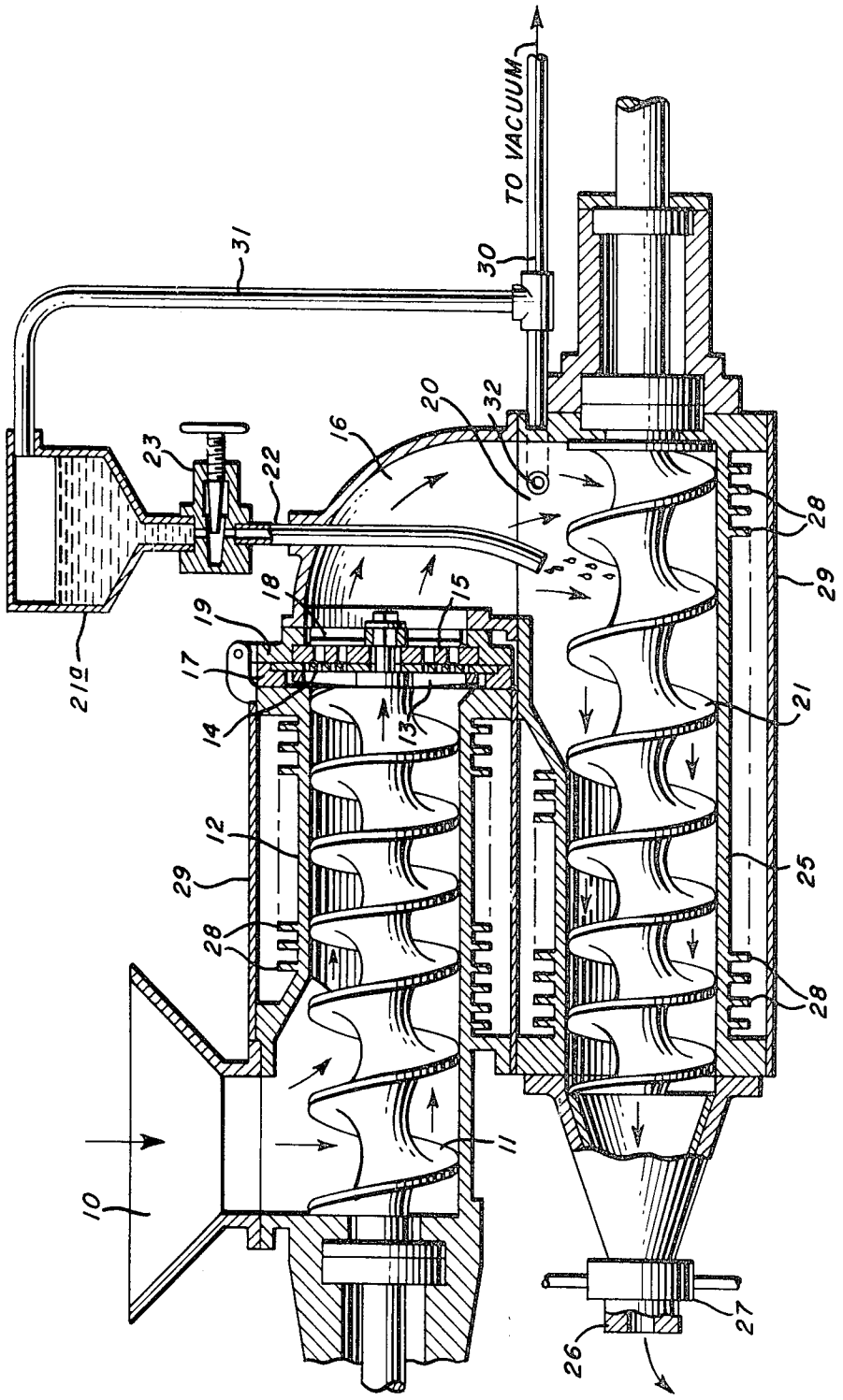
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PLODDER FOR MAKING VARIEGATED SOAP

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PLODDER FOR MAKING VARIEGATED SOAP

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ABSTRACT OF THE DISCLOSURE

An improved plodder apparatus for making a variegated, streaked or striated milled and plodded cleansing agent, which comprises in combination with a double barrel vacuum plodder apparatus, a vessel, under a vacuum, for holding a coloring fluid, a conduit for feeding coloring fluid into the vacuum chamber of the plodder, and a means for controlling the flow of the coloring solution from the vessel into the conduit.

