

UNITED STATES PATENT OFFICE

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PROCESS OF MAKING A SOAP COMPOUND

No Drawing.

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This invention relates to a novel soap compound and the process of making the same, the chief object being to provide a soap having a greatly improved cleansing action.

To that end the invention contemplates a soap or soap compound having incorporated therein an enzyme capable of effecting, by catalytic action, the transformation or conversion of the slowly soluble starch, in fabrics or analogous articles being washed, into readily soluble sugar as a part of the chemical change which takes place when soap is dissolved in water, thereby releasing the dirt attached to the starch and starched material. This action is supplementary to the ordinary cleansing action of soap, wherein, when the soap is dissolved in water, a partial interchange takes place between the sodium or potassium of the soap and the hydrogen of the water and there is formed a hydrogen stearate and a certain amount of caustic soda or caustic potassium. The alkali thus set free attacks the greasy or oily matters of the articles to be cleansed, and the aqueous solution of soap held in suspension removes mechanically the particles of dust and other insoluble matters. The catalytic action of the enzyme, which is consolidated with the soap forming materials during the course of manufacture, accelerates this action of the usual soap forming materials by the transformation or conversion of any starch present into the readily soluble sugar, which chemical action automatically frees the dirt.

A further object of the invention is the specific use, as a part of the soap compound, of diastase or diastasic material, for instance, as it occurs in malt, as the enzyme to provide the catalytic and chemical reaction referred to.

In general, the invention contemplates, a soap or soap compound having the chemical and physical characteristics referred to which may be utilized for general washing or cleansing purposes, either as a hard soap or as a soft soap, but possessing special utility in its application to the washing of woven material in the course of manufacture or the washing of fabrics made up into clothing or other articles. Also, the invention provides

a soap or soap compound which may be made up into the finest grade of soap with no harmful or damaging effects on the finest textile materials.

In carrying forward the invention it will be understood that the enzyme preferably selected for the purposes of the invention is diastase. This as an ingredient of the soap may be selected from any source or supply for diastasic material, and the same may be either in solid form or as a semi-fluid or liquid, such as fine diastasic malt flour, a dried diastasic malt extract, a diastasic malt extract or syrup, a thin liquid diastasic malt wort, or other diastasic material. In whichever of these forms the diastase is used it has the catalytic action of an enzyme as herein explained.

As to the processing of a soap made in accordance with the present invention it will be understood that the invention is not limited to any particular soap forming materials, nor interferes with any of the usual soap making processes, but certain conditions must be met in connection with the use of the diastase or diastasic material in order to preserve intact the power of the diastase as an enzyme, and the chemical action resulting from its use. In that regard, the condition particularly to be met is that the action or power of the diastasic material is diminished or destroyed by heat, so that it becomes necessary that in the making of the new soap, the temperature must be kept sufficiently low to preserve the life and activity of the diastase. In that connection it is quite generally recognized that a temperature of 140° F. is the maximum temperature with which diastase may be employed for any purpose without destroying its efficiency, and that temperature of course is materially below that of the temperature necessary to effect proper saponification of the soap forming materials.

Consequently, the diastase or diastasic material must not be subjected to a saponification temperature, and an important feature of the invention therefore resides in introducing the diastase or diastasic material into the soap mass after saponification has taken place and such mass reduced to a temperature below

(approximately 140° F.) where the diastase or diastasic material can safely be worked into the soap mass and become an intimate structural ingredient thereof. Of course it will be understood that the diastasic enzyme or material may be introduced into the soap compound at almost any stage of manufacture, provided the temperature of the compound or mixture at the time is not subsequently raised beyond the temperature at which such enzyme or material will lose its character. Also, subject to the condition mentioned the diastase may be added to soft or liquid soap and thoroughly incorporated therewith, or introduced and incorporated into the soap when the latter is in a semi-liquid or soft condition, or it may be added to fine chipped and dried soap and thoroughly incorporated with it. Regardless, however, of when and how the diastase is worked into the soap the condition must be observed that subsequently the temperature of the mixture must not be raised above the danger point for preserving intact the character and action of the diastase. It will also be understood that the power of the catalytic and chemical action of the diastase will necessarily vary with the proportion of the ingredients, and in fact that action of the diastase is controlled by the percentages of the ingredients used in the soap forming materials and of the diastase or diastasic material. These percentages also necessarily will vary with the quality of the soap forming materials and of the soap to be produced.

From the foregoing it is thought that the novel features of the invention have been sufficiently pointed out without further description particularly with reference to distinguishing feature of the use of diastase or diastasic material in the manufacture of soap so that it will become an active ingredient thereof, and in the process of making the soap which requires that the soap mixture or compound, after the introduction of the diastase or diastasic material therein, shall not be raised to or beyond a temperature at which the diastase or diastasic material loses its character and chemical properties.

I claim:—

A process of making a soap composition which consists first in saponifying soap forming materials and subsequently mixing diastase therewith at a lower temperature than the saponifying temperature.

In testimony whereof I hereunto affix my signature.

GEORGE G. FRELINGHUYSEN.