Dec. 16, 1969 M. M. STERNAU 3,484,034

POUR SPOUT DISPENSING CARTON

Filed Oct. 21, 1966 2 Sheets-Sheet 1

FIG. 1

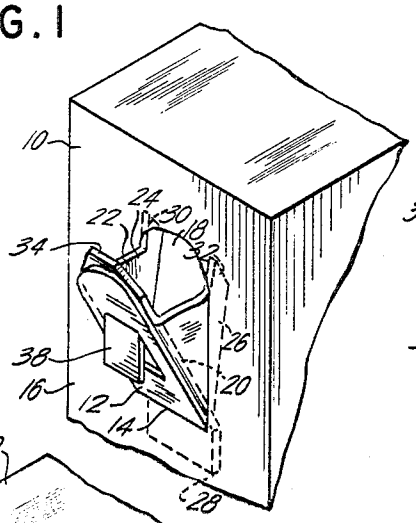


FIG. 2

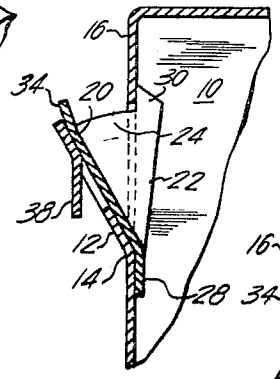
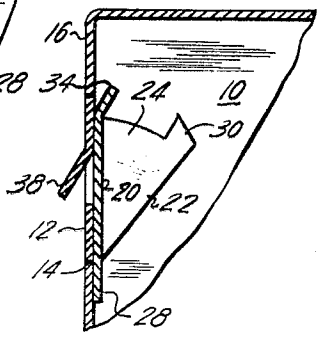


FIG. 3



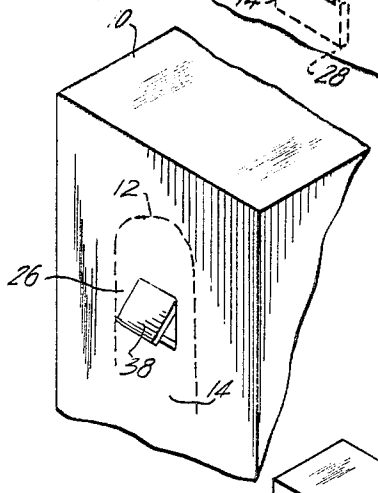


FIG. 4

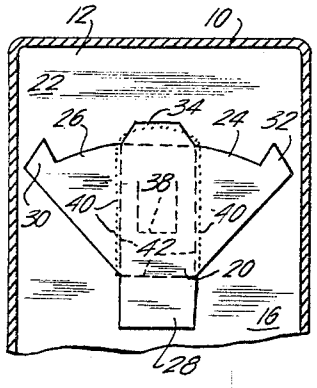


FIG. 5

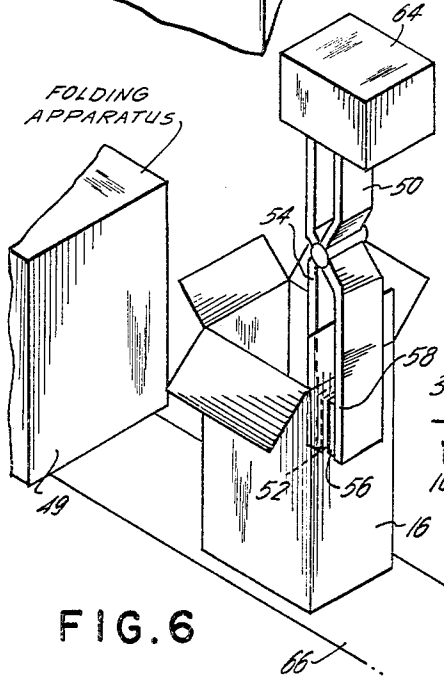


FIG. 6

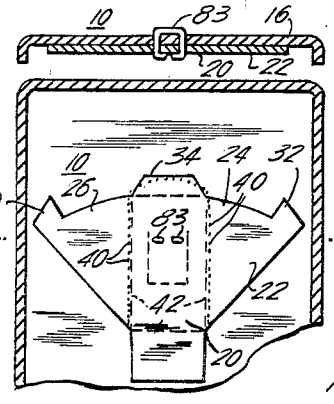


FIG. 10

FIG. 11

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Dec. 16, 1969 M. M. STERNAU 3,484,034

