

Feb. 16, 1954

C. M. CARSON ET AL
PACKAGE FOR LIQUIDS

2,669,351

Filed April 3, 1950

3 Sheets-Sheet 1

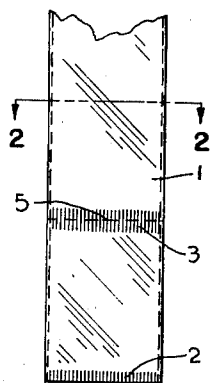


FIG. 1

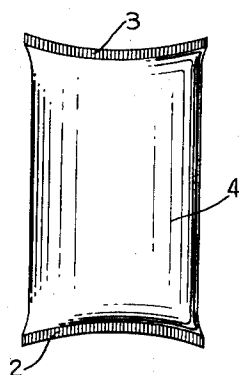


FIG. 3



FIG. 2

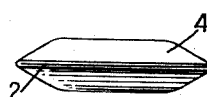


FIG. 4

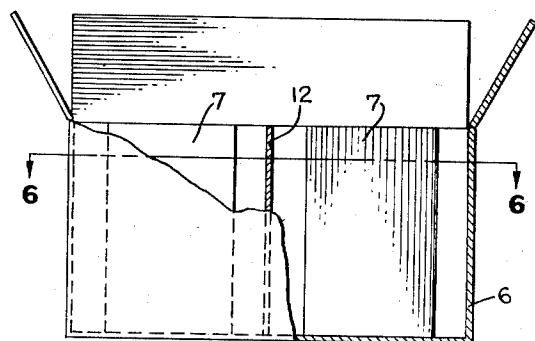


FIG. 5

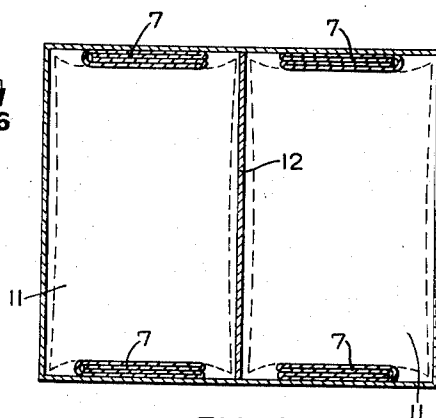


FIG. 6

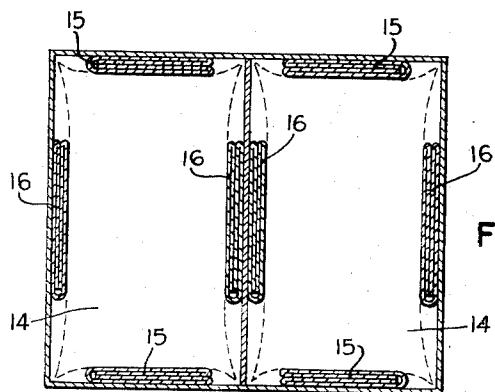


FIG. 7

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3 Sheets-Sheet 2

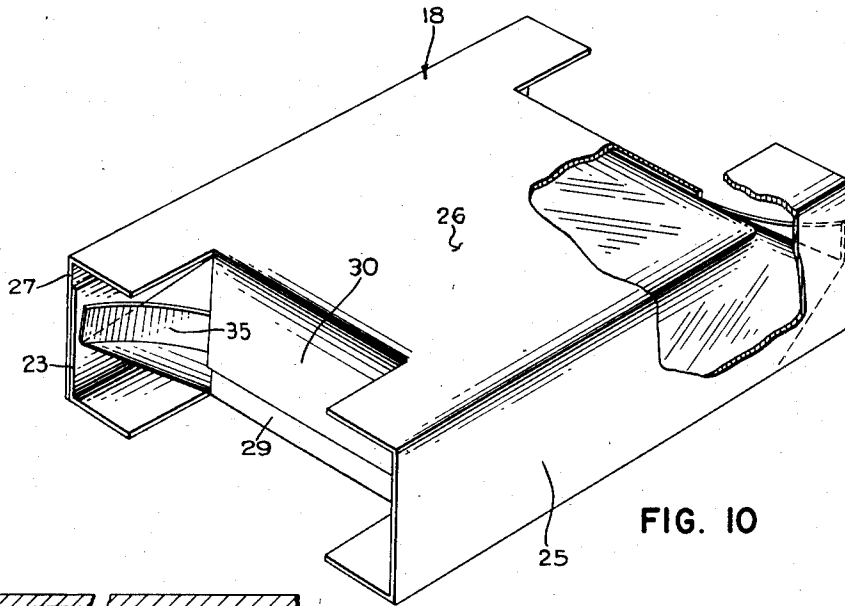


FIG. 10

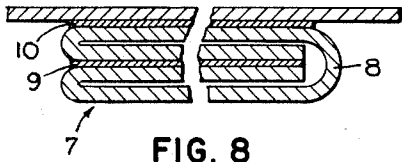


FIG. 8

