Oct. 18, 1932. R. L. COBB 1,883,577

COLLAPSIBLE CONTAINER

Filed March 16, 1931 2 Sheets-Sheet 1

Fig. 1

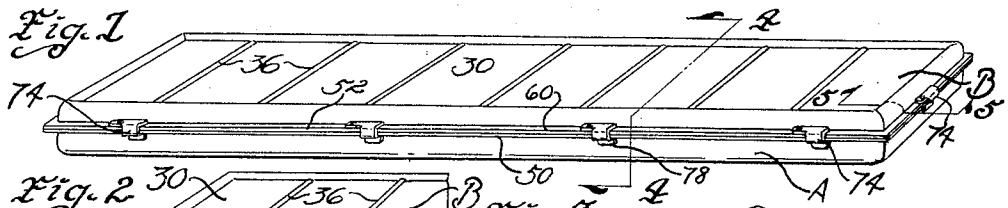


Fig. 2

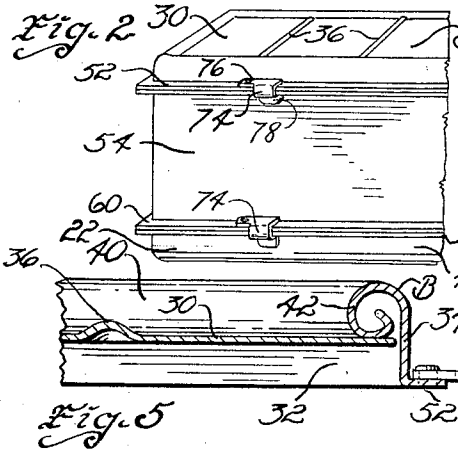


Fig. 3

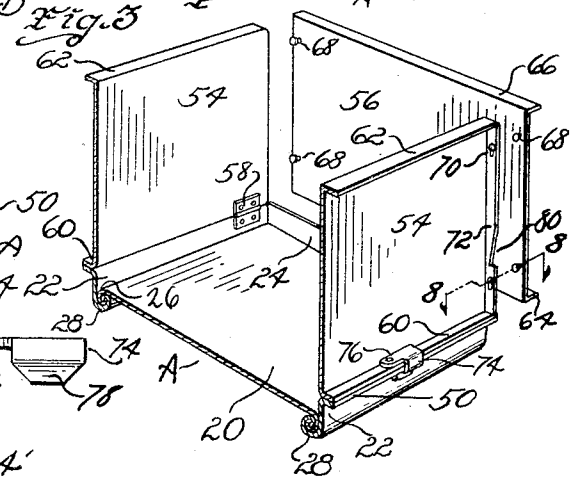


Fig. 5

Fig. 6

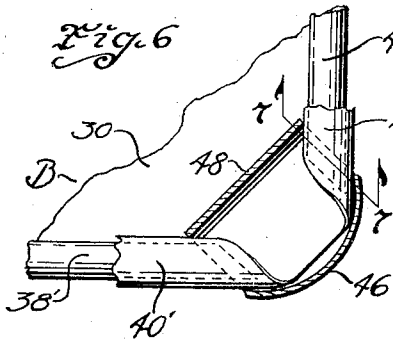


Fig. 8

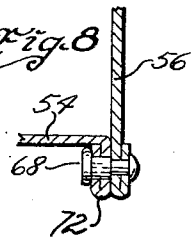


Fig. 7

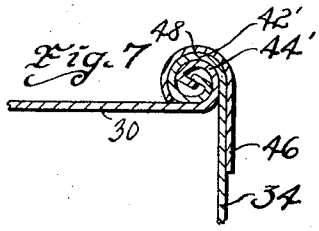


