APPLATUS FOR MAKING SOAP

Fig. 1

Fig. 2

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APPARATUS FOR MAKING SOAP

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My invention relates to improvements in methods of making soap and apparatus therefor and has for one object a soap making machine which may be used for the manufacture of soap in relatively small quantities for domestic and similar use in contrast with the manufacture of soap in large quantities for wholesale and retail distribution.

Another object of my invention is a relatively small soap making apparatus so that the housewife may use the waste greases from her kitchen to make soap.

I propose to provide a relatively small portable soap making machine which may be used in the home or the laundry for the manufacture of liquid soap in such quantity and at such a price as to be used as soon as the soap has been manufactured. This machine does away with the expense involved in drying the soap for storage and shipment. It also eliminates the expense of returning the soap to its original liquid condition at the point of use so that it may serve as a detergent. It is well known that until the soap is mixed with water to make it a liquid soap, no cleaning or detergent value can be obtained from it.

My invention is illustrated more or less diagrammatically in the accompanying drawings wherein:

Figure 1 is a perspective view, with parts in section, showing the soap machine of my invention;

Figure 2 is a plan view of the device of Figure 1;

Figure 3 is a section along the line 3—3 of Figure 2;

Figure 4 is a part section along the line 3—3 of Figure 2, viewed in the opposite direction from Figure 3;

Figure 5 is a back view in elevation in the direction of arrows on 5—5 of Figure 4;

Figure 6 is a section along the line 6—6 of Figure 4; and

Figure 7 is a wiring schematic.

1 is a housing mounted on a suitable base 2. The housing is apertured at top and bottom and contains a generally conical mixing bowl 3, flanged to 4 to close the upper aperture in the housing and offset at 5 to make a tight closure with the lower aperture in the housing. This provides a closed boiler chamber 6 around the mixing bowl 3. The water boils, and pressure generated therein expels the hot water from the boiler to fill the mixing chamber. In the meantime, the timer has broken the circuit to the solenoid valve, and when the water flows down from the float switch 33, the solenoid valve will not be opened. When the water level in boiler 6 falls below a certain point a float 35 actuates the switch 36 to disconnect the heating coils so that they will not burn out. Meanwhile, the motor continues to actuate the mixing paddles, mixing the soap charge with the initial water with the additional water supply, and motor rotation continues until the liquid soap is thoroughly mixed and completed.

The liquid soap can be withdrawn from the apparatus into a suitable reservoir at any time when needed.

The use, operation and function of my invention are as follows:

In the ordinary manufacture of soap where it is packaged and delivered for sale in the store, the manufacturer must insure against the soap becoming rancid during long periods of storage and exposure to a wide range of temperatures. Thus, the manufacturer is required to use special tallowes, greases, or oils, but, unfortunately, these are the fats least satisfactory for saponification. Accordingly, one object of my invention is a method and apparatus for use generally in households, restaurants, and the like, which enables the housewife or restaurateur to manufacture small quantities of liquid soap cheaply and easily, as needed, using ordinary

near the top. 22 indicates an electric heating element to heat water in the boiler chamber 6 so that when the boiler 6 is charged with water and the water is boiled, it will, just as in the conventional coffee percolator, be expelled by steam pressure from the boiler 6 to the mixing chamber 3 through pipe 21.

23 indicates any suitable hose connection through which water may be supplied to the boiler. Water passes through the duct 24 controlled by the solenoid valve 25, most of the water being discharged through the pipe 26 into the boiler 6 but some of the water being also discharged through the pipe 27 into the mixing chamber, relative flow through the pipes 26 and 27 being manually adjusted by valves 28 and 29. 30 is a manual control switch which opens and closes an electric circuit supplied with electric power from any suitable source through the conductor 31. Closing the switch 30 activates the solenoid valve 25 and allows water to enter both the boiler 6 and the mixing chamber 3. As the water rises, it raises a float 35 closing a float switch 36 to energize the heating coils 32. When the operator closes the switch he also sets the timer 37.

When the water level reaches a predetermined point, a float 32 tilts a switch 33 to deactuate the solenoid valve 25 to stop the flow of water into the boiler and mixing chamber.

The operator will have put into the chamber a suitable amount of grease, alkali and any other desired soap making materials, this being termed a soap charge. Until the temperature of the water in the mixing chamber reaches a point at which the initial water supply and the soap making materials can be mixed, a switch 34 remains open and no rotation of the motor occurs. As the temperature of the water in the boiler rises, the heat will cook the soap charge. As soon as the temperature in the boiler chamber reaches a predetermined point the thermostat switch 34 closes a circuit through the motor 16 to cause the mixing paddles 12 and 15 to rotate in opposite directions.

When such a temperature is reached the motor rotates, mixing the soap charge with the initial quantity of water. Meanwhile the temperature in the boiler and in the mixing chamber continues to rise to a point at which the water boils and pressure generated therein expels the hot water from the boiler to fill the mixing chamber.

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tallows, greases, fats and oils without fear of rancidity or discoloration, since the soap produced is to be used substantially immediately or in the near future. It is well-known that water must be added to soap in any form, whether cake, powder, flakes or chips, in order to obtain any cleansing action. I provide a structure and method whereby certain types of readily available raw materials may be simply and easily converted into readily usable liquid or liquid-gel soap.

