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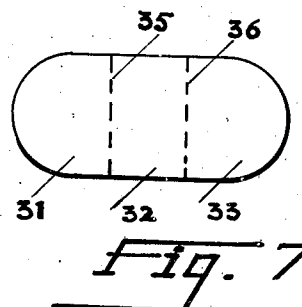
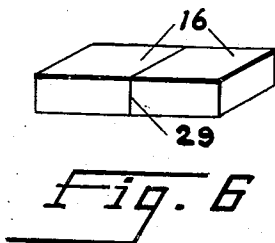
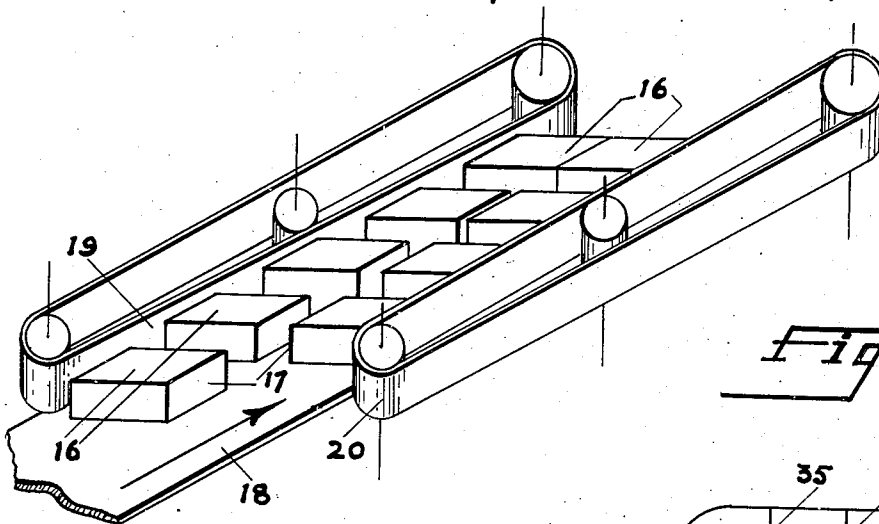
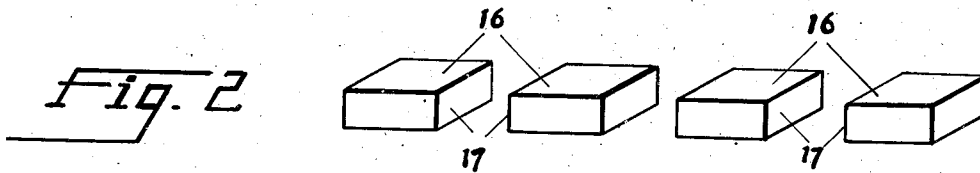
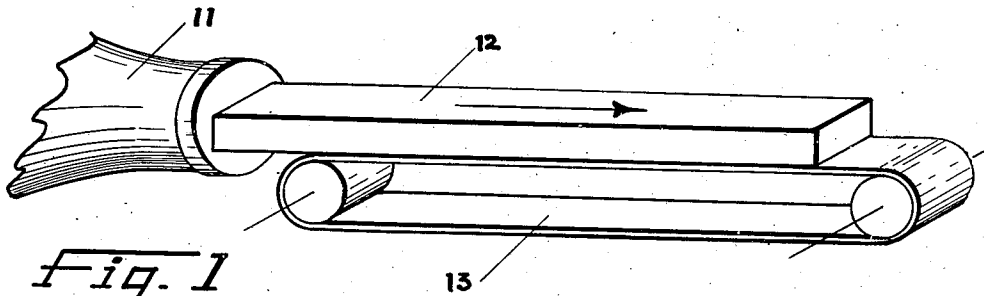
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2,486,213

PROCESS FOR MAKING DIVISIBLE SOAP BARS

Filed Feb. 19, 1946

2 Sheets-Sheet 1



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PROCESS FOR MAKING DIVISIBLE SOAP BARS

