Dec. 19, 1967 S. N. CRATSA 3,359,206

FLOATING SOAP

Filed May 21, 1964 2 Sheets-Sheet 1

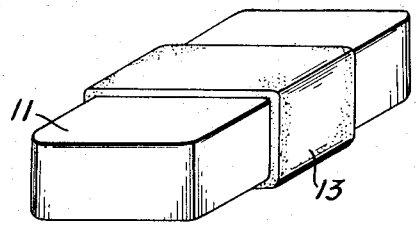

FIG. 1

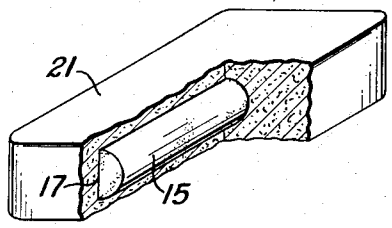

FIG. 2

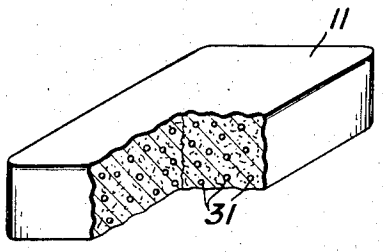

FIG. 3

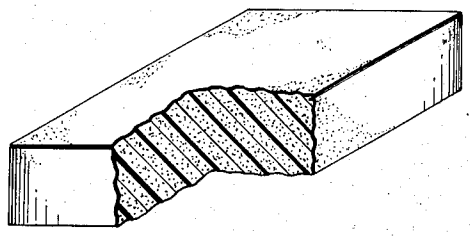

FIG. 4

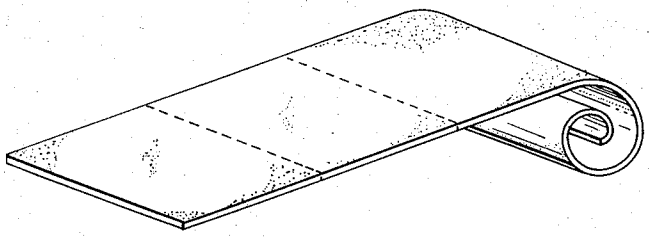

FIG. 5

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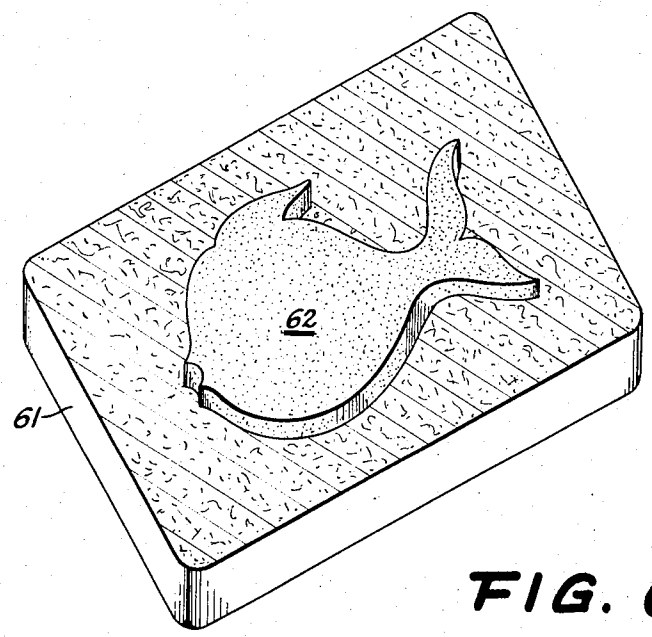

FIG. 6

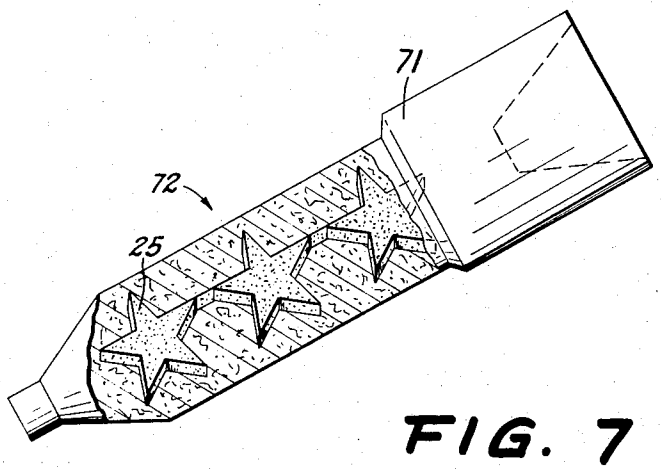

FIG. 7

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FLOATING SOAP

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1 Claim. (Cl. 252—92)

This invention relates generally to floating soaps.

