Dec. 20, 1932. R. S. BLAIR 1,891,744

SOAP MAKING

Filed Nov. 1, 1930

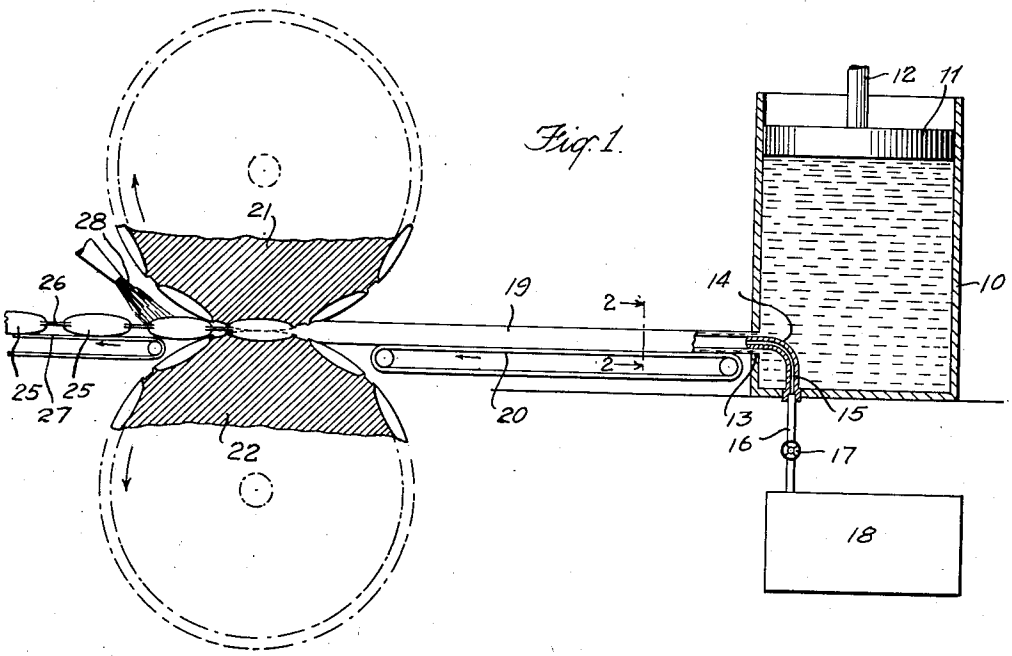

Fig. 1.

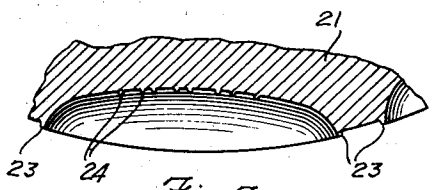

Fig. 3.

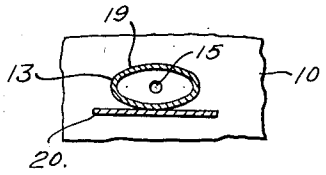

Fig. 2.

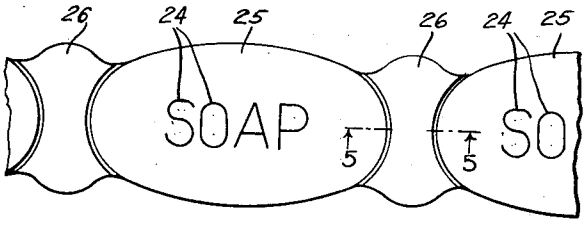

Fig. 4.

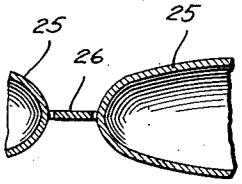

Fig. 5.

INVENTOR

Robert S. Blair

Patented Dec. 20, 1932 1,891,744

UNITED STATES PATENT OFFICE

ROBERT S. BLAIR, OF STAMFORD, CONNECTICUT

SOAP MAKING

Application filed November 1, 1930. Serial No. 492,655.

This invention relates to making cakes of soap, and the application is a continuation in part with respect to my co-pending application, Serial No. 620,633, filed February 23, 1923.

One of the objects thereof is to provide a simple and practical art for making cakes of soap having certain desirable characteristics. Another object is to provide an art of the above nature which may be conveniently carried on at a high rate of speed and which is economical in the use of material. Another object is to provide apparatus for the making of soap cakes characterized by simple construction and efficient action. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, arrangement of parts, and the several steps and relation and order of the same, all as will be illustratively herein described, and the scope of the application indicated in the following claims.

In the accompanying drawing in which is illustratively set forth an embodiment of the mechanical features of this invention and a showing of the art or process,

Fig. 1 is a diagrammatic sectional elevation of apparatus in action in forming cakes of soap,

Fig. 2 is a detail cross section taken on the line 2—2 of Fig. 1,

Fig. 3 is an enlarged sectional view of a portion of a die,

Fig. 4 is a plan of a succession of soap cakes formed in accordance with this invention,

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Similar references and characters refer to similar parts throughout the several views of the drawings.

Referring now to Fig. 1 of the drawings, there is shown a tank 10, preferably of cylindrical form, having a piston 11 downwardly pressed as by the piston rod 12 or other suitable means to exercise compression on the contents of the tank. At the lower portion of the tank is an opening 13, preferably of elliptical form, and of a size equal to the maximum cross section of the soap cake to be formed. Mounted within this opening and fixed in position as on the bottom wall of the tank is a rigid mandrel 14 equally spaced from the walls of the opening 13 so as to leave an annular opening, preferably of elliptical form, of a thickness equal to the desired thickness of the walls of the soap cake as hereinafter described. This mandrel is provided with a passage 15 which may lead to the outer air, but which is preferably connected as by the conduit 16 and throttle valve 17 with a tank 18 filled with compressed air by any suitable means.

