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2,343,819

SUCTION CLEANING APPARATUS

Filed Dec. 5, 1942

FIG. 1

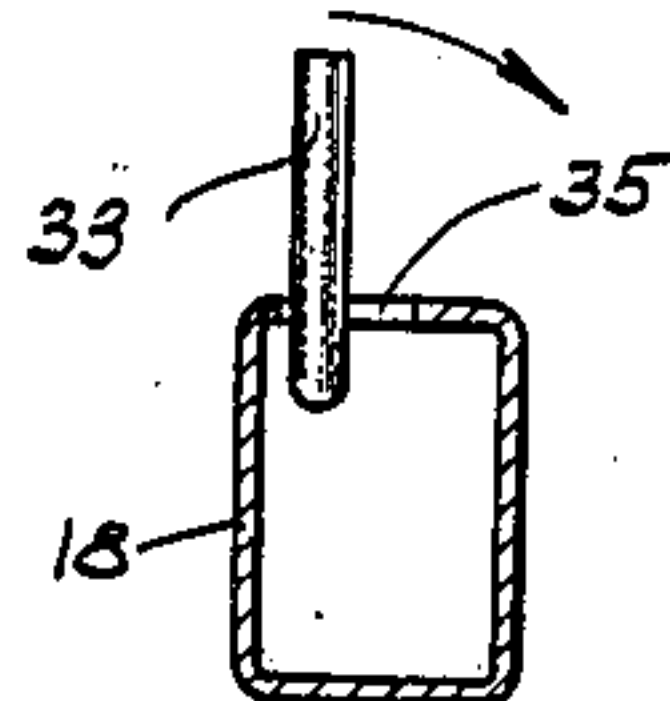
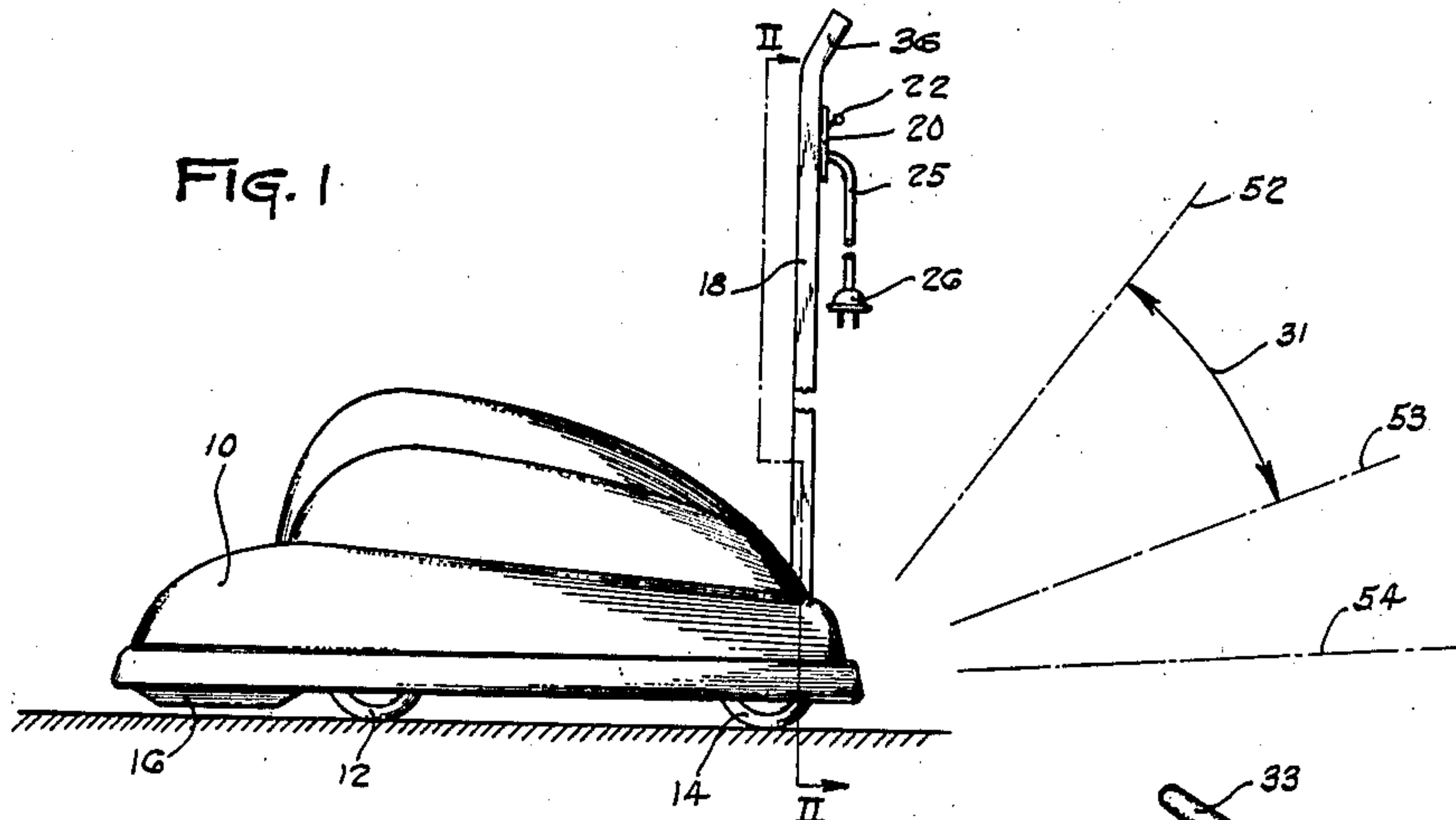


