Jan. 5, 1960 M. ROLSTAD 2,919,837

LATHER MAKING MACHINE

Filed May 28, 1958 2 Sheets-Sheet 1

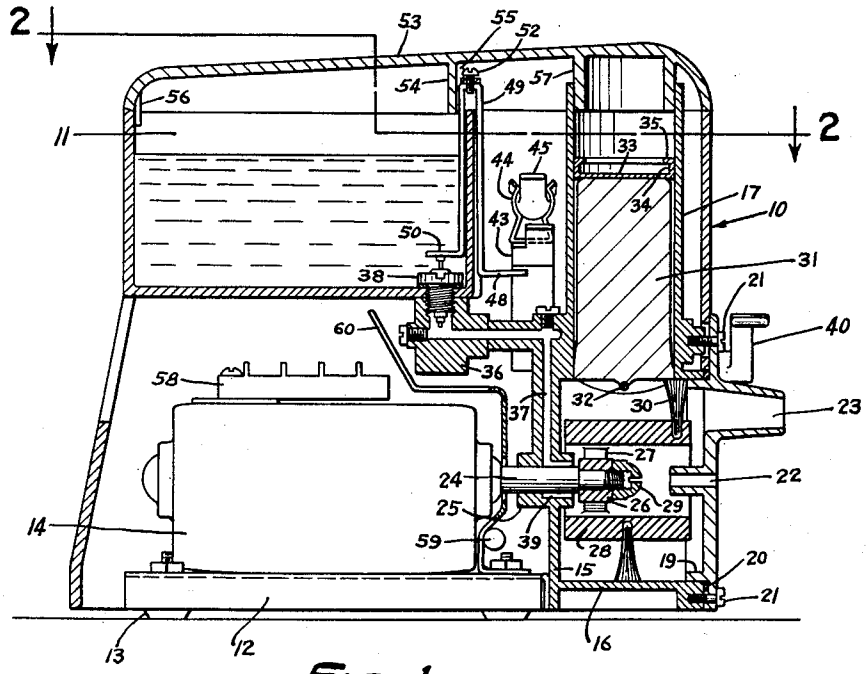


FIG. 1

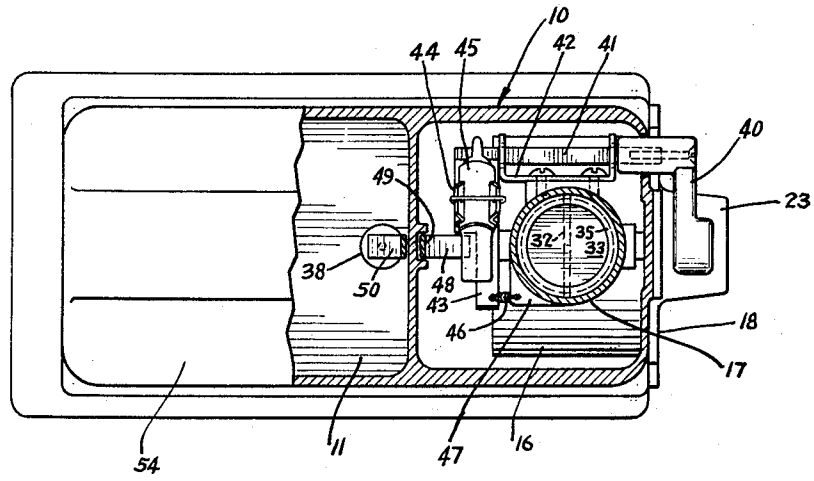


FIG. 2

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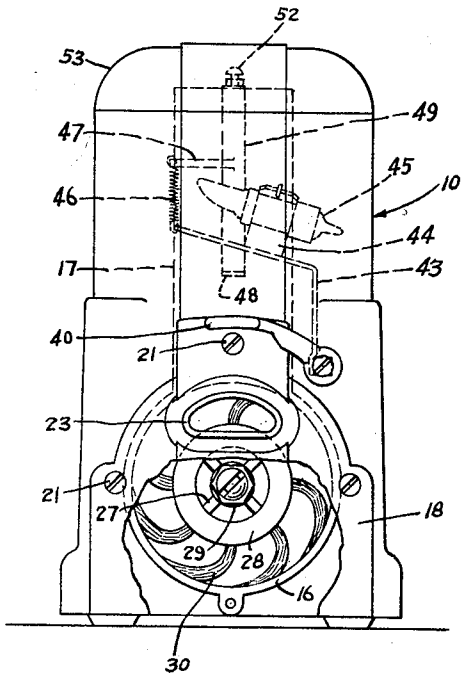


