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E. FLAMMER ET AL
MANUFACTURE OF SOAP
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Fig. 1.

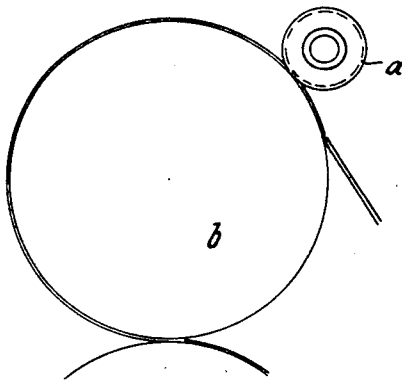


Fig. 2.

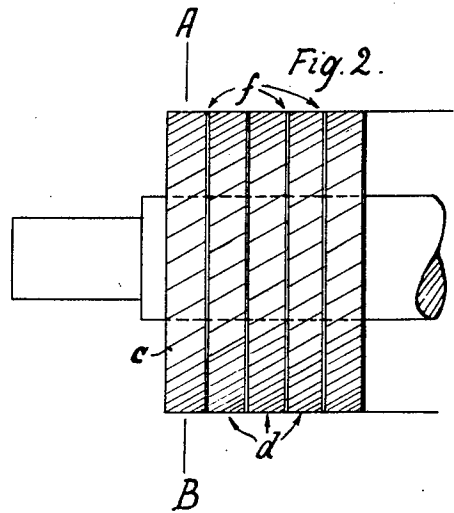
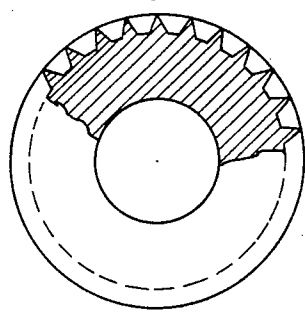


Fig. 3.



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MANUFACTURE OF SOAP

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The well-known soap powders comprising compounds containing active oxygen, more particularly containing persalts, are made by mixing dry finely powdered soap and persalts in the form of powder with or without addition of other dry washing agents in powder form.

These soap powders made of dried soap and persalts become readily dissociated, as the size of the granules as well as the specific weight of the constituents are different. Moreover the soap in powder-form dissolves quicker than the persalt when they are employed and there is thus the danger that the less soluble persalts of greater specific weight settle upon the articles being washed, and, forming a concentrated solution, cause a strong local action and thus a damage to the materials.

According to the present process, however, water containing soap is used for the manufacture of soap flakes or soap bands containing persalts. The soap with a relatively low water content, for instance from 8 to 14% water, are exceedingly brittle when used alone. It appeared to us that it would not be possible to form the soap into thin flakes or the like when adding persalts to the soap.

The form of thin flakes or the like is of particular advantage, as it ensures a uniform solution of the soap and of the persalts contained therein. In this form it is not possible for perborate granules liberated from the soap envelope to produce a strongly concentrated local bleaching solution which would cause holes to be formed in the articles being washed.

According to the present process soap having a small water content, say from 8 to 14% water, is intimately mixed with compounds in powder form, containing active oxygen, particularly persalts, the mixture is then rolled out thin in rolling machines and cut up in a cutting machine into small pieces in flake form. The essential feature of the present process consists in mixing soap having a small water content and persalts, and bringing these mixtures into a form which with certainty prevents the constituents becoming dissociated, which would cause damage to the

articles being washed, and ensures an exceedingly ready solubility.

The manufacture of flakes or bands of soap mixed with salts containing active oxygen particularly per-salts has certain special advantages, if these flakes or bands are made translucent, as is the case according to various modifications of the present invention. Hitherto it has not been possible to make either non-translucent or translucent bands from such a mixture. The applicants have discovered, that translucent flakes or bands may be made, if the fatty acids required for the manufacture of the soaps contain a fairly large percentage of acids of the formula $C_nH_{2n-2}O_2$ and $C_nH_{2n-2}O_3$. With such an addition of acids a uniform band is formed on the rolls, from which readily soluble, translucent flakes or bands may be produced. Less saturated acids, for instance those of the formula $C_nH_{2n-4}O_2$ are not suitable for use as additions to these soaps, when persalts, there is a danger of the formation of organic peroxides.