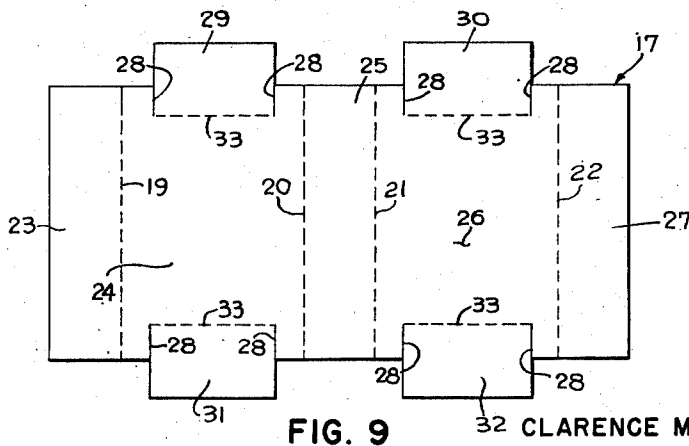


FIG. 9

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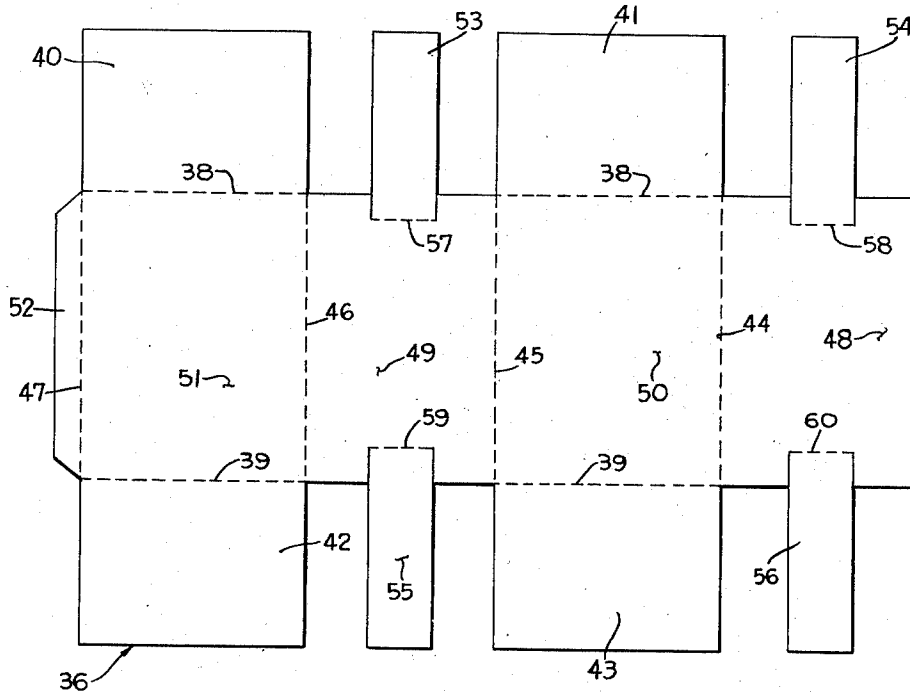


FIG. 11

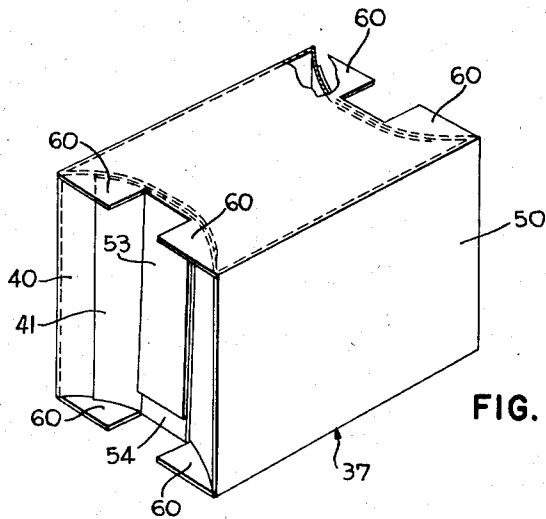


FIG. 12

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PACKAGE FOR LIQUIDS

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Application April 3, 1950, Serial No. 153,732

6 Claims. (Cl. 206-46)

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This invention relates to a package for liquids. The package includes one or more pillow-shaped rectangular pouches and a stiff outer container which holds them.