FIG. 3

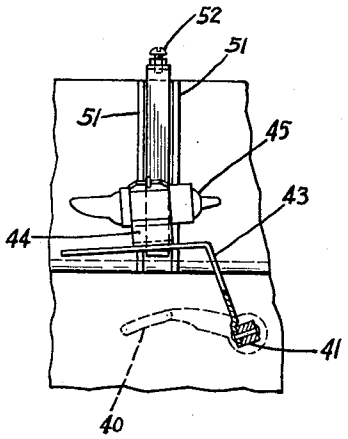


FIG. 4

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LATHER MAKING MACHINE

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12 Claims. (Cl. 222—145)

This invention relates to new and useful improvements in a machine for making and dispensing soap lathers. More particularly, this invention relates to improvements in the structure and the structural relationships of the elements comprising a lather making and dispensing machine.

The invention is illustrated by the drawings in which the same numerals refer to corresponding parts and in which:

Figure 1 is a side elevation, in section, of the lather making and dispensing machine according to this invention;

Figure 2 is a top plan view, partly in section, taken along the line 2—2 of Figure 1 and in the direction of the arrows;

Figure 3 is a front elevation, partly broken away to show the construction of the lather making chamber; and

Figure 4 is a detail elevational view of the means for actuating flow of water and starting a motor for rotation of a lather producing brush in the lather making chamber.

Referring to the drawings, the lather making and dispensing apparatus according to this invention includes a housing, indicated generally at **10**, and preferably cast in one piece of suitable synthetic resinous material to form a strong rigid container for the machine. A water storage chamber **11** is formed integral with the housing in its upper rear interior portion. The housing is supported over a base **12**, preferably provided with a plurality of resilient feet **13**. A small electric motor **14** (1/15 H.P.—5000 r.p.m.) is supported on the base **12** within the housing in the space below the water storage chamber **11**. Motor **14** is mounted with its shaft horizontal. A horizontally disposed cylindrical lather chamber including a vertical back wall **15** and cylindrical wall **16** is supported by the front end of the base **12** coaxial with the shaft of the motor **14**. A cylindrical tubular soap chamber **17** is disposed vertically above the lather chamber and intersects the top of the cylindrical wall **16** of the lather chamber. The lather chamber and soap chamber are preferably formed integral with one another, cast from a suitable synthetic resinous material.

A front face plate member **18** secured to the front of the housing **10** forms the front wall of the lather chamber. The inside surface of the face plate member **18** is provided with an annular flange **19** which fits with a slip fit in the inside of the cylindrical wall **16**. A resilient ring gasket **20** insures a water-tight fit between the face plate and the lather chamber. The face plate is secured to the integral lather chamber-soap chamber structure by means of screws **21**. The face plate **18** is provided with a central air inlet opening **22** to the lather chamber and a spout **23** for discharge of lather, as explained hereinafter. The shaft **24** of the electric motor **14** extends through a water-tight bearing or gland **25** formed integral with the back wall **15** of the lather chamber and extends into the lather chamber.

A lathering brush is secured to the end of the motor shaft **24** within the lather chamber. The lather brush comprises a hub **26** supported by spider members **27** within a cylindrical tubular member **28** and secured to the shaft by means of a cap nut **29**. The cylindrical tube **28** is of a diameter less than the interior diameter of the cylindrical lather chamber and is coaxial therewith. The ends of the tubular cylinder **28** are spaced slightly away from the back vertical wall **15** of the lather chamber and away from the front wall formed by the face plate **18**. The outer periphery of the cylindrical tube **28** is provided with a plurality of brush elements or bristles **30** helically arranged thereon in a direction to cause the lather produced in the lather chamber to work outwardly toward the spout **23**.

