

March 12, 1940.

F. D. JONAS

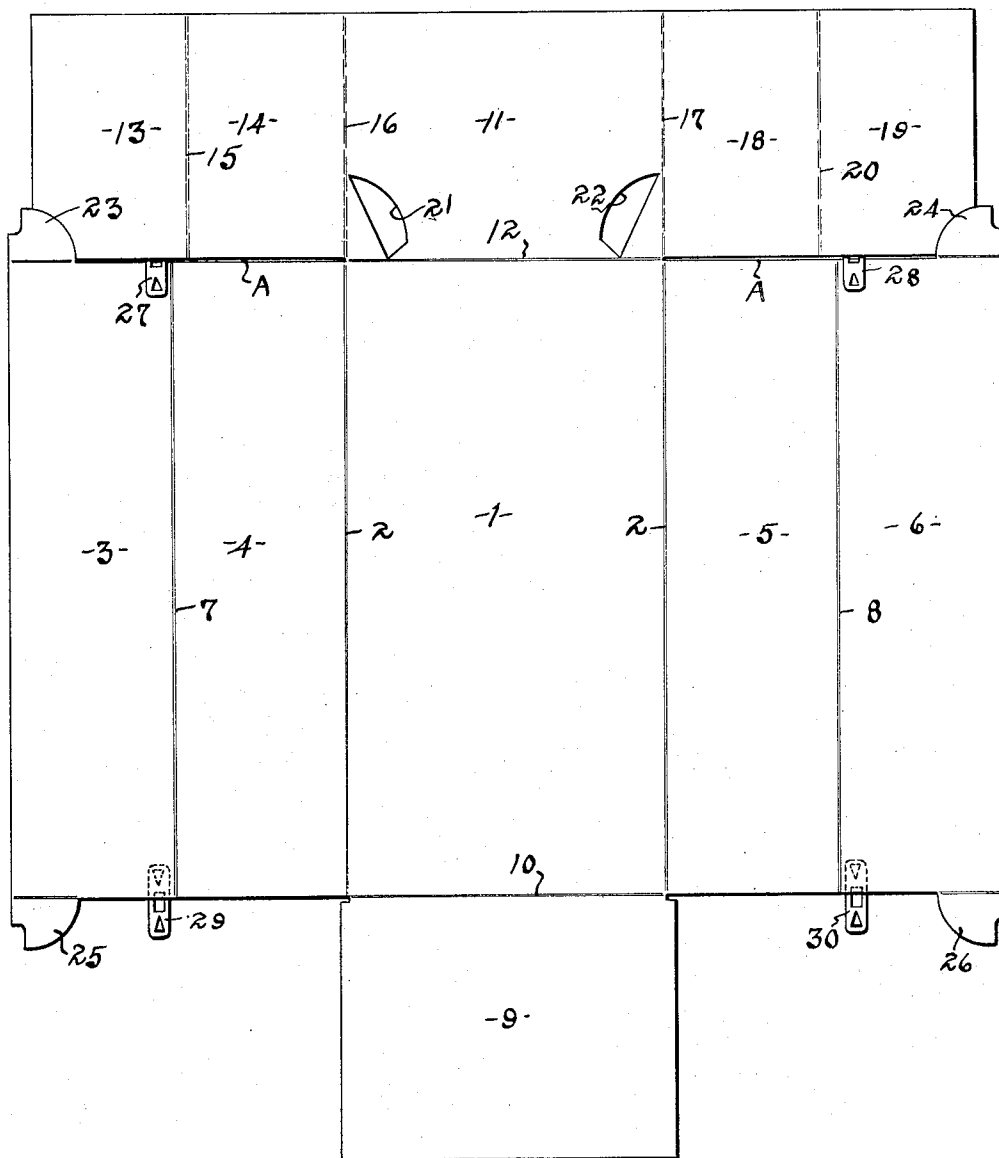
2,193,632

COLLAPSIBLE CONTAINER

Filed Nov. 24, 1937

6 Sheets-Sheet 2

Fig. 5



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6 Sheets-Sheet 3

Fig. 6

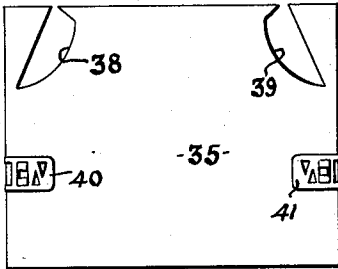


Fig. 7

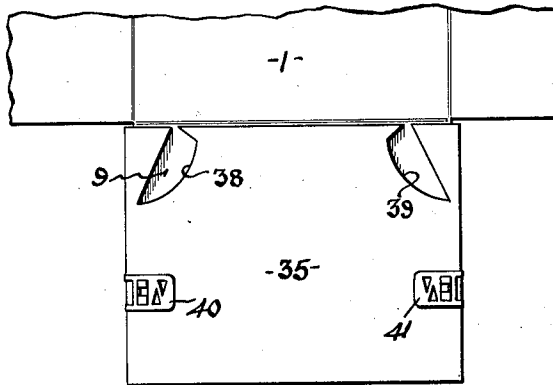


Fig. 9

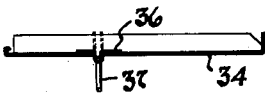


Fig. 10

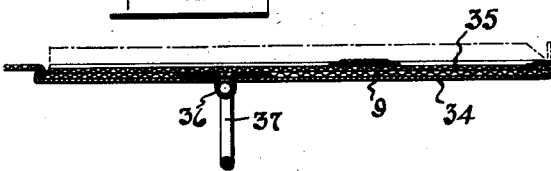


Fig. 8

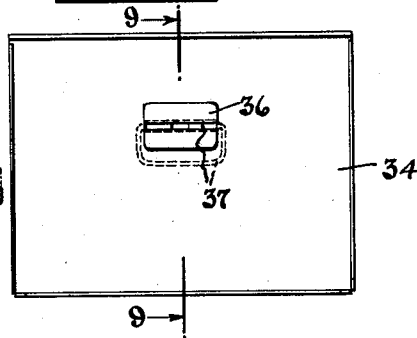