The products obtained with the admixture of the said acids are translucent and elastic and dissolve uniformly and readily. In this way soaps containing considerable quantities of salts or mixtures of salts in a suitable quantity may be made in the form of thin translucent, elastic flakes.

The invention is carried out for instance in the following manner:

1. A soap is made, the fatty acid mixture of which contains lauric and myristic acid along with 35% ricinoleic acid. The soap thus produced is dried, mixed with 20% sodium perborate and rolled in the rolling machine. Translucent flakes are obtained, which are readily soluble, even in cold water.

2. A soap is made, the fatty acid mixture of which contains lauric, myristic and palmitic acid together with 50% erucic acid; this soap is dried and mixed with 15% sodium perborate. After rolling in the rolling machine translucent, readily soluble flakes are obtained.

In place of the one definite salt containing active oxygen particularly per-salts mixtures of salts may of course be used. The

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selection of the acid to be added (for instance ricinoleic acid or erucic) depends on the kind and quantity of the combined salts containing active oxygen particularly persalts or mixtures of salts containing active oxygen particularly persalts.

Another modification in the manufacture of translucent flakes or bands from a mixture of soap having a small water content and containing salts giving off oxygen consists in adding to the mixture hydrocarbons having the formula C_nH_{2n+2} and C_nH_{2n} with at least ten carbon atoms or their oxy-compounds, free or in the form of their esters. More strongly unsaturated hydrocarbons, for instance those having the formula C_nH_{2n-2} , are not suitable, as they do not obviate the danger of the decomposition of the compounds which give off oxygen. In this case only the acids mentioned above are suitable.

In this modified form the invention may for instance be carried out as follows:

Example 1.—To a mixture of a soap having 84% fatty acid and sodium perborate the cetyl ester of palmitic acid is added, for instance 4%, and after the said ester has been mixed with the mixture of soap and compounds containing oxygen the mixture thus obtained is passed through a rolling machine, the lower roll of which is heated. Bands of good translucence are obtained.

Example 2.—To the mixture of dried soap and oxygen-containing compounds is added for instance 5% of readily oxydized paraffin which by treatment with alkali is freed from the free fatty acid formed, the ingredients are mixed and the entire mixture is passed through the rolling machine. Smooth translucent flakes are obtained after the bands have been suitably divided. The oxydized paraffin may however be previously added to the water-containing soap. In that case the soap is first dried and worked up together with the oxygen-containing compound into flakes.

A third modification of the manufacture of translucent flakes or bands from soap mixed with salts consists in using for the manufacture of the soaps fatty acids which are partially converted into potassium salts, so that the soap which has a small water content or has been dried there will constitute a mixture of potash and soda soaps. If this mixture consisting of potash-soda soaps be mixed with salts which give off oxygen, translucent and sufficiently elastic products may be made. The following is an example of the manufacture of such a soap:

A soap mixture is made containing 17% potash soaps and 83% soda soaps and the mixture is dried. To 80 parts of this dried soap mixture for instance 20 parts of sodium perborate are used and these raw materials are then intimately mixed together. A mixture of potash-soda soaps is thus obtained

with the addition of sodium perborate, which is passed through the rolling machine, and leaves it in the form of a smooth, elastic and translucent band, which may readily be cut up into elastic and translucent flakes.

This modification is not restricted to the limits of 17% potash soaps and 83% soda soaps given in the above example and also not to the proportions of the soap mixture with the salts there given. The mixtures of salts may be used in place of the salt and the percentage of potash soaps may vary according to the kind and quantity of the added salt. The proportions of the soap mixture of potash and soda soaps will be chosen according to the kind and quantity of the added salt or mixtures of salts used.

Thus the main idea underlying the present invention consists in this, that for making soaps into a stable mixture with salts giving off oxygen soap having a water content of less than 15% has for the first time been used. Hitherto it has been assumed that the soap should be completely dry, in order to prevent the destruction of the persalts; it had not however been found possible to make bands or flakes from the dry soap combined with the persalts. For the same reason it had been found still more difficult to make translucent flakes or bands, such as can be made according to the present invention, even with completely dried soap.

