

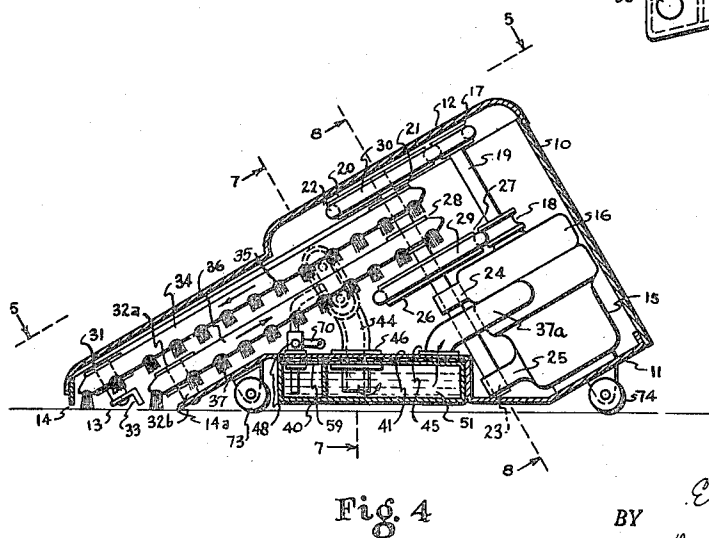
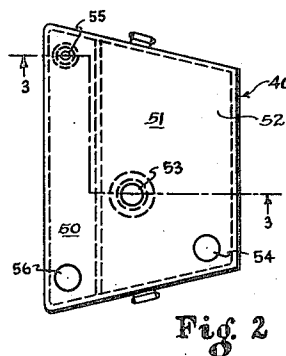
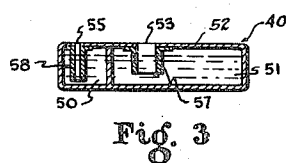
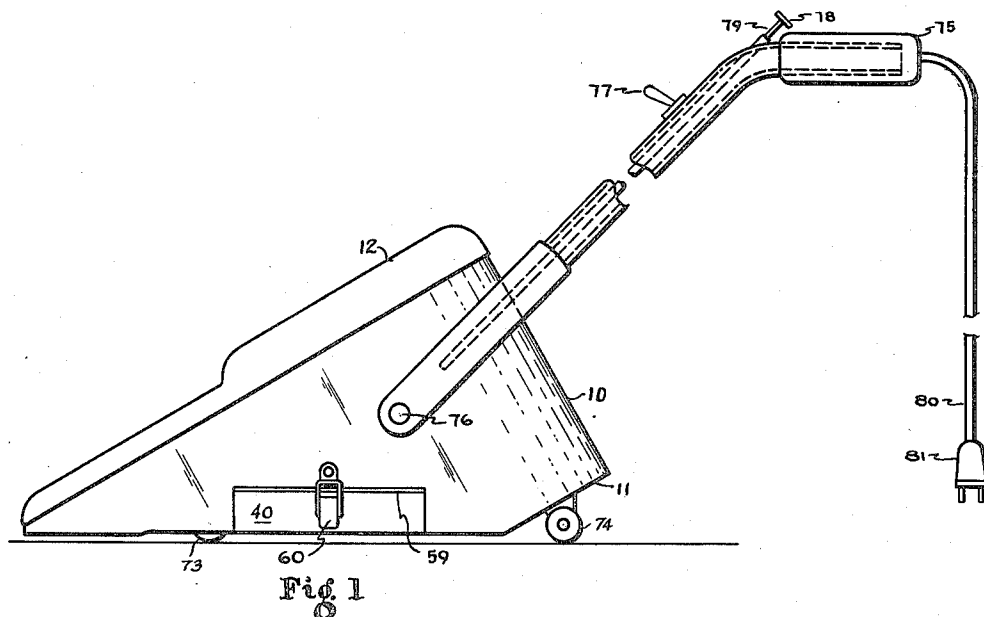
Oct. 10, 1950

