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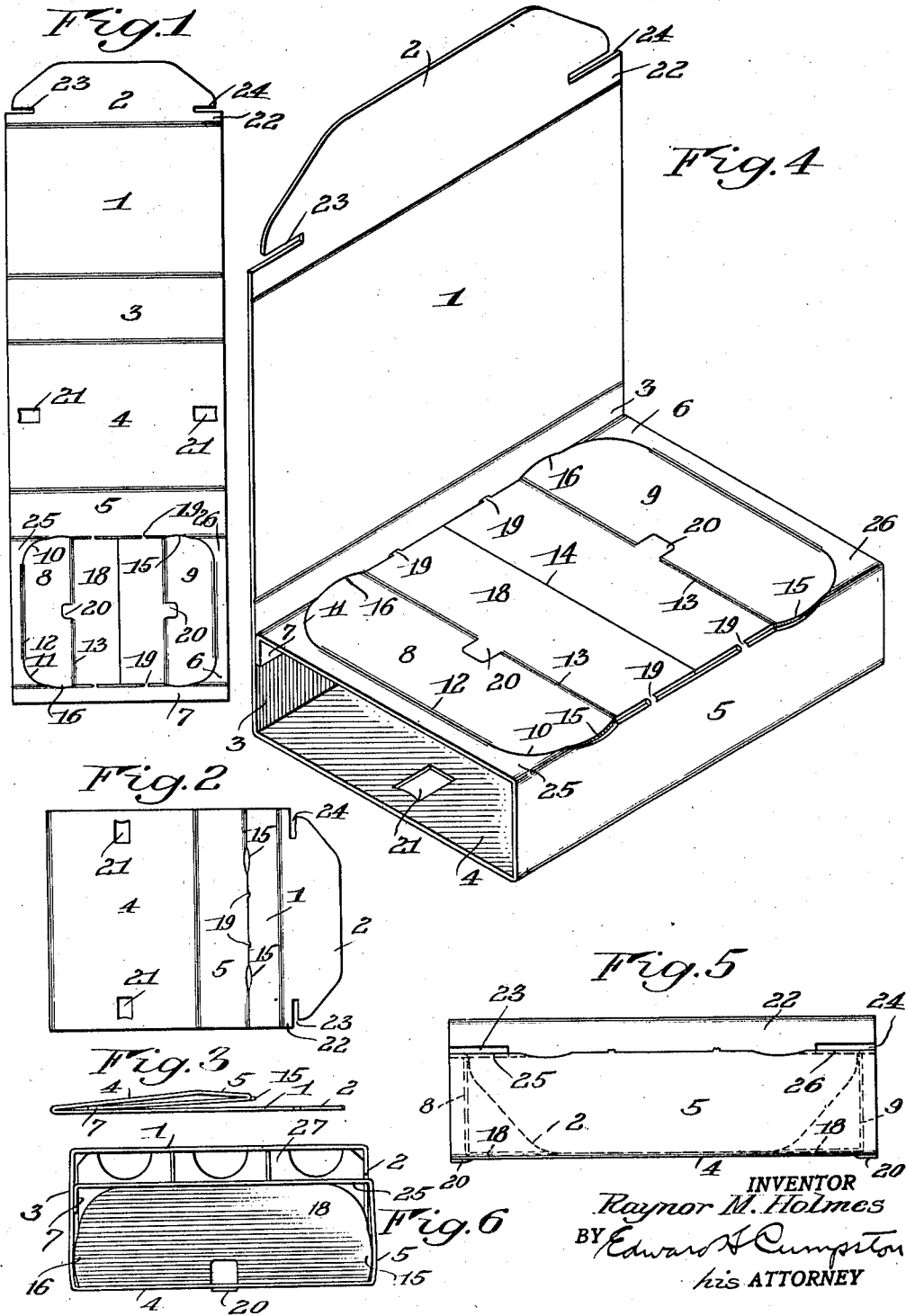
R. M. HOLMES

