Feb. 11, 1958 A. H. EBERHART 2,822,566

HANDLE LOCK FOR SUCTION CLEANER APPARATUS

Filed Sept. 28, 1953 2 Sheets-Sheet 1

FIG. 1.

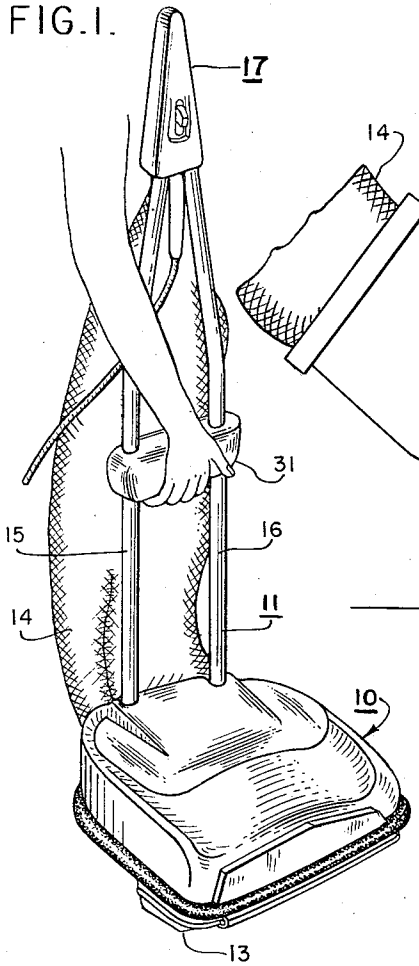
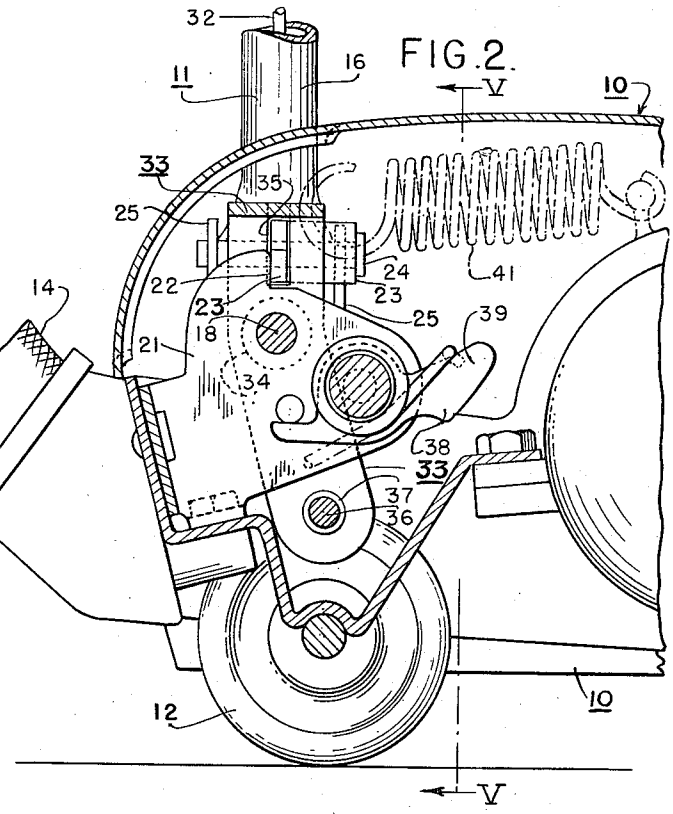


FIG. 2.



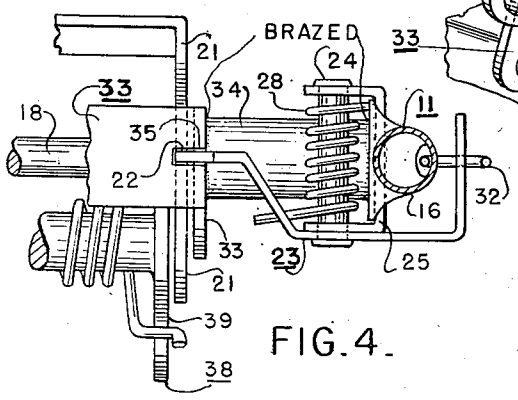


FIG. 4.

