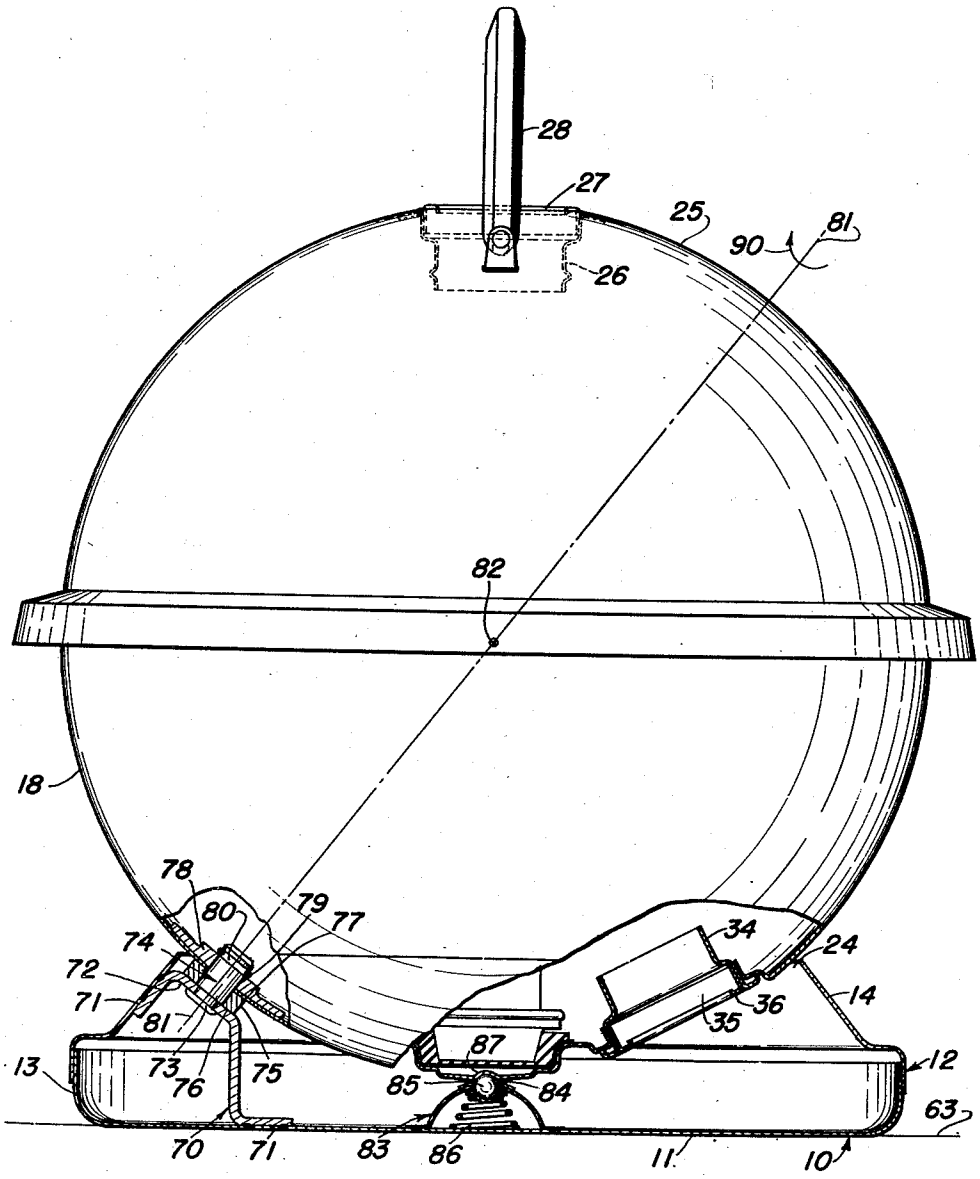


Fig. 4

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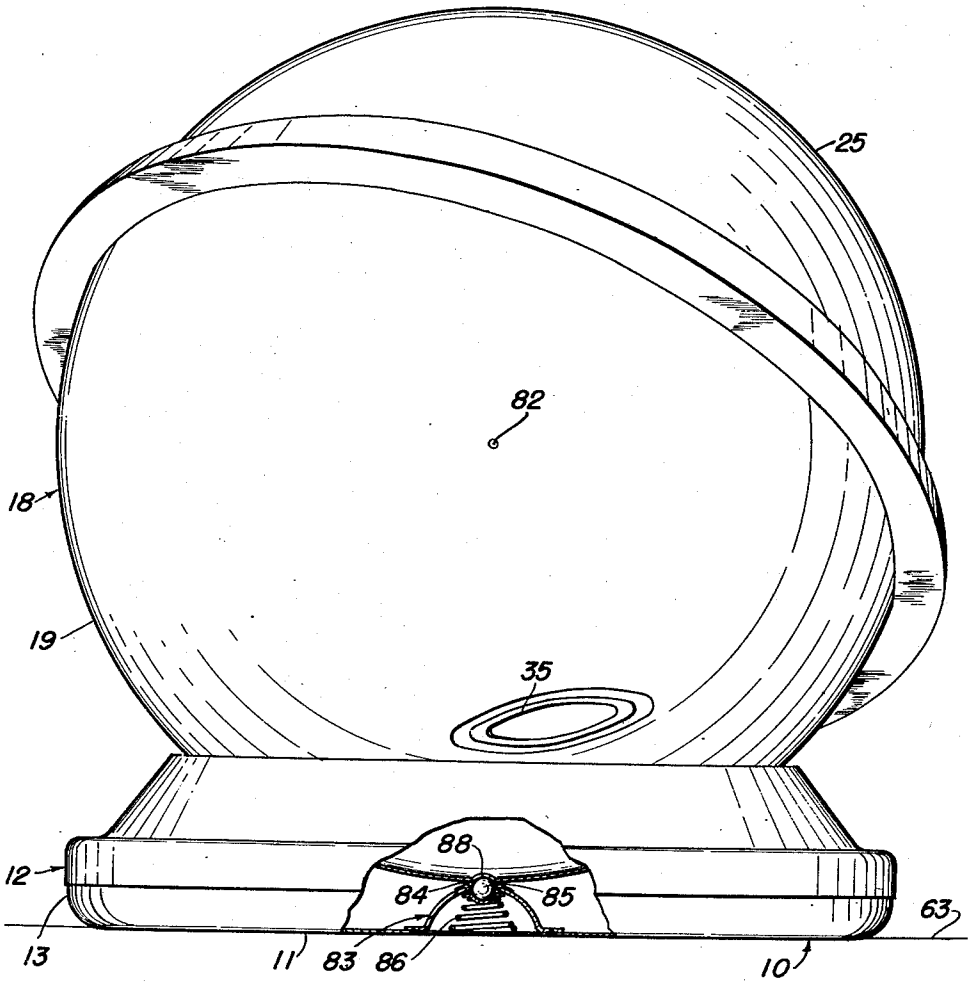


Fig. 5

United States Patent Office 2,814,065 Patented Nov. 26, 1957

2,814,065

SUCTION CLEANERS

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Application April 5, 1954, Serial No. 420,787

6 Claims. (Cl. 15—330)

The present invention relates to suction cleaners and more particularly to positioning the cleaner air outlet for cleaning with suction and by blowing air over the surfaces to be cleaned.

An object of the invention is to provide a suction cleaner having a casing mounted on a base for movement therealong to conceal and expose the air outlet with respect to the base. Another object is to provide a suction cleaner having a base on which the casing is movable within the confines of the base to conceal and expose the air outlet. Other objects and advantages of the invention will become apparent from the following description and the drawings wherein,

Figure 1 is an elevation partly in section of one embodiment of the invention showing the cleaner casing arranged for cleaning surfaces with suction;

Figure 2 is a section along the line 2—2 of Figure 1 showing the cleaner air outlet concealed within the base;

Figure 3 is a section similar to Figure 2 but showing the cleaner outlet exposed beyond the base for connection of a hose to clean surfaces by blowing air thereover;

Figure 4 is an elevation partly in section of another embodiment of the invention showing the air outlet concealed within the base; and

Figure 5 discloses the casing air outlet exposed beyond the base to clean surfaces by blowing.

The embodiment of the invention disclosed in Figures 1 to 3 comprises a base 10 having a flat disc-shaped bottom wall 11, an annular side wall 12 including a vertical wall 13 and an inwardly upwardly inclined wall 14 terminating at 15 to form an opening 16 for access to the interior of the base. A substantially spherical casing 18, divided into two hemispheres suitably hinged together for access to the interior of the casing, has its lower portion 19 projecting through the opening 16 into the base 10. Riveted to the lower part 19 of the casing are oppositely arranged arcuate members 20 which rest upon diametrically opposed rollers 21 each rotatably supported on a pin 22 mounted on the inclined wall 14 and upon a bracket 23 secured to the interior surface of the wall 14 to rotatably support the casing 18 on the base 10. The rollers 21 and arcuate members 20 provide an annular space 24 between the casing and base for escape of air.