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2 Sheets-Sheet 2

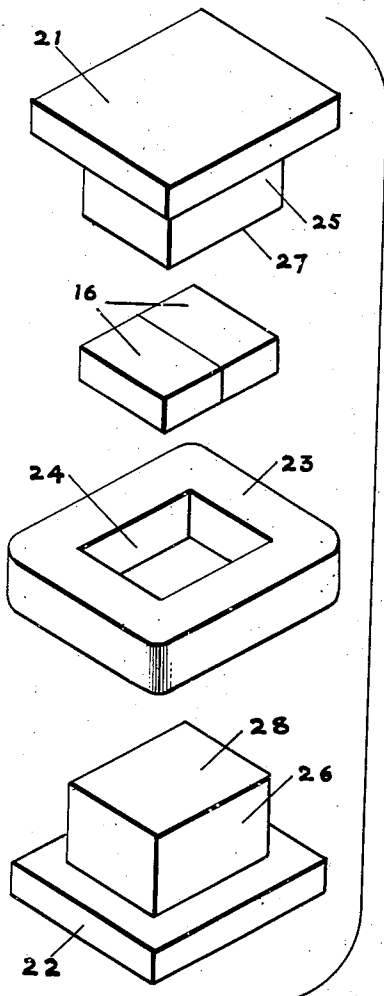


Fig. 4

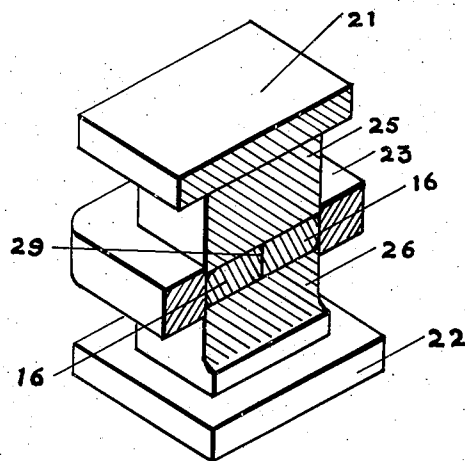


Fig. 5

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UNITED STATES PATENT OFFICE

2,486,213

PROCESS FOR MAKING DIVISIBLE
SOAP BARS

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Application February 19, 1946, Serial No. 648,783

1 Claim. (Cl. 18—59)

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This invention relates to divisible soap bars and is especially concerned with such divisible soap bars which break smoothly and cleanly and where the line of division between them is substantially invisible to the eye of a casual observer.

It is the principal object of the present invention to provide for the packaging of soap in such a manner that it can be packaged and sold in a relatively large bar, and used in that form or broken up easily by the customer into a number of smaller sections for separate or individual use if desired.

The advantage of this arrangement is that less packaging material is required to package a large bar of soap so made up of a plurality of separable sections than would be required for wrapping each section as a separate smaller bar, thereby effecting a saving in packaging cost, and the consumer is able to buy a larger quantity of soap with a commensurate saving for quantity buying and be able to easily break off convenient sections of the soap as he needs them for use.

It has heretofore been recognized that some of the public would like to purchase relatively large bars of soap which could be so sub-divided, and to my knowledge several schemes have been tried. One of the most widely used of these provides notches in opposite sides of the large soap bar, so that a narrowed and weakened waist portion is formed in the soap, and at that portion the soap may break when subjected to bending. The chief objection and difficulty encountered with this and similar arrangements are that notching the bar wastes soap and that the soap bar does not break in a smooth plane, but usually breaks along a rough or rather jagged interface which presents a poor appearance and constitutes slivers and fine projections that are usually wasted when the section is first used in water.

According to the present invention, a further object is to provide a divisible soap bar that breaks upon a cleavage plane which is smooth and clean and presents no objectionable rough or irregular jagged edges. A further object of the invention is to provide a novel process for making a divisible soap bar wherein a larger body of soap is cut into sections which are pressed together on cutting planes or other smooth surfaces until a self-supporting soap bar of the desired number of sections is made.

Further objects of the invention will presently appear as the description proceeds in connection with the appended claim and the annexed drawings wherein:

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Figure 1 is a rather schematic representation of a soap plodder delivering freshly made soap in the form of a continuous elongated columnar body to conveyor;

Figure 2 illustrates the soap body cut up into bars or sections preparatory to reassembly of the sections according to the invention;

Figure 3 is a diagrammatic illustration of a suitable feed arrangement for delivering pairs of soap sections to be joined to a press like that of Figures 4 and 5;

Figure 4 is a diagrammatic exploded representation of a press wherein a plurality of sections of soap are assembled and arranged to be pressed together with their adjacent smooth parallel faces, formed by the cutting operation which produced the sections, in intimate contact;

Figure 5 is an assembled view partly in section of the press of Figure 4 with a bar of soap therein;

Figure 6 is an isometric view of the assembled soap bar with a central line indicating the normally almost invisible cleavage surface between the sections; and

Figure 7 is a plan view of another bar of soap made up of three sections of different shapes, illustrating further the scope of the invention.

