Nov. 29, 1938. J. Z. MEANS ET AL 2,138,112

CHICK BOX

Filed Jan. 2, 1937 2 Sheets-Sheet 1

Fig. 1

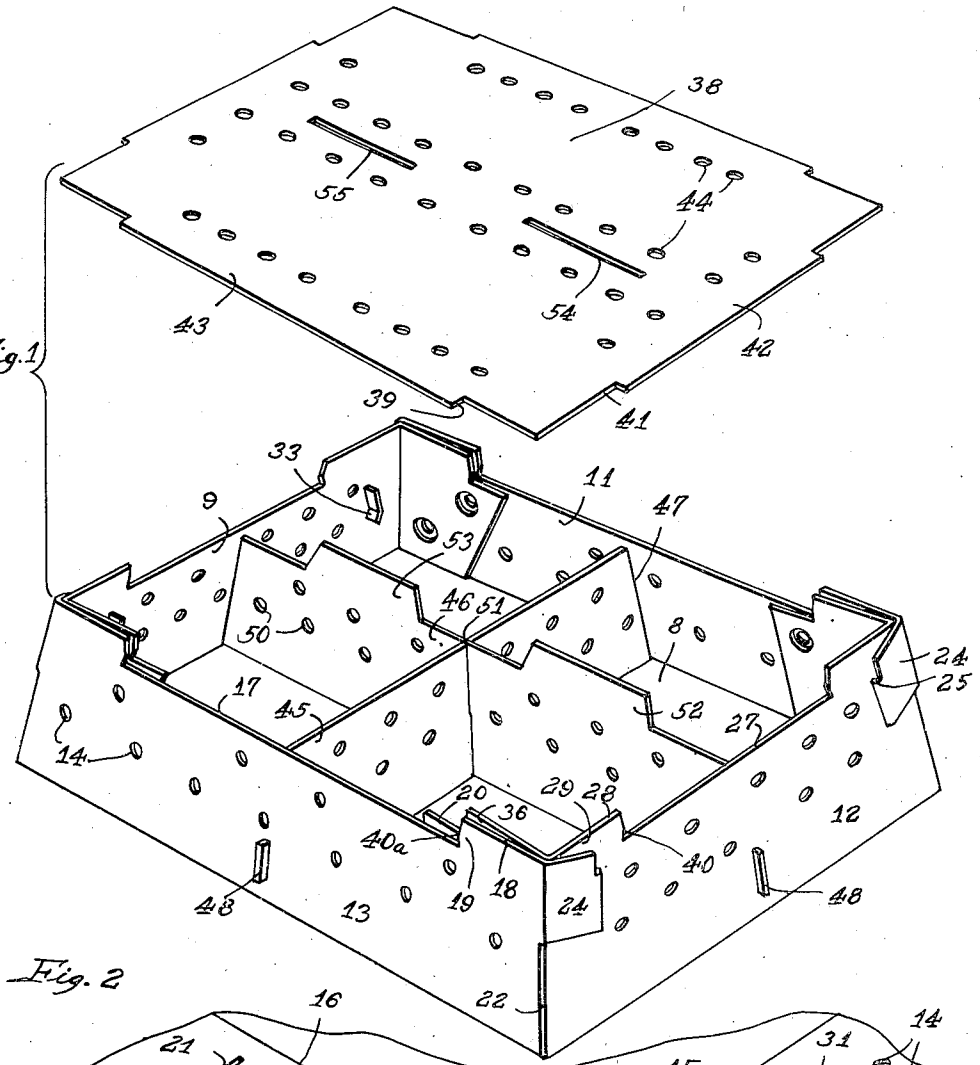
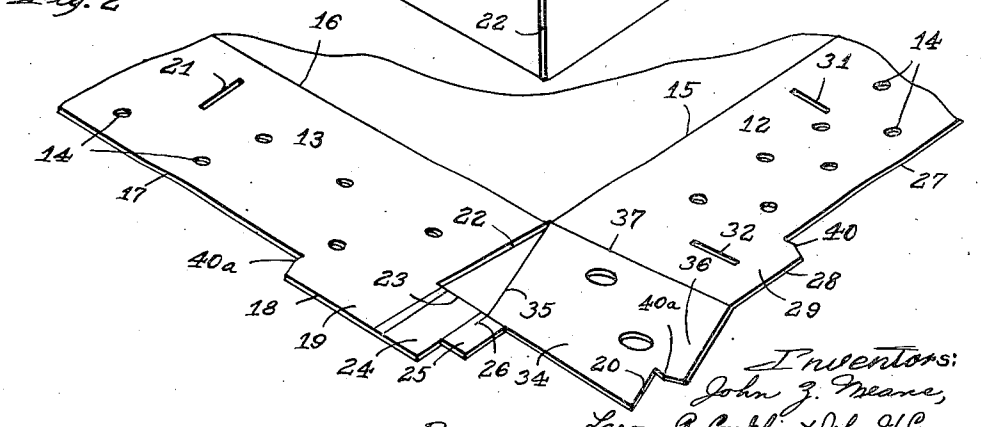


