July 25, 1950 E. O. MILDEBRATH 2,516,523

FLOOR WAXER WITH INERTIA ACTUATED FLOW CONTROL VALVE

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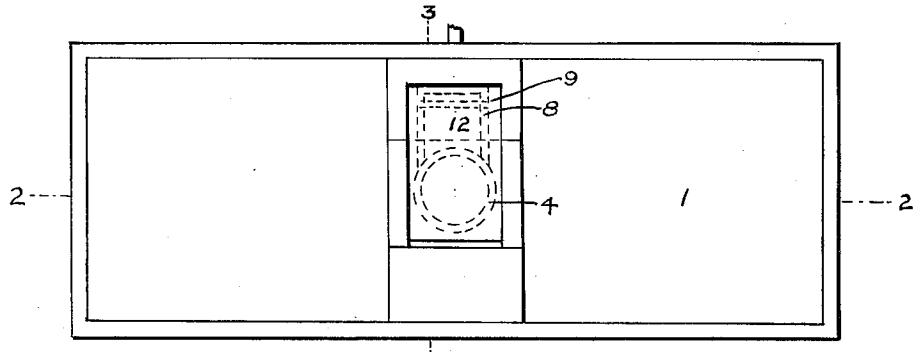


FIG. 1

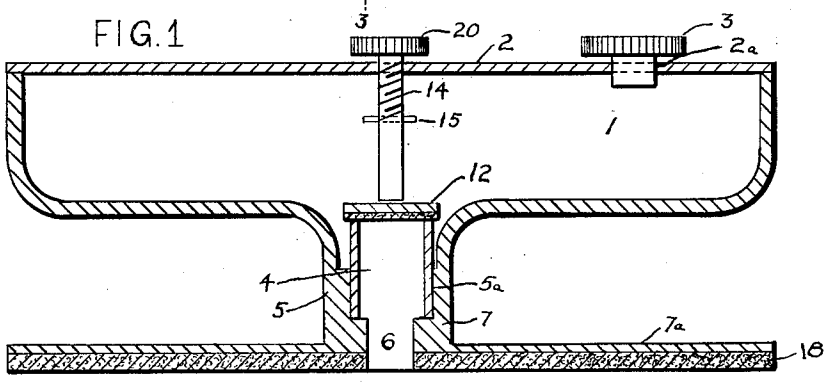


FIG. 2

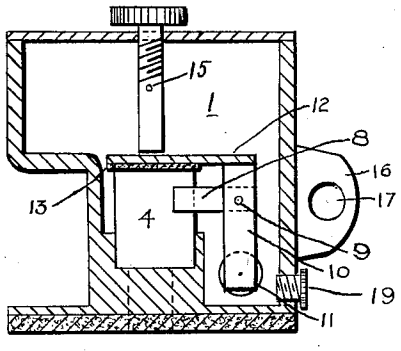


FIG. 3

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FLOOR WAXER WITH INERTIA ACTUATED FLOW CONTROL VALVE

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9 Claims. (Cl. 15—131)

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My invention relates to floor waxers and polishers and the like, and provides a novel means for automatically applying liquid wax evenly on a surface such as a floor and polishing such surface.

Heretofore, to my knowledge, many attempts have been made to produce a floor waxer that would apply and spread evenly liquid wax on a plane surface but all of these prior inventions depend on separate manipulation on the part of the operator for insuring a flow of the wax. My invention, however, spreads the wax evenly by the customary movements necessary in the use of a waxer.

Another advantage of my invention is an automatic floor waxer wherein the flow of wax onto the floor surface may be accurately controlled by the operator so that either a large amount or a small amount of wax may be dispensed and applied as desired, or none, in accordance with the condition of the surface to be worked on.

Another advantage of my invention is a floor waxer which is fully automatic in action as a wax spreader but also may be used solely as a floor polisher when desired by means of a simple adjustment which will cut off entirely the flow of liquid wax to the floor surface.

Other objects and advantages will be apparent from the following specification and the accompanying drawings.

The improvements are illustrated in the accompanying drawings in which:

Fig. 1 is a top plan view of a waxer embodying the improvements with the top of the waxer removed;

Fig. 2 is a vertical medial cross section of the waxer substantially through section line 2—2 of Fig. 1;

Fig. 3 is a vertical medial cross section of the waxer substantially through section line 3—3 of Fig. 1.

