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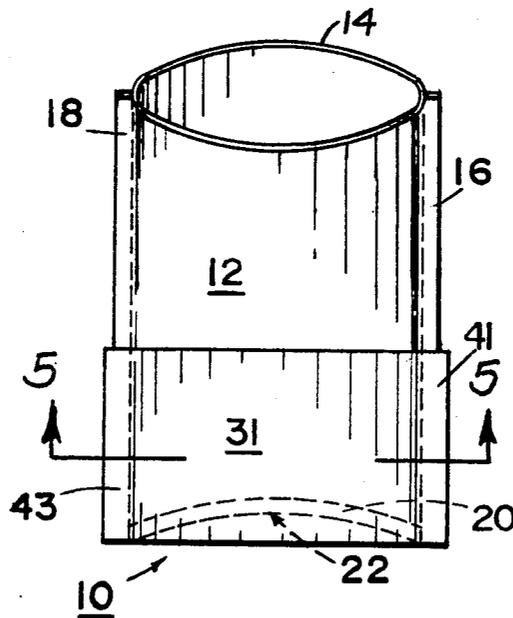
[54] **FREE-STANDING FLEXIBLE PACKAGE**  
6 Claims, 1 Drawing Fig.

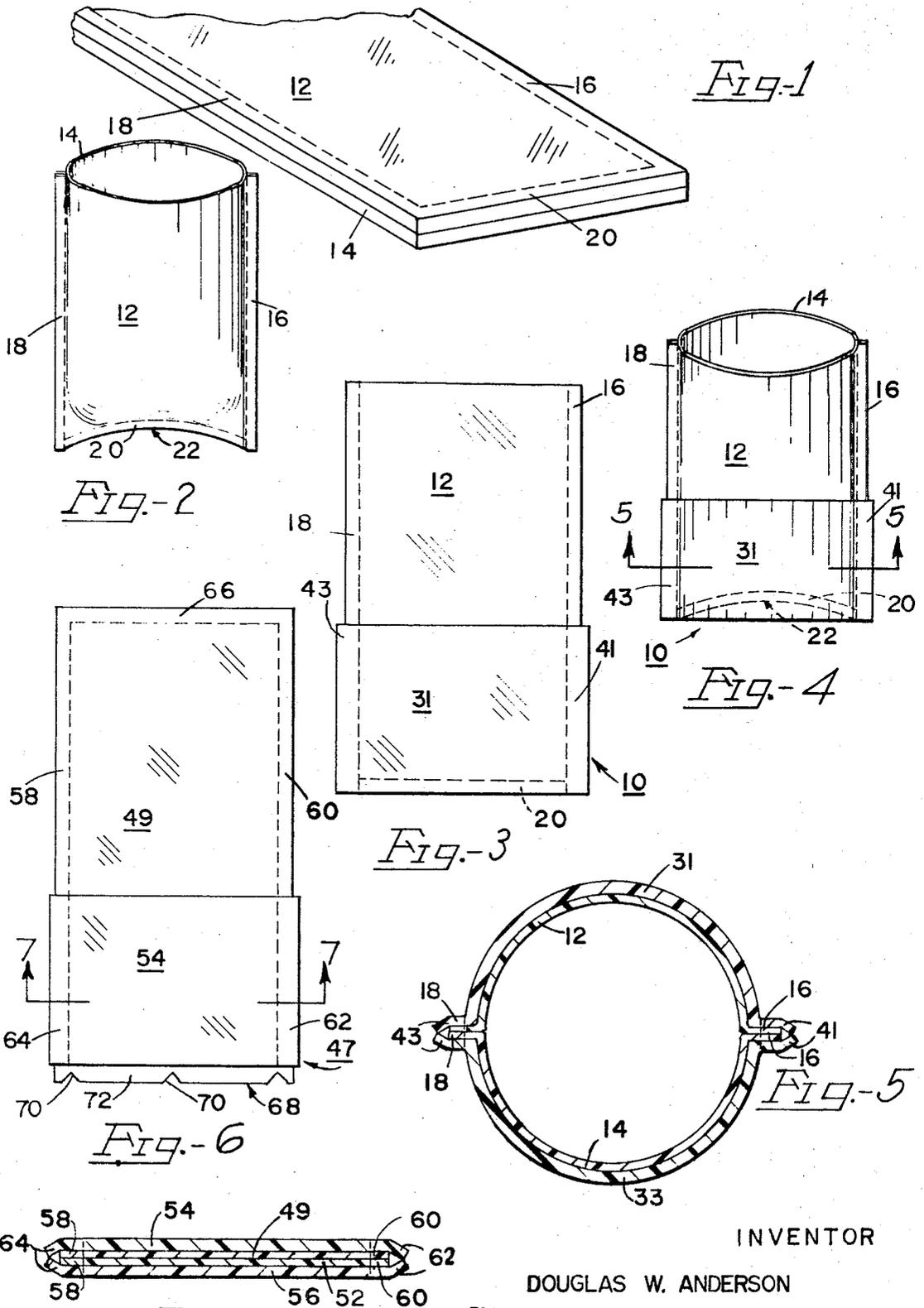
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**ABSTRACT:** A freestanding flexible package comprises two flexible plastic sheets heat-sealed together along their marginal edges to form a container, and a pair of flexible plastic base-forming strips disposed over opposite faces of the sheets with their marginal edges heat-sealed to the sheets. When the package is filled, the flexible strips assume a circular cross-sectional shape for supporting the container and its contents in an upright position.





