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UPHOLSTERY CLEANER

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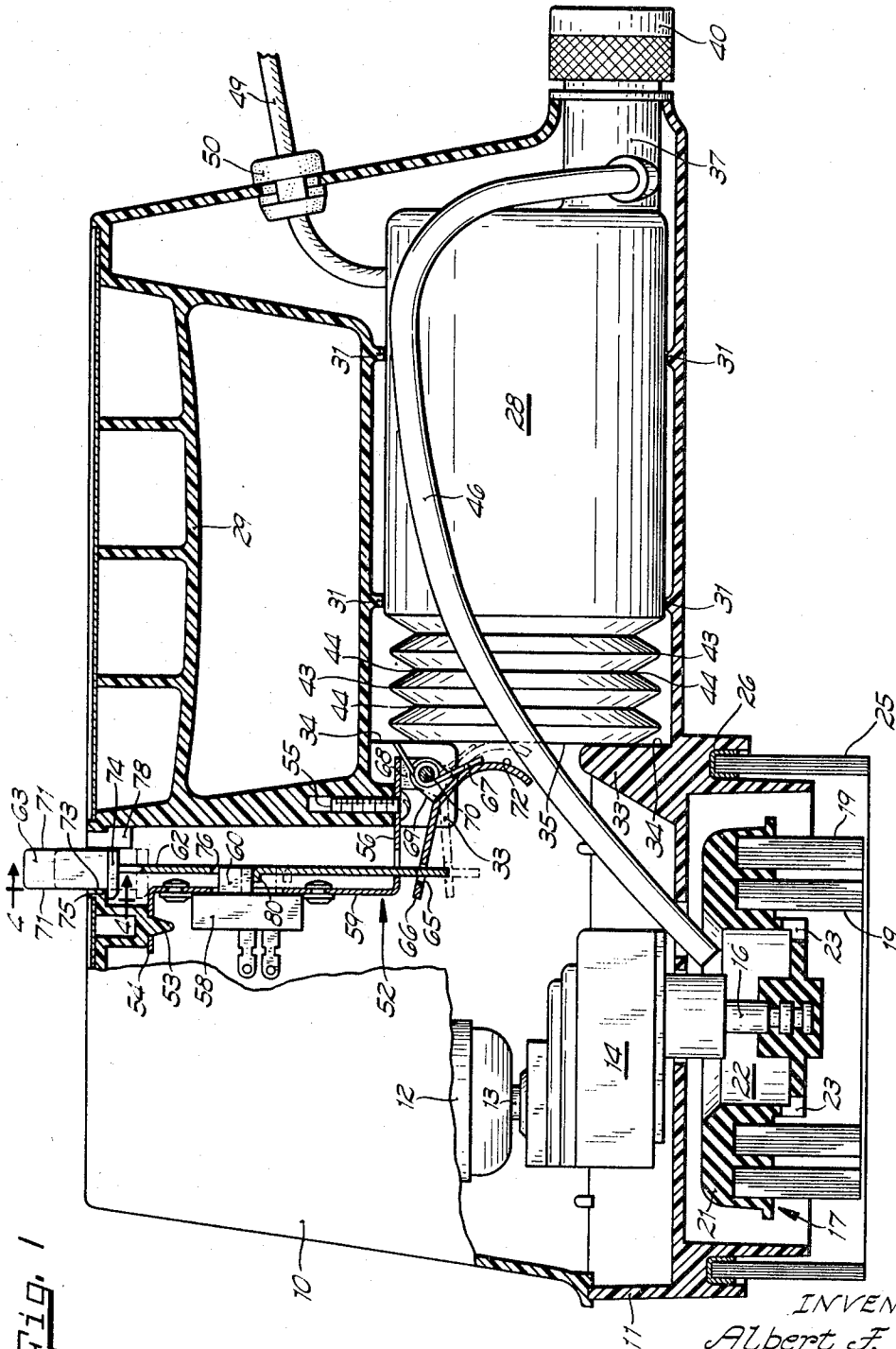


