

UNITED STATES PATENT OFFICE.

CARLETON ELLIS, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO ELLIS-FOSTER COMPANY, A CORPORATION OF NEW JERSEY.

PROCESS OF MAKING SOAP POWDER.

1,007,680.

Specification of Letters Patent.

Patented Nov. 7, 1911.

No Drawing.

Application filed December 3, 1909. Serial No. 531,236.

To all whom it may concern:

Be it known that I, CARLETON ELLIS, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Processes of Making Soap Powder, of which the following is a specification.

This invention relates to process of making soap powders and relates particularly to a dry pulverulent free lathering soap powder intended particularly for shaving and shampooing purposes.

The object of the invention is to produce from soaps which are normally hygroscopic and difficult of drying, a dry pulverulent non-lumping freely soluble, free lathering soap powder, which for shaving purposes will produce a firm, creamy lather without sponginess and having a substantially neutral reaction, and one which for shampooing will be sufficiently neutral and sufficiently free lathering to have marked detergent action and without injurious effect on the hair or scalp.

If ordinary soap is dried, it will be found that it has a tendency as a rule on standing in the container to form coherent masses. Furthermore, owing to its density, it is not freely soluble and does not immediately produce a free lather. Soaps which contain glycerin or potash are particularly difficult to dry owing to their hygroscopic properties. In the endeavor to dry such soaps, high temperatures have been employed with the result that often times the fat or the glycerin is decomposed into products having disagreeable odor and with more or less discoloration of the soap. Even the use of vacuum pans does not readily overcome the difficulty.

Under the present invention, soap powders containing 3% to 6% of glycerin and 5% to 10% of potash may be made so as to dry readily and produce a satisfactory pulverulent powder free from caking action.

In the selection of the materials to be used under this process, and for the purposes herein specifically mentioned, it is desirable that the stock be light colored in order that the resultant powder may be white or nearly so. For this reason, the use of low grade greases and fats in any large quantity is proscribed. Ordinarily, I prefer to use a considerable quantity of free

fatty acid in the manufacture of these products and preferably employ the fatty acids derived from cocoanut oil or similar light colored fats, or I may make use of stearic acid, the commercial double pressed variety which is sufficiently white for the specific purposes herein mentioned. Fatty acids such as red oil or commercial oleic owing to their dark color are not so desirable. These acids moreover are bleached with considerable difficulty so that they are not generally available for this purpose. The fatty acids obtained by distillation of the fatty acids from cottonseed oil produce a fairly white product although the soaps made therefrom are not as dry and pulverulent as those from cocoanut oil and stearic acid but are more inclined to be slightly sticky or gummy.

In a soap materially intended for use on the person, a moderate amount of glycerin is desirable owing to its healing action and to the tonic effect which it produces on the skin. Cocoanut oil also is believed to have certain healing and medicinal properties and this together with its free lathering powers, makes it a very desirable ingredient in the present composition. In the saponification of cocoanut oil, some 10% or 12% of glycerin is produced and inasmuch as it is not ordinarily feasible to remove this glycerin by salting out in the usual manner, owing to the fact that during the process of salting out, some changes apparently take place in the character of the material which may be due in a measure to the presence of some absorbed salts, etc., it is desirable that saponification be so conducted that the salting out process is eliminated and the glycerin retained in the mixture. However, as a proportion of 10 or 12% of glycerin in the product is not desirable—it having been found that 4 to 6% glycerin is sufficient for the purposes hereinbefore mentioned—means must be taken to reduce the content of glycerin to approximately the lesser amount. This I accomplish in the following manner: Cocoanut oil is saponified with approximately twice the amount of alkali required for its complete saponification, using perhaps an equal amount to twice the amount of water reckoned on the cocoanut oil employed. When saponified, an amount of free fatty acid obtained from cocoanut oil equal in weight to

that of the cocoanut oil originally used, is added to the mixture and rapidly agitated with heating until the excess of alkali is substantially neutralized. Then, the mass is subjected to powerful agitation using emulsifying apparatus or similar beating mechanism to vesiculate the soap, filling it with air bubbles and increasing its volume to perhaps twice its original volume. This powerful crutching or beating renders the soap very porous and if the proportion of water is properly regulated, sufficient time elapses before the soap hardens to permit of an increase in volume of the amount mentioned. On removal from the crutching apparatus, the plastic porous material may be poured into frames and allowed to solidify. If the soap is rather liquid owing to the use of an excess of water, the frame should be cooled in some manner as for example, by means of a jacket containing cold water. As otherwise, in so fluent a condition, the soapy material might contract and lose more or less of its porosity. When the same has hardened, it may be run through a slicing apparatus and then passed into a drying oven. This preferably should be heated only to 60 or 80° C. as a much higher temperature tends to decompose the fatty material to some extent. Owing to the extremely porous character of the material, the water departs very rapidly and a soap which in the non-vesiculated condition might require several days exposure to this temperature to properly effect the drying, is dried in the course of a few hours when in aforesaid porous state.

In the manufacture of cocoanut oil soaps, a great difficulty has heretofore been experienced in the production of a soap which does not rancidify in the course of time. Apparently, this is in a large measure due to the difficulty of complete saponification of the fat resulting in the presence in the finished soap of a small quantity of unsaponified material which eventually becomes rancid. By the present process, saponification of the cocoanut oil with a large excess of alkali overcomes this difficulty and a soap is produced which remains free from rancidity for an indefinite time.