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## FREE-STANDING FLEXIBLE PACKAGE

### BACKGROUND OF THE INVENTION

The present invention relates in general to flexible packages of the thin film type, and it relates in particular to flexible packages of the freestanding type.

For many reasons, including lower manufacturing cost, reduced storage space, discardability and versatility of design, flexible packages have, in recent years, replaced their rigid counterparts in many applications. Heretofore, however, one disadvantage of flexible packages has been their inability to assume an upright position in the absence of auxiliary supports. Consequently, flexible containers have not been used to any great extent for the retail handling of liquids such as milk.

It would be desirable, therefore, to provide a flexible film package which has the ability to hold itself in an upright or standing position. One such package which employs a gusset formed in the bottom end of a tubular film bag is available on the market and has found acceptance for some applications. Unfortunately, however, it is relatively expensive and not suitable for low priced products nor is it readily adaptable to in-line packaging techniques.

Therefore, a principal object of the present invention is to provide a new and improved self-standing, flexible package.

Another object of the invention is to provide a self-standing container which may be formed of flexible, plastic film with relatively simple, inexpensive equipment.

A further object of the invention is to provide a self-standing construction suitable for use with thin plastic film containers.

### BRIEF DESCRIPTION OF THE INVENTION

Briefly, the above and further objects of the present invention may be realized in a flexible tubular container formed of two sheets of plastic film secured together along their marginal edges and having a flexible base strip surrounding the lower portion of the container and secured thereto only at the side marginal edges of the film sheets. When the container is filled with a liquid, the base strip forms a cylindrical base which supports the container in an upright, standing position.

### BRIEF DESCRIPTION OF THE DRAWINGS

The invention, both as to its organization and method of operation, together with further objects and advantages thereof will best be understood by reference to the following detailed description taken in connection with the accompanying sheet of drawings, wherein:

FIG. 1 is a fragmentary perspective view of a flexible container which forms a part of a freestanding flexible package in accordance with the present invention;

FIG. 2 is a reduced-scale, front elevational view of the container of FIG. 1, illustrating it in a manner as if it were filled with a liquid or other material;

FIG. 3 is a front elevational view of a freestanding flexible container in accordance with the present invention;

FIG. 4 is a reduced-scale, front elevational view of the freestanding flexible package of FIG. 3, illustrating it in a manner as if it were filled with a liquid or other material;

FIG. 5 is an enlarged cross-sectional view of FIG. 4 taken substantially along the line 5-5 thereof;

FIG. 6 is a front elevational view of another freestanding flexible package in accordance with the present invention; and

