

Oct. 25, 1938.

J. S. KIRBY

2,134,051

CHICK BOX

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2 Sheets-Sheet 1

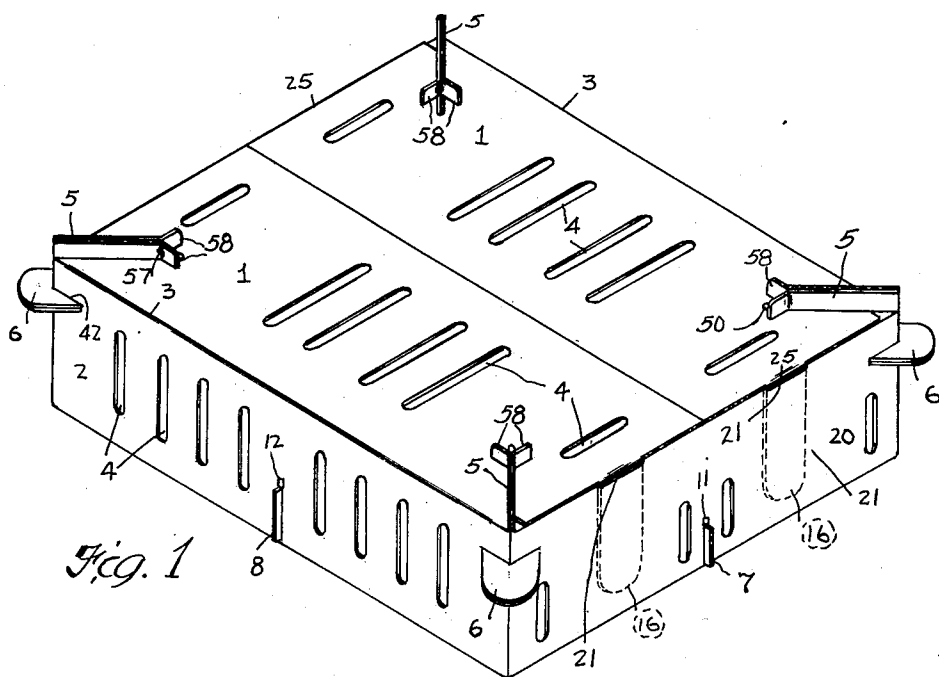


Fig. 1

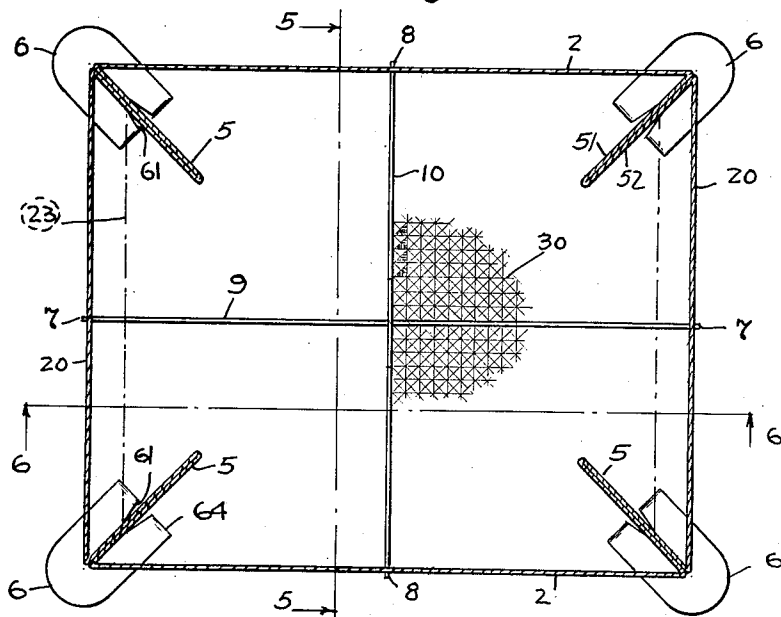


Fig. 2

