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E. L. SMITH

2,449,334

METHOD OF PACKAGING

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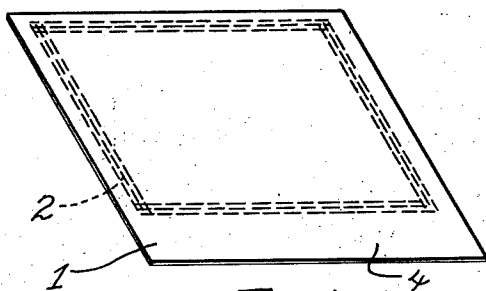


Fig. 1.

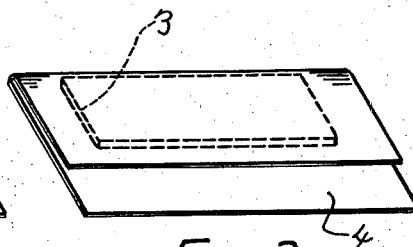


Fig. 2.

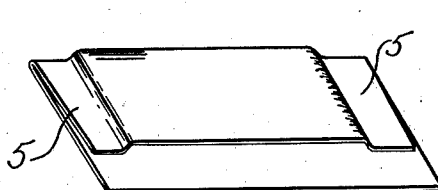


Fig. 3.

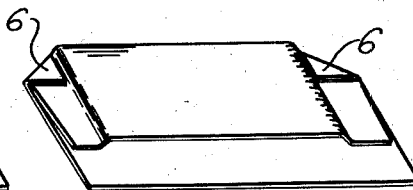


Fig. 4.

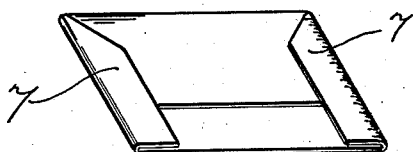


Fig. 5.

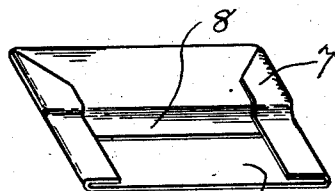


Fig. 6.

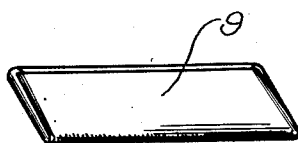


Fig. 7.

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METHOD OF PACKAGING

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1 Claim. (Cl. 93—2)

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This invention relates to improvements in packages and in methods for sealing them. One object of the invention is to produce a package which is hermetically sealed by a band of sealing material extending around and relatively close to the article. Another object is to produce a seal which can be made with greater rapidity than the usual heat seal, or in less length of a wrapping machine at equal speed. Another object is to produce a type of sealed package particularly suitable for use on high speed wrapping machines, in which pieces of gum are wrapped at a rate of 500-1000 pieces a minute.

The improved package and method will now be described with relation to the accompanying drawings, in which

Fig. 1 is a perspective view of a wrapper with an adhesive imprinted on it; and

Figs. 2 to 7 are perspective views showing successive stages in the wrapping of an article such as a gum stick.

In the usual wrapping methods the wrapper is sealed either by dissolved adhesive or by the application of heat and pressure. The first method requires a substantial time to evaporate the solvent from the adhesive, the second method requires time for the heat to penetrate the wrapping material and also time for enough heat to be abstracted from the fused sealing material so that the overlapping folds are set in place. In wrapping machines operating at a slow rate this is not a serious detriment, but in high speed machines the use of long heating or cooling times requires abnormally long paths of travel with a consequent increase in the size of the machine.

I have found that the wrapper can be printed with a substance, such as an amorphous wax or some the commercial forms of pressure sensitive adhesive, which will stick either to the wrapper or to another wax coated area by pressure alone, and that the rapidity of the sealing operation can thus be greatly increased. It has been found desirable when using amorphous wax, which is a slightly tacky waxy residue produced by the petroleum industry, to print the molten wax in such a pattern that every seam will be made by contact of two wax coated areas, and to chill the wax sufficiently to solidify it before performing the wrapping step. The consistency of the wax may be controlled by the addition of other ingredients, which may be high molecular weight hydrocarbons such as paraffin or the like. The coated areas, when brought into contact during the wrapping, can be caused to adhere by any form of direct pressure such as a stamp or pressure rolls.

