Nov. 19, 1968 J. L. KINGSLEY 3,411,170

CLEANING DEVICE

Filed July 31, 1967 3 Sheets-Sheet 1

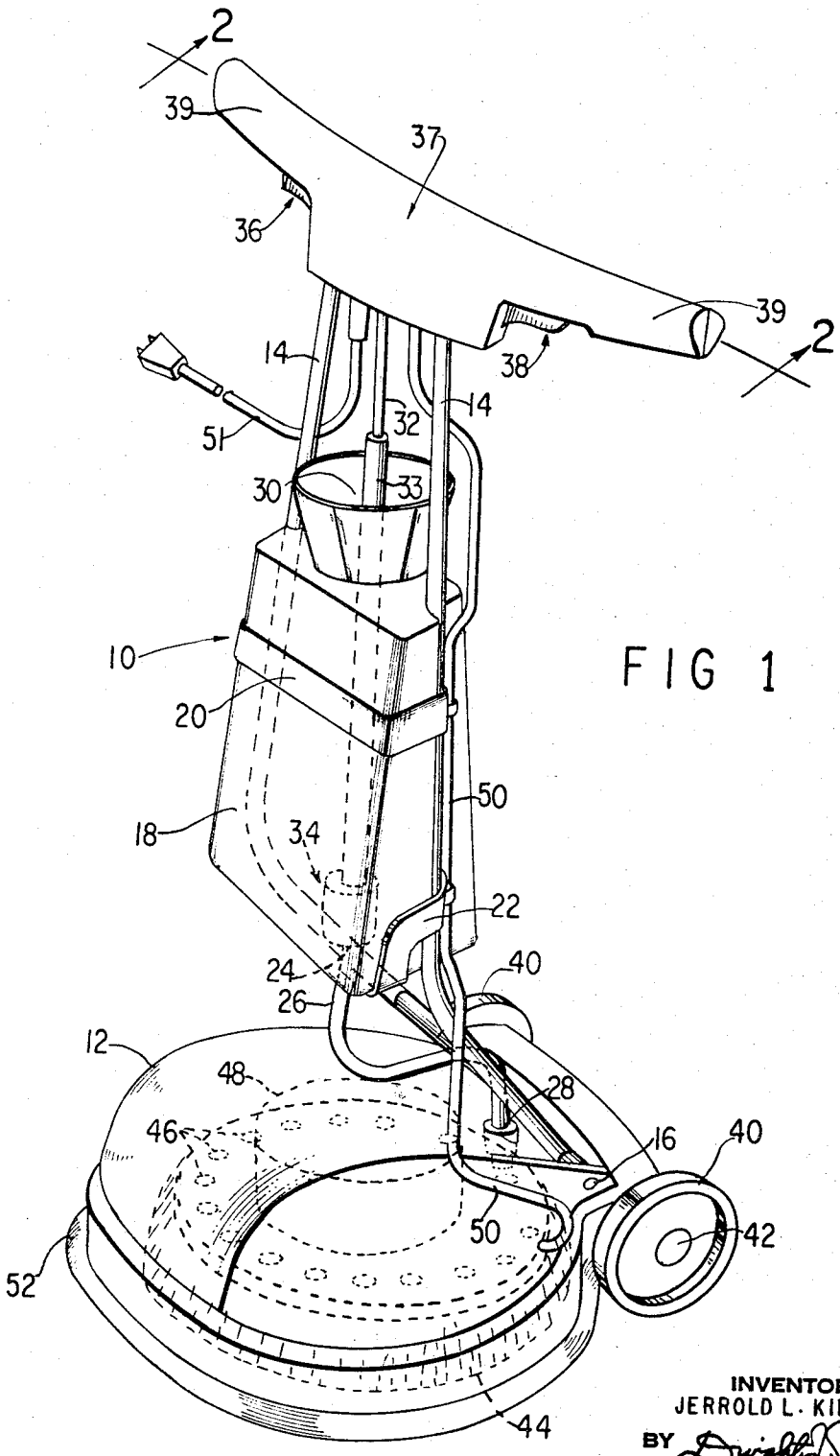