FIG. 7 is an enlarged cross-sectional view of FIG. 6 taken substantially along the line 7-7 thereof.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGS. 1, 2 and 3 of the drawings and more particularly to FIG. 3 thereof, there is shown a flexible package 10 in accordance with the present invention. As shown in FIG. 1, there is provided in accordance with the invention a pair of sheets of plastic film 12 and 14, which are heat-sealed together along their side marginal edges 16 and 18

and along their bottom marginal edges 20 to form a container, which forms a part of the package 10. The upper marginal edges (not shown) are left open for filling of the container. The container may also be constructed of a single sheet of plastic film which is folded over and heat-sealed along the bottom and one of the side marginal edges, or the container may be formed of a seamless, extruded plastic tube. As shown in FIG. 2, if the container is filled with a liquid or other material and supported in an upright position, the central portion of the container will have a circular cross-sectional shape, but its bottom end, at the sealed marginal edge 20, puckers up at 22 whereby the bottom end does not form a suitable base for supporting the container in an upright position.

Referring now to FIGS. 3, 4, 6 and 7, the construction of the freestanding flexible package 10 in accordance with the present invention is completed by providing a pair of flexible strips 31 and 33 surrounding the lower portion of the pairs of sheets 12 and 14. In order to attach the strips 31 and 33 to the respective sheets 12 and 14, opposite side marginal edges 41 and 43 of the strips 31 and 33 are heat-sealed to the outer surfaces of the side marginal edges 16 and 18 of the sheets 12 and 14. After filling the container, the top marginal edges of the sheets 12 and 14 may be heat-sealed or closed over with a suitable closure (not shown) for the purpose of completing the package. If the package 10 is filled as indicated in FIGS. 4 and 5, since only the marginal edges of the strips 31 and 33 are secured to the sheets 12 and 14, the strips 31 and 33 assume a circular cross-sectional shape so that the package 10 will stand in an upright position on a supporting surface. When the package 10 is standing in an upright position, the bottom end of the container at 22 puckers up into a bowed shape within the space between the strips 31 and 33. As shown in FIG. 4, the wrinkled and puckered portions of the bottom end of the sheets 12 and 14 are disposed entirely within the space between the strips 31 and 33, but this ideal condition may not always occur. For example, if the package 10 is almost empty, the sheets 12 and 14 could be wrinkled and puckered above the strips 31 and 33. In such a condition, the base strips 31 and 33 continue to retain their circular cross-sectional shape since they are only attached to the marginal edges 16 and 18 of the sheets 12 and 14 and are not attached to the portions of the sheets 12 and 14 which form the retaining surfaces for the contents of the package.

As shown in FIGS. 3 and 4, the sheets 12 and 14 are identical and are rectangular in shape, but it is to be understood that they may have various different sizes and shapes. The sheets may be composed of any suitable material such as a multiplexed polyethylene film. The rectangular strips 31 and 33 are identical and have a length which is slightly greater than the width of the sheets 12 and 14 so that the strips extend slightly beyond the side edges of the sheets. As shown in the drawings, in order to provide the package 10 with a stable base, the strips 31 and 33 have a height which is preferably equal to at least one-half of the inside width of the sheets 12 and 14 between their sealed side marginal edges 16 and 18 when the package 10 is collapsed in a flat condition, as shown in FIG. 3. Preferably, as shown in FIG. 5, the strips 31 and 33 have a thickness which is substantially greater than that of the sheets 12 and 14 so as to have sufficient strength to hold up a relatively heavy, filled container. In this regard, as shown in FIG. 5, the strips 31 and 33 are at least twice as thick as the sheets 12 and 14. The strips may be composed of any suitable flexible material such as polyethylene.

In order to manufacture the package 10 in an inexpensive and expeditious manner, the sheets 12 and 14 are placed together in a face-to-face relationship and then are heat-sealed together along their lower margin at 20. Thereafter, the strips 31 and 33 are placed on the outer faces of the sheets with the bottom edges of the strips being disposed in alignment with the bottom edges of the sheets. Both the sheets 12 and 14 and the strips 31 and 33 are then simultaneously heat-sealed together along their side margins in one operation by using suitable heat-sealing apparatus (not shown). In this re-

gard, the sheets and the strips are heat-sealed together at their right-hand side (FIG. 3) along an area adjacent their right-hand side edges extending between the bottom and top edges of the sheets at 41 and 16 and at their left-hand side along an area adjacent their left-hand side edges extending between the bottom and top edges of the sheets at 43 and 18.

