July 6, 1943. A. B. CAMPBELL 2,323,377

LATHER PRODUCING MACHINE

Filed Feb. 6, 1942 2 Sheets-Sheet 1

Fig. 1.

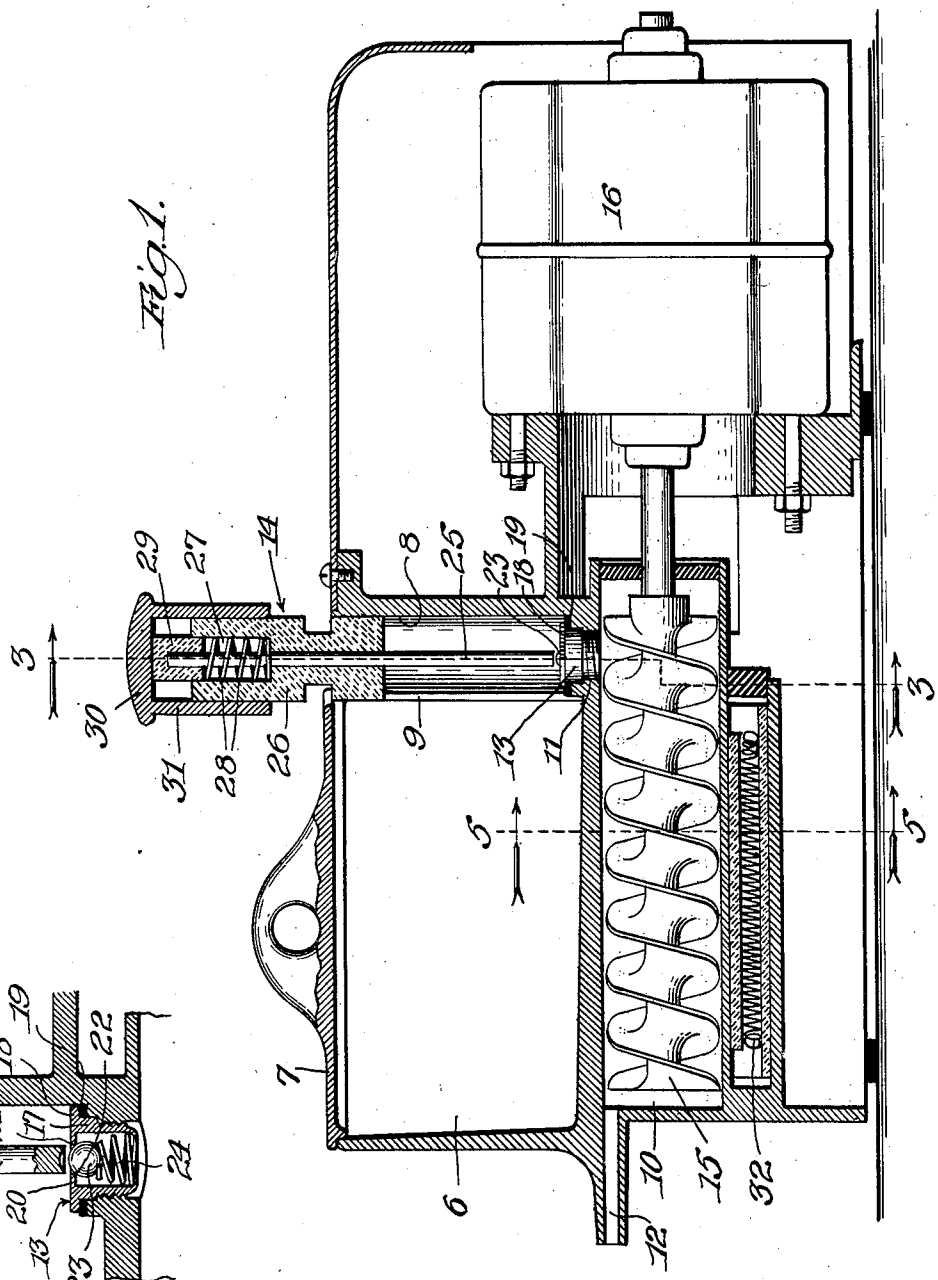


Fig. 2.