FIG 1

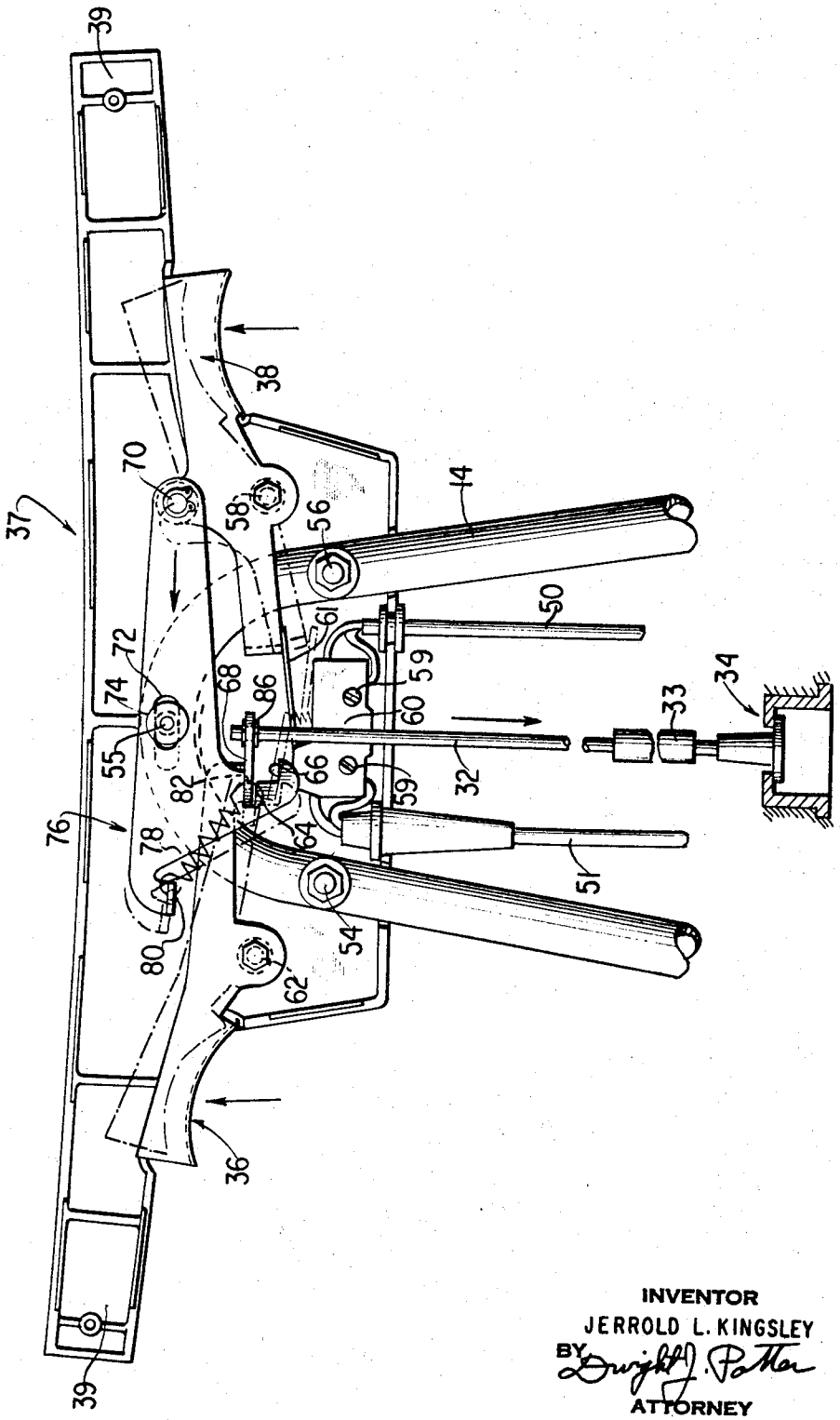
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FIG. 2



