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POWDERED SOAP PRODUCT AND METHOD
OF PREPARING THE SAMEWilliam H. Alton, New York, N. Y., assignor to
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This invention relates to an improved powdered soap product. The invention includes both the new soap product and the method of manufacturing the same.

Numerous powdered soap products have heretofore been proposed and some of them marketed. Soap powders, so-called, are extensively used for laundry purposes, etc., and usually contain a considerable amount of hydrated sodium carbonate. Soap powder preparations are also made for washing the hands to remove grease, etc., and these usually contain an abrasive material, such as powdered pumice. Powdered soap has also been produced in the form of particles of substantially pure soap, particularly for high grade laundry purposes.

When an ordinary cake of toilet soap is employed and rubbed between the hands, some of the soap rubs off on to the hands leaving the hands with a layer of soap of sufficient thickness to give a distinctly slippery feeling which is often resistant to ready removal by washing, requiring rubbing and washing for an appreciable time before the soap layer is completely removed. When pure soap in powdered form is sprinkled onto the hands and wet, it tends to run together and form a smeary layer of soap which only slowly dissolves. The result is that a large part of the soap is wasted and serves no useful washing purpose and moreover, has to be washed off of the hands often by washing and rubbing for an appreciable time before the hands are completely freed from it.

My observations lead me to believe that toilet soaps, whether in cake or powdered form, are wasteful, much more soap being used than is necessary. High grade toilet soaps, whether in cake or powdered form, tend to absorb and hold water. A cake of soap after use remains wet for some time and the surface layer is softened by the water absorbed thereby. If the cake is permitted to stand in a dish containing water, the cake is further softened and wasted. Pure soap in powdered form is also hygroscopic or water absorbent and if the powder becomes wet, the particles stick together and tend to remain in an agglomerated state.

The present invention provides an improved powdered soap product which enables soap to be much more effectively employed, reduces the loss and waste of the soap to a minimum and is otherwise free from the objections of the common powdered soaps and moreover, has valuable properties hereinafter more fully set forth.

The new powdered soap product contains finely powdered particles of soap which are so small

that they dissolve quickly in water and these particles are coated or glazed with a non-saponaceous material which prevents the soap particles from sticking together before use, and when the soap product is used the non-saponaceous material prevents the soap particles from adhering together to form an objectionable pasty mass which would become smeared on to the hands. The soap particles dissolve before any such objectionable combining of the individual particles takes place. Furthermore, the soap product is free from larger soap particles, that is, particles so large that they would not quickly dissolve in water at normal body temperatures, but would soften and smear onto the hands before dissolving. The soap particles in the new product are so fine that an extremely large surface of the soap is exposed to the action of the water used in washing and it quickly dissolves. Therefore it is not necessary to use as much soap in the form in which it is present in the new product as formerly to obtain the same washing effect since the soap all goes into solution and there is no undissolved residue of soap which is washed away and wasted. Less soap is consumed in producing the same or an improved washing effect and a considerable saving in soap is thus made possible.

The powdered soaps on the market contain soap particles so large that they feel gritty and uncomfortable when used for washing the hands. The soap particles are not ground to a sufficient degree of fineness to dissolve quickly, and unless some non-saponaceous material is added to the mill which is used in powdering soap to dust the soap particles as they are formed, it is impossible to produce a soap product containing soap particles of the degree of fineness contemplated by this invention. The non-saponaceous material in the soap product of this invention therefore serves a two-fold purpose. It serves as a dusting material to keep the soap particles from adhering together before and also during use, and it also makes possible the grinding of soap to a greater degree of fineness than has heretofore been obtainable in a commercial product.

It is possible to grind soap of any usual water content to particles of extreme fineness by grinding it in the presence of a sufficient amount of a suitable dusting material, such as pyrophyllite, talc, mica, starch, etc. In attempting to grind soap in a grinding mill without such a dusting material, I have found that as the grinding mill becomes warm through friction, the soap in passing through the mill becomes soft and fills up the veins or grinding edges of the plates, smearing

them over and lubricating these surfaces until all grinding action ceases. In the case of a ball mill or pebble mill, the balls or pebbles form with the soap a large pasty mass or ball within the mill and roll over and over in such a way as to form an agglomerate, but without grinding action. However, if the soap is ground with a sufficient amount of a suitable dusting material to form a coating or glaze over each little grain of soap during the process of grinding, the formation of a sticky mass is prevented and the soap can be comminuted to its most efficient particle size.

It might be possible to grind dehydrated soap to particles of the fineness contemplated by this invention without the particles running together as soap of the usual water content does. However, it is not possible to dehydrate soap and then grind it on a commercial scale and produce a product that can compete with other soap products on a cost basis. The drying of soap not only involves heating costs, but is expensive because it necessitates keeping a large amount of soap in process. By adding the necessary amount of dusting material to soap of any ordinary water content it is possible to grind it to particles of the fineness contemplated by this invention. The amount of dusting material which must be added to glaze or coat the soap particles during the grinding process will depend upon the fineness to which the particles are ground and also upon the moisture content of the soap, the temperature and humidity of the air, etc. In general, I have found that by adding pyrophyllite, for example, in an amount equivalent to at least 30% by weight of the soap to the mill and by grinding a soap of any ordinary water content with this amount of dusting material, soap particles of the desired fineness can be obtained. Dusting material equivalent to forty or fifty percent by weight of the soap is used to advantage and even as much as seventy-five or even ninety percent by weight of the dusting material may be employed.

The dusting material employed may be a mineral such as talc, mica, pyrophyllite or other member of the talc family or some vegetable substance such as a member of the starch family may be used. Starch is advantageously used to absorb the moisture from the air and prevent the soap from becoming soft and sticking together in storage.

