

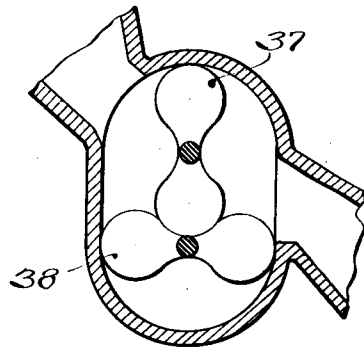
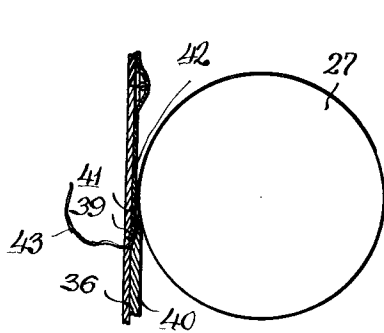
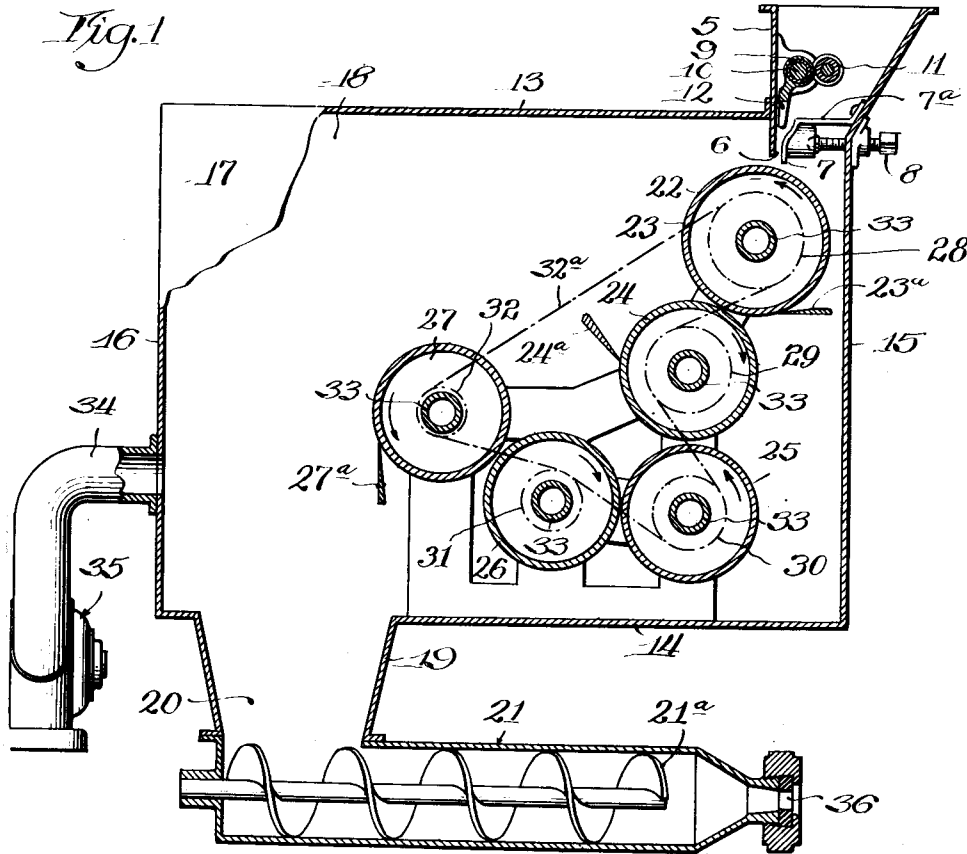
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A. F. THAL

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PROCESS OF TREATING SOAP

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Witness:
Chas. F. Vorse

Inventor
A. F. Thal
by Benj. S. Condit
Att'y.

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ADOLPH F. THAL, OF CHICAGO, ILLINOIS.

PROCESS OF TREATING SOAP.

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My present invention relates to a process of treating soap. So far as I am at present aware after the ingredients have been treated in the soap kettle where saponification occurs and it is desired to work up the saponified material at once in a continuous process into cakes, or flakes, without the lapse of time for curing, it is the present practice to draw off the hot saponified material from the soap kettle and cool the same by subjecting it to the action of a series of cooled rollers. The cooled soap is then passed through a drier to extract, or drive off, a desired amount of moisture therefrom and is then milled by passing the dried material through suitable rollers for the purpose of producing a more homogeneous mass by thoroughly incorporating the dried exterior with the more moist interior of the dried product as it comes from the drier, and from the mill the product is fed to a compressing device, called a "plodder", generally consisting of a casing, in which rotates an Archimedean screw, from which device the material is forced through a die, and, if desired, into molds for giving the cake any desired form. In this process, as hitherto practiced, it will be noted that the cooling of the saponified material and the drying thereof are two separate steps and that they are succeeded after the saponified material has been sufficiently cooled and dried, by a separate milling process. I have had for my object the simplification of this process by, so to speak, combining the cooling, drying and milling steps, which have heretofore been carried out separately.