The pouches may be of the type made from a tube, in which seals project from each end. Whatever the exact design the upper and lower portions of each pouch are rectangular and there is no intervening portion at either end or either side of the pouch. When such a pouch is filled with liquid the central portions of the sides and ends of the pouch are rounded up and consequently drawn inwardly toward the center of the pouch, making the four corners of the pouch protrude in all four directions beyond these rounded portions. When such a filled pouch is placed in a rectangular space, it either is smaller than the space so that it shifts within it, or if it fits snugly in the space the corners must be distorted from their natural position, producing a condition conducive to the development of leaks.

It is the object of this invention to produce a container for such a pouch which provides supports for the two ends of the pouch, and may also provide side supports. These supports hold such pouches with minimum distortion of the protruding corners, and minimize the development of leaks. The supports are spaced inwardly from the walls of a rectangular container or they may themselves form the walls of the container. In the latter case the corners of the pouch may extend beyond the confines of the container. The supports may be formed separately from the container or they may be formed integrally with the container.

The invention will be further described in connection with the accompanying drawings, in which—

Fig. 1 is a plan view of a tube of wrapping material with the pouch formed therein but not severed from the balance of the tube;

Fig. 2 is a section on the line 2-2 of Fig. 1;

Fig. 3 is a plan view of the filled pouch;

Fig. 4 is an end view of the filled pouch;

Fig. 5 is an end view partly broken away of an empty outer container;

Fig. 6 is a view on the line 6-6 of Fig. 5;

Fig. 7 is a like horizontal sectional view through a modified form of container;

Fig. 8 is a top end view of a support of the type used in Figs. 5, 6 and 7, adhesively united to a container wall;

Fig. 9 is a blank of stiff material from which a container with integral end supports may be formed;

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Fig. 10 is a view in perspective of the container formed from the blank shown in Fig. 9 and shows a pouch within it;

Fig. 11 is a plan view of a modified blank; and Fig. 12 is a view in perspective of the container formed from the blank shown in Fig. 11.

There are many machines on the market for packaging liquids in pouches made from tubular material. Fig. 1 illustrates such tubular material. The tube is composed of any flexible material suitable for holding the liquid which is to be packaged. For packaging lubricating oil rubber hydrochloride film is preferred. The tube may be made by spiraling a strip of the film and sealing its overlapping edges. Alternatively, the opposite edges of a strip may be sealed together to form a tube with a single seam located either at its side or in one face. Certain packaging materials which may be used in carrying out this invention may be extruded through a circular orifice and the tube may be formed in that manner.

However the tube is formed, it is sealed at the bottom 2. If the tube is made of rubber hydrochloride film the seal is preferably made by pressing the opposite walls of the tube together while heating them to make them adhere to one another. The liquid is filled into the tube above this seal 2 and another seal 3 is made when the desired amount of liquid has been introduced into the tube. The filled pouch 4 is then severed from the balance of the tube by cutting along the dotted line 5 which is located centrally of the seal 3. (The tube shown in Fig. 1 is not filled and the location of the seal 3 and cut 5 have been added merely to clarify the disclosure.) Additional liquid is fed into the tube above the seal 3. The operation is repeated to form additional pouches. In Fig. 3 the pouch 4 is shown with laterally projecting end seals 2 and 3. This pouch is representative of pillow-shaped rectangular pouches, in that it is rounded up at all four edges between the four corners. Figs. 3 and 4 illustrate the resulting pillow-shaped effect.

When a pouch of this general shape is shipped it is subjected to various strains, as by the starting and stopping of a vehicle which is transporting it. This strain is so great that a seal or other weak portion of the pouch may be ruptured by the temporary pressure of the liquid against it. The container of this invention relieves such strains by providing a lateral support for rounded portions of such a pouch between its four corners. The sealed ends of the pouch are generally subjected to the greatest strain and are the

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portions of the pouch most apt to leak. Therefore, for a pouch sealed at each end, a support at each end without any side support reduces the tendency to leak. By supplying side supports as well as end supports the tendency to leak is further reduced, and four supports so placed reduce the strains on any pillow-shaped rectangular pouch, regardless of its construction, and reduce its tendency to leak.