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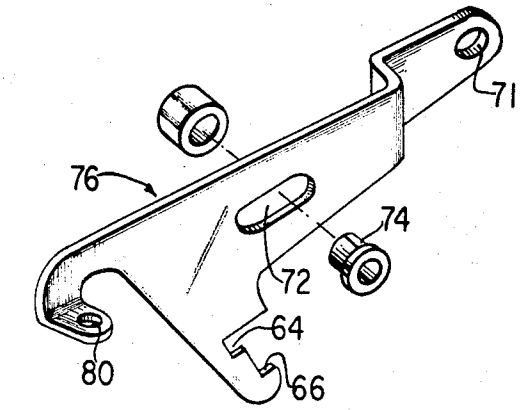


FIG. 3

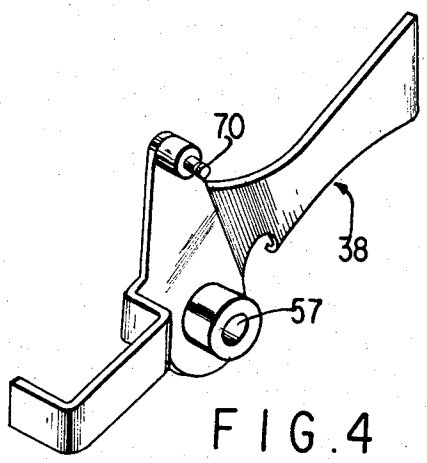


FIG. 4

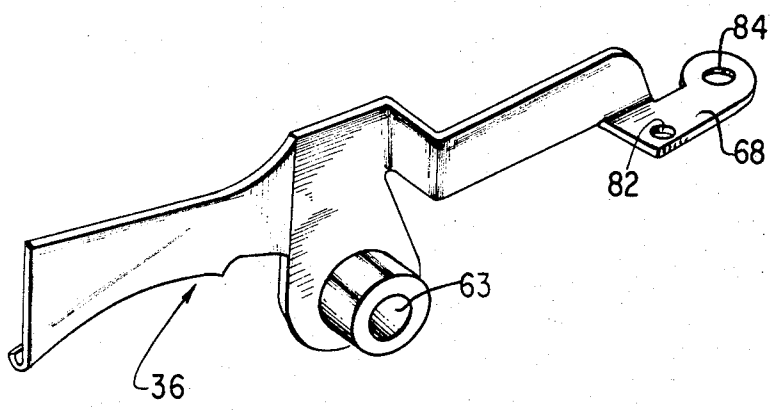


FIG. 5

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3,411,170

CLEANING DEVICE

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10 Claims. (Cl. 15—50)

ABSTRACT OF THE DISCLOSURE

A rug cleaning apparatus having the cleaning fluid release cooperating with a rotary brush actuator so that cleaning fluid cannot be released from a reservoir until the cleaning brush is rotating and the rotation of the brush cannot be stopped until the cleaning fluid flow is stopped.

BACKGROUND OF THE INVENTION

This invention relates to the well known field of cleaning and polishing apparatus. One such apparatus is disclosed in U.S. Patent No. 3,058,136 in which is shown a polishing machine having an aerosol container of wax mounted thereon and a means for selectively dispensing the wax onto a floor adjacent the polishing machine. The rotary brush motor and wax dispenser of this prior art device are actuated independently.

The use of independent, non-cooperating actuating means for the cleaning fluid or wax dispenser and the rotary brush motor can cause the deposit of an undesirably large amount of wax or cleaning fluid in one area.

Moreover, for rug shampooers it is particularly advantageous to apply the shampoo on the rug after passage through the rotating brush so that the shampoo is whipped-up into a foam. The use of a foam facilitates cleaning of the rug and prevents soaking of the rug in spots which causes longer drying time and may cause warping of underlying floor boards.