Referring to the drawings, 1 is a reservoir chamber for holding liquid wax or similar fluid and is filled by means of a filler hole 2a in the top cover 2 which is closed by filler cap or plug 3. In the medial part of the reservoir 1 is a valve assembly for automatic control of the flow of liquid wax. The valve assembly consists of a central tube 4 which is press fitted into the downwardly extending hollow post 5 of the reservoir at 5a so that the lower end of the tube 4 fits over a smaller orifice 6 in the bottom portion 7 of the post. The valve assembly itself consists of the said tube 4 to which is secured a U-shaped fulcrum bracket 8. Mounted on the bracket 8 by

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means of the pivot pin 9 is the balance valve arm 10 which carries a counterweight 11 at its lower end. Fixed to the upper end of the balance arm 10 is the valve cap arm 12 which carries on the end covering the tube 4 a piece of compressible material 13 for the purpose of making a liquid-tight seal over the upper end of the said tube 4. The reservoir 1 is closed by the cover 2 which is tapped at its center, and this center tap carries inserted therein a screw adjuster 14 threaded therein which has its lower end terminating on the top of the valve closure arm 12 above tube 4. Screw adjuster 14 carries a stop 15 to prevent complete removal of the screw from cover 2.

The bottom portion 7 has at its rear a vertically disposed plate 16 having an orifice 17, providing means for attachment of a waxer handle. The part 7 is extended horizontally as shown at 7a to form a base to which is attached a waxing pad 18 which may be made of any suitable material and may be either permanently or removably attached. The part 7 also has at its rear a threaded discharge stopper 19 for removal of any excess wax when the waxing job is finished.

In operation the waxer reservoir 1 is filled with liquid wax through the filler opening 2a by removal of the filler cap 3. The filler cap 3 is replaced and the threaded adjustment knob 20 is turned counterclockwise so that the lower end of the threaded adjustment plunger 14 is raised above the valve arm 12 to such an extent as to give the desired maximum flow of wax. The waxer is now pushed backward and forward over the surface of the floor to be waxed. As it moves forward under the thrust of the operator and is checked or stopped the valve arm 12 due to the forward momentum of and because it is counterbalanced by the weight 11, lifts off its seat on the tube 4 thus allowing a small amount of liquid wax to flow into the tube 4 down through the orifice 6 and onto the floor. Upon the return stroke of the operator the inertia of the weight 11 tends to open the valve but upon a checking or cessation of this motion, the valve arm 12 once again closes on the end of the tube 4 preventing any more fluid from descending through the tube 4 and the orifice 6. These valve opening movements should preferably be short until the desired amount of fluid has been deposited on the floor; and can be varied in length and speed to regulate that supply accurately at all times. It will be obvious, therefore, that the amount of liquid flowing onto the floor will depend upon the size of the opening between the tube 4 and the valve arm 12 and the maximum of this opening is determined by the

adjustment of the threaded plunger 14 with respect to the valve arm 12 while within that maximum it is under the control of the operator through manipulation of the waxer and its effect on the action of the weight 11 and valve arms 10 and 12. When the floor has been sufficiently coated with fluid wax and it is desired to polish the floor, the screw adjustment of 14 is turned down so that the threaded adjustment plunger comes in contact with and presses against the valve arm 12 and prevents any opening movement. Thus the waxer may be now used as a polisher since any forward or backward movement will not open the valve assembly and therefore no wax will flow onto the floor. The spreading of the wax on the floor, however, may be accomplished by relatively slow even movements of the waxer thereover without positively closing the valve plug at 13.

In all the wax feeding movements the fluid in the reservoir has an effect on the valve-operating parts, since it will never quite fill the reservoir and on the forward movement will tend to pile up at the rearward side, over the arm 10, weight 11 and rear end of arm 12, while on the backward movement it will move in the opposite direction, thus accelerating their action. It is at all times in contact with these parts while at normal operating levels and therefore influences their action during normal waxing operation.

It will be seen from the foregoing description and the illustrative embodiment shown in the drawing that the weight acts by its gravity and momentum at the end or the retarding of the forward stroke to open the valve by lifting the plug, while on the backward stroke it acts by its inertia to open the same and at the end of or retarding of that stroke it acts by its gravity and momentum to close the plug. This peculiar action of the valve assembly enables the operator to control accurately the flow of fluid to the floor automatically by control of the forward and backward strokes of the waxer. The details of construction of the embodiment shown and described may, however, be varied within certain limits without departing from the scope of the invention.

What I claim is:

1. In a device of the character described, a fluid-holding chamber, a fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber, comprising a valve plug for opening and closing said duct, an arm extending from said plug connected therewith, an arm extending angularly from said first arm, connected therewith and pivotally mounted in spaced relation to the duct, a weight carried by said second arm on the side of its pivotal mounting opposite its connection with the first arm, said weight being movable by sudden lateral movements of the chamber to swing said arms and said plug to duct opening and closing positions.