Referring now to FIGS. 6 and 7, there is shown another embodiment of a freestanding flexible package 47 constructed in accordance with the present invention. The package 47 is similar to the package 10, except that the package 47 is adapted to be filled from the bottom rather than from the top. The package 47 includes a pair of flexible plastic sheets 49 and 52, which are similar to the sheets 26 and 28 for the package 24, and a pair of flexible plastic strips 54 and 56, which are substantially identical to the strips 31 and 33, to permit the package 47 to stand in an upright position. The strips 54 and 56 are attached to the respective sheets 49 and 52 by heat sealing only along the opposite side marginal edges 58 and 60 of the sheets 49 and 52 and the respective opposite side marginal edges 62 and 64 of the strips 54 and 56 together in the same manner as the strips 31 and 33 of the package 24. The upper marginal edges 66 of the sheets 49 and 52 are heat-sealed together to provide a closed-top container, which may be filled at the bottom end 68 which is adapted to be heat-sealed to complete the package.

The strips 54 and 56 are spaced from the bottom edges 68 of the sheets 49 and 52 to provide an area which can be heat-sealed after the package 47 is filled. A plurality of V-shaped notches 70 are cut in the lower marginal edges 72 of the sheets 49 and 52 at U-shape, distance from the bottom edges of the strips 54 and 56 so that when the package 47 is filled, the strips 54 and 56 assume a circular cross-sectional shape and the lower marginal edges 72 of the sheets 49 and 52 pucker upwardly within the space between the strips 54 and 56. The notches thus permit the portion of the sheets 49 and 52 extending below the strips 54 and 56 to readily fold up into the space between the strips so that the bottom edges of the reinforcing strips engage the supporting surface on which the package 47 rests. It should be understood that the notches may be cut in the marginal edges 72 before or after heat sealing them. Moreover, the notches may have various different shapes, such as a U-shape, and the notches may also be cut in the marginal edges 72 along the sides thereof adjacent the strips 54 and 56.

While the present invention has been described in connection with particular embodiments thereof, it will be understood that many changes and modifications of this invention may be made by those skilled in the art without departing from the true spirit and scope thereof. Accordingly, the appended claims are intended to cover all such changes and modifications as fall within the true spirit and scope of the present invention.

I claim:

1. A flexible package which lies flat when in the unfilled condition and which is freestanding when filled with liquid, said package comprising:

- 5 a collapsible tubular container formed of a flexible plastic and having a closed bottom end, said container being substantially flat when collapsed and being substantially circular in cross section when filled; and
- 10 a flexible base strip means surrounding the bottom portion of said container and secured thereto along longitudinally extending areas on diametrically opposite sides of said container, said areas extending substantially throughout the height dimension of said strip means, so that when said container is filled with liquid, said base strip means assumes a generally circular shape with the bottom edge thereof extending below said container to provide a base for supporting said container in an upright position.

2. A freestanding flexible package according to claim 1, wherein said strips are disposed in edgewise alignment with said bottom end of said container.

3. A freestanding flexible package according to claim 1, wherein said container comprises a pair of flexible plastic sheets disposed in edgewise alignment and heat-sealed together along their side marginal edges and along one of their end marginal edges.

4. A freestanding flexible package according to claim 3, wherein the thickness of said base strip means is equal to at least twice the thickness of said sheets.

5. A freestanding flexible package comprising:

- 30 a collapsible tubular container formed of flexible plastic material and being substantially circular in cross section when filled;

flexible plastic base strip means surrounding said container near the bottom end thereof and secured to said container only along longitudinally extending areas on diametrically opposite sides of said container, said base strip means comprising a pair of flexible plastic strips heat-sealed only to said areas of said container along the side marginal edges of said strips, said strips being disposed in a spaced-apart relationship relative to said bottom end of said container to provide a heat-sealing area so that said area can be heat-sealed to complete the package; and whereby when the contents of said container is contained therein, said base strip means forms a substantially circular base for supporting in an upright position said container and its contents.

6. A freestanding flexible package according to claim 5, further including means defining a plurality of notches in said heat-sealing area of said container so that after sealing said area, said end marginal edges of said container pucker up under said base when it supports said container and its contents.

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