

Aug. 13, 1935.

E. E. MOHLER ET AL

2,011,069

OFFSET STICKLESS CHICK BOX

Filed Jan. 29, 1934

3 Sheets-Sheet 1

FIG. 1

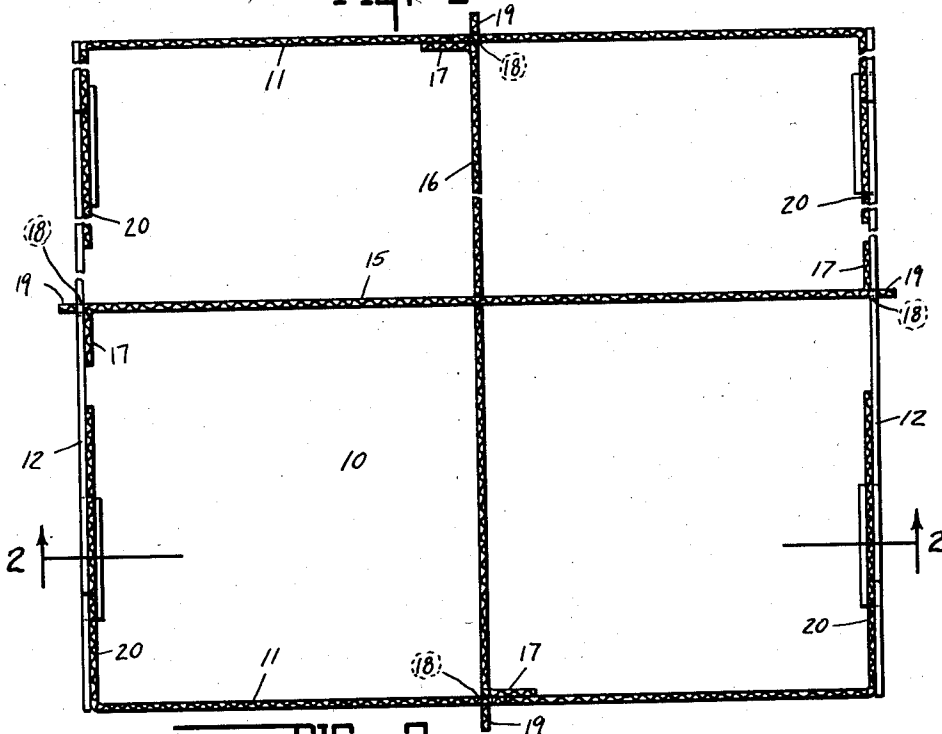


FIG. 2

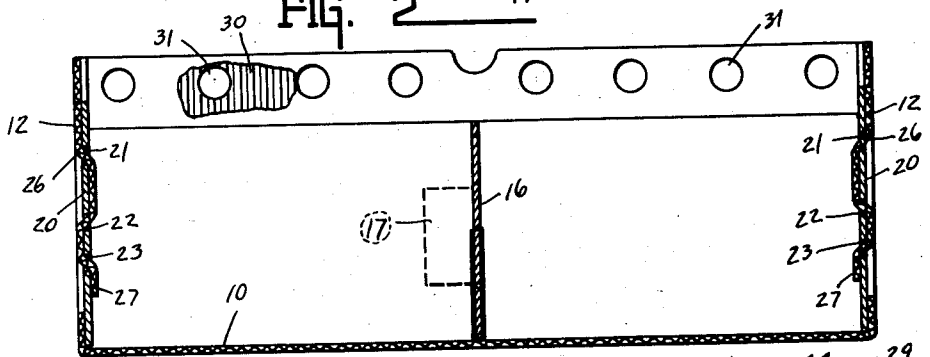
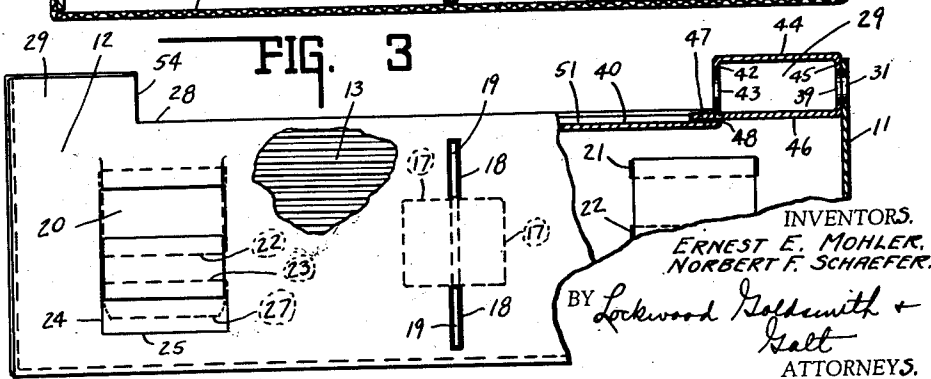