Fig. 11

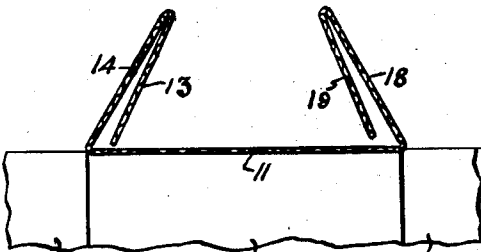
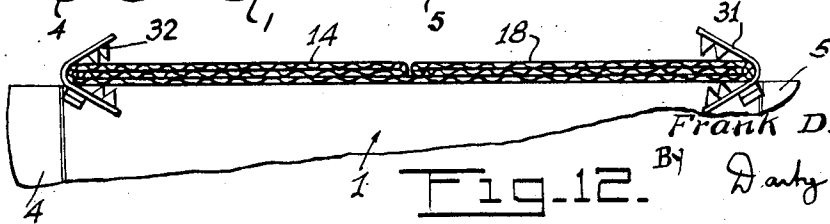


Fig. 12.

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Fig. 13

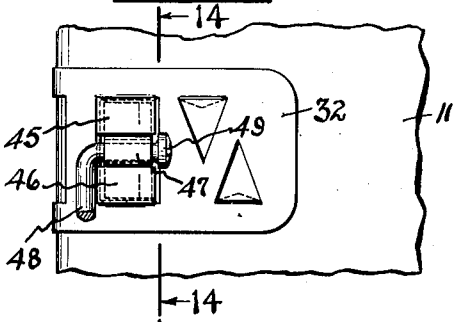


Fig. 14

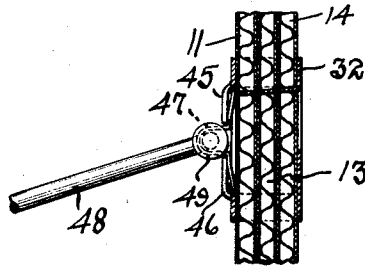


Fig. 15

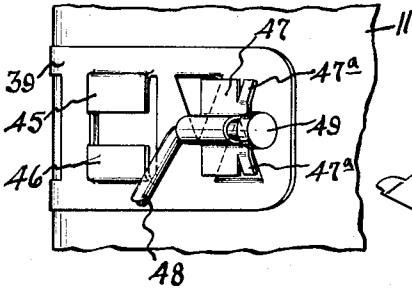


Fig. 17

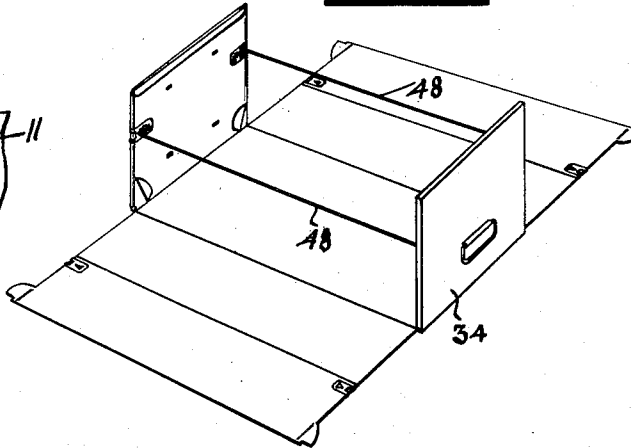


Fig. 16

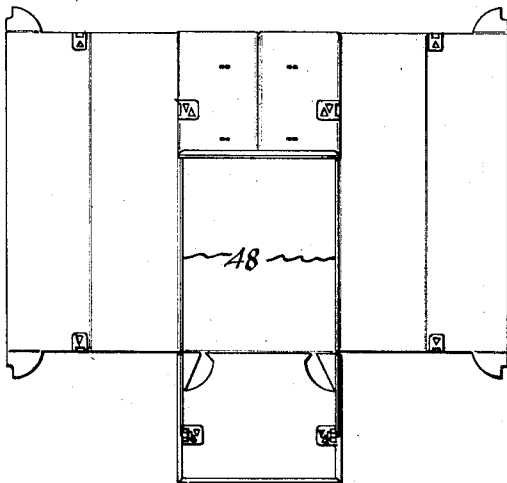
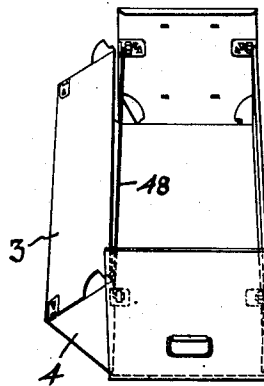