2,076,844

COLLAPSIBLE CONTAINER

Filed April 27, 1935

3 Sheets-Sheet 1



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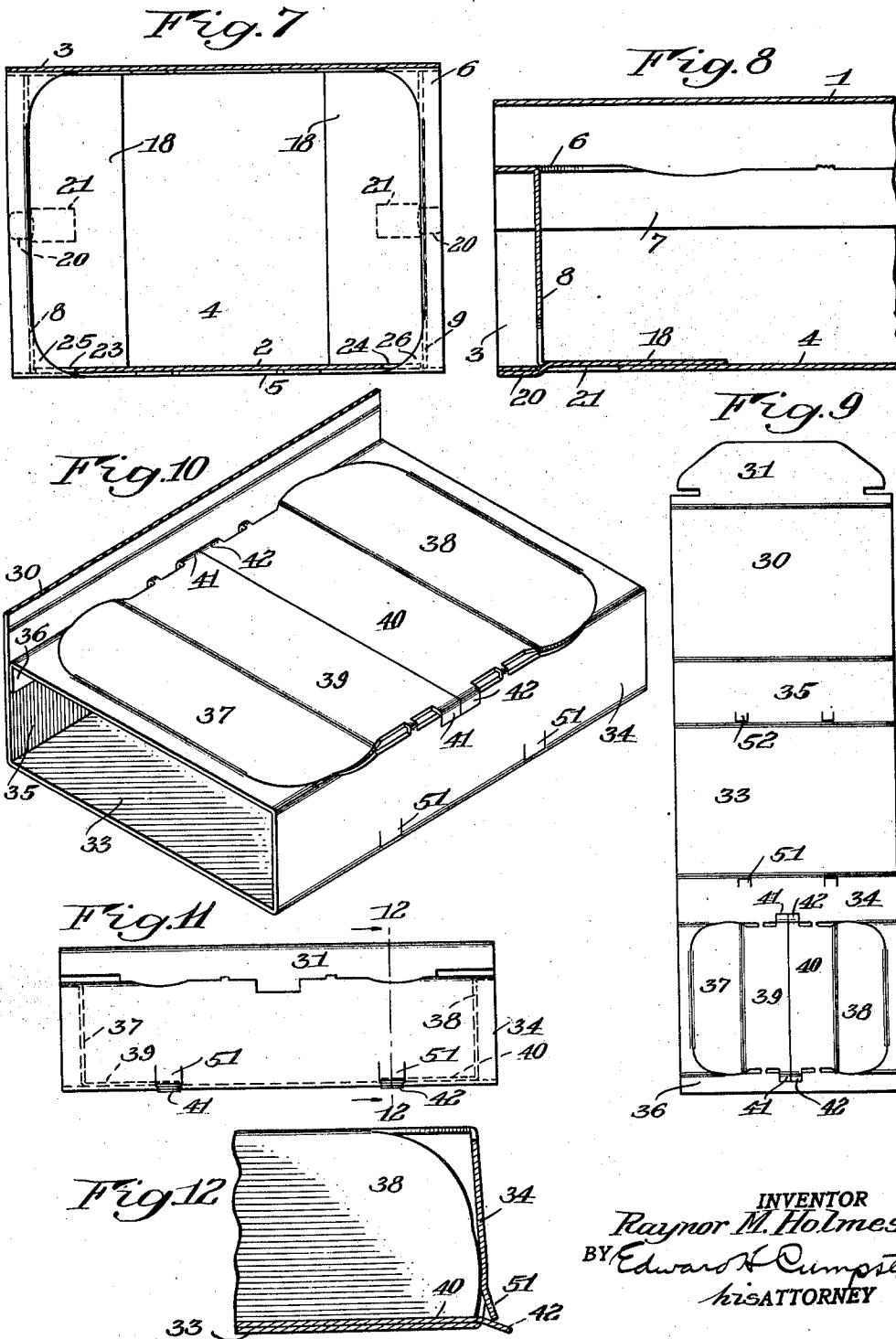
