Sept. 1, 1964 L. S. TWERSKY 3,146,912

PACKAGE OPENING MEANS

Filed May 14, 1962

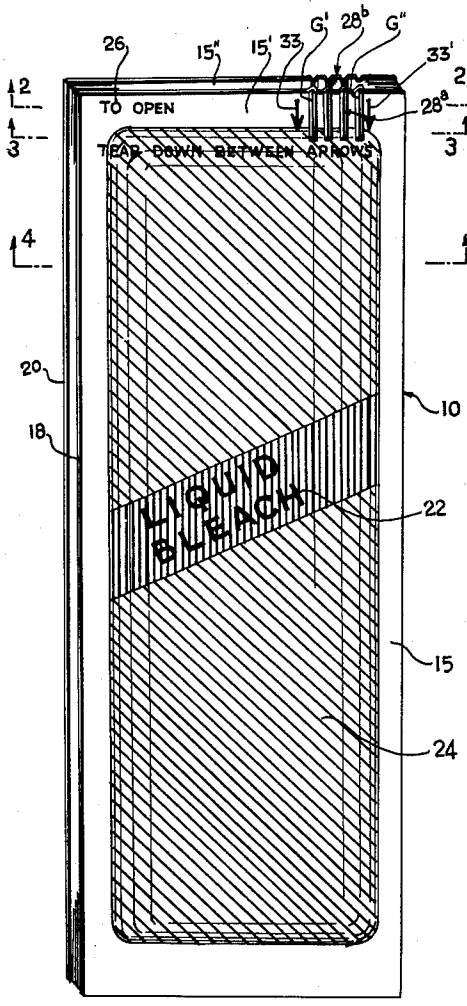

Fig. 1.

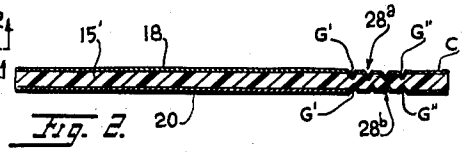

Fig. 2.

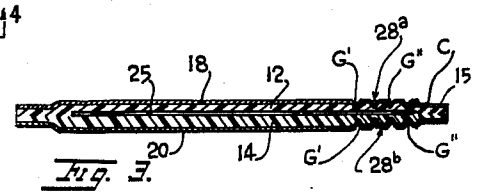

Fig. 3.

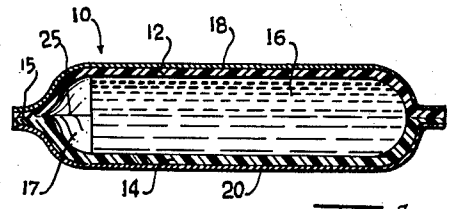

Fig. 4.

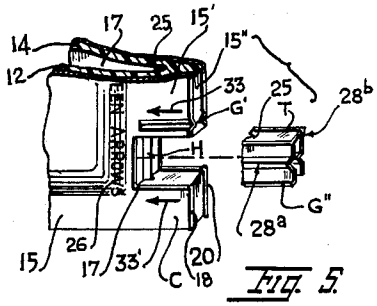

Fig. 5.

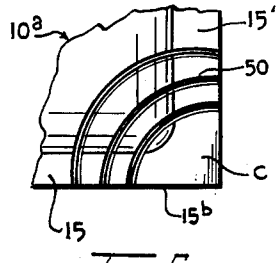

Fig. 6.

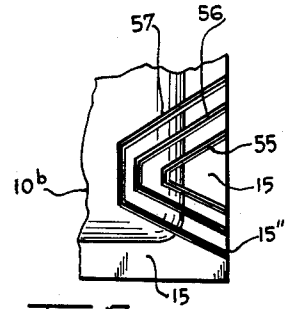

Fig. 7.

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3,146,912

PACKAGE OPENING MEANS

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1 Claim. (Cl. 222—107)

This invention relates to containers or packages such as sealed plastic bags or envelopes for packaging vendible liquid products, particularly liquid chemicals such as bleaches, detergents, and the like. More particularly, the invention concerns improved opening means for such sealed plastic bags or envelopes.

According to the invention there is provided a bag or package made of two juxtaposed rectangular sheets of thermoplastic film heat-sealed together at their edges. The films have adhering paper covers or coatings at their outer sides. These paper covers can be printed with appropriate instructions for use, trademarks, and other indicia. The paper covers also serve to strengthen the bag structure and to improve the appearance of the bag. At one end corner of the bag is a plurality of parallel grooves impressed into the fused material and extending outwardly to the free edge of the bag. A rectangular tab can be torn out of the bag to open a hole into the interior of the bag. The liquid contents of the bag can be poured out of this hole.

It has been proposed heretofore to provide other types of opening means for plastic packages as described. One such prior opening means includes perforations formed along an opening line. A perforated opening line cannot be used for a package containing liquid. It has also been proposed to apply stiff strips across the walls of a package. This expedient increases the cost of manufacture and is objectionable for a package containing liquid since it is not possible to limit the torn opening to a small pouring hole. Other suggested opening expedients have proven impractical or two costly for use in liquid-containing packages.

The present invention has therefore a principal object of providing a moistureproof package for liquid chemicals, in which simple, inexpensive means is provided for tearing a small hole in one end of the package.