In the use of the apparatus thus far described, the tank 10 is filled with soap in such condition as to adapt it for extrusion under pressure. This may be brought about by slight heating or by taking the soap at such stage of its manufacture as it will have sufficient plasticity for extrusion. Upon pressure being applied as by the piston 11, the soap will emerge in the form of a hollow tube 19 of elliptical cross section. Any tendency of this tube to collapse may be offset by venting, but preferably its interior is supplied by compressed air through the passage 15 to the limit of pressure which it will stand without undue distension of the tube. This may be controlled as by the throttle 17 or in any other desired manner.

The tube 19 of soap is received upon an ordinary conveyor belt 20 and fed between a pair of die rolls 21 and 22, each driven as indicated by the arrows and provided with mating die cavities of such form that when brought together, they form an aggregate cavity which is of the shape and size of the desired cake of soap and may be elliptical

both transversely and longitudinally. These die cavities, as illustrated in Fig. 3, are preferably provided with a projecting dull edge 23 and with suitable characters in relief or depression, as indicated at 24, whereby any desired name or legend may be formed in the walls of the soap. This rotary form of dies conduces to a high rate of production, although if desired, reciprocating dies driven transversely to the line of travel of the soap may be employed.

As the dies contact the tube of soap fed to them, they compress the same and the air therein, sealing the edges of the cake and placing it in finished form, as illustrated at 25 in Fig. 4. This compression of the soap cake is facilitated by the internal air pressure, and if desired, the dies may be chilled as compared with the temperature of the soap so as to tend to harden it and make it hold its shape. In the formation of the cake there is usually a web of material at each end, and possibly to some extent at the sides, as illustrated at 26 in Fig. 4, but this web is substantially cut free by the dies and forms scrap soap which may be remelted and later used.

The succession of soap cakes and scrap are received upon a conveyor belt 27 and carried away. If desired they may be subjected to a blast of cold air, as indicated at 28, in order to expedite the hardening action.

It is to be understood that if the soap is used in a form of such hardness as to hold its tubular shape, the internal pressure may be low and the cooling of the dies is unnecessary; in fact they may be slightly heated relative to the temperature of the soap to facilitate the sealing together of the cake and the imprint formed thereon.

As various changes might be made in the construction herein described, and as the art herein described might be varied in certain particulars without departing from the scope of this invention, it is intended that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. The herein described art which consists in forming a hollow cake of soap in plastic form with walls of substantially uniform thickness and thin as compared to the space within the cake, pressing the cake laterally into the desired shape while in plastic condition, and permitting the same to harden.

2. The herein described art which consists in extruding a hollow tubular member of soap and laterally compressing the same into hollow cakes.

3. The herein described art which consists in extruding a hollow member of soap admitting air to the interior of said member and laterally compressing said member into hollow cakes.

4. The herein described art which consists in extruding soap in the form of a hollow tubular member and forcing the walls thereof together at spaced intervals and thereby forming a succession of hollow cakes with substantially closed ends.

5. The herein described art which consists in forming a hollow tubular soap member and pressing the same laterally to merge opposite walls thereof one with the other at spaced intervals and thereby form a succession of hollow cakes.

6. The herein described art which consists in forming a hollow soap member and compressing the same between dies to compress the air contained therein in forming a cake of soap.

7. The herein described art which consists in extruding a hollow soap member and compressing the same between dies of a temperature different from that of the soap with which they engage and thereby form a succession of hollow cakes with substantially closed ends.

8. The herein described art which consists in forming a tube of soap having walls of substantially uniform thickness and thin as compared with the space embraced by the tube, cutting the tube transversely into cakes, and compressing the walls thereof substantially to close said cakes.

9. In apparatus for forming material into cakes, in combination, means adapted to extrude a hollow member, and means adapted to receive said member and comprising means which compress the same laterally at spaced intervals and thereby form a succession of hollow cakes.

10. In apparatus for forming material into cakes, in combination, means adapted to extrude a continuous tubular member, a pair of co-operating compressing members between which and into operative relation with which said tubular member is led and means adapted to operate said compressing members to force said material into the form of a succession of substantially closed hollow cakes.

11. The herein described art which consists in extruding soap in the form of a plastic tube with a closed outer end, admitting air to the interior of the tube as it is extruded, and successively pressing the walls of the tube together at spaced intervals to close the same.

12. In apparatus for forming material into cakes, in combination, means adapted to extrude a hollow tubular member of said material, a pair of cooperating die members between which said tube enters, means adapted to operate said die members to compress said tube laterally across the same at spaced intervals, and means adapted to receive the hollow cakes formed by said die members.

13. In apparatus for forming material into

cakes, in combination, means adapted to form an elongated member of soap, a pair of rotary die members with their co-operating surfaces driven in the same direction, and means adapted to lead said soap between the same, said die members being shaped to form a cake of soap of non-rectangular form and non-uniform external thickness and cut free excess material.

In testimony whereof, I have signed my name to this specification this 31st day of October, 1930.

ROBERT S. BLAIR.