In order to enhance the beneficial effect of glycerin, it is sometimes desirable especially in shaving soaps to add a small quantity say from 2 to 5% of waxy material. This for example may be bleached beeswax, spermaceti, paraffin wax and the like. It preferably should be added to the fatty acids which are added to the strongly alkaline soap during the stage of neutralization.

An illustrative formula under the present invention is made by saponifying 10 pounds of cocoanut oil with 2½ pounds of caustic soda and 1½ pounds of caustic potash, using about two gallons of water for solution of

the alkali in its reaction on the cocoanut oil. This may be boiled down in a steam jacketed kettle until nearly half of the water has been expelled and saponification is complete, when 10 pounds of free fatty acids from cocoanut oil are added and the mixture churned or crutched violently until the volume of the soap product is practically doubled. The soap may then be chilled as heretofore indicated, sliced and dried. After drying, it may be perfumed by means of an atomizer, carrying a suitable perfuming material and then ground. Another illustrative formula consists in cocoanut oil 10 pounds, caustic soda 2 pounds, caustic potash 2 pounds, cotton seed oil fatty acid 10 pounds, all combined as above set forth. Of course, carbonate of soda or potash may displace in whole or in part the caustic alkali used although it is better for the saponification of the cocoanut oil to use the caustic alkali, using a small excess of this and introducing the remainder of the alkali in the form of carbonate if desired. Another formula consists of cocoanut oil 10 pounds, caustic soda 3 pounds, caustic potash 1 pound, stearic acid 8 pounds, still stock 2 pounds.

In the above formulas, the alkali preferably employed is a mixture of soda and potash while in the following intended more for use as a shampoo powder, caustic soda is used as the sole alkali. The formula is cocoanut oil 10 pounds, caustic soda 4 pounds, red oil 5 pounds, still stock 5 pounds. These materials are incorporated as above indicated and when reduced to a powder, ½ pound of pine tar is added and worked into the powdered material, when the mixture may be reground if desired. Powdered camphor, menthol and thymol may be added to such a mixture in order to suitably medicate it. These powders may be combined if desired with suitable filling materials such as talc or ground soap stone or light colored infusorial earth.

To give a saponifying or disinfecting effect, peroxids, perborates and the like may be introduced, provided they are not materially incompatible with the other bodies employed, or by virtue of any internal reactions deteriorate the materials on keeping. The perborates are especially useful for giving to shaving soap powders desirable hygienic properties. Of course, other antiseptic materials may be added in small quantities such for example, as carbolic acid, eucalyptol and the like.

While it has heretofore been customary to pass soap materials in the process of manufacture through crutching devices, more particularly for the purpose of making a uniform mixture and for working the perfumed materials well into the soap, and also for reducing the specific gravity of the soap

in those applications where the soap is desired to be somewhat lighter in water, there has been, so far as I am advised, no application of the process of heavily crutching or beating a fluent or plastic soap mass to incorporate into the soap a very substantial amount of air globules so as to render the soap extremely light and porous and by such an operation to substantially double its volume; or for the purpose of rendering the soap highly porous so that it may be readily ground and so that the ground particles owing to their substantially vesicular character exist not as dense pellets but as flakes or vesicles soluble in water with great ease.

While I do not wish to limit myself in the process herein described to the step of crutching to a volume substantially double that of the original soap mass or in other words introducing into the mass a volume of air substantially equal to that of the soap mass itself, yet I have found that employing these proportions, a product is obtained which is very readily handled and I prefer to conduct the operation substantially in this manner.

What I claim is:—

1. The process of making a free lathering, easily soluble non-coherent soap powder, which consists in saponifying cocoanut oil with twice the alkali required for combination with its fatty acids, in adding after saponification of the fatty oil, a quantity of free fatty acids, sufficient to neutralize said alkali and in crutching the resulting product to substantially double its volume and in subsequently drying and grinding to a fine powder.

2. The process of making a free lathering, easily soluble non-coherent soap powder

which consists in saponifying a glycerid of fatty acid with substantially twice the amount of alkali required to neutralize the fatty acid in said glycerid, in adding after complete saponification, a quantity of free fatty acid sufficient to neutralize the excess of alkali and in crutching the material to a highly vesicular condition and in drying and grinding the resulting product.

3. The process of making a free lathering, easily soluble non-coherent soap powder which consists in saponifying cocoanut oil with twice the amount of alkali required for its saponification, said alkali comprising caustic soda and caustic potash, in adding after saponification a quantity of free fatty acid sufficient to neutralize the excess of alkali and in rapidly agitating in the presence of air, to introduce into said mixture a volume of air substantially equal to that of the soap mass, in drying and grinding the resulting mixtures.

4. The process of making a free lathering, easily soluble non-coherent soap powder which consists in saponifying a quantity of a glycerid with a quantity of alkali substantially more than sufficient to neutralize the fatty acids of said glycerid, in thereupon adding sufficient free fatty acid to neutralize the excess of alkali and in beating and agitating the mass while in a plastic condition to substantially increase its volume and convert it into a vesicular condition.

In witness whereof I have affixed my signature in presence of two witnesses.

CARLETON ELLIS.

Witnesses:

NATHANIEL L. FOSTER,
JAMES T. ERNOTT.