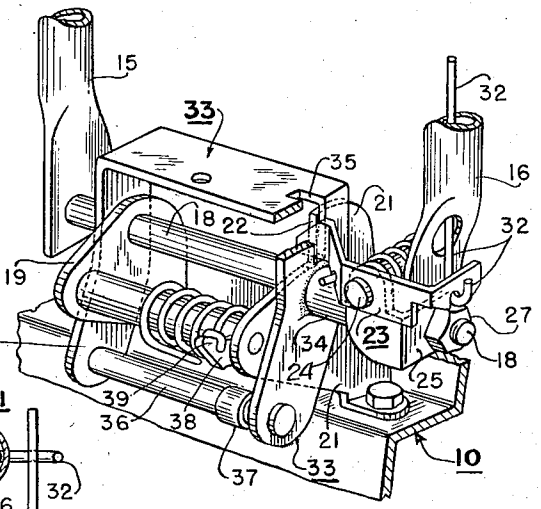


FIG. 3.

INVENTOR
ARTHUR H. EBERHART

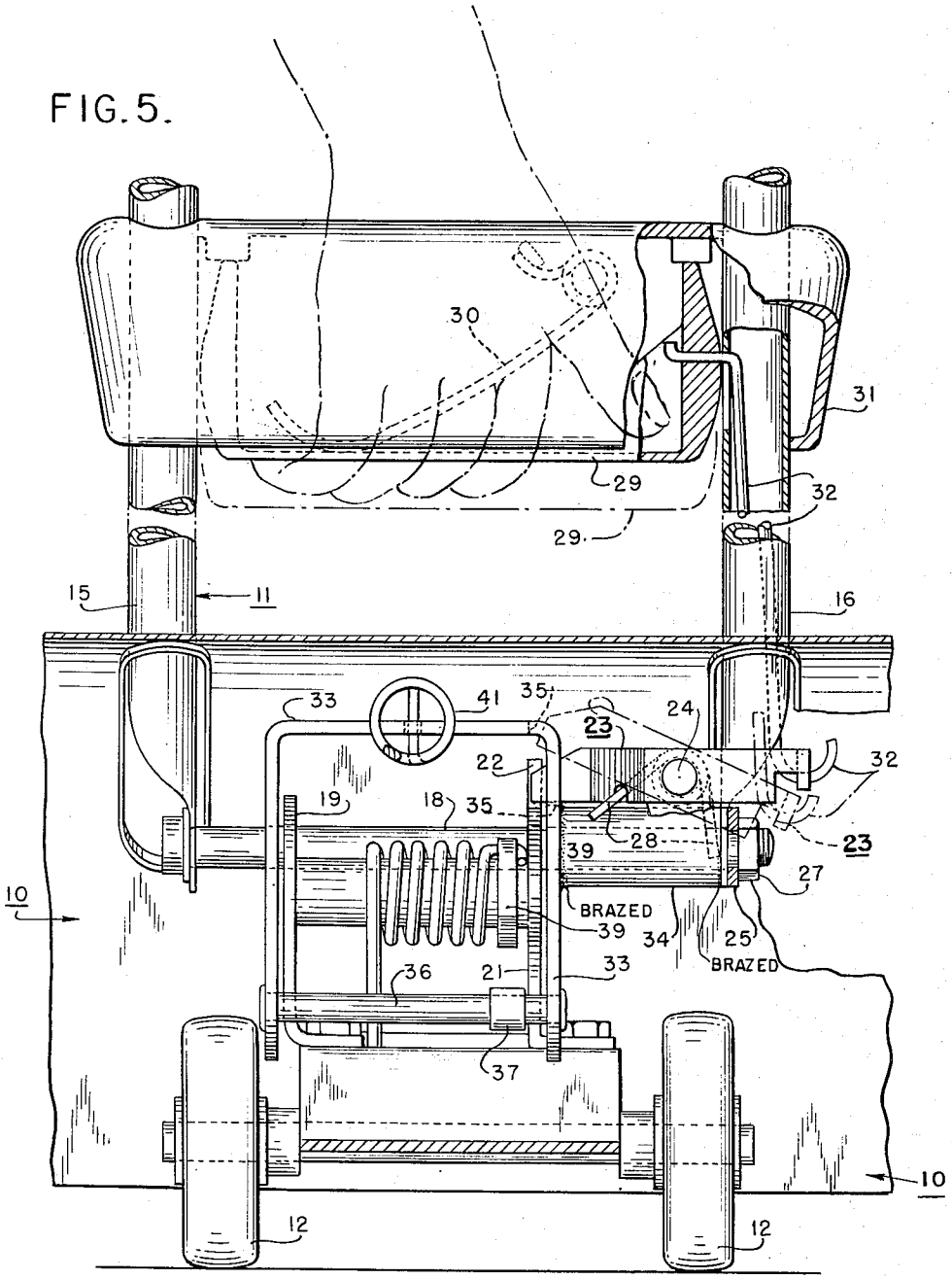
BY R. J. Eisinger
ATTORNEY

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FIG. 5.



INVENTOR
ARTHUR H. EBERHART

BY R. J. Eisinger
ATTORNEY

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2,822,566

HANDLE LOCK FOR SUCTION CLEANER APPARATUS

Arthur H. Eberhart, East Longmeadow, Mass., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application September 28, 1953, Serial No. 382,627

4 Claims. (Cl. 15—410)

My invention relates to a suction cleaner of the upright or handle maneuvered type, more particularly to a latching mechanism for latching the body relative to the handle to maintain it in normal or horizontal position when the cleaner is picked up by the handle.

The object of the invention is to provide a simple latching mechanism for automatically latching the cleaner body relative to the handle when the cleaner is picked up by the handle.

In accordance with my invention, I provide a hand actuated member or hand grip on the handle, in a position in which it is engaged by the hand when lifting the cleaner from the floor. The hand operated member or hand grip has limited vertical movement relative to the handle. I also provide a latching mechanism comprising a stop which is fixed relative to the cleaner body and a detent which is movable into abutting engagement with said stop and which is at such time fixed in relation to the handle, thereby preventing the body from dropping down relative to the handle when the cleaner is lifted by picking up the handle.

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

Fig. 1 is a perspective view of a cleaner incorporating the latching mechanism of the present invention;

Fig. 2 is a vertical section showing the latching mechanism;

Fig. 3 is a perspective view, with parts broken away, showing the latching mechanism;

Fig. 4 is a fragmentary plan view showing part of the latching mechanism; and

Fig. 5 is an elevational view showing the latching mechanism as viewed from the line V—V of Fig. 2.

Referring to the drawing in detail, the cleaner shown in Fig. 1 comprises a body **10** and a handle **11**. The body is disposed horizontally and has wheels **12** for movement over a rug or carpet. The body **10** includes the usual nozzle **13** and suction creating means (not shown), the details of which are not material to the present invention. A dust collecting bag **14** is attached to the body **10**.

The handle **11** comprises two tubular members **15** and **16**, which are spaced from each other except that they are secured to each other at the upper end, at which end is provided a hand grip **17** for actuating the handle in normal cleaning operation. The handle **11** is pivoted to the body **10** by means of a bolt **18**, which extends through the end walls **19** and **21** of a bracket which is bolted to the cleaner body, and which bolt also extends through the lower flattened ends of the tubular members **15** and **16**.