This application is a division of copending application Ser. No. 616,903, filed Feb. 17, 1967 now U.S. Pat. 3,485,905.

The present invention relates to an improved plodder having means for introducing solutions or suspensions of materials to be added to plodded soap and, more particularly, to an improved plodder for making a variegated, streaked or striated milled and plodded toilet soap bar with or without emollients and/or bacteriostats.

For many years variegated or mottled soaps have been made as a framed soap and generally of the "cold made" type.

As emphasized in U.S. Pat. No. 2,649,417 issued to one of the present inventors, the conventional process of making framed soaps comprises crutching kettle soap with the desired addition agents such as perfume, builder, filler, air, etc., and running the crutched mixture into a frame where it is allowed to cool and solidify at ambient temperature. The process is described as involving introducing soap particles into a plodder through an evacuated space, plodding the soap at a temperature in the range of about 70° F. to about 120° F., and extruding the soap from the plodder as a bar which may then be cut into cakes, pressed and wrapped. As described in U.S. No. 2,649,417 in the preferred embodiment of the invention kettle soap is crutched with desired addition agents to form a mixture suitable for a laundry or household bar, the mixture chilled without substantial drying to solid form, and the solidified soap which may be taken from a chilling roll in the form of ribbons is then compacted under a vacuum. As described in U.S. Pat. No. 2,649,417 the soap is discharged from the upper worm into a vacuum chamber through which it falls on to the lower worm from which it is discharged through a nozzle as a bar of any desired cross-sectional configuration.

In contrast, the present invention provides for non-uniform distribution of color to provide striated or speckled variegated bar toilet soap having a least two colors in which white is considered a color. That is to say, it is an object of the present invention to provide an apparatus for producing bar soap having a basic color, including white, having streaks of at least one additional color. In general, a conventional white toilet soap comprising fatty acid soap, white pigment, preservative and perfume is mixed and milled on conventional equipment and fed into the top worm of a double-barrel vacuum plodder such as described and illustrated in U.S. Pat. No. 2,649,417. The soap travels through the top barrel and is extruded therefrom as spaghetti-like filament and/or pellets into an

evacuated chamber enclosing the discharge end of the top worm and the feed end of the bottom worm. Through the housing of the vacuum chamber is introduced a tube fabricated of material capable of retaining its shape under a vacuum of twenty to twenty-nine inches, substantially inert to the soap, substantially non-corrosive, and preferably of stainless steel. The aforesaid tube extends into the aforesaid vacuum chamber with its discharge end or outlet located over the bottom worm. Attached to the other or inlet end of the aforesaid tube is a feed vessel or hopper kept under substantially the same pressure as the vacuum chamber of the double barrel plodder. A needle valve is interposed between he feed vessel or hopper and the aforesaid tube to regulate the flow of the solution from the feed vessel or hopper through the tube to the vacuum chamber between the top and bottom barrels of the double barrel plodder. The feed vessel containing color solution of the concentration to provide a contrast with the basic color of the feed soap is sealed and kept under substantially the same reduced pressure as is being used within the vacuum chamber. As the pellets and/or spaghetti-like filaments falls from the top worm through the vacuum chamber to the bottom worm, the needle valve at the feed vessel or hopper is adjusted to cause the solution of color to drop on the pellets and/or filaments of soap at a rate required to provide the desired streaks in the extruded bar of soap. The extruded bar is cut into desired lengths and pressed.

