

[54] **VARIEGATED SOAP APPARATUS**

3,784,533 1/1974 Mach..... 425/296 X

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[58] Field of Search ..... 264/139, 37, 145, 146,  
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309, 316, 289, 298, 376, 378, 380, 461, 465,  
467

[57]

### ABSTRACT

Plodded striated or variegated soap is extruded as side by side billets through a die having closely spaced openings corresponding to the billet cross sections and slots closely adjacent the outer sides of the openings for shaving away outer surface layers during extrusion.

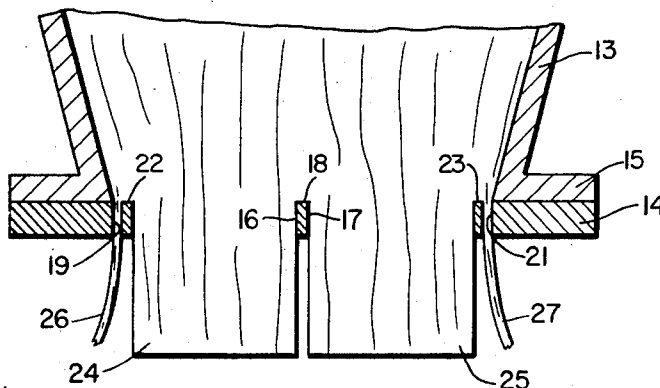
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### References Cited

#### UNITED STATES PATENTS

2,968,835 1/1961 Weston, Jr. et al..... 425/461 X

**3 Claims, 3 Drawing Figures**



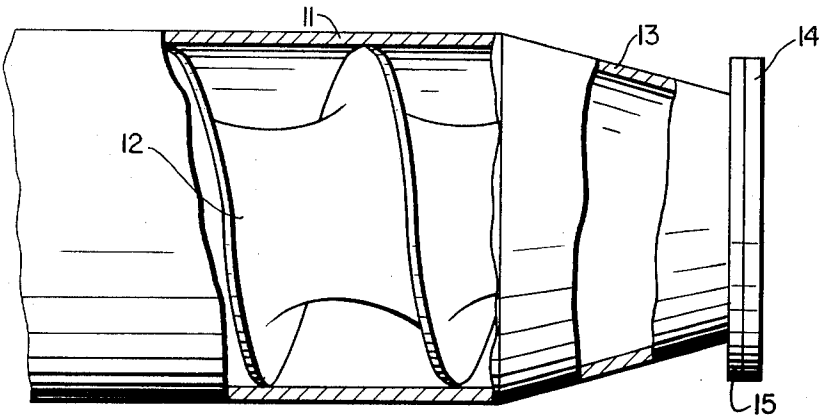


FIG. 1

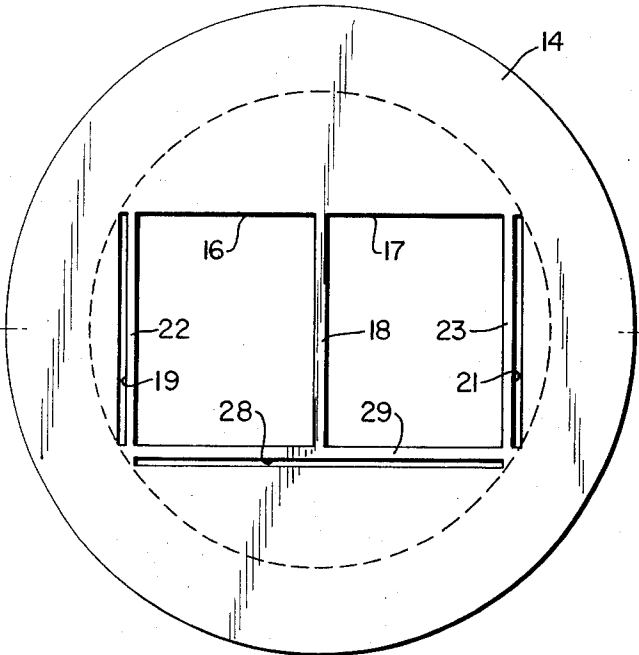


FIG. 2

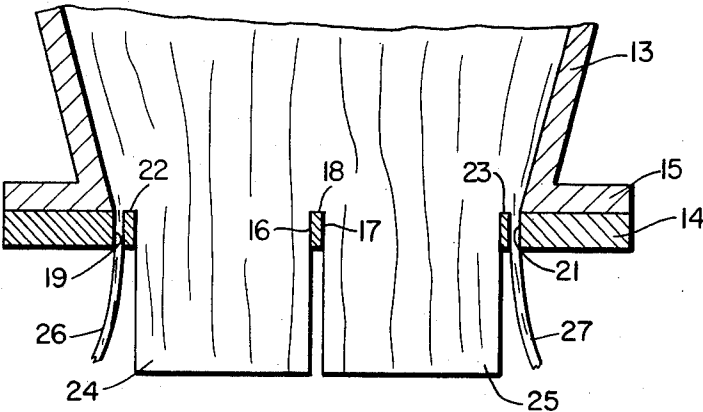


FIG. 3

## VARIEGATED SOAP APPARATUS

This invention relates to the manufacture of variegated soap and is particularly directed to apparatus and method for extruding soap billets that have clearly distinct surface markings exhibiting the color distribution regions.