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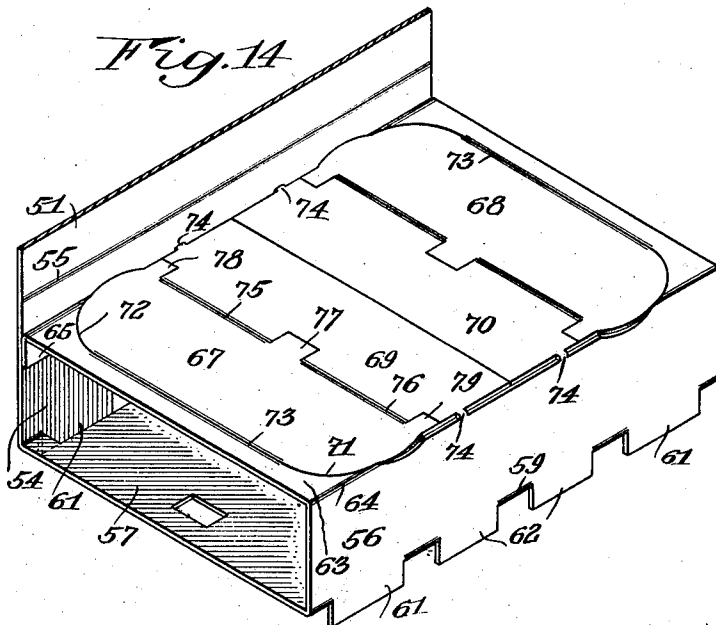
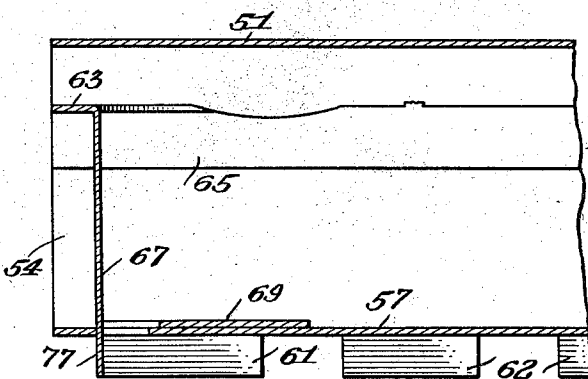
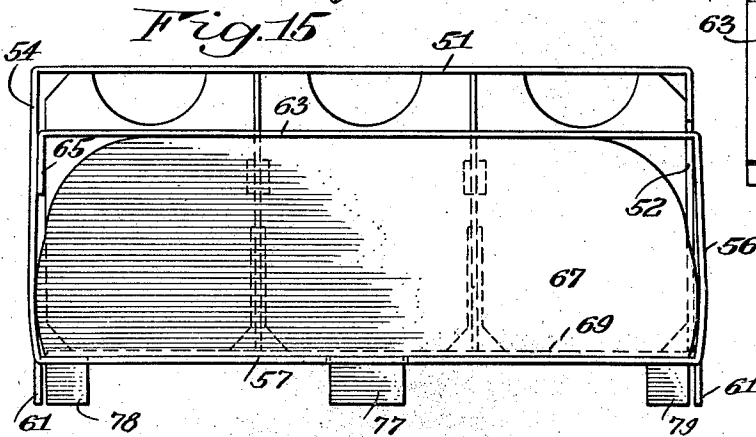
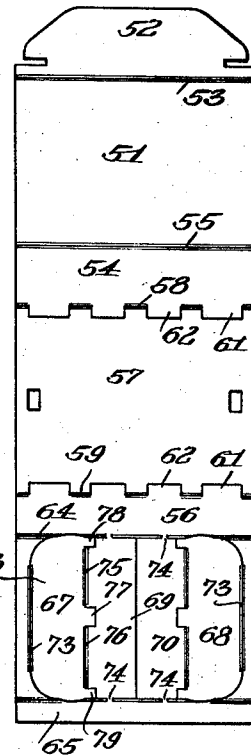