Fig. 4

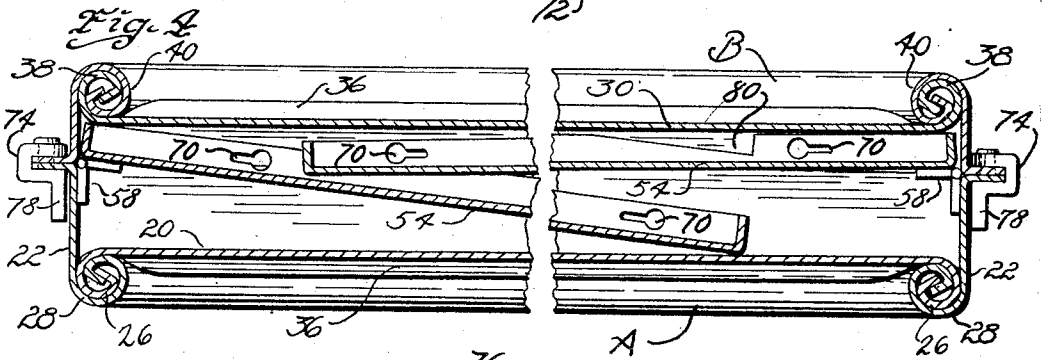
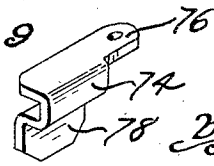


Fig. 9



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COLLAPSIBLE CONTAINER

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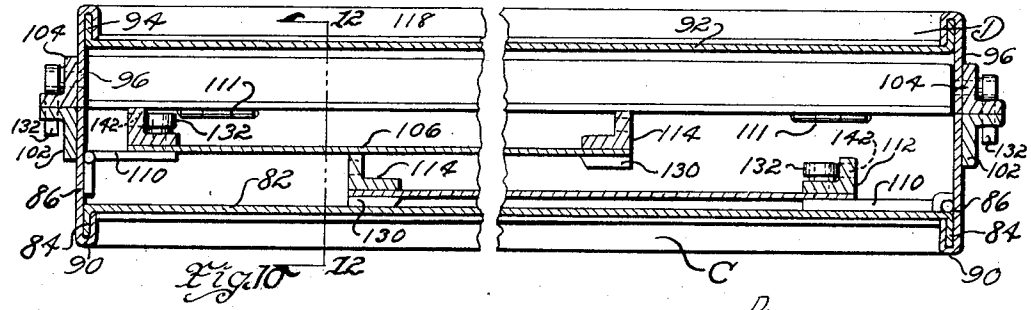


Fig. 10

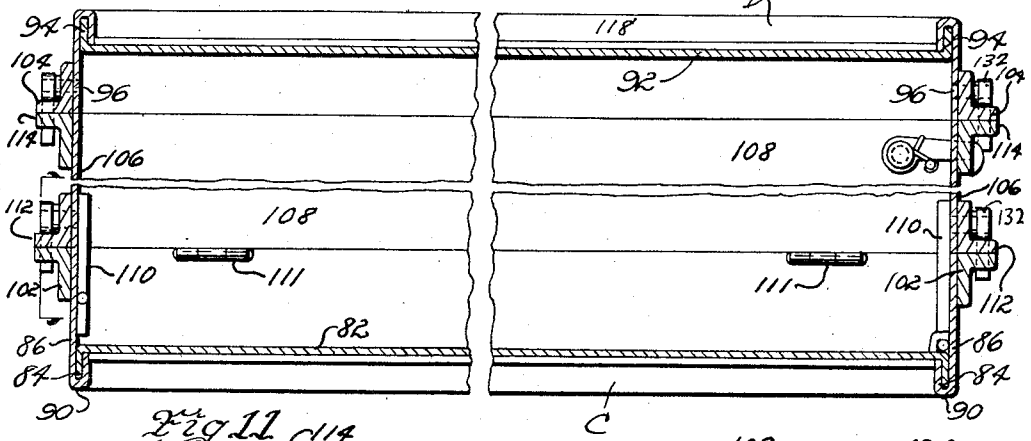


Fig. 11

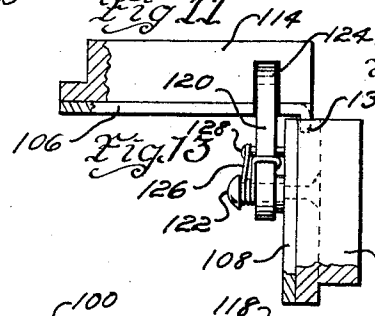
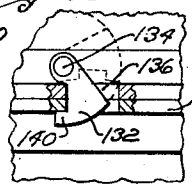


