Patented Feb. 2, 1926. 1,571,625

UNITED STATES PATENT OFFICE.

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FLAKED SOAP AND PROCESS OF MAKING THE SAME.

No Drawing. Application filed February 26, 1921. Serial No. 448,168.

To all whom it may concern:

Be it known that I, GEORGE F. DAWES, a citizen of the United States, residing at La Crosse, in the county of La Crosse and State of Wisconsin, have invented certain new and useful Improvements in Flake Soap and Processes of Making the Same, of which the following is a specification.

This invention relates to the production of dry soap powder, flakes or granules, and the general object of the invention is to produce a granular, flaky or powdered soap from ordinary hard soap without the addition thereto of any material such as caustics, etc., which might tend to injure its quality as a safe cleanser.

Another object is to produce a soap, every granule, flake or particle of which is spongeous or porous so that the water with which the soap is used may have the greatest possible action in dissolving the soap.

And a further object is to provide for increasing the detergent qualities of soap so that it will operate with greater effect as a cleanser and be much more economical in use than the ordinary dry soaps, powdered or flake soaps.

Another object is to provide a process by which hard soap may be reduced to a flake, powder or granular form with a relatively great increase in the bulk of the soap.

Still another object is to provide a process which will cause hard soap to be placed in such condition that it may be readily powdered, flaked or granulated.

Other objects will appear in the course of the following description.

In order to produce a granulated, powdered or flaked soap in accordance with my invention, I take ordinary hard soap such as is used for laundry or toilet purposes and commonly known as cake soap or bar soap and thoroughly permeate the soap with moisture, as by soaking the soap in water until it has taken up a sufficient degree of water and is relatively and uniformly soft. The soap, which has been thoroughly permeated with moisture, as above stated, is then preferably placed in an oven, vessel or container but without any water or other liquid in the container and submitted to an even heat of from 250° F. to 450° F., this heat being preferably from 350° F. to 400° F. Under this dry heat the water or moisture in the soap is expelled and this water or moisture in trying to escape from the soap in the form of steam or other vapor causes the soap to swell or puff up so that the soap is left in an extremely light, porous and spongy and porous condition. The soap is kept within the heated vessel or otherwise subjected to heat until all the vapor has been eliminated from the soap and when all of the water and some of the glycerine has been expelled, the soap will be left in a dry, light, porous, sponge-like mass. This mass can then be readily reduced to granules, flakes or to a powdered condition by rolling or kneading or crumbling the soap. In other words, this porous, spongeous mass is then very readily broken up into small particles or granules.

It is my theory of the action of the expanding steam on the soap that the particles of soap however small become permeated with moisture and when subjected to a sudden and intense heat swell and burst from within outward. Fats or oils not saponified cannot be permeated with moisture and cannot be dissolved in water as is soap, but saponification allows the particles to be penetrated by moisture, and it is these water-permeated particles which burst when subjected to a predetermined degree of heat.

I have found in practice that soap which has been treated in accordance with the above process and which is granulated or flaked is much more soluble in water than other forms of flaked, powdered or granulated soap, and that it has a much greater cleansing effect, while the bulk of the soap is increased about three times. That is to say, assuming that a cake of soap is powdered or flaked by ordinary processes and a like cake of soap is subjected to my process and then granulated or powdered or flaked, the flaked or granulated product from my process will have approximately three times the bulk of the product secured from merely granulating, flaking or powdering hard soap in the usual manner. I have found that soap flakes, powders or granules with regard to solubility, the production of suds and cleansing properties are much superior in every way to the soap in its original form or to a like soap which has been granulated, flaked or powdered in the ordinary manner, and that a soap formed in accordance with my process possesses a detergent, dirt removing power which the original soap did not possess and which is not possessed by the same amount of soap

formed in the ordinary manner. Furthermore, I have found from actual tests that the soap formed in accordance with my process is much quicker in its action and it is, therefore, much more effective than ordinary soaps. Actual tests have proved that a tablespoonful of soap flakes or powders made in accordance with my invention has three times the effective value of a tablespoonful of the soap in its original form, due to the fact that the original soap is increased in bulk about three times what it was but withou any loss of efficiency and in fact with a gain in its cleansing and detergent powers.