In the upper end 25 of the casing 18 is a conduit 26 defining an air inlet port 27 to which a hose is connected for conveying dirt-laden air into the casing 18. A U-shaped cleaner carrying handle 28 is pivotally mounted on the casing adjacent the air inlet 27. An unshown filter is suitably connected to the conduit 26 for removing the dirt from the incoming air stream. A motor fan unit 30 is axially arranged with respect to the conduit 26 beneath the unshown filter and its lower end 31 is mounted in a resilient cup 32 seated in a projection 33 of the casing wall.

Disposed at one side of the lower motor mounting 32 is a conduit 34 supported in the casing wall and having an outlet 35 for discharge of filtered air from within the casing 18. The conduit 34 is provided with a ring 36

to receive the latch 37 of a hose 38 to removably connect the latter as shown in Figure 3.

The casing 18 is movably connected to the base 10 by two pairs of substantially U-shaped brackets 39 and 40 secured to the base bottom wall 11. Each set of brackets 39—40 are aligned to receive an elongated member 43 which slidably engages the top walls 44 of the brackets, and the members 43 are spaced apart to receive the casing projection 33 therebetween as shown in Figures 1 and 2. The opposite ends of each slide member are provided with upturned stops 45 and 46 adapted to respectively abut the sides 47 of the brackets 39 and the sides 48 of the brackets 40.

At the center of each member 43 is an opening 50 through which projects a link 51 having its lower end 52 rotatably mounted on a pin 53 secured to the lower surface of each member 43 by a bracket 54. The upper portion of each link 51 projects through an opening 56 in the casing wall 19 and through a helical compression spring 57 confined within a housing 58. A pin 59 is provided at the upper end of each link 51 and rests on a washer 60 which bears on the upper end of the spring 57 and also moves within each housing 58. Each housing 58 is secured to the casing by having its flange 61 welded to the casing wall 19.

In operation of the cleaner for removing dirt by suction the casing 18 is arranged with respect to the base 10 to position the exhaust port 35 within the base as shown in Figures 1 and 2, and the hose 38 is attached to the inlet conduit 26, the hose being provided with a suitable unshown nozzle to engage the surface being cleaned.

The dirt-laden air passes through the conduit 26 into the casing 18 wherein the dirt is removed from the air stream by the unshown filter, and the clean air is discharged through the motor fan unit 30 and then through the outlet 35 into the interior of the base 10. The air within the base escapes therefrom through the annular space 24 and is diffused upwardly from the supporting surface 63 along the exterior of the casing.

While the casing 18 is in suction cleaning position the stops 45 on the slide members 43 abut the brackets 39, and the springs 57 are compressed to urge the slide members 43 against the tops 44 of the brackets 39 and 40 to resiliently maintain the casing in position.

When it is desired to clean surfaces by blowing air thereover, the hose 38 is removed from the inlet 26 and the operator grasps the handle 28 and rotates the casing 18 about an axis 64 passing through its geometric center 65 in the direction indicated by the arrow 66.

Such rotation of the casing 18 moves the air outlet 35 from its concealed position within the base 10 to a point above the upper edge 15 of the side wall 12 to expose the conduit 34 for connection of the hose 38 which is provided with a suitable cleaning nozzle to direct air discharged from the outlet 35 over the surface being cleaned.

Movement of the casing 18 to its position to clean by blowing air through the exposed outlet 35 is limited by the stops 46 on the slide members 43 abutting the brackets 40 as shown in Figure 3. The casing 18 is maintained in this position by the springs 57 which are additionally compressed to urge the slide members 43 into tighter engagement with the tops 44 of the brackets 39 and 40.

The alignment of the brackets 39—40 guides the movement of the slide members 43 to direct rotation of the casing 18 about its axis 64, and the arcuate members 20 move along the rollers 21 during movement of the casing 18 to its different cleaning positions.

The embodiment of the invention disclosed in Figures 4 and 5 is similar to the previous modification except for the structures to rotate the casing 18 with respect to the base

10 and to maintain the casing in its different cleaning positions.