Fig. 2



Inventors:
John Z. Means,
Laron R. Conklin & John H. Conway

By
Wilson, Dowell, McCanna & Hintercorn
Attys.

Nov. 29, 1938. J. Z. MEANS ET AL 2,138,112

CHICK BOX

Filed Jan. 2, 1937 2 Sheets-Sheet 2

Fig. 3

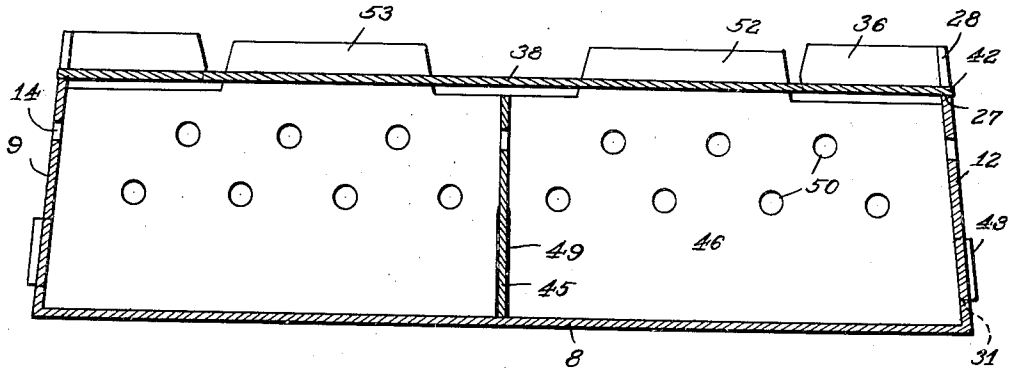


Fig. 4

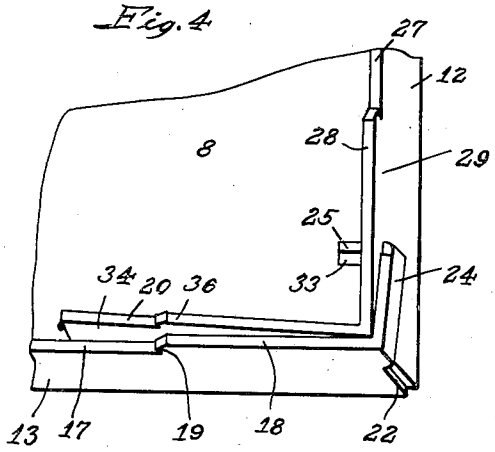


Fig. 5

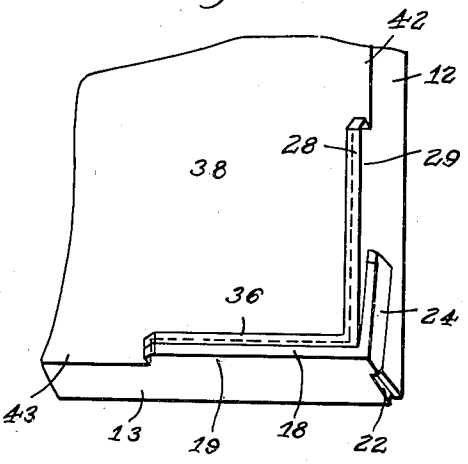


Fig. 6

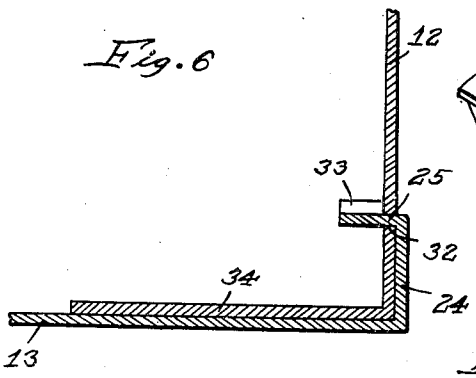
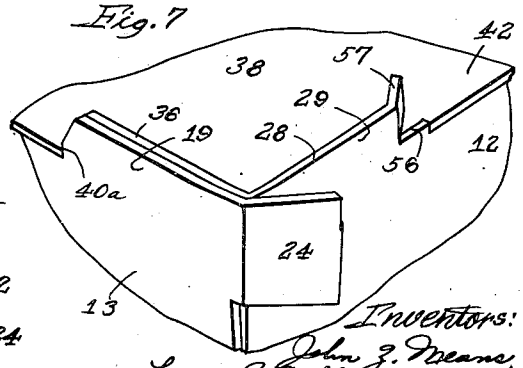


Fig. 7



Inventors:
John Z. Means,
Laron R. Conklin &
John H. Conway

By
Wilson, Dowell, McCanna & Hintercorn
Attys.

Patented Nov. 29, 1938

2,138,112

UNITED STATES PATENT OFFICE

2,138,112

CHICK BOX

John Z. Means, Laron R. Conklin, and John H. Conway, Rockford, Ill., assignors to The Eddy Paper Corporation, Chicago, Ill., a corporation of Illinois

Application January 2, 1937, Serial No. 118,868

16 Claims. (Cl. 229—6)

This invention relates to boxes of the type known as chick boxes and intended primarily for the transportation of live chicks.

An object of the invention is the provision of a chick box of generally improved structure insuring ventilation between the boxes when stacked, greater rigidity and strength in the box and greater convenience in use.

Another object of the invention is the provision of a chick box having an improved corner construction.

A further object of the invention is the provision of a chick box having improved means for retaining the partitions in position within the box.

Another object of the invention is the provision of a box which may be assembled without the use of staples or other foreign fastening means, and which may be easily and rapidly assembled into its box structure and disassembled when necessary.

A further object of the invention is the provision of a fiber board chick box wherein the box structure is formed by interlocking portions at the corners of the box.

A further object of the invention is the provision of a chick box wherein the corners and the cover of the box cooperate in providing rigidity therefor and in retaining the portions of the box in their required location.