My process enables the soap when placed in water to dissolve much more easily and thoroughly than if the soap had been dried at a low temperature, as the ordinary soap powders are, and then granulated or powdered.

Actual tests have shown that soap subjected to the process above described has a quality which no other soap, not even soft and wet soap, possesses. This quality renders it capable of being at once reached in every particle by a sufficient amount of water to dissolve it. Undissolved soap has no cleansing effect because every least particle of the soap is extremely porous or spongeous. The process of dissolution under the action of water when the soap is used gives it greater energy and far quicker action than ordinary soap and this without the application of heat or the expenditure of any more labor than is used with ordinary soap. Ordinary dry soap in any form is dense and only a small percentage of the particles are capable of exerting a cleansing influence throughout a given time, and for a perfect dissolution of this dry soap there is required the application of heat or friction and a much longer time is necessary to accomplish the same results than is necessary with my porous and granulated soap. Its instantly penetrable nature caused by its extreme porosity gives it all the advantages of a liquid soap, which has every particle saturated to the point of dissolution, with the added advantages of a dry soap.

I am aware that it is the ordinary practice to make dry soap such as flake soap, soap chips and powders by drying at a low temperature, but this drying is accomplished without impregnating the soap cake with water and then placing it in a relatively high heat so as to expel the water in the form of vapor and render the soap spongy, but the cleansing power of soap dried at a relatively low heat as described is not enhanced by the drying process as it is in my case. The slow drying of soap at a relatively low temperature will not accomplish the results called for because the moisture will be driven out gradually by evaporation, which will not produce the dry, spongeous mass referred to.

I do not wish to be limited to the soaking of the cake of dry soap in water for the purpose of giving enough moisture to the soap to permit steam or other vapor to be formed, as it is obvious that the soap in the process of formation and at a time when the soap is not dry but is filled with water could be reduced to a spongeous mass by expelling the water under the relatively high heat before referred to. Neither do I wish to be limited to the exact degree of heat called for, as this may be varied within a considerable range, nor to any specific length of time during which the soap is to be subjected to the action of heat, as this will vary with different soaps and with different moisture content. Furthermore, it is to be understood that the temperature might be relatively low and then raised to the degree called for to expel the vapors provided this raise is relatively rapid. Preferably, however, the soap is subjected immediately to a temperature of approximately 350° F. I do not wish to be limited to any particular manner of subjecting the mass to heat in order to render it spongeous.

I have used the term "granular" in the claims hereto appended as descriptive of the eventual condition of the soap after it is broken up into small particles, and this term "granular" is meant to include soap in the form of flakes, powders or granules.

I claim:—

1. A step in the process of making granular soap which consists in submitting soap containing a great amount of water to a dry heat at a temperature of approximately from 250° F. to 400° F., and at atmospheric pressure to thereby raise the water in the soap to steam and cause its expulsion suddenly from the soap and thereby render the soap porous.

2. A step in the process of forming granular soap consisting in incorporating in the soap a relatively large amount of water and expelling the water, and subjecting the soap to the action of a relatively high degree of heat at atmospheric pressure, to thereby transform the water into steam and eject the steam suddenly from the soap and thus render the soap porous.

3. A process of forming granular soap consisting in incorporating water with hard soap, then subjecting the soap to a relatively high degree of dry heat and suddenly driving off the water contained in the soap in the form of steam, thus rendering the soap spongeous and porous, and then granulating the mass.

4. A process of forming flake soap consisting in causing a cake of hard soap to absorb a relatively large degree of moisture

and then subjecting the cake to the action of a relatively high degree of heat to thereby suddenly expel the moisture in the form of steam and render the mass porous, and granulating the resultant porous mass.

5. A process of preparing granular soap consisting in immersing a cake of hard soap in water until the soap has absorbed a relatively great amount of water, and then subjecting the soap to a dry heat of from 250° F. to 450° F., and then granulating the soap.

6. A process of preparing granular soap consisting in causing a cake of hard soap to absorb a relatively great amount of moisture, then subjecting the mass to a dry heat of from 250° F. to 450° F. until all of the water in the soap has been expelled, and then granulating the resultant mass.

7. An article of manufacture consisting of soap exploded from within by internal pressure and thus reduced to granular form, each granule thereof being rendered porous by said explosion.

In testimony whereof I hereunto affix my signature.

GEORGE F. DAWES.