June 21, 1949. A. H. KNOLL 2,473,530

PROCESS OF MAKING BAR SOAP WITH INGRAINED EMBLEMS

Filed June 23, 1945 2 Sheets-Sheet 1

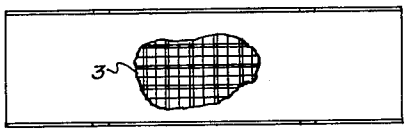


FIG. 4

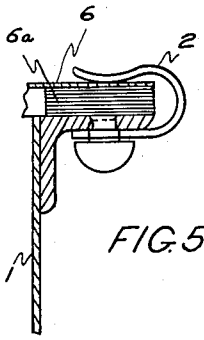


FIG. 5

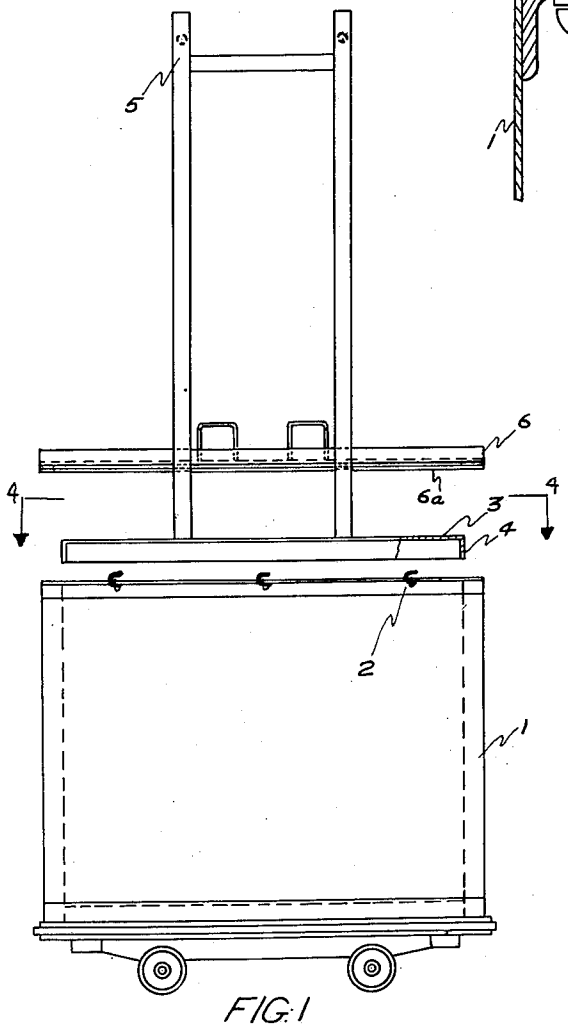


FIG. 1

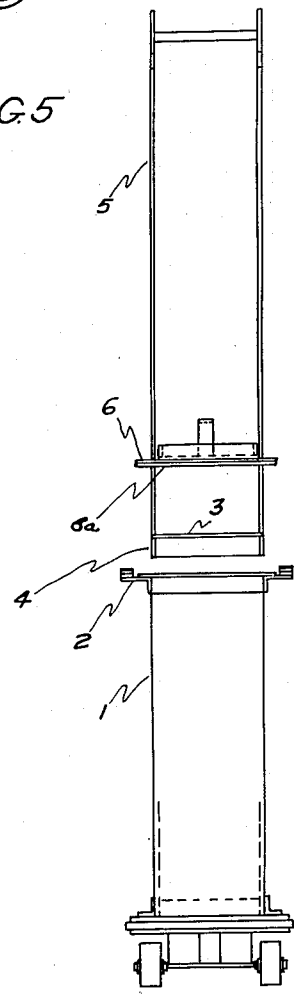


FIG. 2

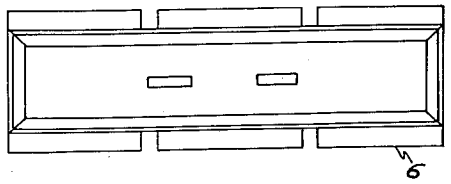


FIG. 3

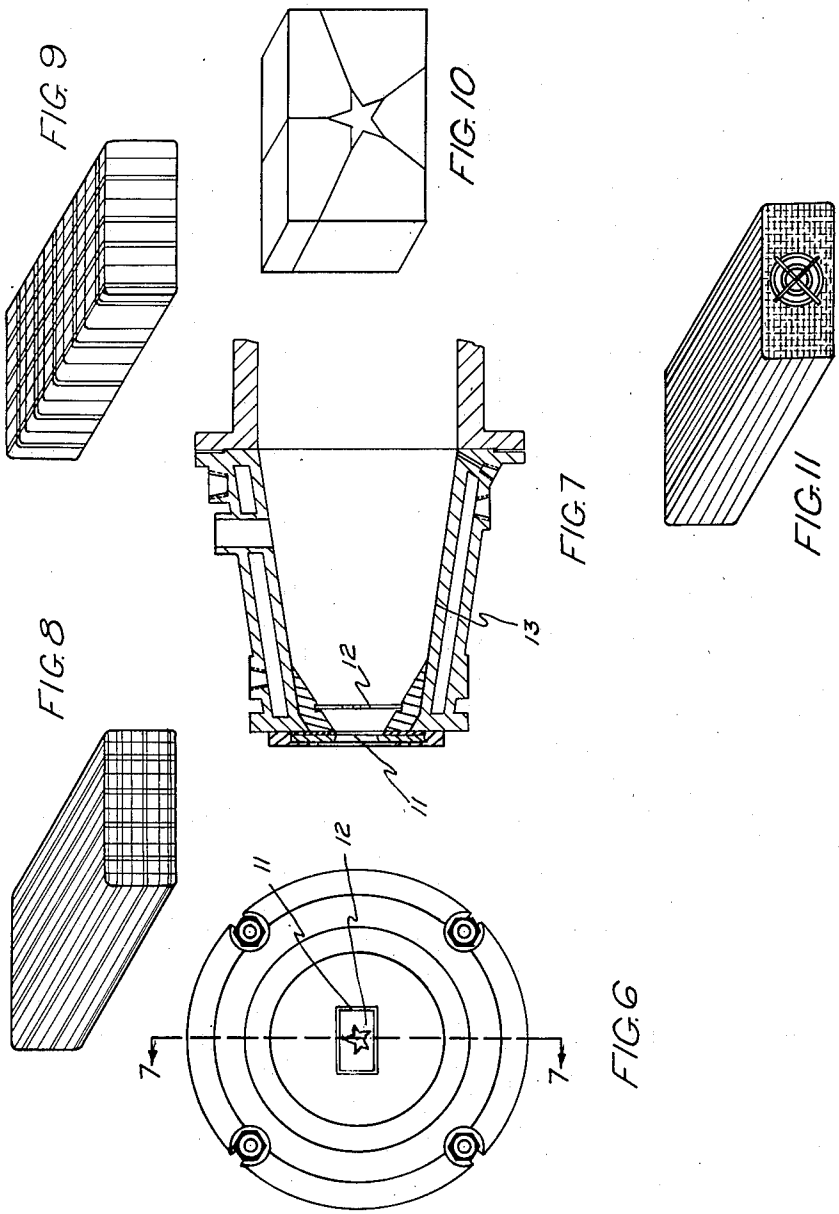
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PROCESS OF MAKING BAR SOAP WITH INGRAINED EMBLEMS

Filed June 23, 1945 2 Sheets-Sheet 2



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2,473,530

PROCESS OF MAKING BAR SOAP WITH INGRAINED EMBLEM

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Application June 23, 1945, Serial No. 601,144

2 Claims. (Cl. 252—370)

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This invention relates to an improvement in manufacture of detergent bar soap, whereby an ingrained design or emblem or trade-mark is displayed by the bar throughout the period of its use.

In the present specification and claims the term "emblem" will be used to signify any design, pattern, symbol, trade-mark, letter, numeral, figure, or group of letters and/or numerals and/or figures and the like which is formed within a bar of soap according to the present invention.

Various ways have in the past been suggested for producing bars of soap which display a name, design, or other emblem not only when the bars are new and unused, but also after they have been put to use and are partially consumed. Inserts have for example been embedded below the surface of bars of transparent soap; also colored soap inlays have been introduced into bars of while opaque soap.

The present invention employs an entirely different principle from these earlier suggestions, and has the advantage of being relatively simple in application and of requiring no elaborate equipment or procedure for treating each individual bar of soap.

My process comprises passing a mass of the soap from which the bars are to be made, while the mass is in a flowable condition, through a grid having a configuration, or a plurality of configurations, corresponding to that of the desired emblem and thereupon, without essentially disturbing the pattern thus created in the mass, cooling the soap until it is fully solidified, and cutting it into individual bars in such a manner that the emblem will appear in the desired position in each bar.

The mass of soap in a flowable condition, suitable for treatment in this manner, may be molten framed soap in the neat phase (e. g. framed kettle soap or framed semi-boiled soap, in either case either with or without admixture with soap builders and/or dispersed fine air bubbles), or cold process soap which is substantially saponified and is approaching the solidification stage of its formation, or partially solidified soap containing mechanically produced soap of beta phase prepared as described in Mills Patent 2,295,594, or any other soap which is suitable for use in any bar soap manufacturing process and which is at least partially in the neat soap phase.