E. T. PLATZ
FLOOR CLEANING MACHINE

2,524,928

Filed April 12, 1946

2. Sheets-Sheet 1



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2 Sheets-Sheet 2

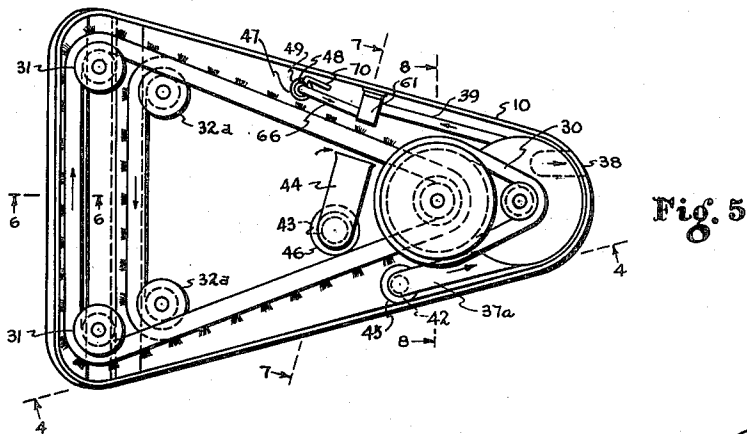


Fig. 5

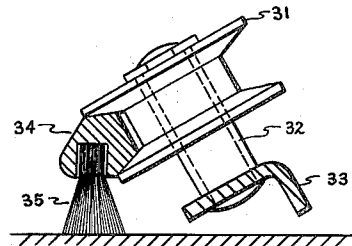


Fig. 6

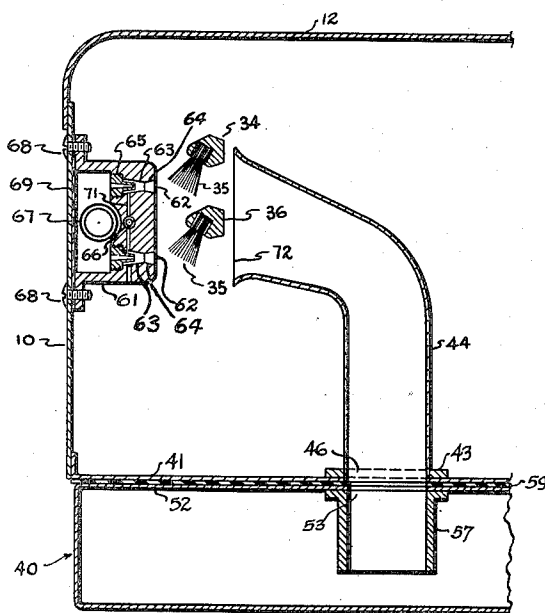


Fig. 7

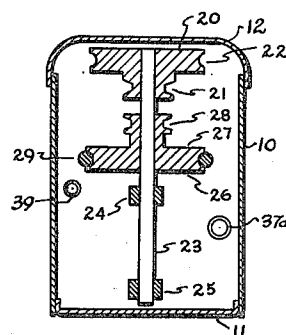


Fig. 8

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UNITED STATES PATENT OFFICE

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FLOOR CLEANING MACHINE

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Application April 12, 1946, Serial No. 661,664

3 Claims. (Cl. 15—50)

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This application discloses a surface cleaning machine, optionally useful for vacuum cleaning or washing or scrubbing or polishing a surface.

An embodiment of such machines is disclosed in the appended drawings.

In these drawings, Fig. 1 is a side view of a machine.

Fig. 2 is a top view of a part thereof, removed from the machine.

Fig. 3 is a sectional view on line 3—3 of Fig. 2.

Fig. 4 is a side view of the machine with part removed for purposes of clarity.

Fig. 5 is a view along the line 5—5 of Fig. 4, with part removed for purposes of clarity.

Fig. 6 is an enlarged partial view along line 6—6 of Fig. 5.

Fig. 7 is an enlarged partial view along lines 7—7 of Figs. 4 and 5.

Fig. 8 is a section view along line 8—8 of Fig. 4.

The machine shown in Figs. 1 to 8 comprises a side housing 10, a base 11, and a removable cover 12 combining to form an enclosure or casing with a nozzle-like opening 13 in the bottom between the edges 14—14a of the side housing and the base. Otherwise, the enclosure is substantially air tight.

An electric motor 15 is secured to an upwardly bent portion of the right hand end of the base 11. A multi-stage air compressor 16 is directly connected to and driven by this motor. Grooved pulleys 17 and 18 are mounted on and driven by an extension 19 of the drive shaft of the motor.