Fig. 1

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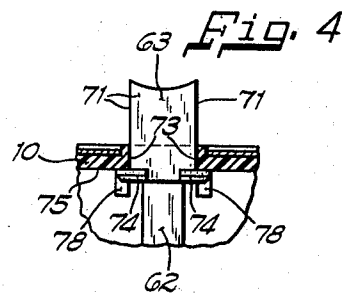
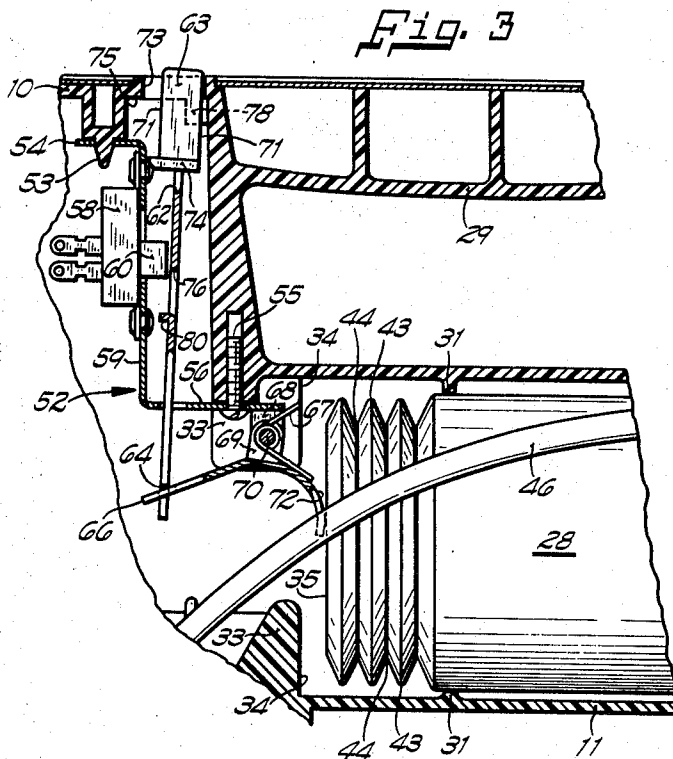
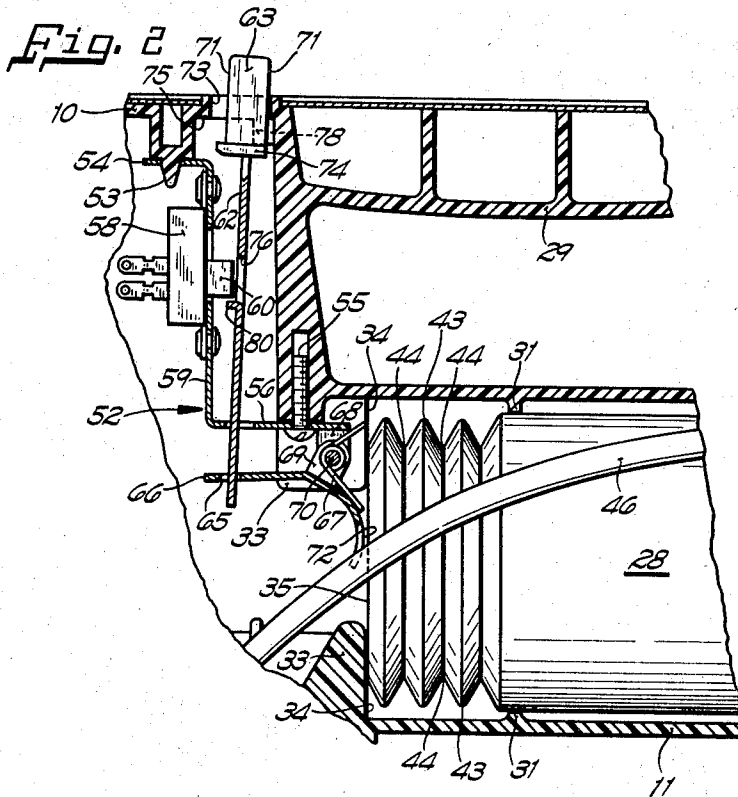
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UPHOLSTERY CLEANER

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10 Claims

ABSTRACT OF THE DISCLOSURE

A device of the portable power driven rotary brush type having a reservoir containing a fluid cleaning formulation to be applied selectively during operation of the rotary brush. A control member having a first inoperative position and movable to second and third positions. The control member is moved from the first inoperative position to the second position to energize the brush drive means and to the third position to effect selective delivery of the cleaning formulation.