The density of ordinary soap is greater than the density of water, so soap sinks in water. When this happens as one is bathing, the soap is hard to find in the water and once the soap is found, the inherent slipperyness of the soap makes it difficult to grasp. It is not surprising, therefore, that floating soaps are the most popular for bath and toilet use.

Heretofore, floating soaps have depended upon entrained air for their buoyancy. This air is usually incorporated into the soap base during the processing of the soap. For example, the molten soap is beat or churned to incorporate air into the molten mass; the mass is then cooled in specially designed equipment and thereafter plodded or continuously extruded in the form of a bar, which is cut into the desired size of cakes, and cooled.

To entrain air in the soap requires elaborate and expensive equipment. It also requires a number of additional processing steps which must be carefully controlled.

An object of this invention, therefore, is to produce a floating soap which does not depend upon entrained air for its buoyancy.

In accordance with this invention, foamed plastic provides the buoyancy for floating soap.

The above and further objects and novel features of the invention will appear more fully from the following detailed description when the same is read in connection with the accompanying drawings. It is to be expressly understood, however, that the drawings are not intended as a definition of the invention but are for the purpose of illustration only.

In the drawings wherein like parts are marked alike:

FIGURE 1 illustrates a floating bar of soap which floats as a result of the bar being surrounded by foamed plastic;

FIGURE 2 illustrates another embodiment of the invention wherein an insert of foamed plastic renders the soap floatable;

FIGURE 3 illustrates another embodiment of the invention wherein a bar of soap has incorporated therein beads of expandable polystyrene;

FIGURE 4 illustrates a further embodiment of the invention wherein soap is incorporated in a block of foamed polystyrene;

FIGURE 5 illustrates an embodiment of the invention that is in the nature of a film of soap incorporated in foamed polystyrene;

FIGURE 6 illustrates an embodiment of the invention as a novelty; and

FIGURE 7 illustrates still another embodiment of the invention.

Soap is made by the action of a caustic solution on fatty oils. The soap usable in accordance with this invention may be a conventional good grade of toilet soap. Soap is usually made in the shape of a bar. The bar of soap is designated **11** in FIG. 1. Since soap is more dense than water, the soap will sink when it is placed in water.

In accordance with this invention, the bar **11** of soap is surrounded with a band **13** of foamed polystyrene. This band will so change the weight to volume ratio of the assembly that the assembly will float.

Foamed polystyrene is conventionally made by heating expandable polystyrene which is commercially available from several manufacturers. Expandable polystyrene, for example, is sold under the trade name Dylite by Koppers

Company, Inc. Generally, expandable polystyrene is polystyrene in which there is incorporated an expanding agent, such as, a low boiling hydrocarbon, for example, pentane, to the extent of 5–15%. When the particles are heated to a temperature above the boiling point of the expanding agent but below the softening point of the polystyrene, the particles expand to as much as thirty times their original volume and fuse together to form a structure having closed cells and a foamed characteristic. Usually the expandable polystyrene is pre-expanded prior to its being foamed; a suitable pre-expander being described, for example, in Rodman Patent No. 3,023,175. The pre-expanded particles are then expanded in a mold by subjecting the particles to heat. The band **13** may be molded in accordance with the process in Stastny Patent No. 2,787,809.

Alternatively, the band **13** may be made by extruding expandable polystyrene, for example, as described in Patents Nos. 2,941,964 and 2,941,965, in an extruder as a blown film of substantial thickness.

Advantageously, the band **13** is made slightly smaller in inner dimension than the dimension of block **11** of soap. Then the band is expanded and placed over the soap. Thus the band resiliently and frictionally engages the bar of soap. Due to the light weight of the band and the additional bulk which the band provides for the soap, the bar of soap is rendered floatable.

To render the bar of soap more elegant to fit the modern decor of a bathroom, the bar of soap **11** may be of one color and the band of foamed plastic **13** may be made another color so as to give the bar of soap an enhanced esthetic apperance. Additionally, band **13** makes the soap easier to grasp. The band has a different feel than that of soap **11** and does not have the slippery nature which causes the soap to be difficult to handle.

FIG. 2 illustrates another embodiment of the invention. In this application, an insert **15** of foamed polystyrene in the cake **21** of soap renders the soap floatable. The aperture **17** may be made by molding the soap so as to have an aperture **17** therein for insert **15** to be placed in this aperture or insert **15** may be placed in the soap during the time that the soap is being molded in the form of a cake **21**.

While the cake **21** of soap would normally sink in water, the additional buoyancy imparted by insert **15** renders the soap floatable. Thus the cake of soap will float on the surface of the water. Varying the size of insert **15**, it is, of course, possible to impart any desired buoyancy to the soap and thus regulate the extent to which the soap floats.

