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SOAP OR CLEANING COMPOUND.

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To all whom it may concern:

Be it known that I, EDWIN D. CHAPLIN, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Soap or Cleaning Compounds, of which the following is a specification.

A principal object of my present invention is to furnish an improved cleaning compound or soap having when being used, a combined scrubbing and adhesive initial action of a non-abrasive character, and adapted to have incorporated therein an excess (commonly so called) of alkali whereby such initial adhesive action may be gradually overcome during the using of the soap. A further object is to furnish a soap of the class described, composed of two principal ingredients of which one ingredient (while contained in the finished soap, before using) shall have a granular, or granule form and consist of composite scrubbing bodies comprising fiber and a resin, and in which the resin is of a kind combinable with an alkali for thereby aiding in the breaking up of the granular scrubbing bodies during the using of the soap. Further objects and features of utility are explained or set forth in and by the following description.

As regards certain of its qualities and characteristics, my improved cleaning compound or soap may be described as being composed of a saponic-compound, (which may contain an excess of an alkali-component as potash), having mixed and incorporated therein and therewith, granular masses in the nature of body-grains and which consist of a fiber-component and a fiber-holding resin-component preliminarily united and combined together and afterward incorporated into and combined with said saponic-compound, so that this compound has therein and as a part thereof, a component or element that is miscible or combinable, or both, with the said resin-component when the soap is subjected to rubbing in water. When the said excess of alkali consists of potash, the soap is especially adapted for washing by the use of salt water, such as sea-water; and to provide a soap effective for this use, is one of the principal objects of the present improvements. In this specific kind of my improved soap, the potash operates with the other materials present in the soap and in the sea-water to effect chemical action and reactions which overcome the adverse effect of the salts in the water, this being done in part by a breaking up of certain of the salts.

In making my improved soap by the preferred method therefor, I first provide an ordinary or some suitable mixture or compound of soap, and add thereto or therein, a relatively small excess of an alkali, (sometimes designated as the free alkali), which is preferably potash; and this material, for convenience of description, I have herein designated as the "saponic-compound" which forms one of the two principal ingredients, or components of the soap. In the saponic-compound I incorporate a second ingredient consisting of a resin of a kind which is normally combinable with the kind of alkali that constitutes the said excess of alkali. And for deferring for a time or until the soap shall be used, such a combining of the excess alkali and said resin, I protect the resin by supplying this ingredient in granular, or granule, form, and further by supplying the granular resin in a "mechanical" or physical combination (or admixture) with some substance that is somewhat soluble in or with the alkali, but is either not combinable therewith, or is less readily combinable therewith than is the resin. For these purposes, I have found cellulose in the form of short fibers to be a desirable and effective substance, especially when massed together in relatively compact or dense bunches and held together in and by the granule resin. Thus the cellulose may be considered as a "foil" or deterrent for and as against an otherwise normal action of the alkali upon the resin when this is in the granule form as herein set forth.

The described granule-ingredient constitutes a body-portion component for my improved soap, and may be manufactured in various specific ways. One method which I deem to be a preferable mode of manufacture, is to combine a fiber or cellulose element in a mixture with a suitable resin and then reduce this compound material to a granule form by mechanical operations. For such fiber-element I may use the fiber of cotton or other plants,—preferably in a separated or substantially separated form or condition.—and the short "lint" may be used, which is obtained from cotton-seed subse-

quently to ginning and by means of the well-known "delinting" operation. In practice, it is deemed preferable to have the fibers reduced to an extremely short length which, however, may vary within a considerable range. For thus preparing the cotton lint or any longer fibers of suitable character, the fiber-material may be run through a cutting machine in a well-known manner for effecting the proper reduction thereof whenever this is required. For the resin-element, a resin may be selected in accordance with the grade of the soap,—having regard also to the color and consistency,—and for ordinary grades, the unbleached resins of the pine tree is regarded as a suitable material.

When the body-grain is made by mixing the fiber-element stock with a resin as above indicated, the mixture may be spread or rolled out and then after becoming relatively firm or hardened, may be reduced to granular, or "granule" form suitable for incorporation with the mixture of saponic-elements which thus become chemically associated with the said resin-component of the body-grain, and both mechanically and physically associated with the fiber-component of said body-grain. When prepared as above described the body grains on being subjected to the action of the resin dissolving alkali in only a sufficient quantity to partially dissolve the resin, become scrubbing bodies having free-end fibers, and thus are peculiarly adapted for cleaning the hands without the abrasive action on the cuticle due to the incorporation of an abrasive material, (either as adulterants or otherwise) in the cleaning compound. Thus the resin-component may be said to have a compound or complex function, and to form, in certain respects, an element first of the body-grain and next by a chemical association, also an element of the saponic-mixture or compound, so that the composite body-grain,—without being in any proper sense an adulterant,—operates as a chief ingredient and functional component of and in a resultant soap having a suitable excess of the combinable alkali.

