May 23, 1933. L. A. SHOEMAKER 1,910,480

CONTAINER

Filed May 20, 1932 3 Sheets-Sheet 1

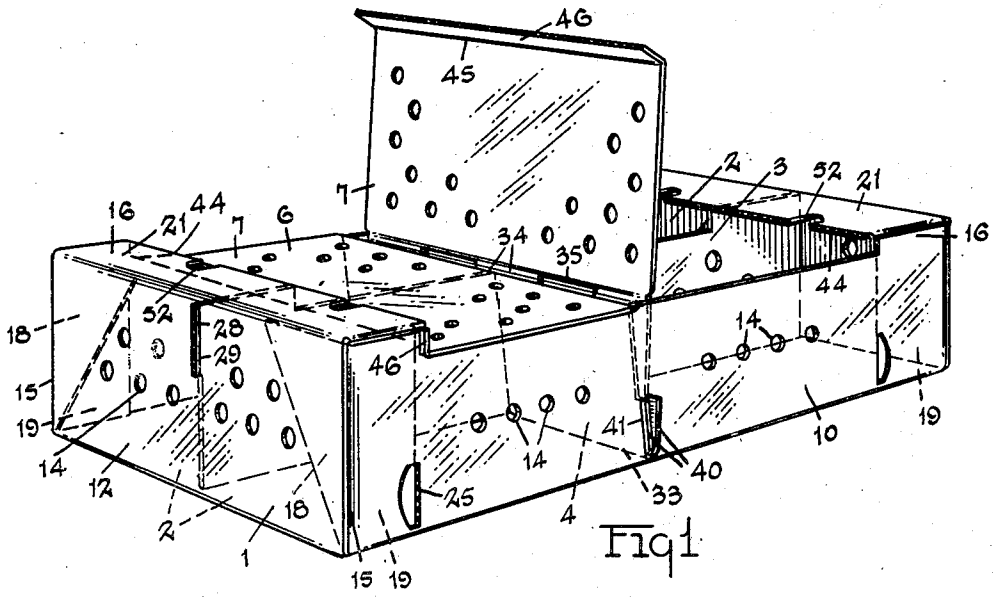


Fig 1

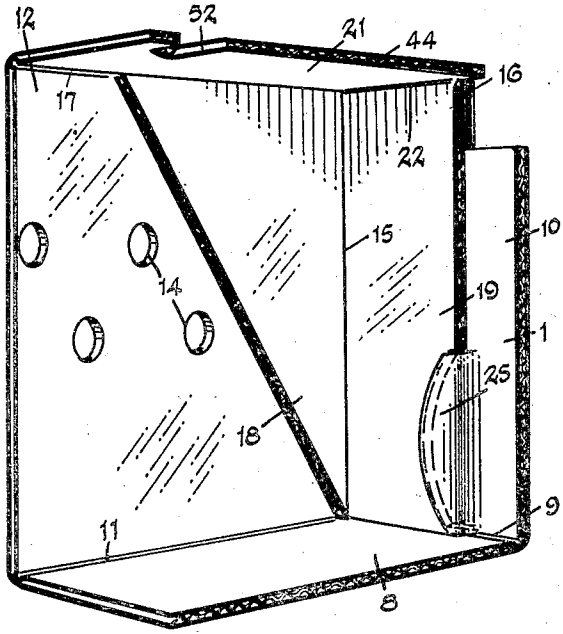


Fig 2