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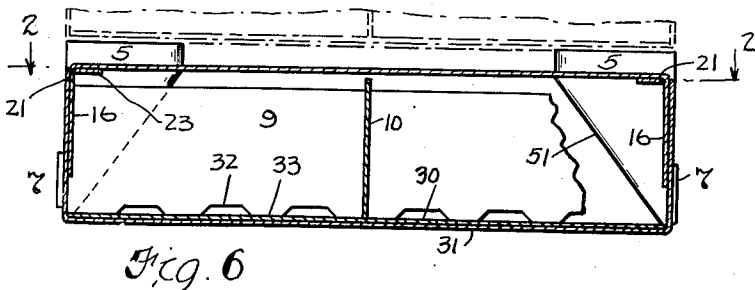
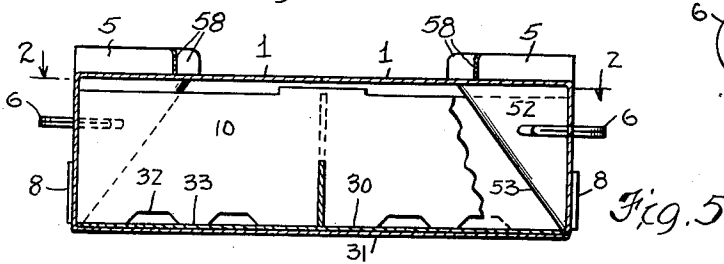
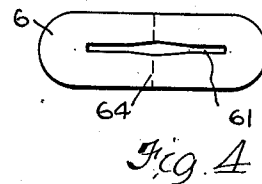
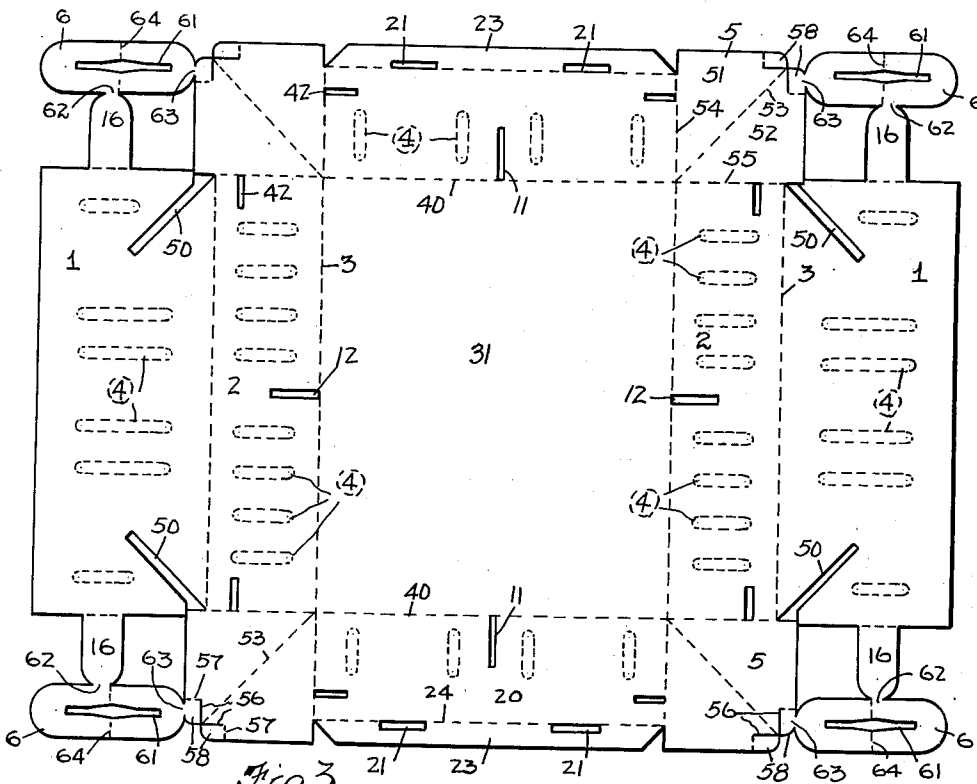
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2 Sheets-Sheet 2



