Aug. 1, 1944. C. F. MANNING 2,355,027

MOISTUREPROOF COLLAPSIBLE CONTAINER

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FIG. 1.

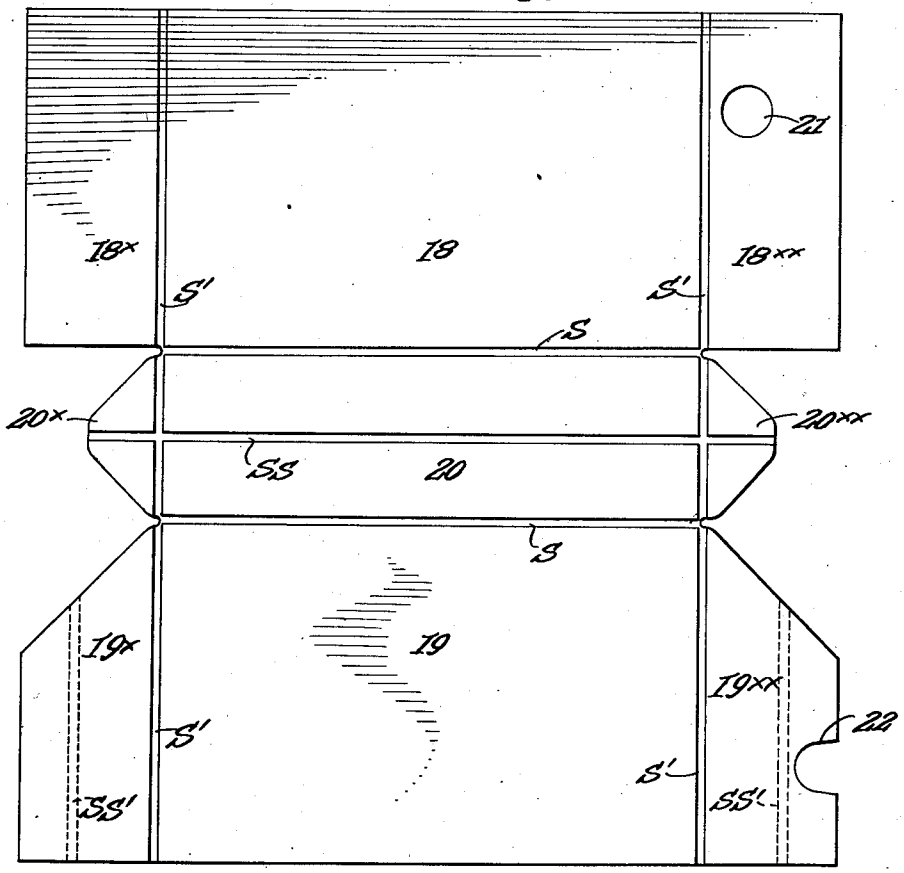


FIG. 2.

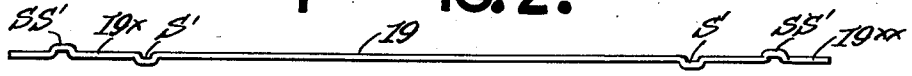
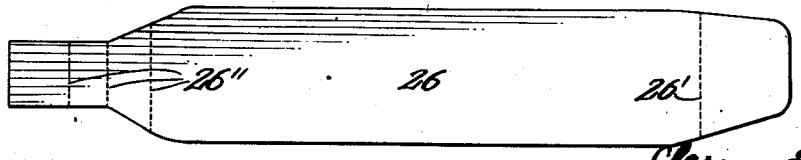


FIG. 3.



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FIG. 4.

