

Nov. 10, 1936.

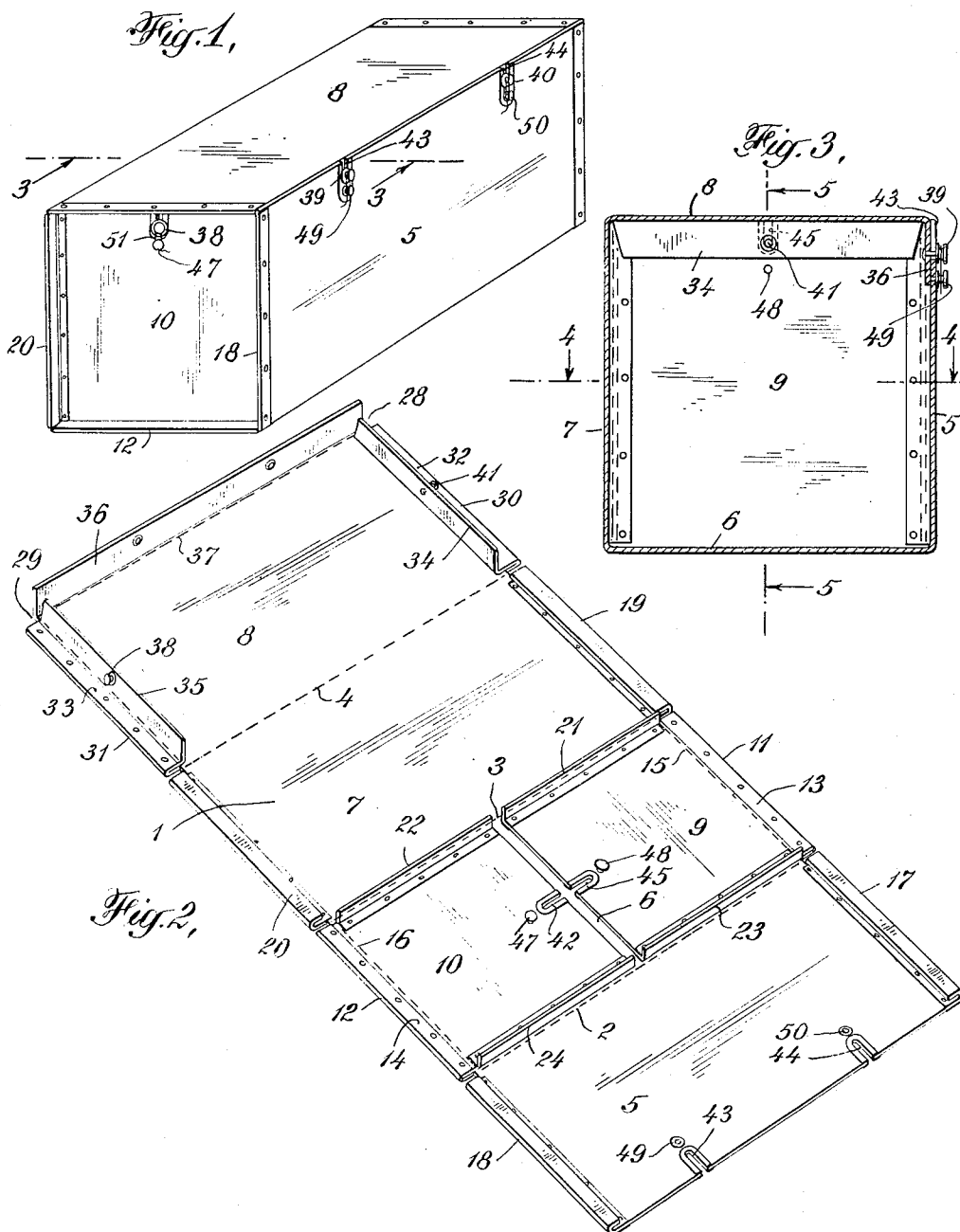
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2,060,030

