

July 7, 1936.

C. K. ELLSWORTH

2,047,017

WEIGHT LATCHED BOX

Filed July 19, 1934

3 Sheets-Sheet 1

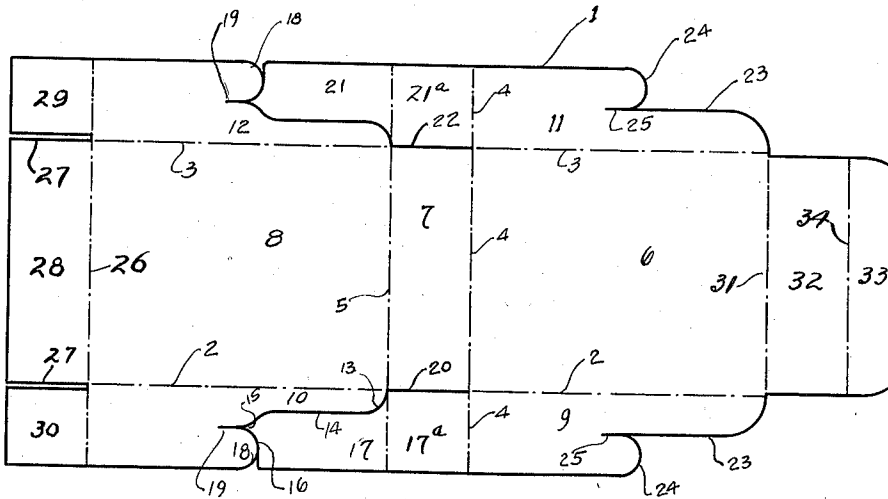


FIG. 1.

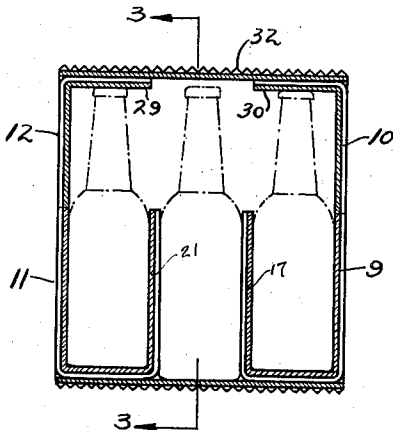


FIG. 2.

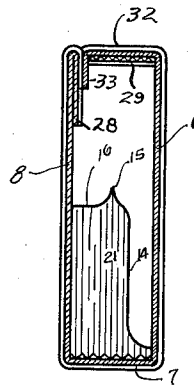


FIG. 3.

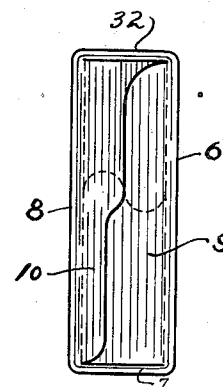


FIG. 4.

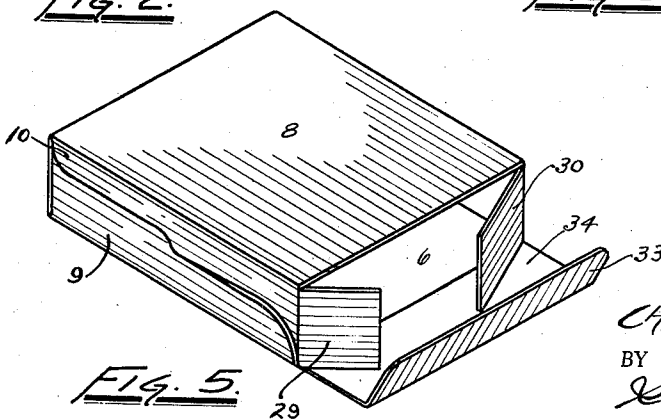


FIG. 5.