Referring to Figure 1, a conventional plodder of the type usually used in making milled soap extrudes therefrom an elongated shape retaining body of soap 12 onto a suitable conveyor 13 which carries the soap body away from the plodder at a suitable rate. As indicated in Figure 2, the soap body 12 is then sub-divided into a plurality of portions, which may either be of the size of the eventual soap bar which it is desired to package, or according to a preferred embodiment of the invention may comprise a plurality of smaller sections 16 which when pressed together again in desired numbers make up a soap bar of the desired size. In the illustrated example, section 16 is half as large as the final soap bar size for simplicity of disclosure, but may be of any relative size. If soap body 12 is initially cut into integral bar-size sections, further sub-dividing means are provided for cutting these integral soap bars into smaller sections 16 in practicing the invention.

The cutting of soap body 12 into bars or sections 16 is accomplished preferably by the usual wire frame knife device common in soap cutting practice which provides smooth clean planar surfaces along the separated adjacent sides of the sections 16. It is not, however, essential to the invention that the separate surfaces be smooth

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or planar. In practicing the invention, I assemble two or more of the sections 16 in a suitable press wherein the sections are pressed together firmly with adjacent smooth parallel cut surfaces 17, which have just been separated by the above-described cutting operation, forced into intimate contact until the two adhere to form a single bar of the desired size. Obviously any number of sections 16 of any suitable size may be provided to assure a soap bar of desired size and of any desired number of sections, the use of a two equal section soap bar being shown only for purpose of illustration and in no way limiting the scope of the invention.

Figures 4 and 5 illustrate a preferred form of press for rejoining sections 16 to form a soap bar according to the invention, and Figure 3 illustrates a preferred manner of conveying the sections 16 in readiness for pressing operation to a press such as that of Figures 4 and 5. Note that the soap sections 16 carried from the cutting device by the moving conveyor belt 18 of Figure 3 have their cut surfaces 17 opposite and adjacent so as to be properly positioned for juncture according to the invention. The vertical side conveyor belts 19 and 20 are preferably arranged to provide a diverging pass from left to right so as to move the sections to be joined toward and into contact with each other prior to delivery to the press which will be located at the right end of Figure 3. Preferably the force exerted by belts 19 and 20 is sufficient to cause each laterally adjacent pair of sections 16 to adhere to each other with enough tenacity to enable the handling required to transfer them to the press.

The press of Figures 4 and 5 comprises relatively movable top and bottom die members 21 and 22 and an open ended usually stationary die box 23. The shape of the die parts and the inner periphery of box 23 is selected to correspond to the desired shape of the final soap bar.

In the illustrated example where a rectangular soap bar is desired, the temporarily joined sections, compressed by belts 19 and 20, are suitably deposited in die box 23 which has its internal periphery 24 formed to the desired contour of the final bar, and the upper and lower die members are brought together under pressure, upper die block 25 and lower die block 26 being shaped to conform in contour to and project within the die box periphery 24. The die blocks have flat smooth parallel surfaces at 27 and 28.

Figure 5 is partially cut away to illustrate in section how the soap is compressed therein by reason of moving the die members together under pressure. Outward flow of the soap is limited by the confining die box periphery 24, and the two sections 16 are caused by the pressure to unite and adhere along their common surfaces 17, and in a common plane indicated at 29. Thus the adhesion at plane 29 is effected by exerting pressure on the soap substantially parallel to that plane in this embodiment. Using soap of a single color, the plane of juncture at 29 is substantially invisible to the human eye.

Figure 6 represents the completed soap bar after it has been taken from the press of Figure 5. The plane of joining between the two sections 16 of the completed bar is indicated by line 29 but in the completed bar, especially when freshly made of similar sections, the casual eye can hardly detect the joining line. Where soap sections 16 of different color are pressed together,

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the juncture plane appears sharp and clearly distinct.

As a result of the above described process, I provide a divisible soap bar which is strong enough by reason of adhesion due to the pressing operation to be self sustaining and resistant to breaking during packaging and normal handling, and which appears to the casual external eye to be a single large soap bar. I have found that when subjected to lateral bending force the above made soap bar will very easily and every time separate along the joining plane 29, and will separate smoothly and cleanly leaving no objectionable jagged surfaces and thereby preventing waste of soap.