POUR SPOUT DISPENSING CARTON

Filed Oct. 21, 1966 2 Sheets-Sheet 2

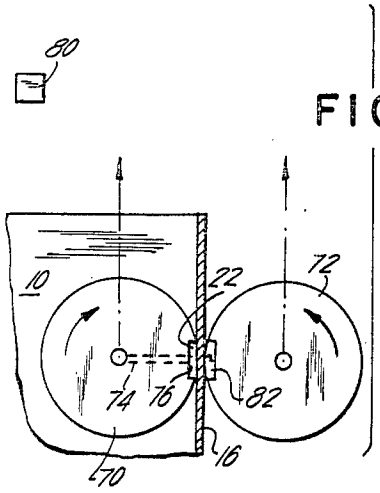


FIG. 9

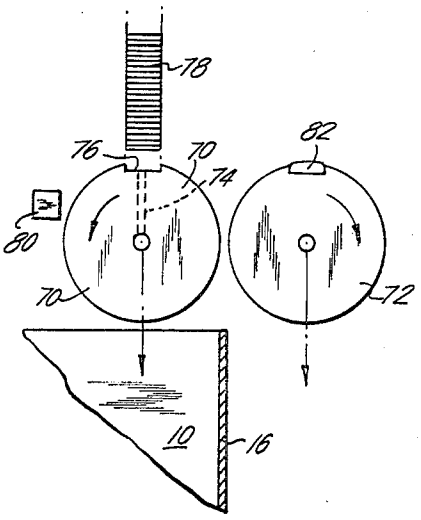


FIG. 8

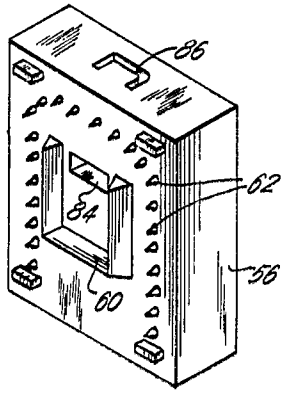


FIG. 7

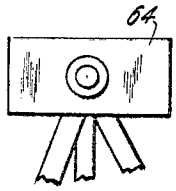


FIG. 13

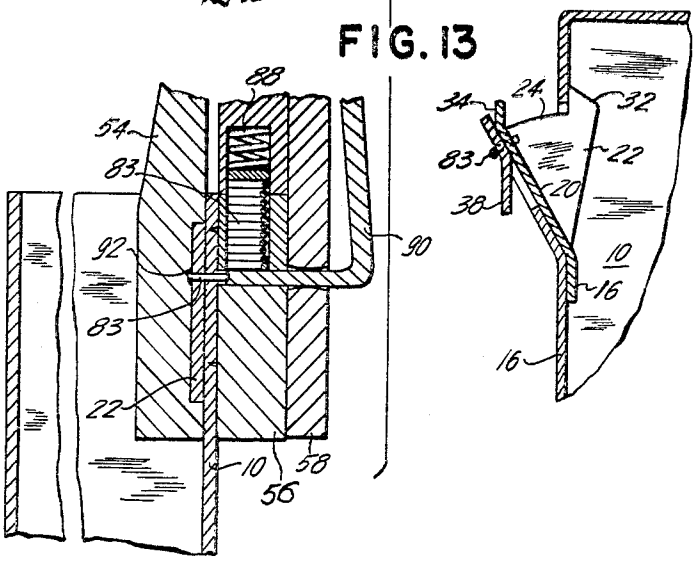


FIG. 12

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3,484,034

POUR SPOUT DISPENSING CARTON

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Filed Oct. 21, 1966, Ser. No. 593,611
Int. Cl. B65d 25/46
U.S. Cl. 229—7 3 Claims

ABSTRACT OF THE DISCLOSURE

A tab projects integrally downward from an upstanding flap defined by partly-penetrating perforations following an inverted U-shape in the wall of a container. The flap conforms in shape to the central portion of a channel shaped drum that is secured by its central portion to the flap at the inside of the container.

This invention relates to boxes for dispensing granular material, and particularly to such boxes as dispense granular material through a spout that is opened with a tab as illustrated in U.S. Patent No. 3,237,835 issued Mar. 1, 1966.