A pulley 20, having a groove 21 of relatively small diameter and a groove 22 of relatively large diameter, is journaled on the stationary shaft 23 which is rigidly held in a fixed position by the lug 24 of the air compressor and by the lug 25 of the motor. A similar pulley 26 with grooves 27 and 28 is also journaled on the shaft 23. This arrangement of pulleys is clearly shown in Fig. 8. The groove 27 of pulley 26 is tightly fitted with a tire-like pliable rim 29 of circular cross section. This rim frictionally engages the motor pulley 18, thereby causing the pulley 26 to be rotated in a direction opposite to the rotational direction of the motor. The endless belt 30, fitting the grooves of pulleys 20 and 17, rotates the pulley 20 in the same direction as the motor. Thus, the pulleys 20 and 26 are both driven by the motor 15 but rotate in opposite directions on shaft 23.

At the left hand end of the machine are two grooved pulleys 31 journaled on studs 32 which are riveted to a cross member 33, as shown enlarged in Fig. 6. Similarly, two pulleys 32a are journaled on another set of studs 32b which are riveted to the base 11 near its edge 14a.

An endless belt 34 having brushes 35 projecting therefrom at suitable intervals is carried by the pulleys 31 and driven by the pulley 21. A

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similar endless belt 36, but slightly shorter, is carried by the pulleys 32a and is driven by the pulley 28; belt 36 has brushes 37. The brushes 35—37 project from the belts at such an angle and the pulleys 31 and 32a are so located that the brushes engage the floor or carpet between the edges 14—14a, which as previously mentioned, form a nozzle-like opening 13 in the bottom of the machine.

The multi-stage compressor 16 is the conventional type having several impellers or stages. Air is drawn in through the inlet pipe 37a and partially discharged from the first stage through the outlet port 38. The outlet port 38 is suitably baffled so that a portion of the air from the first stage enters the subsequent stages and is discharged from the compressor at a high pressure through the high pressure tube 39.

The base 11 is formed upward in a step-up manner near its center to provide a tunnel-like opening for a fluid tank 40 to be described later. The raised surface 41 of the base 11 thus formed has openings at 42 and 43 to communicate with the tubes 37a and 44, which are secured by their respective flanges 45 and 46 to this upper surface 41 of the base 11. Surface 41 of the base also has an opening 47 communicating with the valve 48 which is likewise secured to the upper surface 41 by its flange 49.

The tank 40 has a cleaning fluid compartment 50 and an air washing or filtering fluid compartment 51 as shown in Figs. 2 and 3. The top surface 52 of the tank has openings 53—54—55 in line with the openings 43—42 and 47 in the base, and an opening 56 for filling the cleaning fluid compartment. The opening 54 thus communicates with the inlet tube 37 and can also be used for filling the filtering fluid compartment of the tank. A flanged tube 57 secured to the inside of the tank in line with the hole 53 is intended to extend below the surface of the filtering fluid. Similarly, a flanged tube 58 secured to the inside of the tank in line with the opening 55 is intended to extend into the cleaning fluid.

A gasket 59, glued or otherwise secured to the underside of the surface 41, has holes corresponding to the holes 42, 43 and 47 in the surface 41. A clamp 60 on each side of the machine holds the tank 40 snugly up against the gasket 59 with air tight connection between the aforementioned openings 42—43—47 in the surface 41 and the corresponding openings 54—53—55 in the tank 40. The clamps 60 also permit easy removal of the tank for filling and draining the fluid.

Referring to Fig. 7, an air receiver 61 is provided having two orifices 62 each with conical bores 63 and 64. Nozzles 65 threaded into the air receiver 61 extend into the conical bores 63.

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A passage 71 connects the orifices 62 to the tube 66 which is connected to the cleaning fluid control valve 48. The high pressure air line 39 from the compressor is connected to the air receiver 61 at 67. The air receiver 61 is secured by screws 68 to the housing 10 with the interposed gasket 69 forming an air tight enclosure and positioned so that a blast of air from the compressor will be directed against the brushes 35 as they are carried past by the endless belts 34 and 36. When the fluid control valve 48 is opened by raising the valve arm 70, cleaning fluid is drawn from the tank 40 through the line 66 and the passage 71 to the orifices 62. A mixture of cleaning fluid and air is then sprayed on the brushes 35.