The latching mechanism for latching the body and the handle to each other to prevent the body dropping down when the cleaner is picked up by the handle, comprises a stop carried by one of these members and a detent carried by or in fixed relation to the other of these members.

In the illustrated embodiment, the stop is carried by the body and is provided by the bracket wall **21**, as shown at **22**. The detent is provided by a latch lever **23**, which is pivoted by a pivot pin **24** to a bracket **25**, the latter being fixed relative to the handle, being clamped between the lower flattened end of the tubular member **16** and the nut **27** on the bolt **18**. The left hand end (as seen in Figs. 3 and 5) of the latch lever **23** constitutes the detent which is movable into and out of abutting relation with the stop **22**. A spring **28** biases the lever **23** clockwise into disengaged position.

To move the latch lever into engaging position I provide a hand actuated member which is mounted in such position on the handle **11** that it is engaged by the hand and moved upwardly upon picking up the handle for lifting the cleaner. In the present embodiment, I provide a horizontally extending hand grip **29** extending between the tubular members **15** and **16** of the handle. It is disposed within a casing **31** extending across and fastened to the tubular members **15** and **16**, the hand grip projecting below the lower open end of the casing. In the illustrated embodiment, it is movable between the lower position indicated in dot-and-dash lines, which is the normal position, and the upper position shown in full lines. The top of the hand grip **29** abuts the casing **31** when the hand grip is in its upper position so as to transmit the lifting force through the hand grip to the handle and the cleaner. So far as the present invention is concerned, however, it is only necessary that the hand grip or hand operating member be disposed in such position that it is naturally engaged by the hand and moved upwardly as the hand grip portion is engaged for lifting the cleaner. For example, the lower end of the casing may extend down to such extent that it is engaged by the hand after the hand grip **29** is lifted so that the lifting force is transmitted directly to the casing after having raised the hand grip. The hand grip is connected by a wire or rod **32** to the end of the latch lever **23** remote from the detent, so that as the hand grip is raised the detent is moved into abutting relation to the stop **22**. The wire **32** is preferably extended through the interior of the tubular member **16**.

I further provide a bracket **33** of inverted U-shape, which is fastened in fixed relation to the handle by means of a bushing **34** which is brazed to the bracket **33** and the flattened lower end of the tubular handle member **16**. The bracket **33** is provided with a slot **35** in which the detent is movable. One side of the slot is adapted to take the thrust imposed on the detent by the stop **22** when the cleaner is lifted. The bracket **33** further has a pin **36** carrying a bushing **37** adapted to engage a projection **38** on a spring biased lever **39** for resiliently retaining the lever at the lower limit of its range of normal inclined operating positions. The handle may, however, be moved down to horizontal position by merely applying greater downward force, whereby the spring force on the lever **39** is overcome and the bushing **37** moves past the projection **38**. A tension spring **41** is connected between the cleaner body and the bracket **33** to bias the handle upwardly and to counterbalance its weight in the normal operating position.

Operation

In normal operation, the latch lever **23** is biased out of engagement with the stop by the spring **28**, so that the handle is freely movable downwardly. The hand grip **29** is retained in its lower position by the force of the spring **28** and by the force of gravity. A spring **30** exerting a downward force on the end of the hand grip **29** opposite the wire **32**, may be provided to balance the force exerted by the spring **28**. The cleaner is actuated by the hand grip **17**.

When it is desired to move the cleaner from one place to another, it is picked up by the hand grip **29**. Upon initial upward movement of the hand, the cleaner is held down by its weight, so that the hand grip **29** moves upwardly relative to the cleaner and through the wire **32** rotates the latch lever **23** to move the detent into abutting relation to the stop **22**. Upon further upward movement of the hand, the lifting force is transmitted through the hand grip **29**, the casing **31**, the handle and the pivot bolt **18** to the cleaner body. The weight of the cleaner body imposes a force tending to rotate it clockwise (as seen in Fig. 2) about the pivot bolt **18** and this force is transmitted by the stop **22** against the detent and by the detent against the edge of the slot **35** in the U-shaped bracket **33**. Thus, the cleaner body is prevented from dropping down relative to the handle as it is picked up.