Fig. 13

Fig. 15



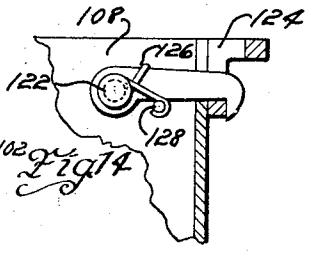


Fig. 14

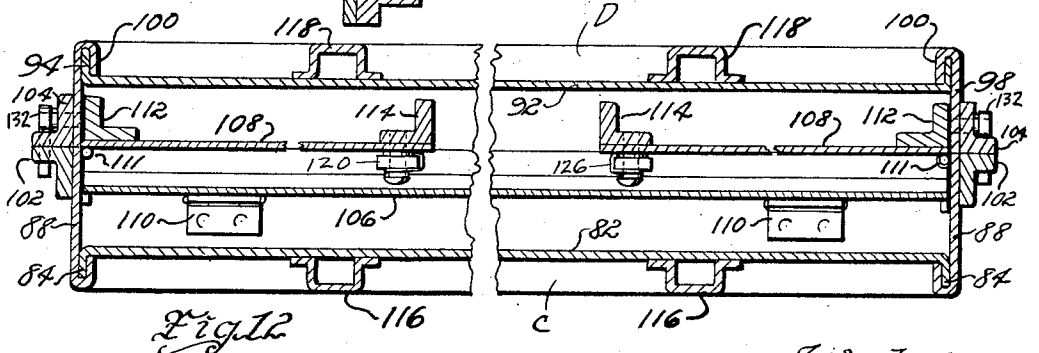


Fig. 12

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UNITED STATES PATENT OFFICE

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COLLAPSIBLE CONTAINER

Application filed March 16, 1931. Serial No. 522,985.

The object of this invention is to provide an improved construction for a box or a container which is capable of being folded or collapsed into compact condition for storage or transportation, or for use at the grave.

A further object of the invention is to provide a container having a unitary bottom portion, a unitary top portion and movable side walls capable of being compacted between and within the top and bottom portions, which are then capable of forming a container of less height within which the side walls are enclosed.

Still another object of the invention is to provide an improved construction for a box or container comprising a unitary, relatively shallow bottom portion, having a peripheral flange at its upper margin, side walls movably secured to the bottom portion and having at their lower margins flanges adapted to cooperate with the flanges of said bottom portion and also formed at their upper margins with peripheral flanges, there being also provided a unitary top portion having a peripheral flange adapted to cooperate selectively with the flanges at the upper margins of the side walls or with the flanges on the bottom portion and thereby secured in either of said positions for forming an enclosed container of either extended or compacted form.

Another and further object of the invention is to provide improved details of construction for a sheet metal container whereby a strong, durable and relatively inexpensive construction is obtained, and whereby the container is capable of being easily and quickly altered from its extended to a collapsed condition in which it occupies a minimum space.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view illustrating the preferred form of my collapsible container in compacted position.

Figure 2 is a perspective view showing one end portion of this form of the container in extended position.

Figure 3 is a perspective view of an end portion of this form of the container in extended position with the cover removed and the end wall separated from its normal position.

Figure 4 is a cross section of the compacted or collapsed container on the line 4—4 of Figure 1.

Figure 5 is a detail sectional view of a portion of the cover member substantially on the line 5—5 of Figure 1.

Figure 6 is a detail plan view partly in section, illustrating one method of forming a joint between two members and for providing a finished construction at the corner, this view being taken substantially on the line 6—6 of Figure 7.

Figure 7 is a sectional view of the same elements on the line 7—7 of Figure 6.

Figure 8 is a detail section on the line 8—8 of Figure 3, illustrating one method of separably mounting an end wall relative to a side wall of the container.

Figure 9 is a perspective view of a friction spring clip employed for removably securing two members together.

Figure 10 is a cross section of a modified form of the container in collapsed condition.

Figure 11 is a cross section of the same in extended position.