The soap is ground to such fineness that on sieving it will all pass thru a ten mesh screen and preferably all will pass thru a twenty mesh screen. Some small amount may be retained on a forty mesh screen for heavy duty soap powders such as those suitable for use by mechanics, but for the best results it is preferable to reduce the soap to particles of such fineness that all pass thru a forty mesh screen and over ninety-nine percent pass thru a sixty mesh screen, and preferably over ninety percent pass thru a one-hundred mesh screen.

In preparing the new soap product it is preferable to first separately reduce the soap to a coarse powder by grinding in any device suitable for this purpose and the dusting material is preferably first separately ground to a powder ranging from sixty mesh to impalpability, for example.

When talc or the like is used as the dusting material I prefer to grind it with the soap in a tube or ball mill until it has been reduced to the degree of fineness contemplated by this invention. If starch is used as the diluent it is preferable to use an attrition mill or disc mill driven at a speed of at least a thousand R. P. M. and preferably a mill, the grinding surfaces of which

should be almost without veins in order that the product may free itself largely thru the centrifugal force produced by the high speed. Any suitable type of mill may be employed.

A powdered soap containing twenty-five percent of soap and seventy-five percent of talc or pyrophyllite, substantially all of which passes thru a sixty mesh screen and sixty percent of which passes thru a one-hundred mesh screen gives a coarse product satisfactory for mechanics' hands. In preparing such a coarse grade of soap somewhat less dusting material may be added to the mill, and after grinding, any desired amount of pumice or grit of regulated mesh can be mixed with the powder. Soap of this fineness will all be brought into solution by the amount of rubbing ordinarily employed in using soap for rough work. Powdered soap for toilet use should be entirely free from soap particles of a size to be retained on a forty mesh screen, and preferably over ninety percent will pass thru a one hundred mesh screen. Somewhat more of the dusting material is required for such fine grinding.

The new soap product has a wide range of usefulness and is particularly designed for toilet purposes. Any perfume, disinfectant, coloring matter, etc. is preferably incorporated with the soap before grinding. The dusting material may also be colored before grinding. Care should be taken that nothing is added to the soap product during or after the grinding to interfere with the formation of a free-running product.

The new soap product of this invention is particularly valuable for use in sifter-top cans of the kind now commonly used for talcum powder or toilet powders. The fine subdivision of the particles of the soap and the freedom from water absorbing and caking properties enables it to be shaken from the can much as talcum powder is shaken so that any desired amount of the powder can be sprinkled on the hands and effectively employed.

The possibility of dispensing toilet soap in this manner presents many advantages from a sanitary standpoint. It makes unnecessary the use of individual cakes of toilet soap and enables each user to sprinkle just the desired amount of the powder on his hands without the possibility of contamination which may result from using a cake of soap that has been used by others. The remarkable effectiveness of the soap product, even with its low percentage of soap, enables the soap to be most effectively employed, with resulting economy in the amount of soap required.

I claim:

1. A soap powder consisting of from 10% to 70% of soap, and from 30% to 90% of water-insoluble dusting material from the group consisting of pyrophyllite, talc, mica and starch as essential ingredients, the dusting material having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that all will pass a 40 mesh screen, substantially all will pass a 60 mesh screen and at least 90% will pass a 100 mesh screen.

2. A soap powder consisting of from 10% to 70% of soap, and from 30% to 90% of water-insoluble dusting material from the group consisting of pyrophyllite, talc, mica and starch as essential ingredients, the dusting material having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that at least 90% will pass a 100 mesh screen.

3. A soap powder consisting of from 10% to 70% of soap, and from 30% to 90% of water-insoluble dusting material from the group consisting of pyrophyllite, talc, mica and starch as essential ingredients, the dusting material having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that at least 60% will pass a 100 mesh screen.
4. A soap powder consisting of from 10% to 70% of soap, and from 30% to 90% of water-insoluble dusting material from the group consisting of pyrophyllite, talc, mica, and starch as essential ingredients, the dusting material having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said soap being ground to such fineness that they will dissolve almost instantaneously when added to water.
5. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of starch as essential ingredients, the starch having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that all will pass a 40 mesh screen, substantially all will pass a 60 mesh screen and at least 90% will pass a 100 mesh screen.
6. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of starch as essential ingredients, the starch having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that at least 90% will pass a 100 mesh screen.
7. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of starch as essential ingredients, the starch having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that at least 60% will pass a 100 mesh screen.
8. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of starch as essential ingredients, the starch having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said soap being ground to such fineness that they will dissolve almost instantaneously when added to water.
9. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of mica as essential ingredients, the mica having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that all will pass a 40 mesh screen, substantially all will pass a 60 mesh screen and at least 90% will pass a 100 mesh screen.
10. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of mica as essential ingredients, the mica having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that at least 90% will pass a 100 mesh screen.
11. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of mica as essential ingredients, the mica having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that at least 60% will pass a 100 mesh screen.
12. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of mica as essential ingredients, the mica having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said soap being ground to such fineness that they will dissolve almost instantaneously when added to water.
13. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of talc as essential ingredients, the talc having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that all will pass a 40 mesh screen, substantially all will pass a 60 mesh screen and at least 90% will pass a 100 mesh screen.
14. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of talc as essential ingredients, the talc having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that at least 90% will pass a 100 mesh screen.
15. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of talc as essential ingredients, the talc having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said powder being ground to such fineness that at least 60% will pass a 100 mesh screen.
16. A soap powder consisting of from 10% to 70% of soap and from 30% to 90% of talc as essential ingredients, the talc having been ground with the soap in such manner that it coats or glazes the particles of soap, the particles of said soap being ground to such fineness that they will dissolve almost instantaneously when added to water.

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