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SOAP PACKAGE

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This application is a continuation in part of my co-pending application, Serial No. 165,316, filed September 23, 1937.

This invention relates to a wrapper which may be used in connection with a number of products in which it is desired to retain the moisture and likewise constituents of the product, particularly the alkalies and acids. Disclosure herein is directed particularly to a wrapper for soap in the form of soap bars such as those in domestic use.

For soap of this kind, there has been developed in recent years a wrapper coated with material of which the predominant constituent is wax, wax-like or crystalline substances which have been considered desirable as being moisture-repellant and likewise thermoplastic so that the wrapper could be heat-sealed after application to the soap bar.

While coated soap wrappers of the general character indicated have provided an improvement over the older type of uncoated wrapper, yet an outstanding disadvantage has been noted in connection with the wax coated wrapper, namely, the cracking of the wax coating upon folding of the wrapper or after handling, stacking, packing, shipment or the like. This rupturing of the wax coating permits the entry of air into the wrapper so that moisture in the soap dries out at a comparatively rapid rate, the bar of soap losing weight, becoming undesirably hard, and to some extent, misshapen. This result is hastened by the crystalline character of such coatings which more readily permit the penetration of soap and moisture. The result of the moisture penetration into the wrapper is the wrinkling of the wrapper due to evaporation of the moisture therein.

Another disadvantage of the penetration of moisture and soap into the wrapper is the fact that the wrapper becomes, at times, so tightly bound or molded to the soap, in parts at least, that the lines, lettering, and irregular surfaces of the soap are revealed upon the wrapper itself. It is obvious that such results are hastened when the soap bars are stacked over a period of time, in the ordinary manner.

A further disadvantage of the wax coated wrapper has been the mutilation or disfiguring of the printing or pictorial figures on the wrapper due to the alkali in the soap attacking the ink bases used in printing. The result has frequently been noted that the lettering or figures on the soap wrapper being to "run" after a period of time

rendering the wrapper unattractive from this standpoint likewise.

The present invention is directed to the elimination and reduction of the disadvantages such as those discussed in connection with the wax coated wrapper. The invention provides for a soap package comprising a bar of soap having a wrapper heat-sealed thereon, the wrapper being coated on one side with a thermoplastic non-crystalline coating adapted to resist moisture, alkali, acid and soap. The other side of the wrapper is provided with a thermoplastic coating of suitable character.

In accordance with the present invention the non-crystalline coating, first referred to above, is of the general class of synthetic resins, and of this class the vinyl resins have been found particularly effective. The vinyl resins, as is well known, result from the polymerization of vinyl compounds, and possess the characteristic of thermoplasticity. The vinyl resins embrace vinyl bromide, vinyl chloride, vinyl alcohol, styrene (vinylbenzene). Commercial forms of synthetic resins have been found suitable for the purpose of this invention.

The vinyl resin has incorporated therewith, in accordance with the invention, a suitable plasticizer and, for the effective application of the coating, a volatile carrier is utilized. These materials possess the primary requisite of being non-crystalline and plastic so that the coating will not crack or rupture and thereby permit the access of air to the enclosed soap and penetration of soap into the wrapper. In this connection it may be pointed out that the ordinary coating heretofore used on wrapping materials for such commodities as food products, have usually comprised nitro-cellulose, a resin, a plasticizer, a solvent, and a diluent. The general classification of lacquers embrace coatings of this character and inasmuch as they are not alkali nor soap resistant, they would entail the disadvantages, for use upon soap wrappers, as already discussed above. The present invention is therefore an improvement over lacquer coatings of this class.

Another generally used type of coating which would be undesirable for achieving the purposes contemplated herein, is that class embracing hygroscopic materials which could not be successfully used as coatings for soap wrappers because the result would be the absorption by the coatings of moisture from the soap.

The present invention contemplates the use of a well calendered paper or base to which the coating is applied so that the coating will not be

absorbed into the paper. The vinyl resin forming the primary constituent of the coating is preferably mixed with a small percentage of plasticizer, for example, dibutyl phthalate which gives added flexibility. These materials are dissolved in a suitable carrier, preferably a ketone. Of the latter, methyl isobutyl ketone, known as "hexone", has been found particularly satisfactory. The resultant liquid is applied to one of the surfaces of the wrapper and when dried, produces a smooth flexible and rubber-like surface unaffected by subsequent folding, stacking, shipping and similar operations.