Figure 12 is a longitudinal section of this form of the container on the line 12—12 of Figure 10 in collapsed condition.

Figure 13 is a detail plan view, partly in section, illustrating a method of detachably securing side walls together at a corner of the container when extended.

Figure 14 is a sectional elevation illustrating the same type of fastening means.

Figure 15 is an elevation, partly in section, illustrating a different type of friction latching means for detachably securing parts of the container together.

The container or sheet metal box constructed in accordance with my invention includes a shallow bottom member or portion designated generally by the character A and it

also includes a top member or portion B adapted to be secured to and to cooperate with the other elements of the container either in extended or in collapsed condition for forming a closed container.

The bottom member A is composed of a bottom wall 20 and a plurality of low side walls 22 and end walls 24 rising from the respective margins of the bottom wall 20. Any suitable means may be employed for securing the low side walls 22 and end walls 24 to the bottom wall 20. As here shown, the bottom wall 20 is formed at its longer side margins with downwardly projecting rolls 26 and the side walls 22 are formed with inwardly projecting rolls 28. The rolls 28 are of such shape and formation as to be capable of snugly embracing and interengaging with the walls 26, and these parts are assembled by relative longitudinal sliding movement of the parts, whereby a strong and tight fitting joint is produced.

The top or cover member B is formed in a similar manner and is composed of a top wall 30 and low side walls 32 and end walls 34. The top wall 30 may be formed with a series of integral transverse ribs 36 for strengthening and reinforcing it. The top wall 30 is formed at its longer side margins with upturned rolls 38 and the low side walls 32 are formed with inturned rolls 40 which embrace and snugly engage the rolls 38 by longitudinal sliding movement of the parts.

I have illustrated two different methods of attaching the low end walls 34 of the top member B to the top wall 30 and similar methods may be employed with respect to the end walls 24 of the bottom member A.

As shown particularly in Figures 1 and 2 and in the detail illustration of Figure 5, the low end walls 34 of the cover member are formed with inturned rolls 42 which are similar to the rolls 40 of the side walls. In this form of the device the rolls 40 and 42 extend entirely to each corner between the respective side walls and are mitered to form a corner joint. This arrangement, of course, makes it impossible to assemble both the end walls and the side walls to the cover wall by longitudinal sliding movement. The cover wall 30 is, therefore, formed plain at its shorter or end margins as illustrated in Figure 5 and is welded at such portions to the inner surface of the rolls 42.

In the construction according to Figures 6 and 7 the rolls 40′ of the side walls and 42′ of the end walls terminate at points spaced from the corner a sufficient distance to permit sliding movement of each of said end walls with respect to the rolls of the top wall in the operation of assembly. The top wall is then formed not only with the rolls 38′ on its longer side margins, but also with other rolls 44′ on its shorter end walls, the latter cooperating with the rolls 42 of the end walls 34.

When the assembly is completed according to this form of construction, each corner is covered and finished by mounting thereon a corner plate 46 of angular or curved formation for embracing the end portions of the side walls 32 and end walls 34 and having a rolled portion 48 embracing the ends of the rolls 40′ and 44′ and covering the gap between them. The corner plates 46 may be attached to the other members by any suitable means, such as welding.

In this manner a rigid structure is formed to constitute the unitary bottom portion A and the unitary top portion B of the container.

The low walls 22 and 24 of the bottom portion A are provided at their upper margins with outturned flanges 50, and in a similar manner the low walls 32 and 34 of the top member B are formed at their lower margin with outturned flanges 52.

A pair of side walls 54 are provided for the container and also a pair of end walls 56.

The side walls 54 are hinged to the low side walls 22 of the bottom member by means of hinges 58 so arranged that the walls 54 are adapted to fold inwardly toward the bottom wall 20. The side walls 54 are formed at their lower margins with outturned flanges 60 and at their upper margins with outturned flanges 62. The lower flanges 60 are adapted to rest on the flanges 50 of the bottom member when the device is extended and by such engagement they constitute stops to limit outward movement of the walls 54 on their hinges and to assist in holding them in perpendicular relation to the bottom wall 20.