We have also aimed to provide a chick box having improved means for retaining the cover in place.

Other objects and advantages will become apparent from the following description and the accompanying drawings, in which—

Figure 1 is a perspective view of a chick box embodying our invention showing the cover at an elevated point;

Fig. 2 is a fragmentary view of a corner of the box prior to its being folded and interlocked;

Fig. 3 is a vertical section through the box embodying the invention;

Fig. 4 is a top view of one corner of the box with the cover removed;

Fig. 5 is a view similar to Fig. 4 with the cover in position;

Fig. 6 is a section through a corner of the box parallel to the bottom thereof showing the manner in which the corner is folded and locked, and

Fig. 7 is a view similar to Fig. 5 showing a modified or optional form.

The invention contemplates a chick box which includes a body formed from a single piece of box board, preferably of the corrugated board variety, cut and scored in such manner that it may be assembled without the use of foreign fastening devices simply by suitably folding and bending the parts of the board. The invention further contemplates the production in this manner of a chick box having improved shape characteristics wherein the various essential elements of the box so interfit and cooperate as to materially increase the strength, rigidity, and usefulness of the box. To this end we employ a box having a bottom 8 and side walls 9, 11, 12 and 13 preferably forming a box of rectangular cross-section, the walls sloping inwardly from bottom to top and having a plurality of ventilation openings 14. It will be seen that because of the slope on the side walls of the box it is impossible to stack the boxes in such manner as to cut off the passage of air through the ventilation openings 14, and this is an important function of the sloping side wall as described in U. S. Patent No. 2,026,417, over which the present invention may be said to be an improvement. In the present construction, however, the sloping side walls serve additional functions, as will presently appear.

