

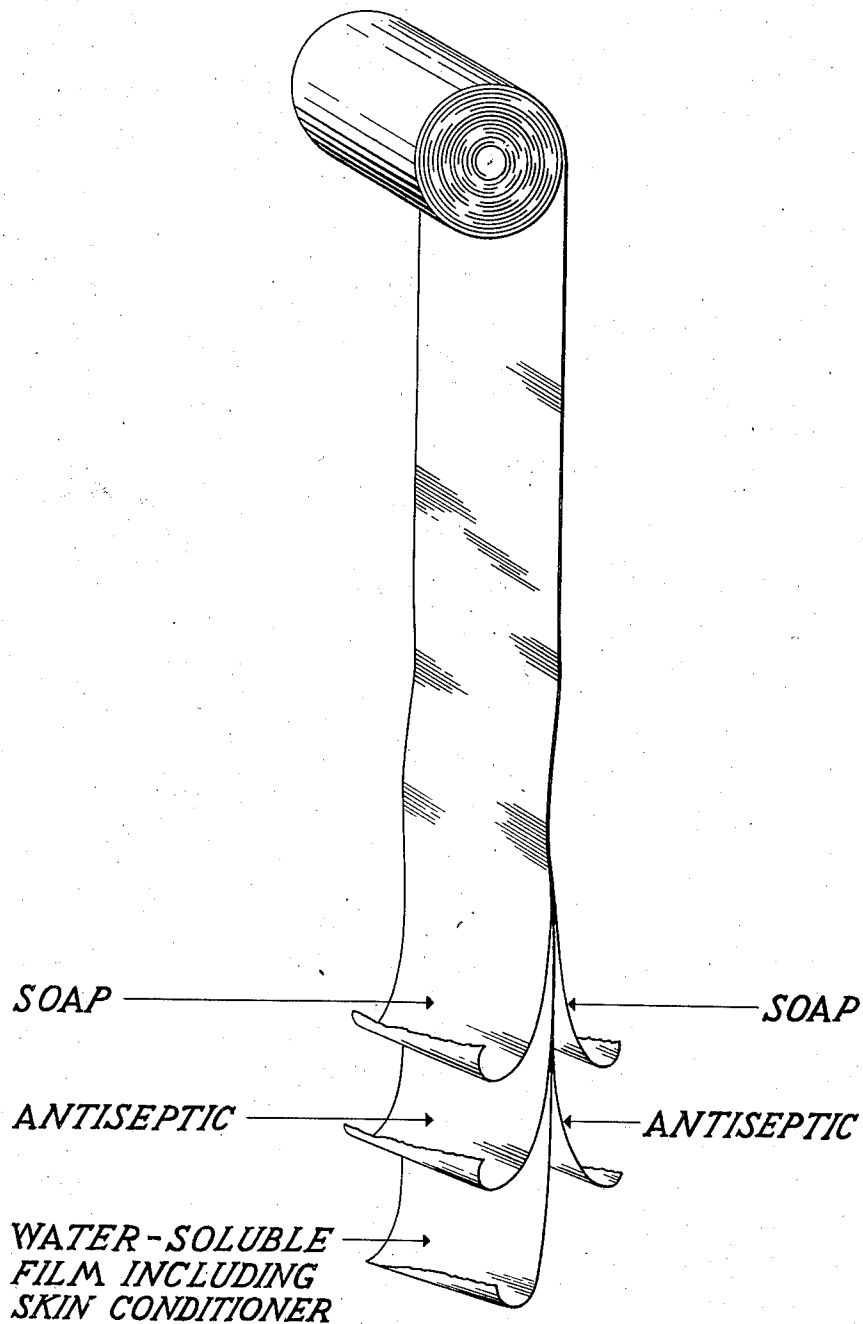
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FLEXIBLE SHEET

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FLEXIBLE SHEET

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3 Claims. (Cl. 252—134)

This invention relates to detergents and is directed more particularly to a sheet material embodying, generally speaking, a flexible film-forming agent of water-soluble material combined with a detergent agent, such, for example, as soap, either with or without one or more added cleansing, purifying, antiseptic, scenting, or skin conditioning agents.

The present invention permits soap to be incorporated within a flexible sheet in such manner that it may be made in web form and wound into a roll to be dispensed, either manually or by machine, in either optional or measured lengths which may be mechanically or manually cut or torn off for successive uses wherein no two persons can use the same soap and no soap will be wasted.

The water-soluble character of the film-forming agent is of marked importance in this invention for it should be such that it will be entirely dissipated or dissolved by the water during the ordinary manipulation of washing, without leaving any solid residue which would tend to clog the sink drains or require independent receptacles for such residue. When such agent is wholly water-soluble, it disappears in the lather produced while washing and although it may leave behind upon the person sufficient quantities of scenting, skin conditioning or medicating agents, as the case may be, the soluble residue will go off through the drain leaving the wash bowl or the like clean and uncontaminated.