The step of passing a mass of soap in a flowable condition through a grid of the desired configuration may be accomplished by extruding a continuously flowing strip or slab of soap, at a temperature above its complete solidification point, through a grid placed across the extrusion channel at a point such that the soap strands emerging from the apertures of the grid have an opportunity to reunite just before the soap mass emerges from the extrusion orifice. Another way is to push a grid through molten neat soap or through partially solidified crutched soap, while the soap is in a conventional soap frame or other receptacle, in such a manner as to force the soap to pass through the openings of the grid. When this latter method is employed, the grid will ordinarily be made so as to repeat the configuration of the emblem as many times as the number of bars to be cut from a section of the frame or receptacle parallel to the plane of the grid.

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The pattern or emblem that is created in the body of the soap by this general process (without the addition or incorporation of any other soap or any other substance) somewhat resembles a water mark in paper, in that it tends to be faint and elusive rather than sharply defined. It is literally ingrained in the soap, and thus differs from prior suggestions relating to emblems inlaid or implanted in bars of soap.

The term "ingrained emblem" as employed herein denotes an emblem formed in and of the soap mass itself, and does not include emblems formed by incorporating other soap or other materials into the soap mass.

The accompanying drawings illustrate examples of soap making apparatus suitable for the practice of the invention, and also depict soap bars containing ingrained emblems produced by this practice.

Figure 1 is a side elevation of a soap frame, together with a grid in the form of a specially woven wire screen mounted in a supporting structure, and a cover for the frame.

Figure 2 is an end elevation of the same equipment.

Figure 3 is a plan view of the cover for the frame.

Figure 4 is a horizontal sectional view of the screen and its supporting structure taken on the line 4—4 of Fig. 1.

Figure 5 is a cross sectional detail view of the upper edge of one of the sides of the soap frame showing how the cover may be clamped to the frame.

Figure 6 is an end elevation of the extrusion end of a soap chilling and agitating device (of

the general character described in Patent 2,295,-594) having a grid outlining the configuration of an emblem mounted in the discharge passage a short distance removed from the extrusion orifice.

Fig. 7 is a vertical sectional view of this same extrusion end taken on line 7—7 of Fig. 6.

Figures 8, 9, 10, and 11 represent, in perspective, unstamped bars of soap containing ingrained emblems, the outlines of these emblems being shown in the drawings in somewhat exaggerated form.

It is understood that the particular designs, patterns, and emblems illustrated in the several drawings are given merely as example of the innumerable emblems which can readily be designed for use in the practice of this invention, and that the design of the emblem forms no part of my invention.

In Figures 1 to 5, element 1 (diagrammatically shown) is a soap frame, 2 is one of the clamps to hold the cover in place, 3 is a wire screen, in this case woven so as to produce a distinctive plaid-like pattern in the soap, 4 is a metal supporting structure for the screen, having handles 5, 6 is the cover for the frame, and 6a is a sponge rubber gasket mounted on the under side of this cover.

In Figures 6 and 7, element 12 is an openwork grid outlining the configuration of the emblem, in this case a star design, 13 is the discharge passage in which it is mounted, and 11 is the extrusion orifice.

Figure 8 illustrates a bar of framed soap made with the equipment illustrated in Figures 1 to 5, the bar having been cut from the frame in such manner that the grain runs lengthwise of the bar.

Figure 9 represents a bar of soap made with the same equipment, the bar in this case having been cut from the frame in such a manner that the end grain pattern is displayed on the broad faces of the bar, i. e. the direction of grain is parallel with the smallest dimension of the bar.

Fig. 10 illustrates a bar of extruded soap made with the apparatus illustrated in Figures 6 and 7, the direction of extrusion in this case having been parallel with the smallest dimension of the bar.

Fig. 11 illustrates an unstamped bar of soap with grain lines running parallel with its longest dimension, with its ends displaying a cross-hatched end grain pattern with a monogram in the center.

The following examples will serve to illustrate typical applications of my invention.