Referring to Fig. 2, we have shown the manner in whih a sheet of box board is cut and scored for the purpose of forming the box body, this view showing one corner of the blank which is identical with the other corners thereof. The sheet of box board is scored rectangularly as shown at 15 and 16, which scores define the extremities of the bottom of the folded box. Beyond the score 16 the board is cut so as to provide an edge 17 in one plane and an edge 18 in a plane more remote, which edge 18 forms the upper edge of a corner projection 19, the purpose of which will presently appear. The portion between the score 16 and the edge 17 constitutes in this instance the side wall 13 and is provided with the openings 14 and with a slot 21 extending at right-angles to the score 16 and of such width as to snugly receive a thickness of box board for a purpose which will presently appear. A triangular notch is cut in the board, to provide an end portion 22 for the side wall 13, which end portion is inclined at an angle with respect to the vertical plane of the score 15, the amount of this angularity depending upon the slope of the side walls. The base 23 of this triangular notch forms a flap 24 adapted in the folded box to overlie the side wall 12, as shown in Figure 1. The end of the flap 24 has a projection 25 cut along a line 26 arranged to function in locking the corner in position, as will presently appear. Spaced from the scoring 15 are spaced edges 27 and 28 in different planes defining the

side wall 12 and a corner projection 29. The sidewall is provided with the ventilation openings 14 and with a vertically disposed slot 31 similar to the slot 21 in the side wall 13. The side wall 12 is also provided with a slot 32 positioned to receive the projection 25 when the box is folded, the projection 25 passing through the slot 32 and the portion thereof defined by the cut 26 being sheared laterally out of the plane of the remainder of the projection, as shown at 33 (Figure 1) so as to abut against the inner surface of the wall 12 and retain the side walls 12 and 13 in position. The end of the side wall 12 has an overlapping flap 34, one edge 35 thereof being defined by the triangle cut-out bounded by the edges 22 and 23, this edge also lying at an angle with respect to the score 15 so that the flap 34 may lie along the inner surface of the wall 13 with the edge 35 resting against the bottom of the box. It will be seen that the angularity of this edge is necessitated by the slope of the side wall 12. The edge of the flap opposite the edge 35 is provided with a projection 36 arranged to coincide with the projection 19 when the box is folded so that at each corner one side wall will have a double layer of projections corresponding to the projections 19 and 36. It will be seen that the projections 19, 29 and 36 form upstanding legs at the corners of the box body for the purpose of supporting a superimposed box in spaced relation to the top of the lower box to provide ventilation therebetween. The flap 34 extends beyond the projection 36 as shown at 20, the upper edge of this portion lying in substantially the same horizontal plane as the edge 17 for contact with the lower surface of the cover, as will presently appear. Because of the manner in which the wall 13 overlaps the wall 12, the overlapping portion 34 will tend to spring away from the inner surface of the wall 13, as shown in Figure 1, the amount of this spring being limited, however, by contact of the bottom edge 35 with the bottom of the body resulting from the fact that the corners of the box slope inwardly and the bottom of the folded box therefore lies in the plane of movement of the flap 34 in any rotation about the corner defined by the cut 22 and a score 37 defining the junction between the side wall 12 and the overlapping portion 34.

