Feb. 10, 1948. C. H. TAYLOR 2,435,640

CLOSURE FASTENER FOR SUCTION CLEANING APPARATUS

Filed June 12, 1944 2 Sheets-Sheet 1

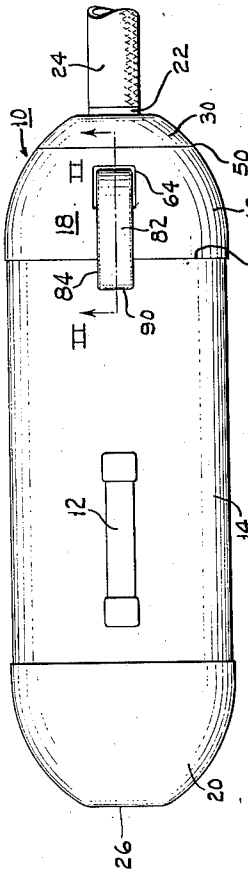


FIG. 1.

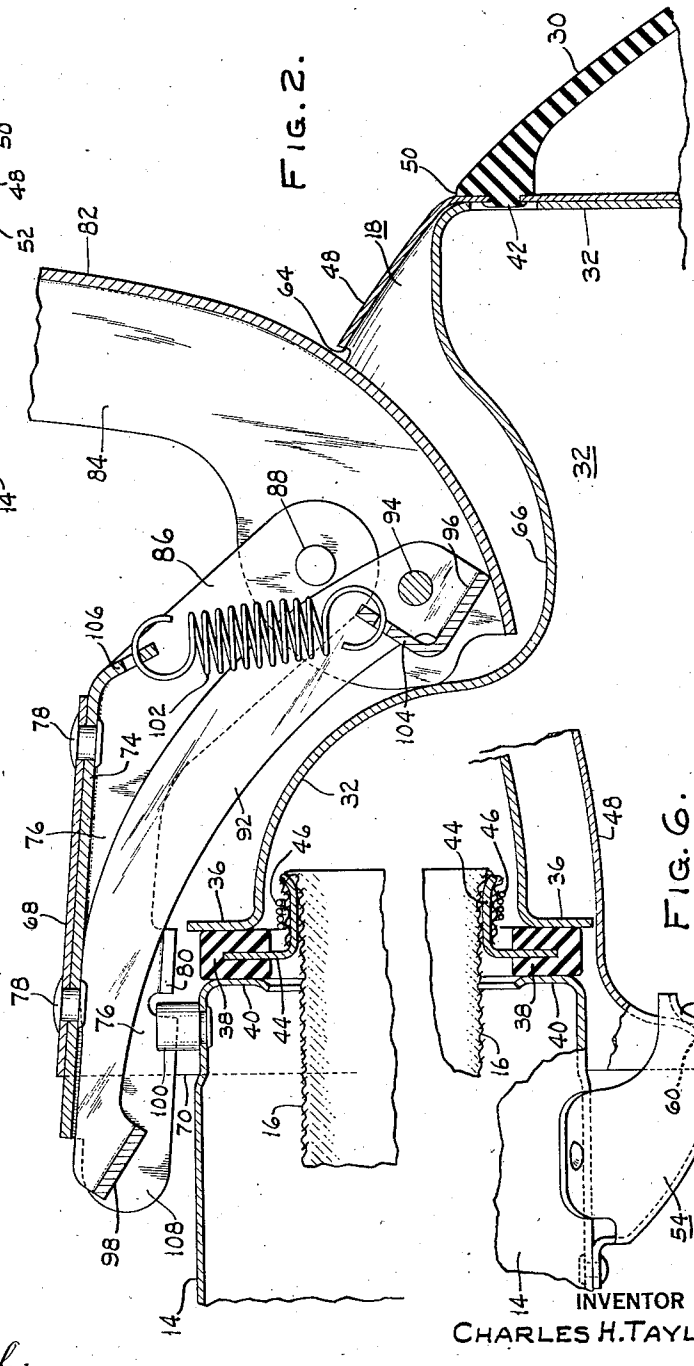


FIG. 2.