2. In a device of the character described, a fluid-holding chamber, a planular fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber controlling the flow of fluid therefrom, comprising a valve plug for opening and closing said duct, an arm extending angularly from said plug connected therewith, an arm extending angularly and downwardly from said first arm connected therewith and pivotally mounted in spaced relation to the duct, a weight carried by said second arm on the side of its pivotal mounting opposite and below its connection with the first arm, said weight being movable by lateral movements of the chamber to swing said arms and said plug to duct opening and closing positions.

3. In a device of the character described, a fluid-holding chamber, a fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber, comprising a valve plug for opening and closing said duct, an arm extending from said plug connected therewith, an arm extending angularly from said first arm connected therewith and pivotally mounted in spaced relation to the duct, a weight carried by said second arm on the side of its pivotal mounting opposite its connection with the first arm, said weight being movable by sudden movements of the chamber to swing said arms and said valve plug to duct opening and closing positions, said arms, plug and weight being rigidly connected.

4. In a device of the character described, a fluid-holding chamber, a fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber, comprising a valve plug for opening and closing said duct, an arm extending from said plug connected therewith, an arm extending angularly from said first arm, connected therewith and pivotally mounted in spaced relation to the duct, a weight carried by said second arm on the side of its pivotal mounting opposite its connection with the first arm, said weight being movable by sudden lateral movements of the chamber to swing said arms and plug to duct opening and closing positions, said arms, plug and weight being rigidly connected and being normally immersed in the fluid in said chamber.

5. In a device of the character described, a fluid-holding chamber, a fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber, comprising a valve plug for opening and closing said duct, an arm extending laterally from said plug and carrying the same, an arm extending angularly from said first arm, rigidly connected therewith and pivotally mounted between its ends outside the duct to swing laterally in a vertical plane, a weight carried by said second arm below its pivotal mounting, said weight being movable by changes in the horizontal velocity of the chamber to swing said arms and said plug to duct opening and closing positions.

6. In a device of the character described, a fluid-holding chamber, a fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber, comprising a valve plug for opening and closing said duct, an arm extending horizontally from said plug and carrying the same, an arm extending angularly and horizontally from said first arm, rigidly connected therewith, a pivotal mounting for said second arm between its ends in spaced relation to the duct, a weight carried by said second arm below its pivotal mounting, said weight being movable by changes in the lateral movements of the chamber, perpendicular to the axis of the arm pivot, to swing said arms and said plug on said pivotal mounting and raise

and lower said plug to duct opening and closing positions and said weight being positioned to normally close and hold closed said plug.

7. In a device of the character described, a fluid-holding chamber, a fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber, comprising a valve plug for opening and closing said duct, an arm extending from said plug and carrying it, an arm extending downwardly from said first arm rigidly connected therewith, a pivotal mounting for said second arm in spaced relation to the duct, a weight carried by said second arm below its pivotal mounting, said weight being movable by changes in lateral movement of the chamber to swing said arms and said valve plug to duct opening and closing positions, and an adjustable device mounted on said chamber movable to secure said plug in closed position.

8. In a device of the character described, a fluid-holding chamber, a fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber, comprising a valve plug for opening and closing said duct, an arm extending from said plug and carrying it, an arm extending downwardly from said first arm rigidly connected therewith, a pivotal mounting for said second arm in spaced relation to the duct, a weight carried by said second arm below its pivotal mounting, said weight being movable by changes in lateral movement of the chamber to swing said arms and said valve plug to duct opening and closing positions, and an adjustable device mounted on said chamber movable to secure said plug in closed position and also to permit but restrict the extent of its opening.

9. In a device of the character described, a fluid-holding chamber, a fluid applying and distributing member below said chamber, a duct communicating between said chamber and member, a valve device for said duct in said chamber, comprising a valve plug member for opening and closing said duct, an arm extending laterally from said plug member and carrying the same, an arm extending angularly and downwardly from said first arm supporting and rigidly connected therewith, a pivotal mounting for said second arm between its ends in spaced relation to the duct, on which it swings laterally in a vertical plane, a weight carried by said second arm below its pivotal mounting, said weight being movable by sudden horizontal movements of the chamber to swing said arms and said valve plug to duct opening and closing and intermediate positions, the construction and arrangement being such that on movement of the chamber over a floor in one direction and the retarding of said movement the valve is opened by the momentum of the weight and on movement in another direction the valve is opened by the inertia of the weight and when that motion is retarded is closed by its momentum.

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