COLLAPSIBLE CONTAINER

Filed Jan. 20, 1936

2 Sheets-Sheet 1



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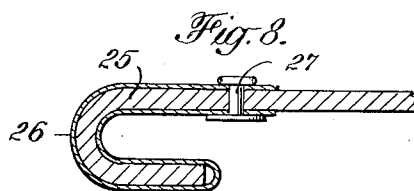
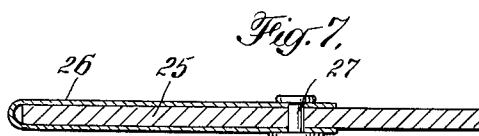
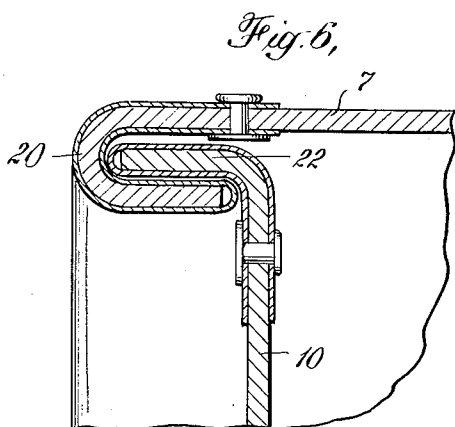
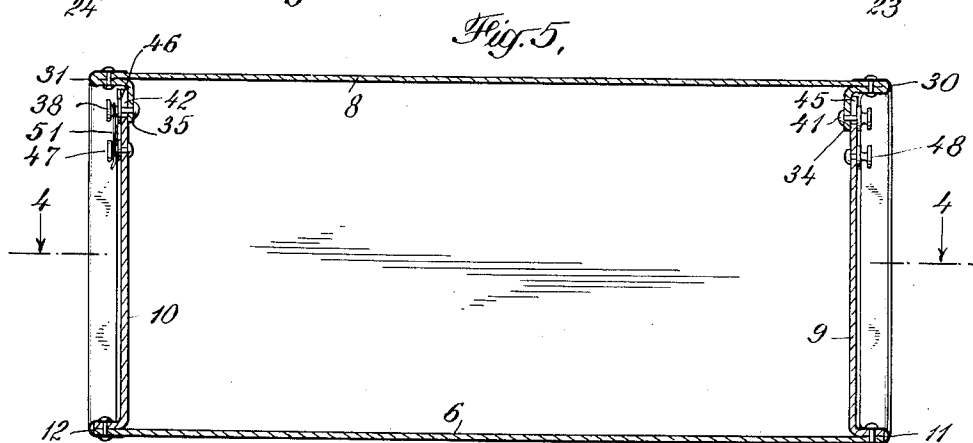
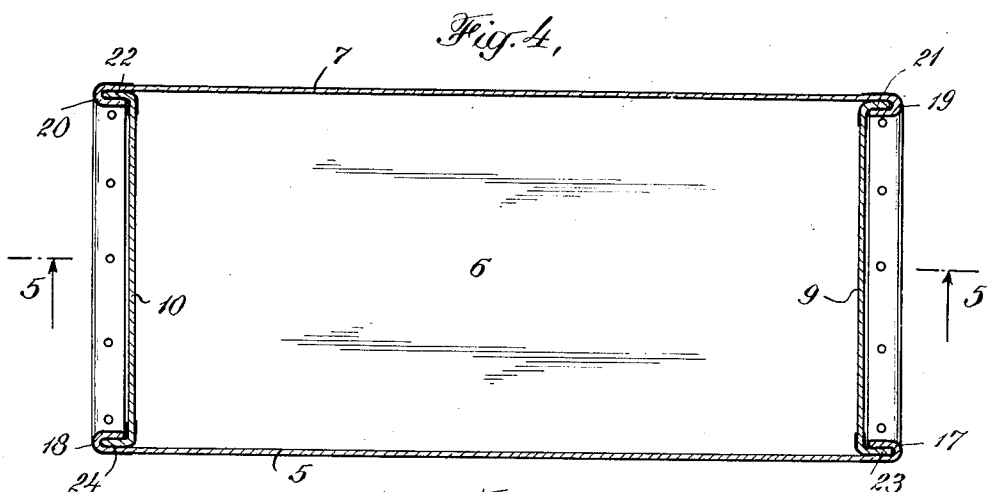
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Filed Jan. 20, 1936

2 Sheets-Sheet 2



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2,060,030

COLLAPSIBLE CONTAINER

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Application January 20, 1936, Serial No. 59,838

9 Claims. (Cl. 229—23)

This invention relates to collapsible containers such as are made of cardboard, fibre board, corrugated board, and the like, and more particularly to containers of the type referred to which are provided with a metal trim.

An object of the invention is to provide an economical metal trimmed collapsible container, having a strength and ruggedness comparable to that of all-metal or all-wood containers and which is thus especially adapted to the shipping of relatively large and heavy objects.