Figs. 5 and 6 show a container 6 of corrugated paper in which there are two compartments. It may be constructed with any desired number of compartments. At each end of each compartment there is a support 7. As shown in Fig. 8, the support 7 may be formed by folding a sheet of corrugated paper 8 four times. The inner two plies are united by adhesive 9 and the outside of the resulting support is united to the wall of the container 6 by adhesive 10. Any other type of support about $\frac{1}{2}$ " thick, for example a block of wood, is suitable.

The container shown in Fig. 6 contains several pouches 11 shown in dotted lines. Fig. 5 shows the container with the flaps opened ready for filling. The divider 12 may be a partition which is fastened to the container 6 or it may be entirely separate from the container and removable. The container 6 is deep enough to hold some 6 or 8 pouches in each of the two compartments. The pouches are laid flat, one on top of another, and the container should be level full so as to prevent any movement of the pouches after the flaps of the container have been closed. The closed flaps should provide a slight pressure on the top bag. The container is then turned and shipped on its side with the supports 7 on the bottom and top. Each pouch then rides in a vertical position supported laterally by dividers 12, and the container sides, and with the four corners of the pouch unsupported and out of contact with the walls of the container. For purposes of economy the top supports 7 may be omitted if care is taken to be sure that the remaining supports 7 are on the bottom in shipping.

For flat pouches measuring $8\frac{3}{4}$ inches long and 6 inches wide, filled with one quart of lubricating oil or other liquid, the distance between the end supports 7 should be $7\frac{3}{4}$ inches and the distance between the divider 12 and each side wall is $4\frac{7}{8}$ inches. The end supports 7 should be approximately 4 inches wide and $\frac{1}{2}$ inch thick. A three-compartment carton or other container having two dividers, with inside measurements of $14\frac{1}{8}$ by $8\frac{3}{4}$ inches, and 13 inches deep is suitable for packaging twenty-four such pouches.

Fig. 7 shows an alternative design in which each pouch 14 is supported at the ends by corrugated board or other supports 15 and in which wider supports 16 are provided at each side of the package. The lateral support afforded by the dividers and sides of the container relieves the pouches of strains which are imposed upon them when shipped in a container without such supports, or with supports at only two ends. The end supports 15 are generally slightly thicker than the side supports 16.

Fig. 9 shows a carton blank 17 which is used to form the container 18 of Fig. 10. The blank is scored along the lines 19, 20, 21 and 22 to facilitate folding the blank along the edges of the panels 23, 24, 25, 26 and 27. The panels 23 and 27 overlap when the container is formed. The blank is cut along the lines 28 which are ex-

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tensions of the sides of the flaps 29, 30, 31 and 32. The inner edge of each flap is scored along the line 33. The preferred container holds a single pouch 34, as illustrated in Fig. 10.

According to a preferred procedure for forming the container, the panels 23 and 27 are sealed together, and two of the flaps are fastened together, e. g., the flaps 31 and 32. The pouch is inserted and the other flaps 29 and 30 are united. As shown in Fig. 10 the ends of the pouch fit snug against the flaps which form the ends of the container. The end seals 35 are bent over, as shown, and the corners of the pouch extend beyond the supports provided by the respective flaps. The pouch is held tightly, with slight pressure on its top and bottom sides, so that there is no lateral or vertical shifting of the pouch within the container. The support given by the flaps which are spaced inwardly from the corners relieves strains which would otherwise be set up within the pouch, and the tendency for leakage is greatly reduced.

Figs. 11 and 12 show, respectively, a blank 36 and a container 37 which is formed from it. The blank 36 is scored along the lines 38 and 39 to facilitate bending the end panels 40, 41, 42 and 43. The blank is scored along the lines 44, 45, 46 and 47 to form the top and bottom panels 48 and 49, the side panels 50 and 51, and the flap 52. The long, narrow flaps 53, 54, 55 and 56 alternate with flaps 40, 41, 42 and 43. The blank is scored along the lines 57, 58, 59 and 60 so that these four flaps may be bent inward. This leaves legs 60 (Fig. 12) between the long flaps 53 to 56 and the edges of the side panels 50 and 51.