Fig. 18



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Fig. 19

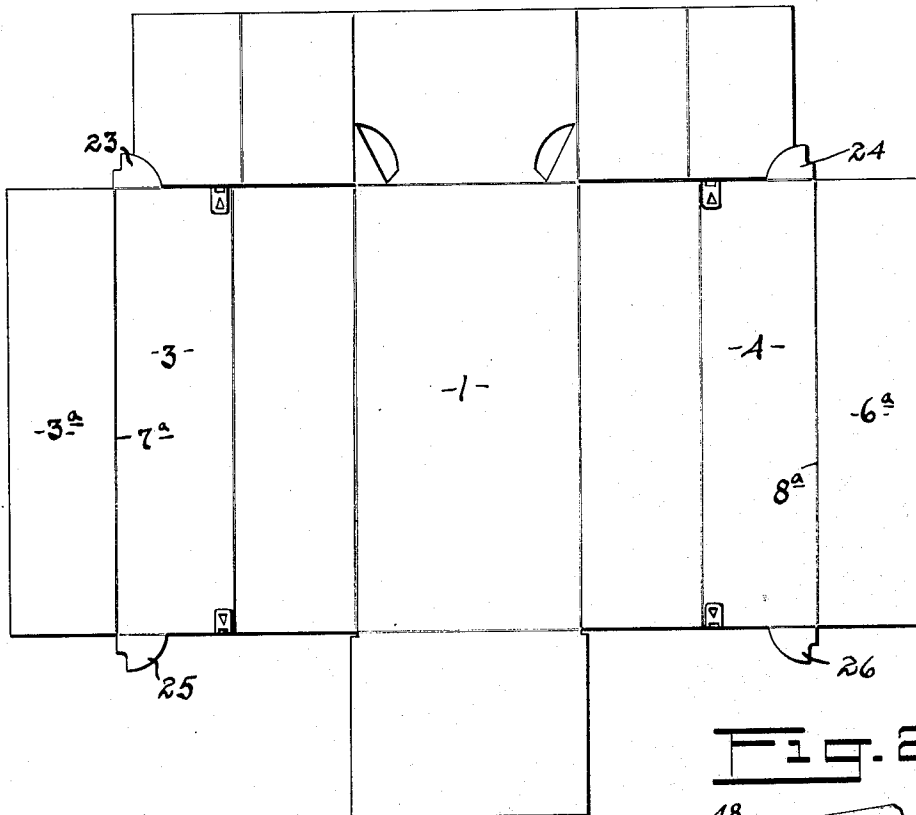


Fig. 20

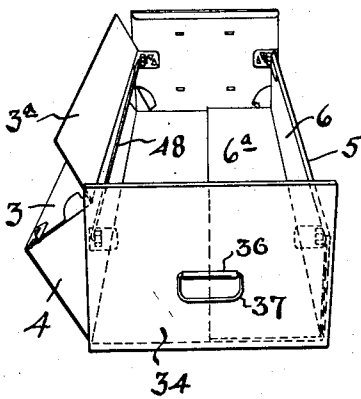


Fig. 21

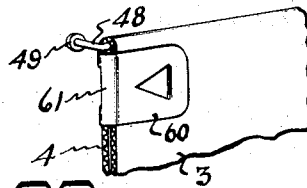


Fig. 22

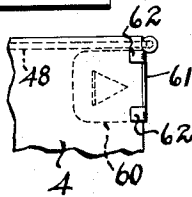
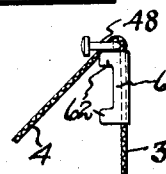