The casing 18 is rotatably supported on the base 10 by a bracket 70 arranged adjacent the base side wall 12 and is secured to the latter and the base bottom wall 11 by spot welding as indicated at 71. A portion 72 of the bracket 70 extends downwardly and inwardly of the base 10 and riveted thereto as at 73 is a pivot pin 74 positioned at an inclined axis with respect to the base 10.

Supported on the pin 74 between the bracket 70 and casing 18 is a bearing 75 having one surface 76 resting against the bracket portion 72 and another surface 77 upon which the casing 18 rests. Arranged about the pin 74 within the casing 18 is a washer 78, and a split retaining spring 79 is removably arranged in an annular groove 80 at the end of the pin 74 to detachably connect the casing to the base 10. The pivot pin 74 rotatably supports the casing 18 on an axis inclined with respect to the base as indicated by the line 81—81 and which passes through the geometric center 82 of the casing 18.

Secured to the base bottom wall 11 at substantially the center thereof is a housing 83 having an opening 84 through which partly projects a detent ball 85 resiliently supported by a conical spring 86 disposed within the housing 83. Ball 85 resiliently engages spaced dimples 87 and 88 in the casing wall to maintain the casing in the different positions shown in Figures 4 and 5.

In operating this embodiment of the invention for cleaning surfaces by suction, the casing 18 is arranged with respect to the base 10 as shown in Figure 4 and the air outlet 35 is within and concealed by the base 10, whereby the clean air discharged through the outlet 35 passes into the base 10 and is then diffused therefrom through the annular space 24. The spring-pressed ball 85 engages the dimple 87 and maintains the casing in suction cleaning position.

In order to convert the cleaner to remove dirt by blowing an air stream over the surface to be cleaned, the operator grasps the handle 28 and rotates the casing 18 about the inclined axis 81—81 in the direction indicated by the arrow 90 to the position shown in Figure 5. In this position the cleaner outlet 35 is moved beyond the base side wall 12 and is exposed for connection of the hose 38 to clean surfaces by the air discharged through the outlet 35. The dimple 88 receives the spring-pressed ball 85 to maintain the casing 18 in its blower cleaning position.

From the foregoing it will be perceived that in both embodiments of the invention upon movement of the casing with respect to the base 10 to conceal and expose the cleaner outlet 35 the casing 18 is rotated about an axis passing through the geometric center of the casing, the latter is not raised with respect to the base 10, remains within the confines of the base, and is at all times partly nested in the base, whereby the general arrangement of the casing 18 with respect to the base 10 is not disturbed.

While I have shown and described but two embodiments of my invention, it is to be understood that those embodiments are to be taken as illustrative only and not in a limiting sense. I do not wish to be limited to the

particular structures shown and described but to include all equivalent variations except as limited by the scope of the claims.

I claim:

1. A suction cleaner comprising a casing having an air inlet and an air outlet, suction creating means in said casing for drawing air through said inlet into said casing and discharging air through said outlet, a base for said casing and having a closed bottom wall and an upstanding annular side wall, means connecting said casing to said base with a portion of said casing nested within said side wall, said side wall spaced from and formed complemental to said casing to define therewith an air diffusing passageway leading from the interior of said base, said connecting means attaching said casing to said base for movement to one position to conceal said outlet within said base for discharge of air into the base and through said diffusing passageway, and for movement to another position to arrange said outlet above said base for removable connection of a hose, said connecting means arranged with respect to said base and said casing for movement of the latter to its said different positions while maintaining said casing within the confines of said complemental side wall of said base.

2. A suction cleaner comprising a casing having an air inlet and an air outlet, suction creating means in said casing for drawing air through said inlet into said casing and discharging air through said outlet, a base for said casing resting on a supporting surface, means connecting said base to said casing for movement of the latter relative to said base to conceal said outlet within said base for discharge of air into the latter and movable to expose said outlet above said base for removable connection of a hose, said connecting means arranged below the geometric center of said casing for movement of the latter to its said different positions about an axis of rotation passing through the center of said casing.

3. A suction cleaner as described in claim 2, and said connecting means arranged with respect to said base and casing for movement of the latter to its said different positions about an axis of rotation inclined to said base and said casing.

4. A suction cleaner as described in claim 2, and roller means interposed between said base and casing for rotation of the latter thereon and along said base during said movement of said casing to its said different positions.

5. A suction cleaner as described in claim 2, and said connecting means including means on said base and means on said casing connected for displacement of one of said means by movement of said casing to its said different positions.

6. A suction cleaner as described in claim 5, and cooperating means on said base means and said casing means limiting said displacement to arrange said casing in its different positions.

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