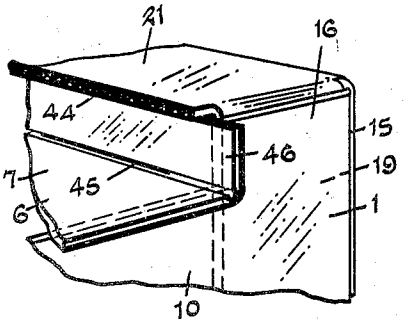


Fig 3

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CONTAINER

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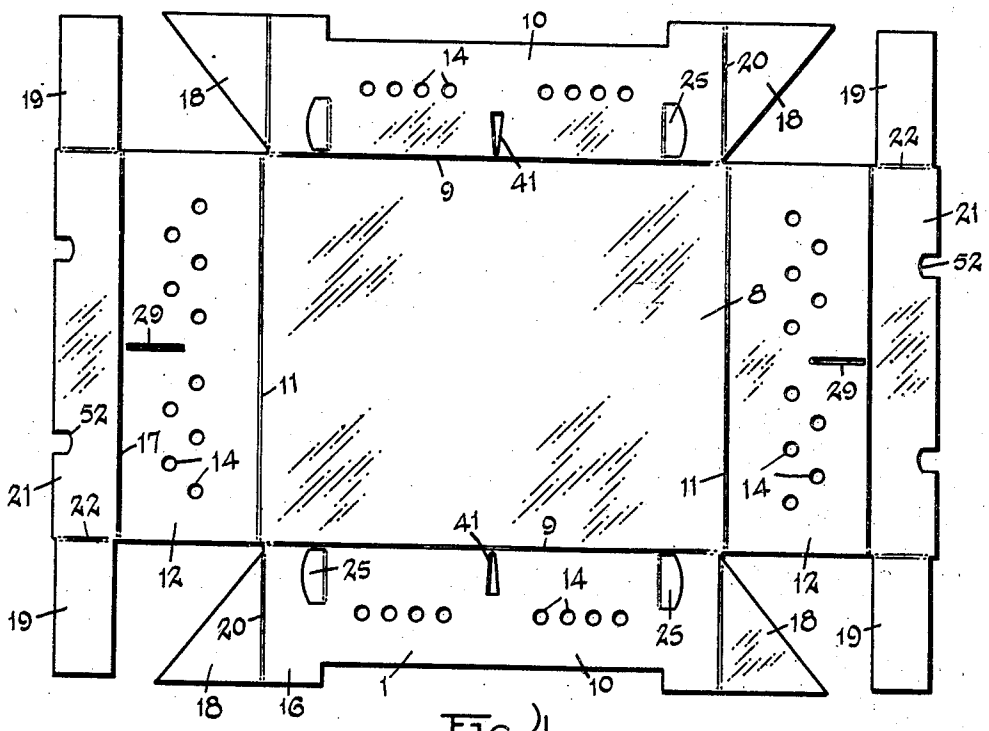