Fig. 23



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Fig. 25

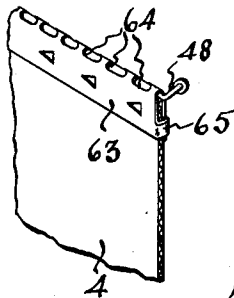


Fig. 24

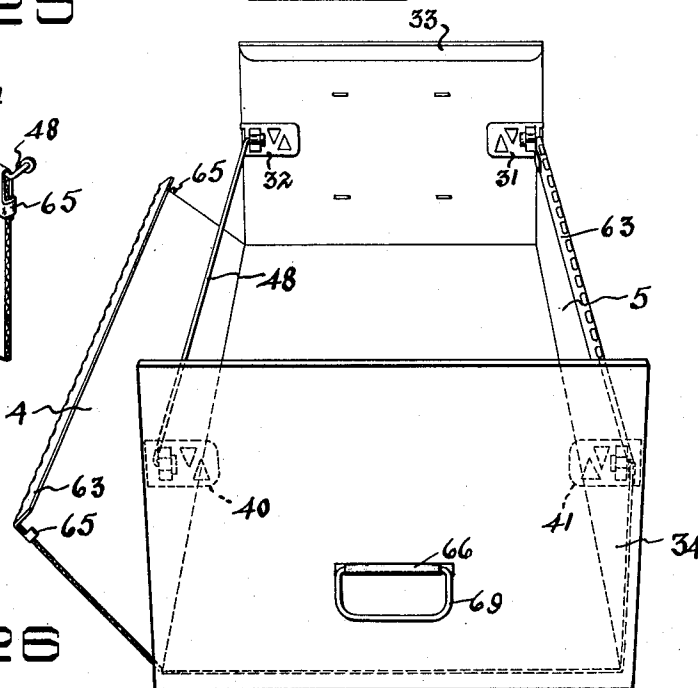


Fig. 26

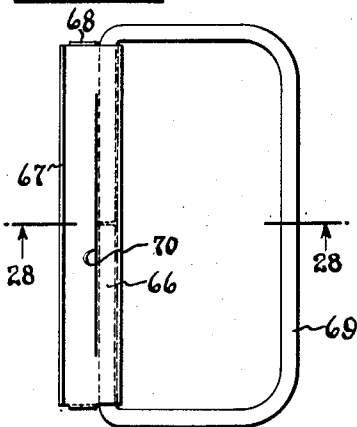


Fig. 27

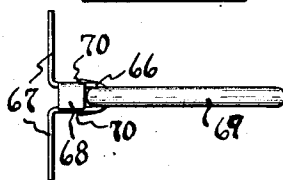


Fig. 29

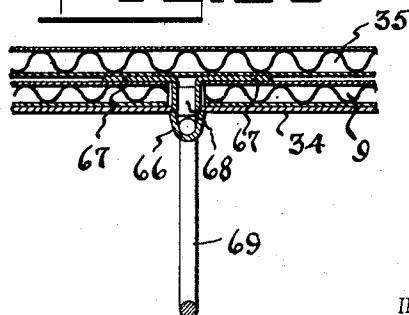
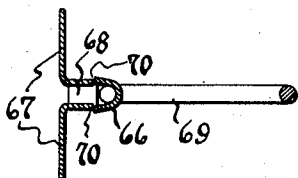


Fig. 28



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UNITED STATES PATENT OFFICE

2,193,632

COLLAPSIBLE CONTAINER

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Richard A. Jonas, Jr., Robert P. Jonas, Frank
D. Jonas, and Edward F. Jonas

Application November 24, 1937, Serial No. 176,183

18 Claims. (Cl. 229—41)

This invention relates to improvements in collapsible containers particularly in the form of a drawer suitable for use as the drawer of a filing cabinet.

5 An object of this invention is to provide in a simplified structural form a container adapted for use as a file cabinet drawer fabricated substantially from a single blank of material in such a manner as to be easily packed for shipment and storage in a substantially flat condition and set up for use.

10 Another object of the invention is to provide a collapsible structure of this type which when in set up condition is exceedingly strong, rugged and rigid and adapted to successfully resist all normal stresses, strains and abuses encountered in use.

15 A further object of the invention is to provide a structure of this type which even when made of corrugated board and similar material is adequately resistant to longitudinal, transverse and diagonal strains.

20 These and many other objects, as will appear from the following disclosure are successfully secured by means of the structures herein disclosed.

25 This invention resides substantially in the combination, construction, arrangement and relative location of parts, all as will be fully described.

30 In the accompanying drawings, Figure 1 is a perspective view of a collapsible container in accordance with this invention shown set up ready for use;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Figure 1;

35 Fig. 3 is a rear end elevational view thereof;

Fig. 4 is a cross-sectional view taken on the line 4—4 of Figure 1;

Fig. 5 is a developed plan view of the blank from which the container is made;

40 Fig. 6 is a plan view of the front wall reinforcing member;

Fig. 7 is a detailed plan view of one end of the container blank with the reinforcing member of Fig. 6 applied thereto;

45 Fig. 8 is an elevational view of the inside of the cover for the front end of the drawer;

Fig. 9 is a cross-sectional view taken on the line 9—9 of Fig. 8;

50 Fig. 10 is an enlarged view similar to that of Fig. 9 with the corrugated board members of the front end wall in place;

Fig. 11 is a horizontal cross-sectional view through the rear end wall with the flap partly opened out;

Fig. 12 is a similar view with the flap closed and the clips partially applied;

Fig. 13 is an enlarged front elevational view of a portion of the rear end wall at one of the clips showing the manner of attaching the interconnecting longitudinally extending side wall braces;

Fig. 14 is a cross-sectional view taken on the line 14—14 of Fig. 13;