Such channel-shaped spouts have tabs projecting from the center portion of the channel so that a user by grasping the tab can open and close the box by operating the spout. These spouts assure sanitary handling of the spout. However, they frequently permit the granular material to sift through slits formed in the box when the spout is manufactured, especially at points where the channel passes into the box. Moreover boxes with such spouts are difficult to manufacture. Such spouts are also sometimes difficult to open and put a strain on the tab.

An object of this invention is to improve boxes for dispensing granular materials.

Another object is to improve methods and means for manufacturing such boxes.

Still another object is to eliminate the abovementioned deficiencies of such boxes and their manufacturing methods.

Yet another object is to avoid undesired sifting of material from such boxes and simplify manufacturing procedures for such boxes.

Still another object is to minimize the effort to open the spout and to minimize the strain on the tab.

To these ends, and according to a feature of the invention, a box for pouring granular material is completed by attaching the center portion of a channel-shaped spout member to the inside of the box, perforating the box about three sides of the center portion of the channel-shaped spout, and within the perforated area cutting a tab which a user can grasp. By pushing in the perforated area a user can form a spout-carrying, hinged flap which he can pull out of the box by the tab. Preferably the perforations penetrate the box only partially and glue attaches the spout member to the flap. This keeps the box completely intact during shipping. Preferably the perforations are aligned in the shape of an arch so as to conform to a thumb or finger shape that pushes in the perforated area.

According to another feature of the invention, the tab forms a U-shape extending in a direction opposite to the arch of the flap. The tab then hinges as far as possible away from the flap hinge. This reduces the force and hence strain on the tab required to open the flap and spout.

According to still another feature of the invention the spout member is applied to the box after the latter is folded while at the same time the perforation and tab are cut. This is done according to other features of the invention with a plier like device or with a pair of mated and moving drums, one carrying the spout member and the other carrying a cutting tool. According to still another feature of the invention a staple is simultaneously added while attaching the spout member.

These and other features of the invention are pointed out in the claims. Other objects and advantages of the invention will appear from the following description of embodiments of the invention when read in light of the accompanying drawings wherein:

FIG. 1 is a partial perspective view of a box with a spout, embodying features of the invention and showing the spout in open position;

FIG. 2 is section of FIG. 1;

FIG. 3 is a partial section of the box in FIG. 1 showing the spout before the box is opened and used;

FIG. 4 is a partial perspective of the box shown by the section of FIG. 3;

FIG. 5 is a plan view of the interior of FIGS. 3 and 4;

FIG. 6 is a perspective partly schematic view of an apparatus embodying features of the invention for manufacturing the box of FIG. 1;

FIG. 7 is a perspective view showing a detail of the apparatus in FIG. 6;

FIGS. 8 and 9 are schematic representations of another apparatus, shown in two positions, for manufacturing the box of FIG. 1 according to the invention;

FIGS. 10, 11 and 12 are partial plan, front elevation, and side elevation views respectively of another embodiment of the box in FIG. 1; and

FIG. 13 is a partial section showing an apparatus, embodying features of the invention, for manufacturing the box of FIGS. 10, 11 and 12.

In FIGS. 1, 2 and 3, a rectangular cardboard box or carton **10**, containing material to be poured, integrally carries an arch shaped flap **12** hinged outwardly along a line **14** on a sideface **16**. The flap **12** is torn from the sideface **16** along perforations and leaves an arch shaped opening **18**. Glued to the interior face of the flap **16** is the center section **20** of a chute-shaped channel **22** integrally possessing sector like wings **24** and **26** extending through the opening **18** into the box **10**. The channel **22** may be made from cardboard, metal, paper or plastic, such as polyethylene with sufficient resilience to bias the wings **24** and **26** against the vertical edges of the opening **18**. The invention also contemplates a pair of vertical slits extending upwardly from vertical edges of the opening **18** and aligned with these edges. The slits receive the circular edges of the wings **24** and **26** to guide them near their peripheries so as to maintain their angular orientation relative to the central portion **20** as the flap **16** and channel **22** are articulated about line **14**. The wings **24** and **26** may also be kept against the vertical edges by bosses that extend into the channel from the box **10**. Extending downwardly and integrally from the central section **20** and also secured against the interior of sideface **16** is a rectangular reinforcing strip **28**. Stops **30** and **32** at the ends of respective wings **24** and **26** define the extent to which the flap **12** and channel **22** may be articulated outward. An extension **34** of the central portion can be bent inwardly to serve as a locking means for keeping the flap **12** closed.