This invention pertains to upholstery cleaners, and more particularly, to a portable upholstery cleaner having a power actuated brush.

A small hand held portable upholstery cleaning machine which is intended to meet general home cleaning requirements should have a cost and be of a size that make it practical for general home use. In addition, such a device should be simple to operate by any member of the general public and should be suitable to clean upholstered surfaces disposed in any attitude in which they may be found from horizontal to vertical. In the portable upholstery cleaner of the present invention a single control button, operable by the hand holding the appliance, controls the operation of the rotating brush and also the selective delivery of cleaning formulation from the reservoir to the location of the moving brush. The reservoir and the assembly for delivering cleaning formulation from the reservoir to the brush are further designed to cause the device to be fully operable to provide both the power brushing operation and the delivery of cleaning formulation to the rotating brush in either a horizontal or vertical attitude or any intermediate disposition of inclination. The delivery of fluid from reservoir to brush can be effected at any inclination at which delivery may be effectively made to the working surface of the brush.

It is an object of this invention to provide an improved hand held portable upholstery cleaning device.

It is a further object of this invention to provide an upholstery cleaner which is fully effective to clean horizontal, vertical or inclined surfaces.

It is also an object of this invention to provide an upholstery cleaning device which is controlled and operated by a single knob or control.

These and other objects and advantages of this invention will become apparent from the following description when taken in connection with the accompanying drawings, wherein:

FIG. 1 is a side elevational view, partially broken away and in section, showing an upholstery cleaner according to the present invention;

FIG. 2 is a partial side elevational and sectional view, similar to FIG. 1, showing the control member partially depressed;

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FIG. 3 is a partial side elevational and section view, similar to FIG. 1, showing the control member fully depressed; and

FIG. 4 is a partial sectional view, taken generally along line 4—4 of FIG. 1.

Referring to the drawings, FIG. 1 shows the upholstery cleaning unit including an upper housing 10 and lower housing 11. A motor 12 is mounted within upper housing 10 and has a downwardly depending output shaft 13 that extends into a speed reducing gear box 14 utilized to transfer shaft power from the motor to shaft 16. The shaft 16 extends from the gear box and carries rotary brush 17 as an integral part of the lower distal end. The rotary brush 17 is formed of two concentric rows 19 of tufts of bristles 19 secured within the brush body 21. A cylindrical axial extending recess 22 is formed in the brush body 21 with a top opening and a series of lower openings 23 which permit fluid delivered to the axially extending annular recess 22 to enter the space radially inward of the circular rows 19 of bristle tufts. A circular row of bristles 25 is secured within annular recess 26 in the lower housing portion 11 and depends in surrounding relation radially outward of the rotary brush 17.

A reservoir 28 formed of resilient material is mounted within the housing portion which underlies handle 29 and is confined by inwardly projecting circumferential wall portions 31 and by projections 33 having abutting surfaces 34 engageable with front end surface 35 of the reservoir. At the rear end the reservoir has a neck 37 which adjoins a lower most portion of the reservoir and extends through the housing with a threaded portion about which is received a closure cap 40 to provide a readily accessible filling opening. At the opposite end reservoir 28 is defined by a series of alternate ridges 43 and grooves 44 which form a bellows section to enable the end portion of the reservoir to alternately compress and expand in response to pressure applied to the axial end wall 35 to thereby cause the effective volume of the reservoir to be reduced and deliver fluid from the reservoir through fluid delivery tube 46. The fluid delivery tube 46 communicates with the reservoir through an opening in a lower part of the reservoir filler neck 37.