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2,134,051

CHICK BOX

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Ohio, a corporation of Ohio

Application December 10, 1936, Serial No. 115,173

7 Claims. (Cl. 229—31)

The subject matter of this invention is a single-piece carton of the general type known in the industry as a folder or wrapper, which signifies that a single blank constitutes both body and lid, such carton preferably to be made out of corrugated board and particularly intended for the shipping of live chicks. Among the particular aims of this invention are the construction of such a carton with all parts in a single blank, including the top, the fastening means, and the external vertical spacing means, the construction being such that the blank can be assembled into a finished box without the use of any extraneous fastening means such as staples, adhesive, and the like. The purposes of this invention further include arrangements whereby the interior elements in the box can be inserted after the box is assembled; means whereby the chicks in the box will be protected from being caught in any of the box elements; means improving the interior ventilation of the box; means for giving the chicks a better foot-hold in the box and for absorbing moisture, droppings, and so on, thereby eliminating the need of straw, wood wool or the like for this purpose; the provision of integral construction elements which not only interlock the box elements, but also space successive piled boxes and transmit weight down a column of stacked boxes without additional or separate strengthening means and without encroaching upon the interior floor space of the box; the provision of locking means which also furnish side spacing; the arrangement of top and ends to permit fastening either with or without a strip of adhesive.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain structure embodying the invention, such disclosed means constituting, however, but one of various structural forms in which the principle of the invention may be used.

In the accompanying drawings:

Fig. 1 is a perspective showing the box completed and closed;

Fig. 2 is a plan view taken slightly below the top, namely on the plane 2—2 of Fig. 6;

Fig. 3 is a plan view of the developed blank;

Fig. 4 is a detail of a corner key piece before folding;

Fig. 5 is a transverse vertical section on the

plane 5—5 of Fig. 2, with part of the interior partition broken away; and

Fig. 6 is a longitudinal vertical section on the plane 6—6 of Fig. 2, but modified by omission of key pieces and fastening tabs. This figure also shows the spacing of successive boxes in stacks.

In chick boxes of hitherto known construction it has been customary for the top and the body of the box to be separate pieces; for the bodies and lids to be assembled by stapling and for the internal partitions also to be stapled or otherwise rigidly secured in place; for the vertical spacers to take up some of the interior floor space of the box; and for interior padding, if any, to be of loose material such as excelsior, wood wool, hay or the like, separate in each of the interior cells.

The practice of having the bodies and lids separate has given rise to difficulties in shipping the blanks due to the fact that the two sorts of blanks, being of different sizes, were most economically handled in separate bundles and it could easily happen by mistake that the number of tops and number of bottoms included was not the same, or that a bundle of one or the other might get lost from a large order. Similarly, using staples in the assembly of the boxes or for securing the interior partitions has slowed down the assembly process and made it more difficult and expensive. Also it has been customary for the bottom of the box to be simply one face of the construction material, and since the construction material is usually double face corrugated board, this has meant either that the bottom surface, which constituted the flooring on which the chicks stood, was smooth and slick, thus making it impossible for the chicks to hold on when the box was moved rapidly and causing them to be thrown around and at times injured, or else that straw, excelsior or something of the sort had to be used, requiring one more preparatory step, and giving a filling likely to bunch up.

Another trouble frequently encountered in chick boxes has been due to the fact that the partitions normally bear down firmly upon the box floor, and when the bottom of the box, in handling, would spring away from its flat shape and then spring back into place, the toes of chicks would be caught between the bottom edges of the partitions and the box floor causing severe injury or preventing the chick from moving and frequently resulting in death. Also, ventilation between the internal compartments of the boxes has usually either not been provided for at all or else has been attained by punching holes through the partition. In the present form of partition the

partition itself is made of such shape and relative dimensions as to allow air circulation above and below but at the same time not leaving any openings such as to catch the head of a chick or otherwise cause danger.

The foregoing and various other difficulties are avoided by my improved construction.