FIG. 6.

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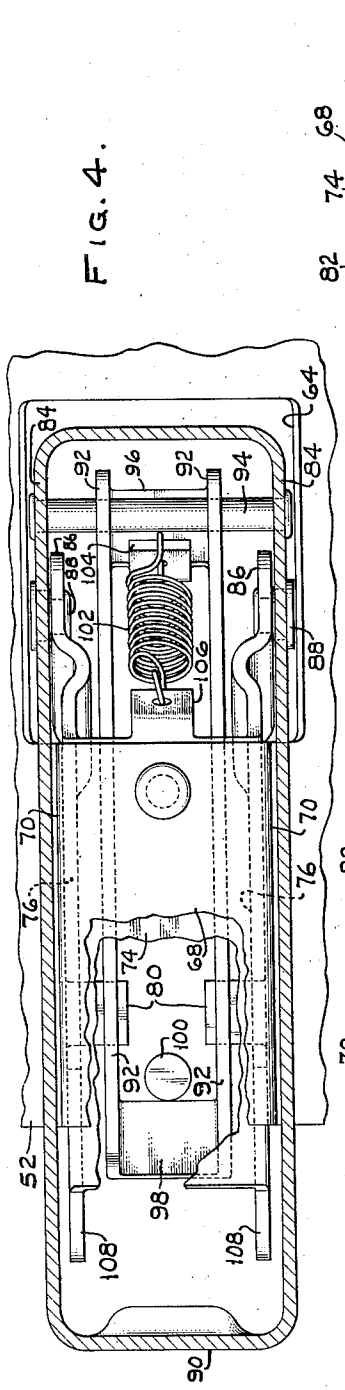


FIG. 4.

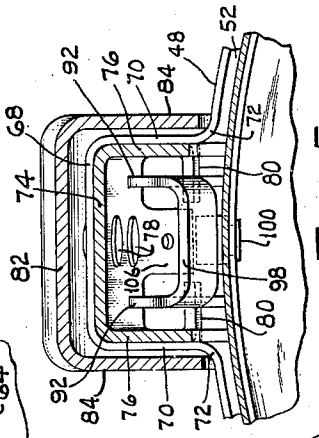


FIG. 5.

FIG. 3.

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CLOSURE FASTENER FOR SUCTION CLEANING APPARATUS

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4 Claims. (Cl. 220—55)

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My invention relates to a latch of the type adapted detachably to connect or couple two separte parts, such, for example, as the body portion and the end bell of a tank type suction cleaner, or the like.

One object of my invention is to produce an improved latch of the type set forth.

In a tank type cleaner it is necessary to open, or completely to detach at least one end bell whenever it is necessary to empty the dust or filter bag of such cleaner.

It is, therefore, a further object of my invention to produce an improved latch whereby the end bell of a tank type suction cleaner may be easily coupled to, or uncoupled from, the body portion of the cleaner.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a top plan view of a tank type suction cleaner embodying my invention;

Fig. 2 is an enlarged vertical section, taken on line II—II of Fig. 1, showing the latch in disengaging position;

Fig. 3 is a view similar to Fig. 2 showing the latch in engaged position;

Fig. 4 is a section on line IV—IV of Fig. 3;

Fig. 5 is a section on line V—V of Fig. 3; and

Fig. 6 is an enlarged fragmentary sectional view, taken in the plane of line II—II of Fig. 1, showing the manner in which the bottom portion of the end bell is detachably hinged to the adjacent end of the body portion of the cleaner.

Referring to the drawings and particularly to Fig. 1, 10 designates a tank type cleaner provided with a lifting handle 12 and supported on conventional runners, not shown. The cleaner includes a cylindrical body portion 14 which houses the usual motor fan unit, not shown, and a dust or filter bag 16. The opposite ends of the cleaner body are closed by end bells 18 and 20.