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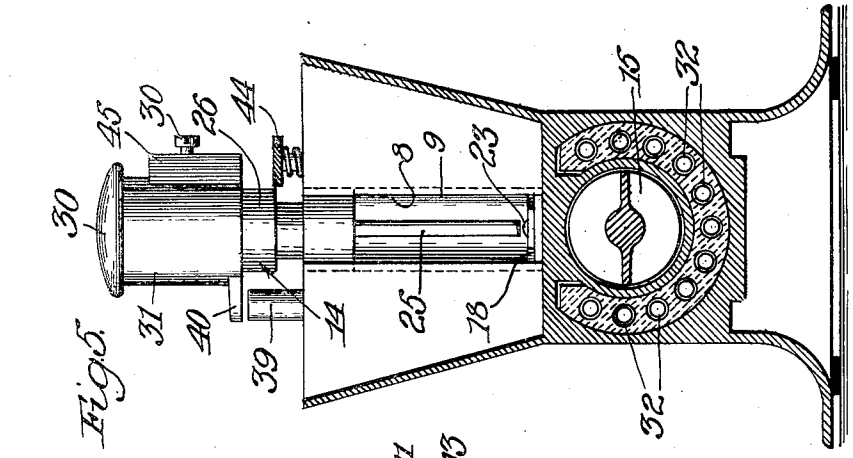


Fig. 5.

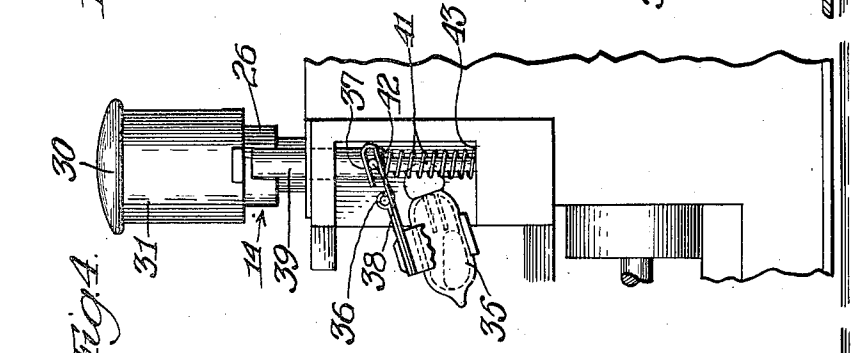


Fig. 4.

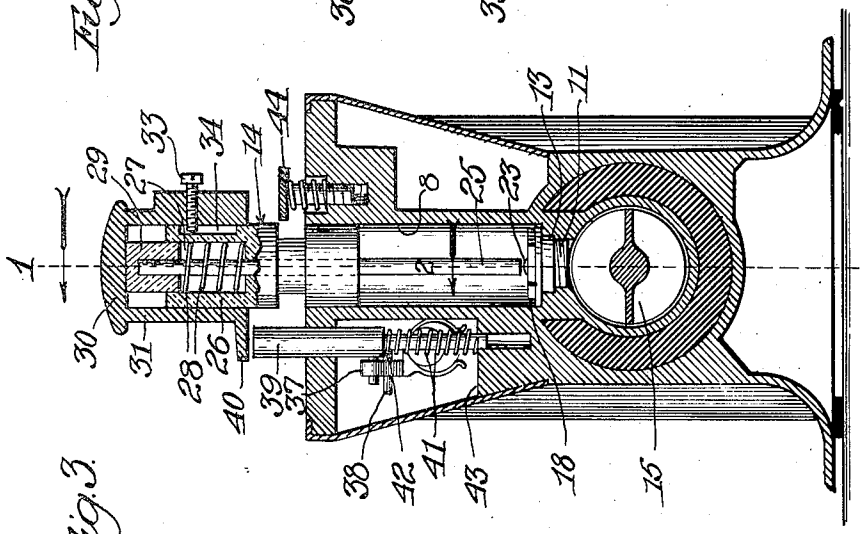


Fig. 3.