While I am unable to fully describe with certainty all of the relations, coactions or reactions of the several soap-forming materials as occurring first during the soap-making process and later during the using of the soap with the addition of water, it is believed that an intimate association or union which is mainly chemical in character, takes place between the saponaceous mixture (or some elements thereof) and the resin component of the body-grains; and, that such chemical union extends to or involves a relatively large portion of the resin-element of such grains, while leaving a sufficient junction or union as between a portion of such resin-element and the fiber-element as to prevent a complete disintegration of the grain itself in advance of the using of the soap. Thus the fibers of a said grain are normally retained together, so that in using the soap the fibers may act temporarily after the manner of minute and non-abrasive scrubbing devices and may perform this function in combination with an adhesive action supplied by a modified resin by which the said body-grain fiber is itself held together for effecting that same scrubbing action; and, these intricate coactions and effects are understood to result during the using of the soap as set forth, in the gradual reduction of the resin-element for thereby disconnecting and separating the fiber-bunches of the grains, and for completely incorporating and combining such resin with and in the saponic-mass of the soap.

In the manufacture of some grades of my improved soap, the described fibro-resinous component or portion may be provided in a preliminarily-combined form, without resorting to an artificial manufacture thereof, since the required fiber and resin is sometimes found in a combined form in certain kinds of wood, especially in some species or varities of pine trees. Hence by selecting a wood having a sufficient resin-component, and minutely dividing the wood into short-fiber body-grain form, the desired fiber-bunches are obtained in granule bodies having a resin-component in condition for being acted upon by the materials of the saponic-compound. For other grades or kinds of the soap, however, a fiber-component will be required which is not found already existing in a combination with a suitable resin-element.

In providing the body-grains, the resin-element thereof need not, in practice, be entirely free of other substances, especially if these are relatively neutral in character, and do not act in such a way, or are not present in such quantity as to materially vitiate the quality or mode of action as between the saponic-compound and the combined fiber-component and resin-component of the body-grain portion or ingredient of the soap. In view, therefore, of the use of oils or fats in the making of the saponic-compound, it is not regarded as being objectionable for the resin-component to contain or be accompanied by, or associated with, a small proportion of an oil, or a gum or a fat, or with two or more of them,—especially if these are of vegetable origin,—either with or without other non-injurious substances, including salts or mineral substances, if in small or non-active forms or quantities. The materials to be employed in any given case, should be selected, of course, as regards degree of purity and

otherwise, in accordance with the quality or grade of soap to be made, and the purpose for which the soap is to be used, but these are matters which, in practice, may be readily ascertained by trial, in accordance with methods well-known in this art. In practice, the relative quantities of the two principal ingredients of the soap may be varied, and I prefer to use, especially for medium grades of the soap, about equal volumes of the saponic-compound and of the body-grain ingredient, but a ratio of about one to two may be used in some cases.

In the soap when completely compounded, the free-alkali element of the said saponic-ingredient will tend, of course, to combine to some extent (but in a progressively self-limiting manner) with the resin-element of the body-grain ingredient, so that said two soap-ingredients each has therein a component-material which coacts directly and initially with a component-material of the other said soap-ingredient, and this at a time prior to the using of the soap. But, as explained, that initial coaction, or tendency to combine, may be limited or deterred,—as by the proportions and relations of the materials,—so that in the soap as used, there may exist a considerable portion of uncombined resin in the fiber-bunch granules. On using the soap when in that condition and with water or other dissolvent therefor, the then uncombined portion of the resin-component becomes subject, as I apprehend, to a compound action consisting of a continuance,—or renewal,—of the alkali action plus the disintegrating action due to rubbing, so that some of the resin,—when the soap is used, for instance, in washing the hands,—will be liberated and spread upon the skin for producing, first, an adhesive effect which materially aids in the cleansing; and, second, spreading the uncombined resin in a comminuted form, over the surfaces and thus making it subject to the further action of the alkali. Thus the surfaces to be cleaned, are subjected at once to a complex treatment involving the saponified material, the uncombined resin (for aiding entrainment of dirt particles), the residuum of free-alkali, and the non-abrasive scrubbing action of fiber-bunches while these are in process of disintegration by the coaction of the alkali and resin aided by mechanical attrition.

