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HAND-OPERATED AIR VACUUM CLEANER AND BLOWER

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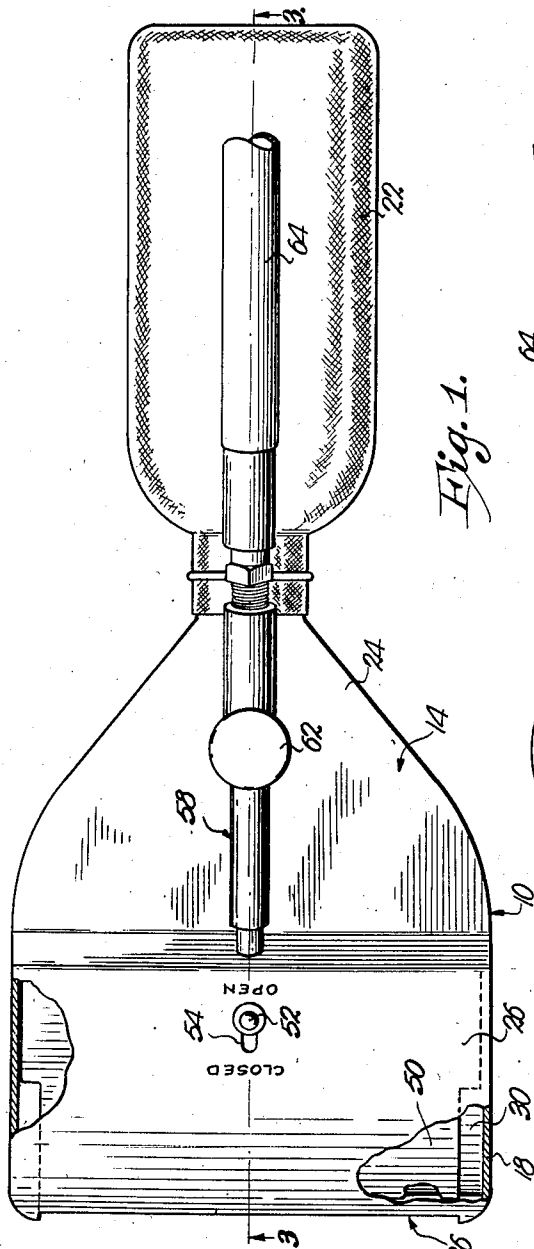


Fig. 1.

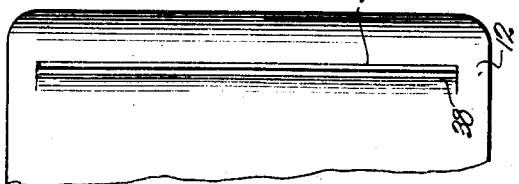


Fig. 2.

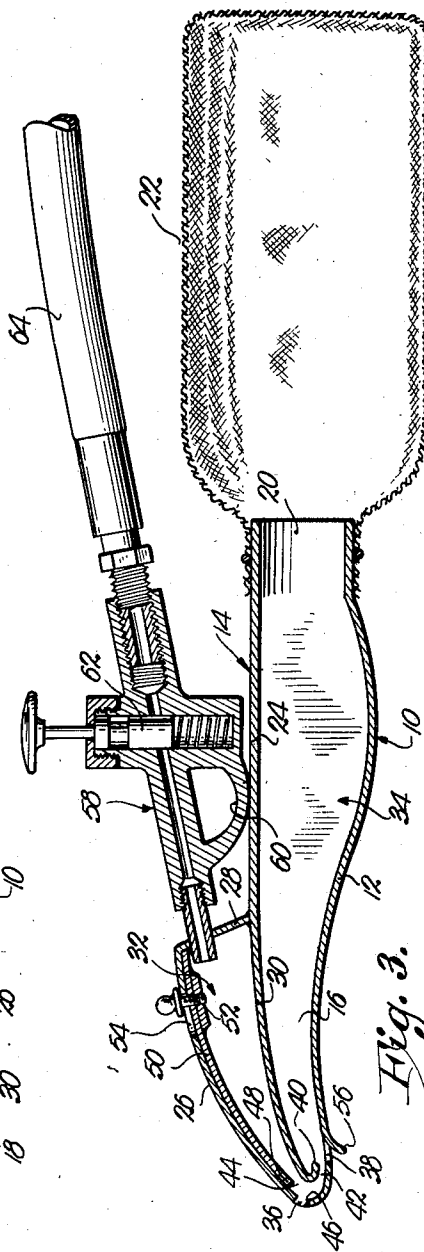


Fig. 3.