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Patented July 6, 1943

2,323,377

UNITED STATES PATENT OFFICE

2,323,377

LATHER PRODUCING MACHINE

Albert B. Campbell, Chicago, Ill., assignor to Campbell Products Co., Chicago, Ill., a corporation of Illinois

Application February 6, 1942, Serial No. 429,717

2 Claims. (Cl. 259—25)

My invention relates to a machine for producing lather from liquid soap and comprising generally stated, a receptacle for the liquid soap, a lathering chamber to which the liquid soap is controllably supplied from the soap receptacle by a valve device, and a lathering element in the lathering chamber.

Certain of my objects are as follows:

To provide for maintaining uniform speed of flow of the soap to the lathering chamber particularly to the end of producing the lather more speedily;

To provide for the highly effective sealing of the outlet of the soap receptacle in the closed position of the valve device;

To provide a structure in which the valve device may be readily removed, cleaned and replaced and substitution therefor made if desired.

To provide a construction which may be internally cleaned and rinsed with water without subjecting the machine to leakage and possible damage to the electric motor when used to actuate the lathering element, or to the electric heater when used for heating the lathering chamber;

To provide a construction whereby the chance of foreign matter, more particularly hairs which are apt to accumulate in the interior of the machine, becoming lodged on the seat of the valve device and causing leakage or non-uniform flow, will be minimized;

To provide a construction in which the valve of the valve device is pressed to its seat by a spring, having provision for shielding the spring against contact with the soap when the valve is in closed position and thus minimize the possibility of the spring becoming clogged and interfering with the proper functioning of the valve device; and other objects as will be understood from the following description.

I have chosen to illustrate my invention as embodied in a machine of the general construction shown in United States Letters Patent No. 2,191,450, issued to me February 27, 1940, but without intending to limit it thereto; a description of the accompanying drawings being as follows:

Figure 1 is a view in longitudinal sectional elevation of the machine in which my improvements are incorporated, the section being taken at the line 1 on Fig. 3 and viewed in the direction of the arrow.

Figure 2 is an enlarged fragmentary sectional view taken at the line 2 on Fig. 3 and viewed in the direction of the arrow.

Figure 3 is a sectional view taken at the line 3 on Fig. 1 and viewed in the direction of the arrow.

Figure 4 is a fragmentary view in side elevation of the machine; and

Figure 5, a sectional view taken at the line 5 on Fig. 1 and viewed in the direction of the arrow.

The machine shown comprises a receptacle 6 for liquid soap and having a removable and replaceable cover 7; a cylindrical chamber 8 alongside the receptacle 6 and open to the latter through a slot 9; a chamber 10 extending along the bottom of the receptacle 6 and having an opening 11 at one end communicating with the lower end of the chamber 8 and an outlet 12 for the lather at its opposite end; a valve device 13 in the opening 11; means 14 for actuating the valve of the valve device; means 15 for lathering the soap fed into the chamber 10 and feeding it in the form of lather through the outlet 12; a power device 16, shown as an electric motor, for operating the lathering means 15, means controlling the valve of the valve device 13; and means for heating the soap in the receptacle 6 and the lather in chamber 10. The action of the screw lathering means 15 produces a suction in the chamber 10 as set forth in my Patent No. 2,191,450, page 2, column 1, lines 31 to 34.

The valve device 13 is shown as formed of a casing 17 open at its bottom to the chamber 10, and screwed into the opening 11 and having a flange 18 which presses against a gasket 19 mounted on the surrounding wall of the opening 11 to make a tight fit. The top wall 20 of the casing 17 which is shown as quite thin, it being, by way of example and preferably, about $\frac{1}{32}$ inch thick, has a port 21 therein the surrounding wall of which forms an annular seat 22 for the valve 23 of the valve device 13 shown in the form of a ball normally pressed upwardly against the seat 22 by a coil spring 24 in the casing 17 to close the lathering chamber 10 to the liquid soap supply.

