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UPHOLSTERY SHAMPOOING MACHINES

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Fig.2.

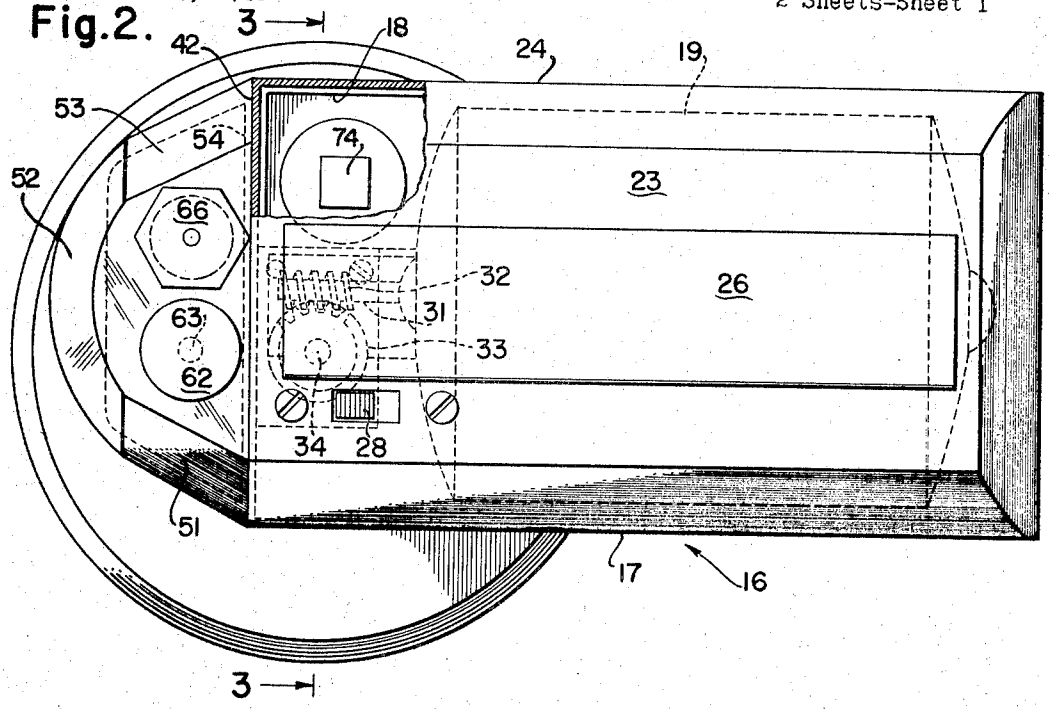
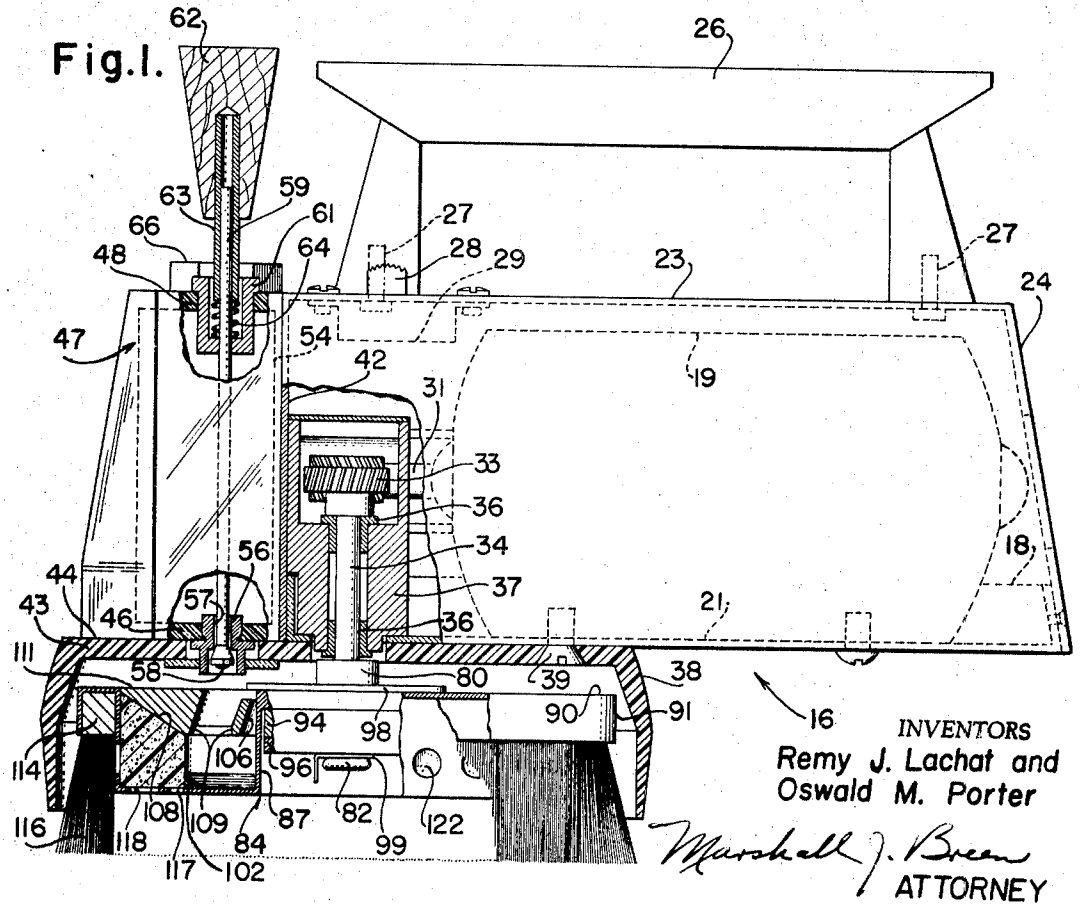