Projecting integrally from the flap **12** is a tab **38**. The latter is formed by cutting a tongue shaped tab in the flap and bending it outwardly to articulate the spout assembly formed by the flap **12** and the chute-shaped channel **22** about the hinge line **14** against and toward the box **10**. A user grasps the tab **38** and either pulls or pushes according to the desired movement. The spout assembly may be completely closed by pushing the extension **34** into the opening **18** locking the spout assembly as shown in FIG. 3. FIG. 2 shows the box **10** with the spout assembly open.

FIGS. 4 and 5 show the box **10** before it is opened. Perforations **40** extend partly through the sideface **16** along the arch that defines the flap **12**. For simplicity in

assembly the channel 11 appears unfolded flat against the interior of the sideface 16 in butterfly fashion. The channel 22 is weakened along lines 42 to establish fold lines.

A user of a new box first lifts the cut-out downwardly extending tab 38 to permit its being grasped and make it assume an outward position. The user then presses inwardly with a finger or preferably a thumb against the flap portion outlined by the perforations whose arch alignment conforms approximately to the thumb shape until the material breaks along the perforations 40 and forms the flap 12 as well as the opening 18. The user now grasps the inwardly leaning flap, which carries the chute-shaped channel, by means of the tab 38 and pulls the flap and spout assembly outward into the desired position. During this outward movement the flat-lying wings 24 and 26 shown in FIG. 5 as they are drawn outwardly against the vertical edges of opening 18 fold along the weakened lines 42 into the shape in FIG. 1. The resilience of the channel 22 keeps the wings 24 and 26 biased against these vertical edges. If necessary the user can guide or snap the circular portion of wings 24 and 26 into suitable slits in the box sideface 16. When a user pulls the spout assembly with its wings 24 and 26 folded and biased against the vertical edges of opening 18 to the position of FIG. 1, box 10 can be tilted and the contents poured.

The box 10 with the spout assembly can be manufactured by horizontally passing flat cardboard stock, with glue applied to the flap area 18, past a horizontal-axis drum that pneumatically picks up individually cut and weakened spout blanks and by rotating presses them against the glued area. The box is then cut to shape, folded and glued. Preferably the wingspan of the channel 22, that is the total overall flat width of the channel 22 is less than the interior width of sideface 16. Such a method corresponds to that shown in copending application Ser. No. 563,508, filed July 7, 1966. However here it is unnecessary to pass a tab through a slot during application of the channel. By making the channel wingspan shorter than the interior box width the channel can remain flat as in FIG. 5 when the box is folded. Otherwise the spout blanks must be at least partly folded along lines 42 before the box 10 is folded.

According to the invention the spout blank may be applied after folding and gluing the box 10.

This is accomplished as shown in FIG. 6. Here the box is folded and glued in the folding apparatus 49. Then a plier shaped applicator 50 presses a glue-carrying spout blank 52 held on its inner arm 54 against the interior surface of the sideface 16 on the box 10. A cutting block 56 at the end of the arm 58 presses against the outside. The block 56, whose details appear in FIG. 7, cuts the tab 38 with a U-shaped knife projection 60 and forms the arch-aligned perforations 40 by means of conical points 62, that are long enough only to penetrate partly into the sideface 16.

The applicator 50 is automatically opened and closed as well as moved up and down to grasp successive boxes 10 by vertically reciprocating machinery 64. The latter is time-coupled to a suitable intermittently-moving belt 66 that stops each successive box 10 beneath the applicator 50. For improved adhesion of the channel glue heating means in the arm 54 can be added.

The channel 22 may also be applied, after folding the box in apparatus 49, by means of two drums 70 and 72 that roll back and forth between the positions shown in FIGS. 8 and 9 as a box 10 stops in its intermittent lateral movement on a belt (not shown). A pneumatically energized bore 74 draws a blank for the channel 22 into a mating recess 76 from a stock 78 of blanks. A glue applicator 80 applies glue to the center section 20 of the channel 22 as the drum 70 rolls past it. The drum 70 applies the channel when it reaches the position of FIG. 9 and the pneumatic drawing power in the bore 74 releases the blank. A cutting block 82 having a concave surface but otherwise corresponding to the block 56 of FIG. 7 cuts the perforations 40 and the tab 38 outline. For improved adhesion of the channel to the box the drum 70 possesses glue heating means.

