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Improvements in or relating to collapsible containers.

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A collapsible container comprises a bag which includes a dispensing spout 16 in one side 28 thereof. A flexible strip formed from two plastics material sheets 20,22 in the form of "bubble film" is provided within the bag along the other side 26 thereof. The strip maintains a liquid passage within the container connecting with the spout upon collapse of the container.

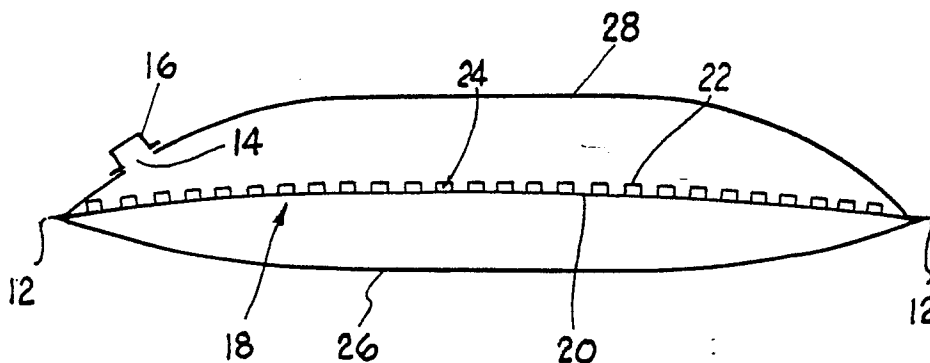


FIG.2.

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Improvements in or relating to Collapsible Containers

The present invention concerns improvements in or relating to collapsible containers especially but not exclusively bags intending to store and dispense liquids.

Plastic material bags contained within a more rigid outer container, for example a cardboard carton, are used on an increasingly large scale to store and dispense liquids. They exhibit many advantages over conventional rigid containers but suffer from certain disadvantages.

The bags are designed to collapse on emptying and depending upon the circumstances of use the collapse is not uniform across the whole area of the bag. Thus, for example, the bag can collapse along a line which separates the dispensing spout fixed in one of its sides adjacent to one edge or corner from another area of the bag trapping a quantity of liquid and preventing all the contents of the bag from being dispensed. This problem can be particularly serious where the contents of the bag are being pumped out by way of a spout situated at the top of the bag as the reduction in pressure within the bag can cause the bag to collapse around the spout thereby hindering or preventing efficient dispensing.

It is an object of the present invention to obviate and mitigate these disadvantages.

According to the present invention there is provided a collapsible container having a dispensing spout and a flexible member fixed by at least one of its ends within the container during manufacture of the container, the flexible member being positioned to at least partially face the dispensing spout across the interior of the container and having at least one protrusion extending from a side thereof which; on collapse of the container on dispensing its contents maintains a liquid passage within the container communicating with the spout.

Preferably the container is a plastics material bag.

Preferably the bag comprises a seamless tube or two sheets seamed at their longitudinal edges, and closed at each end to form a rectangular bag by a transverse seal.

Preferably the flexible member is fitted within the bag prior to the sealing of its ends by fusion and each end of the flexible member is fused into the seal.

Preferably the or each protrusion extends from the side of the flexible member facing the spout.

Preferably the flexible member comprises two superposed sheets of a plastics material one of which is planar, the other having a base with a

plurality of spaced dimples projecting therefrom.

Preferably the dimples are air-filled.

Preferably the flexible member comprises a strip, the width of which is at least equal to the diameter of the dispensing spout. Alternatively the flexible member is a sheet extending over an entire side of the bag.

In an alternative arrangement the flexible member is a thermoplastic extruded strip having continuous or intermittent ribs projecting from one side thereof.

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings, in which;

Fig. 1 shows part of the continuous web of plastics material bags;

Fig. 2 shows a longitudinal cross-section through a filled bag; and

Fig. 3 shows a plan view of part of a flexible strip from within the bag shown in Fig. 2.