Fig. 15 is a view similar to that of Fig. 13 with parts disconnected;

Fig. 16 is a plan view of the container in collapsed condition;

Fig. 17 is a perspective view showing the end walls swung up at right angles to the remainder of the blank to form a partially set-up structure;

Fig. 18 shows the container almost completely set up;

Fig. 19 is a plan view of a blank of a modified form of container;

Fig. 20 is a view of the container partially set up similar to the view of Fig. 18;

Fig. 21 is an enlarged detail perspective view of a modified form of corner bracing plate;

Fig. 22 is a side elevational view thereof;

Fig. 23 is an end elevational view thereof;

Fig. 24 is a front elevational view looking upwardly into a further modified form of container in accordance with this invention;

Fig. 25 is an enlarged detail perspective view of one corner and the construction thereof;

Fig. 26 is a top plan view of a modified form of handle mounting construction;

Fig. 27 is an end elevational view thereof;

Fig. 28 is a cross-sectional view taken on the line 28—28 of Fig. 26; and

Fig. 29 is a vertical, cross-sectional view through the front of the container and the handle construction mounted in place.

The container of this invention is particularly constructed and arranged to adapt it for use as a drawer in a filing cabinet and adapted to be received within the shell of the filing cabinet. The invention is disclosed in this form, although it will be apparent to those skilled in the art that the principles thereof are adaptable to containers for many other uses. Preferably the container herein disclosed is constructed of an easily foldable material such as cardboard, corrugated board, fibre board, and indeed most any suitable fibrous material.

The structure in Figures 1 to 18 inclusive will be described first.

Referring to Fig. 5, the main blank of which the container is made is cut from a sheet of suit-

able fibrous material so as to have the form shown therein. The blank is scored to provide a series of panels of which the panel 1 forms the bottom of the container and is defined at its side edges by the score lines 2. These score lines also define the side edges of two side flaps which in turn are longitudinally scored intermediate their side edges along the lines 7 and 8 to form the side wall panels 3 and 4 and 5 and 6 respectively. The score line 10 at the end of panel 1 defines the front end wall panel 9 and the similar score line 12 at the other end defines the rear end wall panel 12. The blank is cut along curved lines to form the tabs 23 and 24 on the ends of the panels 3 and 6, and slit along the lines A and A to form reinforcing panels for the rear end wall. A series of score lines 15, 16, 17 and 20 are formed in the rear end wall member to define in addition to the panel 11, the panels 13 and 14, and 18 and 19. Two openings are cut in the panel 11 as shown at 21 and 22 of the form illustrated. Tabs 25 and 26 are also left on the ends of the panels 3 and 6 opposite the tabs 23 and 24 and of the form illustrated. At 27, 28, 29 and 30 are metal clips which are folded around the edges of the panels 3 and 6 adjacent the score lines 7 and 8 on the outer sides thereof and held in place thereon by means of sharp pointed struck-out tabs which penetrate the material of the panels and clinched over.

As is clear from Figs. 11 and 12, the panels 13 and 19 are folded around on the score lines 15 and 20 so as to lie against the outer faces of the panels 14 and 18. The double thickness panels then resulting are folded around in the same direction, as is clear from Fig. 11, to the position in Fig. 12, when the panels 13 and 19 lie against the rear face of panel 11. This forms a triple thickness rear end wall which is united into a unitary structure by means of staples or clips which pass therethrough in accordance with well known practice, as indicated at 11^a. A pair of metal clips 31 and 32 are then folded around the side edges of the rear end wall as indicated in Fig. 12. These clips are provided with struck-out sharpened tabs which penetrate into the material of the end wall to hold the clips in place. The top edge of the rear end wall is then trimmed, reinforced and strengthened by means of a rectangular channel-shaped metal member 33 which is clamped thereon.

The front end wall comprises the panel 9 down the entire face of which is applied a reinforcing panel 35 (see Fig. 6). This panel has a pair of openings 38 and 39 cut therethrough similar to the openings 21 and 22 at the rear end wall. The panel 35 is secured over the panel 9, as shown in Fig. 7 by a pair of metal clips 40 and 41 which fold around the side edges thereof and are constructed similar to the clips 31, 32. The double thickness front end wall is then faced with a metal cover 34 which, as is clearly shown in the drawings, is secured thereto by end flanges which are clamped around the side and top edges of the front double thickness end walls. The metal panel is provided with a handle structure comprising a bail 37 which is secured in place by means of a strap 36 surrounding the ends of the bail 37 passing through a slot in the metal panel 34 and having its terminal edges folded at right angles to lie along the rear face of the metal panel and under the adjacent end wall panel 9, see Fig. 10.

