May 27, 1941. R. H. VAN SAUN 2,243,231

CONTAINER

Filed Feb. 23, 1940

Fig. 1

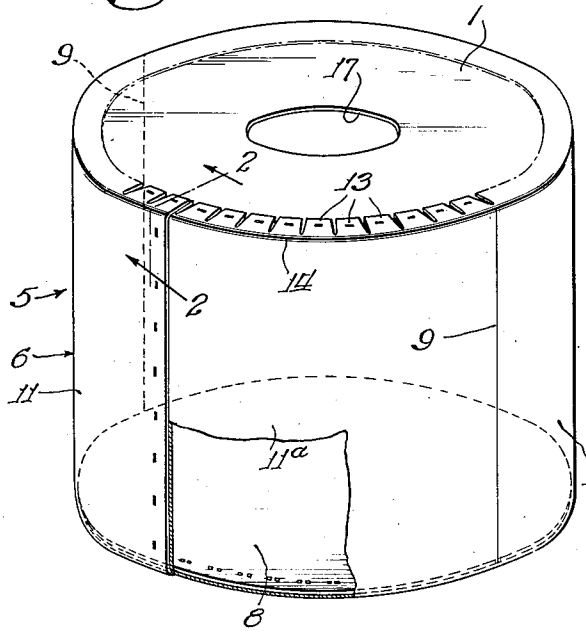


Fig. 3

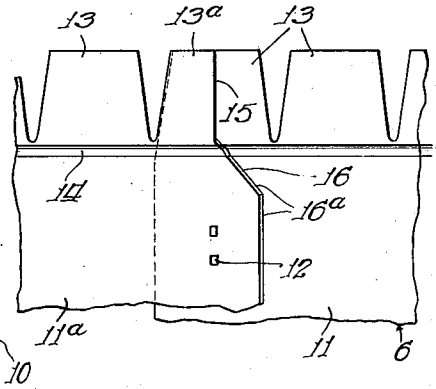


Fig. 2

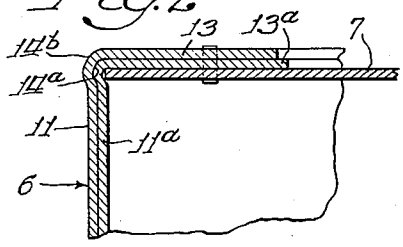


Fig. 4

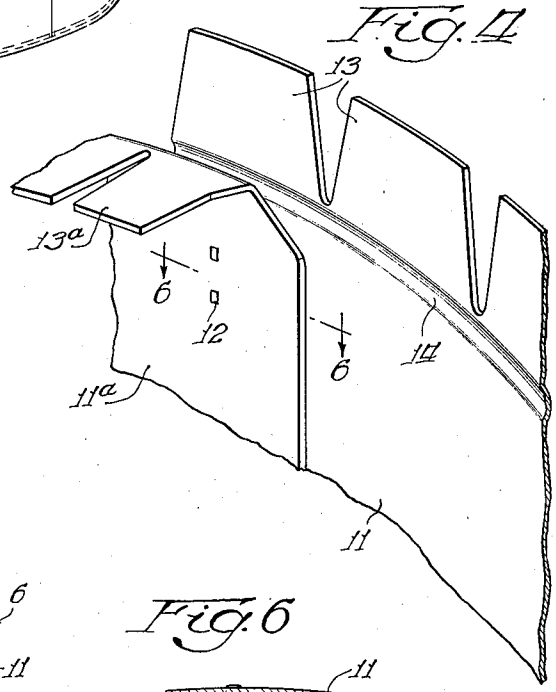


Fig. 5

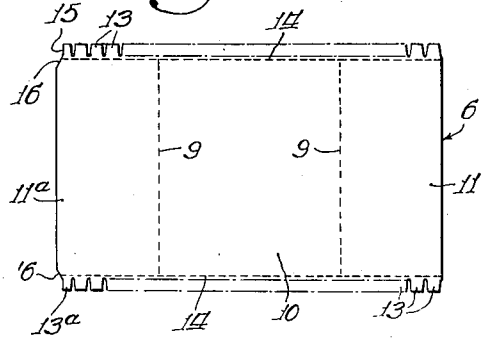
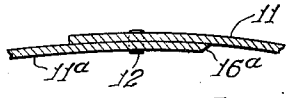


Fig. 6



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UNITED STATES PATENT OFFICE

2,243,231

CONTAINER

Raymond H. Van Saun, Chicago, Ill., assignor to Container Corporation of America, Chicago, Ill., a corporation of Delaware

Application February 23, 1940, Serial No. 320,313

3 Claims. (Cl. 229—23)

The present invention relates to collapsible containers and more particularly to cylindrical or drum shaped containers adapted to receive either liquid or comminuted materials.