The making of variegated soap by introducing colored liquid to admix with soap filaments in a worm plodder prior to extrusion of the billet is known as disclosed in U.S. Pat. No. 3,485,905 to Compa et al. It has also been proposed to make variegated soap by introducing colored liquid through the worm of a plodder as disclosed in U.S. Pat. No. 3,676,538. It has further been proposed to make variegated soap by bringing together differently colored soaps from separate plodders or the like in a mixing device which extrudes the mixture as a continuous billet. In all of these prior devices a soap billet of generally rectangular cross section is extruded from the cone of the final plodder.

It has been observed that the color at the surface of billets of most variegated soaps extruded from plodders is usually diffused and the striations indistinct at the surface. A partial solution of the problem is disclosed in said Compa et al. patent wherein shaving knives are disposed to peel off surface layers of the extruding billet to predetermined depths.

The present invention represents an improvement and a material advantage over the Compa et al arrangement in that it reduces the amount of shaving required for an extruded billet and improves the shaving action.

It has been observed that in most plodders wherein color is added for producing variegated soap the striations are more distinct at the central region of the soap billet being extruded. This is believed due to friction with the internal walls of the plodder chamber and cone and consequently slower relative movement of soap that contacts those walls so that the color tends to become scattered or diffused at the outer peripheral region. In the invention, closely adjacent side by side billets of required cross section are extruded from the plodder and only the outer sides of each billet require scraping. The respective adjacent inner sides of the side by side billets which exhibit the more distinct striations of the central region of worked soap do not require scraping. Thus scraping is reduced by half and this is an important advantage of the invention.

Another advantage of the invention is the provision of a novel extrusion die at the plodder outlet which is formed to separate the extrusion into adjacent side by side billets and at the same time, by means of parallel slots adjacent the extrusion aperture sides, peel off a predetermined depth layer from the outer side of each extruding billet. Similar slots may be provided in the die below or even above the extrusion aperture if desirable or necessary.

## BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a fragmentary view partly in section showing the discharge end of a worm plodder;

FIG. 2 is an enlarged front end view of the extrusion die at the end of the cone in the plodder of FIG. 1; and

FIG. 3 is a section substantially on line 3—3 of FIG. 2 and also illustrates the soap scraping or shaving action of the die member of the invention.

FIG. 1 shows the end of a plodder 11 containing a worm 12 for working soap and passing it as a continuous mass into and through the cone 13 at the discharge

end. Color additive is introduced into the plodder in a conventional manner (not shown) so that the soap will be variegated when extruded. Cone 13 is usually circular in internal cross section and at its open smaller end it has mounted an extrusion die 14 through which the variegated soap is forced by worm pressure.

Die 14 is a rigid metal plate having its periphery secured to an end flange 15 on the plodder housing. Centrally die 14 is formed with closely side by side rectangular extrusion openings 16 and 17, preferably of the same size, separated by a narrow land 18. Narrow straight slots 19 and 21 are provided adjacent the laterally outer sides of openings 16 and 17 respectively, with a narrow land 22 being formed adjacent the outer side of opening 16 and a narrow land 23 being formed adjacent the outer side of opening 17. Slots 19 and 21 are parallel and of the same vertical dimension as openings 16 and 17.

In operation, as the compacted variegated plastic soap mass is forced through die member 14, it extrudes as side by side billets 24 and 25 through openings 16 and 17 respectively, due to the splitting action of land 18. At the outer sides of each opening the sides of the extruding billets are extruded and shaved by the action of lands 22 and 23 which peel off effective surface layers indicated at 26 and 27 in FIG. 3. These extruded shaved off layers represent scrap which may be collected and returned into the plodder for further mixing.

Thus the outer sides of the issuing billets are shaved to a suitable depth in the form of extrusions for clarifying the striations, and the inner sides which contain soap from the center of the worked mass require no scraping because the surface striations are already adequately distinct.

The relative dimensions of the respective slots and lands depend on operating characteristics of the plodder, mainly the speed of soap extrusion and the surface of the extrusion die.

In a practical form with otherwise conventional plodder construction, each die opening 16 and 17 is about 40 by 30 millimeters with a land between them about 2 millimeters wide, and each slot 19 and 21 is about 0.8 millimeters wide and spaced from the adjacent opening by lands 22 and 23 that are about 1.5 millimeters wide. The extrusion openings may of course be of any operative size, and it is contemplated suitably sized apparatus to extrude side by side billets each of the cross section hitherto normally present in conventional soap plodders.

As shown in FIG. 2 a further shaving slot 28 may be formed in the die member below and closely adjacent and parallel to the lower sides of the extrusion opening. This slot may be about 0.8 millimeters wide separated from the openings by a land 29 about 1.5 millimeters wide. This slot is provided as may be required for the final shape of the pressed soap bar.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by Letters Patent is:

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1. Apparatus for producing variegated soap billets comprising a plodder having a discharge end, an extrusion die mounted on and communicating with said discharge end, said extrusion die being formed from a flat unitary plate having at least four extrusion openings disposed in side by side relationship, each of said openings being rectangular in configuration and having the same dimension in one direction, said four openings being separated by three lands of substantially the same width, the inner two of said openings being of a size suitable for the extrusion of side by side billets of soap, the outer two of said openings being in the form of slots through which a surface layer of each of said billets is extruded simultaneously with said billets, all of said ex-

trusion openings being defined by parallel walls extending through said unitary plate.

2. The apparatus defined by claim 1 wherein each of said outer openings is less than about a millimeter in width, and each of said lands are about 1.5 to about 2 millimeters in width.

3. The apparatus defined by claim 1 further including at least one additional slot extending generally perpendicular to said outer openings and separated from said inner openings by a land having substantially the same width as said lands separating said four extrusion openings.

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