FIG. 3



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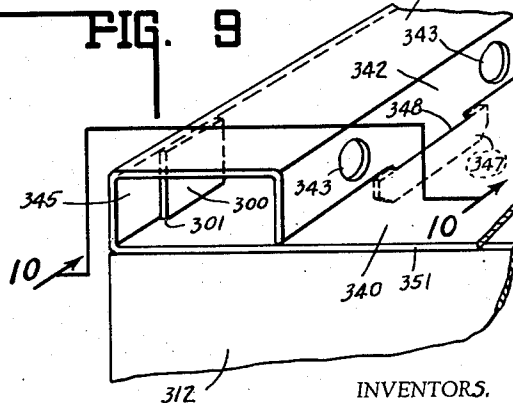
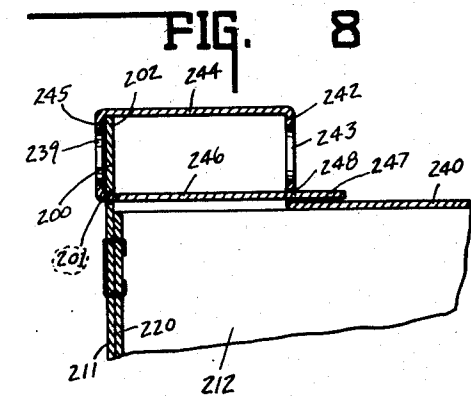
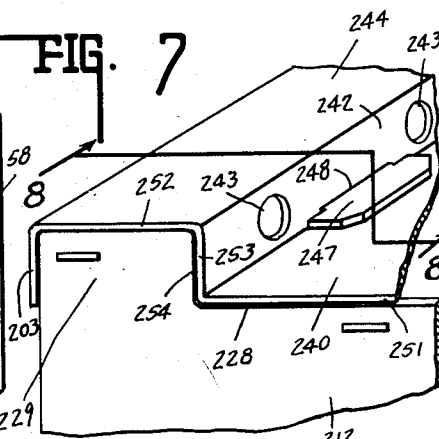
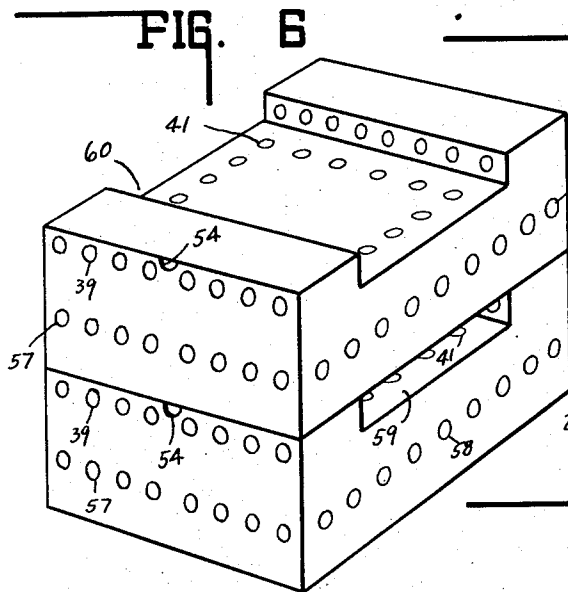
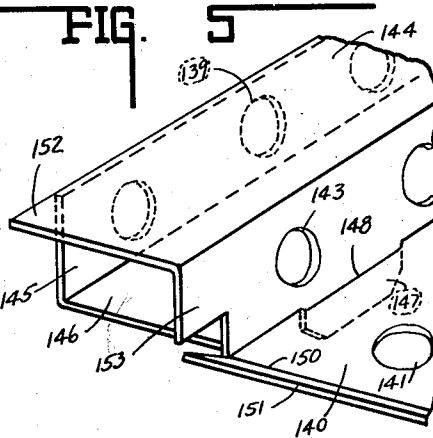
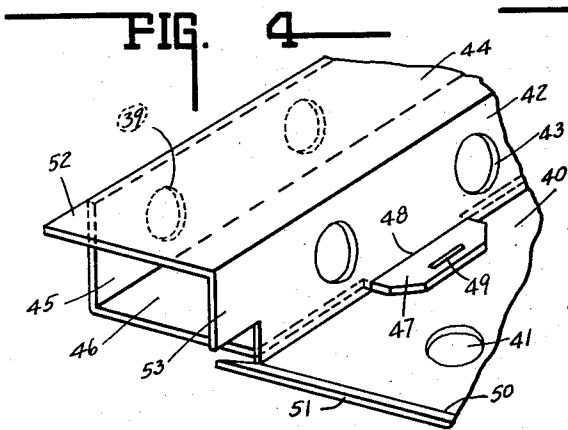
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3 Sheets-Sheet 2