In accordance with this invention, a floating soap having an enhanced sales appeal may be made by providing an insert therein of foamed plastic of novel configuration such, for example, as shown in FIG. 6. As illustrated therein, the cake of soap **61** has a foamed polystyrene article **62** in the shape of a fish inserted in the bar of soap. It is, of course, obvious that other shapes may be utilized to vary the novel effect of the soap. As is well known in the molding art, the fish or molded article may be made of any desired color. The additional buoyancy imparted to the soap by the insert enables the soap to float in the water. After the soap has been consumed, the plastic article **62** remains as a toy or novelty.

In accordance with the invention, the soap may be used to induce youngsters to bathe. For example, the soap may be molded into the form of a rocket **71**. The foamed plastic article, herein illustrated in the form of stars **72**, are inserted into the soap during the time of molding. Since the weight ratio can be adjusted, the rocket body can be made to float upright as does a conventional space capsule. The soap thus has floating characteristics. As

the soap dissolves and is consumed, suspense builds up in the mind of the consumer to discover the surprise article such, for example, as the star **25** that is in the item. Due to the difficulty in cutting soap or otherwise releasing the star **25** before the soap is completely consumed, the mystery of what novelty is embodied in the soap is not readily unlocked. The fact that the novelty cannot be obtained until the soap is consumed aids parents in inducing children to use the soap for washing since the child knows that he will not obtain the novelty **72** until he has used the soap.

Still another embodiment of the invention is illustrated in FIG. 3. Here the loose expanded particles of foamed polystyrene are incorporated, as beads, in the soap. The beads **31** of expandable polystyrene are pre-expanded, as in the above-described Rodman patent, and then are mixed with the soap prior to the molding of the soap in the shape of cake **11**. The additional volume consumed by these beads of foamed polystyrene increases the buoyancy of the soap to provide a floating characteristic for the soap. Beads **31** can also be used to lend a novel effect to the soap to enhance its appeal to the consumer in that the beads may be multi-colored so as to harmonize with or contrast with the color of the main body of the soap itself.

FIG. 4 illustrates yet another embodiment of the invention. The soap is mixed with the foamed polystyrene, and the mixture extruded as a block of foamed polystyrene. This block is then cut, for example, as with a hot wire or knife, to provide a bar having the desired dimensions.

The foamed polystyrene, itself, forms a soft, slightly abrasive cleaner. As the bar is consumed in so abrading, fresh surface of soap and polystyrene is exposed so that the cleaning power of the abrasive enhances the cleaning power of the soap.

Along with the soap in this embodiment, there may be added an abrasive to enhance still further the cleaning action. Any of the commonly known abrasives, which are in the form of grains or particles, may be used. Such abrasives, for example, include aluminum oxide, silicon carbide, cryolite, calcium carbonate, diatomaceous earth, jeweler's rouge, crocus, and volcanic ash. The size of these particles is a practical matter. However, the particle size generally is in the range of 0.001 to 0.3 inch. The concentration of abrasive should be between 0.1 and 10% of the total volume of polystyrene and abrasive.

With the abrasive, there may be added a cleanser such as a conventional normally solid detergent or surface-active agent, such as, an aryl alkyl sulfonate, as an addition to or substitute for the soap. Conveniently, this is done by adding to the polystyrene between about 0.1 to 10% by volume based upon the volume of the polystyrene

and abrasive of a commercial cleanser such as mechanic's soap, "Bab-O," "Bon-Ami," etc. In such cleansers, the abrasive should constitute from 2–50% of the cleanser.

Although it is preferable to extrude the admixture of expandable polystyrene and soap, the admixture may be readily molded using conventional molding techniques. The resulting foamed polystyrene floats on water.

FIG. 5 illustrates yet another embodiment of the invention. The expandable polystyrene is mixed with soap, abrasive, detergent or mixtures thereof and extruded by conventional practice, for example, as illustrated in the "Dylite Expandable Polystyrene" publication of the Koppers Company, Inc., copyright 1954, page 21, into a blown sheet of foamed polystyrene. This sheet is then split and perforated in a conventional fashion to form a sheet having measured sections. As described before, each section provides not only surface-active cleaner but also enhances this with the abrading power of the polystyrene.

With the foregoing, it is possible, for example, in washrooms to have only a measured amount of cleaner used by each person, which measured amount is formed in one section **51**. After cleaning, this section can be disposed of or discarded thereby decreasing the possibility of the spread of germs. On the other hand, the film is floatable so that it does not drop to the bottom of the water but remains on the surface so as to be readily available for use.

The foregoing has described a novel floating soap which has both useful hygienic and esthetic value. The soap does not depend upon entrained air for its floatation characteristics. The soap can be made to float to any desired extent.

I claim:

A floating soap consisting essentially of a block of water soluble soap having intimately incorporated and uniformly dispersed therein discrete particles of foam polystyrene having closed cells.

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