The manufacture of the present soap mixture in the special form of flakes or bands further lead to the invention of an apparatus closely associated with the above inventions for cutting the sheets of soap consisting of a mixture of soap with persalts.

Hitherto it has been necessary, for cutting sheets of soap in two directions to use two cutting devices lying one behind the other, one for cutting transversely and the other for cutting longitudinally. Both cutting devices only partially cut through the sheets but not entirely. This necessitated the provision of a breaking device which broke off the separate pieces along the partially cut edges.

According to the present invention a single cutting device is used and no breaking device is required, the raw material being entirely cut through.

This cutting device comprises a steel roller *a*, Fig. 1, which runs on the last roller *b* of the rolling machine, and contains two cutting devices, Figs. 2 and 3, with which the sheet of soap lying on the last roller can be divided both longitudinally of the direction of travel and transversely of the same. The sheet is divided transversely by the cutting roller being provided with spirals *c*. These cutting spirals have a greater or smaller distance from one another, according to the dimensions to which the soap flakes are to be cut.

The separation of the soap flakes in the longitudinal direction is effected by the cut-

ting roller being divided into a plurality of parts and a thin, round, steel disc d being between each two such parts, which effects the longitudinal cutting. The size of the parts, into which the cutting roller is divided, and the number of steel discs depends on the desired dimensions of the soap flakes. If, for instance, the soap flakes are to be 10 mm. wide, the parts of the roller are also made 10 mm. wide and between each two such parts there is a steel cutting disc.

By varying the spirals and the separate steel discs, it becomes possible to make any shape of flake, for instance rectangular, rhomboidal or triangular flakes, by means of a single cutting device. The discs and the spiral roller parts and consequently the shapes to be made can be varied in a very simple manner by making the discs readily removable by the usual means for fixing such parts on an ordinary roller by folds, grooves, an angular shaped core to the roller, and the like.

The central feature of the apparatus according to the present invention, which is closely associated with the manufacture of the flakes or bands, that is the new process claimed herein, consists in effecting by means of a single cutting device in a single operation a transverse and longitudinal division of the sheet of soap consisting of a mixture of soap and persalts and in thus completely cutting through the said sheet of soap and considerably reducing the time taken by the operation, so as to prevent an unnecessary over-heating of the raw materials and the consequent possibility of the destruction of the admixed persalts. Per carbonates may be used in a way analogous to the described use of perborates.

Claims.

1. A process for the manufacture of soap flakes which comprises forming soap containing water but less than 15% thereof, incorporating with said soap a per-alkaline salt and forming said mixture into thin flakes.

2. A process for the manufacture of soap flakes which comprises forming a soap containing a moisture content of approximately 8 to 14%, incorporating with said soap a per-alkaline salt and forming said mixture into thin flakes.

3. A process for the manufacture of soap flakes which comprises forming soap containing water but less than 15% thereof, incorporating with said soap a per-alkaline salt and a hydrocarbon of the C_nH_{2n+2} type containing more than 9 carbon atoms and forming the soap into flakes.

4. An article of manufacture comprising soap flakes containing water but less than 15% thereof and a per-alkaline salt.

5. An article of manufacture comprising soap flakes containing approximately 8 to 14% water and a per-alkaline salt.

6. An article of manufacture comprising soap flakes containing water but less than 15% thereof, a per-alkaline salt and a hydrocarbon of the C_nH_{2n+2} type having more than 9 carbon atoms.

7. A process for the manufacture of soap flakes which comprises forming a soap containing a moisture content of not over 8% incorporating with said soap an alkali metal salt of a peracid having bleaching properties and forming said mixture into thin flakes.

8. An article of manufacture comprising soap flakes containing not over 8% water and an alkaline metal salt of a peracid having bleaching properties.

9. An article of manufacture consisting of soap flakes forming as a whole a loose, non-coherent mass, each flake of which contains water in amount less than 15%, a per-salt of an alkali metal, and a hydrocarbon of the C_nH_{2n+2} type where n has a value greater than 9, all thoroughly and intimately commingled.

In testimony whereof we affix our signatures.

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