Fig 4

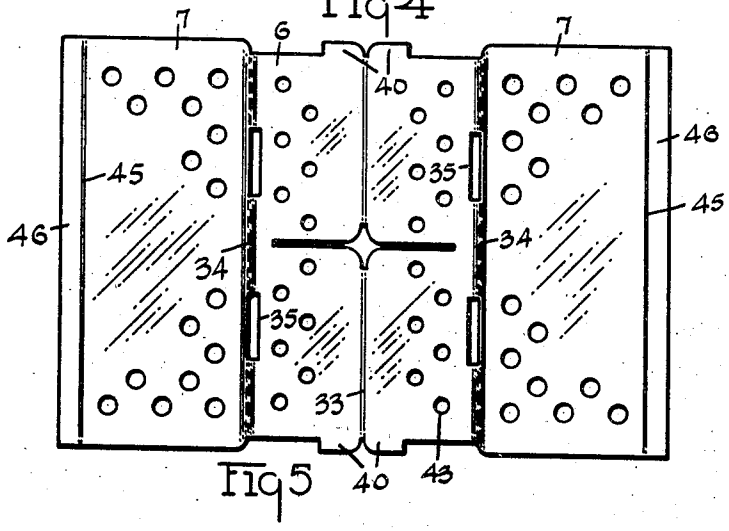


Fig 5

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CONTAINER

Filed May 20, 1932 3 Sheets-Sheet 3

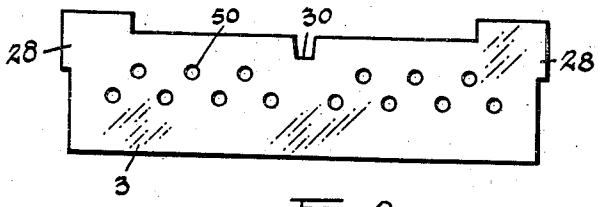


Fig 6

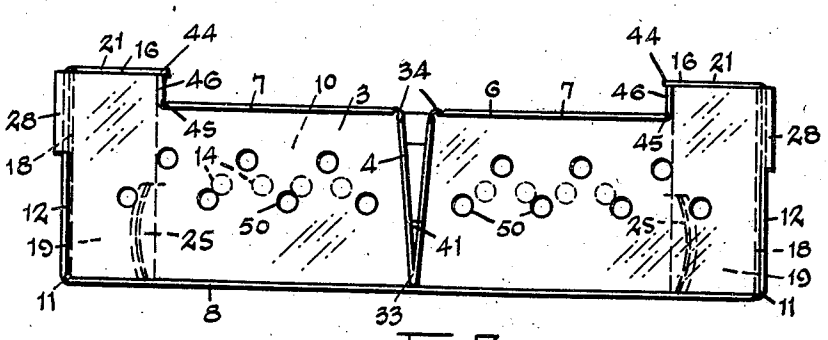


Fig 7

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Patented May 23, 1933

1,910,480

UNITED STATES PATENT OFFICE

LOUIS A. SHOEMAKER, OF MONROE, MICHIGAN

CONTAINER

Application filed May 20, 1932. Serial No. 612,413.

This invention relates to paper board containers having walls that are strengthened and reinforced by the interlocking and interfitting of portions of the walls with each other and therefore provides a container which is readily adaptable for shipping products requiring space within which to circulate air or exercise and still be protected as against crushing or bruising.

The particular object of the invention is to provide a container having means for interlocking the walls to form a rigid construction resistant to collapsibility. The invention also provides a container which may be assembled without the use of adhesives, rivets, or cementitious strips, while maintaining a high degree of strength and rigidity in the corners and walls of the container. A further object is to provide a cover for the container which may be formed so as to be elastically maintained in a closed position by the ends of the container. The invention also provides a means integral with the cover for subdividing the container into compartments, thereby reducing the cost of manufacture of the container and increasing its strength. The invention has for a further object to provide a shipping container, easily distributed or shipped in a knocked-down form and may be quickly assembled, having relatively few parts and well adapted to be manufactured at a low cost.

The invention consists in other features and advantages which will appear from the following description and upon examination of the drawings. Structures containing the invention may partake of different forms and may be varied in their details and still embody the invention. To illustrate a practical application of the invention, I have selected a container embodying the invention as an example of the various structures and details thereof that contain the invention and shall describe the selected structure hereinafter, it being understood that variations may be made without departing from the spirit of the invention. The particular structure selected is shown in the accompanying drawings.

Fig. 1 of the drawings is a perspective view of the shipping box, one of the cover portions being raised to show the interior compartments. Fig. 2 illustrates a perspective view of a corner of the box and the interlocked relation of parts. Fig. 3 illustrates a partial view of the "snap" lock relation between an end of the cover and the box. Fig. 4 illustrates a plan view of the blank when formed to produce the bottom, side and end walls of the container. Fig. 5 illustrates a similar plan view of a blank when formed to produce the cover portions and one of the partitioning walls of the box. Fig. 6 illustrates a face view of a partitioning wall. Fig. 7 illustrates a longitudinal sectional view through the box and shows the various interlocking portions of the box when it has been assembled.