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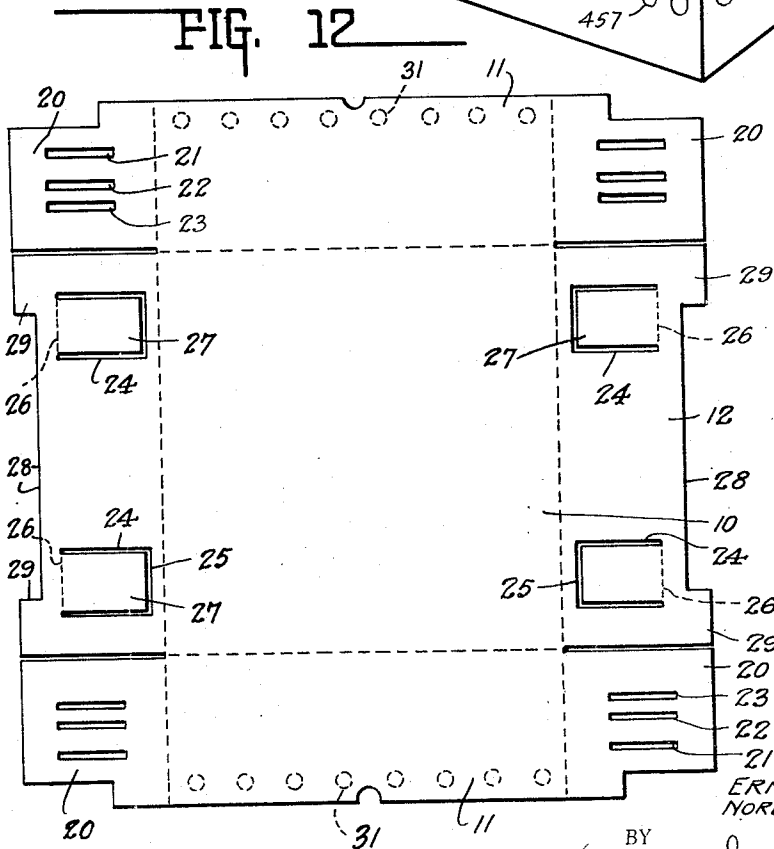
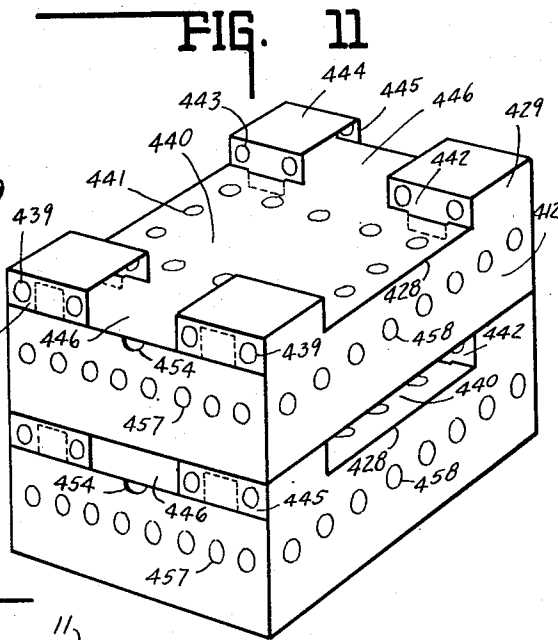
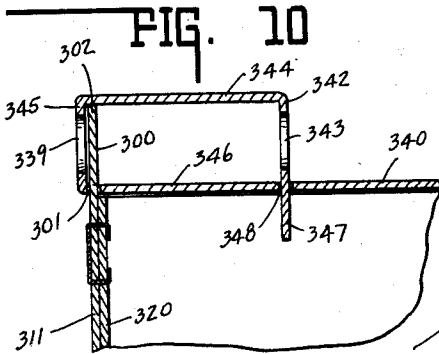
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3 Sheets-Sheet 3