Fig.1.



INVENTORS
Remy J. Lachat and
Oswald M. Porter

Marshall J. Breen
ATTORNEY

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Fig.3.

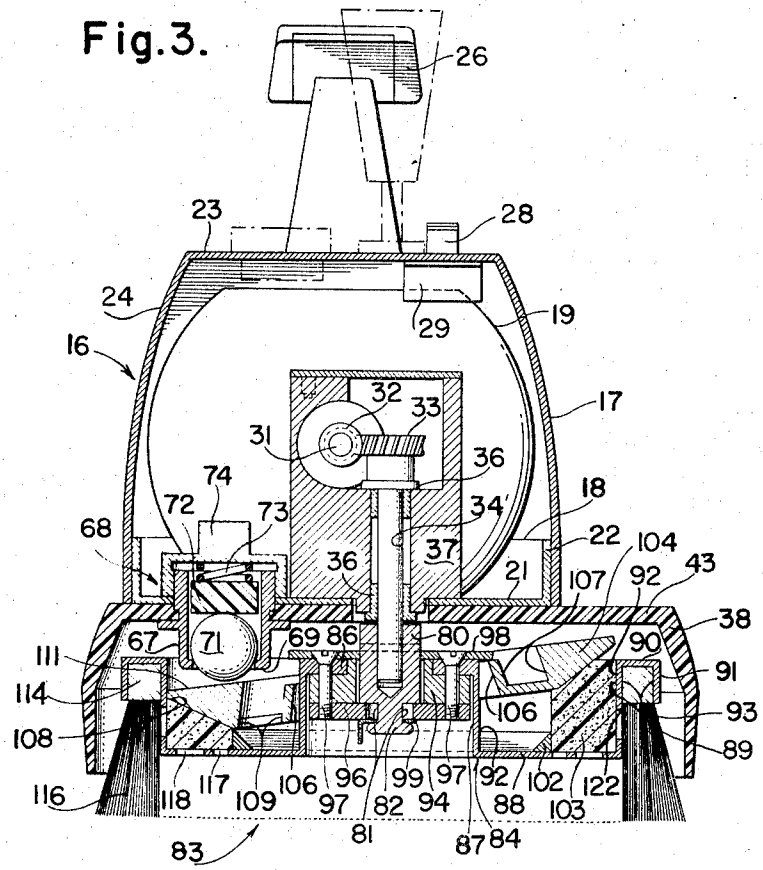
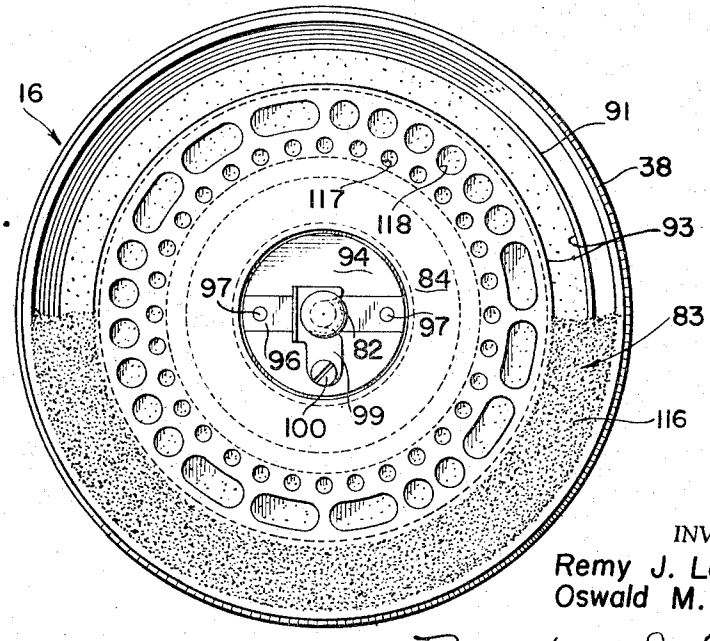


Fig.4.



