Nov. 26, 1957 R. S. ZEBARTH 2,814,408

COLLAPSIBLE TRANSPORTING BOX FOR CHICKS

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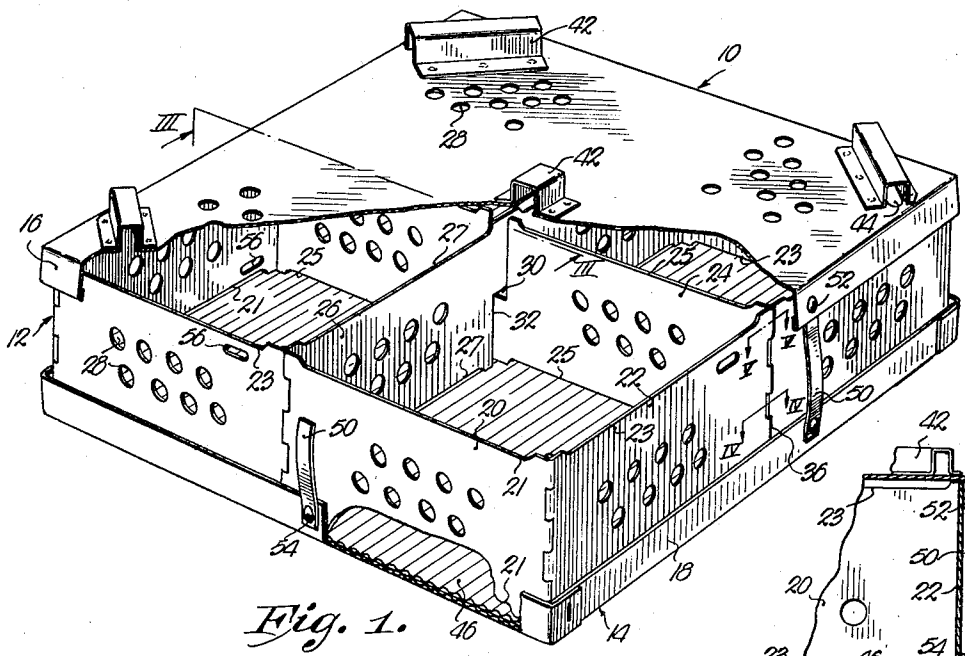


Fig. 1.

Fig. 6.

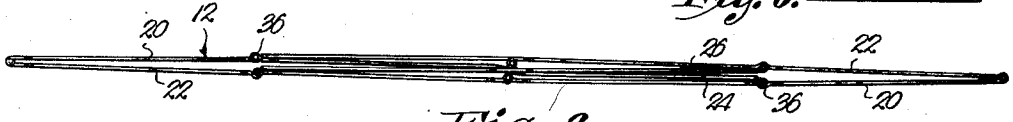


Fig. 2.

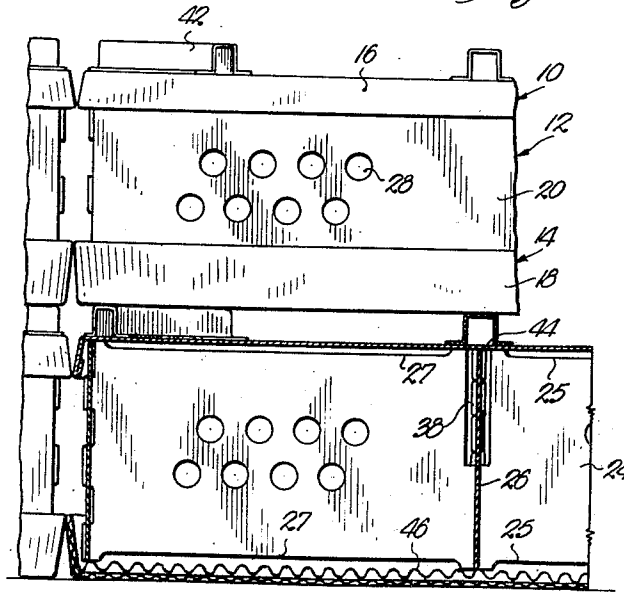


Fig. 3.

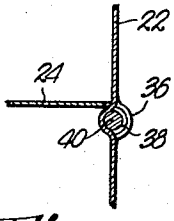


Fig. 4.

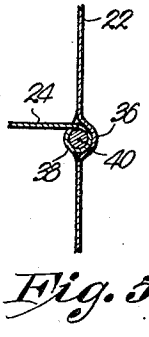


Fig. 5.

INVENTOR.
Ralph S. Zebarth
BY
Joel Rose
ATTORNEY.

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COLLAPSIBLE TRANSPORTING BOX FOR CHICKS

Ralph S. Zebarth, Hickman Mills, Mo., assignor to Gordon Johnson Equipment Company, Kansas City, Mo., a corporation of Missouri

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2 Claims. (Cl. 220—4)

This invention relates to shipping boxes for baby chicks and more particularly to a knock-down receptacle having top and body portions adapted for re-use and a disposable bottom structure.