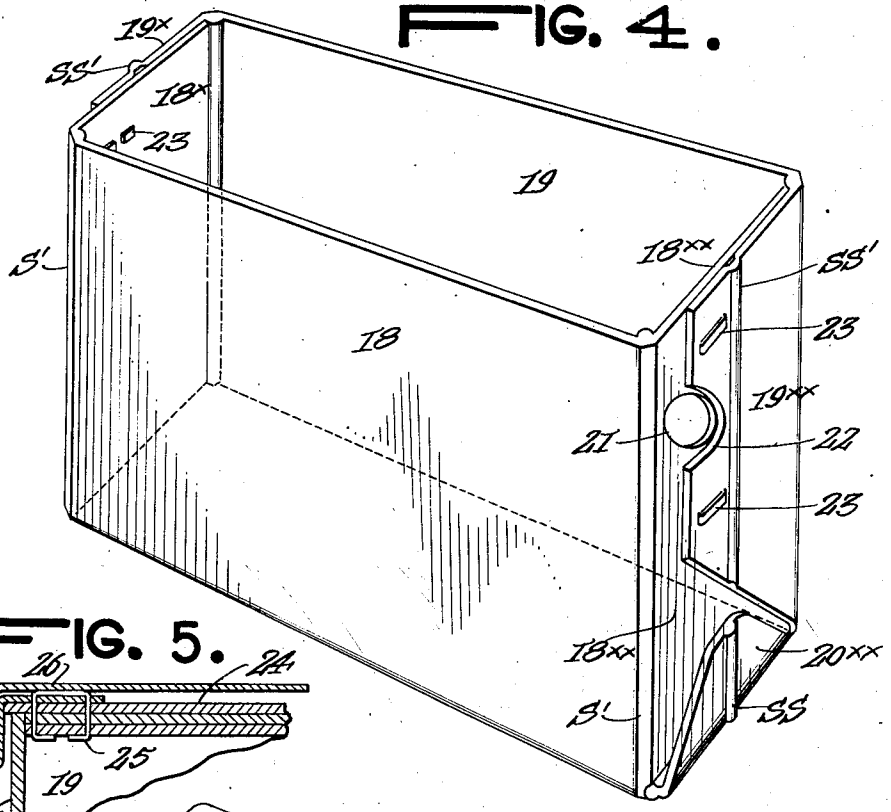


FIG. 5.

FIG. 6.

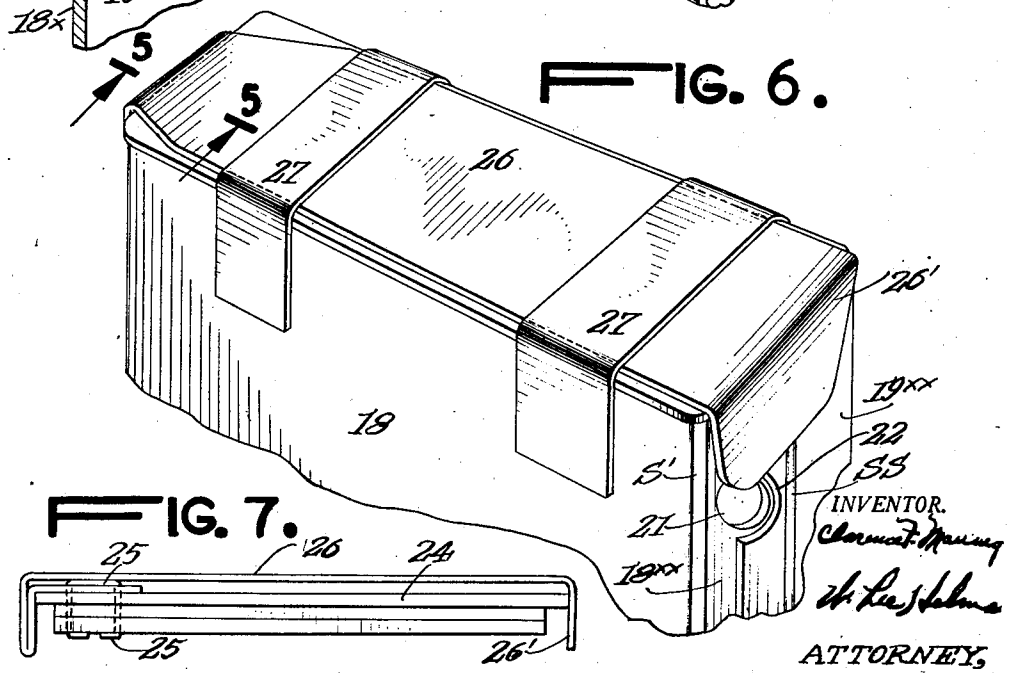


FIG. 7.

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FIG. 8.