SUMMARY OF THE INVENTION

This invention relates more particularly to an improved automatic floor cleaning device, especially a rug shampooer, provided with an interlock that connects the power trigger with the shampoo dispensing trigger so that the shampoo cannot be released until the motor is activated and the shampoo brush is turning and also so that the motor cannot be turned off until the shampoo flow has been shut off.

The invention provides for an improved automatic floor cleaning device comprising a brush housing rotatably supporting a brush disposed therebelow, motor means mounted in said brush housing for rotating said brush, an inlet in said brush housing to said brush, a handle standard extending from said housing, said handle standard being pivotably secured to said housing, a reservoir for a floor cleaning agent, having an inlet at one end and an outlet at the other end, said reservoir being fixedly mounted on said handle standard, a valve means in said outlet of said reservoir, a conduit having one end in communication with said outlet of said reservoir and the other end in communication with the inlet in said brush housing, a handle fixedly mounted on said handle standard, a motor actuator means fixedly mounted on said handle, first trigger means pivotably mounted on said handle for activating said motor actuator means, and second trigger means extending from said handle for actuating said valve means so as to release cleaning fluid onto said brush, with the improvement which comprises a slotted interlocking means mounted on its slot for lateral movement in said handle cooperating with said second trigger means to control said valve means and being pivotably connected to said first trigger so as to be urged laterally by said first trigger when activating said motor actuator means, said interlocking means being adapted to engage said second trigger means to prevent actuation of said valve means by said second trigger means and being further adapted to disengage from said second trigger means only when urged laterally by said first trigger means whereby said second trigger is permitted to activate said valve means and allow cleaning fluid to flow through the conduit and the inlet in said brush housing onto said brush only when said brush is rotating.

The objects, advantages and nature of the present invention will be more readily understood from the descriptions of the preferred embodiments there of hereinafter with reference to the accompanying drawings now described below:

DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a perspective view of the rug shampooer of this invention;

FIGURE 2 is a view of the handle of the shampooer of FIGURE 1 taken along line 2–2 with the front cover removed to show the operating means;

FIGURE 3 is a perspective view of the interlock connecting the power trigger with the shampoo dispensing trigger;

FIGURE 4 is a perspective view of the power trigger; and

FIGURE 5 is a perspective view of the shampoo dispensing trigger.

Although the principles of the present invention are broadly applicable to automatic floor cleaning and waxing devices, the present invention is particularly adapted for use in an automatic rug shampooer and hence it has been so illustrated and will be so described.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With specific reference to the form of the present invention illustrated in the drawings, and referring particularly to FIGURES 1 through 5, the improved automatic rug shampooer is indicated generally by the reference numeral **10**.

The rug shampooer **10** comprises a brush housing **12** which is adapted to be generally horizontal with relation to the floor. A handle standard comprising a pair of shafts **14** is pivotably secured to ears **16** and **17** on the housing **12**.

The ends of the shafts **14** remote from the brush housing **12** are provided with a handle **37**. The handle **37** is provided with triggers **36** and **38**, and a pair of handle arms **39**. The purpose of triggers **36** and **38** will be disclosed hereinafter.

A shampoo reservoir **18** is mounted on shafts **14** by brackets **20** and **22**. Each of the brackets may be secured to the shafts **14** by any conventional method such as by screws, studs or welding to the shafts **14**.

The reservoir **18** is provided with an inlet **30** and an outlet **24**. A manually operated valve **34** is provided in the outlet **24**. A rod **32** passing through a sleeve **33** is connected to valve **34** at one end and to trigger **36** (shown in FIGURE 2) at the other end so that operation of the trigger will open and close the valve seat to control flow within the valve **34**.

The brush housing **12** is provided with a resilient bumper **52** extending therearound and wheels **40** rotatably mounted on pins **42**.

A motor **48** provided with a cord **50** is mounted by conventional means to the uppermost surface of the brush housing **12**. The out-put shaft of the motor **48** is connected by conventional means (not shown) to a brush

44 for rotating said brush. The brush is provided with a plurality of openings 46 in alignment under inlet 28 on the brush housing 12.