Shipping container constructions, which utilize the features of my invention, are particularly well adapted for distribution of produce or animal life, such as baby chicks or rabbits, which require a desirable amount of air circulation and body space during the period of their distribution, as well as protection against crushing. The containers are preferably of a substantially shallow body which is formed from a suitable blank of corrugated or light fiber board which may be creased or scored and folded to form the walls and bottom for the container. The walls have flaps extending therefrom which are located relative to each other so that the walls may be interconnected and reinforced by each other and by the flap portions and interlocked without the use of adhesive, rivets, or cementitious strips to secure the walls in their interlocked relationship and to form the corners of the container. The end walls are of increased height to provide shoulders at each end of the container to permit piling or stacking of additional containers on one another while maintaining a space for ventilation between each of the containers.

The container may be divided into a suitable number of compartments by partitioning walls which extend longitudinally and transversely in the container. The container is covered by a suitable cover or lid and, in the use of my invention, the lid is hinged so

that either end of the lid may be opened without disturbing the other. The lid is preferably formed integral with one of the partitioning walls from a single blank of corrugated paper board. The ends of the lid are bent to form surfaces which are located in an engaging relation at the ends of the container when the lid is closed and thereby provide a locking means for the lid.

In the particular form of construction shown in the drawings, the shipping container has a body portion 1 which may be subdivided into individual compartments 2 by suitable partitioning walls. A lid or cover 6 for the container may be formed by doubling a sheet to form a partitioning wall 4 of the compartments 2 and bending the thus extended ends 7 over the compartments 2.

The body 1 of the container is made from a suitably cut blank of corrugated paper or fiber board which may be scored or creased, in a manner well known in the art, and bent to extend the side and end walls at substantially right angles to the bottom 8 of the container. Thus the blank is scored, as at 9, to form the side walls 10, and at 11, to form the end walls 12. The walls 10 and 12 may be perforated by openings 14 to provide vents for the circulation of air into and through the container.

The walls 10 and 12 of the container are secured and interconnected with each other to form corners 15 of the container. Preferably, the end edges of the side walls 10, adjacent to the corners 15 are higher than the central portion so as to form with the end walls 12 when folded and connected, a raised shoulder or cleat 16 at each end of the container. The shoulder 16 provides a raised supporting surface on which additional containers may be piled so as to permit the circulation of air above the compartments 2 and between adjacent containers. The upper surfaces 21 of the shoulders 16 are formed by bending portions of the end walls 12 at right angles to the wall and parallel to the bottom along the scored line 17. The shoulders are supported at the corners 15 to prevent deformation or crushing of the container and to maintain the end and side walls in abutting relationship by reenforcing flaps 18 and 19 which are interlocked at the corners 15.

The flaps 18 extend from the ends of the side walls 10 and may be bent relative to the walls 10 along the scored lines 20. The flaps 19 are bent downwardly from the surfaces 21 along the scored line 22. The flaps 19 are substantially the same in length as the height of the end walls 12 of the container to locate the lower end of the flap 19 abutting the bottom 8 and in the corner formed along the scored line 9. In forming the corners 15 of the container, the side walls 10 are bent upwardly from the plane of the bottom 8 and the flaps 18 are brought inward. The end walls 12 are then brought against flaps 18 and the flaps 19 are folded over the flaps 18 and within the side walls 10. The flaps 18 and 19, which thus form and reinforce the corner 15, may be secured to maintain the interlocked relation of their positions by tabs 25, cut from the side walls and forced inwardly so as to engage the inner edges of the flaps 19.

The lid 6 is formed from a suitable blank of corrugated board which is scored at 33 so as to bend the blank double and forming the partitioning wall 4. The blank is slotted as at 35, and scored as at 34, by a triple crease between the wall portion 4 and lid 6 along the line of the scorings 34, two on one side, and one on the other, to form elastic hinge portions to permit opening and closing of the box and without weakening or rupture of the lid or cover during the continued use of the container. The lid and its connected wall 4 is secured relative to the side walls 10 by ears 40 cut from the wall portion of the blank which extend into slots 41 in the walls 10. The space between the doubled portions of the lid blank which forms the wall portion 4 provides a ready means of ventilation which communicates with the central portions of the container through the openings 43 formed in the wall portions 4.