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# UNITED STATES PATENT OFFICE

2,011,069

## OFFSET STICKLESS CHICK BOX

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Application January 29, 1934, Serial No. 708,792

13 Claims. (Cl. 229—6)

This invention relates to a so-called stickless box suitable for the shipment of small live animals, and is an improvement upon the Bomberger Patent No. 1,714,295, dated May 21, 1929, which broadly claims an offset top construction of the box in its entirety.

The present invention is directed generally to the formation of a simple cover construction which embodies a cover that is not provided with a peripheral defining rim or border, such as shown in the Bomberger patent and which incorporates a pair of spaced, substantially tubular portions, which constitute at least two flat surfaces in spaced relation and at opposite sides or ends of the box, whereby when two or more boxes are stacked one upon the other, ventilation to the interior of the box can be obtained by reason of the offset in the top of the box when the top of the box is perforated for ventilation.

The tubular portions, if desired, may be perforated to provide for ventilation transverse to the offset channel in the top of the box or between the two spaced tubular portions. Each or either of them may be so arranged as to be comprised of two portions in longitudinal alignment for providing a passage therebetween to obtain the advantage of ventilation transverse to the offset arrangement.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:—

In the drawings, Fig. 1 is a top plan view of one form of box bottom, wherein the sides and ends are interlockingly associated together and the partitions are likewise interlockingly associated together, all without the use of the conventional wire or metal staples.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1 and in the direction of the arrows, and looking toward the end of the box.

Fig. 3 is a side elevation of the box bottom shown in Figs. 1 and 2 and portions are broken away to show certain details of construction and other parts in section.

Fig. 4 is a perspective view of one corner of the cover construction which, in the present invention, constitutes the entire top of the box.

Fig. 5 is a similar view of a reversely formed construction and, therefore, a modification of the form of the invention shown in Fig. 4.

Fig. 6 is a perspective view showing two boxes embodying the invention in superposed relation and illustrates the lateral and offset ventilation objective in the stack.

Fig. 7 is a view similar to Figs. 4 and 5 but in

addition is shown associated with the adjacent cooperating portion of the box bottom and also illustrates a modified form.

Fig. 8 is a sectional view taken on line 8—8 of Fig. 7 and in the direction of the arrows.

Fig. 9 is a view similar to Fig. 7 and of a form of the invention which differs from Fig. 7 in the manner that Fig. 5 differs from Fig. 4, with the further addition that the box bottom is also modified from the disclosure of Fig. 7.

Fig. 10 is a longitudinal sectional view taken on line 10—10 of Fig. 9 and in the direction of the arrows.

Fig. 11 is a perspective view of a stack, including a pair of superposed boxes which have covers of the type shown in Figs. 7 and 8 and which is further modified by each of the longitudinal tubular bearing structures in the top being divided and with portions thereof spaced apart to provide a channel transverse to the offset channel.

Fig. 12 is a plan view of the blank from which is fabricated the main portion of the box body or bottom shown in Figs. 1, 2 and 3.

Boxes of this general character, which is the subject matter of the present invention, are made of corrugated paper board, which is suitably formed from board stock scored, cut, creased and folded and includes a box bottom and a cover which may or may not be substantially coextensive with the box bottom.

In the shipment of small live animals, such as chicks and the like, it is essential that sufficient ventilation be provided. When the boxes are stacked one upon the other and the stacks are placed adjacent each other, it will be readily apparent that the problem of providing ventilation is a fundamental one.