Fig. 13



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UNITED STATES PATENT OFFICE

2,076,844

COLLAPSIBLE CONTAINER

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9 Claims. (Cl. 229—29)

This invention relates to improvements in containers and particularly to containers, boxes, or cartons of the kind used for packing and transporting various articles, which may be fragile in character, such as eggs, fruit, and the like.

The principal object of the invention is the provision of containers of this kind which are simple in construction, adapted to be packed in a minimum of space when not in use, which are strong, and which may be cheaply made from a single strip of sheet material.

Another object of the invention is the provision of a container of this kind which may be readily formed from a single piece of foldable sheet material and having interlocking means whereby the formed container is rigidly held in assembled form.

A further object of the invention is the provision of a container of this kind which is light in weight, strong, and which provides the greatest possible protection for fragile articles contained therein.

Still another object of the invention is the provision of a blank which may be cut from a sheet of material with a minimum of waste of the material, and which may be glued and folded flat for transportation and storage.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a plan view of a blank from which a container may be formed and which illustrates one possible embodiment of the invention;

Fig. 2 is a reverse plan view of the same partially assembled;

Fig. 3 is a side elevation of the same;

Fig. 4 is a perspective view of the container showing the position of the parts before the end walls are moved into position, or before it is folded to the form shown in Figs. 2 and 3.

Fig. 5 is a front elevation of the same completely assembled;

Fig. 6 is an end elevation of the same showing cell forming partitions arranged therein;

Fig. 7 is a sectional plan view showing the interior of the container;

Fig. 8 is a vertical section, partly broken away and showing details of construction;

Fig. 9 is a plan view of a blank for a container, illustrating another possible embodiment of the invention;

Fig. 10 is a perspective view of the same partly assembled and partly broken away;

Fig. 11 is a front elevation of the same;

Fig. 12 is a fragmentary sectional view taken substantially on line 12—12 of Fig. 11, and looking in the direction of the arrows at said line;

Fig. 13 is a plan view of a blank for a container illustrating another possible embodiment of the invention;

Fig. 14 is a perspective view of the same partly assembled and partly broken away;

Fig. 15 is an enlarged end elevation of the same showing cell forming partitions arranged therein, and

Fig. 16 is a vertical longitudinal section of the container partly broken away.

Similar reference numerals refer to the same part in all the figures of the drawings.

Referring first to that form of the invention illustrated in Figs. 1 to 8, inclusive, Fig. 1 shows a blank from which a container, box, or carton may be formed by folding, and which may be cut from any suitable sheet material, such as cardboard, fiberboard, or the like. It is scored to form a top cover or lid section 1 which has a flap section 2 on its forward edge, and a rear wall section 3 at its rear edge. A bottom wall section 4 connects the lower edge of the rear wall section with the lower edge of a front wall section 5. Connected with the upper edge of the front wall section and foldable thereon is an end wall section generally referred to by the reference numeral 6 from which end walls and floor boards are formed, as presently described. Formed on the free edge of the section 6 and foldable thereon is a glue or paste strip 7. It will be noted by reference to Fig. 1 of the drawings that these parts are formed from an integral one piece blank by scoring, so as to be foldable on each other to form the container. It will also be noted that the sections 1, 4, and 6 are of substantially the same shape and size and that the rear wall section 3 is substantially wider or of greater height than the front wall section 5.

In assembling or forming the container from the blank, the rear and front wall sections 3 and 5 are folded to vertical positions on the bottom section 4. The section 6 is then folded to a horizontal position substantially parallel with the bottom section 4 and intermediate the same and the cover, and the glue strip 7 folded downwardly against the inner side of the rear wall section to which it is secured by means of paste, glue, or other suitable adhesive material. The blank now assumes the form illustrated in Fig. 4 of the

drawings and may be collapsed or folded to the form shown in Figs. 2 and 3 of the drawings in which it is substantially flat and may be packed in a minimum of space for storage or transportation and assembled to form a container without the use of tools or other instruments.

To complete the formation of the container for use, the parts are arranged as indicated in Fig. 4 of the drawings. As previously indicated, the end or side walls are formed from the section 6.