The end walls 56 may be hingedly secured, but as here shown they are entirely separate and removable from the structure. They are formed at their lower margins with outturned flanges 64 and at their upper margins with outturned flanges 66. The flanges 64 are adapted to rest at times on the flanges 50 of the low end walls 24.

For forming a detachable connection for the side walls 56 I have shown headed studs 68 projecting inwardly from the marginal portions of these members and adapted to engage in key hole slots 70 formed in outturned flanges 72 at the end margins of the side walls 54. This construction is shown particularly in Figure 8.

When it is desired to extend or expand the container, the side walls 54 are raised to upright position, as shown in Figure 3, in which position their base flanges 60 are in contact with the flanges 50 of the bottom member A. Then the end walls 56 are placed in position by inserting the studs 68 through the enlarged upper portions of the key hole slots 70 and then sliding them downwardly until the base flanges 64 engage and rest on the flanges 50 of the bottom member. This

method of mounting the end walls 56 serves to hold all of the container walls in upright position.

The cover member then may be placed on the extended 19 container with its peripheral flange 52 engaging and resting on the upper flanges 62 and 66 of the container walls.

When it is desired to collapse or contract the container, the cover member is removed and then the end walls 56 are separated from their positions by upward and outward movement to cause the studs 68 to be removed from the slots 70. Then the side walls 54 will swing inwardly on the hinges 58 toward the bottom wall 20.

In many instances the bottom member may not be of sufficient width to permit the two side walls 54 to lie side by side, and in such event it may be desirable to form notches such as 80 in their end flanges 72 to permit one side wall to nest somewhat within the other, as shown in Figure 4, for the purpose of conserving space. The end walls 56 may also be mounted within the bottom member and then the cover member is mounted thereon with its peripheral flange 52 engaging the flanges 50 at the upper margins of the low side walls 22 and end walls 24. This arrangement of the parts provides a relatively flat and shallow container within which the movable side and end walls of the complete container are enclosed.

Any suitable means may be employed for holding the cover member in position. As here shown, I employ a plurality of channel shaped spring clips 74, each having an apertured extension 76 by means of which it is pivotally attached to the flange 52 of the cover member. Each clip also has a lip 78 adapted to be engaged manually for placing it in the desired position.

The clips 74 are arranged at suitable intervals around the flange of the cover member and they are adapted to be moved to position for conjunctively engaging and embracing the flange 52 of the cover member and the flanges 50 or 62—66 of the container.

Similar spring clips 74 are mounted on the base flanges 60 and 64 of the walls for engaging the flanges 50 of the bottom member when the walls are extended, thus providing means for securely holding the walls in such position.

In other words, the cover member 30 may be used selectively either with the complete or extended container or with the shallow compacted container. In either position the peripheral flange 52 of the cover member will engage and rest upon a coacting flange which in one instance would be the flange 50 surrounding the low side and end walls of the compacted container, and in the other instance would be the flanges 62 and 66 at the tops of the extended walls. In either position the cover member may be detachably secured in place by means of the spring clips 74 embracing conjunctively the engaging flanges above referred to.

I have thus provided a convenient and comparatively inexpensive constrution for a collapsible container which may be easily and quickly altered from one condition to the other so as to be ready for use when extended, or it may be made to occupy comparatively little space when not desired for use.

The container thus constructed is also sturdy and rigid and capable of enduring considerable hard usage because of the cooperating and reinforcing relation of the various parts.

One distinctive use for which this collapsible container is especially desirable is for use as a casket box, to take the place of wooden burial boxes commonly used in cemeteries, but of course it is to be understood that it is not limited to this particular method of use.

The construction which is illustrated in Figures 10 to 15 inclusive embodies the same general principles or features as those heretofore described, but there are various modifications in the methods employed for embodying these principles in concrete form.

In this form the bottom member is designated by the character C and the top member by the character D.

The bottom member comprises a bottom wall 82 and it is formed at its margins with a downturned flange 84. Rigidly secured to the bottom wall 82 are low side walls 86 and low end walls 88. The walls 86 and 88 are formed at their lower margins with hook flanges 90 which engage and embrace the flanges 84 of the bottom member to form a rigid joint and connection between these parts.