Each of the metal clips 31, 32, 40 and 41 on

their inner faces are provided with struck-out tabs 45 and 46 which lie parallel to the face of the clip from which they are struck to form a receptacle in which a clip or strap 47 may be pressed. These straps fit over the ends of longitudinal reinforcing bars 48 whose terminal ends are bent around at right angles and positioned as indicated at 49 so that they may not come out of the straps. These straps are then forced into the sockets formed by the tabs 45 and 46 10 and have ears 47^a which spring down in back of the front edge of the socket to hold them securely therein, as is clearly shown in Figs. 13 and 14. The opposite side of the socket is closed, as is clear from Fig. 15, so that the clips may 15 only be removed by springing the ears 47^a above the adjacent face of the clip 39. The construction is the same at all four of the clips 31, 32, 40 and 41 so that the longitudinal reinforcing rods 49 pivotally interconnect them. Thus the end walls may be folded down as is clearly indicated in Fig. 16 to form a relatively flat structure easily stored and packed for shipment.

To assemble the structure the end walls are folded up to the position shown in Fig. 17. The side walls are then folded around the longitudinal members 48, as is clear from the various figures. The tabs 23, 24, 25 and 26 are then snapped in to the adjacent openings 21, 22, 38 and 39 respectively, locking the structure in assembled form, as illustrated in Figs. 1 to 4 inclusive and 18. The metal clips 27, 28, 29 and 30 are so positioned that they lie between the metal clips 32, 31, 40 and 41 respectively and engage them. This is clear from Fig. 1. Thus at main bearing points between the ends and side walls there is metal to metal engagement which forms a strong reinforced structure adapted to take strains without defect to the fibrous material of which the container is principally made. The construction herein illustrated produces a file drawer made of fibrous material having a reinforced decorated metal front which improves the appearance thereof, as well as its resistance to damage. It is a simple matter to collapse the container by pulling out the tabs 23, 24, 25 and 26 from their associated notches in the end walls and swinging the side wall panels out to a flattened condition and rotating the end walls down to a horizontal position. If desired, the outside panels 3 and 6 may be folded over onto panels 4 and 5 to provide a smaller structure for packing and shipping.

A very important advantage of the structure herein disclosed is the speed and ease with which it may be set up for use from a knocked-down condition. The arrangement is particularly novel and valuable in that the front and rear walls are pivotally connected together by means of the side rods which are permanently attached (although they may be removed when desired without much difficulty), and do not need ordinarily to be detached in either knocking the container down or setting it up. In setting the container up the left hand of the operator, for example, grasps the front end wall and swings it to a vertical position which automatically positions the rear end wall. One of the side wall structures is then folded around the side rod with the right hand with which the parts are then held in this position. The left hand is then free to swing the other side wall into position and the two hands manipulated to interengage the tabs with the notches. This is a very simple operation which

may be carried out repeatedly without any difficulty.

A further important advantage resulting from this structure, that is the side rods employed as shown, is present in the fact that the pulling strains are distributed thereby between the front and rear end walls.

Figs. 19 and 20 illustrate a slightly modified form of structure. The main blank is substantially like that previously described with the exception that the side wall panels 3 and 6 have extensions forming terminal panels 3^a and 6^a resulting from the additional score lines 7^a and 8^a. Otherwise the structure is the same throughout as that previously described. When a container employing a blank of this form is set it will be seen that the terminal panels 3^a and 6^a lie on the upper face of the central panel 1, forming a double thickness bottom as clearly illustrated in Fig. 20. It is to be noted that in the construction employing the blank of Fig. 19 the tabs 23 to 26 inclusive and the notches in the front and rear end walls may be dispensed with when the terminal flaps 3^a and 6^a are made to have a tight interlocking fit with each other and between the front and rear walls. In other words, when the flaps 3^a and 6^a are forced down into position with their free terminal edges abutting the fit may be tight enough so that the parts are securely locked together, thereby eliminating the necessity for any additional locking means.

Figs. 21, 22 and 23 illustrate a modified detail of construction which may be employed in both of the containers heretofore described. In this case the reinforcing and bearing plates 27, 28, 29 and 30 may be constructed as shown in these figures. Such a modified form of plate is shown at 60 secured to the inner face of the inner wall 3 by means of a struck-out tab which pierces the inner wall and may be clinched over on the other side thereof in accordance with common practice. At the end of the plate, adjacent the edge of the wall 3 it is turned at right angles as shown at 61 to overlie the end edge of the wall, and when the walls 3 and 4 are in parallel relation the turned over portion 61 serves to lock the rod 48 in the bite or bend which interconnects the two walls. This structural feature is of considerable advantage in increasing the resistance of the container to strains. Obviously all vertical loads resulting from the contents of the container are supported by the rods 48 and the loads thereon distributed to the end walls to which they are connected. However, without the use of the turned over flange portion 61 it will be seen that any upward forces on the front or rear end walls for example will be distributed up through the side walls, and since there is nothing to hold the rods 48 in place the side walls will tend to move upwardly with respect thereto, placing undue strains on the areas adjacent the connection on the bottom wall and the front and end walls. In order to prevent this the flange portions 61 are provided which lock the rods 48 in the bend between the side walls 3 and 4 and prevent its movement downwardly therebetween under forces or strains of this type. To further strengthen the structure, when desired the flange portion 61 may be provided with a pair of terminal extending ears 62 which, as is clear from Fig. 22 may be bent around at right angles to the portion 61 so as to overlie the upper face of the outer side wall 4. This clamps the two side wall portions 3 and 4 together making a stronger

structure and tending to prevent any separation between them. It is of course to be understood that plates of this construction may be substituted at all four corners for the plates 27 to 30 inclusive.