In my invention, a soap-making cartridge or soap charge may be provided for use in the structure shown in the drawings. On the other hand, the raw materials may be fed into the water as a water made charge but may be only an aggregation, in powder or flake form, of the necessary fats, tallows, greases, caustics, builders and the like. Regardless of its form, the soap charge is deposited in the mixing bowl. Water is then supplied to the boiler and also a small quantity of initial water may be supplied to the mixing bowl. The heating element is energized to heat and boil the water in the boiler. As the water in the boiler is heated, cooking and saponification of the soap charge in the mixing bowl takes place. As the temperature of the water approaches the boiling point, a large portion of the charge in the mixing chamber will be saponified. At a predetermined temperature, the switch 34 energizes the motor to begin the mixing action of the paddles. When the boiling point of the water is reached, a percolator action takes place to automatically discharge hot water and steam into the mixing chamber. To prevent the escape of the hot water and steam, a cover may be provided over the top of the mixing chamber. However, I have not shown such a cover as this is considered optional.

The water entering the mixing bowl immediately contacts a partially saponified charge and is thoroughly mixed with it as the paddles are in operation. Thus, the saponified charge is of a reasonably dissolved and is thoroughly mixed with the full quantity of water from the boiler. After the soap charge and the hot water from the boiler have been thoroughly mixed, the boiler has cooled so that the thermostat 34 opens and the mixing motor is stopped. The soap solution can then be drained off as a suitable reservoir, or the like. On the other hand, the soap solution could stay in the mixing chamber until all of it is intermittently withdrawn and used.

I have stated that the soap charge is initially placed in the mixing chamber and saponified with an initial charge of water under heat at a predetermined temperature in the boiler the mixing paddles are energized. With certain types of ingredients or charges, it might be desirable to start the paddles immediately after the charge is put in the mixing chamber so that the paddles would disintegrate or thoroughly pulverize the ingredients of the charge. Thus the charge would be thoroughly mixed with the initial water while it is being cooked and saponified. At a predetermined time after adequate saponification has taken place, the percolating action would follow, the rest of the water would enter the mixing bowl. It should also be understood that the initial charge of water may be either mixed directly with the soap charge when it is prepared, or it could merely be poured in when the soap charge is put in the mixing chamber. In either case, the pipe 27 and valve 29 would be unnecessary. The entire operation could be controlled manually. For example, manually actuated switches could be provided for the mixing motor and heating elements instead of the thermostat and switch. Water could be put in the boiler up to a certain level without the necessity of the solenoid valve.

In Figure 7, the thermostat is also provided with a rheostat contact 38 so that a selected amount of resistance can be put in series with the motor to operate it at any selected speed as soon as the main switch 30 is closed. The rheostat also has an "off" position 38c.

While I have shown and described the preferred form of my invention, it should be understood that numerous modifications, alterations, substitutions, and changes can be made in addition to those set forth above, without departing from the fundamental theme of my invention. I therefore wish that my invention be unrestricted except as by the appended claims.

I claim:

1. A home soap-making apparatus comprising a water chamber, a separate soap-making chamber adapted to receive raw materials for making soap, means for supplying water to said water chamber, heating means for heating said water responsive to the level of the water in the chamber for automatically energizing and deenergizing said heating means, convey means adapted to convey said water to said soap-making chamber when the water has reached a predetermined temperature, means for mixing said raw materials including a shaft extending into said soap-making chamber, a raw materials outlet in said chamber extending into said soap-making chamber, mixing means extending laterally from said shaft and rotatable therewith, power means for rotating said shaft, and automatic means responsive to the temperature of the water in the chamber for controlling the power means.

2. A soap-making apparatus including a hot water chamber and a water supply therefrom, a water heating element arranged adjacent the lower portion of the hot water chamber, a separate frusto-conical mixing chamber within the hot water chamber, means for conducting water upwardly from a point adjacent the bottom of the hot water chamber to a point adjacent the top of the mixing chamber, support means within the mixing chamber adapted to support a soap-making charge in position to be contacted by water entering the mixing chamber from the conducting means, stirring means within the mixing chamber, automatic means responsive to the temperature of the water in the hot water chamber for energizing the stirring means, and a valve controlled discharge for the mixing chamber.

3. The structure of claim 2 in which the hot water and mixing chambers are concentric.

4. A home soap-making machine comprising a water chamber, a separate soap-making chamber surrounded by the water chamber adapted to receive predetermined quantities of raw materials for making soap, heating means for heating the water in the water chamber, automatic means responsive to the water level in the water chamber for energizing the heating means, water conveying means adapted to convey the water from the water chamber to the soap-making chamber, and a discharge outlet for the soap-making chamber.

5. The structure of claim 4 further characterized in that the hot water and soap-making chambers are concentrically arranged.

6. A home soap-making machine, comprised of a water chamber, a separate soap-making chamber surrounded by the water chamber adapted to receive predetermined quantities of raw materials for making soap, the chambers being the same height, one within the other, with their upper surfaces in the same plane, the water chamber being annular in cross section throughout its length, means for heating the water in the water chamber, water conveying means adapted to convey the water from the water chamber to the soap-making chamber, and automatically operated stirrer means in the soap-making chamber.

7. A home soap-making means comprising a container adapted to contain a quantity of water, a separate soap-making container in the container in heat transfer relationship to the water in the container, means for heating the water, and means for supplying the water to the container and for conveying the water to the soap-making container including a substantially vertical standpipe within
the container, said standpipe having its open lower end adjacent the lower wall of the container and spaced therefrom, a filling opening adjacent an upper portion of the pipe, a lateral take-off portion on the standpipe intermediate the lower end and the filling opening, and throttle means in the standpipe intermediate the filling opening and the take-off portion, said take-off portion having an open end extending into the soap-making chamber.

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