The most important object of the present invention is to provide improvements in chick transporting receptacles such as that disclosed in U. S. Patent No. 2,682,964, granted to Norman F. Toadvine, on July 6, 1954.

In this type of transporting receptacle, there is provided a foldable wall and partition structure and a top member, all of which are fabricated from sheet metal and, therefore, adapted for continual re-use. The bottom structure is made of cardboard or the like so that the same may be left with the purchaser for use as a feed tray after the wall and partition structure and the top member have been returned to the shipper for sterilization and eventual re-use. These receptacles have been found economical, durable, easy to handle, and efficient and effective in use.

The primary object of the present invention is the provision of improved spacers on the exterior of each top member for supporting the bottom structure of a receptacle stacked thereabove and thereby insuring continuous ventilation through the openings provided for that purpose in the receptacles.

Another important object of the present invention is to provide improved hinge means between the partitions and the foldable walls which permits collapsing of the wall and partition structure to a flat condition whereby to facilitate further economies by way of reduced shipping charges for returning the receptacles to the shipper.

A further object of the present invention is the provision of fastening elements on the top member and engageable with the walls and the bottom structure for minimizing relative movement between these interconnected elements in transit.

Other objectives include the use of a more suitable sanitary covering for the bottom; the provision of recesses in the longitudinal edges of the walls and partitions for clearing and thereby preventing damage to the feet of chicks within the compartments of the box; and other, more minor advantages which will become apparent in the specification which follows.

In the drawing:

Figure 1 is a perspective view of an assembled transporting receptacle made in accordance with the teachings of the present invention, parts being broken away and in section to reveal details of construction.

Fig. 2 is a top view of the wall and partition structure of the receptacle of Fig. 1, showing the same in a folded condition.

Fig. 3 is an enlarged, fragmentary, elevational view of a number of stacked receptacles, the lower right-hand receptacle having been sectioned on line III—III of Fig. 1.

Fig. 4 is a horizontal, sectional view taken on line IV—IV of Fig. 1.

Fig. 5 is a horizontal, sectional view similar to Fig. 4 and taken on line V—V of Fig. 1; and

Fig. 6 is an enlarged, fragmentary, vertical, sectional view through one of the fastening elements of Fig. 1 and illustrating the manner of interconnecting the assembled top member with the wall and partition structure and the bottom structure.

Referring now to the drawing, wherein like numerals indicate similar parts, the transporting receptacle for baby chicks of the present invention includes, as elements thereof, a top member 10, a body portion 12 and bottom structure 14. Top member 10 and bottom structure 14 have angularly disposed, integral flanges 16 and 18 respectively, which serve to maintain body portion 12 in an expanded condition when in place thereon. As best shown in Figs. 1 and 3, the flanges 16 and 18 diverge as the outermost edges thereof are approached.

Body portion 12 has a pair of end walls 20, a pair of side walls 22, a partition 24 and a partition 26, each of which is provided with a plurality of spaced perforations 28. Side walls 20 and end walls 22 are hingedly interconnected to permit folding of body portion 12, as shown in Fig. 2, after removal of top 10 and bottom 14.

In each longitudinal edge thereof, the walls 20 and 22 are provided with a pair of spaced, elongated recesses 21 and 23. Similarly, the partitions 24 and 26 are provided with recesses 25 and 27 so that, regardless of which end of body portion 12 is placed within flanges 18 of bottom structure 14, the recesses 21, 23, 25 and 27 in the corresponding walls 20 and 22 and partitions 24 and 26 present suitable clearances between body portion 12 and bottom structure 14 for the feet of chicks subsequently placed in the receptacle for shipment.

Partitions 24 and 26 have cooperating notches 30 and 32 intermediate the ends thereof so that the partitions 24—26 may be arranged in intersecting relationship as shown in Figs. 1 and 2. Each of the partitions 24—26 is hingedly connected at each end thereof to one of the walls 20—22, intermediate the ends of the latter. This improved hinge means, shown in detail in Figs. 4 and 5, includes a barrel section formed in each of the walls 20—22 intermediate the ends thereof by stamping alternately inwardly and outwardly extending tubular projections 36 in each wall 20—22.

As shown in Fig. 4, partition 24 has spaced hinge knuckles 38 along each end edge thereof and complemental with the outwardly extending projections 36. The hinge is completed by the insertion of a hinge pin 40 through the projections 36 and the knuckles 38 in telescoping relationship thereto. Each pin 40 is, therefore, substantially in the plane of one of the walls 20—22.

The knuckles 38 on the opposite end of partition 24 project laterally outwardly from the partition 24 in a direction opposite to those shown in Fig. 4. In this manner, a hinge is provided which permits folding of the body portion 12 to the substantially flat condition shown in Fig. 2.