As shown, the end bell 18 is at the intake end of the cleaner and is provided with a coupling 22 adapted to receive and engage one end of a flexible hose 24 through which dirt-laden air is drawn through and into the bag 16. The other end of the hose 24 is provided with a suitable nozzle or dusting tool (not shown). The end bell 20 is positioned at the discharge end of the cleaner and is provided with an opening 26 through which air filtered through the bag 16 is discharged.

The end bell 18 includes a finished end portion

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30 and an inner portion 32 having an annular flange 36. The flange 36 is adapted to abut against an annular gasket 38, which in turn abuts against an inturned flange 40 carried by the adjacent end of the body portion 14. The portions 30 and 32 of the end bell 18 are permanently and rigidly secured together, as at 42, but, if desired, they may be made of one piece. Embedded in the gasket 38 is an annular L-shaped member 44 to which the open end of the dust bag 16 is secured in any suitable manner, as by rings or wires 46, as best shown in Figs. 2, 3 and 6.

In order to present a neat and attractive appearance, an outside or finished cover 48 is suitably secured at its outer end to the end bell portion 30, as at 50. Except as hereinafter explained, the inner end of the cover 48 overlaps, and has a close sliding fit with, the adjacent end of the body portion 14 of the cleaner, as at 52. The end bell 18, being at the intake end of the cleaner, must be removed or swung open, whenever it becomes necessary to empty the dust bag 16. To this end, the end bell 18 is hinged or hooked to the body of the cleaner and is secured in position by the latch embodying my invention. The end bell 18 may be hinged to the cleaner in any approved manner. For example, and as shown in Fig. 6, a U- or cup-shaped bracket 54, provided with an upturned lip 56, is secured to the body portion 14 of the cleaner. The lip portion 56 is adapted to engage a corresponding pendant portion 60 which is pressed out of, or carried by the adjacent portion of the outer cover 48.

Except for the improved latch to be hereinafter described, and except for the manner in which the structure of the end bell 18 is modified in order to cooperate with the latch, the structure thus far described may be of any approved conventional design.

In order to accommodate the latch assembly, the top wall of the finished cover 48 is provided with an opening 64 and the top wall of the inner portion 32 of the end bell 18 is depressed to form a pocket or recess 66 registering with the opening 64. Also, adjacent the inner end of the opening 64, a portion of the cover 48 is drawn upwardly so as to form an inverted U-shaped housing including a top wall 68 and side walls 70 which merge with the cover 48, as at 72. See Fig. 5.

The latch assembly includes an inverted U-shaped bracket formed of a top wall 74 and side walls 76. The top wall 74 is secured to the top wall 68 of the U-shaped housing by rivets or the

like 78. Projecting inwardly from the side walls 76 are a pair of arms or lugs 80 which will be hereinafter further referred to.

The latch assembly further includes an operating handle of an inverted U-shaped structure which includes a top wall 82 and side walls 84. The handle is suitably curved so as to present an attractive streamlined appearance. The handle is pivoted to pendant extensions 86 of the side walls 76 of the bracket, as at 88. The other end of the handle is provided with a pendant wall 90.

The latch assembly still further includes a latch member formed of spaced parallel arms 92, which are pivoted to the handle by means of a pin 94 passing through the arms 92 and engaging the side walls 84 of the handle. The arms 92 are maintained in proper spaced relation by any suitable means such as a cross arm 96 secured to, or formed integral with the pivoted end of the latch member. The opposite ends of the arms 92 are provided with a cross piece 98 which is adapted to engage a pin or stop 100, carried by the adjacent end of the body portion 14 of the cleaner, as shown in Fig. 3.

In order to maintain the latch member and handle in engaging or non-engaging position, an over-center spring 102 is connected to a lug 104 at the pivoted end of the latch member and to a lug 106 forming part of or carried by the top wall 68 of the supporting bracket. In order to protect the free end of the latch member when the end bell is disconnected from the cleaner, the side walls 76 of the supporting bracket are provided with extensions 108.

Operation

When the handle is rotated clockwise into the position shown in Fig. 2, the pivot 94 of the latch member moves from the position shown in Fig. 3 to a position below and slightly to the left of the pivot 88 of the handle. This causes the latch member to tilt into the position shown in Fig. 2, in which the cross piece 98 of the latch member is out of engagement with the pin 100. The end bell 18 may now be removed from the cleaner.