The bristles comprising the brush elements **30** are of substantial length, greater than the space between the cylindrical tube member **28** and the inside of the lather chamber, necessitating bending of the bristles as best shown in Figure 3, with the result that the ends of the bristles exert a wiping action upon the bottom of a stick of soap **31** disposed in the upright cylindrical soap chamber **17**. The stick of soap **31** is supported vertically within the soap chamber **17** by resting upon a pin or thin rod **32** extending transversely of the chamber at its intersection of the lather chamber.

The soap stick **31** is urged against the supporting pin member **32** by means of a resilient cap or disc **33** having slightly upwardly and outwardly flaring walls **34** which are compressed within the tubular chamber **17** to insure a tight frictional fit. The upper edges of the disc walls **34** are provided with an inwardly directed annular flange to facilitate removal of the disc for insertion of a new supply of soap. As the soap is gradually used in the production of lather, the disc **33** is pushed further down into the tubular chamber **17** to prevent the soap stick from rising upwardly under influence of the rotating bristles of the lather producing brush.

Water from the storage chamber **11** passes to the lather chamber through a fitting **36** disposed below the bottom of the water storage chamber and connecting it to a vertical tubular conduit **37** formed integral with the soap chamber and lather chamber structure adjacent the vertical wall **15** of the lather chamber. A conventional commercial threaded needle valve **38** is disposed in the outlet from the water chamber to connect the water chamber with fitting **36** and control the flow of water. The tubular conduit **37** connects with an annular opening **39** around the shaft **24** of the motor leading to the lather chamber. Thus, it will be seen that the lather is formed by action of the brush elements **30** whipping water from the water storage tank and air admitted through the inlet **22** against the exposed surface of the soap stick **31** at high speed into a thick creamy mass.

Production of lather is controlled through a crank arm or lever **40** extending out from the front of the lather making and dispensing machine adjacent to the lather spout **23**. Crank or lever **40** is keyed to one end of a horizontal square shaft **41** extending back from the face plate **18** and journalled in a bifurcated bracket **42** supported by the outside base of the soap chamber **17** at one side thereof. The opposite end of shaft **41** carries a bent lever arm **43** which carries a cradle **44** upon its upper surface, which in turn supports a mercury switch element **45** for control of motor **14**. The lever arm **43** (and consequently the crank arm **40**) is normally urged in an upward direction by means of a coil spring **46** extending between the free end of the lever arm **43** and a lip **47** molded into the outer upper wall of the cylindrical soap chamber.

With the lever arm **43** in its normal upward position the mercury switch **45** is disposed generally as shown in broken lines in Figure 3 with the mobile globular mass

of mercury in the free end of the switch tube away from the switch contacts. When the lever arm 43 is moved away from its upward position against the tension of spring 46 by means of thumb pressure upon the crank arm 40 outside of the housing, it assumes the position shown in Figure 4 and the mercury within the switch element 45 flows to the opposite end where it closes the circuit between the switch contact members. Switch 45 thus actuates electric motor 14 which rotates the lather producing brush within the lather chamber.

At the same time the lever arm 43 pushes down upon the horizontal foot 48 of a vertically disposed U-shaped valve operating member 49 which extends up along the outside surface of the front wall of the water storage chamber 11 in a loop over the top and then down along the inside of the same front wall member terminating in a horizontal foot 50 which rests upon the plunger of the needle valve 38. Thus, when foot 49 is depressed by contact with lever arm 43, foot 50 is simultaneously depressed and pushes against the plunger of the needle valve to open that valve and permit a small amount of water to flow from the chamber 11 through the fitting 36 and conduit 37 into the annular opening 39 and into the lather chamber. Thus, water flows into the lather chamber during the same period of time that the motor is rotating the brush within the lather chamber.

The U-shaped valve actuating element is guided vertically in a channel formed between a pair of vertical ridges 51 formed integrally in the front wall of the water chamber 11. The amount of water which is permitted to flow to the lather chamber may be controlled by means of a screw adjusting member 52 fitted into the top loop portion of the U-shaped member 49. By adjustment of screw 52 the amount of vertical movement of the U-shaped member may be controlled and, by this means, the extent to which the plunger of the needle valve 38 may be depressed is controlled and the rate of flow from the water storage chamber is regulated.