The other surface of the wrapper is preferably provided with one of the known types of thermoplastic coatings such as a paraffin wax coating, so that the wrapper may be heat-sealed upon the soap bar. This is adapted to protect the cake of soap against drying out by the atmosphere. Inasmuch as both this coating and likewise the coating on the opposite surface of the wrapper are thermoplastic the wrapper can be completely heat-sealed upon a cake of soap, in those parts of the wrapper wherein one portion of a coating is placed against another portion of the same coating, as well as those parts of the wrapper wherein one coating is placed against the opposite coating.

Comparative tests of the wrapper of this invention and the older type of wrapper, provided with a wax coating on both surfaces, have given interesting results. Soap bars, some enclosed in the ordinary type of waxed wrapper and some in the wrapper of this invention, were together further enclosed in six thicknesses of waxed paper and subjected to an initial sweat test. The package was placed in an oven and maintained at a temperature of 120° F., for two weeks. Thereafter the bars were removed, the six thicknesses of waxed paper taken off, and the bars placed in separated position in room temperature. After the third week, the difference in moisture loss, as determined by weight of the wrapped soap bars, began to become apparent. The bars enclosed in the wrapper of the present invention (which I shall hereafter designate the A specimens) had lost in weight a fraction over 1%, while, at the same time, the bars enclosed in the older type of waxed wrappers (which I shall designate the B specimens) had lost a fraction over 4%. By the end of the fourth week, the A specimens had lost a fraction less than 2% in weight, while the B specimens had lost approximately 6½%. The weekly tests resulted in substantially the same comparative ratios of moisture loss percentage over the fifteen-week test period. A graph prepared in this connection represents the moisture loss percentage of the A specimens in a straight downward slant, whereas the moisture loss percentage of the B specimens is represented by a steep downward curve diverging sharply below the straight line symbol representing the A specimens. At the end of the fifteen-week period, the percentage loss in weight of the A specimens had reached 10%, while that of the B specimens had reached nearly 17%. A tabulation of results at the end of the fifteen-week period shows a

56.7% reduction in moisture loss through the use of the wrapper of this invention as compared with the specimen B wrappers.

The foregoing facts are concerned only with the weight loss of the soap bars. The change in appearance of the B specimen wrappers was equally noteworthy. These wrappers became wrinkled, molded to the soap bars, and otherwise unattractive in appearance due to running of the ink of the printed wrappers. The B specimen bars presented, in short, a distinctly unsaleable appearance.

The A specimen wrappers, on the other hand, remained substantially unchanged throughout, the wrapper being smooth, non-adherent, unsmudged by released ink constituents and fresh in appearance at the end of the test. The coating, moreover, is adapted to maintain the wrapper in such condition even after considerable "sweating" at elevated temperatures.

It may be pointed out that the wrapper coated in accordance with the present invention, in addition to its characteristics of moisture and vapor proofness and its resistance to alkalies and acids, is likewise odorless and tasteless and is therefore obviously adapted for use upon other commodities such as food products.

What is claimed is:

1. A package comprising a bar of soap sealed in a sheet of wrapping material provided on one side with a heat-seal coating and on the other side with a moisture-, acid-, and alkali-resistant coating of vinyl resin adapted to counteract the emission of characteristic constituents of the soap for reducing wastage and deterioration thereof.

2. A package comprising a bar of domestic soap sealed in a sheet of wrapping paper having printing thereon, the paper on one side being provided with a coating of heat-sealing material and on the other side with a moisture-, acid-, and alkali-resistant coating of vinyl resin adapted to counteract the emission of characteristic constituents of the soap for reducing wastage and deterioration thereof, said vinyl resin coating further serving to prevent alkali properties in the soap from attaching the ink bases in the printing on the wrapper to preclude running of the printed matter.

3. A package comprising a bar of soap sealed in a sheet of callendered paper provided on one side with a heat-seal coating and on the other side with a moisture-, acid-, and alkali-resistant coating of vinyl resin adapted to counteract the emission of characteristic constituents of the soap for reducing wastage and deterioration thereof, said calendered paper resisting absorption of the coatings therein to preserve the coatings intact for performing their respective functions.

4. A package comprising a bar of soap sealed in a sheet of wrapping material provided on one side with a heat-seal coating and on the other side with a moisture-, and alkali-resistant coating of vinyl resin adapted to counteract the emission of characteristic constituents of the soap for reducing wastage and deterioration thereof.

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