In order that the sheet material may be practical, it should be of a flexible nature, so that it can be readily handled, packaged and dispensed. A number of different materials may be used for this purpose. Gelatin, e. g., French gelatin, may be used, although other materials which will form a dry flexible film, either with or without plasticizers, may be employed, as hereinafter pointed out.

It has been heretofore suggested that soap be applied to a textile fabric or a sheet of paper or paper toweling, which in several cases has been provided with holes to be filled with the soap. In other instances, soap has been applied to a perforated gelatin sheet so that the perforations or holes therein are filled with soap. The present invention in contradistinction utilizes a dried flexible film of water-soluble film-forming material without perforations or holes therein and on the opposite sides of this imperforate film of water-soluble material are successive laminations of antiseptic and soap. A skin conditioner may be in the form of an additional film or may be in-

corporated in said water-soluble film. In any case, when the article is used, for example, to wash the hands in water, the successive films go into solution in succession to effect the cleansing action, to produce a sterile condition and to leave the skin in a soft condition.

In addition to the detergent, there may be included any one or more antiseptics, deodorants, skin lotions, perfumes or the like, with or without medication. Furthermore one or more of these agents may be incorporated in the film, while one or more additional agents may be coated thereon. These different ways of carrying out the present invention will depend to some extent upon the particular materials employed and it is not intended to limit the invention specifically in this connection.

In practice the sheet or web product may be conveniently, though not necessarily, rolled, and if there is any tendency of particular sheets to stick together, a separator strip of wax paper or any other suitable material may be positioned between the successive sheets or convolutions, or the sheet or web may be powdered with talc or some other inert material. If a separator strip is employed, it may be torn off with the web when the latter is dispensed or it may be wound up by appropriate means in a mechanical dispensing machine, so that only the web is dispensed.

The following are illustrative examples of different ways in which the invention can be practically carried out.

Example 1.—Make a warm aqueous solution of commercial gelatin of which French, Russian, Cooper's or Cox's are typical. Add to this solution a water solution of either hard or soft soap. Film the solution and permit to dry. The end product will be a sheet or film of gelatin and soap which is readily soluble in water and forms a nice lather.

Example 2.—Mix solutions of gelatin and soap as in Example 1 and add thereto a small quantity of mucilage or other binding agent, such as gum tragacanth, gum arabic or the like. The resulting film will be as before but more tenacious.

Example 3.—Form a solution of gelatin and soap with or without a binding agent, as in Examples 1 and 2, and add to this solution any suitable plasticizer, such as glycerine, castor oil or the like. The films will be as in the previous examples, except that they will be more flexible.

Example 4.—Form the solutions, as set forth in any of the preceding examples, but add thereto small quantities of either one or more of the following: a commercial skin lotion, an antiseptic, a

medicament, or a deodorant, which same may go into solution or form an emulsion, suspension or dispersion in the mass and be thus incorporated in the finished dry film.

I consider it good practice to add to any of the foregoing formulas, unless some equivalent is already incorporated therein, an appropriate agent to prevent fermentation of organic substances present, such, for example, as a small quantity of boric acid.

The proportions given in the foregoing examples are not critical and they may be varied considerably without interfering with the dry film forming properties of the mass.

In each of the foregoing examples the gelatin constitutes the film-forming agent for the other agent or agents which are added. Gelatin is preferred in this connection because of its relative cheapness, workability and the fact that it is water-soluble and dissolves immediately when wetted and manipulated between the hands in the manner of using ordinary soap. In lieu of the gelatin, however, I may employ any other suitable water-soluble film-forming agents which will dissolve or dissipate when wet and not leave an undesirable residue or precipitate which would clog the drains of sinks or the like or require the use of separate receptacles.

In lieu of gelatin, I may use other materials which will form dry water-soluble films. Agar agar, pectin, gum tragacanth, as well as many of the water-soluble "aqueous resins," such as produced by the Glycol Products Company, may be employed. Casein may also be used in this connection, but must be placed in solution in alcohol to form a film. The alkaline reaction of the soap, however, will render it water-soluble when the material is subsequently used. Starch or dextrine may also be employed as a film-forming material, but, in such cases, as well as in other cases, hereinbefore referred to, a suitable fermentation preventative, such as small quantities of phenol, should be incorporated.

In carrying out the invention with all of the foregoing examples, the film may be formed through the employment of any appropriate film forming mechanism and the film may be made of such thickness as desired. Sheets or films a few thousandths of an inch in thickness have been found thoroughly satisfactory.

It is preferable, though not essential, that the finished sheet or film be rolled into a web for the sake of convenience, although the commercial form may be that of a wafer or unrolled sheet.

