United States Patent [19]

Wilska

[11] **3,782,430**

[45] **Jan. 1, 1974**

[54] **RELATIVELY MOVABLE VALVE ACTUATOR**

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[22] Filed: **Mar. 16, 1971**

[21] Appl. No.: **124,901**

[30] **Foreign Application Priority Data**

Apr. 14, 1970	Sweden	5053/70
Apr. 13, 1970	Norway	1351/70
Apr. 17, 1970	Denmark	1934/70
Dec. 17, 1970	Great Britain	59,887/70
Dec. 11, 1970	Netherlands	7018098
Dec. 11, 1970	France	7044764
Dec. 10, 1970	Germany	P 20 60 910.3
Nov. 10, 1969	Finland	3237/69

[52] **U.S. Cl.** **141/362,** 222/529, 248/99

[51] **Int. Cl.** **B65b 3/04,** B67d 3/02

[58] **Field of Search** ..... 141/362, 360, 361; 206/56 AA; 222/105, 107, 527, 529; 137/382; 248/100, 99; 211/89

[56] **References Cited**

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[57] **ABSTRACT**

A method of forming a container includes placing two heat sealable material pieces in overlapping relationship and a method of forming a container for dispensing liquid using two pieces of material in overlapping relationship, forming a seam line at a location spaced inwardly from the edges of the materials around the periphery thereof and outwardly adjacent one end thereof to define a pouring spout portion extending outwardly from said body by spaced apart substantially parallel seam lines extending to the end of said pouring spout and defining a pouring opening therebetween, filling the container with a liquid through the opening of the spout portion, and thereafter forming a seal closure between the seal lines of the spout portion. The container thus formed includes openings in a marginal area of the spout which provide a mounting engagement for the container on a support. The support carries a pivotal tongue which is biased by a weight to close the spout but which is shiftable such as by a drinking glass to be filled to open the spout to pour out the liquid.

1 Claim, 11 Drawing Figures

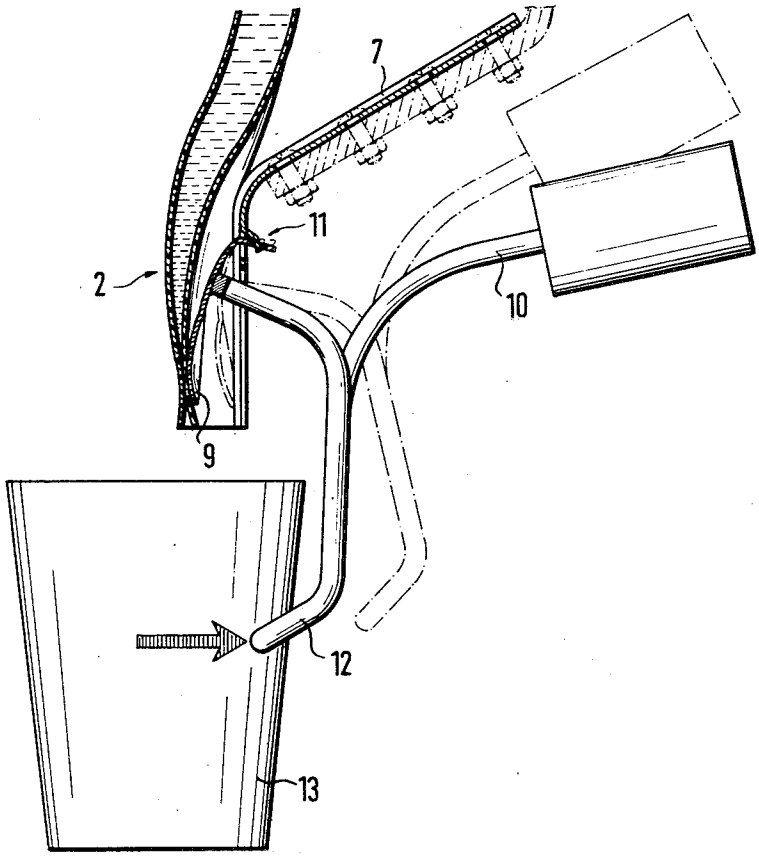
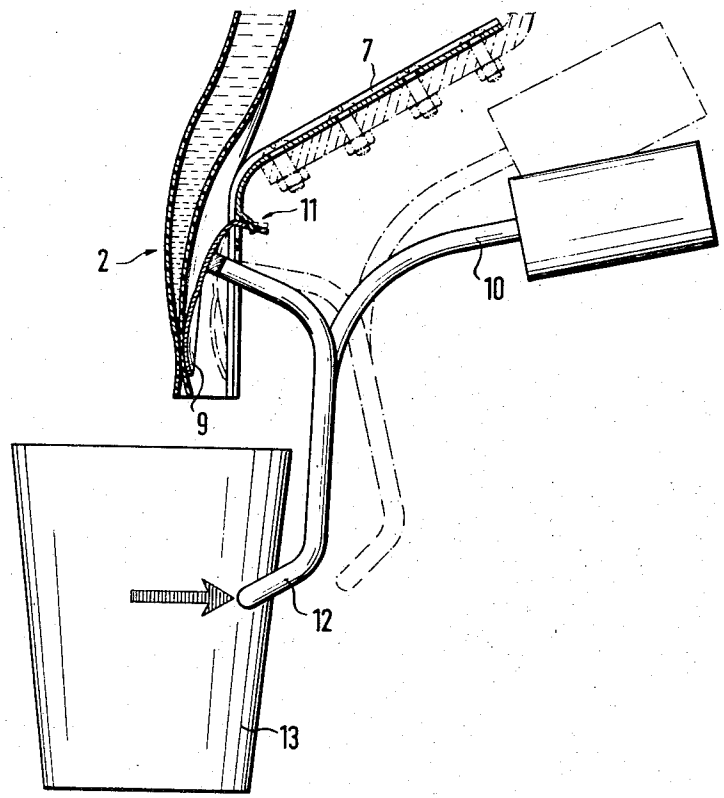