A cover, designated generally by the numeral 38, is of slightly greater dimensions than the top of the box body defined by the edges 17 and 27, and has notches such as shown at 39 and 41 at each corner complemental to the upstanding legs, so that when inserted between the projections at the top of the box, the projection 29 will seat within the notch 41 and the projections 19 and 36 will seat within the notch 39. The notch 39 is of such width that insertion of the cover forces the projection 36 outward into firm surface contact with the projection 19, whereby the projection 36 exerts a confining pressure against the edge of the top. The outer edges 42 and 43 of the cover overlap the edges 27 and 17 of the body member in the manner best shown in Fig. 3, and are of such length as to abut tightly against the legs or projections 19, 29 and 36, these projections being sloped outwardly and then inwardly from top to bottom to provide overhanging portions as shown at 40 and 40—*a* to confine the cover. It will thus be seen that at each corner the overlapping portions 34 exert a tension against the raw cut edge of the cover 38 so as to frictionally hold the cover in position. In addition to these forces acting to hold the cover, it will be observed that the upper edges of the projections 28 and 36 overhang the cover because of the sloping side wall, in the manner shown in Fig. 5, so as to further confine and retain the cover in position. This action results from the fact that the cover is made from a single sheet of unscored box board so as to be semi-rigid in character. Because of the limited amount of flexibility in the sheet cover, the cover may be slightly flexed for insertion between the upstanding corner projections and beneath the overhanging edges 40 and 40—*a*, and is forced into position against the tension of the overlapping portions 34, as a result of which it is firmly held in position against any forces which may act thereon during the normal usage of the box. Attention is also directed to the fact that because of the semi-rigid nature of the cover it acts to rigidify the upper portion of the box, preventing distortion of the box by twisting or inward flexing of the side walls occasioned by their semi-flexible nature. As previously pointed out, the upper edge of the flap portion 20 abuts against the bottom of the cover, and this is effective to prevent outward movement of the side walls 9 and 12, or in other words, rotation about the scores 15. This acts to hold the corner rigid and obstruct the side walls 9 and 12 from dropping down should the locking projection 25 give way. The top is likewise provided with a plurality of ventilation openings 44 customary in such boxes.

While the chick box will frequently be used in the form heretofore described, as for example, in small sizes, in the great majority of the cases it will be necessary to partition the box into a number of separate sections. For this purpose we provide partitions 45 and 46, the widths of which are slightly less than the vertical distance between the bottom and the edges 17 and 27, whereby to provide a small space between the cover and the upper edges of the partitions for the passage of air between the compartments. The partitions are also provided with conventional ventilation holes 50. The ends of each of the partitions are sloped inwardly from bottom to top as shown at 47, the slope being complemental to the slope of the side walls so that the ends of the partitions abut against the side walls throughout their width. The ends of the partitions are also provided with projections or tabs as shown at 48 positioned to be snugly received in the openings 21 and 31 of the side walls, which tabs prevent lateral displacement of the partitions. It will be observed that the sloping ends of the partitions are wedged in by the sloping side walls and thus held down against the bottom of the body, which action is assisted by the tabs 48. In order to further retain the partitions against lateral movement at their center, the partition 46 is provided with a slot 49 through which the partition 45 passes and the partition 45 is provided with a slot at 51 for the passage of the partition 46. In order to further rigidify the structure, the partition 46 is provided with upstanding projections 52 and 53 arranged to be snugly received in slots 54 and 55 of the cover 38, and project thereabove. These projections extend to a plane slightly below the upper plane of the corner projections of the box body, in which position they act to prevent undue sagging of the bottom of a box which may be stacked thereon, and at the same time do not interfere with the stacking of the boxes, the support of a superimposed box at the corners nor with the cross-ventilation between the boxes. It will be

seen that the projections 52 and 53 passing through and snugly received in the slots of the top serve to further rigidify the entire structure, the top serving to prevent lateral displacement of the partition 46, and the projections serving with the corner legs to prevent edgewise displacement of the top.

Referring to Fig. 7, we have shown further means for securing the top in place which may be used in addition to the structure heretofore disclosed. In this form a knife cut 56 is made in the projection 29, and if desired, also in the projections 19 and 36, the cut being made on a level with the upper surface of the top. This provides a finger or fingers 57 which are then sheared laterally out of the plane of the projection so as to extend over the top as shown, whereby to additionally obstruct movement of the top out of its seat.