The tube 44 leading to the filtering compartment of the tank 40, has its open end 72 flared out and positioned opposite the orifices 62 to receive the blast of air or mixture of fluid and air after it passes the brushes 35.

Air in a comparatively large volume is drawn from the floor surface into the machine through the nozzle opening between the edges 14 and 14a, then through the tube 44, the filtering compartment 51 of the tank 40 and the tube 37a leading to the inlet of the compressor.

The machine rolls along the floor or carpet on its two front wheels 73 and rear wheel 74. The machine is moved back and forth or guided along the floor by the handle assembly 75 pivoted to the machine housing at 76. The handle assembly 75 carries a motor control switch 77 and a push pull knob 78 connected to one end of a Bowden wire 79. The other end of the wire 79 is connected (not shown) to the valve arm 70 so that when the knob 78 is pulled out valve 48 is opened. A flexible electrical cord 80 with an attachment plug 81 is provided for plugging into an electrical outlet.

When the machine is in use the motor runs continuously. The filtering compartment 51 of the tank 40 is partially filled with water or any other suitable filtering fluid. The cleaning fluid compartment 50 is filled preferably with soapy water or any other suitable cleaning fluid.

When used for vacuum cleaning or sweeping the button 78 is pushed in and air only is blasted against the brushes 35. The brushes sweep the floor as they travel along in opposite directions on their respective endless belts. At the same time the inrush of air through the floor nozzle carries dust and particles of dirt into the machine. The stream of air then enters the open end of the tube 44 and passes through the filtering fluid. Dust and particles of dirt are retained or collected by the filtering fluid, the filtered air passing on to the compressor.

When used for washing, the operation is the same as for sweeping, except the button 78 is pulled out and a mixture of cleaning fluid and air is blasted against the brushes. This blast of cleaning fluid and air continuously cleans the brushes and wets the brushes to wash the floor as they engage the floor through the floor nozzle. The inrush of air through the floor nozzle, as in vacuum cleaning, also aids in carrying dust and particles of dirt into the compartment 51 of the machine. The position of the open end 72 of the tube 44 directly in front of the orifices 62 enables the tube 44 to effectively collect the excess spray and guide it to the filtering fluid compartment. The inrush of air into the open end of the tube also aids in collecting and controlling the excess spray.

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After a portion of the floor has been washed, the button 78 can be pushed in. Then the blast of air only will dry the brushes and the brushes in turn will dry the floor.

I claim:

1. In a floor cleaning machine, a casing having a bottom opening, a continuously moving belt therein arranged to move past said opening, said belt, when stationary, having a portion at said opening and a second portion within said casing longitudinally remote from said opening, a fluid pressure spray means inside said casing also longitudinally remote from said opening and arranged and located in a manner to pressure spray fluid across said second belt portion at a point longitudinally remote from said opening and perpendicular to the line of travel of the belt and generally parallel to its surface, both at that portion of the belt adjacent said spray means, whereby a spray of fluid directed across said second belt portion will not pass through said casing opening.

2. In a floor cleaning machine, a casing of considerable length having a transverse bottom opening whose length is much less than that of the casing and whose width is substantially that of the casing, a narrow endless belt in said casing having a portion exposed to the floor at said opening, means for moving said belt continuously, a fluid pressure spray means within said casing at a point longitudinally remote from said opening and so arranged and located with respect to said belt that a spray therefrom will be directed across said belt and perpendicular to its line of travel and generally parallel to its surface, both at that portion of the belt adjacent said spray means, and will be remote from said opening.

3. In a floor cleaning machine, a casing having a bottom opening, a continuously moving belt therein arranged to move past said opening, said belt, when stationary, having a portion at said opening and a second portion within said casing longitudinally remote from said opening, a fluid pressure spray means inside said casing also longitudinally remote from said opening and arranged and located in a manner to pressure spray fluid across said second belt portion at a point longitudinally remote from said opening and perpendicular to the line of travel of the belt and generally parallel to its surface, both at that portion of the belt adjacent said spray means, whereby a spray of fluid directed across said second belt portion will not pass through said casing opening, the bottom opening being of a length much less than that of the casing and of a width substantially that of the casing, and said belt being narrow.

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