Fig.1



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Fig.2

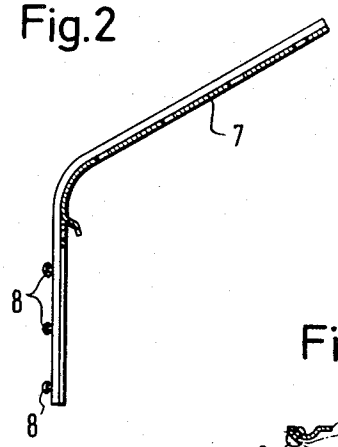


Fig.3

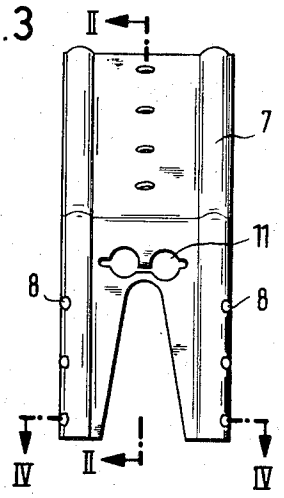


Fig.4

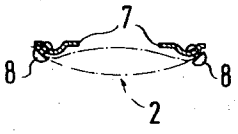


Fig.5

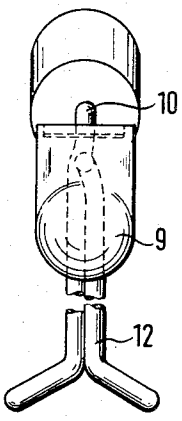


Fig.6

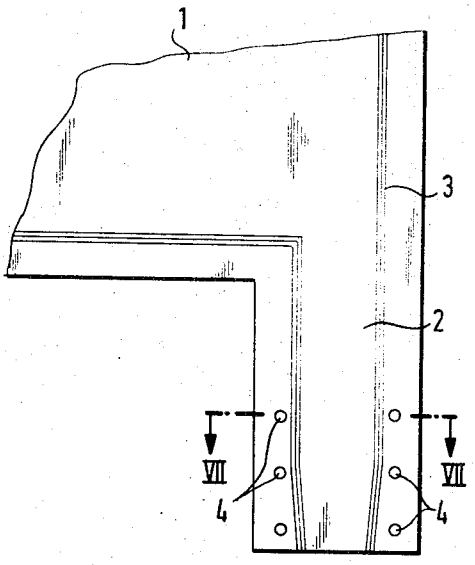


Fig.7



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Fig.8

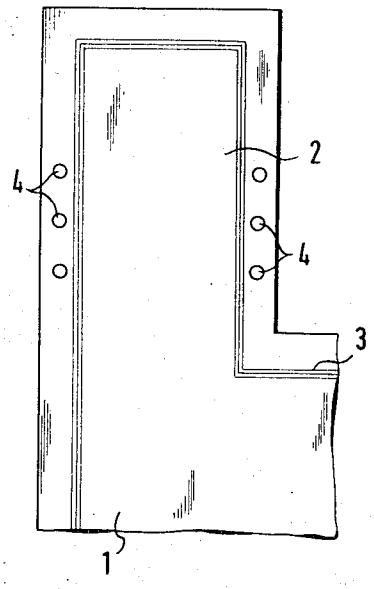


Fig.9

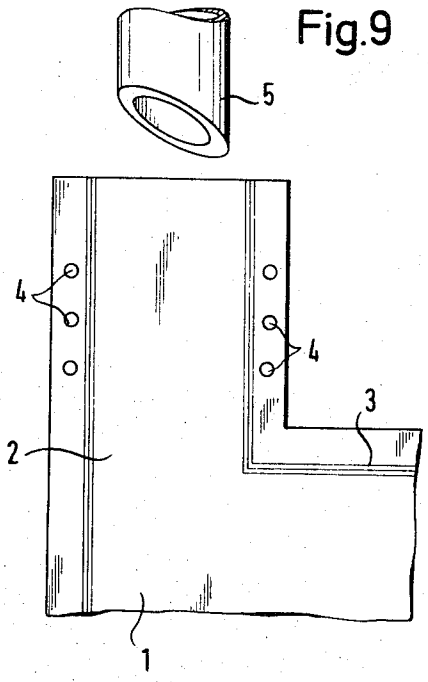


Fig.10

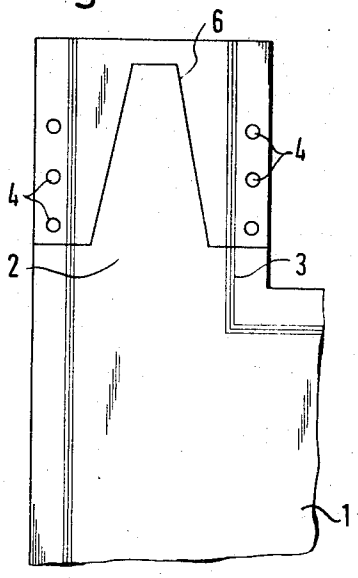
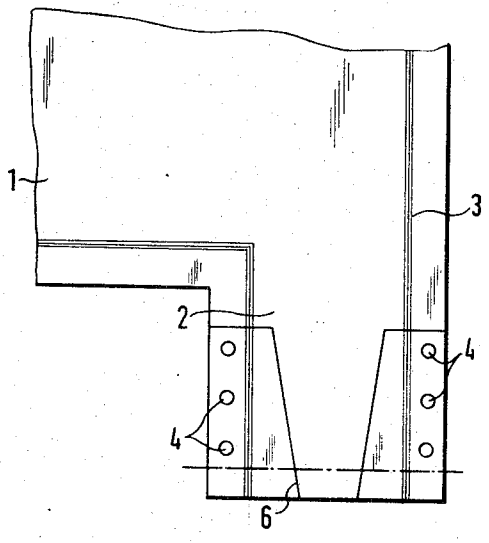


Fig.11



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RELATIVELY MOVABLE VALVE ACTUATOR

SUMMARY OF THE INVENTION

This invention relates to a carton for liquids, method of manufacturing the same and a valve arrangement for the carton. The carton comprises a liquid-tight inner bag of plastic film and a tubular part of elastic material for filling and emptying the bag. The carton is placed in a box made of a rigid sheet material, usually corrugated cardboard, so as to provide a stable carton that gives the bag mechanical protection. Such a carton usually holds from a few liters to a few decalitres of liquid and the carton is generally used for the distribution of cheap liquids, such as drinking water, juices and milk. The carton is intended to be thrown away and should therefore be as cheap as possible.

Known cartons of the type described above are expensive. This is mainly due to the tube necessary for filling and emptying the bag as well as the arrangement of the bag's valve. An object of the invention is to provide a carton that is cheaper than previously known cartons, as well as a simple method of manufacturing the same, and also a cheap, simple valve arrangement for the carton.