It will thus be seen that we have provided a chick box adapted to be assembled and held together merely by an interfolding of the parts of the box, wherein the construction is simple to assemble and cheap to manufacture, wherein the sloping side walls and the upstanding projections at the corners serve to prevent adjacent boxes from being stacked in such manner as to shut off the ventilation, wherein the sloping side walls and the folding features of the box function with the top to rigidify the structure, wherein improved means are provided for holding the top in position, and wherein the top, the partitions, the sloping side walls, and the folding structure of the box cooperate to provide a highly rigid, simple, convenient and efficient chick box which may be used either with or without tying.

While we have thus described and illustrated a specific embodiment of the invention, we are aware that numerous alterations and changes may be made therein within the spirit of the invention, and we do not wish to be limited except as required by the prior art and the scope of the appended claims, in which—

We claim:

1. A chick box comprising a one-piece box board folded to form a body of approximate rectangular shape including a bottom and side walls sloping inwardly from bottom to top, said walls having overlapping ends and upstanding projections forming legs extending around each corner and sloping inwardly, one overlapping end portion at each corner being attached to the outer surface of the adjacent wall, and the other overlapping end extending along the inner surface of the adjacent side wall, a stiff cover of box board shaped to seat across the upper edges of the side walls between said legs and be frictionally retained by the overhanging upper ends of said legs.

2. The combination in a chick box of a rectangular body of box board having side walls sloping inwardly from bottom to top overlapping at the corners, the corner portions thereof projecting above the top surface of the remainder of the body to form legs and overlying the box in converging relation, said body having the end portion of one side wall lying free along the inner side of the adjacent wall near the corner, and a semi-rigid sheet of box board forming a cover and shaped for insertion between said legs, the overlapping end portion and overlying legs acting to retain the cover in position and the cover acting to retain said end portions against the adjacent side wall to provide a rigid box.

3. The combination in a chick box of a rectangular body of box board having side walls sloping inwardly from bottom to top and overlapping at the corners, the corner portions thereof projecting above the top surface of the remainder of the box to form legs in part overlying the box, said body having the end portion of one side wall lying free along the inner side of the adjacent wall near the corner, and a semi-rigid rectangular sheet of box board forming a cover and having notches at its corners for reception of the upwardly projecting legs of said box whereby the cover seats upon the top surface of the body, the overlapping end portion and overlying legs acting to retain the cover in position and the cover acting to retain said end portions against the adjacent side wall.

4. The combination in a chick box of a one-piece body of box board cut and scored to provide a bottom, upstanding side walls, and interlocking corners, each of said corners comprising a flap on the end of one of said side walls arranged to lie along the inner side of the adjacent side wall when folded, and a flap on the end of the adjacent side wall arranged to be folded around the corner of the wall, pass through a slot in the first-mentioned wall and be displaced sidewise at its end to lock the sides together and form the corner.

5. The combination in a chick box of a one-piece body of box board cut and scored to provide a bottom, side walls having upstanding projections at the corners forming legs, and interlocking corners, each of said corners having a flap on the end of one of said side walls arranged to lie unsecured along the inner side of the adjacent side wall when folded, and a flap on the end of the adjacent side wall arranged to be folded around the corner of the wall, pass through a slot in the first-mentioned wall and be displaced sidewise at its end to lock the sides together and form the corner, and a semi-rigid cover shaped to frictionally fit between said upstanding legs for holding said first-mentioned flap against the adjacent side wall.

6. The combination in a chick box of a one-piece body of box board cut and scored to provide a bottom, upstanding side walls sloping inwardly from bottom to top and interlocking corners, each of said corners comprising an angularly disposed flap on the end of one of said sides arranged to lie along the inner side of the adjacent side wall when folded, and a flap on the adjacent side wall arranged to be folded around the corner at the top of the wall, pass through a slot in the first-mentioned wall and be displaced sidewise near its end to lock the sides together to form the corner.

7. The combination in a chick box of a one-piece body of box board cut and scored to provide a bottom, upstanding side walls sloping inwardly from bottom to top and interlocking corners, each of said corners comprising an angularly disposed flap on the end of one side wall formed by an angularly disposed score in the side wall, and an angularly disposed cut forming the lower edge of the flap whereby when folded the bottom of the box intersects the plane of rotation of said edge, and a flap on the end of the adjacent side wall arranged to be folded around the corner at the top of the wall, pass through a slot in the first-mentioned wall and be displaced sidewise near its end to lock the sides together and form the corner.