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I have illustrated in the drawings one form of package which is particularly adapted for use with a pressure sensitive adhesive since it offers a way of making a hermetically sealed package at high speeds. The wrapper 1 is printed as shown in Fig. 1 with a closed pattern 2 of melted amorphous wax, which is allowed to cool. The pattern is here rectangular in shape, since it is designed for enclosing a rectangular article 3 such as a gum stick. For purposes which will be described the pattern printed on the wrapper is so positioned that a wide margin 4 is provided at one side. The length of the rectangular adhesive pattern is slightly greater than the length of the article, while the width of the pattern is slightly greater than twice the width of the article.

For this reason, when the wrapper is folded around the article as in Fig. 2 the pressure sensitive adhesive will lie in strips spaced slightly beyond the ends and one side of the article with the adhesive portions on the top and bottom flaps of the wrapper directly opposite each other. The ends of the wrapper are now pressed down as shown at 5 in Fig. 3 causing adherence of the pressure sensitive adhesive between these flaps and the bottom part of the wrapper. For neatness, folds 6 are then made as in Fig. 4 and the resulting flaps turned over on the tops of the package as indicated at 7 in Fig. 5.

The wrapper is then pressed down at 8 along the edge of the article as shown in Fig. 6. There being a line of adhesive on each meeting surface of the wrapper, the pressure will cause firm adherence of the two wrapper plies. One feature of advantage of the present process is clearly apparent from the step shown in Fig. 6. It will be noted that the portion of the wrapper flattened down has a central two-ply portion with end four-ply portions. If the sealing of the wrapper were done by heat and pressure, as is customary, it would take a longer time for heat to penetrate the four-ply portions than the two-ply portions. If the entire edge of the wrapper were folded at once as shown this difference in the time of heat transmission would result in either overheating the two-ply portion or underheating the four-ply portion. In accordance with the present process, this difficulty is eliminated since pressure is transmitted instantaneously through the plies, whether two or four in number, and sealing will occur immediately wherever two mating surfaces of the adhesive are in contact. It would thus be possible for complete sealing to be accomplished by passing the superposed flaps under a roller, which would flatten the

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wrapper along the edge of the article and simultaneously seal it.

To seal the wrapper in its final form, the long margin 9 of the wrapper is folded over one top of the article and if desired retained there by a suitable adhesive. This final adhesive, which may be of any type, need not be relied on for the hermetic seal desired, and on the other hand the pressure sensitive adhesive need not be relied on to do the actual holding of the wrapper in place.

As shown in Fig. 7 the final closing flap 9 provided by the wide marginal portion 4 is of sufficient extent to substantially cover the top of the finished package. The rear end corners 6 of the wrapper having been folded in as described and shown in Fig. 2 will underlie said top flap 9 and present a neat tucked in appearance for the finished package. It will be noted that the package as thus completed will have a smooth continuous surface over substantially the entire area at each flat side of the package, which surfaces are not interrupted by any seam, and are therefore suitable for being printed upon to thus avoid the necessity of using the ordinary printed label which is usually employed on such packages.

I claim:

A method of wrapping an article which comprises printing upon a rectangular wrapper a rectangular band of pressure sensitive adhesive, said band having a length slightly in excess of the length of the article and a width slightly in excess of twice the width of the article and having its width asymmetrically disposed on the sheet to produce a wide margin at one side of the sheet, folding the wrapper over the article to bring the folded-over portions of the band into superposed

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registry, with top and bottom portions of the wrapper overlapping beyond the front of the article and with the wide margin at the bottom extending beyond the narrower margin at the top to produce a final folding flap sufficient to substantially cover the top of the finished package, pressing top end portions of the wrapper downwardly against flattened bottom end portions thereof to bring the registered bands at the ends of the wrapper into adherence closely adjacent the ends of the article, folding each rear corner of the wrapper down upon its respective flattened end portion adjacent opposite ends of the article, folding over said flattened end portions of the wrapper upon the top of the article, pressing the front end top portion of the wrapper down against the final folding flap at the bottom to bring the registered bands of said portions into adherence closely adjacent the front of the article, folding the final folding flap of said wrapper over the top of the package to substantially cover the same, and adhesively securing said finally folded flap in position to complete the package.

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