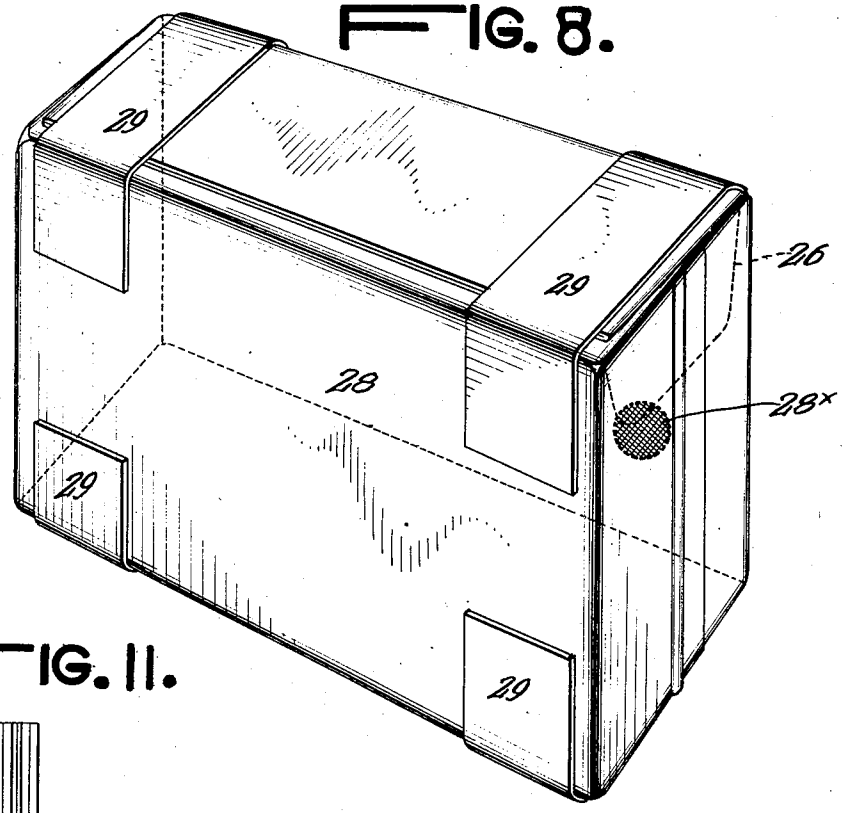


FIG. 11.

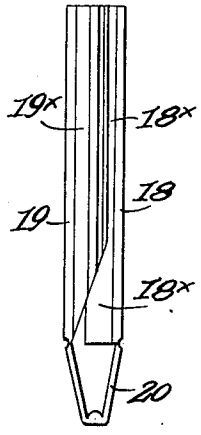


FIG. 9.

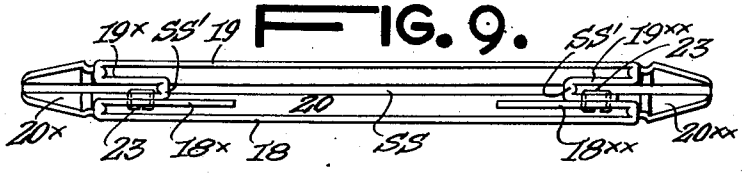
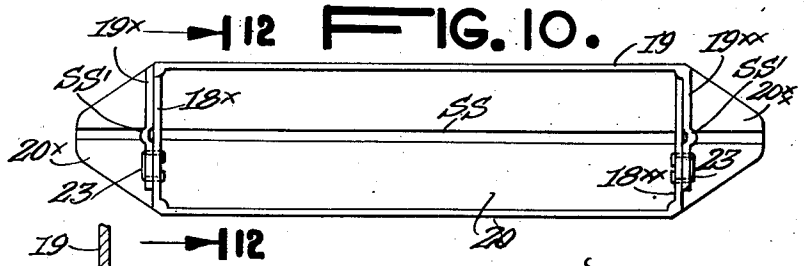


FIG. 10.



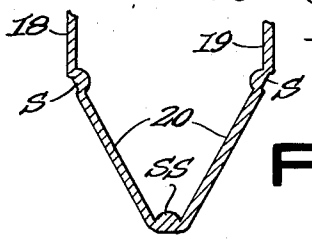


FIG. 12.

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UNITED STATES PATENT OFFICE

2,355,027

MOISTUREPROOF COLLAPSIBLE CONTAINER

Clarence F. Manning, Richmond, Va., assignor to Reynolds Metals Co., Richmond, Va., a corporation of Delaware

Application June 11, 1942, Serial No. 446,593

6 Claims. (Cl. 229—51)

The object of the invention is to provide a collapsible multi-unit, light, strong and moisture-proof container particularly adapted for the shipment and storage of ammunition, explosives, chemicals, grease and petroleum products, and other materials which will be afforded protection against moisture, excessive dryness, light and actinic rays, insects and vermin, deleterious vapors, corrosion, and other hazards incident to storage and transportation. When empty, the container units are collapsed into flat form for economy and storage and transportation; when ready for use it is extended into strong, rigid box-like form and sealed. After being sealed, both the sealing unit and the box can be opened simultaneously by one simple arm motion and without tools.