FIG. 6

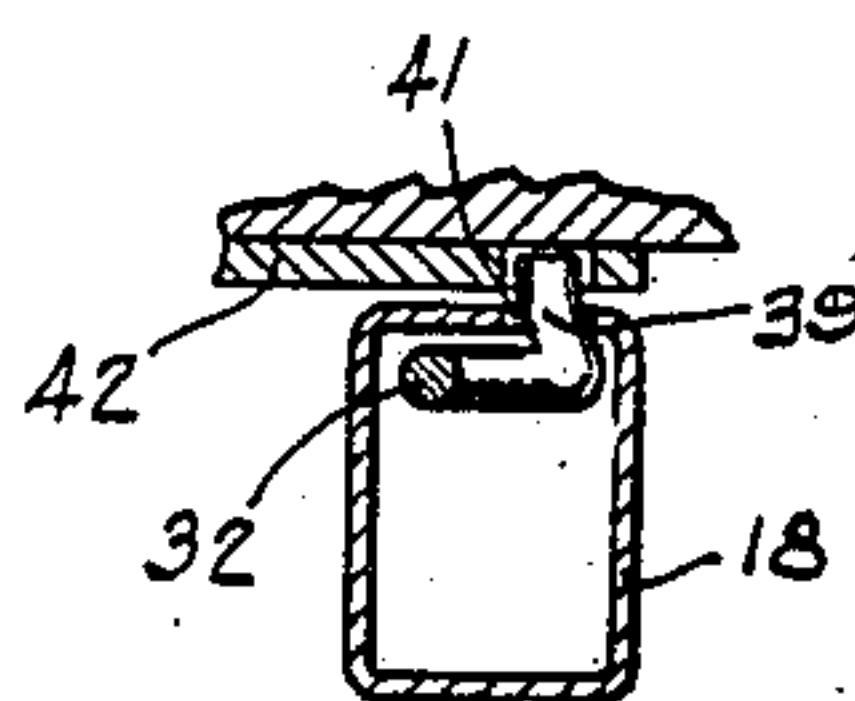


FIG. 5

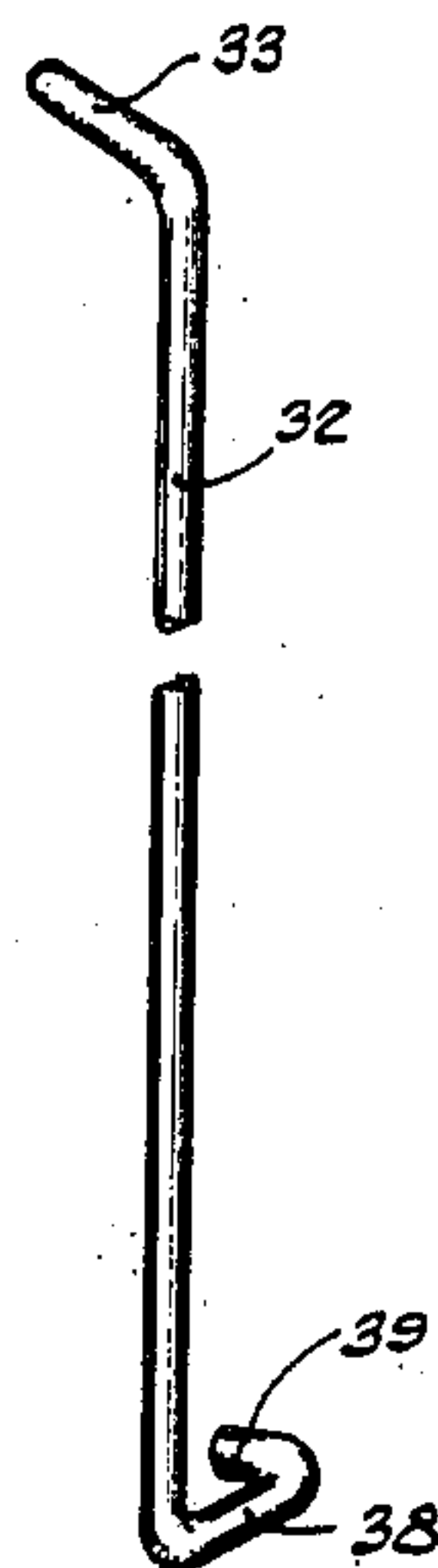


FIG. 4