A feature of the invention resides in a construction whereby the container may be erected in locking assembly and thereafter collapsed without injury, and which is thereby especially adapted to repeated use as a shipping container. After each such use the container may be collapsed, compactly crated with other similar units and returned for reuse to the shipping point at a minimum shipping cost due to its small bulk in the collapsed condition.

In accordance with the invention, the ruggedness and locking assembly referred to are imparted to the container by providing it with a metal trim of unique arrangement. The container is made from an elongated section of fibre board, corrugated board, etc., transversely creased to provide top, bottom and side panels. The elongated section may be so cut in a single piece and creased as in addition to form end panels, in which case the sheet material would be cut somewhat in the shape of a cross. Preferably, however, and for the purpose of saving material in quantity production, the side, top and bottom panels are formed from a single, transversely creased, and preferably substantially rectangular sheet to provide substantially rectangular panels; while the end panels are separately cut in the form of substantially rectangular sheets and are flexibly secured by means of metal bindings to opposite ends respectively of either the front side, rear side or bottom panel.

In accordance with a preferred construction of the invention, the end panels are thus flexibly secured to opposite ends respectively of the bottom panel and are collapsible thereon. The lateral edges of the end panels and those of the front and rear panels are metal bound and bent, those of the front and rear panels inwardly and substantially parallel thereto respectively, and those of the end members outwardly and substantially perpendicular thereto respectively, thereby to provide metal grooves and flanges so disposed that when the side panels are rotated perpendicular to the bottom panel, and thereafter the

end panels are rotated outwardly to the vertical position, the flanges thereof will enter the grooves of the front and rear panels to form interlocking joints in the erected container. Due to the fact that the locking engagement results from outward rotation of the end panels, the container cannot collapse or come apart when filled.

In order to provide the top panel with a peripheral flange adapted to fit into the container proper in the erected position, and to strengthen the upper edges of the front and end panels, the top panel is preferably notched at its outer corners, and the ends thereof folded under and metal bound as folded, leaving the folded edges exposed beyond the metal binding, the thus exposed edges being bent substantially perpendicular to the top panel. The front edge of the top panel is also bent substantially perpendicular to itself thereby to complete the peripheral flange referred to.

To further strengthen and support the box in the erected position and for the purpose of slide locking the top panel to the front and side panels, the peripheral flange of the top panel is provided with outwardly projecting metal lugs positioned to enter metal finished slots in the upper edges of the front and end panels, the lugs being radially flanged adjacent their outer ends to prevent the lugs from slipping axially out of the slots whereby the top slide-locks into the container proper.

For the purpose of fastening the top in the closed position, the end and front panels are provided below the slots therein with metal studs whereby preferably wire may be wound thereabout and about the aligned lugs of the top panel, the latter being provided with studded terminations to this end.

Having now described the improved container of the invention in general terms, reference will be had to the accompanying drawings for a more detailed description, wherein:

Fig. 1 is a perspective view of the erected container;

Fig. 2 is a perspective view in the collapsed position;

Fig. 3 is a transverse section at 3—3 of Fig. 1;

Figs. 4 and 5 are longitudinal sections at 4—4 and 5—5 respectively of Fig. 3;

Fig. 6 is an enlarged fragmentary view of a corner of the Fig. 4 showing and illustrating in detail the lock joint assembly between the end and side panels; while Figs. 7 and 8 are similarly enlarged sectional views showing the end of a side panel prior to and after bending to form the locking groove.

Referring to the various figures wherein like elements are similarly designated, the container comprises in the preferred construction shown, an elongated section 1 of sheet material such as fibre board, corrugated board, etc., transversely creased at 2, 3, 4 to divide the section into front side, bottom, rear side and top panels 5, 6, 7, 8.

A pair of end panels 9, 10 are flexibly secured respectively to opposite ends 11, 12 of the bottom panel. These end panels 9, 10 may be continuous with sheet 1, and collapsible on the bottom panel as shown, by folding the end panels onto the bottom panel and riveting metal bindings 13, 14 along the folded edges, the end panels being thereafter creased along 15 and 16 so that they may be rotated to a vertical position relative to the bottom panel. Preferably, however, and in order to save material in quantity production, the end panels 9, 10 are cut separately from sheet 1 and are flexibly secured thereto by means of the riveted metal bindings 13, 14 as shown.