When the handle is rotated counterclockwise into the position shown in Fig. 3, the pivot point of the latch member moves from the position shown in Fig. 2 to the position shown in Fig. 3, and the latch member tilts to the position shown in Fig. 3, in which the cross member 98 of the latch member engages the pin 100. The over-center spring 102 serves to retain the handle and the latch member in either of the positions shown in Figs. 2 and 3. It will be noted from Fig. 3 that, in its engaging position, the arched top edge 110 of the latch member abuts against the top wall 74 of the supporting bracket as a fulcrum. This causes the cross piece 98 tightly to engage the pin 100.

When it is desired to connect the end bell 18 to the cleaner, the handle is rotated in clockwise direction to the position shown in Fig. 2, and the end bell is moved towards the cleaner body at an angle to the longitudinal axis thereof. The pendant portion 60 is then inserted into the U-shaped bracket 54 and the end bell is brought into concentric relation with respect to the body of the cleaner. The engagement of the portion 60 with the lip portion 56 forces the end bell into sufficiently tight but detachable engagement with the adjacent end of the cleaner. When the end bell has been moved to a position in which the flange 36 abuts against the gasket 38, the handle is rotated in counterclockwise direction, or from

the position shown in Fig. 2 to the position shown in Fig. 3, in which the engagement of the cross piece 98 with the pin 100 will retain the end bell securely in position.

The arms or lugs 80 serve as fulcrum points for the arms 92 of the latch member. Also, the abutment of the latch member against the top wall 68 of the U-shaped housing, limits the movement of the latch and handle members, all as shown in Fig. 2.

While I have illustrated the application of my invention to a suction cleaner, it is to be understood that my invention is equally applicable for clamping other closure members to other containers.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a suction cleaner, an elongated casing adapted to contain air moving means and air filtering means and having a rim defining an end opening, a cap for closing said opening, said cap including inner and outer members adapted to engage said rim, a portion of said outer member adjacent said rim being drawn to form a housing extending outwardly of the wall of said casing, there being an opening in said outer member in alignment with, and longitudinally spaced from, said housing, the portion of said inner member registering with said opening being depressed to form a recess, a supporting bracket carried by, and disposed within, said housing and having an end thereof extending through said opening into said recess, an operating handle having one end thereof pivoted to said end of said bracket, a stop carried by said casing adjacent said rim, and a latch member disposed in said housing and having one end thereof pivoted to the pivoted end of said handle and the other end thereof adapted to engage said stop, the pivoted ends of said handle and said latch member being movable in said recess, said handle and said latch member being so related that, in one position of said handle, said latch member engages said stop, and, in another position of said handle, said latch member is out of engagement with said stop.

2. The structure recited in claim 1 together with an overcenter spring connected to the pivoted end of said latch member and to said bracket for yieldably retaining said latch member and said handle in either of said positions.

3. The structure recited in claim 1 in which said latch member, said bracket, said housing and said handle are all of U-shape in cross section and in which, when said latch member engages said stop, said handle overlies and encloses said housing, said bracket and said latch member.

4. The combination with a container having a rim defining an opening and a closure member having a portion adapted to engage said rim for closing said opening, of means for detachably securing said closure member, in closing position, to said container, said means including a housing carried by the rim-engaging portion of said closure member, a supporting bracket disposed within, and carried by, said housing, an operating handle having one end thereof pivoted to said bracket and movable to a first position in which

it overlies said housing and said bracket, and to a second position remote from said bracket, a stop carried by said container, and a latch member pivoted to, and movable with, said handle, said latch member being disposed within said housing and being adapted to engage said stop in a first position of said handle and to be disengaged from said stop by movement of said handle to said second position, said latch member, said bracket, said housing and said handle being of U-shape in cross section and said handle enclosing said housing, said bracket, and said latch member when said latch is in engagement with said stop.

CHARLES H. TAYLOR.

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