One object of the present invention is to provide a container of the class described made of a body section and end sections adapted to be delivered in flat condition to the user and by such user set up in a simple manner to form a strong and sturdy construction in which the joints between the separate parts are sufficiently tight to hold liquid material, particularly such materials as molten tar or asphalt.

Another object of the invention is to provide an effective joint construction at the heads or ends of the container where the head discs meet the overlapping ends of the body blank.

Additional and more specific objects of the invention will appear as the description proceeds.

In the drawing:

Fig. 1 is a perspective view of the container in set-up condition with a section broken away to show the bottom;

Fig. 2 is a fragmentary sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary plan view of the container joint showing the overlapping relationship of the end tabs;

Fig. 4 is a fragmentary perspective view of the container joint showing the inner tabs folded;

Fig. 5 is a plan view of the body blank of the container; and

Fig. 6 is a fragmentary sectional view taken on line 6—6 of Fig. 4 illustrating the construction of joint formed by the meeting edges of the body member.

The construction of the present invention, as herein disclosed, provides a three-piece paperboard drum construction particularly adapted to receive high melting point substances while in molten condition, the meeting edges and other contacting or overlapping portions being so related as to reduce to a minimum any tendency toward leakage.

Referring more particularly to the drawing, the drum designated as a whole at 5 is preferably formed from paperboard such as solid fibre board or folding carton board. The body member 6 is arranged to be secured in tubular form and then folded flat for storage and shipment and being capable of ready expansion into tubular form to receive upper and lower closure discs 7 and 8.

For the purpose of collapsing the body member 5, score lines 9, 9 are formed longitudinally thereof so as to form the body member into two sections of equal dimensions after the edges of the body member are secured together. One of the sections indicated at 10 comprises the central part of the blank and the other section is made up of parts 11 and 11a at the ends of the blank. In the present instance the part 11a is secured with its edge portion lying on the inside surface of the part 11, see Fig. 4, and the edge portions are suitably secured together as by means of staples 12, 12.

The discs 7 and 8 are preferably held in place by means of attaching tabs 13, 13 which are adapted to be bent over into contact with the outside surfaces of the discs. In this position the tabs are preferably stapled to the discs by means presently to be referred to. The tabs 13, 13 are separated from each other by V-shaped slots or cuts of sufficient size to allow the edges of the tabs to be somewhat separated from each other when the tabs have been secured against the closure disc.

The tabs 13, 13 are defined from the main portion of the body blank by score lines 14, 14. These score lines are preferably formed of appreciable breadth so as to prevent the paperboard from bending too sharply at the upper and lower edges of the drum. In the present instance the score lines are formed to provide a concave part 14a on the inside of the blank and a convex part 14b on the outside of the blank. As shown in Fig. 2, the outside or convex part of the score line on the part 11a registers with and fits into the concave part of the score line on the part 11. Thus when the tabs are folded down the scores tend to nest closely with each other.

The V-shaped slots between the tabs are preferably formed so as to terminate at the outer edges of the score lines 14, 14.

Means are provided to cause the tabs at the ends of the body member to be secured in non-registering relation. The end tab 13 on part 11 is preferably the same as the remaining tabs. A tab 13a of special form is provided at the free edge of part 11a. This tab 13a is narrower than tab 13 and has an edge 15 which, in normal secured relation of the parts, is disposed intermediate the lateral edges of the overlapping tab 13. In the present instance the edge 15 is arranged to lie in a central position on the tab 13.

The edge 15 on tab 13a terminates in an edge 16 which is inclined downwardly and crosses the

score line 14 at an acute angle to meet the vertical edge of the part 11a at a point below the score line 14.

As shown in Fig. 6, the edge 16 of the inclined part of the section 11a is preferably tapered to a feather edge 16a so that such feather edge contacts and rests flat against the surface of part 11. By this arrangement a very close fitting joint is afforded. The tapered feather edge 16 is provided by cutting the blanks so that the cutting die first contacts the inside surface of the blank and as the cutting action of the die progresses a beveled or feather edge is produced.

In utilizing the drum of the present invention, the body member 6 will be expanded to cylindrical form after which the upper closure disc 8 is inserted so that its edge portions will fit within the concave part of the score line 14. The tabs 13, 13 are then bent over and stapled to the outer surface of the disc 8. For this purpose a suitable stapling machine is employed as, for example, a machine having a clinching anvil supported so as to project upwardly through the drum in position to clinch staples as driven through the tabs.

After the disc 8 has been secured in place, the bottom disc 7 is inserted with its edges in the concave part of the score line at the bottom end of the drum. The staples will then be driven through the downturned tabs at that end of the drum by a similar stapling machine with its upstanding clinching anvil projecting through an opening 17 formed in the top closure disc 8. The drum will then be in condition to receive its contents. If desired, after the drum has been filled, an auxiliary closure can be secured over the opening 17.