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HAND-OPERATED AIR VACUUM CLEANER AND BLOWER

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5 Claims. (Cl. 15—330)

The invention relates to a combination vacuum cleaner and blower wherein both the blowing action and the vacuum intake means are operated through use of a single source of air pressure, the primary object being to provide a relatively compact, simple, lightweight hand unit that is highly maneuverable and easily controlled in either of its two modes of operation.

It is the most important object of the present invention to provide in a hand-operated cleaning appliance of the aforementioned character, a novel gate arrangement for quickly converting the unit from a blower to a vacuum cleaner.

Another important object of the instant invention is to so arrange the said gate with respect to a passage between a pair of chambers and relative to a pair of slots so that when both slots are open, the appliance operates as a blower, but when the gate closes one of the slots, the second slot receives dirt and dust because of the vacuum that has been established in one of the chambers.

Still another important object of the present invention is to arrange the air outlet slot at one end of the hollow body forming a part of the appliance, adjacent the point of merger between a top and a bottom wall so that the gate moves into such air outlet slot and against one longitudinal edge thereof when the device is to be used as a vacuum cleaner.

In the drawing:

Fig. 1 is a plan view of a hand-operated air vacuum cleaner and blower made pursuant to my present invention, parts being broken away for clearness.

Fig. 2 is a fragmentary, inverted view showing the vacuum slot; and

Fig. 3 is a longitudinal, cross-sectional view taken on line 3—3 of Fig. 1.

A hollow body, broadly designated by the numeral 10, includes a bottom wall 12, a top wall 14, and a pair of side walls 16 and 18. The side walls 16 and 18 converge rearwardly to an air and dust outlet 20 at the rearmost end of the body 10 which may communicate with a porous dust collecting bag 22 if desired, or with a long, flexible hose if the dust and dirt can practicably be discharged to a point remote from the area being cleaned.

Top wall 14 includes a flat, substantially triangular-shaped panel 24, a substantially rectangular, transversely arched panel 26, and an inclined, rectangular panel 28 integral with panel 26 and joined directly to the panel 24.

Panel 24 continues into a partition 30 that subdivides the body 10 into an upper chamber 32 and a lower chamber 34.

The walls 12 and 14, or more particularly, the wall 12 and panel 26, merge at the forwardmost end of the body 10 and at such point of merger, there is provided an elongated air outlet slot 36 extending substantially from wall 16 to wall 18.

A similarly shaped, elongated air and dust inlet slot 38 parallel with the slot 36, is provided in the bottom wall 12 forwardly of a downturned lip 56 on bottom 12 and adjacent a downwardly and rearwardly turned lip

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40 at the forwardmost end of the partition 30. It is understood that the partition 30 spans the distance between the walls 16 and 18 and, therefore, there is presented a restricted passage 42 between lip 40 and wall 12 coextensive in length with lip 40 and parallel with slots 36 and 38. A passage 44 between the forwardmost end of body 10 and the forwardmost end of partition 30, adjacent the slot 36 and in parallelism with the latter, places the chamber 32 into communication with the chamber 34.

The slot 36 is so disposed that lowermost, longitudinal edge 46 thereof is within the path of travel of the proximal edge 48 of a gate 50 that is transversely arched and conforms in shape with the panel 26 against the innermost face of which it slides when shifted to and from a position closing the slot 36.

Gate 50 is confined between the walls 16 and 18, as shown by dotted lines in Fig. 1, but the edge 48 thereof is coextensive in length with the edge 46 of slot 36.

A pin 52 movable in elongated opening 54 within panel 26, connects with gate 50 to shift the latter from the position shown in Fig. 3 to a position closing the slot 36, pin 52 bearing against the upper surface of panel 26 and holding the gate 50 in sliding engagement with the inner face of panel 26. Noteworthy is the fact that when edges 46 and 48 are in abutment, gate 50 extends into the slot 36 and across such slot 36 to close the latter.

A valve body 58 is connected to the upper face of panel 24 and communicates with the chamber 32 through panel 28. When a user grasps the body 58 through hand clearance opening 60, he is not only able to actuate the pin 52, but with the palm of his hand, open spring-loaded valve 62 to admit compressed air to the chamber 32 by virtue of the fact that body 58 is coupled with a suitable sources of such air pressure (not shown) by a flexible hose 64.

Manifestly, when the gate 50 is open, as shown in Fig. 3, air entering the chamber 32 will pass along the upper surface of partition 30 and thence outwardly through the slot 36. However, when the gate 50 is shifted downwardly to a position closing the slot 36, the air in chamber 32 flows through passage 44, and thence around the lip 40 through the restricted passage 42 and into the chamber 34. The movement of the compressed air through the passage 42 creates a suction within the slot 38 so that dirt and dust may be drawn into the chamber 34 and be collected in the bag 22.