Figure 7 illustrates that different sizes and shapes of sections 31, 32 and 33 may be assembled and pressed together in the same manner, being divisible along normally invisible planes or surfaces indicated at 35 and 36.

The press surfaces 27 and 28 may be of any desired shape and also may include raised or indented lettering or indicia for providing the usual markings on the final soap bar. The essential requirement with which the invention is concerned is that severed surface areas be pressed together. It is not essential that the two cut surface areas at 17 be those which were originally separated from each other by the cutting operation, and alternate or other spaced sections 16 may be joined within the scope of the invention.

In practicing the invention I have observed that the technique of actually joining the soap sections with adequate adhesive strength for purposes of the invention will as a practical matter depend on the type of soap being handled, the age of the soap, particularly whether or not the soap is aerated, and especially on the moisture content of the soap.

Aerated soap

I have discovered that the invention is practiced with greatest facility using aerated soap of such composition as to have a relatively high moisture content, which means soap having a moisture content of more than about eighteen per cent. I have found that milled soap which is aerated in a plodder as described in my copending application, Serial No. 591,937, filed May 4, 1945 (now abandoned) and which contains such a high moisture content, is very readily adapted to the process of the invention, in that the tubular soap body extruded from the plodder may be cut into sections and pressed together into bars of desired size and without any special treatment of the surfaces to be joined together. A particular advantage of this process is that no aging or other treatment of the extruded soap is necessary before carrying out the invention, and the severed sections may be immediately pressed together even when warm and fresh cut as soon as they can be conveyed to the press.

Ordinary aerated frame soap has adequately high moisture content for purposes of the invention when freshly made but in usual practice it has been found necessary to age framed soap to permit formation of a surface skin necessary for successful pressing. This skin precludes the rejoining of previously severed surfaces and so interferes with practice of the invention with such soap, and I have found it necessary to moisten the surfaces to be joined, as a spray of water or some similar means, prior to pressing sections of aerated frame soap together. While the joint between the sections here is not of purely

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adhesive character, as with the aerated milled soap, but is substantially formed by a weld or solution, the term adhesive as used in the claims will be understood to include such a joint. Soap sections joined in such manner break relatively clean however, and practice of the invention in this respect may be useful.

Non-aerated soap

As a general rule non-aerated soap sections cannot practically be joined by the above pressing operation, without additional treatment. Ordinary milled and plodded non-aerated toilet soap is of low enough moisture content that aging is not required prior to pressing, but the low moisture content makes it necessary to wet the surfaces to be joined in order to practice the invention.

I have upon experiment found that sections of milled and plodded non-aerated toilet soap of higher than normal moisture content, about eighteen per cent or more, may satisfactorily adhere together if pressed immediately after cutting.

Ordinary laundry and other framed soaps, while of adequately high moisture content, must be aged prior to pressing and thus form the moisture inhibiting skin which precludes joining of sections of such soap in a press without an additional moisture treatment.

In summary, the invention is most preferably and efficiently practiced when joining cut sections of aerated soap of milled soap characteristics, but may be practiced with other soaps with an added moisture treatment of the surfaces to be joined. I believe that the peculiar soap structure resulting from the process disclosed and claimed in my aforementioned application provides the necessary balance of moisture and other conditions required for suitable adhesive joining of the soap sections.

It will be appreciated that the term "soap" herein is intended to cover solid detergents or any similar plastic cleansing materials of the same nature.

I have therefore provided a soap bar and method of making it which to external appearance is a complete bar of large size which may be easily sub-divided along smooth planes or surfaces of cleavage into a predetermined number of smaller sections. If desired these planes of cleavage, if not apparent, may be suitably marked to indicate how the bar will break. These sections may be

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used as desired. These sections may be of different color for ornamental appearance in the larger bar, they may be of different shape as above explained in connection with Figure 4, and they may be of different types of soap. For example one section 16 in the final bar may be a detergent, while the other may be of true soap, and different sections may have different perfumes incorporated therein, or they may be modified in any other desired manner.

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 claim rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claim are therefore intended to be embraced therein.

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

In a process for making a divisible soap bar, the steps of cutting preformed shape retaining soap bar stock into small sections, said sections having correlated faces where severed, assembling a predetermined number of said sections with said severed faces in intimate contact and peripherally confining each section assembly against outward expansion and exerting full surface pressure on each section assembly in a direction substantially parallel to said interface whereby flow of the soap during said compression is limited to relative opposite displacement of each section at said interface to thereby tightly join said sections together at said interface.

ALBERT LYLE SCHULERUD.

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