My improved cleaning compound may be described as consisting of grains which are mixed in a viscous and saponaceous grain-reducing element, said grains comprising undissolved fiber or cellulose in fiber-form and combined with an undissolved resin component, the said grain-reducing element comprising saponaceous material having therewith alkali of a kind and in a quantity for effecting or aiding in a disintegration of said grains on the using of the cleaning compound under the action of water and rubbing.

My improved soap may be varied in consistency to suit the requirements of the trade, and it is especially adapted to be made of a plastic quality and to be packed in jars and cans for the market, and for shipment. Also, the soap may be reduced to a dry or hardened form and thus be sold and used in the form of cakes; this, in some instances, is the preferred mode of preparing the soap, especially when it is compounded for use with sea-water, in which case the excess-alkali usually will be potash. However, in making the saponaceous portion of the soap, soda alkali may be used in part or wholly, (or, in some cases, ammonia) while the excess alkali consists of potash.

The following is one of many possible examples of how my new cleaning compound may be prepared:

20 parts by weight of very short cotton fibers are thoroughly mixed with 100 parts of powdered unbleached pine resin. The resulting mixture is heated until the resin is freely liquid, and the mixture is then thoroughly stirred. It is then allowed to harden and is ground to fine granules to be used as will be shortly explained.

160 parts by weight of finely chipped soaps are heated with 30 parts of water until the mixture is fully dissolved. Four parts of potash are then added, and then are added 40 to 50 parts of the above mentioned granules, which are thoroughly mixed, after which the compound may be allowed to cool in molds.

In practice, the proportionate quantities of the granular and saponaceous components of the finished cleaning compound, may be varied according to the special requirements, but for washing hands,—as in factories where the workmen get on their hands much oil and grime, I prefer to use at least 20 to 30 per cent. by weight of the granules; in some special cases this ratio may be advantageously increased to one-half, or even more, of the whole quantity.

Having thus described my invention, I claim:

1. A cleaning compound composed of a saponic-compound in combination with granular masses mixed therein and consisting of an undissolved fiber-component and an undissolved fiber-holding resin-component preliminarily united together and having the fibers in a free-end condition, said saponic-compound having therein a component combinable with the said resin-component only when the soap is subjected to rubbing in water.

2. A cleaning compound composed of a saponic-compound having an excess alkali,

in combination with a body-grain ingredient composed of undisintegrated free-end fiber and an undissolved resin normally combinable with the alkali, but only partially so combined in the cleaning compound when this is ready for use, whereby a further combining of the alkali and resin may take place on the using of the soap with a dissolvent therefor.

3. The improved cleaning compound herein described, consisting of two principal ingredients of which one is a saponic-compound comprising an excess alkali-component; and, of which the other said principal ingredient is a granular form of fibro-resinous material constituting non-abrasive scrubbing bodies having free-end fibers, and having therein an undissolved resin that is normally combinable with said excess alkali of said saponic-compound.

4. A cleaning compound composed of a saponic-compound having an excess alkali, in combination with a composite ingredient comprising scrubbing bodies consisting of free-end cotton-fiber and an undissolved resin which is combinable with said alkali.

5. A cleaning compound composed of a saponic-compound having an excess alkali, in combination with a composite ingredient comprising scrubbing bodies consisting of free-end cotton-fiber and an undissolved resin of the pine-tree, and having the resin and excess alkali in a proportion for deterring the combining action thereof in the soap when this is compounded ready for use, substantially as set forth.

6. An ingredient for use in making soaps of the class herein described, consisting in a compound of separated and free-end fibers incorporated in a mixture with an undissolved resin and then reduced to a granule form constituting a body-grain material subject to disintegration by an excess alakali when combined in a saponic-compound, and subjected to the action of water and rubbing.

7. An ingredient for use in making soaps of the class herein described, consisting in a compound of short cotton fiber incorporated in a mixture with undissolved resin and then reduced to granules having free-end fibers, substantially as described.

8. A cleaning compound consisting of grains mixed in a saponaceous grain-reducing element, said grains comprising undissolved free-end fibers combined with and held together into smaller masses by an undissolved resin component, and said grain-reducing element comprising saponaceous material having therewith alkali for aiding a disintegration of said grains on the using of the cleaning compound under the action of water and rubbing.

9. A cleaning compound consisting of grains mixed in a saponaceous grain-reducing element, said grains comprising cellulose in fiber-form combined with and held together by an undissolved resin component, and said grain-reducing element comprising saponaceous material having therewith alkali in a quantity only sufficient for partially disintegrating said grains on the using of the cleaning compound under the action of water and rubbing.

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Witnesses:
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