Electric power is supplied to the device through a line cord 49 entering the housing through an aperture in the upper housing portion and restrained at the aperture by a relief element 50. A bracket 52 is secured to the upper housing portion 10 by means of a projection 53 extending through an aperture in the upper bracket flange 54 and a single bolt 55 through an aperture in the lower bracket flange 56. A slide switch 58 is secured to the web 59 of the bracket 52 and has an actuator button 60 which projects through an aperture in the web. An actuator bracket 62 carries an operating button 63 at its upper end and is received at its lower end within an aperture 65 of actuator crank 66 pivoted to bracket 52. The bracket 62 has a downwardly facing shoulder 64 (FIG. 3) which engages and unites in common movement with the end portion of the actuator crank 66 that is pivotally mounted on pivot 70 to the bracket 52 and that is biased by spring 67 in a clockwise direction to the position shown in FIG. 1. The flange has two depending tabs 68 which straddle a pair of tabs 69 bracket 66 to the bracket on pivot 70 passing through apertures in the tabs. The actuator crank 66 has a curved arm which presents an arcuate surface 72 engageable with the end wall 35 of reservoir 28.

Under normal conditions, the spring 67 biases the ac-

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tuator crank 66 in a clockwise direction to lift the actuator bracket 62 upwardly to the position shown in FIG. 1. In this position, the actuator button 63 is confined laterally within the housing by means of button surfaces 71 and 74 engaging against housing surfaces 73 and 78, respectively. The upward travel of the button is restrained by means of the forward edge of the button flange 74 underlying and engaging the downwardly facing housing surface 75. The rear side of the button flange 74 engages and rides along the spaced ribs or projections 78 on the housing.

To operate the unit the button 63 is initially depressed to the position shown in phantom in FIG. 1 whereat the rear edges of flange 74 clears the ribs or projections 78. Also, the forward edges of the flanges 74 engage the bracket 52 to stop downward movement of the button. During this downward depression of the button 63, the actuator bracket 62 engages at the edge 76 of the button receiving opening the slide switch actuator button 60 to move it downwardly to the "on" position of the appliance. Also, the downward movement of the button 63 to the phantom position shown in FIG. 1 pivots the actuator crank 66 so that arcuate surfaces 72 engages the end 35 of the reservoir. In this condition the motor 12 has been energized to rotate the brush, but fluid has not yet been delivered from the reservoir to the brush.

When it is desired to deliver formulation from the reservoir the button 63 is moved rearwardly to the position shown in FIG. 2 whereat the button flange 74 clears ribs 78 and almost simultaneously clears bracket flange 54 and disengages the aperture upper surface 76 from the switch actuator button 60. The control button and actuator bracket may now be stroked vertically between the positions shown in FIGS. 2 and 3 to cause the actuator crank 66 to alternately depress the bellows section of reservoir 28 and permit the same to expand thereby delivering fluid from the reservoir 28 to rotary brush 17. With the button 63 and actuator bracket 62 in the position shown in FIG. 2 where the housing projections 78 engage the button flange 74, the switch in the "on" position and the motor continues to drive the rotary brush.

To stop the brush, the button 63 is urged forward from the position of FIG. 2 to a location where the button flanges 74 are out of engagement with the upper housing ribs 78 and the switch actuator button 60 again is constrained within the aperture of the actuating bracket 62 and in engagement with the actuating bracket flange 80. Thereupon upward movement of the bracket 62, as caused by spring 67, also lifts the switch button 60 to the "off" position and terminates the operation of the appliance.

It will be observed that the delivery tube 46 connects to the reservoir 28 adjacent the bottom when the appliance is disposed in the attitude shown in FIG. 1, and when the unit is tipped upwardly as it would be to work on a vertical cleaning surface. Accordingly, the appliance may be used on either a horizontal, vertical or inclined cleaning surface since fluid can be discharged from the reservoir to the rotating brush 17 under the pumping influence of the actuator button 63.