Top member 10 has an elongated, upright channel member 42 attached thereto in substantially traversing relationship to each of the corners of top member 10. A central channel member 42 is aligned with one of the partitions 24—26 above the point of intersection between the partitions. In addition to the spaced perforations 28, top member 10 has an elongated slot 44 beneath each channel member 42. Viewing Fig. 1, it is seen that the corner channel members 42 are angularly disposed relative to the corresponding corner of top member 10 and, therefore, more suitably adapted for use as supports for a receptacle stacked thereon. Similarly, the central channel member 42 is situated between the relatively rigid parti-

tions **24—26** of the stacked receptacles and, therefore, less likely to puncture the bottom **14** resting thereon.

In receptacles of this nature which have been provided previously, the spacers for maintaining a void between stacked receptacles have generally been stamped in the top members, leaving a relatively inaccessible cavity during the cleaning and sterilization process. The improved spacers described above present no such difficulties since the slots **44** open the channel members **42** to the flow of water therethrough as the top members are washed. Furthermore, the corner spacers **42** and the central spacer **42** insure separate ventilation of each of the compartments provided by the partitions **24—26**, as well as cross ventilation through the slot **44** beneath central spacer **42**.

The specific arrangement of the channeled spacers **42** is of the utmost importance in maintaining proper ventilation at all times. In transit, stacks of receptacles are often placed in such a position that the perforations **28** of one or more walls **20—22** are closed by the proximity of the receptacles to other freight, so that the chicks within a compartment must exist on the air supplied by the perforations **28** in the top member **10**. The location of spacers **42** at the corners and at the center of top member **10** positively insures that all of the compartments will have top ventilation at all times, even should the proximal receptacles be displaced slightly from a position of vertical alignment.

As shown in Fig. 3, the outwardly flared configuration of the flanges **16** and **18** functions to maintain the boxes of adjacent stacks suitably spaced and thereby provides an additional means of insuring adequate ventilation.

The bottom structure **14** may be made from any inexpensive, disposable material having sufficient rigidity such as cardboard and includes, as a separate element thereof, a sheet **46** of corrugated paper, board or the like.

As best shown in Figs. 1 and 6, there is a fastening element **50** in the nature of a spring clip for each side of the assembled box. Elements **50** are pivotally attached to the flange **16** adjacent, but spaced from, the center of each side of the top member **10** by rivets **52**. At their outermost ends, elements **50** have elongated pins **54** which, after being pressed through flange **18** of bottom **14**, engage the walls **20** or **22** within a slot **56**, the length of which facilitates alignment of pin **54** therewith. The inherent resiliency of element **50** holds pin **54** within slot **56** and thus prevents relative movement between top **10**, body **12** and bottom **14** in a vertical plane. As mentioned previously, flanges **16** and **18** are flared outwardly to facilitate assembly and, at the same time, the flanges **16** and **18** prevent displacement of top **10** and bottom **14** in a horizontal plane.

When the receptacle is assembled, the sheet **46** underlies the chicks and provides a firm footing during transshipment. At the point of delivery, the top member **10** and the body portion **12** may be removed and the bottom structure **14** left as a feeding tray or the like for use in the brooder. The chicks may be left on bottom **14** and not handled at all as they are moved into the brooder, it being common knowledge that a certain percentage is always lost when it is necessary to pour the chicks from a shipping container into a brooder or to transfer them by hand. With a bottom structure such as that herein disclosed, the chicks subsequently find their way over the flange **18**, after which time the ribbed sheet **46** is ideally suited for use as a feed tray.

It is obvious that the embodiment herein disclosed is a preferred form only, and that changes and modifications may be made without departing from the principles of the present invention. Such changes or modifications are contemplated hereby and it is, therefore, desired to be limited only by the scope of the appended claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A transporting box for chicks comprising a pair of intersecting partitions; a continuous wall surrounding said partitions, and having a pair of sides connected to one of said partitions and a pair of ends joined to the sides and connected to the other of said partitions, presenting a number of compartments; a top and a bottom closing said compartments, each having a continuous flange surrounding the wall; and means exteriorly of each side and each end respectively releasably interconnecting said top and bottom including a spring clip swingably secured to one of the flanges and yieldably biased against the other flange, each clip having a pin extending through said other flange, said wall having slots receiving the pins.

2. A collapsible transporting box for chicks comprising a pair of intersecting partitions having opposed notches hingedly interconnecting the same at the point of intersection; a continuous wall surrounding the partitions and including a pair of spaced sides and a pair of spaced ends; hinge means connecting the sides with said ends, each of said sides and each of said ends having a pair of sections, each of said sides and each of said ends having hinge structure interconnecting the sections thereof, said structure hingedly joining the sides with one of the partitions and the ends with the other of said partitions, presenting a number of compartments, each of said sections being provided with an elongated recess at the uppermost and at the lowermost edges thereof, each of said partitions having a pair of elongated recesses at the uppermost and at the lowermost edges thereof on opposite sides of said point of intersection; a top and a bottom closing said compartments, each having a continuous flange surrounding the wall, said flanges being outwardly flared for free flow of air into and out of the compartments through said recesses; and means exteriorly of each side and each end respectively releasably interconnecting said top and bottom including a spring clip swingably secured to one of the flanges and yieldably biased against the other flange, each clip having a pin extending through said other flange, said wall having slots receiving the pins.

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