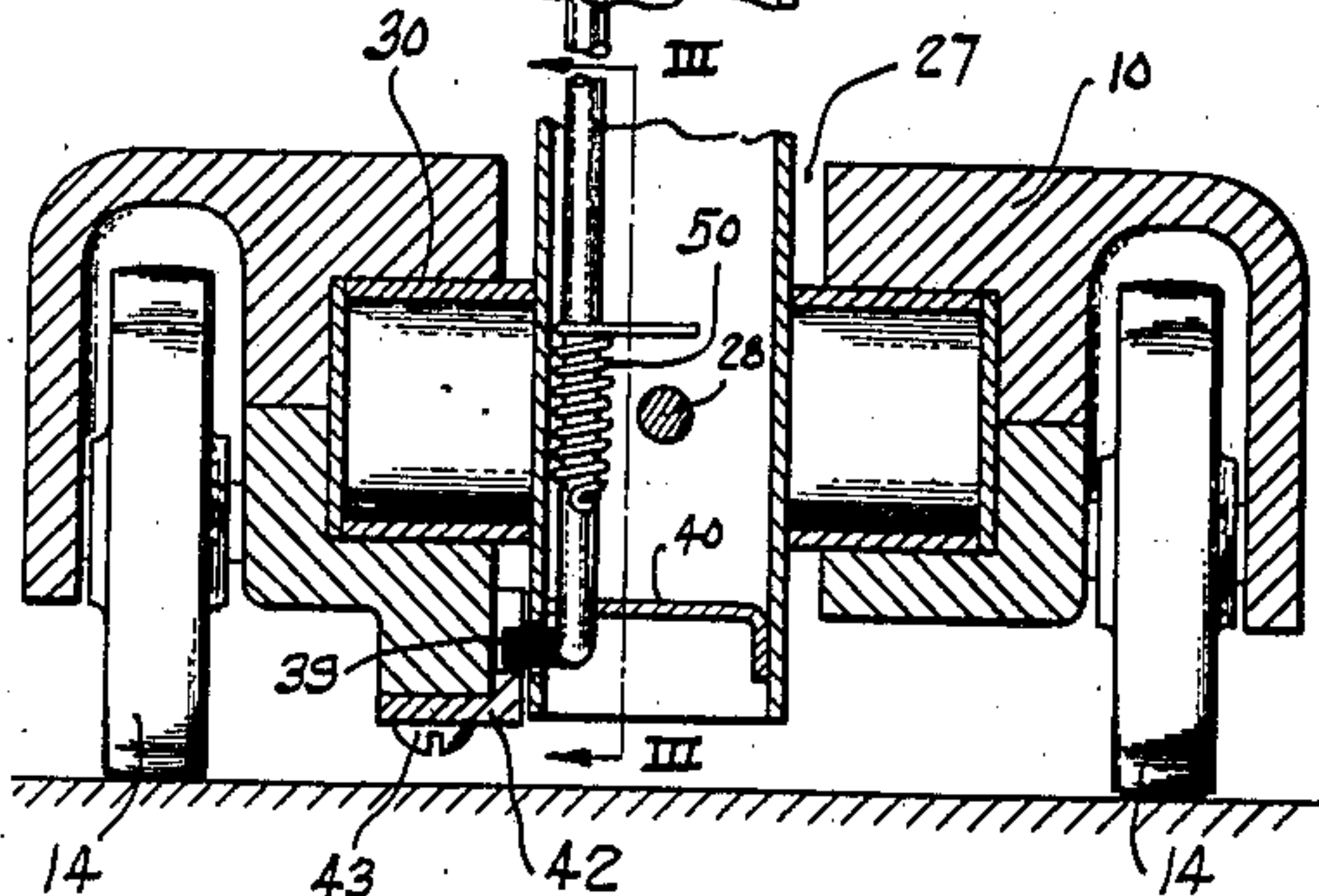


FIG. 2

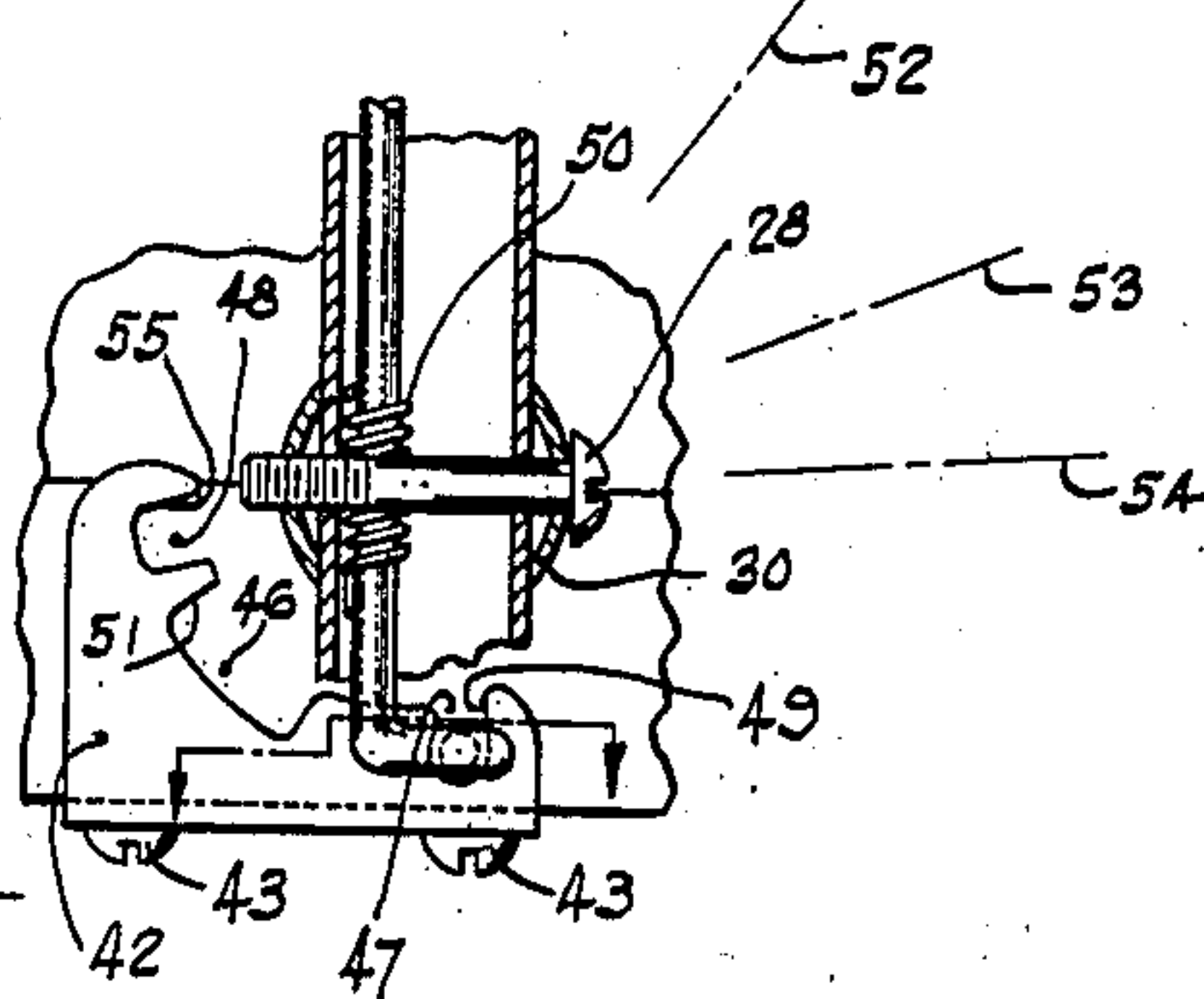


FIG. 3

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SUCTION CLEANING APPARATUS

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10 Claims. (Cl. 306—13)