It is to be noted that the provision of a relatively wide score line having concave and convex portions tends to make a tight joint where bending of the tabs takes place along the joint in the body blank. As the closure discs are made to fit snugly within the body member, a considerable degree of compression will take place between contacting parts when the two overlapping flaps 13 and 13a are folded over and stapled to the closure disc.

When flaps 13 are folded to overlie the closure discs, the tubular body tends to assume a polygonal form at each end, the base of each flap providing one side of the polygon. As the diameter of the drum from the side of one flap to the side of the opposite flap will be slightly greater than the diameter from a point centrally of a flap to a point centrally of the opposite flap, each closure disc will engage the body member with a maximum pressure centrally of the flaps. Due to the fact that the edge 16 of part 11a crosses the score line 14 centrally of the outer overlying flap, where the disc engages the body with maximum pressure, the disc will tend to become somewhat deformed at the edge 16 and thereby conforms to the contour of the joint to provide a leak proof construction particularly for relatively viscous fluids such as molten asphalt.

Due to the provision of the inclined edge 16 at the joint between the parts 11 and 11a, the line of contact between the inner exposed edge of the two overlapping parts 11 and 11a and the edge of the closure disc will be substantially lengthened in contrast to a construction in which the inner edge crosses the edge of the disc at right angles. When the meeting edges are brought into a compression relationship, due to the forcing of the disc into the concave part of the score line, there is a tendency toward deformation of the edges with a consequent closing up of the small space produced by the edge 16a. By inclining this edge at an acute angle to the edge of the disc, the deformation produced between the edge of the disc and the edge 16 will be extended over a sufficient area or length of line so that it is only necessary to have relatively small amount of deformation of the parts at any point to produce a liquid tight joint. By feathering the edge 16 the results above described are still further assured.

While the present description sets forth a preferred embodiment of the invention, numerous changes may be made in the construction without departing from the spirit of the invention, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A drum construction comprising a tubular body member of flexible sheet material formed with inner and outer overlapping end portions, a disc-like closure member, tabs extending from the body member adapted to be folded over and secured to the outer surface of the closure member, the tab on the end of the outer portion of the body member being adapted to overlap the tab on the inner portion, the body member being formed adjacent the bases of the tabs with a score line having a concave portion directed inwardly of the body member and a convex portion directed outwardly thereof, the convex score line portion of the inner body portion being fitted so as to extend at least partially into the concave score line portion of the outer body portion, the edge of the closure disc being adapted to fit into the concave part of the score line in the body member, the outer edge portion of the inner overlapping tab adjacent its base being disposed centrally of the tab on the outer portion, said outer edge extending thence downwardly at an inclination to cross the score line at an acute angle, whereby the edge portion at the base of the tab is disposed across the edge of the disc at an acute angle when the disc has been fitted into the end of the body member.

2. A drum construction comprising a tubular body member of flexible sheet material formed with inner and outer overlapping end portions, a disc-like closure member, tabs extending from the body member adapted to be folded over and secured to the outer surface of the closure disc, the tab on the end of the outer portion of the body member being adapted to overlap the tab on the inner portion, said inner tab having its extremity adjacent the end of the body portion terminating centrally of the tab on the outer portion, the body member being formed adjacent the bases of the tabs with a score line, having a concave portion directed inwardly of the body member and a convex portion directed outwardly thereof, the convex score line portion of the inner body portion being fitted so as to extend at least partially into the concave score line portion of the outer body portion, the edge of the closure disc being adapted to fit into the concave part of the score line in the body member, the outer edge of the inner overlapping tab terminating in an inclined edge crossing the score line at an acute angle whereby the edge portion

at the base of the tab is disposed across the edge of the disc at an acute angle when the disc has been fitted into the end of the body member, said inclined, outer edge of the inner overlapping tab also having a tapered surface meeting the inner surface of the outer portion of the body member, whereby a relatively tight joint between the ends of the body portion and the edge of the closure disc is provided.

3. A drum construction comprising a tubular body member of flexible sheet material formed with inner and outer overlapping end portions, a disc-like closure member, tabs extending from the body member adapted to be folded over and secured to the outer surface of the closure disc, the tab on the end of the outer portion of the body member being adapted to overlap the tab on the inner portion, the body member being formed adjacent the bases of the tabs with a score line, the edge of the closure disc being adapted to engage the body member along the score line formed adjacent the bases of the tabs, the outer edge of the inner overlapping tab adjacent its base terminating in an inclined edge crossing the score line at an acute angle whereby the edge portion at the base of the tab is disposed across the edge of the disc at an acute angle when the disc has been fitted into the end of the body member, said inclined, outer edge of the inner overlapping tab also having a tapered surface meeting the inner surface of the outer portion of the body member, whereby a relatively tight joint between the ends of the body portion and the edge of the closure disc is provided.

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