Witness

Rosalind Tsai

INVENTORS

Remy J. Lachat and

Oswald M. Porter

Marshall J. Breen

ATTORNEY

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UPHOLSTERY SHAMPOOING MACHINES

Remy J. Lachat, Wellesley, Mass., and Oswald M. Porter, Livingston, N.J., assignors to The Singer Company, New York, N.Y., a corporation of New Jersey

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4 Claims. (Cl. 15—29)

This invention relates to shampooing machines and more particularly to a hand held shampooing machine especially adapted for cleaning the upholstery of chairs, sofas, etc. and one of the primary objects of the present invention is to provide an improved device of this character.

Another object of the invention is to provide an improved shampooing machine which changes liquid shampoo or detergent into a foam and then deposits this foam on a selected surface that is to be scrubbed by a rotating brush.

A further object of the invention is to provide a small compact hand held shampooing machine which is equipped with an electric motor, a bottle for containing a liquid, a rotary bush and means for converting the liquid into foam for cleaning.

A still further object of the invention is to provide a low cost, small sized, upholstery shampooer which is equipped with means for converting liquid shampoo or detergent into a foam for cleaning.

Another object of the invention is to provide an upholstery shampooer in which a knob for controlling dispensing of liquid is located adjacent to the handle of the shampooer.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

FIG. 1 is an elevational side view, partly in section, of an upholstery shampooing machine embodying the present invention,

FIG. 2 is a top plan view of the machine shown in FIG. 1,

FIG. 3 is a sectional view taken substantially on the line 3—3 of FIG. 2, and

FIG. 4 is a bottom plan view of a portion of the machine shown in FIGS. 1 through 3.

Referring more specifically to the drawings, FIGS. 1 through 4 illustrate a preferred embodiment of an upholstery shampooing machine **16** embodying the present invention and comprising an elongated casing or housing made up of a preferably aluminum housing cover **17** and a preferably aluminum housing base **18** designed to enclose a conventional fractional horsepower electric motor **19**. The housing base **18** has a bottom wall **21** bounded by an upstanding rim **22** and the housing cover **17** has a top wall **23** bounded by a depending rim **24** which rim **24** envelopes the rim **22**. A pickup handle **26** extends longitudinally of the casing and is suitably secured to the top wall **23** by screws **27** and an operation handle **28** of an on-off electric switch **29** extends upwardly through a hole in the top wall **23**. The free end of a shaft **31**, which extends longitudinally of the casing, protrudes from the motor **19** and carries a worm **32** designed to engage a worm gear or wheel **33** held to the upper end of a vertical spindle **34**. The spindle **34** is rotatably mounted in bearings **36—36** of a gear box **37** secured to the bottom wall **21**, and the spindle **34** extends transversely of the casing.

An inverted cup-like splash guard **38** is secured by

screws **39** (only one being shown) to the undersurface of the wall **21**, it being noted (FIG. 1) that the splash guard **38** extends beyond an end portion **42** of the rim **24**. Because of this an upper wall **43** of the cup shaped splash guard **38** functions as a shelf **44** on which rests a bottom wall **46** of a liquid containing bottle **47** designed to hold a cleaning detergent or other liquid. The bottle **47**, which is located at one end of the cover **17**, in addition to having the bottom wall **46**, is formed with a top wall **48** and connecting upstanding side walls **51**, **52**, **53**, and **54**. The bottom wall **46** of the bottle **47** is formed with an aperture designed to receive, by a liquid-tight connection, the upper end of an outlet valve seat member **56** which is formed with a central opening or passageway **57** designed to act both as a valve seat for a valve head **58** and as a passageway for a valve stem **59**. An upper portion of the stem **59** passes through a spring box **61** which itself passes through an aperture in the top wall **48**. The top of the valve stem **59** is equipped with a dispersing knob **62**, and with a depending sleeve **63**, the lower end of which engages the upper end of a compression spring **64** positioned in the box **61**. It will be understood that the spring **64** biases the valve head **58** and the stem **59** upwardly, thereby causing the head **58** to engage the seat of the opening **57** thus preventing liquid from flowing through the opening **57**. Since the box **61** is held by the top wall **48** of the bottle **47**, and the valve seat member **56** is held by the bottom wall **46** of the bottle **47** and since the stem **59** passes through both the box **61** and the member **56**, it follows that the stem **59** passes through the bottle **47**. The top wall **48** of the bottle **47** is also formed with a filling opening which is closed by a bottle fill cap **66**. Reference to FIGS. 1 and 2 shows that the dispensing knob **62** is located adjacent to one end of the handle **26**.