8. The combination in a chick box of a body comprising side walls having upstanding projec-

tions integral with the walls at each corner forming legs, a semi-rigid cover arranged to seat across said body and between said legs, said legs having edge portions in the plane of the side walls overhanging said cover for retaining the same against the top of said body.

9. The combination in a chick box of a box board body comprising side walls having upstanding projections at each corner forming legs, a semi-rigid cover arranged to seat across said body and between said legs, and a finger on said projections shaped to be displaced out of the plane of said projections to overlie the cover and thereby retain the cover against the top of the body.

10. The combination in a chick box of a body comprising inwardly sloping side walls from bottom to top, having upstanding corner legs and flaps on the inner side of said legs normally urged inward, a semi-rigid cover arranged to seat across said body and between said legs against the tension of said flaps, said legs having overhanging edge portions for retaining said cover against the top of said body.

11. The combination in a chick box of a one-piece rectangular box board cut, scored and folded to provide a body of approximate rectangular shape having a bottom, side walls having upstanding projections at the corners to form legs, and interlocking corners, each of said corners comprising an angularly disposed flap on the end of one side wall arranged to lie along the inner side of the adjacent side wall when folded and having an upper edge coplanar with the top of said body, and a flap on the end of the adjacent side wall arranged to be folded around the corner of the body, pass through a slot in the first-mentioned side wall and be displaced sidewise at its end to lock the sides together and form the corner, and a cover shaped to seat against the upper edges of the side walls below said upstanding projections, said cover abutting the upper edges of said first-mentioned flaps to prevent outward movement of said first-mentioned side wall.

12. The combination in a chick box of a one-piece rectangular body of box board cut and scored to provide a bottom, side walls sloping inwardly from bottom to top and having upstanding projections at the corners to form legs, and interlocking corners, each of said corners comprising an angularly disposed flap on the end of one side wall arranged to lie along the inner side of the adjacent side wall when folded, said flap being formed by an angularly disposed score in the side wall and an angularly disposed cut forming the lower edge of the flap whereby when folded the bottom of the box intersects the plane of rotation of said edge, said flap having an upper edge coplanar with the top of said body, and a flap on the end of the adjacent side wall arranged to be folded around the corner of the body, pass through a slot in the first-mentioned side wall, and be displaced sidewise at its end to lock the sides together and form the corner, and a cover shaped to seat over the top of the body, said cover abutting the upper edges of said first-mentioned flaps, whereby said flaps are retained at their upper and lower edges by abutting contact with the cover and the bottom to prevent tilting movement of the side walls on accidental release of the corner lock.

13. The combination recited in claim 12, wherein a portion of the side walls projecting above said cover is displaced laterally out of the plane of said projection to a point over said cover to hold the cover against the top of said box body.

14. The combination in a chick box of a box board body having a bottom and upstanding side walls provided with a centrally disposed slot and a plurality of ventilation openings, said side walls sloping inwardly from bottom to top to prevent said openings from being covered by adjacent boxes, and at least one partition extending between opposed side walls, the ends of said partition having tabs received in said slots and being sloped complementally to said walls whereby the walls act to hold the partition against the bottom and the partition acts to support the side walls against distortion.

15. A chick box comprising a one-piece box body of box board folded to form a bottom and side walls sloping inwardly from bottom to top, said walls having upstanding projections at each corner forming legs, a slot intermediate the ends thereof and ventilation openings, cross-partitions extending between opposed sides of said box having tabs at their ends for reception in said slots to secure the partitions against lateral and edgewise movement, and sloping ends complemental to the slope of said walls to prevent movement of the partitions away from the bottom, at least one of said partitions having an upstanding projection, and a cover seated over the top of said box, the cover having a slot for the reception of the projection on said partition to retain the partition against lateral movement.

16. The combination recited in claim 15, wherein said one of said partitions has a transverse slot for the reception of the other partition to retain the latter against sidewise displacement at its center.

JOHN Z. MEANS.
LARON R. CONKLIN.
JOHN H. CONWAY.