The lateral edges 17-24 inclusive of the front, rear and side panels are encased in a metal trim riveted thereto, in the manner illustrated in Fig. 7 by the sheet material 25, the encasing metal trim 26 and the riveting 27. For the purpose of providing the locking joints referred to between the end panels and the front and rear panels, the metal trimmed lateral edges 17-20 inclusive of the front and rear panels are bent inwardly and substantially parallel to these panels respectively, as illustrated in Fig. 8; while the lateral edges 21-24 of the end panels are bent outwardly and substantially perpendicular to these panels respectively, as shown more particularly in Figs. 2 and 4.

As a result of this construction, when the front and rear panels 5, 7 are rotated perpendicular to the bottom panel 6, and the end panels 9, 10 thereafter similarly rotated, the metal flange portions 21-24 inclusive of the end panels will enter the metal grooves 17-20 inclusive of the front and rear panels in the manner illustrated in Figs. 4 and 6, to provide interlocked joints thereby maintaining the container in the erected position illustrated in Figs. 1, 3 and 4.

For the purpose of providing the top panel 8 with a peripheral flange fitting within the assembled container as shown in Figs. 1 and 3, rectangular cuts are made at the exposed corners 28, 29 of the top panel, and the top panel material folded inwardly on itself along its lateral edges 30, 31, metal bound as folded as shown at 32, 33, leaving, however, the edges 34, 35 of the sheet material exposed, which edges are bent substantially perpendicular to the plane of the top panel 8 as shown. The front edge 36 of the top panel is creased along 37 and similarly bent inwardly and substantially perpendicular to the plane of the top panel, whereby the perpendicular edges 34, 35, 36 provide a peripheral flange adapted to fit within the front and side panels of the erected container as shown in Figs. 1 and 3, for purposes of strengthening the container in the erected position, additional strength being imparted by the metal binding applied to the top.

As a means of slide-locking the top to the container proper, the perpendicular peripheral edge 34, 35, 36 of the top is provided with outwardly projecting lugs, such as 38, 39, 40, 41, so positioned as to enter metal trimmed slots 42, 43, 44, 45 formed in the upper edges of the end and front panels as shown. In order to prevent the lugs 38-41 inclusive from slipping axially out of the slots 42-45 inclusive, the lugs are provided with

flanges or washers such as 46, Fig. 5, secured to the lugs. The lugs further terminate at their outer extremities in radial flanges or heads such as 47, Fig. 5, and the end and front panels are similarly provided below slots 42-45 inclusive with studs 47, 48, 49, 50 around which wire such as 51, Fig. 5, may be looped for the purpose of fastening the top panel to the container in the closed position.

What we claim is:

1. A metal bound collapsible container, comprising: an elongated section of sheet material transversely creased to provide top, bottom and side panels, a pair of end panels flexibly secured respectively to opposite sides of said elongated section, the lateral edges of said elongated section and said end panels having metal bindings which are bent, those of said elongated section inwardly and substantially parallel to said section, and those of said end panels outwardly and substantially perpendicular to said end panels, to provide respectively metal grooves and metal flanges cooperating to form interlocking joints in the erected container.

2. A collapsible container, comprising: an elongated section of sheet material transversely creased to provide top, bottom and side panels, end members flexibly secured to opposite sides of said elongated section, the lateral edges of said elongated section and said end members being metal bound and bent, the former inwardly and substantially parallel to said elongated section and the latter outwardly and substantially perpendicular to said end panels, to provide metal bound grooves and flanges cooperating to form interlocking joints in the erected container.

3. A metal bound collapsible container, comprising: an elongated section of sheet material transversely creased to provide top, bottom and side panels, a pair of end panels flexibly secured respectively to opposite sides of said elongated section, the lateral edges of said elongated section and said end panels having metal bindings which are bent, those of said elongated section inwardly and substantially parallel to said section, and those of said end panels outwardly and substantially perpendicular to said end panels, to provide respectively metal grooves and metal flanges cooperating to form interlocking joints in the erected container, the peripheral edge of said top panel being bent substantially perpendicular to the main portion thereof to provide a peripheral flange fitting within the erected container.

4. A metal bound collapsible container, comprising: an elongated section of sheet material transversely creased to provide top, bottom and side panels, a pair of end panels flexibly secured respectively to opposite sides of said elongated section, the lateral edges of said elongated section and said end panels having metal bindings which are bent, those of said elongated section inwardly and substantially parallel to said section, and those of said end panels outwardly and substantially perpendicular to said end panels, to provide respectively metal grooves and metal flanges cooperating to form interlocking joints in the erected container, the peripheral edge of said top panel being bent substantially perpendicular to the main portion thereof to provide a peripheral flange fitting within the erected container, said peripheral flange being provided with projecting metal lugs and the cooperating edges of said front panel and end members being provided with slots in alignment with said lugs whereby said lugs

enter said slots thereby to slide-lock the top to the sides of said container.