My invention relates to a suction cleaner of the handle-propelled type, more particularly to a device for controlling the position of the handle relative to the body of the cleaner, and it has for an object to provide a new and improved construction.

A further object is to provide a construction of handle control device which is simple and, therefore, inexpensive, and which holds securely so that the cleaner may be lifted by the handle when the latter is in storage position.

A characteristic feature of the handle control device of my invention is a rod extending longitudinally within the handle and rotatable about an axis extending longitudinally of the rod. At its lower end, a lever extends radially from the rod and a locking pin extends angularly from the outer end of the lever. A notched plate or the like is positioned along the arcuate path of travel of the locking pin, and the locking pin is adapted to be moved transversely of the plate into one of the notches upon rotary or annular movement of the rod. The rod is rotated by means of a lever at its upper end.

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 drawing, forming a part of this application, in which:

Fig. 1 is a diagrammatic view in side elevation of a suction cleaner embodying my invention;

Fig. 2 is a sectional view, on an enlarged scale, taken on line II—II of Fig. 1;

Fig. 3 is a fragmentary view taken on line III—III of Fig. 2;

Fig. 4 is a perspective view of the locking member forming part of this invention, shown detached;

Fig. 5 is a fragmentary sectional view on line V—V of Fig. 3; and,

Fig. 6 is a fragmentary sectional view on line VI—VI of Fig. 2.

Referring now to the drawing in detail, numeral 10 designates a conventional suction cleaner shown only in outline and provided with front and rear supporting wheels 12 and 14. The suction nozzle is generally designated by the numeral 16 and it will be understood that a suitable suction-creating device is enclosed within the casing 10 in any suitable manner. The dust-collecting bag may be enclosed within the casing 10. The structure thus far referred to forms no part of the present invention, and the novel mechanism for controlling the handle position

is applicable to any type of handle-propelled suction cleaner.

Referring now to Figs. 5 and 6, it will be seen that the handle 18 is hollow and of rectangular cross section although it is to be understood that the handle 18 may have any other desired cross sectional contour. The handle 18 is provided with a switch plate 20 which carries the switch 22 for turning the unshown motor off and on. Through the handle 18 extends an electric conductor 25 provided with a plug 26 for connection to a source of power. The lower end of the handle 18 projects downwardly into or through a recess or space 27 provided in the rear portion of the body 10 of the suction cleaner and is secured by the bolt 28 or the like to the trunnion 30, which is rotatable about its horizontal axis so as to permit arcuate movement of the handle in the usual manner.

In order to control the position of the handle, I provide the operating rod 32 which extends through the handle 18 and which is provided with the upper deflected actuating handle 33. The handle 33 extends through and moves in a slot 35 immediately below the grip portion 36 of the cleaner handle 18, so as to be readily accessible without changing the position of the hand of the operator.

A resilient or rigid brace 37 engages the upper portion of the rod 32 below the handle 33 to form a bearing for said rod and to retain it in the position shown in Fig. 2. The lower end of rod 32 is deflected at right angles to form the horizontal portion 38, which also is deflected to form the engaging pin 39. The pin 39 projects through an opening 41 in the lower portion of the handle. Another bearing member 40 engages the lower end of the rod 32, to maintain the rod in the position shown in Fig. 2 and to absorb some of the stress and strain to which the rod is subjected by the weight of the cleaner casing 10 when the cleaner is bodily lifted by the handle. Coacting with the engaging pin 39 of the rod 32 is a bracket 42 which is best seen in Fig. 3 and which is suitably secured to the rear portion of the casing 10 by any suitable means 43. As will be seen from Figs. 2 and 3, the bracket 42 is disposed at a right angle with respect to the axis of the trunnion 30 about which the handle 18 is pivoted. The bracket 42 is provided with the central relatively large seat or recess 46 and with the end recesses 47 and 48. 50 designates a spring wound about the rod 32 and constantly biasing said rod (in a counter-clockwise direction) to urge the engaging pin 39

toward the bracket 42 and into one or another of the recesses 46, 47, and 48.