Both end walls 8 and 9 are formed from this single section and since the formation and construction is substantially the same for both, except for being right and left, only one need be described in detail. The material of the section is scored transversely on the lines 12 and 13 and cut on the line 14. The scored line 12 is short of the width of the section and between its ends and the corresponding ends of the scored line 13 the material is cut through on the curved lines 10 and 11 which form the ends of the end wall 8. These curved lines 10 and 11 are extended slightly beyond the limits of the end section into the front wall section at 15 and the glue strip at 16, so that the end wall is slightly longer than the width of the end section. A floor board 18 is formed between the scored line 13 and cut 14 and its ends are cut free from the front wall and glue strip except for short intervals at 19. The scored line 13 is interrupted intermediate its ends by a tongue 20 cut from the material of the end wall. It will now be apparent that by pressing inwardly on the floor boards, the connections 19 are readily torn or broken and the end walls together with the floor boards may be pressed inwardly between the front and rear walls on the scored lines 12 as axes. Since the end walls are slightly longer than the distance between the front and rear walls, their front and rear edges frictionally engage said walls and may cause them to bulge outwardly as shown in Fig. 6. By this arrangement, the end walls are frictionally and resiliently engaged by the front and rear walls whereby they are firmly held or retained between them.

As the end walls are moved to their vertical or normally operative positions the inner ends of the floor boards engage the bottom causing them to fold on the scored lines 13 as axes and swing the tongues 20 downwardly from the planes of the end walls and into openings 21 provided therefor in the bottom to serve to limit the outward movement of the end walls when they reach a substantially vertical position. The floor boards may be pressed into contact with the bottom where they are retained by the frictional engagement of the torn edges at 19 with the front and rear walls. It will be noted that the ends 25 and 26 of the end section outside the scored lines 12 connect the upper edge of the front wall with the rear wall and support the end walls at their upper edges, the lower edges of the end walls being connected with the floor boards which are frictionally held between the front and rear walls and anchored against lateral movement by the tongues 20. The floor boards serve to reinforce the bottom of the container adjacent its ends where it is subject to greatest strains.

The container may now be closed by swinging or folding the cover 1 on the upper edge of the rear wall 3 as an axis over the open top of the container and folding the flap 2 downwardly and inwardly to a position behind the front wall 5. The rear wall 3 is deeper or of greater vertical height than the front wall 5 and the flap 2 is of

a width substantially equal to the depth or vertical height of the rear wall 3, so that it engages the bottom when the cover reaches a position substantially parallel with the bottom of the container. It will be noted that by this construction the upper portion 22 of the flap serves to form a part of the front wall of the container and that the cover 1 comes to rest in a position spaced above the end walls of the container and provides open spaces at the ends between the end walls and the cover.

Interlocking means are provided for securing or retaining the cover in its closed position. To this end, the ends of the flap are slotted, as at 23 and 24, substantially in the plane of the part 6 when the flap engages the bottom of the container. When the cover is moved to closed position the flap is inclined inwardly and downwardly inside the front wall 5. The wings of the flap adjacent the slots 23 and 24 are flexed rearwardly by engagement with the curved portions 10 of the end parts 25 and 26 until the slots reach the plane of parts 25 and 26, when the wings swing forwardly and lock under the parts 25 and 26.

A box or container thus constructed is inexpensively made from a single piece of sheet material, can be packed flat in the minimum of space for transportation and storage, is strong, rigid, and light when fully assembled, and since the front and rear walls, bottom and cover project over the end walls they serve to protect fragile articles contained therein against breakage. The usual cell forming partitions 27 for fragile articles such as eggs, glass ornaments, and the like may be arranged in the container if desired, as shown in Fig. 6 of the drawings.

In Figs. 9 to 12, inclusive, another possible embodiment of the invention is illustrated. This container is also formed from a blank cut from a single piece of material and comprising a plurality of sections foldable upon each other. Such a blank is illustrated in Fig. 9 of the drawings, and comprises a cover section 30, having a flap section 31 at its front edge, and connected with a rear wall section 32 at its rear edge. The bottom 33 is arranged between the rear wall section 32 and the front wall section 34, and the end wall section 35 with its glue strip section 36 is connected with the upper edge of the front wall section. The sections 31 and 30, are similar in all respects to the sections 2 and 1 previously described, and the rear wall section 32 is of greater width or depth than the front wall section 34. This container is also formed from the blank in a manner similar to that already described, the front and rear wall sections 34 and 32 being folded up to a substantially vertical position on the bottom section 33 and the end wall section folded down opposite the bottom section, and the glue section folded downwardly and secured to the rear wall section by means of glue, or other suitable adhesive, with the end wall section arranged substantially parallel with the bottom section. The container, unless intended for immediate use, may now be collapsed to a substantially flat condition for transportation or storage.