A conduit 26 connects outlet 24 with inlet 28. The conduit is preferably made from flexible plastic material such as rubber, polyethylene, polyvinyl chloride, saran, or the like.

FIGURE 2 shows the primary feature of this invention. The handle 37 is fixedly mounted on shafts 14 by any conventional means such as bolts 54, 55 and 56. A trigger 38 is pivotably mounted in the handle 37 on pin 58.

A microswitch 60 is mounted on handle 37 by any conventional method such as screws 59 so that the squeezing of trigger 38 will cause it to pivot about pin 58 and depress the microswitch activator 61. Cord 50 from motor 48 and cord 51 connectable to an electrical outlet are attached to the microswitch 60 so that the motor 48 is activated when the microswitch activator 61 is depressed.

A trigger 36 is pivotably mounted in the handle 37 on pin 62. The trigger 36 is provided with a flange 68 which seats the end of rod 32 in a collar 86.

An interlock 76 that connects trigger 36 with trigger 38 is mounted on handle 37 for straight line lateral movement by means of a stud 74 through a slot 72 in the interlock 76. The interlock 76 is provided with a notch 64 which holds the flange 68 until released when the interlock 76 moves laterally. The lateral movement of the interlock 76 is caused by the connection of the interlock with the trigger 38 by pin 70 as the trigger 38 pivots on pin 58 when squeezed. A stop 66 on the interlock 76 restricts the downward movement of the flange 68.

A spring means 78 is provided that is attached to the interlock 76 at an attachment 80 and to an attachment 82 on trigger 36. Although openings 80 and 82 are shown as the spring 78 attachments, the attachments may be other means, such as studs, hooks, eyes, or the like.

FIGURES 3–5 show the interlock 76, trigger 38 and trigger 36 respectively. Although aperture 71 in the interlock 76 and pin 70 on the trigger 38 are shown as providing a connection between the interlock 76 and the trigger 38, the aperture may be provided on the trigger 38 and the pin on the interlock 76. Alternatively, the connection between the interlock 76 and the trigger 38 may be by other conventional means such as an opening in each of the interlock 76 and the trigger 38 and a pivot pin passing through the openings to connect them.

Trigger 38 is provided with an opening 57 for pivotably mounting the trigger 38 on the handle 37 by means of the pin 58.

Trigger 36 is provided with an opening 63 for pivotably mounting the trigger 36 on the handle 37 by means of pin 62 and an opening 84 on flange 68 for receiving the rod 32 with collar 86.

In the operation of the rug shampooer 10 of the present invention, the trigger 38 pivots on pin 58 and depresses the microswitch activator 61 to activate the microswitch 60 and turn on the motor 48; also, as the trigger 38 pivots, the interlock 76 is moved laterally through its connection 70, 71 with the trigger 38.

A straight-line lateral movement of the interlock is guaranteed by a stud 74 through the slot 72 so that notch 64 of the interlock 76 clears the flange 68 on trigger 36. After the flange 68 clears the notch 64, the trigger 36 may be pressed so as to pivot on pin 62 and depress the rod 32 which opens the valve 34 to permit flow of shampoo from the reservoir 18. The shampoo passes through the conduit 26 onto the openings 46 of the rotating brush 44 to be whipped up into a foam.

Once the valve 34 is open, the motor cannot be turned off until trigger 36 is released even when hand pressure against the trigger 38 is removed because of the tension of interlock 76 against the flange 68 of trigger 38. The release of trigger 36 allows the spring 78 to pull the flange 68 into the notch 64. An additional spring means may be provided to urge the flange into the notch such as a compression spring acting on the rod 32.

Additionally, spring 78, after release of trigger 36, moves the interlock 76 to its starting position with resulting rotation of trigger 38 on pin 58. The rotation releases pressure on the microswitch activator 61 and shuts off the motor 48.

Until trigger 36 is depressed the flange 68 on trigger 38 is securely locked in the notch 64 and downward pressure cannot be applied on rod 32 to open the valve 34.