The invention will be described with reference to the accompanying drawings, in which:

Figure 1 is a plan view of the blank from which the collapsible box is made.

Figure 2 is an edge view of the same.

Figure 3 is a plan view of the tear strip showing in dotted lines the lines of fold.

Figure 4 is a perspective view of the set-up box.

Figure 5 is a fragmentary vertical section taken on the line 5—5, Figure 6.

Figure 6 is a fragmentary view showing the upper portion of the closed box ready to be received within its sealing envelope.

Figure 7 is an edge view of the cover assembly, theretofore shown in section, Figure 5.

Figure 8 is a perspective view of the sealed structure within its envelope.

Figure 9 is a top plan view of the collapsible box in collapsed form.

Figure 10 is a top plan view of the collapsible box in extended form, the foldable bottom extensions being horizontally disposed.

Figure 11 is an end view of the collapsible box before complete extension.

Figure 12 is an enlarged fragmentary section taken on the line 12—12, Figure 10.

In the structure illustrated in Figures 1 to 12 inclusive, the blank consists of a heavy piece of cardboard or fibre-board cut and scored to form opposed side wall panels 18, 19, a bottom member 20 cut and scored to fold outwardly upon itself, side wall 18 at its ends having primary end wall members 18*x*, 18*xx*. The side wall 19 has at its end secondary end wall members 19*x*, 19*xx*. The bottom wall construction at its ends carries both longitudinally foldable and transversely foldable extensions 20*x*, 20*xx*.

The view in Figure 1 shows the outer face of the collapsible box blank. The side walls 18 and 19 are bounded from the bottom member by heavy scored lines at *s*. The primary and secondary side wall members have at their ends heavy scored lines *s'* which lie intermediate said side walls and the end walls and which extend transversely across the bottom wall 20 to inwardly bound their extensions 20*x* and 20*xx*. In addition, the bottom wall 20 is formed with a heavy longitudinally extending score line which also extends longitudinally of said bottom wall extensions 20*x* and 20*xx*.

The secondary end walls 19*x*, 19*xx* are reversely scored at *ss'*.

One of the primary end wall members is preferably formed with an opening at 21, Figure 1, showing the opening in primary end wall member 18*xx*, and the margin of secondary end wall member 19*xx* is correspondingly cut away at its margin as shown at 22.

In forming up the collapsible box so that when formed it may lie in the flat or be extended as desired, the side walls are brought up to the vertical by folding on the heavy score lines *s* and the secondary end wall members are brought over outwardly upon the primary end wall members 18*x*, 18*xx*, as shown in Figure 4. Thereupon the primary and secondary end wall members are secured together by any suitable means as by staples 23 which staples lie outwardly of the heavy score lines *ss'*. The structure will then assume the position shown in Figure 10 whereupon the bottom extensions 20*x* and 20*xx* may be folded upwardly as shown in Figure 4. The box may be collapsed as shown in Figure 9 for shipping.

When the box is filled, as with cartridges, it may receive a cover member 24 preferably as shown in Figures 5 and 7. This cover member is made of an upper cardboard piece of major area which will lie over upon the top edges of the box and one or more pieces secured thereto which will be of the inside dimensions of the box. Secured by staples or other means indicated at 25 is the tear strip 26, the strip being shown in detail in Figure 3. It preferably consists of a length of cardboard or the like reduced in width at one end and near the opposite end transversely scored at 26' and formed near the opposite end with three transversely extending lines of scoring as shown at 26''. The end of the tear strip extending outwardly from the score line 26' is adapted to be folded vertically so that its end will lie adjacent the opening 21 in end wall member 18*xx* and the marginal cut 22 of end wall member 19*xx* as shown in Figure 6.

When the cover member is applied with its overlying folded tear strip the cover may be held in position by adhesive tape strips preferably of paper as indicated at **27**, Figure 6.

After the box is filled and closed and is in the form shown in Figure 6, it is ready for reception within the envelope **28**. This envelope may be the same as shown in Figure 8 of the drawings and printed at **28***x* with an indicator marking which will lie opposite the box opening **21** so that the envelope may be readily punctured to expose the grasping lip of the tear strip, as shown in Figure 8. A suitable method of making the envelope is to fold a heat sealing sheet construction upon itself, the fold forming the body of the envelope. At the sides of the body member when placed together, the margins are pressed by hot plates into connection, leaving the top of the envelope open or unattached. The side walls will be greater in depth than the box. The box may be inserted in the envelope in collapsed form and then may be expanded, and held expanded by virtue of its construction, with the upper area thereof extending above the box, for lap folding as shown in Figure 8, after which the sealing tapes **29** may be applied.