If only a single tier of boxes or a stack were to be shipped, ventilation, it is obvious, can easily be effected by perforations formed in the side and end walls of the box bottom. Invariably boxes of this character have two transverse partitions therein, forming four compartments and these partitions usually are also apertured to provide ventilation between compartments.

Partitions are provided so that a box designed for one hundred chicks can accommodate twenty five chicks to the compartment and the same box may be utilized for twenty-five, fifty or seventy-five chicks by placing twenty-five chicks in each of said compartments up to the desired number of compartments to include the total number of chicks to be shipped in that particular box.

It will also be understood that when a plurality of boxes are stacked one upon the other that ade-

quate provision must be made for supporting the superposed boxes by the lower boxes and the Bomberger patent previously mentioned, discloses one method of providing such a suitable support, which insures vertical stacking even though the boxes are slightly offset one from the other in the stack so that the stack of boxes will not be of an insecure character by reason of any slight offsetting of one box upon the other.

The present invention is directed to a simplification of the broad disclosure of the type of box shown in the Bomberger patent.

In Figs. 1 to 3 of the drawings, there is illustrated a box, and the same includes a bottom 10, a pair of spaced end walls 11 and a pair of spaced side walls 12, the same being integral with the bottom 10 and as shown in Fig. 3, the corrugations in the side walls extend longitudinally as indicated at 13. The purpose of this positioning of the corrugations is to secure rigidity in the side wall to prevent bowing outwardly, particularly when the partitions of the box are not stapled to the end and side walls but are interlockingly associated therewith, as shown in these figures.

A pair of partitions 15 and 16 have a matched slotted connection at their intersection and are transversely arranged relative to each other and each terminates in a flap 17 that lies adjacent and inside the side or end wall. In the stapled type of box, which is well known in the art, the partitions are secured to the walls by stapling these extensions which then generally are of a depth corresponding to the full depth of the partitions.

In the present form of box, however, since it is of the non-stapled type, it is provided intermediate the ends of the side and end walls with a pair of spaced slots 18 and the partition includes a pair of extensions 19 that extend through said slots. The intermediate portion, as will appear from the several figures before mentioned, is turned angularly of the partition and forms the flap 17. In the stapled type box, either the end or the side wall has an extension of substantially the same depth or of a lesser depth or may be of a greater depth than the adjacent wall and that extension projects transversely of the supporting wall and lies immediately adjacent the other wall and is usually secured thereto by staples.

In the present form of box, the use of staples is omitted and an interlocking connection is provided and herein the same is shown applied to the side wall 12, although it may be applied to the end wall 11. End wall 11 includes the transversely extending flap 20 and said flap 20 is provided with a plurality of superposed slots 21, 22 and 23.

The side wall 12 is slit as at 24 and 25 to form a tongue integral with the side wall at the top of the tongue as at 26 and said tongue passes inwardly through the slot 21, lies behind the flap 20, then passes outwardly through the slot 22 and then lies forwardly of the flap 20, thence passes inwardly through the slot 23 and the free end 27 of the tongue lies within the box and the connection is thus protected against casual breakage or displacement by reason of side to side contact between adjacent boxes.

Each side wall 12 is herein shown provided with a reduced portion 28 which leaves two upwardly extended portions 29 which are of substantially the same height as the end walls 11 and the latter, as indicated at 30, have the corrugations running vertically therein and are provided with, if desired, a plurality of apertures 31.

As previously indicated, the partitions and the side and end walls, instead of being interlockingly

associated together, as herein disclosed, may be assembled in box formation and secured therein by stapling in the manner recited in the Bomberger patent before mentioned. The box bottom, how so ever formed, is provided with the offset portions indicated by the numeral 29 at each corner in the side walls.

When the side wall reduction, indicated at 28, is not desired, then the side wall may have formed therein, in place of the reduction 28, a plurality of longitudinally aligned apertures similar to the aperture 31. Either form of side wall structure may be utilized with the type of cover illustrated in Figs. 4 or 5.

In Fig. 4 of the drawings as well as in Fig. 3, in the right hand portion, there is illustrated one form of cover which includes an intermediate portion 40 that is provided with a plurality of ventilating apertures 41 therein and the portion 40 has an integral upward extension 42 apertured as at 43 and scoringly connected therewith is a portion 44 which lies parallel to but offset from the portion 40.