A top cover member 53 is provided for the housing 10. The top 53 is provided with a transverse vertically depending internal wall member 54 displaced slightly rearwardly from the front wall of the water storage chamber 11. The front surface of the transverse wall 54 is provided with a pair of vertical ridges 55 which define a vertical channel in which the U-shaped member 49 is guided in cooperation with the channel formed between ridges 51 in the front wall of the water chamber. The inside of the top 53 for the housing is provided with a plurality of lugs 56 for engaging the inside of the housing wall to form a frictional fit therewith and with a depending annular member 57 which fits with a sliding fit into the top of the tubular soap chamber 17.

A terminal block 58 is supported on the top of the motor 17 to facilitate the electrical circuitry. An electrical heating element 59 is disposed between the motor and lather chamber to warm the vertical wall of the lather chamber and to warm the water in the integral conduit 37 so that the lather produced will be warm when applied. An insulating shield 60 of fiber or paper or similar insulating material is interposed between the heater and the motor. Although the circuitry is not shown, it will be understood that the heating element is connected in parallel with the supply circuit so that the heating element is on so long as the supply circuit is connected to a source of electric current. The motor is connected to the supply circuit through the mercury switch so that the motor is operative only when the crank arm 40 is depressed to actuate the mercury switch.

The lather making machine is placed in operation by filling the water storage chamber 11 with water and by inserting a stick of soap in the soap chamber 17 and inserting the resilient disc 33 on top of it. The soap stick is pushed down into contact with the retaining pin 32. Sufficient water is permitted to flow from the water chamber through the needle valve to fill the conduit 37.

The machine is plugged into a source of electric current to power the heater and the motor. Then, when lather is desired, the barber or other operator places his fingers below the spout 23 and depresses the crank arm 40 with his thumb. This action, through the shaft 41, similarly depresses the lever arm 43 to change the position of the mercury switch to actuate the motor and simultaneously to depress the foot 48 of the U-shaped member 49 so as to depress the foot 50 resting upon the plunger of the needle valve 38 to permit flow of water into the lather chamber.

The high-speed action of the rotating brush element in the lather chamber draws air through the air inlet 22 and with the water entering through the annular opening 39 about the motor shaft whips the soap wiped off the bottom of the soap stick into a smooth creamy lather. The spirally disposed brush elements carry this lather up to the spout 23 and forces it out onto the fingers of the barber. When he has received sufficient lather, usually in a matter of a few seconds, pressure on the crank arm 40 is released, water flow is stopped and the motor is simultaneously stopped.

Particular attention is directed to the structural features of the lather making and dispensing machine of this invention by which the soap containing chamber, lather making chamber, conduit for passing water to the lather making chamber, and gland sealing the motor from moisture of the lather making chamber are all cast integrally in one piece from synthetic resinous material. Attention is also directed to the particular construction of the tubular vertically extending chamber for holding the soap stick including the narrow rod member extending across the bottom end of that chamber for supporting the end of the soap stick in the lather making chamber and the resilient disc cap which is manually pressed into the soap chamber to retain the soap stick in position to be engaged by the bristles on the rotor brush. The U-shaped valve operating member is a one piece stamping which does not require any machining and because of the channel guide members molded into the housing the U-shaped valve operating member does not require the provision of any screws, bolts or similar means for retaining it in operating position. The cradle and lever arm for supporting the mercury switch and actuating the valve operating member is likewise in the form of a simple stamping spot-welded to the shaft 41 but requiring no machining. These simplified structural features materially reduce the ease of assembly and consequently the labor required in resultant cost of the machine.

It is apparent that many modifications and variations of this invention as hereinbefore set forth may be made without departing from the spirit and scope thereof. The specific embodiments described are given by way of example only and the invention is limited only by the terms of the appended claims.

I claim:

1. A lather making and dispensing machine comprising a housing including an integral water chamber, a horizontally disposed cylindrical lather chamber within said housing, a vertically disposed tubular soap containing chamber intersecting said lather chamber, support means at the intersection of said lather chamber and soap containing chamber for supporting a solid mass of soap with one face exposed in said lather chamber, resilient cap-disc retaining means fit with a press fit in said soap containing chamber, rotary lather producing brush means disposed on a horizontal axis for rotation in said lather chamber, an air inlet to said lather chamber, a lather outlet spout from said lather chamber, motor means for driving said rotary brush, conduit means connecting said water chamber and lather chamber, valve means in said conduit for controlling the flow of water therethrough, a U-shaped valve operating means extending over one wall of said water chamber, a horizontal foot on the leg of said U-shaped member within said water chamber

positioned to engage and open the valve controlling flow of water therefrom, a horizontal foot on the leg of the U-shaped member outside of the water chamber, pivoted mercury switch means operatively connected for controlling operation of said motor and operable from a crank arm outside of said housing, the foot of said U-shaped valve operating member outside of the water chamber lying in the path of said pivotally movable switch means whereby actuation of said switch simultaneously actuates said valve.