A further object is to provide a package having a fused edge provided with a plurality of grooves to facilitate tearing a hole in the package.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is an oblique side view of a package embodying the invention.

FIGS. 2, 3 and 4 are sectional views on an enlarged scale taken on lines 2—2, 3—3 and 4—4, respectively, of FIG. 1.

FIG. 5 is a fragmentary oblique side view of the package shown with a tab torn out to form a pouring hole for liquid contents of the package.

FIGS. 6 and 7 are fragmentary side views of parts of other packages.

Referring to the drawings, there is shown the package **10** formed by two rectangular pieces **12, 14** of a nonporous, chemically stable, flexible sheet plastic material. Suitable material for the purpose may be polyethylene resin, polyvinylidene chloride, and vinyl resin. Materials such as regenerated cellulose or cellulose acetate are not considered suitable because they are microporous and not sufficiently moistureproof and resistant to chemical attack of liquid acid and alkali. The two pieces **12, 14** are sealed or fused by heat alone, by application of heat

and pressure or by chemical bonding to form a homogeneous rectangular edge or margin **15** all around the package. The interior compartment **17** of the package is substantially filled with an appropriate liquid chemical **16**. Filling can be effected by pouring the liquid chemical into a partially sealed package and then completing the sealing of margin **15** after filling with the liquid. The sheets **12, 14** are preferably coated or covered with adhering paper films **18, 20** on their outer sides.

Each paper film may be printed with identification indicia **22** and may be printed over the major portion **24** of its area in attractive colors. Instruction indicia **26** for opening the package appear on end margin **15'**. This end margin has a first plurality of parallel grooves 28^a formed in one side of the package near one corner C. These grooves extend inwardly from free end edge **15''** and terminate at the separate inner walls **12, 14** just beyond the line of separation **25**. Another plurality of grooves 28^b oppose grooves 28^a on the other side of the package, as clearly shown in FIGS. 1, 2 and 3. Three or more grooves are provided on each side of the package. These grooves can be formed by heated dies at the same time that the end margin **15'** is sealed or can be formed subsequently to sealing. Arrows **33, 33'** are printed just outside the grooves to guide and instruct tearing of the margin.

FIG. 5 shows hole H opening into the interior compartment **17**. A rectangular tab T of the package has been torn out. The tear is made along any two spaced grooves 28^a and the opposing grooves 28^b on the other side. The hole will be smallest if the tears are made along two adjacent grooves and will be widest if the tears are made along the outermost grooves G' and G''.

It will be noted that the material of the fused margin **15'** is thinnest at the opposing grooves. This facilitates longitudinal tearing of the plastic material. After the margin is torn longitudinally for the full lengths of the selected grooves, the line of separation **25** of the walls **12, 14** is passed. The rectangular flap formed by severing the material along the parallel grooves can then be torn transversely parallel to end edge **15''**. This tear is facilitated because at the inner ends of the grooves, only the single thickness of each wall is to be torn. The strength of the material at this point is substantially less than that of the fused margin **15'** and is equal to the strength of the material in the grooves so that tearing is accomplished without difficulty. FIG. 5 shows the tab T torn out of the corner C to open the hole H.

In FIG. 6, the package 10^a is similar to package **10**, except that grooves **50** are arcuate in form and concentric. They extend between end edge 15^a of margin end **15'** and lateral edge 15^b of margin **15**. By tearing the package along any one curved groove a different size of tab is torn off to provide a different size of hole into the package.

In FIG.7, the package 10^b has a plurality of generally V-shaped grooves **55, 56** and **57**. Groove **56** is between grooves **55** and **57**. If the package margin **15'** is torn at groove **55** a trapezoidal tab will be torn off. If the margin **15'** is torn at groove **56** or groove **57** a larger trapezoidal tab will be torn off so that a larger hole will be made into the package interior than when the tab is torn at groove **55**.

The invention thus makes it possible to open a hole of any one of a plurality of predetermined widths selected at will by the user. The hole thus formed permits the contents of the package to be poured out in a controlled stream without splashing, spraying or spilling.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may

be made within the scope of the invention as defined in the appended claim.

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

A package for containing and dispensing liquid, comprising a pair of rectangular nonporous chemically stable flexible plastic sheets superimposed with edges in registration and sealed together all around their registering edges to form a rectangular margin, said margin having a thickness equal to the total thickness of both sheets, said sheets having a closed interior compartment for containing liquid, said margin having a first group of at least three parallel grooves extending inwardly from a free end edge at one side of the margin, said margin having a second group of at least three parallel grooves extending inwardly from the free end edge at the other side of said margin and opposing the first group of grooves, all of said grooves disposed adjacent one corner of the margin and terminating just beyond a line of separation of the sheets at the sealed margin, the thickness of the edges of the grooves being less than the thickness of the remainder of the margin, said margin being tearable along two selected grooves to define a tab of predetermined width in accordance with the grooves selected, said tab being tearable transversely below said line of separation whereby to open a hole into said compartment inwardly of the adjacent corner for dispensing the liquid therefrom, a paper film adhering to and covering the outer side of each sheet for strengthening the same, and guide markings on the films adjacent to the grooves for guiding and instructing the tearing of the sheets along the grooves.

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