Integral and scoringly connected to portion 44 is a depending portion 45 which, as shown in Figs. 3 and 4, is apertured as at 39 and scoringly connected therewith is the portion 46 which is provided with, in the present instance, a pair of tongues 47 that project through slots 48 in the portion 42. If desired, each tongue may be stapled to the portion 40 by the staple 49, although the tongue and slot connection may be so arranged that it is of an interlocking type that requires no stapling. Each side edge 50 of the portion 40 includes a flap 51 that is hingedly connected thereto and extends upwardly. This flap 51 frictionally engages the side wall 12 of the box adjacent the top edge of the reduction 28.

The portion 45 lies adjacent the upper portion of the end wall 11 and the two end walls nestingly receive the tubular constructions, the upper faces 44 of which constitute two coplanar supporting surfaces at each end of the box and of an appreciable area with the intermediate offset portion 40 therebetween. The apertures 39 and 43 preferably, are in registration and also are in registration with the apertures 31 in the end walls, all as shown in Fig. 3. Thus, in the event boxes are stacked side by side and/or end to end so that the offset portion is blocked, the air can pass through these registering apertures into the offset channel, as it were, and thence through the apertures 41 into the interior of the box and all four compartments therein.

The partitions 15 and 16 may be of uniform height and the cover just described may rest thereon.

When it is not desired to have the entire weight of superposed boxes transmitted from the cover to the bottom of the box through the partition but through the side walls or the same and the partition, then the portion 44 has a lateral extension shown at 52 which rides upon the top of the portion 29, while portion 42 of the tubular construction of the cover may have the portion 53 provided, and this would then lie adjacent the side edge 54 of the portion 29 of the side wall 12—see Fig. 3. This portion 53, however, may be omitted. As before stated, when the cover is to be supported by the partition, portion 52 may be omitted. However, these omissions would only provide a bearing support at two places along the partitions; consequently either the portion 53 or the portion 52 or both, preferably, are incorporated, so as to engage upon the top edge of the

side wall either immediately adjacent the lower end of edge 54 thereof or along the top edge of portion 29 thereof. This provides two corner supports for the cover and prevents inward movement of the cover corner should, due to rapid transit, the chicks huddle all in the back corners and thus concentrate the load in superposed boxes at one of the back covers, having reference to forward movement of the vehicle transporting these boxes.

If desired, and without departing from the invention, the portion 46 may also be apertured in a manner similar to the aperturing shown at 39 and 43, and this would constitute additional ventilation for the interior of the box.

It is to be understood that all of these so-called apertures are shown as complete apertures, although in the process of manufacture they are only semi-die cut, as shown in the Cleveland Patent No. 1,609,696, so that the purchaser of the box, who generally is a hatcheryman, knocks out the material semi-die cut in substantially circular form, to the desired number to insure the right amount of ventilation, having due regard for the outside temperature and the number of chicks in the box. Naturally, on colder days only a small number of apertures will be opened, while on the warmest days, probably all of the apertures will be opened.

In Fig. 5 there is illustrated a modified form of the invention and numerals similar to those employed to designate parts in Fig. 4 but increased by one hundred, are employed to designate parts similar thereto in Fig. 5. This form of the invention merely illustrates a reverse form of cover formation with respect to the formation of the tubular support at each end of the cover. In this form of the invention, the tongue 147 extends through the slot 148 which is at the junction of the portion 146 and the portion 140. Naturally when thus extended, this tongue cannot be stapled to the cover. If, however, it is turned angularly so as to lie parallel to and immediately beneath the intermediate portion 140, it may be stapled thereto. It has been found, however, with respect to both forms of the invention that stapling is not required. To facilitate the removal of the cover, each end wall is provided with a notch 54—see Fig. 6. The end walls also are provided with any desired number of apertures 57 and the side walls also are provided with any number of apertures 58 and these may be variously arranged. All of these apertures, as before mentioned, are manufactured in semi-die cut arrangement for subsequent knock out.

Two superposed boxes are illustrated in Fig. 6 and they provide the ventilating channel 59 therebetween. There is thus provided a covered box, the top of which is of offset character, as illustrated in the Bomberger patent before mentioned, and which provides ventilation transversely of the box and longitudinally of the offset channel, as it were, and also longitudinally of the box through the registering openings 31, 39 and 43, and thus transversely of the offset channel. This positively insures ventilation to the interior of the box through the top of the box when the boxes are arranged in stacked relation and two stacks are positioned side by side, even though the channel 60 be blocked by one stack of boxes having its ends positioned adjacent the sides of another stack of boxes.