Referring now to the figures of the drawings, the box when closed constitutes a ventilated carton, one-piece except for the partitions and except for optional corner fasteners. The top is of two flaps 1, 1, each bendable with relation to its respective side 2 along the line 3. External vertical braces 5, each formed of the box material and directed inwardly on diagonal lines when seen in plan view, occur at the four corners. Key pieces 6 which also act as horizontal spacing members are preferably used to aid in holding the sides together although not essential to all phases of the invention. Short end tongues 7, 8, on the interior partitions 9, 10, respectively, extend into vertical slots 11 and 12 in the box sides, these slots being slightly higher than the height of the respective tongues for a purpose to be later described. Appropriate ventilating slots 4 are formed in the sides and top. These slots are long and narrow instead of having the usual round holes. Consequently a smaller number of openings provides adequate ventilation, and in warm weather, when much ventilation is necessary, sufficient opening is made by removing the knockouts from comparatively few slots instead of from a large number of small holes. The slots are too narrow for chicks to put their heads through. In accordance with the usual practice in box making, the material of these vents is ordinarily not completely severed, so that a greater or less number can be knocked out to provide the degree of ventilation appropriate to the season of the year.

Each of the top flaps 1, 1 is finished with end tongues 16, 16, bendable at the base, each passing down through a slot 21 in the end wall 20 of the box. A pad 30 on the floor 31 of the box, preferably fastened thereto as by adhesive, has a roughened surface as indicated diagrammatically in Fig. 2. This pad, besides being roughened to give a foothold for the chicks, is best made of soft stock which enhances the foothold properties and also absorbs moisture.

The method of assembling the box will be apparent by a comparison of Fig. 3 with the other figures. The blank, as shown, is of rectangular outline, comprising the bottom area 31 which is separated by fold lines 3, 3 and 40, 40 from the sides 2 and ends 20 respectively. Slots 11 and 12 through the ends 20 and sides 2, respectively, and transversely directed, are to take the end tongues 7 and 8 of the interior partitions 9 and 10. Slots 42 at each end of the panels 2 and 20, parallel to and spaced from the bottom fold lines 3 and 40, receive the folded key pieces 6 in the completed box, as will be understood by reference to the other figures. The top flaps 1 are bounded along their inner edges by the folding lines 3, and are diagonally slotted as at 50 for passage of the corner braces 5.

The corner braces 5 comprise in detail two triangular panels 51 and 52, joined by the fold line 53, and joined to the sides 2 and ends 20 by fold lines 55 and 54. Slits 56 and bend lines 57 set off locking tabs 58 which swing out from the upper part of the corner braces 5, as shown in Fig. 1, to keep the lid down, this feature being similar to Patent No. 1,994,318. In addition

there is a finishing flange 23 foldable along the line 24 along the ultimate upper edge of each of the ends 20; the slots 21 are cut therein. At each of the four extreme corners of the blank a key piece 6, opened out, and perforated medially lengthwise by a slot 61, is severably attached to the tongue 16 and panel 52 as at 62 and 63. These key pieces 6 are transversely scored as at 64 for folding into the final shape which is best seen in Fig. 2.

To assemble the box the sides and ends are raised into a vertical position and the corner braces 5 are folded inward, bending along the lines 53, 54 and 55, to make, in effect, a brace of double thickness. Such folding obviously brings the slots 11 and 12 into vertical position and brings each pair of slots 42 into mutual horizontal alignment on opposite sides of 5. If corner fasteners are to be used, the blanks 6 are detached, folded upon themselves on the line 64, thus forming them into open-ended U-shaped key pieces as best shown in Fig. 2. The prongs of these key pieces are slipped through the slots 42, straddling the corner brace 5 thereby keeping it from spreading and keeping the ends 20 and sides 2 together at their junction lines. It will be apparent that glue, sodium silicate, or other adhesive may be used on the pieces 6 to augment the holding by friction. Also obviously the key pieces may be of other material, such as metal.

The upper portions of the corner braces 5 stand above the level of the lid when closed, and are embraced within the slots 50. The slots 50 can thus either provide the entire fastening against the spreading of the vertical walls of the container, although preferably they will be reinforced by the key pieces 6. When the key pieces 6 are used their outward projections serve the additional useful purpose of spacing adjacent boxes sidewise for air circulation.

It will be observed, particularly from Figs. 5 and 6, that the corner braces 5 constitute brackets which carry the load downward to the lower apex of each box corner without encroaching upon the floor space or forming a hazard for chicks, and the extension of these braces above the lid furnishes the necessary vertical spacing for ventilation.