Bags intended to carry liquids for use in bag-in-box applications are generally manufactured in a continuous web 10 from a tube of laminated plastics and metal foil which is flattened and formed into bags by providing spaced transverse seals 12 by fusion or adhesion along which cuts are eventually made to separate the web in to individual bags. Each bag has a dispensing hole 14 formed in one side thereof to which is fitted a dispensing spout 16 which receives a dispensing tap (not shown).

The bag is filled with liquid by any of a number of known means which do not form part of the present invention and will not be described.

According to the present invention as the bags are being formed there is fitted therein a flexible strip 18 which has a width slightly greater than the diameter of the dispensing spout 14 and extends from one end of the bag to the other. The strip is formed from a continuous member which is located within the tube and is conveniently manufactured from a thermoplastics material which is compatible with thermoplastics material of the bag so that when the bag is sealed the ends of the strip are fused in the sealed ends of the bag.

In one embodiment of the invention the strip is formed from two plastics material sheets 20, 22 which are formed into what is known as a "bubble film". Figs. 2 and 3 show that the bubble film comprises a planar plastics first sheet 20 to which is attached (by fusion) a further planar sheet 22 in which is formed a plurality of air-filled dimples 24, the dimples being spaced from each other.

When the bag is in the filled condition as shown in Fig. 2, the flexible strip normally lies

alongside the side 26 of the bag which does not include the dispensing spout 16. Plastics bags of this nature are designed to collapse when the liquid is dispensed therefrom as no air is allowed to enter into the bag to replace the dispensed liquid. It is possible therefore for the sides 26 and 28 of the bag to come together on collapse and to trap a pocket of liquid by virtue of a seal formed between the sides 26 and 28.

The upstanding dimples 24 from the flexible strip will support the side 28 of the bag including the dispensing spout and as the dimples are spaced apart there will remain the passage for liquid along the strip between the dimples. It will be realised that the spacing between the dimples must be such that the side 28 of the bag cannot appreciably collapse into the space between the dimples thereby closing off the fluid passages along the strip.

In a modification the strip 18 can extend across the entire width of the bag and in a further modification one side of the bag, both sides of the bag or a strip of one or both sides of the bag can take the form of a bubble film.

In a further modification the flexible strip can take the form of a thermoplastic extruded strip provided with at least two continuous ribs up-standing from the face which, in use, faces the dispensing spout. To provide inlets to the dispensing channels formed by the ribs gaps can be provided therein at spaced intervals along the length of the rib.

In another modification the air-filled dimples are provided on the face of the strip facing away from the spout. In this modification the strip does not extend across the whole width of the spout and/or perforations are provided in the strip to permit liquid to be dispensed through the spout.

A modified bag may be utilised. This is made up from two sheets seamed along their longitudinal edges to form a tube.

Claims

1. A collapsible container having a dispensing spout (16) characterised in that it also includes a flexible member (18) fixed by at least one of its ends within the container during manufacture of the container, the flexible member (18) being positioned to at least partially face the dispensing spout (16) across the interior of the container and having at least one protrusion (24) extending from a side thereof which; on collapse of the container on dispensing its contents maintains a liquid passage within the container communicating with the spout (16).

2. A container according to claim 1, characterised in that the container is a plastics material bag.

3. A container according to claim 2, characterised in that the bag comprises a seamless tube or two sheets (26, 28) seamed at their longitudinal edges, and closed at each end to form a rectangular bag by a transverse seal (12).

4. A container according to claim 3, characterised in that the flexible member (18) is fitted within the bag prior to the sealing of its ends by fusion and each end of the flexible member (18) is fused into the seal (12)

5. A container according to any of the preceding claims, characterised in that the or each protrusion (24) extends from the side of the flexible member (18) facing the spout (16).

6. A container according to claim 5, characterised in that the flexible member comprises a strip (18), the width of which is at least equal to the diameter of the dispensing spout (16).