In Figs. 7 and 8 a modified form of the invention is illustrated. In this form of the invention

it is to be understood that the top edge of the end wall 211 is cut away, or reduced to provide upwardly extending tongues 200 and the tubular ended cover, which is similar to but not identical with the cover shown in Figs. 4 and 5, is provided with slots 201 to receive these upwardly extending tongues 200. If desired, the top edge of said tongue, indicated by the numeral 202, may bear against the under surface of the portion 244. It is to be understood that portions 242 are apertured at 243 and portions 245 are apertured as at 239. The tongues 200 do not overlap or cover the apertures 239.

It will be apparent from the aforesaid—see Fig. 8—that the cover is primarily supported by the top edge of the end wall. As shown at 251, see Fig. 7, the intermediate portion is co-extensive with and lies in the same plane as the intermediate portion 240 and rests on the top edge of the recessed portion 228. As indicated at 253, portion 242 may abut against and frictionally engage edge 254 of the side wall. Likewise, portion 244 as at 252, will bear upon the top edge of the side wall 252. To protect the side wall extension 229, the portion 245 of the cover may be extended similar to the extension 253 and overlap the end of the side wall as at 203. Thus, this cover may be substantially of sheet formation and overlies all of the top edges of the end and side walls and is held to the box bottom structure by the tongues 200. In this form of the invention, it is apparent the cover need not rest upon the partition.

In Figs. 9 and 10 there is illustrated a form of the invention similar to that shown in Figs. 7 and 8 and in said figures numerals of the three hundred series similar to numerals of the two hundred series indicate parts in this form of the invention which are similar or correspond to similar parts in the form of the invention illustrated in Figs. 6 and 7.

There are two modifications, however, in this present form of the invention. This present form of the invention differs from that shown in Figs. 7 and 8 in the same manner that the form shown in Figs. 5 and 6 differ from that shown in Fig. 4. In addition thereto the box end wall of this form of the invention does not have the extension 229.

This form of the invention is a simpler form than that shown in Figs. 7 and 8 but has the disadvantage that lateral play of the cover across the box is not limited by the side wall extension 229, as found in Figs. 7 and 8. In both forms of the invention shown in Figs. 7 to 10, inclusive, longitudinal play of the cover is limited by the tongues. It will be recalled that longitudinal and lateral play of the cover in the form of the invention shown in Figs. 1 to 6 inclusive, is limited by the nesting of the cover within the side and end walls. The cover may be removed from the forms of the invention shown in Figs. 7 to 10 by inserting the finger into anyone of the holes 239 or 339 and the cover may be readily elevated and then freed from finger engagement.

In Fig. 11 there is illustrated a further modified form of the invention and the same is shown applied to the form of the invention shown in Figs. 7 and 8, although it can be equally as well applied to the form of the invention shown in Figs. 9 and 10. In this form of the invention the side wall is indicated by the numeral 412, the corner extension by the numeral 429, the side wall offset by the numeral 428 and the cover intermediate portion by the numeral 440. In this

form, the side walls are suitably apertured in semi-circular cut formation as at 458 and the end walls similarly as at 457. Each end wall may be notched at 454 to permit the fingers to engage below the cover portion 446. The portions 442, 446, 444 and 445 form tubular portions at the ends of the box but in the present form of the invention, the tubular portions are each separated by a gap forming a longitudinal channel transverse to the offset transverse channel in the cover of the box. In this form of the invention, the two transverse offset passages provide for free ventilation to the interior of the offset arrangement in the top of the box, and thence through the apertures 441 to the several compartments therein.

If the end walls of the box shown in Figs. 1 to 3 are notched and the covers shown in either Figs. 4 or 5 are recessed or cut away, similar to Fig. 11 in the tubular portions, the same result will be obtained.

This form of the invention preferably is made like that shown in Figs. 7 and 8, wherein the tubular portions overlie the upward extensions 429 of the side walls. Naturally in this form of the invention, the tongue construction is also employed. However, this form of the cover is shown formed in the manner illustrated in Fig. 9 to this extent, that the interlocking tongue having the tubular portion formation, is extended downwardly through the cover 440 instead of laterally through the portion 442, as shown in the form of the invention illustrated in Figs. 7 and 8.