It will be noted that the effective volume change of the reservoir 28 when the bellows has been moved between the positions shown in FIGS. 2 and 3 is greater than the residual volume confined within tube 46. Thus, after fluid is discharged from the reservoir (FIG. 3 position) and the reservoir is expanded (FIG. 2 position), the fluid in the tube 46 is withdrawn to the reservoir 28 and whatever air is required is likewise admitted to the reservoir. It also will be noted that with the use of the bellows type reservoir employed herein, there is no contact of any metallic component with the fluid in the reservoir, since the reservoir and the outlet tube 46 can be made of corrosive resistant, flexible plastic material.

What is claimed is:

1. A portable upholstery cleaner comprising a housing; a power brush mounted on said housing and projecting

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therefrom; drive means operatively connected to said power brush; fluid dispenser means within said housing for selectively delivering a cleaning formulation to said power brush; and a control member having a first, inoperative position and movable to second and third positions, said control member being movable from said first, inoperative position to said second position to energize said power brush drive means and movable between said second and third positions to effect said selective delivery of cleaning formulation.

2. The upholstery cleaner of claim 1, wherein said control member is biased toward said first position and includes detent means for retention in said second position.

3. The upholstery cleaner of claim 2, further comprising an on-off switch including an actuator portion mounted within said housing adjacent said control member for energizing said drive means, and wherein said control member when moved between said first and second positions engages and moves said switch actuator portion and when moved between said second and third positions is disengaged from said switch actuator portion.

4. The upholstery cleaner of claim 3, wherein said fluid dispenser means includes a reservoir of resilient material having a bellows section and confronting said control member, wherein said control member comprises an assembly including an actuating bracket, an operating button carried by said bracket and projecting through an aperture in said housing, and a crank member having one portion engaged and moved by said actuating bracket and a second portion engageable with said reservoir to compress said bellows section.

5. The upholstery cleaner of claim 4, wherein said operating button includes a first abutting surface and said housing presents second and third cooperating abutting surfaces, said first and second abutting surfaces being engageable to limit upward travel of said control member in the first position and said first and third abutting surfaces being selectively engageable to retain said control member in said second position.

6. The upholstery cleaner of claim 4 wherein said power brush is a rotating brush having generally circularly arranged depending bristles and including a body portion having a generally cylindrical depression, said body portion having openings extending from a layer part of said depression to the space radially inward of said bristles; and wherein said reservoir includes an outlet opening communicating with a lower rearward portion thereof; and further comprising a delivery tube extending from said reservoir outlet opening to said body portion cylindrical depression.

7. The upholstery cleaner of claim 6, wherein said reservoir and said delivery tube are each made of a corrosive resistant material, such as plastic, and form the only components of the fluid dispenser means that contacts the cleaning formulation.

8. A portable upholstery cleaner, comprising a housing including a handle; a motor in the housing; a brush mounted to rotate about an axis and drivingly connected to the motor; a reservoir supported within the housing and disposed radially of the axis of rotation of the brush generally between the brush and the handle, the reservoir being formed of resilient material and having at the location thereof adjacent the brush alternate peripheral ridges and grooves forming a compressible bellows, and having at the location remote of the brush an outlet opening from the reservoir; hose means extending from the outlet opening and terminating in fluid delivery relation to the brush; an actuating bracket pivoted to the housing and engageable with the bellows for compression of the bellows; spring means normally restraining the bracket from compression of the bellows; and an operative element engaging the bracket and extending exteriorly of the housing adapted for manual actuation thereof effective upon overcoming the spring means to compress

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the bellows by means of the bracket for delivering fluid from the reservoir to the brush.

9. An upholstery cleaner of claim 8, further comprising an ON-OFF switch for energizing said motor, wherein the operative element engages and actuates the switch and is movable from a first position where the switch is off to a second position where the switch is on and the motor is energized, and the operative element further being movable between the second position and a third position effective to engage the bracket and compress the bellows thereby for delivering fluid from the reservoir.

10. The upholstery cleaner of claim 9, further comprising interengaging detent means on the housing and the operative element suitable for releasably maintaining

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the operative element in the second position where the motor is energized.

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U.S. Cl. X.R.