The invention is based upon the concept of having the tubular part of the inner bag wide enough for rapid filling, but having the tubular part contracted for emptying so that it then has a substantially smaller cross-sectional area for outflow. The carton thus can be filled and emptied through the same tubular part. When the carton is filled, the tubular part is sufficiently wide for the filling to take place rapidly. The tubular part thereafter is contracted so that its cross-sectional area for flow becomes substantially smaller and this part is closed for storing and transporting the carton. For example, the liquid can be dispensed to drinking glasses by means of a valve arrangement according to the invention.

The invention is described in more detail below with reference to the accompanying drawings, wherein:

FIG. 1 is a side view, partly in section, of a tubular member provided in the lower part of the inner bag in a carton fitted with the valve dispensing means according to the invention.

FIG. 2 is a sectional view of the valve arrangement shown in FIGS. 1 and 3, the section being taken along the line II—II in FIG. 3.

FIG. 3 is a perspective view of a part of the valve arrangement shown in FIG. 1.

FIG. 4 is a view in section taken along line IV—IV of the part shown in FIG. 3.

FIG. 5 is an elevation of the valve dispensing arrangement shown in FIG. 1.

FIG. 6 shows a part of the inner plastic bag and the tubular part connected therewith, seen from the side.

FIG. 7 shows a cross-section of the tubular part of the inner plastic bag taken along line VII—VII in FIG. 6.