Operation

Assuming the cleaner to be in storage, the handle 18 will assume the substantially vertical position shown in Figs. 1 and 3. In this position the pin 39 is positioned in the recess 47 and is retained therein by the spring 50. If the cleaner is raised by the handle, the cleaner casing 10 will not swing away but will continue to assume the substantially right-angular position illustrated in Fig. 1. This is done to the fact that the pin 39 will, when the cleaner is lifted by the handle 18, bear against the wall 49 of the recess 47 as soon as the casing 10 begins to swing downwardly and away from the handle 18. If it is desired to use the cleaner for normal operation, it is merely necessary to rotate the actuating handle 33 in the slot 35, in clockwise direction, as viewed in Fig. 6. This results in rotating the rod 32 about its vertical axis, thus withdrawing the engaging pin 39 from the recess 47 in the bracket 42. The handle 18 can now be swung downwardly in the direction of the arrow 31. The movement of the cleaner handle downwardly moves the pin 39 parallel to the bracket 42 and when the handle 33 is released, the spring 50 causes the pin 39 to enter the recess 46. The handle 18 may now be swung up and down freely through an arc sufficient for normal operation. This range is approximately equal to the distance between the broken lines 52 and 53. If the handle 18 is released while the parts are in the position just described, the handle can move downwardly only until the pin 39 engages the wall 51 of the recess 46. This brings the cleaner handle approximately to the position shown by the line 53. From this position, the handle can easily be picked up for resumption of the cleaning operation. If it is desired to bring the handle 18 to substantially the horizontal position illustrated by the broken line 54, the handle 33 is again rotated in the direction of the arrow in Fig. 6 to withdraw the engaging pin 39 out of the recess 46. The cleaner handle is then lowered to the desired position and the pin 39 now enters the recess 48.

In this position of the handle 18, the cleaner is used for cleaning under low furniture such as beds and the like, and, the abutment of the pin 39 against the wall 55 of the recess 48 locks the cleaner handle in a substantially horizontal position relative to the cleaner casing 10 when the cleaner is lifted off the floor by the handle. This is convenient for cleaning stair treads, window sills and similar surfaces.

It will thus be seen that my novel mechanism is controlled and actuated by the mere rotation of the handle 33 to rotate the rod 32 about its longitudinal axis through an arc sufficient to withdraw the pin 39 from whatever recess 46, 47, or 48 it may be in, the engaging pin 39 being automatically returned into one or another of the recesses 46, 47, and 48 by the spring 50, when the cleaner handle 18 reaches any of the positions described and the actuating handle 33 is released.

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, a casing, an arcuately movable handle for propelling said casing, fixed engaging means carried by said casing, a second engaging means carried by said handle and movable therewith, said second engaging means being rotatable in one direction, about an axis extending longitudinally of said handle, into engagement with said fixed engaging means, and in the opposite direction for disengagement from said fixed engaging means.
2. In a suction cleaner, a casing, an arcuately movable handle for propelling said casing, a plurality of fixed engaging means carried by said casing, a complementary engaging means carried by said handle and movable therewith, means for biasing said complementary engaging means, about an axis extending longitudinally of said handle, to bring said complementary engaging means into selective engagement with one or another of said fixed engaging means, according to the position of said handle with respect to said casing, and means for rotating said complementary engaging means in the opposite direction to disengage the same from said fixed engaging means.
3. In a suction cleaner, a casing, an arcuately movable propelling handle therefor and means for controlling the relationship of said handle to said casing, comprising engaging means on said casing, an elongated member carried by and extending longitudinally of said handle, a pin carried by the lower end of said elongated member and adapted to coact with said engaging means, and means for normally rotating said elongated member in one direction about an axis extending longitudinally of said handle to move said pin toward said engaging means, said elongated member being rotatable in the opposite direction to move said pin away from said engaging means.
4. In a suction cleaner, a casing, an arcuately movable propelling handle therefor, and means for controlling the relationship of said handle to said casing, said means comprising an elongated member carried by said handle, a locking, angularly disposed pin at the lower end of said elongated member, engaging means on said casing, means for normally rotating said elongated member in one direction about an axis extending longitudinally of said handle and urging said pin into engagement with said engaging means, and means for rotating said elongated member in the opposite direction to withdraw said pin from said engaging means.
5. In a suction cleaner, a casing, an arcuately movable propelling handle therefor, and means for controlling the relation of said handle to said casing, comprising spaced engaging means on said casing, an elongated member carried by and movable with said handle, a locking pin carried by, and disposed at an angle to the lower end of said elongated member, means for normally rotating said member in one direction about an axis extending longitudinally of said handle to move said pin into engagement with one or another of said engaging means, according to the position of said handle with respect to said casing, and an actuating member at the upper end of said elongated member for rotating said elongated member in the opposite direction to move said pin away from said engaging means.
6. In a suction cleaner, a casing, an arcuately movable hollow handle for propelling said cas-