5. A metal bound collapsible container, comprising: an elongated section of sheet material transversely creased to provide top, bottom and side panels, a pair of end panels flexibly secured respectively to opposite sides of said elongated section, the lateral edges of said elongated section and said end panels having metal bindings which are bent, those of said elongated section inwardly and substantially parallel to said section, and those of said end panels outwardly and substantially perpendicular to said end panels, to provide respectively metal grooves and metal flanges cooperating to form interlocking joints in the erected container, the peripheral edge of said top panel being bent substantially perpendicular to the main portion thereof to provide a peripheral flange fitting within the erected container, said peripheral flange being provided with projecting metal lugs and the cooperating edges of said front panel and end members being provided with slots in alignment with said lugs whereby said lugs enter said slots thereby to slide-lock the top to the sides of said container, and means including the lugs secured to said top panel and cooperating lugs secured to said front and end panels for fastening said top panel thereto.

6. A metal bound collapsible container, comprising: a substantially rectangular section of sheet material transversely creased to provide top, bottom and side panels, a pair of rectangular end panels flexibly secured respectively to opposite ends of said bottom panel and collapsible thereon, the lateral edges of said side and end panels being metal bound and bent, the former inwardly and substantially parallel to said side panels and the latter outwardly and substantially perpendicular to said end panels to provide metal bound grooves and metal bound flanges cooperating to form interlocking joints between the side and end panels in the erected container.

7. A metal bound collapsible container, comprising: a substantially rectangular section of sheet material transversely creased to provide top, bottom and side panels, a pair of rectangular end panels flexibly secured respectively to opposite ends of said bottom panel and collapsible thereon, the lateral edges of said side and end panels being metal bound and bent, the former inwardly and substantially parallel to said side panels and the latter outwardly and substantially perpendicular to said end panels to provide metal bound grooves and metal bound flanges cooperating to form interlocking joints between the side and end panels in the erected container, said top panel being corner notched, folded on itself at the ends, metal bound as folded leaving the folded edges exposed, the latter being bent substantially perpendicular to the top panel and the front edge of said top panel being similarly bent substantially perpendicular to the top panel plane to provide

a peripheral flange fitting within the erected container.

8. A metal bound collapsible container, comprising: a substantially rectangular section of sheet material transversely creased to provide top, bottom and side panels, a pair of rectangular end panels flexibly secured respectively to opposite ends of said bottom panel and collapsible thereon, the lateral edges of said side and end panels being metal bound and bent, the former inwardly and substantially parallel to said side panels and the latter outwardly and substantially perpendicular to said end members to provide metal bound grooves and metal bound flanges cooperating to form interlocking joints between the side and end panels in the erected container, said top panel being corner notched, folded on itself at the ends, metal bound as folded leaving the folded edges exposed, the latter being bent substantially perpendicular to the top panel plane and the front edge of said top panel being similarly bent substantially perpendicular to the top panel to provide a peripheral flange fitting within the assembled container, said flange being provided with projecting metal lugs, and the cooperating edges of said end members and front panel being provided with slots in alignment with said lugs whereby said lugs enter said slots to slide-lock the top to the sides of said container.

9. A metal bound collapsible container, comprising: a substantially rectangular section of sheet material transversely creased to provide top, bottom and side panels, a pair of rectangular end panels flexibly secured respectively to opposite ends of said bottom panel and collapsible thereon, the lateral edges of said side and end panels being metal bound and bent, the former inwardly and substantially parallel to said side panels and the latter outwardly and substantially perpendicular to said end members to provide metal bound grooves and metal bound flanges cooperating to form interlocking joints between the side and end panels in the erected container, said top panel being corner notched, folded on itself at the ends, metal bound as folded leaving the folded edges exposed, the latter being bent substantially perpendicular to the top panel plane and the front edge of said top panel being similarly bent substantially perpendicular to the top panel to provide a peripheral flange fitting within the assembled container, said flange being provided with projecting metal lugs, the cooperating edges of said end members and front panel being provided with slots in alignment with said lugs whereby said lugs enter said slots to slide-lock the top to the sides of said container, and means including the lugs secured to said top panel and cooperating lugs secured to said front and end panels for fastening said top panel thereto.

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