When the cleaner is put down and the hand grip **29** is released, the latter moves downwardly under the force of gravity and the spring **28**, the latter rotating the lever latch **23** out of engagement with the stop **22**. The handle is now resiliently retained in vertical position by the spring **41** but it is freely movable downwardly into the operating range.

From the above description, it will be seen that I have provided a mechanism whereby the body and the handle are latched against relative movement automatically by the normal act of lifting the cleaner without the necessity of the user performing any additional controlling act.

While the invention has been shown 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.

What is claimed is:

1. A vacuum cleaner comprising a body, a handle pivoted to said body rearwardly of the center of gravity thereof, and mechanism for latching the handle in upright position against rearward movement, said latching mechanism comprising a stop carried by and fixed relative to said body, a detent pivotally mounted on said handle in a position in which it is adapted to abut said stop to prevent rearward movement of the handle relative to the body when the handle is in vertical position, means for biasing said detent to pivot out of abutting relation with said stop, a hand grip portion carried by said handle in a position to be engaged by the hand for lifting the cleaner and having limited vertical movement relative to the handle when the handle is in a vertical position, and a connection between said hand grip and said detent such that when the hand grip is raised to lift the cleaner, the detent is pivoted into abutting relation to said stop to hold the body in horizontal position as it is lifted through the hand grip and the handle.

2. The combination with a body and a handle pivoted thereto, said body being adapted to be maneuvered over a horizontal surface by said handle and said handle being movable relative to said body through a range of operating positions in which the handle is inclined and to a substantially vertical position, of locking mechanism for locking said body relative to said handle for lifting said body, said locking mechanism comprising a cooperating stop and a latch carried by said body and said handle, respectively, a hand grip portion carried by said handle and adapted to be engaged by the hand to lift the body by means of the handle, said hand grip being vertically movable relative to said handle when the handle is in a vertical position, means actuated by said hand grip upon upward movement relative to said handle to move said latch into engagement with said stop to lock the body relative to the handle, and means for biasing said latch out of engagement with said stop upon downward movement of said hand grip to permit movement of the handle downwardly to an inclined operating position.

3. A suction cleaner comprising a body having suction creating means therein, a handle pivoted to the body on a horizontal axis and movable vertically relative to the cleaner through a range of inclined positions to a substantially vertical position, latching mechanism comprising cooperating parts carried by said body and said handle, respectively, which are engageable when the handle is substantially vertical and the body in normal position to retain the body against downward movement relative to said handle, said parts being normally out of latching engagement, a hand grip on said handle whereby the cleaner may be lifted, said hand grip having limited vertical movement relative to the handle when the handle is in a vertical position, and means for effecting latching engagement of said parts upon upward movement of said hand grip relative to said handle, whereby, upon lifting the cleaner by raising the hand grip, the body is automatically latched to retain it in normal position.

4. The combination with a body and a handle pivoted thereto, said body being adapted to be maneuvered over a horizontal surface by said handle and said handle being movable relative to said body through a range of operating positions in which the handle is inclined and to a substantially vertical position, of locking mechanism for locking said body relative to said handle, said locking mechanism comprising a stop and a cooperating pivoted detent movable into abutting relation to said stop to prevent relative movement of said body and said handle from a position in which they are substantially at a right angle to each other, a hand grip carried by said handle whereby the body may be lifted through the handle, said hand grip being movable longitudinally of the handle, and a connection between said pivoted detent and said hand grip for moving the detent into abutting relation with said stop upon movement of the hand grip away from the pivoted end of the handle, whereby when the hand grip is raised to lift the device, its movement relative to the handle causes the detent to move into locking engagement.

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