The pouch is assembled by first uniting the narrow end flap 52 to the panel 48. Two of the wide end flaps, e. g., flaps 40 and 41 are treated with a slowly setting glue and curved in at one end and held in place by folding the narrow flaps 53 and 54 outside of them and uniting these narrow flaps by a fast-setting glue. The narrow flaps hold the wider flaps in place. The container illustrated in Fig. 12 is designed to hold four pouches, each of which may hold a quart of oil. These are stacked vertically in the container with one end of each on the curved flaps 40 and 41 and the corners at these ends of the pouches extending into the side corners of the container beyond the narrow flaps 53 and 54 which support the middle of the bag ends. The four pouches fit snugly in this container. The other end of the container is closed by curving the flaps 42 and 43 against one another, with a slowly setting adhesive between them, and then folding in the narrow, longer flaps 55 and 56 and uniting them by a fast-setting adhesive. The curved flaps at the ends of the container apply supporting pressure against the respective ends of the pouches, while permitting their corners to extend beyond the middle portions of the ends. If there are projecting flanges at the ends of the pouches these, of course, are bent over. The support of the curved ends relieves strains in the pouches and reduces the tendency of the seams to open and the pouches to leak.

Containers such as shown in Figs. 10 and 12 can be cheaply made and the support they give to the pouches which fit snugly inside of them will permit the pouches to be made of thinner gauge material than would otherwise be possible. Containers of the design illustrated in Figs. 10 and 12 may be constructed to hold one or more pouches. These containers may be packaged in

cartons, one to a carton, or several such containers may be packaged in a single carton.

Whether the pouches are packaged in containers such as shown in Figs. 10 and 12 or in rectangular containers fitted with suitable supports, as shown in Figs. 5-7, the bags are given end-seam support which protects them against strains in shipment, which would otherwise cause leakage.

Although described with reference to packaging of liquids, the invention is applicable to solids, especially powders such as dried milk, and small granules such as rice, raw popcorn, etc.

What we claim is:

1. A package which includes a container and in it a plurality of pillow-shaped rectangular pouches of liquid, each pouch being constructed with rectangular top and bottom walls united without any intervening wall, which container includes flat inner top and bottom surfaces with the respective top and bottom walls of the top and bottom pouches in contact therewith, and a support fastened to the central portion of the inner surface of each of two ends which supports are narrower than the respective ends of the pouch and spaced from each other by a distance less than the shortest distance between the filled portions of said ends and supporting said ends, with the four corners of each pouch extending beyond said respective supports between said top and bottom surfaces of the container.

2. A package which includes a container and arranged horizontally within it a plurality of pillow-shaped rectangular pouches of liquid, each pouch being constructed with rectangular top and bottom walls united without any intervening wall, which container includes flat inner top and bottom surfaces with the respective top and bottom walls of the top and bottom pouches in contact therewith, and a support fastened to the central portion of the inner surface of each of the four lateral sides of the container, said supports being narrower than the respective four sides of each pouch and each opposed pair of supports being spaced apart by a distance less than the respective lateral dimensions of the filled portion of each pouch so as to support the four sides of each pouch, the four corners of each pouch extending beyond the respective supports between said top and bottom surfaces of the container.

3. A package which includes a container and arranged horizontally within it a plurality of pillow-shaped rectangular pouches of liquid, each pouch being constructed with rectangular top and bottom walls united without any intervening wall, which container includes flat inner top and bottom surfaces with the respective top and bottom walls of the top and bottom pouches in contact therewith, each pouch having two edges shorter than its other two edges, and a support fastened to the central portion of the inner surface of each

wall of the container adjacent said shorter edges of the pouches, each support being shorter than said short edges, the inner surfaces of said two supports being spaced less than the length of the longer edges of the pouches whereby the supports support the shorter edges of the filled pouches with the corners of the pouches extending beyond the ends of the supports, there being no corresponding support at the longer edges of the pouches.

4. A package which includes a container and in it a pillow-shaped rectangular pouch of liquid, the pouch being constructed with rectangular top and bottom walls united without any intervening wall, which container includes flat inner top and bottom surfaces with the top and bottom surfaces of the pouch in contact therewith, and a support fastened to the central portion of the inner surface of each of two ends of the container which supports are narrower than said ends and spaced from each other by a distance less than the shortest distance between the filled portions of said ends and supporting said ends, with the four corners of the pouch extending beyond said supports between said top and bottom surfaces of the container.

5. A package which includes a stiff container and in it a liquid-filled, pillow-shaped rectangular pouch of flexible material, the pouch being constructed with top and bottom walls united without any intervening wall, the pouch being sealed along one edge, a support projecting inwardly from the central portion of the side of the container adjacent said edge which support flattens said edge of the pouch, the corners of the pouch formed by the ends of said sealed edge projecting beyond opposite ends of the support and being unsupported.

6. A rigid container having enclosed therein at least one pillow-shaped rectangular pouch formed from flexible packaging material which container includes fastened to the inner surface thereof a support for the mid-section of at least one end of said pouch, which support is narrower than said end of the pouch, and the corners of the pouch at said end are unsupported.

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