7. A container according to claim 5, characterised in that the flexible member is a sheet extending over an entire side of the bag.

8. A container according to any of the preceding claims, characterised in that the flexible member comprises two superposed sheets (20, 28) of a plastics material one of which (20) is planar, the other (22) having a base with a plurality of spaced dimples (24) projecting therefrom.

9. A container according to claim 8, characterised in that the dimples (24) are air-filled.

10. A container according to any of claims 1 to 6, characterised in that the flexible member is a thermoplastic extruded strip having continuous or intermittent ribs projecting from one side thereof.

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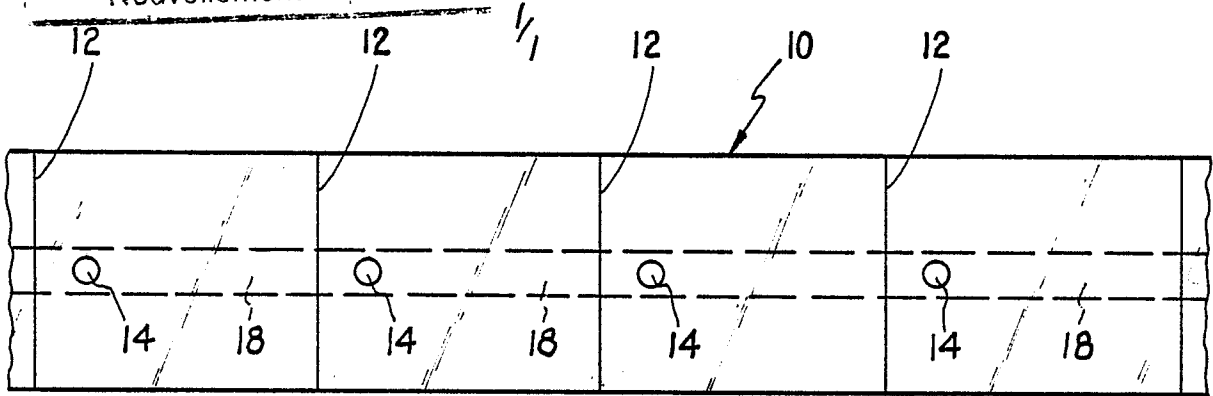


FIG. 1.

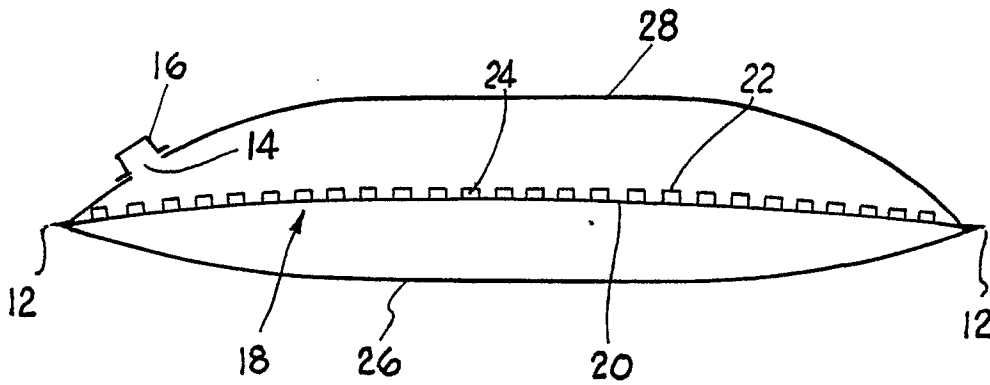


FIG. 2.

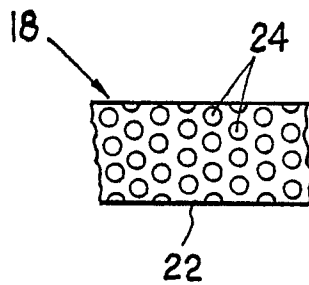


FIG. 3.