The bottom wall **21** of the base **18** and the upper wall **43** of the guard **38** are apertured (FIG. 3) with registering holes which receive a sleeve **67** of a ball camming device **68**. The lower end of the sleeve **67** has an inwardly extending flange **69** which retains a ball **71** within the sleeve **67**. The ball **71** is pressed downwardly by a plastic block **72** preferably formed from Teflon, and the block **72** is biased downwardly by a helical compression spring **73**. The spring **73** is held in the sleeve **67** and the sleeve **67** is secured to the walls **21** and **43** by reason of a cap **74** threaded to the upper end of the sleeve **67**.

The lower end of the spindle **34** has drivingly secured thereto a cylindrical sleeve **80**, the lower end of which is formed with a reduced diameter annular groove **81** and a head **82**. The sleeve **80** mounts and drives a combined cylindrical rotary brush and a former member **83**.

The member **83** comprises a metallic pan **84** formed with an inner or first radial apertured flange **86**, an inner or first cylindrical sleeve **87**, an intermediate or second radial apertured flange **88**, an intermediate or second cylindrical apertured sleeve **89**, an outer or third radial flange **90**, and an outer or third cylindrical sleeve **91**. The outer edge of the flange **86** is integral with the upper edge of the sleeve **87**, the lower edge of the sleeve **87** is integral with the inner edge of the flange **88**, the outer edge of the flange **88** is integral with the lower edge of the sleeve **89**, the upper edge of the sleeve **89** is integral with the inner edge of the flange **90**, and the outer edge of the flange **90** is integral with the upper edge of the sleeve **91**.

The aforesaid parts provide a disc having an annular groove **92** the upper face of which is open and an annular groove **93** the lower face of which is open.

The pan **84** is detachably mounted on the lower end of the sleeve **80** by means of a collar **94**, a diameter bar **96**, two screws **97—97**, and a disc retainer **98** the full purpose of which will presently be described. The screws **97—97** pass downwardly through holes in the retainer **98**, through the apertured flange **86**, through holes in a

collar **94**, and are threaded into the diameter bar **96**. A latch **99** is pivotally held to the lower surface of the collar **94** by means of a screw **100**. When the latch **99** is closed, a portion thereof enters the groove **81** in the sleeve **80** and thereby secures the member **83** to the sleeve **80** and spindle **34**. Opening the latch **99** releases the member **83** from the sleeve **80**.

In the upwardly open annular groove **92** of the member **83**, at a location between the sleeves **87** and **89**, there is positioned a fluid diffusing, preferably plastic, ring **102**. A radial cross section of the ring **102** is in the form of a right triangle and the surface defined by the hypotenuse of the triangle slopes upwardly from the flange **88** and outwardly away from the sleeve **87**. Between the outer vertical surface of the ring **102** and the sleeve **89**, there is positioned a ring **103** made of sponge-like material. A radial cross section of the ring **103** is in the form of a rectangle. The space between the ring **102** and the sleeve **87** forms a reservoir for liquid detergent. A camming plate or wobble disc **104**, preferably made of nylon is also positioned in the annular groove **92** and the lower surface of the disc **104** engages the sponge ring **103**. The disc **104** has a frusto-conical central hole **106**, an annular groove **107** the upper face of which is open, and an outer frusto-conical surface **108** thereby provided a wedge shaped outer circumferential portion of the disc **104**. A plurality of equally spaced inlet holes **109** extend from the bottom wall of the groove **107**, and the upper surface **111** of the disc **104** is so positioned as to be engaged by the aforesaid ball **71**. The downwardly open groove **93** receives a brush ring **114** from the lower surface of which projects an annular row of bristles **116**.