I have particularly referred to the incorporation of the soap into the film by placing them in solution before forming the film. The antiseptic, medicament, deodorant or skin conditioning agents, or any one or more of them may be incorporated at the same time and in a like manner. The soap or any one or more of said agents may be incorporated in the film, while an additional agent or agents may be coated on one or more sides of the film or interposed between laminations of the latter.

Furthermore, I may employ a plurality of laminated films, each containing individual agents. In such case the exterior plies could, to advantage, contain soap, while the next interior plies could contain an antiseptic and the innermost ply or plies contain a skin conditioning agent. When such a product is used, the soap would go into solution first and effect a cleansing action, the antiseptic would go into solution next and produce a sanitary condition, and the skin

conditioner would go into solution last to leave the skin in proper condition. However, in practice, various combinations may be made of the different agents to which I have referred, eliminating one or the other or by adding others, as may be desired.

The sheet or web of this invention may be perforated or scored either longitudinally or transversely to divide it into readily removable sections of appropriate size and thus facilitate the tearing or cutting off of successive portions thereof for use, although when the sheet is made thin this is not ordinarily necessary.

The present invention has marked utility. It provides a detergent in convenient, usable form. A relatively small length of a relatively narrow web can be torn or cut off and used in a manner in which ordinary soap is commonly employed for cleansing purposes and it completely dissolves during such use, leaving no appreciable residue. There is no waste as is prevalent in the use of ordinary soap for a very small quantity of soap, always dry, can be dispensed in this way. This quantity may be adequate for the particular use but without waste. From the hygienic and sanitary standpoint, it is apparent that the soap is not re-used as is the case with ordinary cake soap for not more than one person can use any particular portion of the soap. Furthermore, a lotion, skin softener, or medication can enter into the material and cooperate in the ordinary washing operation to leave the skin clean, smooth and soft and, if antiseptic and the like are embodied in the composition, a sterile condition will result from the use of the product.

In my research in connection with the detergent film hereinbefore described, I also produced a highly satisfactory novel product by using a film-forming agent of gelatinous material combined with a skin treating agent without incorporating any soap or other detergent in the sheet and I find that this product in sheet form embodying the skin conditioner can be used for skin treatment after washing with ordinary soap. In a similar way a medication, antiseptic or the like, may be made in sheet form without soap or any detergent present. I also consider these novel products as my invention.

In all cases hereinbefore referred to suitable coloring matter may be included if desired.

In the accompanying drawing I have illustrated, in perspective, one practical form of the invention. Here the flexible sheet, adapted to be packaged in rolled form, is composed of five films laminated into flexible sheet form. The center film is solid, imperforate, and flexible, and consists of a solidified, water-soluble composition including a skin conditioner, as indicated by the legend.

Attached to each of the opposite faces of this center film is a solid, imperforate and flexible film of water-soluble composition including an antiseptic, as indicated by the legend. And attached to the outer face of each of the latter films is an additional solid, imperforate and flexible film comprising soap.

The drawing shows the lower extremities of the several films separated, broken away, and curled back to more clearly indicate their individual identity, but it should be understood that they are, in practice, firmly and inseparably attached in face abutting relation throughout and can only be separated by successive dissolution under the solvent action of the wash water during use.

The flexible sheet may be unwound from the

roll as required and appropriate portions of its length torn or sheared off as and when desired for use.

The foregoing detailed description sets forth the invention in its preferred forms and the invention is to be understood as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. As a new article of manufacture, a flexible sheet comprising a dry, solid, imperforate, flexible film of water-soluble material having on each of its opposite sides a plurality of flexible films successively laminated thereover, each outermost film being of soap applied to the outer surface of a film containing an antiseptic, whereby, when the article is used with water, the soap will first go into solution to effect a cleansing action, and the antiseptic will next be released to produce a sanitary condition.

2. As a new article of manufacture, a flexible sheet comprising a dry, solid, imperforate, flexible film of water-soluble material having on each of its opposite sides a plurality of flexible films

successively laminated thereover, each outermost film being of soap applied to the outer surface of a film containing an antiseptic, which is, in turn, applied to the corresponding outer surface of a film containing a skin conditioner, whereby, when the article is used with water, the soap will first go into solution to effect a cleansing action, the antiseptic will next be released to produce a sanitary condition, and the skin conditioner will be next released to leave the skin in soft condition.

3. As a new article of manufacture, a flexible sheet comprising a dry, solid, imperforate, flexible film of water-soluble material with a skin conditioner distributed throughout its mass and having on its opposite sides successive flexible films of antiseptic and soap laminated thereon, the soap being outermost and the antiseptic being interposed between the soap and the skin conditioning film; whereby, when the article is used with water, the soap will first go into solution to effect a cleansing action, the antiseptic will then be released to produce a sanitary condition, and the skin conditioner will be last released to leave the skin in soft condition.

CLEMENT EHRET.