Thus it will be seen that there is provided an improved automatic cleaning device in which cleaning fluid cannot be released from its reservoir until the cleaning brush is rotating so as to be able to whip up the cleaning fluid into a foam and in which the motor rotating the cleaning brush cannot be stopped until the flow of cleaning fluid is stopped.

Obviously, the embodiment shown is exemplary only and a wide variety of embodiments may be devised without departing from the spirit and scope thereof.

What is claimed is:

1. In an automatic floor cleaning device comprising:
   - (A) a brush housing rotatably supporting a brush disposed therebelow,
   - (B) motor means mounted in said brush housing for rotating said brush,
   - (C) an inlet in said brush housing to said brush,
   - (D) a shaft extending from said housing, said shaft being pivotably secured to said housing,
   - (E) a reservoir for a floor cleaning agent, having an upper inlet and a lower outlet, said reservoir being fixedly mounted on said shaft,
   - (F) a valve means in said outlet of said reservoir,
   - (G) a conduit having one end in communication with said outlet of said reservoir and the other end in communication with the inlet in said brush housing,
   - (H) a handle fixedly mounted on said shaft,
   - (I) a motor actuator means fixedly mounted in said handle,
   - (J) first trigger means pivotably mounted on said handle for activating said motor actuator means,
   - (K) second trigger means extending from said handle for actuating said valve means so as to release cleaning fluid onto said brush,

   the improvement which comprises a slotted interlocking means mounted on its slot for lateral movement within said handle cooperating with said second trigger means to control said valve means and being pivotably connected to said first trigger so as to be urged laterally by said first trigger means when activating said motor actuator means, said interlocking means being adapted to engage said second trigger means to prevent actuation of said valve means by said second trigger means and being further adapted to disengage from said second trigger means only when urged laterally by said first trigger means whereby said second trigger is permitted to activate said valve means and allow cleaning fluid to flow through the conduit and the inlet in said brush housing onto said brush only when said brush is rotating.

2. The device of claim 1 further including a spring means on said interlocking means and attached to said second trigger so as to urge said second trigger means into engagement with said interlocking means.

3. The device of claim 2 in which said spring means is a tension spring.

4. The device of claim 1 wherein said interlocking means is notched and said second trigger means bears a flange, said flange being capable of locking into said notch to prevent actuation of said valve means by said second trigger and disengaging from said notch when said interlocking means is urged laterally by said first trigger means.

5. The device of claim 1 wherein said motor actuator means is a microswitch.

6. The device of claim 5 which further includes a com-

pression spring on said microswitch which urges said first trigger means away from said microswitch so as to deactivate said motor means.

7. The device of claim 1 which is a rug shampooer.

8. A mechanism contained within the handle of an automatic floor cleaning device for controlling the valve means of the fluid reservoir of said automatic floor cleaning device which comprises:

(A) first trigger means pivotably mounted in said handle of said cleaning device for activating a motor actuator means,

(B) second trigger means pivotably mounted in said handle of said cleaning device and adapted to operate said valve means,

(C) a slotted interlocking means mounted on its slot for lateral movement in said handle cooperating with said second trigger means to control said valve means and being pivotably connected to said first trigger so as to be urged laterally by said first trigger means when activating said motor actuator means, said interlocking means being adapted to engage said second trigger means to prevent actuation of said valve means by said second trigger means and being further adapted to disengage from said second trigger means only when urged laterally by said first trigger means whereby said second trigger means is permitted to activate said valve means.

9. The mechanism of claim 8 wherein said interlocking means is notched and said second trigger means bears a flange capable of locking into said notch to prevent pivoting of said second trigger means and of disengaging from said notch when said interlocking means is urged laterally by said first trigger means.

10. The mechanism of claim 8 further including a spring means on said interlocking means attached to said second trigger means so as to urge said second trigger means into cooperation with said interlocking means.

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EDWARD L. ROBERTS, *Primary Examiner.*