In operation, the subject upholstery shampooing machine functions as follows: Pressing on the knob **62** disengages the head **58** from the valve seat of the opening **57**. This allows detergent to drip from the bottom of the opening **57** into the groove **107** and thence through holes **109** into the space between the fluid dispensing ring **102** and the sleeve **87**. Closing the elcetric switches **28–29** energizes, by means of electric conductors (not shown), the motor **19**, thus rotating the shaft **31**, the worm **32**, and the worm gear **33**. This rotates the spindle **34**, the sleeve **80** and the combined brush and foaming member **83**. As the member **83** rotates the detergent is, by centrifugal force, caused to flow up the hypotenuse of the ring **102** from whence it is delivered to the middle of the sponge ring **103**. As the member **83** rotates the ball **71** presses downwardly on the upper surface **111** of the wobble disc **104** thereby alternately compressing and relaxing the sponge ring **103**. The hereinbefore described alternate compressing and relaxing of the sponge ring **103** causes the detergent to foam, the foam passing from the ring **103** through outlet holes **117** and **118** in the flange **88** and through outlet holes **122** in the sleeve **89**. The foam thus produced is fed to locations within the ring of brush bristles **116** and the foam is worked into the upholstery by the rotary brush bristles **116**. Releasing the knob **62** allows the spring **64** to close the valves **56–58** thereby stopping the flow of the detergent. Opening the switches **28–29** stops the motor **19** and thus stops rotation of the combined foamer and brush member **83**.

Having thus described the nature of the invention, what we claim herein is:

1. An upholstery shampooing machine comprising an elongated casing, an electric motor in said casing, a combined brush and foaming member, means for driving said combined brush and foaming member from said motor, said brush and foaming member including a sponge ring and a fluid diffusing ring located adjacent to and inside of said sponge ring, the cross section of said diffusing ring being in the form of a right triangle, the hypotenuse of which defines a surface sloping upwardly, a liquid containing bottle positioned at one end of said casing, means for supplying liquid from said bottle to a location adjacent to said diffusing ring whereby when said combined brush and foaming member is rotated the dispensing ring delivers liquid to the middle of said sponge ring, said brush and foaming member further including means for manipulating said sponge ring to thereby cause liquid supplied thereto to become foam, and means for feeding said foam to locations within the brush portion of said combined brush and foaming member.

2. An upholstery shampooing machine comprising an elongated casing, an electric motor, a combined brush and foaming member, means for driving said combined brush and foaming member from said motor including a spindle, said brush and foaming member including a sponge ring and a wobble disc for engaging said sponge ring, a ball-type camming device carried by said casing and engaging said wobble disc to cause the disc to wobble as it is rotated by said spindle, a liquid containing bottle positioned at one end of said casing, an outlet valve and passageway positioned to supply liquid from said bottle to said sponge ring, a dispensing knob, and means passing through said bottle for operating said outlet valve from said dispensing knob.

3. An upholstery shampooing machine comprising an elongated casing, a pickup handle secured to the top of said casing and extending longitudinally thereof, an electric motor having a shaft positioned in said casing and extending longitudinally thereof, a spindle extending transversely of said casing, gearing drivingly connecting said motor shaft to said spindle, a combined brush and foaming member, said member being attached to and driven by said spindle, said brush and foaming member including a sponge ring and a wobble disc for engaging said sponge ring, a camming device carried by said casing and engaging said wobble disc to cause the disc to wobble as it is rotated by said spindle, a liquid containing bottle positioned at one end of said casing, an outlet valve and passageway positioned to supply liquid from said bottle to said sponge ring, a dispensing knob located adjacent to one end of said pickup handle, and means passing through said bottle for operating said outlet valve from said dispensing knob.

4. An upholstery shampooing machine comprising an elongated casing, a pickup handle secured to the top of said casing and extending longitudinally thereof, a splash guard secured to the bottom of said casing and a portion of said splash guard extending beyond the end of said casing to thereby form a shelf, an electric motor having a shaft positioned in said casing and extending longitudinally thereof, a spindle extending transversely of said casing, gearing drivingly connecting said motor shaft to said spindle, a combined brush and foaming member positioned in said splash guard and, said foaming member being attached to and driven by said spindle, said brush and foaming member including a sponge ring and a wobble disc engaging said sponge ring, a camming device carried by said casing and engaging said wobble disc to cause the disc to wobble as it is rotated by said spindle, a liquid containing bottle positioned on said shelf at one end of said casing, an outlet valve and passageway positioned to supply liquid from said bottle to said sponge ring, a dispensing knob located adjacent to one end of said handle, and means passing through said bottle for operating said outlet valve from said dispensing knob.

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EDWARD L. ROBERTS, *Primary Examiner.*