2. A lather making and dispensing machine according to claim 1 further characterized in that said horizontally disposed lather chamber and vertically disposed soap chamber are integral and composed of synthetic resinous material.

3. A lather making and dispensing machine according to claim 1 further characterized in that said tubular vertically disposed soap chamber is cylindrical and said soap supporting means comprises a pin spanning the diameter of the cylindrical tube at its point of intersection with said lather chamber.

4. A lather making and dispensing machine according to claim 3 further characterized in that said resilient cap-disc means is circular, provided with outwardly flaring side walls for compression against the walls of said cylindrical soap chamber and provided with an upper inwardly directed annular flange to facilitate removal.

5. A lather making and dispensing machine according to claim 1 further characterized in that integral vertical channel means for said U-shaped valve operating member are provided in one wall of said water chamber.

6. A lather making and dispensing machine according to claim 5 further characterized in that said housing is provided with a top having an internal transverse depending wall, said wall having an integral vertical channel cooperating with said vertical channel in said water chamber wall.

7. A lather making and dispensing machine according to claim 5 further characterized in that said U-shaped valve operating member and attached feet are integral.

8. A lather making and dispensing machine according to claim 1 further characterized in that screw adjusting means are provided in the loop end of said U-shaped member passing over the top surface of the water chamber wall whereby the rate of flow of water from said water chamber may be regulated.

9. A lather making and dispensing machine according to claim 1 further characterized in that said mercury switch means for said motor is supported in a cradle having an integral attached lever arm secured to a pivotally supported shaft operable by said crank arm disposed outside of said housing adjacent said lather dispensing spout.

10. A lather making and dispensing machine comprising a housing including an integral water chamber; a horizontally disposed cylindrical lather chamber within said housing; a vertically disposed cylindrical tubular soap containing chamber intersecting said lather chamber; a transverse soap supporting pin in the lather chamber spanning the diameter of the cylindrical soap chamber at its point of intersection with the lather chamber; resilient cap-disc retaining means fit with a press fit in said soap containing chamber, said cap-disc means being circular, provided with outwardly flaring side walls for compression against the walls of said soap chamber and provided with an upper inwardly directed flange; rotary lather producing brush means disposed on a horizontal axis for rotation in said lather chamber; an air inlet to said lather chamber; a lather outlet spout from said lather chamber; motor means for driving said rotary brush; conduit means connecting said water chamber and lather chamber; said lather chamber and soap chamber and at least part of said conduit means being integral; valve means in said conduit for controlling the flow of water therethrough; a one piece vertically disposed U-shaped valve operating means extending over one wall of said water chamber, a horizontal foot on the leg of said U-shaped member within said water chamber positioned to engage and open the valve controlling flow of water therefrom, a horizontal foot on the leg of the U-shaped member outside of the water chamber; integral vertical channel means for said U-shaped valve operating member provided in one wall of said water chamber; pivoted mercury switch means operatively connected for controlling operation of said motor and operable from a crank outside of said housing, said mercury switch means being supported in a cradle having an integral attached lever arm secured to a pivotally supported shaft operable by said crank arm disposed outside of said housing adjacent said lather dispensing spout; the foot of said U-shaped valve operating member outside of the water chamber lying in the path of said pivotally movable switch means whereby actuation of said switch simultaneously actuates said valve.

11. A lather making and dispensing machine according to claim 10 further characterized in that said housing is provided with a top having an integral transverse depending wall, said wall having an integral vertical channel cooperating with said vertical channel in said water chamber wall.

12. A lather making and dispensing machine according to claim 10 further characterized in that screw adjusting means are provided in the loop end of said U-shaped member passing over the top surface of the water chamber wall whereby the rate of flow of water from said water chamber may be regulated.

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