While the invention has been described in great detail in the foregoing specification and various forms thereof have been illustrated, the same is to be considered illustrative and not restrictive in character. These various modified forms together with others, which will readily suggest themselves to persons skilled within the art, are all considered to be within the broad scope of the invention, reference being had to the appended claims.

The invention claimed is:—

1. In a box of the character described, the combination of a top having an offset intermediate portion between two end portions having upper plane surfaces substantially lying substantially in the same plane and above the offset portion, said two end portions each comprising a tubular arrangement.

2. In a box of the character described, the combination of a top having an offset intermediate portion between two end portions having upper plane surfaces substantially lying substantially in the same plane and above the offset portion and constituting the uppermost portion of the box, said two end portions each comprising a tubular arrangement, the bottom of each being coextensive with the intermediate portion.

3. A device as defined by claim 1, characterized by each tubular arrangement including a gap therein between the ends forming two longitudinally aligned complete tubular portions and positioned adjacent the corners, the end wall of the box being relieved adjacent the gap for ventilation transverse to the offset.

4. A device as defined by claim 1, characterized by each end wall including spaced upstanding tongues and each tubular portion including a similar number of slots adapted to register with tongues and receive the same for closing the box by means of the top.

5. A device as defined by claim 1, character-

ized by each end wall including spaced upstanding tongues and each tubular portion including a similar number of slots adapted to register with tongues and receive the same for closing the box by means of the top, and each side wall of the box including an upstanding projection at each end for engagement with the tubular portions for confining the top against lateral displacement relative to the side walls.

6. A device as defined by claim 1, characterized by each end wall including spaced upstanding tongues and each tubular portion including a similar number of slots adapted to register with tongues and receive the same for closing the box by means of the top, and each side wall of the box including an upstanding projection at each end for engagement with the tubular portions for confining the top against lateral displacement relative to the side walls, said top end portions including extensions overlapping the side wall.

7. A device as defined by claim 1, characterized by each end wall including spaced upstanding tongues and each tubular portion including a similar number of slots adapted to register with tongues and receive the same for closing the box by means of the top, and each side wall of the box including an upstanding projection at each end for engagement with the tubular portions for confining the top against lateral displacement relative to the side walls, said top end portions including extensions overlapping the side wall at the upper edge thereof.

8. A device as defined by claim 1, characterized by each end wall including spaced upstanding tongues and each tubular portion including a similar number of slots adapted to register with tongues and receive the same for closing the box by means of the top, and each side wall of the box including an upstanding projection at each end for engagement with the tubular portions for confining the top against lateral displacement relative to the side walls, said top end portions including extensions overlapping the side wall adjacent the upwardly directed edge of the side projection.

9. A device as claimed by claim 1, characterized by each end wall including spaced upstanding tongues and each tubular portion including a similar number of slots adapted to register with tongues and receive the same for closing the box by means of the top, and each side wall of the box including an upstanding projection at each end for engagement with the tubular portions for confining the top against lateral displacement relative to the side walls, said top end portions including extensions overlapping the side wall at the upper edge thereof and adjacent the upwardly directed edge of the side projection.

10. A box of the character as defined by claim 1, characterized by the offset intermediate portion including means integral therewith and projecting therefrom for frictional engagement with the adjacent side wall.

11. A box of the character as defined by claim 1, characterized by the offset intermediate portion including means integral therewith and projecting therefrom for frictional engagement with the adjacent side wall, said intermediate portion including a scoring arrangement for hinge-leaf effect, and the said means being divided and associated with each of the hinge portions at each side thereof for side wall engagement.

12. A device as defined by claim 1, characterized by each tubular portion being arranged for aper-

turing for ventilation transversely through the same and to the offset portion, the opposite walls adjacent and substantially parallel to the tubular portions being relieved for registration with the transverse aperturing.

adjacent and substantially parallel to the tubular portions being relieved for registration with the transverse aperturing, said intermediate portion including means projecting therefrom at the edges transverse to the tubular portion connections and for frictional engagement with the box side wall.

13. A device as defined by claim 1, characterized by each tubular portion being arranged for aperturing for ventilation transversely through the same and to the offset portion, the opposite walls

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