Means are provided for moving the valve 23 as desired, to open position, to permit soap to feed to the chamber 10 from the soap receptacle 6, these means comprising a plunger 25 the lower end of which is disposed centrally above the ball valve 23. The plunger 25 is reciprocable in a plug 26 removably secured in the upper end of the chamber 8, as for example by providing the plug 26 of such diameter that it will have friction fit in this chamber. The upper end of the plug 26 has a socket 27 for a coil spring 28 which surrounds the plunger 25, between the bottom of the socket 27 and the block 29 slidable in the up-

per end of the socket 27 and serves to normally hold the plunger 25 in raised position in which the valve 23 is in closed position. Slidable vertically on the plug 26 is a button 30 having a skirt 31 surrounding the upper end of the plug 26 and operating, when depressed against the action of the spring 28, to depress the plunger 25 and to control the flow of current to the motor 16. The button 30 is shown as held against accidental displacement on the plug 26 by a set screw 33 on the button 30 extending into a vertical groove 34 in the plug 26.

The heater means shown at 32 and the means 15 for lathering the soap and feeding the lather to the outlet 12, may be of any desirable construction, as for example as disclosed in said Letters Patent.

The motor 16 is shown as controlled by a rocking mercury switch 35 pivoted at 36 on the body of the machine and having a stirrup 37 into which a pin 38 on a plunger 39 reciprocable in the body of the machine, extends. The plunger 39, which extends beneath a lug 40 on the button 30, is upwardly pressed by a coil spring 41 interposed between a shoulder 42 on the plunger and an abutment surface 43 on the machine-body.

In the raised position of the plunger 25 the switch 35 is in open position and no current flows to the motor 16. When the button 30 is pressed down against the action of the spring 28 the plunger 25 presses down on the valve 23 moving it to open position to permit soap to flow to the lathering chamber 10 from the soap receptacle 6 and rocks the switch 35 to a position in which current is supplied to the motor 16 for actuating the lathering element 15 preferably an instant before the valve 23 is moved to open position. As soon as the operator discontinues pressure against the button 30 the parts move to the normal position in which the valve 23 is in closed position and no current flows to the motor.

A vertically adjustable stop 44 on the body of the machine in the path of downward movement of a lug 45 on the button 30 serves as a means for controlling the extent to which the valve device 13 is opened by the action of the plunger 25.

From the foregoing it will be apparent that inasmuch as the valve 23 in moving to open position moves in the direction of flow of the soap to the lathering chamber 6 there is a constant tendency, during the periods the valve is in open position, for the soap to wash from the seat 22 and valve 23 any foreign matter in the soap thereby minimizing the possibility of such matter, particularly important as regards hairs, from becoming interposed between the seat 22 and the valve 23 in the movement of the valve to closed position and which unless avoided will hold the valve sufficiently unseated as to permit soap to leak into and from the lathering chamber with the manifest objection, the overcoming of the objection noted being augmented by providing the opening 21 in a very thin part of the structure as above described, and further augmented by providing the seat 22 as shown, viz., of the minimum width, at which the valve 23 contacts the seat with substantially circular line contact.

Furthermore, by providing the structure as shown, the feed of soap to the lathering chamber may be maintained uniform.

The valve device 13 may be readily removed from the machine when it is desired that it be cleaned, and be readily replaced therein.

The soap chamber 6 and exposed valve parts may be cleaned and rinsed with water (the plunger 25 and plug 26 being preferably preliminarily removed) without danger of water leaking past the valve 23 and without possible damage by water to the motor 16 and heater 32.

The valve device 13 being provided as a unit separate from other parts it may be made at relatively low cost of relatively expensive metal, such as for example high grade stainless steel, non-corrosive when contacted by the soap.

Furthermore, the spring 24 of the valve device is shielded against the soap contacting with it when the machine is not in use and thereby possibility of the spring becoming clogged with soap and interfering with its proper functioning, is minimized.

While I have illustrated and described a particular construction embodying my invention I do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered and the invention embodied in other forms of structure without departing from the spirit of the invention.

What I claim as new, and desire to secure by Letters Patent is:

1. A lather-producing machine comprising a liquid soap receptacle, a lathering chamber including a screw which produces a suction therein, a valve device for controlling the flow of soap from said receptacle to said chamber comprising a valve seat and a valve cooperating with said seat and opening in the direction of flow of soap to said lathering chamber toward and adjacent the screw, and means for actuating said valve to open position and means for actuating the screw.

2. A lather-producing machine as set forth in claim 1 in which the valve is a ball valve.

ALBERT B. CAMPBELL.