The milled soap is fed into an opening **10** in any suitable manner and onto a top worm **11** which rotates within an upper cylinder **12**. The top worm carries the soap forward, that is from left to right in the drawing, and at the same time compacts or compresses it and subjects it to a certain amount of levigation. The soap is thus forced through a grinding head **13** and a foraminous plate **14** and through the holes of a backing plate **15** into an evacuated chamber **16**. The grinding head **13** is directly attached to the worm **11** and rotates with the worm. The screen or foraminous plate **14** consists of a sheet metal disc having a myriad of small holes. It is supported at its periphery by rings **17** and is backed by a heavy plate **15** which has a large number of relatively larger holes. Behind this backing plate is set a four-bladed knife **18**, which is directly fastened to the worm **11** and rotates with it, thus serving to cut the filaments of soap which are extruded through the screen **14** by the upper worm **11** into convenient lengths for feeding to the remainder of the apparatus. The screen **14** and the backing plate **15** are carried by ring **19** which is fastened to the upper cylinder **12** by a hinge, so that when it is desirable to clean the screen, access to it may be had readily.

The filaments of soap, after being cut into convenient lengths as described above, fall by gravity through an opening **20** onto a lower worm **21** (while still under vacuum). While falling through the opening **20**, or after falling through the opening **20**, the short filaments of soap are contacted by a solution of a color flowing from a container **21***a* through a tube **22** under control of a valve **23**, which preferably is a valve permitting close control of the flow of liquid in the tube **22**, such as a needle valve. The container **21***a* is maintained under substantially the same reduced pressure, i.e., 20 to 29 inches of vacuum, as the chamber **16**, in any suitable manner. The lower worm **21** rotates in a lower cylinder **25** and compacts and forces the soap forward through a nozzle **26**. This nozzle is constructed in the usual fashion and is provided with a nozzle jacket **27**.

Preferably, the nozzle **26** is one having cutting edges which shave-off the outer one-thirtysecond to one-sixteenth (1/32 to 1/16) of an inch of the surface as the bar is extruded through the nozzle. For example, the structure described in Austrian Pat. No. 95,947 (Sept. 15,

1923) gives satisfactory results. The trimmings so produced can be returned to the mixed when the base color of a succeeding batch is the same as or similar to that used as the second color in the batch from which the aforesaid trimmings are obtained. Thus, blue trimmings can be added to a batch having blue as the base color.

Both the upper cylinder **12** and the lower cylinder **25** are provided with fins **28** and jackets **29** so that coolant can be circulated around the cylinders **12** and **25** to maintain the temperature of the soap being forced through the cylinders by the worms sufficiently low to ensure the production of a bar of soap of proper consistency and plasticity in accordance with ordinary practice. The present invention contemplates subjecting the extruded bar to a conditioning step prior to the pressing operation, if desired. This conditioning operation may precede or follow the cutting of the extruded bar into individual cages and it can be carried out in any one or more of a number of different ways as briefly described in U.S. Pat. No. 2,649,417.

Illustrative of the production of bars of soap having variegated appearance are the following examples:

EXAMPLE I

Blue streaks on white

Chips of soap comprising 15 percent coconut fatty acid soap and 85 percent hydrogenated tallow acids sodium soap are mixed with titanium dioxide, preservative and perfume in the proportions given hereinafter.

Ingredient:	Wt. percent
15:85 coco:tallow sodium soap chips	98.10
Titanium dioxide	0.50
Preservative	0.20
Perfume	1.20

The soap chips, white pigment, preservative, and perfume are mixed and milled. The milled chips are fed into the top worm of a double-barrel vacuum plodder. As the filaments drop through opening **20** a five percent aqueous solution of a compatible dye such as "Heliogen-Blue" is dropped onto the filaments and/or pellets at a predetermined rate to produce the desired streaks of the desired depth of color. Since the number of streaks and the depth of color is a matter of aesthetics, the rate of flow is a matter of local opinion and can be as low as 0.1 gram per pound of soap.