The top member D is formed with a plain top wall 92 having a peripheral upturned flange 94. The top wall 92 is provided with low side walls 96 and low end walls 98, and these walls are formed at their upper margins with downturned hook flanges 100, which snugly engage the flanges 94 of the top wall to form a rigid joint and connection between them.

Instead of having integral outturned flanges at their meeting edges, the walls of the bottom member C and top member D may be provided with angle bars 102 and 104 respectively, the horizontal flanges of which are adapted to engage and coact at times.

The container constructed according to this embodiment of my invention is provided with side walls 106 and end walls 108, which are hingedly connected to the corresponding walls of the bottom member C by means of hinges 110 and 111 respectively. The side walls 106 and end walls 108 may be provided at their lower margins with angle bars 112 and at their upper margins with angle bars 114 which are adapted to coact respectively

with the horizontal flanges of the angle bars 102 and 104 at times.

The bottom wall 82 may be provided with channel shaped reinforcing bars 116 on its lower surface and suitably secured thereto as by welding, and the top wall 92 may be provided with similar reinforcing bars 118 on its upper surface.

When it is desired to extend or expand the container for use the hinged side walls 106 and end walls 108 are swung upwardly on their hinges to positions where they form extensions of the low side walls 86 and end walls 88 of the bottom member, in which positions the outwardly projecting flanges of the angle bars 112 engage and contact with the outwardly projecting flanges of the angle bars 102. The hinged walls are held in extended position by any suitable means such as latches 102 pivoted at 122 on the inner faces of certain of the walls near their corners and adapted to engage in slotted openings 124 formed in the angle bars 114 of others of the walls. The latches 120 preferably are provided with springs 126 for holding them in operative positions, the ends of these springs being held by pins 128 carried by the walls 108 on which the latches are pivoted. The walls 106 may also be formed with projecting lugs 130 at their ends and at right angles thereto for engaging behind or outside of the adjacent end portions of the walls 108 to provide further means for resisting outward strain against the walls.

When the walls are extended and latched in such position the cover member D may be put in place with its peripheral angle bars 104 engaging and resting on the outwardly projecting portions of the angle bars 114 at the tops of the side walls.

When it is desired to collapse or contract the container, the cover member D is removed and the latches 120 are released manually. Thereupon, the side walls 106 and end walls 108 are folded inwardly on their hinges. In order that the several walls may be conveniently compacted within the bottom member C, I prefer to provide some of the walls such as the side walls 106 with the extension hinges 110 having their axes of articulation spaced below the upper margins of the walls of said bottom member and preferably at points variably spaced below said upper margins. This permits one of the side walls 106 to be folded flat against the bottom wall 82 and the other side wall to be folded into parallel relation and resting thereon as shown in Figure 10. The end walls 108 may then be folded in position to rest above and parallel with the uppermost of the side walls.

When the walls have thus been folded inwardly the cover member D may be placed in position with its peripheral angle bars 104 engaging and resting upon the horizontal portions of the angle bars 102 of the bottom member to form a compacted container within which the hinged side walls are completely enclosed.

For this form of the container I have shown in Figure 15 a different type of latching means carried by the cover member for securing it either to the extended or to the collapsed container. This means includes a latch member 132 pivoted at 134 on the upright part of the angle bar 104. The latch member 132 is adapted to be moved through an opening 136 in the horizontal or outwardly projecting part of the angle bar 104 and through a registering opening 138 formed in the outwardly projecting part of a coacting angle bar such as the angle bar 102 of the bottom member. The latch member 132 is formed at its free end with a lip 140 adapted to engage beneath the flange 102 for holding the cover member in place. It is to be understood that a series of the latch members 132 are provided at suitably spaced intervals and that they are arranged to operate for holding the cover member detachably in place either on the angle bars 102 when the container is in collapsed position, or on the angle bars 114 when the container is in expanded position.

Other latch members 132 may be mounted on the outwardly projecting portions or flanges of the bars 112 at the bottoms of the hinged walls for movement through openings 142 (dotted lines, Figure 10) and through the openings 138 in the angle bars 102 when said hinged walls are in extended position. It is the function of the last-named latching members 132 to assist in holding the hinged walls rigidly in extended relation to the low walls of the bottom member C.