In order to accomplish this result I draw the saponified material from the soap kettle into a sealed chamber in which is located a battery of suitable milling wheels, preferably driven at different speeds, from which chamber I exhaust a greater or less amount of air so as to increase the evaporation from the saponified material as it comes from the soap kettle. It will be seen that by so increasing the evaporation from the saponified material I also, at the same time, by reason of the evaporation, reduce the temperature of the material as it comes from the soap kettle. It will be found in practising my invention that not only are the separate cooling and drying steps eliminated, but that it may even be necessary to heat the product somewhat as the same is being milled. Also, through the evaporation of the water by means of a rarefied atmosphere while the material is being milled, the material is much more homogeneous, as the former drying operation extracted a greater amount of moisture from the surface than from the interior which difference in character of the different portions of the product had to be more or less rectified by a subsequent milling operation.

It is found that when soap is raised to a relatively high temperature necessary in the drier it sometimes sets up an additional oxidation of the soap, resulting in the discoloration of and the production of acidity in the product, both of which results are undesirable. My process dispenses with the necessity of the high temperature of the drier and eliminates the possibility of a further undesired oxidation.

Also, when soap is cooled with cooled rollers the flakes leave the rollers with the side adjacent the rollers having a lustre, or polish, and the other side dull. Where I secure a cooling through evaporation, however, both sides of the flakes have a lustre, or polish, which produces a product of much improved appearance.

After the passage of the material through my chamber in which the atmosphere is rarefied to accelerate evaporation and thereby, also, cool the product, the product is fed to the usual form of compressing, or plodding, device, as above alluded to. My process may conveniently be carried out by the apparatus herein described and illustrated, schematically, in the drawing, in which

Fig. 1 is a side elevation of a structure in which my process may be carried on, an end wall being broken away and portions thereof shown in section to more clearly illustrate the interior arrangement.

Fig. 2 is a section of one form of device for discharging flakes.

Fig. 3 is a section of a modified form of structure for discharging flakes.

The contents of the soap kettle is run into a suitable hopper, 5, which is elongated so as to permit of a relatively narrow slot, 6, in the bottom thereof. The width of this slot may be regulated by means of a gate, 7, mounted within the hopper and controlled by set screws, 8. Secured to the same wall of the hopper as that which carries the gate, 7, is a flexible curtain, or apron, 7^a, which, in combination with the viscous saponified

material in the hopper and passing through the slot, seals the slot against the passage of air therethrough. Also, and preferably, a mechanical cleaner for this slot is provided, which consists of a carriage, 9, traveling on a suitable rod, or track, 10, and driven by a screw, 11, and having a knife, 12, depending from said carriage and entering the slot, 6, aforesaid. This cleaner, or knife, 12, travels continuously backwards and forwards in the slot.

The lower ends of the hopper hermetically connects with an upper corner of a chamber, comprising top and bottom horizontal walls, 13 and 14, and vertical side walls, 15 and 16, and end walls, 17 and 18. The bottom wall, 14, diametrically opposite the location of the hopper, is bent downward, as at 19, and the adjacent side and end walls are extended to form a chute, 20, which connects with the plodder casing, 21, in which is rotated the Archimedean screw, 21^a.

Mounted within the chamber is a suitable frame, 22, in which are journaled the rollers, 23, 24, 25, 26 and 27. To these rollers are fixedly secured suitable sprocket wheels, 28, 29, 30, 31 and 32, connected and driven by a sprocket chain, 32^a, said wheels being proportioned to increase the speed of rotation of the respective rollers as the material travels between the same from the hopper to the plodder. Suitably associated with wheels 23, 24 and 27 are the respective scrapers, or knives, 23^a, 24^a and 27^a for removing the adhering product from their respective rollers.

Also, the rollers are preferably hollow and are provided with circulating pipes, 33, for circulating a fluid therethrough and controlling the temperature of the rollers as may be desired. Connecting with the chamber, aforesaid, by means of a conduit, 34, is any suitable exhaust device, 35.

The viscous nature of the material in the hopper is sufficient, when the slot, 6, is suitably regulated, to seal the chamber against the admission of any air through the hopper thereto for any degree of exhaustion which is necessary in the practice of my invention.

When a plodder is used in connection with the practice of my process the compacting

and forcing of the product through the die, 36, is also sufficient to hold any degree of exhaustion necessary in the practice of my invention. When, however, it is desired to withdraw the product from the chamber in flake form, I provide a form of apparatus, illustrated in Fig. 2, comprising the interacting members 37 and 38, which constitute an air exhausting apparatus in themselves and, also, permit of the extraction of the soap flakes from the chamber without compacting them.

I have shown a modified form of arrangement for securing the discharge of the product in flake form from the chamber in Fig. 3. In this form the rollers are so disposed in the chamber that the last roller, 27, comes closely adjacent the side wall 16. The wall 16 is apertured to provide a slot, 39, therein opposite said roller. A scraper, or knife, 40, is attached to said wall so as to form an extension of the lower edge of said slot. To the upper edge of said slot is hinged a gate 41, provided on its inner face with an apron, 42. The knife, 40, detaches a flake of soap, 43, from the roller 27, which comes out of the slot, 39, the hinged gate, 41, and apron, 42, being held on account of the rarefied condition of the air in the chamber against the outer face of the flake, 43, while it passes through the slot, thereby sealing the chamber against the admission of air.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In the process of treating soap for the production of cake soap and soap flakes in a chamber in which the air pressure is maintained below that of the atmosphere, the step of milling saponified material as it is taken hot from the soap kettle in a rarefied atmosphere.

2. In the process of treating soap for the production of cake soap and soap flakes in a chamber in which the air pressure is maintained below that of the atmosphere, the step of milling and simultaneous heating of saponified material as it is taken hot from the soap kettle in a rarefied atmosphere.

ADOLPH F. THAL.