In Figs. 24 and 25 is shown a further modified construction in accordance with this invention. In this case the blank from which the container is made is like the blank of Fig. 5, with the exception that the terminal side wall portions 3 and 4 are omitted, as are the notches 21 and 22 in the rear end wall portion 11. The rear end wall of the container is otherwise the same as that described in connection with Figure 1, with the parts folded and assembled and secured as previously described. The complete front end wall includes the panel 9, the metal cover 34, and one or more additional reinforcing sheets like the sheet 35, employed in the construction of Figure 1. In this case the new terminal side walls 4 and 5 are of single thickness and have applied along their free terminal edges a metal strip 63 along the longitudinal center of which are distributed a plurality of openings 64 of any suitable form which tend to weaken the strip along its longitudinal axis to permit easy bending thereof. These strips are secured to the side walls by struck-out tabs which pierce the walls and are clinched over in accordance with common practice.

In the assembly of this structure, as will be clear from Fig. 24, the unattached portions of the metal strips 63 are folded over the wires 48 and bent into a parallel relation with the inner face of the respective walls. The inherent tendency of the metal strip to retain the folded position is sufficient to lock the side walls to the rods giving a strong structure with a finished metal edge. In view of the metal trim strip 33 the bent over edges of the metal front 34 and the strips 63, all of the top edges of the container are metal bound, increasing the neatness of their appearance and adding to the indestructibility of the container. To further strengthen the structure the strips 63 may be provided at their ends with tabs 65 lying at right angles to the side walls and positioned to abut against the plates 31, 32, 40 and 41 to which the rods 48 are pivotally connected. Thus these ears 65 may take the place in this construction of the plates 27 to 30 inclusive of the construction of Fig. 1. Further, when desired the ears 65 may be long enough to be bent around, as is clear from Fig. 25, so as to overlie the bent over edges of the strips 65 to further lock and strengthen the structure. When desired, of course, the ears 65 may have a vertical extent sufficient to bring them up under the rods 48 in a manner similar to the flanges 61 of the construction of Fig. 21. However, this additional feature is not so necessary in this case because the walls 4 and 5 themselves lie under the rods 48 and hold them in the bend of the metal strips 63.

In Figs. 26 to 29 inclusive is shown a modified form of handle construction. In this case the strip which holds the handle or bail in place is formed from a single rectangular piece of metal which is longitudinally folded into a U-shaped channel 66, the terminal edges of which are bent outwardly at right angles to form the flanges 67 which lie in a single plane. Integral tabs 68 may be provided which are bent over the openings of the ends of the channels to securely hold the bail or handle 69 in place. The sides of the channels 66 are slit, as shown at 70, which slit

terminates intermediate the ends of the channel, as is clear from Fig. 26. The strains in the metal resulting from the bend tends to permit it to spring outwardly at the slits 70 to form shoulders, as is clear from Figs. 27 and 28. When these shoulders are not sufficiently large the metal can be bent outwardly to increase them. The metal front 34 is provided with a rectangular slot to receive the channel portion of the strip, which slot is made so as to be a relatively tight fit with the channel. In the construction shown, as illustrated in Fig. 29, the panel portion 9 of the blank has a rectangular slot in alignment with the slot in the metal front wall 34. In order to mount the handle in place bail 69 is moved through the slot of the wall portion 9 and metal front 34 from the rear side, the slots being long enough to permit the passage of the bail 69 therethrough. This movement is continued until the base of the channel portion 66 also moves through the slots. Just before the shoulders at the slits 70 are forced through the slot the flanges 67 engage the wall portion 9 so that the additional pressure necessary to get the shoulders past the metal wall 25 34 will compress the wall portion 9. As the shoulders move through the slot in the metal wall under pressure they snap or spring outwardly, securely locking the handle assembly in place, as is clear from Fig. 29. The width of the slot in the metal wall 34 is nicely proportioned to permit this interlocking co-action.

From the above description it will be apparent to those skilled in the art that the various details of construction and their association as illustrated herein may be varied without departure from the novel scope of the subject matter herein disclosed. I do not, therefore, desire to be strictly limited to the disclosure as given for purposes of illustration, but rather to the scope of the claims granted me.

What I seek to secure by United States Letters Patent is:

1. A collapsible container of the class described composed essentially of a single blank of fibrous material scored to form bottom, end and side wall panels, a pair of longitudinally extending reinforcing members pivotally interconnecting the end wall panels, the side wall panels being foldable therearound, and means for securing the side wall panels in folded position.

2. A collapsible container of the class described composed essentially of a single blank of fibrous material scored to form bottom, end and side wall panels, a pair of longitudinally extending reinforcing members pivotally interconnecting the end wall panels, the side wall panels being foldable therearound to form double thickness side walls, and means for securing the side wall panels in folded position.