Example 1.—Kettle soap of 31% moisture content, made by well known kettle boiling practice from an aqueous solution of sodium hydroxide and a mixture consisting of 15 parts of coconut oil, 2 parts of rosin and 83 parts of tallow, is crutched at a temperature of about 152° F. with the addition of small fractions of 1% each of perfume and of preservative, and is simultaneously aerated until the density of the mass is sufficiently reduced so that the finished bar will float in water. The agitated soap is at once discharged from the crutcher into an empty soap frame such as the frame 1 (Figs. 1–5), on the floor of which has previously been placed a wire screen 3, woven from wires of 0.0095 inch diameter in a plaid-like pattern as illustrated in Fig. 4. The screen supporting structure 4 is slightly smaller than the inside plan dimensions of the soap frame, so that the screen and its supporting structure may be moved up and down within the frame with just sufficient clearance to prevent binding. The cover 6 is then placed on top of and in contact with the soap in the filled frame and is fastened in place with clamps 2. The screen on its supporting structure is then raised forcibly and at a fairly rapid rate through the soap to the top of the frame; the cover and the screen are then removed and the frame of soap is cooled, usually by placing it in a relatively cool atmosphere until full solidification occurs whereupon the sides of the frame may be removed and the block of soap further cooled until it is firm enough to cut without undue smearing. It is then cut into slabs, these slabs into strips and the strips into individual bars, either in such a manner that the direction of the grain, which is the direction in which the soap flowed through the apertures of the screen as the latter was raised through the soap, is lengthwise of the finished bar as indicated in Fig. 8, or alternatively in such a manner that the direction of the grain is perpendicular to the two broad faces of the bar as indicated in Fig. 9.

Example 2.—Neat soap of 22% moisture content made from a mixture of 15% coconut oil, 50% tallow, and 35% lard, saponified with caustic soda solution, is chilled from a temperature at which the soap is molten to a temperature of 150° F., and simultaneously agitated, while forcing the mass to flow in a continuous stream through a cooling and agitating device as described in Mills Patent 2,295,594. The chilled flowing soap, which at 150° F. is partially liquid and partially solidified, is further agitated in the discharge end of the cooling and agitating device after leaving its cooling zone, and is extruded in a form-retaining condition through a cone-shaped discharge passage 13 (Figures 6 and 7), through a grid 12 made of thin strips of steel about $\frac{1}{16}$ of an inch wide (in direction perpendicular to the direction of soap flow), and ¼ of an inch thick (in the direction of the soap flow) formed in the shape of an open star having rays radiating from its five points as illustrated, and finally through an oblong discharge orifice 11, which has an opening of substantially the same dimensions as the face dimensions of the finished bar of soap, onto a belt conveyer (not shown in the drawings), which removes the extruded soap to a cutting device which severs the continuous strip into individual bars of the desired thickness.

It should be noted that the apparatus illustrated and described is merely exemplary and can be modified to suit various conditions.

In these examples the individual bars which are cut from the slabs or strips of soap may, prior to wrapping and packing for shipment, be modified in shape (e. g. have their edges beveled or rounded and/or be given a surface impression identical with or supplementary to the ingrained emblem) by pressing or stamping in well known manner, or they may appropriately remain unstamped in order not to divert attention from the emblem which is displayed on their surfaces. The intensity or distinctness of the emblem ingrained in the soap by the present process may be varied somewhat, depending upon the color and nature of the soap and its condition at the time it passes through the grid, particularly by varying the size of the wires or bars of the grid which outline the configuration of the emblem. When the bar of soap is

put into use, the end grain emblem tends to become accentuated, apparently due to differences in rate of solution between the soap which passes through the middle portions of the apertures and that which passes close to the bars or wires of the grid. It will be understood that term "emblem," as previously defined, includes all-over patterns as illustrated in Figures 8 and 9, an isolated figure as in Fig. 10, and combinations of these as in Fig. 9.

In addition to a primary pattern ingrained in the soap, it is possible to produce a secondary or shadow pattern by passing the soap through one grid after another, preferably having the two grids slightly out of alignment one with the other, or by moving a single screen or grid back and forth through the soap two or more times. A primary pattern is created by the grid through which the soap moves last.

The invention is not limited to any particular type of formula, provided the formula is one which produces as a finished product a solid soap as distinguished from a paste or liquid soap.

Soap made by the conventional milling and plodding process, of formulae normally employed in making milled toilet soap, is fully solidified when it is extruded from the plodder at temperatures in the neighborhood of 100° F., and is therefore unsuited for the practice of the present invention.

In a companion application, filed at the same time as the present application, namely, Serial No. 601,143, filed June 23, 1945, the present applicant describes and claims an invention which is closely related to the present one insofar as process steps are concerned.

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

1. A process of making bar soap having an ingrained emblem which includes preparing a mass of soap which is at least partially in the neat soap phase, is in a flowable condition and capable of flowing together and reuniting when divided, and while said soap mass is in said condition, causing it to flow through a grid having elements coacting to form an emblem occupying a substantial surface area of a bar to be formed of said mass, allowing the soap to flow together beyond said grid and without essentially disturbing the pattern thus created in the mass, cooling the soap until it is fully solidified and cutting it into individual bars.

2. The process claimed in claim 1 wherein the soap mass in predominantly neat phase is placed in a frame and wherein said grid is passed through the mass in said frame after which the mass is solidified in said frame.

ALVIN H. KNOLL.

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