Above the pad 30 the interior partitions 9 and 10 rest, positioned by their end lugs 7, 7 and 8, 8 which project out a short distance through slots 11, 11 and 12, 12 of the ends and sides of the box respectively, but these lugs, as shown in Figs. 5 and 6, do not extend for full partition height, and as shown in Fig. 1, are not as high as the slots. Furthermore the partition tops are well below contact with the inside of the lid. Thus the partitions may be styled "floating", because some vertical movement is allowed, with the result that if a chick gets its toes caught under a partition, it can pull them out without injury. For the further prevention of toe catching, the partitions are notched along their bottom as at 32, leaving only intermediate bearing points 33. The notches 32 and the stopping of the partitions below full height allow adequate cross ventilation without other interior openings. In accordance with the usual practice the partitions are interengaged at the middle by the ordinary type of upward and downward slots. It is possible, by slightly flexing the partitions 9 and 10 short of the cracking point, to insert the lugs in the slots of the assembled box (the lid of course being open) and allow the partitions to spring out to their full

length, whereupon they will remain fastened in place, but with some freedom of movement.

To close the box for shipping, the top flaps 1 are turned down along the lines 3, 3 with the slots 50 embracing the upper projections of the corner braces 5, the locking tabs 58 are swung out over the lid, the end tongues 16 are tucked down through the slots 21. Further fastening means, such as tape, string, or the like, may also be employed.

It is obvious that the principles of this invention may be employed for boxes other than those used for shipping chicks, and that the interior arrangements, such as pad and partitions, may be varied or omitted according to the character of the merchandise to be contained.

It will be seen that I have invented a carton to be formed from a one-piece blank, self-locking, and having novel bracing and spacing arrangements as well as having improvements in the interior when the purpose to which the carton is put makes the use of such improvements appropriate. Thus when used as a chick box it requires no padding other than that included in the manufacture of the box, and does not require spacing sticks.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a chick box comprising mutually hinged bottom, sides and lid, a corner comprising adjacent panels folded to contiguous ends of box sides and to each other, said panels each being of triangular outline with apex adjacent the box bottom and edges projecting through the closed lid.

2. A chick box corner comprising adjacent panels folded to contiguous ends of box sides and to each other, said panels each being of triangular outline with apex adjacent the box bottom and edges projecting through the closed lid, and a key piece engaging both of said panels when said panels are folded face-to-face.

3. A chick box corner comprising adjacent panels folded to contiguous ends of box sides and to each other, said panels each being of triangular outline with apex adjacent the box bottom and edges projecting through the closed lid, and a key piece engaging both of said panels when

said panels are folded face-to-face, said key piece being of U-shape and disposed horizontally in the completed box with the arms of the U projecting inside the box and embracing the face-to-face panels between them, and the head of the U projecting outside.

4. A chick box corner comprising adjacent panels folded to contiguous ends of box sides and to each other, said panels being diagonally disposed back-to-back vertically within the assembled box, edges of said panels projecting upward through a slot in the closed lid, and tabs on said projecting edges hinged for selective positioning in the plane of said panels to pass the lid slot, or out of said plane above the closed lid.

5. A chick box comprising in combination corner braces extending through the lid and downwardly into the box beneath the lid, said braces tending diagonally outwardly from top to bottom and merging into the side wall substantially at the floor level, the top edges of said braces standing above the tops of the box sides, and lid elements hinged to the box sides and slotted to pass down over and embrace the upper parts of said braces.

6. A chick box comprising in combination corner braces extending through the lid and downwardly into the box beneath the lid, said braces tending diagonally outwardly from top to bottom and substantially merging into the side wall at the floor level, said braces including flat tops above the tops of the box sides, lid elements hinged to the box sides and slotted to pass down over and embrace the upper parts of said braces, end walls in said box including inwardly directed flaps adapted to underlie the lid, slots between said flaps and said ends, and tongues on said lid elements adapted to fit into said slots when the lid is closed.

7. A chick box comprising in combination two lid flaps each hinged to the top of a side of the box and formed to meet complementarily thus closing the box, vertical spacers formed adjacent the box corners but not contacting the box floor and projecting through and above said lid flaps when the latter are closed, and tongues on the ends of the lid flaps adapted to project downward against end walls of the box when the lid flaps are closed, and inturned flanges on the upper edges of the box ends, and slots defined in said flanges of a size to receive said tongues snugly.

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