FIGS. 8–11 show schematically views of the tubular part of the inner plastic bag in the carton in different stages of manufacture and use.

The bag portion 1 of the inner part of carton is made by placing polyethylene films against each other and by sealing them together along a seam 3 which follows the contours of the inner bag 1 of the carton and of the tubular part thereof 2. The tube mouth is closed by melting for reasons of hygiene. Six holes 4 are formed in the outer edge of the inner bag adjacent the seam. For the purpose of filling, the inner plastic bag 1 is placed in a box of corrugated cardboard, and situated in a filling device adapted to dispense liquid from above (not shown). The mouth of the tube 2 of the bag 1 is situated uppermost. This is schematically illustrated in FIG. 8. The tube 2 is opened by cutting away the seam that closes its mouth. The oblique end of a supply pipe 5 is shown in FIG. 9; this pipe can then be easily fitted into the tube 2. The dimensions of tube 2 and of the pipe 5 have been arranged so that they are wide enough for rapid filling. This stage is shown in FIG. 9. When the inner bag 1 has been filled the end of the tube 2 is placed in a seaming device (not shown) which is situated in the filling device (also not shown), using the holes 4 as guides. The seaming device forms a seam 6 which makes the tube end narrower and simultaneously closes it. The lid of the cardboard box (not shown) is put in its proper place and the end of the tube 2 is simultaneously placed under a perforated flap formed in the lid (not shown). Of the filling device, only the supply pipe 5 of the liquid is shown in the drawings. The seaming device and the box of rigid sheet material, usually corrugated cardboard, where the bag 1 is situated, are also not shown.

To empty the carton in substantial quantities the carton, with the tube 2 directed downwardly, is placed in a measuring device of which only the valve device according to the invention is seen in the drawings. (See FIGS. 1–5). The perforated flap of the cardboard box is opened and the tube 2 of the inner bag 1 is drawn out. The end of the tube 2 is fastened to a member 7 of the measuring device by snapping pins 8, situated in said member, through the holes 4 in the tube 2. A small piece is cut off the end of said tube so that the seam 6 therein is opened. This is illustrated in FIG. 11. The longer the piece which is cut off of the tube, the larger the flow orifice, since the seam 6 has the tapered form shown in FIG. 11. A section which will provide a larger flow cross-sectional is shown by a chain-dotted line in FIG. 11.

The only movable part in the tube closing device is a double-armed lever which is mounted at a point 11 of the body of the measuring device. A lighter and shorter tongue-shaped part 9 of the lever is situated under the tube in its longitudinal direction, while a longer and heavier arm 10 produces a weight that tends to lift the tongue 9 upward and tightens the tube fastened at its edges so that it acquires the form of an inverted U and presses the inner walls of the tube tightly against each other, thus tightly closing the tube mouth. A pressing arm 12 is fastened to said double-armed lever, with the pressing arm reaching below the tube mouth. If the pressing arm is pushed horizontally by means of the edge of a drinking glass (FIG. 1), the weight 10 rises upward in a manner shown by the chain-dotted lines; the tongue 9 descends, and the tube mouth becomes free from tension. The hydrostatic pressure of the liquid opens the tube, and the liquid can flow into the drinking glass 13. When the drinking glass 13 is removed, the tube will be closed by the force of the weighted arm 10 pressing the tongue 9 against the tube 2.

Various modifications of the invention may be made to the embodiment described above. For example, instead of seaming, the contracting of the tube end can be obtained by means of clamping devices, that simultaneously fasten the tube to the body of the measuring

device. The tube mouth can be stretched to the emptying device so as to close the tube in a shape other than U-shape, such as for instance, a plane. The essential matter is to obtain the closing of the tube by stretching the tube in transverse direction.

What we claim is:

1. A liquid dispensing apparatus, comprising a support body having a substantially vertical wall portion, a container adapted to be supported above said support body and having an elongated spout portion extending outwardly therefrom and overlying said vertical portion of said support body, said support body having at least one projection on each side thereof, said spout portion of said container having a sealing line on each side thereof spaced inwardly from the adjacent side edge to form a marginal area outside of said seam line, at least one opening in the marginal area on each side, said support body having at least one projection on each side extending into each opening and holding said spout

body on said vertical support portion, a dispensing valve pivoted on said body and having a tongue portion underlying said spout portion between the seam lines thereof and having a drinking glass engagement portion adapted to underlie said spout, means biasing said lever member in a direction to cause said tongue to engage against said spout and close it off, said drinking glass projecting portion being displaceable to move said tongue backwardly to open said spout, said vertical wall portion including a forked lower end portion having spaced apart legs underlying the marginal area of said container below said spout portion, said legs each carrying one of said projections which are engageable with said container spout portion, said tongue being pivoted to said support body and having a portion disposed between said legs which is engageable with said spout portion to close said spout portion.

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