Either form of the container constructed in accordance with my invention provides a convenient, durable and comparatively inexpensive means for carrying out the objects and accomplishing the purposes hereinbefore delineated.

It is to be understood that the flanges on either form of the box may be produced either by integral bends of the metal, or by attaching separate angle bars as shown and described. Also that either form of the box may be equipped with the spring clips 74 or the pivoted latch members such as 132.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:—

1. A collapsible container comprising a bottom member including a bottom wall and low walls rigidly secured thereto, said low walls being provided with outwardly pro-

jecting flanges at their upper margins, other walls movably arranged relative to said low walls and adapted to form continuations thereof, said other walls being provided with outwardly projecting flanges at their lower margins adapted to engage and rest on the flanges of said low walls and also being provided with outwardly projecting flanges at their upper margins, a cover member provided with an outwardly projecting flange adapted to engage and rest selectively on the flanges of said low walls when the device is in collapsed condition or on the flanges at the top of said other side walls when the device is extended, and latching means for securing said engaging flanges to each other.

2. A collapsible container comprising a bottom member including a bottom wall and low walls rigidly secured thereto, said low walls being provided with outwardly projecting flanges at their upper margins, other walls movably arranged relative to said low walls and adapted to form continuations thereof, said other walls being provided with outwardly projecting flanges at their lower margins adapted to engage and rest on the flanges of said low walls and also being provided with outwardly projecting flanges at their upper margins, a cover member provided with an outwardly projecting flange adapted to engage and rest selectively on the flanges of said low walls when the device is in collapsed condition or on the flanges at the top of said other side walls when the device is extended, and latching means carried by the flange of said cover member for engaging the coacting flanges and holding the cover member in either selected position.

3. A collapsible container comprising a bottom member including a bottom wall and low walls rigidly secured thereto, said low walls being provided with outwardly projecting flanges at their upper margins, other walls movably arranged relative to said low walls and adapted to form continuations thereof, said other walls being provided with outwardly projecting flanges at their lower margins adapted to engage and rest on the flanges of said low walls and also being provided with outwardly projecting flanges at their upper margins, detachable means for securing end portions of said last mentioned walls together when they are in extended position, a cover member provided with an outwardly projecting flange adapted to engage and rest selectively on the flanges of said low walls when the device is in collapsed condition or on the flanges at the top of said other side walls when the device is extended, and latching means for securing said engaging flanges to each other.

4. A collapsible container comprising a bottom member of shallow box-like formation and formed with outwardly projecting peripheral flanges, movable side walls adapted to be collapsed within said bottom member or to be extended to form an extended enclosure thereabove, said movable walls being formed with outwardly projecting flanges at their upper margins, and a cover member formed with outwardly projecting peripheral flanges adapted to engage the flanges of said bottom member or those of said movable side walls when extended, whereby the cover member may be used as a closure either for the collapsed or the extended container.

5. A collapsible container comprising a bottom member of shallow box-like formation and formed with outwardly projecting peripheral flanges, movable side walls adapted to be collapsed within said bottom member or to be extended to form an extended enclosure thereabove, said movable walls being formed with outwardly projecting flanges at their upper margins, and a cover member formed with outwardly projecting peripheral flanges adapted to engage the flanges of said bottom member or those of said movable side walls when extended, whereby the cover member may be used as a closure either for the collapsed or the extended container, together with pivoted latching means on the flanges of said cover member for engaging the coacting flanges and holding the cover member in place.

6. A collapsible container comprising a bottom member of shallow box-like formation, provided with outwardy projecting flanges, side walls hingedly connected to said bottom member and adapted to be folded therein, said side walls being provided with outwardly projecting flanges, means for securing adjacent edges of said walls together when in extended position to form a box of considerably greater depth than the bottom member, and a cover member adapted to be mounted either on the flanges of said bottom member when the side walls are collapsed, or on the flanges of said side walls when extended, and latching means for engaging the flanges of said members for securing the cover member in either of said positions.

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