Many uses for the appliance may be suggested such as the cleaning of automobile floorboards, by either first blowing the dirt therefrom through the open doors and/or lifting such dirt therefrom for collection by the bag 22, or discharge to the driveway as above indicated. The invention is, of course, not limited to such use however, and therefore, it is desired to be limited only by the spirit of the invention as defined by the scope of the appended claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a hand-operated air vacuum cleaner and blower, a hollow body having a top wall and a bottom wall merging into a forwardmost end, a pair of side walls and a rearmost end, there being an air outlet slot in said forwardmost end, a dust and air outlet in said rearmost end and a dust inlet in said bottom wall, said body having a pair of elongated edges defining the top and the bottom of said air outlet slot; a partition spanning the distance between said side walls within the body, subdividing the latter into an upper chamber and a lower chamber, there being an inlet for air under pressure communicating with the upper chamber and a passage at one end of the partition adjacent said forwardmost end between the air outlet slot and the dust inlet, placing the upper chamber

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into communication with the lower chamber, said dust inlet being disposed rearwardly of said passage whereby, upon closing of said air outlet slot, air moving along said bottom from the passage to the dust and air outlet will draw dust into the lower chamber through the dust inlet; and gate means carried by the body and movable to and from a position across and into the air outlet slot in engagement with said bottom of the latter, thereby closing said air outlet slot.

2. In a hand-operated air vacuum cleaner and blower, a hollow body having a top wall and a bottom wall merging into a forwardmost end, a pair of side walls and a rearmost end, there being an air outlet in said forwardmost end, a dust and air outlet in said rearmost end and a dust inlet in said bottom wall; a partition spanning the distance between said side walls within the body, subdividing the latter into an upper chamber and a lower chamber, there being an inlet for air under pressure communicating with the upper chamber and a passage at one end of the partition adjacent said forwardmost end between the air outlet and the dust inlet, placing the upper chamber into communication with the lower chamber, said dust inlet being disposed rearwardly of said passage whereby, upon closing of said air outlet slot, air moving along said bottom from the passage to the dust and air outlet will draw dust into the lower chamber through the dust inlet, said one end of the partition having means presenting a restricted passage between the bottom wall and the partition adjacent said dust inlet; and gate means carried by the body and movable to and from a position closing said air outlet.

3. In a hand-operated air vacuum cleaner and blower, a hollow body having a top wall and a bottom wall merging into a forwardmost end, a pair of side walls and a rearmost end, there being an air outlet in said forwardmost end, a dust and air outlet in said rearmost end and a dust inlet slot in said bottom wall; a partition spanning the distance between said side walls within the body, subdividing the latter into an upper chamber and a lower chamber, there being an inlet for air under pressure communicating with the upper chamber and a passage at one end of the partition adjacent said forwardmost end between the air outlet and the dust inlet slot, placing the upper chamber into communication with the lower chamber, said dust inlet being disposed rearwardly of said passage whereby, upon closing of said air outlet slot, air moving along said bottom from the passage to the

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dust and air outlet will draw dust into the lower chamber through the dust inlet, said one end of the partition having means presenting a restricted passage between the bottom wall and the partition adjacent said dust inlet slot; and gate means carried by the body and movable to and from a position closing said air outlet, said passages being in parallelism with the air outlet and spanning the distance between said side walls.

4. In a hand-operated air vacuum cleaner and blower, a hollow body having a top wall and a bottom wall merging into a forwardmost end, a pair of side walls and a rearmost end, there being an air outlet slot in said forwardmost end, a dust and air outlet in said rearmost end and a dust inlet slot in said bottom wall, said body having a pair of elongated edges defining the top and the bottom of said air outlet slot; a partition spanning the distance between said side walls within the body, subdividing the latter into an upper chamber and a lower chamber, there being an inlet for air under pressure communicating with the upper chamber and a passage at one end of the partition adjacent said forwardmost end between the air outlet slot and the dust inlet slot, placing the upper chamber into communication with the lower chamber, said dust inlet being disposed rearwardly of said passage whereby, upon closing of said air outlet slot, air moving along said bottom from the passage to the dust and air outlet will draw dust into the lower chamber through the dust inlet, said one end of the partition having means presenting a restricted passage between the bottom wall and the partition adjacent said dust inlet slot; and gate means carried by the body and movable to and from a position across and into the air outlet slot in engagement with said bottom of the latter, thereby closing said air outlet slot, the passages spanning the distance between said side walls and being in parallelism with said slots.

5. The invention of claim 1, said gate comprising a slidable panel within the upper chamber and extending into said passage when the same is in said position.

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