The end walls 37 and 38 and floor boards 39 and 40 are formed as those previously described except that the tongues are not cut from the end walls but instead tongues 41 and 42 are formed on the inner edges of the floor boards and cut from the material of the front wall and glue strip and scored along the edges of the end section, as clearly shown in the drawings. When the floor boards and end walls are pressed into the space

between the front and rear walls these tongues move into registration with openings provided therefor in the front and rear walls when the end walls reach their normal operative position and the lower surfaces of the floor boards lie on the bottom. The tongues may then be projected through said openings and folded downwardly and inwardly against the outer surface of the bottom to which they may be secured by means of a suitable adhesive if desired.

Still another possible embodiment of the invention is illustrated in Figs. 13 to 16, inclusive, and differs from that illustrated in Figs. 1 to 8, chiefly in being provided with means for supporting the container with its bottom raised above the object on which it may be supported. The present container is formed from a blank such as shown in Fig. 13, which may be cut from a sheet of suitable material and comprises a cover section 51 having a flap 52 foldable thereon along the scored line 53. The cover is foldable on the rear wall section 54 on the scored line 55. The rear wall section 54 and front wall section 56 are arranged on opposite sides of the bottom section 57 and are foldable thereon along the scored lines 58 and 59, tongues 61 and 62 being cut from the bottom section in the intervals between sections of the scored lines. An end wall section 63 is foldable on the front wall along the scored line 64 and a glue strip 65 is similarly foldable on the rear edge of the end wall section.

The container is assembled from the blank as previously described by folding the rear and front walls to a vertical position on the bottom wall 57. This operation also swings the tongues 61, 62 to a vertical position projecting downwardly from the bottom. The end wall section is then folded on the front wall section to a position substantially parallel with the bottom section and the glue section 65 is folded downwardly and secured to the rear wall by means of glue or other suitable adhesive. As in the previous forms, the container may now be collapsed to a substantially flat condition for transportation or storage.

If desired for immediate use, the assembling may be completed by at once forming the end walls from the end wall section. The end wall section comprises two end walls 67 and 68 and two floor boards 69 and 70, formed substantially as in the forms already described. The material of the end section is scored along the lines 75 and 76 between the end wall and floor board on which the floor board is foldable on the end wall. The lines 75 and 76 are coaxial but separate from each other and from the front and rear edges of the end wall. Between the inner ends of said scored lines is a tongue 77 cut from the material of the floor board, similar tongues 78 and 79 being cut from the material of the floor board at the rear end of the scored line 75 and at the front end of the scored line 76. It will be noted that the tongues 77, 78, and 79 are rigid with the end walls and project from their lower edges when said walls are moved to their operative substantially vertical position. With the parts in the position shown in Fig. 14, pressure on the floor boards breaks the uncut connections 74 and the end walls and floor boards fold inwardly on the scored lines 73. When the floor board engages the bottom of the container it swings out of the plane of the end wall while the tongues 77, 78, and 79 remain in the plane of the end wall and project from its lower edge and when the end wall reaches its vertical position the tongues spring into and through open-

ings provided therefor in the bottom and project vertically downward therefrom to form feet. They may also engage the sides of the openings in the bottom frictionally to lend rigidity to the construction.

It will be noted that in this form of the invention the container is supported on legs which separate the bottom from objects on which the container rests and protects its contents from jars or impulses which might break fragile articles contained therein.

Although only three of the many possible embodiments of the invention are shown and described herein, it will be understood that this application is intended to cover such other changes or modifications thereof as come within the spirit of the invention or scope of the following claims.