ing, and means for controlling the relationship of said handle to said casing, comprising a locking plate having spaced notches therein and carried by said casing, an elongated member disposed within said handle, a pin carried by and disposed at an angle to the lower end of said elongated member and projected beyond the body of said handle, means for normally rotating said elongated member in one direction about an axis extending longitudinally of said handle and thus moving said pin into one or another of said notches, to retain said handle in a corresponding position with respect to said casing, and an actuating member carried by and disposed at an angle to the upper end of said elongated member and projecting beyond the body of said handle for rotating said elongated member in the opposite direction and withdrawing said pin out of engagement with said notches.

7. In a suction cleaner, a casing, an arcuately movable handle for propelling said casing, and means for controlling the relationship of said handle to said casing, comprising an elongated member carried by said handle, a pin carried by, and disposed at an angle to the lower end of said elongated member, a locking plate on said casing, said locking plate having two end notches for receiving said pin when said handle is in a substantially horizontal, or a substantially vertical position, respectively, and an intermediate notch for receiving said pin when said handle is in its normal operating range, means for normally rotating said elongated member about an axis extending longitudinally of the handle to urge said pin into one or another of said notches according to the position of said handle, and an actuating member carried by and disposed at an angle to the upper end of said elongated member for rotating the latter in the opposite direction to withdraw said pin from engagement with said notches.

8. In a suction cleaner, a casing, an arcuately movable handle for propelling said casing, and means for controlling the relationship of said handle to said casing, comprising an elongated member carried by said handle, a pin carried by and disposed at an angle to the lower end of said elongated member, a locking plate on said casing, said locking plate having one relatively narrow end notch for receiving said pin when said handle is in a substantially horizontal position, a second relatively narrow end notch for en-

gaging said pin when said handle is in a substantially vertical position, and for locking said handle to said casing in this position, and an intermediate elongated notch within the limits of which said pin is freely movable when said handle is moved in its normal operating range, means for normally rotating said elongated member about an axis extending longitudinally of the handle to urge said pin into one or another of said notches, according to the position of said handle with respect to said casing, and an actuating member carried by and disposed at an angle to the upper end of said elongated member for rotating the latter in the opposite direction to withdraw said pin from engagement with said notches.

9. In a suction cleaner, a casing, a propelling handle having pivotal connection with said casing, a locking member carried by said casing at a substantially right angle to the axis of said pivotal connection, and having one or more engaging elements, a latch carried by and movable with said handle parallel to said locking member, means for rotating said latch in one direction, about an axis extending longitudinally of said handle, to actuate said latch transversely of said locking member and into engagement with one of said engaging elements, said latch being rotatable in the opposite direction to withdraw said latch from said engaging elements.

10. In a suction cleaner, a casing, an arcuately movable handle for propelling said casing, fixed engaging means carried by said casing, a second engaging means carried by said handle and movable therewith, said second engaging means comprising, an elongated member carried by, and rotatable about an axis parallel to the longitudinal axis of said handle, an angularly projecting portion carried by the lower end of said member, and an engaging pin carried by and disposed at an angle to said portion, means for normally biasing said member to cause it to rotate in one direction about an axis extending longitudinally of said handle to bring said pin into engagement with said fixed engaging means, and an angularly disposed operating portion at the upper end of said member by means of which said member may be rotated in the opposite direction to withdraw said pin from said fixed engaging means.

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