3. A collapsible container of the type described comprising a scored blank of fibrous material folded to form an open top container having double thickness side walls and reinforcing members extending between the end walls and pivotally connected thereto and enclosed by the double thickness side walls.

4. A collapsible container of the type described comprising a scored blank of fibrous material folded to form an open top container having double thickness side walls, reinforcing members extending between the end walls and pivotally connected thereto and enclosed by the double thickness side walls, and means for releasably securing the inner folds of the double thickness side walls in position.

5. A collapsible container of the type described comprising a scored blank of fibrous material folded to form an open top container having double thickness side walls, reinforcing members extending between the end walls and pivotally connected thereto and enclosed by the double thickness side walls, and means for releasably securing the inner folds of the double thickness side walls in position, said means comprising openings cut in the end walls and tabs integral with the side walls lying therein.

6. A container of the type described composed of fibrous material forming end walls and side walls, a pair of longitudinally extending reinforcing members pivotally connected at their respective ends to the end walls of the container, the side walls enclosing said members, and means for locking the side walls in folded position.

7. A container of the type described composed of a scored and folded blank of fibrous material to form end walls and side walls, a pair of longitudinally extending reinforcing members pivotally connected at their respective ends to the end walls of the container, the side walls being folded therearound, and means for locking the side walls in folded position, the inside panels of the side walls having integral extensions which overlie the bottom wall of the container to form a double thickness bottom.

8. A container of the type described composed of a scored folded blank of fibrous material to form an open top container having bottom, end and side walls, a pair of longitudinally extending reinforcing rods, means for pivotally connecting the respective ends of the rods to the end walls of the container, the side walls being folded therearound so as to have double thickness, and means for interlocking the inner panels of the side walls with the end walls to hold the structure in assembled position.

9. A container of the type described composed of a scored folded blank of fibrous material to form an open top container having bottom, end and side walls, a pair of longitudinally extending reinforcing rods, means for pivotally connecting the respective ends of the rods to the end walls of the container, the side walls being folded therearound so as to have double thickness, means for interlocking the inner panels of the side walls with the end walls to hold the structure in assembled position, and reinforcing members secured to the side walls and engaging the means for securing the longitudinal members to the end walls to strengthen and brace the structure.

10. A container of the type described composed of a scored folded blank of fibrous material to form an open top container having bottom, end and side walls, a pair of longitudinally extending reinforcing rods, means for pivotally connecting the respective ends of the rods to the end walls of the container, the side walls being folded therearound so as to have double thickness, and means for interlocking the inner panels of the side walls with the end panels to hold the structure in assembled position, said means for connecting the longitudinal members to the end walls comprising metal clips secured to the end walls having sockets formed therein and strap members in said sockets encircling the ends of said members to pivotally hold them in place.

11. A container of the type described composed of a blank of fibrous material folded to form bottom, end and side walls, pivotal connecting plates secured to the end walls longitudinally extending reinforcing members pivotally intercon-

necting said plates, the side walls being folded around said members, a reinforcing fibrous panel secured to the inner face front end wall, and a metal facing secured to the outer side of the front end wall and overlying said plates to aid in holding them in place.

12. An open top collapsible container of the type described having connected bottom, front, rear and side walls, a pair of parallel links pivotally interconnecting the front and rear walls, said walls being integral with the bottom wall, and means for engaging the side walls with said links to hold the container in set-up relationship.

13. A collapsible open top container of the type described comprising a bottom, rear and front walls hingedly connected together, link members pivotally interconnecting the front and rear walls, and side walls hingedly connected to the bottom wall and interposed between the front and rear walls and secured to the link members to fix them in upright position.

14. A collapsible open top container of the type described having integral bottom, end and side walls, and means interconnecting the end walls to cause conjoint collapsing movement, the side walls engaging the interconnecting means to hold the movable walls in fixed parallel relation.

15. A collapsible container of the type described including a blank of fibrous material secured to form bottom, side and end walls, links for pivotally interconnecting the end walls and metal

strips secured to the side walls and adapted to be folded over the links to secure the side walls thereto.

16. A collapsible container of the type described including a blank of fibrous material secured to form bottom, side and end walls, links for pivotally interconnecting the end walls and metal strips secured to the side walls and adapted to be folded over the links to secure the side walls thereto, the side walls lying between the end walls to hold them in erected position.

17. A collapsible container of the type described including a blank of fibrous material secured to form bottom, side and end walls, links for pivotally interconnecting the end walls, metal strips secured to the side walls and adapted to be folded over the links to secure the side walls thereto, the side walls lying between the end walls to hold them in erected position, and metal tabs on said metal strips positioned to engage the end walls.

18. A container of the type described composed of a scored blank of fibrous material forming bottom, end and side walls, a pair of longitudinally extending reinforcing members pivotally connected at their respective ends to the end walls, the side walls being folded around said members, and means secured to the side walls and extending under said members to hold them in position between folded side walls.

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