The invention furnishes a box which holds granular material without the danger of material sifting out.

The invention also contemplates applying a reinforcing staple 83 as shown in FIGS. 10, 11 and 12. This is accomplished by apparatus similar to FIG. 9. A stapler-arm opening 84 and a U-shaped stapler-stack tunnel 86 is added in the block 56 of FIG. 7. The staple application is accomplished with application of the channel 22 as shown in FIG. 13. A spring 88 forces a staple stack down into the path of a stapler arm 90 that drives the lower staple through the box 10 and channel 22 into a staple-closing recess 92. The arm 90 is also operated by the apparatus 64.

While embodiments of the invention have been shown in detail it will be obvious to those skilled in the art that the invention may be embodied otherwise without departing from its spirit and scope.

What is claimed is:

1. A container for granular material comprising, a plurality of walls, one of said walls being weakened for breaking along a line forming the shape of a flap integrally hinged at the one of said walls, a spout blank including a central section secured to the one of said walls along said flap, said spout blank having side wings which when bent transverse to said central section form a channel shape therewith, said wall having a tab integrally hinged therefrom in the portion defined by said flap, said tab being of sufficient size to be easily grasped between the fingers of a user for moving the flap and spout blank relative to the walls when the wall with said line is broken along the line, said blank being secured to the inside of said one of said walls, said tab being narrower than said flap and being composed wholly of material within the borders of said flap including the hinge formed at said hinged portion.

2. A container as in claim 1, wherein said line along which said one of said walls is weakened is arch shaped to conform to the shape of a user's finger so that a user can break said wall at said line by pressing inwardly, and wherein said spout has an extension projecting beyond the arch shaped line for holding said spout in closed condition.

3. A container as in claim 1 wherein said tab is cut out of said flap, and wherein said tab and said flap project in opposite directions when said tab lies in the plane of said flap, so that the hinged portion of said tab is more remote from the hinged portion of the flap than is the remainder of the tab.

4. A container as in claim 1 wherein staple means pass through said central section and the flap near the tab where said tab is hinged for reinforcing the tab.

5. A container as in claim 1, wherein said weakening forms a solid undivided barrier to contents within the container so as to make the weakened line sift-proof.

6. A container as in claim 5, wherein said line along which one of said walls is weakened is arch shaped to conform the line to the shape of a user's finger so that a user can break said wall at said line by pressing inwardly, said line when broken forming bearing surfaces for said wings when said flap is pulled with said spout blank.

7. A container comprising, a plurality of walls, a spout bendable into a channel shape, said spout having a substantially rectangular center portion with an extension on its lower end and wing shaped side portions, said center portion being secured to the inside of one of said walls, said one of said walls having partially penetrating perforations following an inverted U-configuration and conforming substantially to the width and the length of the center portion and adapted to be torn to allow said spout to hinge outwardly along a line where said extension joins said center portion and through an open-

ing defined by said perforations, a tab of substantially rectangular configuration cut from one of said walls in the area surrounded by said partially penetrating perforations, said tab being free to hinge outwardly, said tab when lying in the plane from which it is cut in the flap portion of said wall projecting toward the end of the U-configuration which is open, said center portion covering the opening cut out by said tab to render the opening sift proof, said partially penetrating perforations being substantially impenetrable to material in the container.

8. A container comprising, a plurality of walls, a spout bendable into a channel shape, said spout having a substantially rectangular center portion with an extension on its lower end and wing shaped side portions, said center portion being secured to the inside of one of said walls, said one of said walls having partially penetrating perforations following an inverted U-configuration and conforming substantially to the width and the length of the center portion and adapted to be torn to allow said spout to hinge outwardly along a line where said extension joins said center portion and through an opening defined by said perforations, a tab of substantially rectangular configuration cut from one of said walls in the area surrounded

by said partially penetrating perforations, said tab being free to hinge outwardly, said tab when lying in the plane from which it is cut in the flap portion of said wall projecting toward the end of the U-configuration which is open, said center portion covering the opening cut out by said tab to render the opening sift proof, said partially penetrating perforations being substantially impenetrable to material in the container, said spout having a second extension projecting beyond the inverted U-configuration for holding said spout in closed position.

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DAVIS T. MOORHEAD, Primary Examiner

U.S. Cl. X.R.

222—531