I claim:

1. A container constructed of a single piece of folded sheet material comprising front, rear, bottom, and top walls, a wall connecting and supporting said front and rear walls intermediate said bottom and top walls and cut and scored to provide end walls folding therefrom in opposite directions about lines spaced inwardly from the ends of said intermediate wall, extensions on the bottom edges of said end walls for supporting engagement with said front, rear, and bottom walls, and means for securing said end walls and extensions in erected position.

2. A container constructed of a single piece of sheet material and comprising a bottom, front, rear, and end walls, floor boards connected with the lower edges of the end walls and arranged in contact with the bottom, and means on the front and rear edges of said floor boards for frictionally engaging the front and rear walls for retaining the floor boards and connected end walls in fixed position.

3. A container constructed of a single piece of sheet material and comprising a bottom, front, rear, and end walls, floor boards connected with the lower edges of the end walls and arranged in contact with the bottom, and means on each of said floor boards arranged to make interlocking engagement with the bottom to anchor them and the end walls against outward movement.

4. A container constructed of sheet material and comprising a bottom, front, and rear walls, said rear wall projecting above the front wall, means at the ends of the front wall for connecting its upper edge with the rear wall, end walls having their upper edges connected with said connecting means, said end walls being of greater length than said connecting means and the extremities of the end walls terminating inwardly of and in engagement with the front and rear walls and causing them to bulge outwardly at points opposite said extremities, a cover foldable on the upper edge of the rear wall, a flap on the cover foldable to a position behind the front wall, and slots at the ends of said flap for engaging said connecting means to secure the cover in closed position.

5. A container constructed of sheet material and comprising a bottom, front, and rear walls, means connecting the front and rear walls, end walls connected with said connecting means at their upper edges, floor boards on the bottom connected with the lower edges of the end walls, and tongues on said floor boards arranged to project outwardly through openings provided therefor at the bottom of the front and rear

walls for securing the floor boards and lower edges of the end walls in fixed position.

6. A container constructed of sheet material and comprising front, rear, bottom, and top walls, a wall extending between said front and rear walls and cut to provide portions folding therefrom in opposite directions to form end walls, said end walls each having an angularly disposed floor board thereon extending longitudinally of and resting on said bottom, means for securing said end walls in erected position, and a cellular filler inserted in said container to provide article receiving compartments, said filler overlapping said floor boards.

7. A container constructed of sheet material scored to form a bottom wall and front and rear side walls and a connecting and supporting section for the front and rear walls, said connecting section being cut transversely between its ends to form opposite members each cut and scored to form a connecting strip between the front and rear side walls and to form end walls, said end walls being cut to a length greater than the distance between the front and rear side walls and folded on the connecting strips, said end walls when in normal position terminating inwardly of and operating to yieldingly exert pressure on the front and rear walls in opposite directions whereby said end walls are maintained in said normal position, and means for securing the connecting strips upon one of said side walls.

8. A blank for a container comprising a sheet of material scored transversely to provide a bottom section and side wall sections at opposite sides thereof, and an end section forming an

extension of one of the side walls, said end section having at its extremity a securing part substantially paralleling the side wall sections and adapted for attachment to one of said side wall sections, said end section being cut longitudinally of the sheet between the securing part and one of the side wall sections to provide oppositely disposed portions, each of which is scored for folding to form an end connecting strip between said securing part and said last mentioned side wall section, an end wall for the container and a floor board adapted to extend longitudinally of and to rest upon the inner face of said bottom wall when the blank is in erected position.

9. A container constructed of sheet material and comprising front, rear, and bottom walls and a connecting section between said front and rear walls comprising a longitudinally extending securing strip connected with said rear wall and transversely extending end strips connecting the securing strip with said front wall, said end strips each having folded thereon a transverse section forming an end wall for the container, said end walls having floor boards folded thereon and extending longitudinally of the container and resting on said bottom wall, said end walls and floor boards being formed by cutting said connecting section transversely thereof and longitudinally between said securing strip and front wall on substantially parallel lines to form oppositely positioned portions and folding each of said portions between its ends and upon its corresponding transversely extending end strip.

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