The slots 41 are preferably triangular in outline, the edge portions of the slots extending upwardly in divergent lines from the base of the slot. The ears 40 pivot in and move in the slots 41. By thus permitting a slight movement of the ears relative to each other and within the triangular shaped slots 41, the strain on the ears is reduced and cushioned by the elasticity of the blank along the scoring 33 and permits lateral movement of the lid 6 to lock and unlock the container in closing.

The lids 6 are locked and secured at or along its ends in the portions of the container forming the cleats 16. The end portions of the lids 6 are scored as at 45 and the ends 46 bent upwardly and adapted to engage projecting ledges 44 of the surface 21. In closing the container, the lids 6 are moved laterally against the elastic force of the scored portion 33 and the ends 46 of the lids is located below the plane of the projecting ledges 44 and released. The resiliency of the blank along the scoring 33 tends to push the ends 46 under the ledges 44 and maintain the lids in a closed position. The lids 6 will be secured in this position by the natural flexibility of the corrugated board and the exertion of this flexing of the board, especially along and in the corners formed by the scored lines 33 and 34.

In order to open the container easily, the ledges 44 may be notched, as at 52, to allow insertion of a suitable tool or finger to engage an end 46 of the lid 6 and move the lid laterally, releasing the lid 6 from engage-

ment with the ledge 44, unlocking and opening the lid.

If desired, the container may be divided into smaller compartments by a wall 3 formed of corrugated or fiber board which extends at right angles to the wall 4. The wall 3 is secured in this position by ears 28 formed at either end of the wall, which extend through slots 29 located in the walls 12. The wall 3 may also be provided at its ends with areas of increased height to support the surfaces 21 of the cleats 16, the areas extending the width of the cleats. The wall 3 also has a notch 30 located centrally in its upper edge for positioning the partitioning walls 4 and to maintain the walls in a substantially central position in the container. The partitioning wall 3 is provided with suitably spaced openings 50 which allow movement of air through the compartments 2 and cooperate with the openings 14 in the walls of the container to cause continuous circulation of air from the outside.

I claim:

1. In a shipping box, the body of the box formed from a blank, the ends of the blank scored to form end flaps, the flaps foldable, one at right angles to the central part of the blank and the other parallel to the central part of the blank, the last named end flaps having end flap tongues, the tongues having a length substantially the same as the width of the first named end flaps, the blank having side flaps and foldable at right angles to the central part of the blank, the ends of the side flaps having side flap tongues foldable at right angles to the side flaps, the side flap tongues having a width the same as the first named end flaps and adapted to be engaged between the outer side edges of the end flap tongues and the first named end flaps, the side flaps having ears adapted to engage the inner side edges of the said end flap tongues, whereby the said last named end flaps are supported in a position parallel to the central part of the blank.

2. A container, the container having side and end walls formed integral with the bottom, the side walls having flap portions formed at each end and located within and contiguous to the end walls, the end walls having end portions bent at substantially right angles to the said end walls, the end walls having end portions bent at substantially right angles to the said end walls, the end portions having flap portions located within the side walls, tabs formed in the side walls to engage the second named flap portions, a partitioning wall extending between the side walls, the partitioning wall forming a cover for the container and means extending from the end portions and parallel to the bottom for engaging the ends of the cover to prevent its movement.

3. In a shipping container, a lid formed from a blank scored substantially midway of its length and folded upon itself and extending into the body of the container, ears extending from the blank on either side and equidistant from the scoring, slots formed in the walls of the container, the ears adapted to be located and move in the slots, the blank scored on either side of, equidistant from, and parallel to the first named scoring and bent at substantially right angles to the portions of the blank between the said scorings and substantially parallel to the bottom of the container, means located on the body of the container for engaging the edge of the lid.