EXAMPLE II

Blue streaks on blue soap

Milled soap chips having the composition given hereinafter are fed to the top worm of a double-barrel plodder.

Ingredient:	Wt. percent
15:85 coco:tallow sodium soap chips	95.470
Titanium dioxide	0.150
Aqueous 50% stannic chloride	0.200
2% aqueous solution of D&C Green dye No. 5	0.250
1% solution external D&C violet dye	0.250
50% aqueous sodium salt of B-gluco-heptonic acid	0.200
Trichlorocarbanilide	1.000
Cold cream [1]	1.500
Perfume	0.980
	100.000

[1] See the following table:

	Percent
Deionized water	11.35
Borax	0.10
Potassium carbonate	0.05
Beeswax	2.95
Paraffin, M.P. 52.5° C.	4.05
Lanolin, anhydrous	66.70
Mineral oil (light) specific gravity at 15.6° C. 0.840 to 0.870; viscosity SUS at 100° F. 80–95 seconds; flash point Taglibue closed-cup 330° F. minimum	14.80
	100.00

As the soap chips fall through the opening **20** they are contacted at the rate of about one gram of solution per pound of soap with a 50/50 blend by weight of a two percent solution of D&C No. 5 green dye and a one percent solution of extract D&C violet No. 2 dye.

EXAMPLE III

Blue streaks on blue soap

Ingredient:	Wt. percent
15:85 coco:tallow sodium soap chips	95.470
Titanium dioxide	0.150
Aqueous 50% stannic chloride	0.200
2% aqueous solution D&C No. 5, green dye	0.125
1% solution external D&C No. 2 violet dye	0.125
50% aqueous sodium salt of B-gluco-heptonic acid	0.200
Trichlorocarbanilide	1.000
Cold cream [1]	1.500
Perfume	0.980
	99.750

[1] See the following table:

	Percent
Deionized water	11.35
Borax	0.10
Potassium carbonate	0.05
Beeswax	2.95
Paraffin, M.P. 52.5° C.	4.05
Lanolin, anhydrous	66.70
Mineral oil (light) specific gravity at 15.6° C. 0.840 to 0.870; viscosity SUS at 100° F. 80–95 seconds; flash point Taglibue closed-cup 330° F. minimum	14.80
	100.00

Milled soap chips having the composition set forth in Example III are fed to the top worm of a double-barrel plodder. As the chips fall through the opening **20** they are contacted at the rate of about 0.5 gram of solution per pound of soap with a 50/50 weight blend of a two percent solution of D&C Green No. 5 dye and a one percent solution of D&C Violet No. 2 dye.

The color or if desired color and additional constituent such as emollient, can be added simultaneously through the tube **22**. When both color and emollient are added and particularly when the mixture is in a paste or slurry form, the valve **23** can be eliminated and a small positive displacement pump synchronized with the plodder drive employed.

The blanks cut from the extruded bar can be pressed on a conventional rotary press or on a modified pin die press. When the latter press is used the bars can be pressed on end, which gives an interesting and unusual design seemingly emanating from the center of the bar.

What is claimed is:

1. In combination with a double barrel vacuum plodder of the type comprising a top worm having a feed end and a discharge end, a bottom worm having a feed end and a discharge end, a casing for each of said worms, an evacuated chamber enclosing the discharge end of the top worm and the feed end of the bottom worm, wherein the improvement comprises a shape retaining conduit having an inlet and outlet end, said conduit extending into the evacuated chamber and its outlet end located over the bottom worm, a vessel for holding coloring solution attached to the inlet of said conduit, said vessel being sealed and under pressure similar to that in the evacuated chamber, and means for regulating the flow of said solution, positioned between the inlet and outlet of said conduit, said improvement producing cleansing agents having a basic color, including white, and having streaks of at least one additional color.

2. An apparatus in accordance with claim **1** wherein said conduit is a stainless steel tube.

3. An apparatus in accordance with claim **1** wherein said flow regulaing means is a needle valve.

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5

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6

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