When the lip of the tear strip is seized a single pull to the left will tear away the top area of the envelope, breaking the paper tapes **29**, Figure 8, if they are employed, and also the inner adhesive strips or tapes **27**, the same motion removing the cover from the box.

The structure is particularly desirable for military use, providing protection for ammunition and goods generally where adequate protection, including protection against moisture, is required.

From the above description of the drawings, it will be seen that the invention provides a light, strong, moistureproof container, which can be packed flat and yet quickly and easily opened for use, and which consists of a moistureproof envelope, a collapsible box within the envelope and a rip strip permitting quick unsealing and removal of the box lid by a quick single motion. Not only does the container afford protection to the contents but is capable of speedy production at low cost and enables ease of assembly, filling and opening.

Having described my invention, what I claim and desire to secure by Letters Patent, is as follows:

1. A light, strong, moistureproof multi-unit container, adapted to be packed flat for economical shipment, comprising a moistureproof envelope having flexible walls and open at its top, the top area carrying a sealing medium, a collapsible box adapted to be received in and to be opened up within the envelope whereby the flexible walls of the latter are conformed to the shape of the box, the said sealing-medium-carrying areas of the envelope projecting beyond the box and being adapted to be brought into abutment for sealing, a removable top applied to the collapsible box and a flexible rip strip secured at one end to the box top and lying along the same, the rip strip having a free end, the envelope being provided with a marked tear area adjacent said free end of the strip, whereby removing said area exposes the end of the strip for opening the envelope and removing the box lid by a movement of the rip strip.

2. A light, strong, moistureproof, multi-unit container constructed in accordance with claim 1, in which the rip strip is formed with a lip adapted to lie adjacent an end wall of the box, said end wall being perforated adjacent the said lip, and the envelope being marked with a puncture designation which lies in register with the opening of the box as and for the purpose described.

3. A collapsible box adapted for use with a moistureproof envelope as set forth in claim 1, which comprises a relatively heavy cardboard sheet cut and scored to provide side walls, a bottom wall member and two sets of end wall members, the bottom wall member being longitudinally scored and also transversely scored colinear with transverse scoring bounding the ends of the side walls, said bottom wall member being provided exteriorly of its transverse scoring with end extensions, one set of the end walls being transversely scored in a direction reversely of the scoring which bounds said end walls from the appropriate side walls, as and for the purpose set forth.

4. A light, strong, moistureproof multi-unit container, which comprises a relatively heavy cardboard sheet cut and scored to provide side walls, a bottom wall member and two sets of end wall members, the bottom wall member being longitudinally scored and also transversely scored colinear with transverse scoring bounding the ends of the side walls, said bottom wall member being provided exteriorly of its transverse scoring with end extensions, one set of the end walls being transversely scored in a direction reversely of the scoring which bounds said end walls from the appropriate side walls, as and for the purpose set forth, in which one set of end walls is, as to one of the walls, formed with an aperture and one of the second set of end walls, is marginally cut away to register with the said aperture, as and for the purpose set forth.

5. A light, strong, moisture-proof multi-unit container, adapted to be packed flat for economical shipment, comprising a moistureproof envelope having flexible walls and open at its top, the top area carrying a sealing medium, a collapsible box adapted to be received in and to be opened up within the envelope whereby the flexible walls of the latter are conformed to the shape of the box, and a top for the box comprising an upper area adapted to abut upon the top edge of the box, and an area of lesser dimensions adapted to fit within the box, a flexible tearing strip having one end folded under its body and secured to an end of the box top, the strip then continuing on and longitudinally of the top and having a lip bent downwardly upon an end wall of the box.

6. A light, strong moistureproof multi-unit container, foldable to be packed flat for economical shipment, comprising a collapsible paperboard box having its walls foldable at their lines of jointure and having its bottom wall foldable at a central longitudinal line, the container including a moisture-proof envelope having flexible walls and adapted to receive the collapsible box whereby the latter may be expanded to conform the envelope therewith, the envelope at its top area carrying a sealing medium, the top area being adapted for folding over in parallelism with the top area of the box, a removable top member for the box, and a band of flexible material secured to the top member and then folded back upon itself with its free end angularly bent to lie parallel with a wall of the box extending angularly of said top member.

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