4. In a shipping box, a lid formed from a blank scored and bent upon itself and extending into the body of the container, the blank scored parallel to the first named scoring and the blank bent at substantially right angles to the portions between the scorings, means located between the scorings for connecting the blank to the walls of the container, slots formed in the blank proximate to the second named scoring whereby the blank may be repeatedly bent along the line of the second named scoring.

5. In a shipping container, the body of the container formed from a blank, the ends and sides of the blank scored to form flaps, the flaps foldable at right angles to the central part of the blank, the end flaps being wider than the width of the side flaps, the end flaps being scored parallel to the first named scoring of the end flaps and foldable at right angles to the end flaps, said bent portions of the end flaps having end flap tongues, the tongues having lengths substantially the same as the major width of the side flaps, the side flaps having side flap tongues foldable at right angles to the side flaps, the side flap tongues having a width equal to the distance between the first named and second named scorings of the end flaps and adapted to be engaged between the outer side edges of the end flap tongues and the end flaps, the side flaps having tabs adapted to engage the inner side edges of the said end flap tongues, whereby the said bent portions of the end flaps are supported in a position parallel to the central part of the blank.

6. In a shipping box, the body of the box formed from a blank, the ends and the sides of the blank scored to form end flaps and side flaps, the end flaps foldable one at right angles to the central part of the blank and the other parallel to the central part of the blank, the side flaps foldable at right angles to the central part of the blank, the end flaps foldable to parallel relation to the central part of the blank having end flap tongues foldable at right angles to the said end flaps, the tongues having a length substantially the same as the width of the first named end flaps and the major width of the side flaps and adapted to engage the central part of the

blank for supporting the outer of the said end flaps, the side flaps having end portions foldable at right angles thereto and adapted to be located intermediate the said flap tongues and the first named end flaps, and means for securing the side flaps in position with reference to the end flaps and the central part of the blank.

7. In a shipping box, the body of the box formed from a blank, the ends of the blank scored to form end flaps, the inner of the end flaps foldable at right angles to the central part of the blank, and the outer of the end flaps foldable at right angles to the inner of the end flaps and parallel to the central part of the blank, the outer of the end flaps having end flap tongues, the blank scored to form the side flaps, the side flaps having end portions wider than the central portions, the wider portions of the side flaps having a length substantially the same as the width of the inner end flaps, the end flap tongues having a length substantially the width of the end portions of the side flaps and foldable within the side flaps to engage the central part of the blank, the side flaps having end portions foldable at right angles thereto and adapted to be located between the said tongues and the inner surfaces of the inner end portions, and means for securing the side flaps and the tongues in position.

8. In a shipping container, a cover and a partition formed from a blank scored substantially midway its ends, the blank folded along the line of the scoring, the blank scored on either side equidistant from the first named scoring and bent at substantially right angles to portions of the blank between the first and second named scorings, the portions of the blank between the second named scorings and the end edges of the blank forming lids for the container, the container having means extending parallel to the plane of the lids when closed for engaging the ends of the lids, the portions of the blank between the first and second named scorings forming a substantially vertical double partition and movable in relative angular obliquity to each other about the first named scoring, affording means yieldably resistant to movement of the ends of the lids from engagement with the container.

9. In a container, a cover for the container formed from a blank, the blank scored midway of its ends, the blank folded along the scored line and upon itself, the blank scored on either side parallel to the first named scoring, the portions of the blank between the first and second named scorings having a width substantially equal to the depth of the container and forming a partition therein, ears formed on the said portions proximate to the first named scoring, slots located in the walls of the container for receiving the ears to movably secure the said portions in an oblique angular relation, the blank bent along the second named scoring at substantially right angles to the said portions, compensating slots located in the lines of the second named scorings to relieve the surface tension of the blank as the blank is bent, means located in the body of the container at right angles to the said portions of the blank for engaging the end edges of the blank, the said portions tending to move angularly about the first named scoring in a direction away from each other and yieldingly resistant to movement of the said end edges of the blank from engagement with the container.

In witness whereof I have hereunto signed my name to this specification.

LOUIS A. SHOEMAKER.