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3 Sheets-Sheet 2

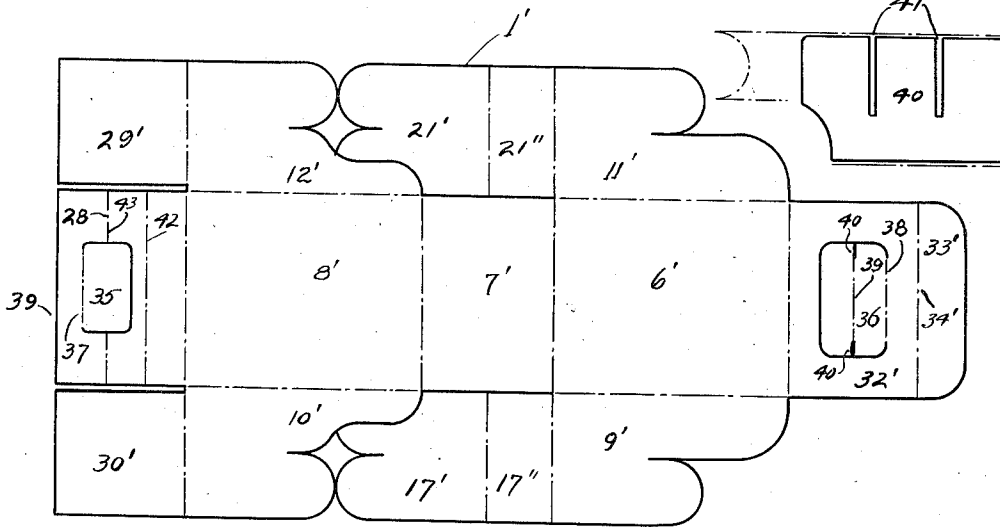


FIG. 6.

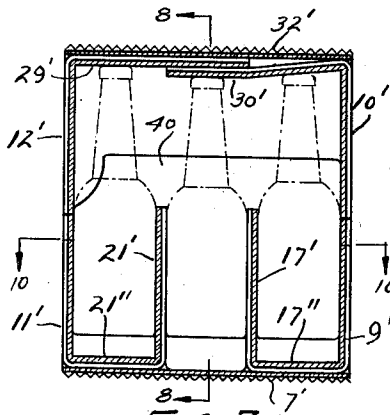


FIG. 7.

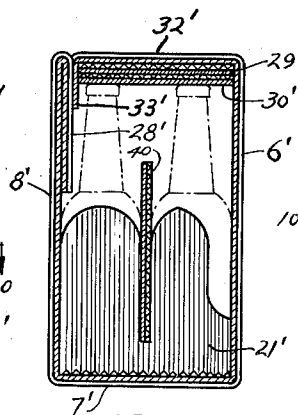


FIG. 8.

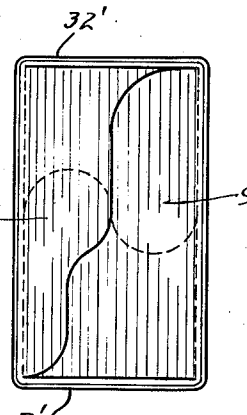


FIG. 9.

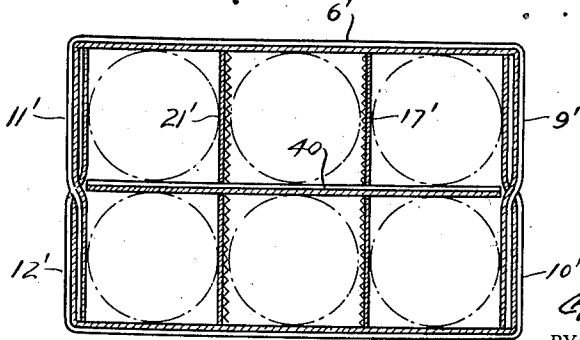


FIG. 10.

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3 Sheets-Sheet 3

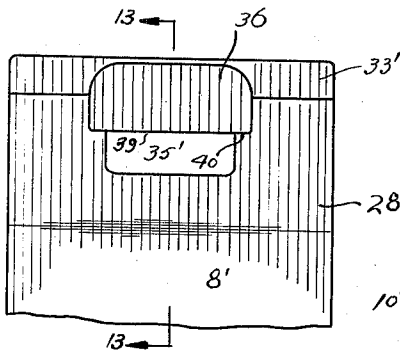


FIG. 11.

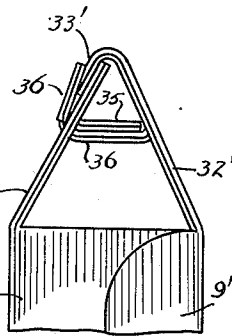


FIG. 12.

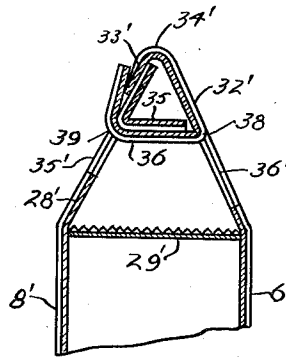


FIG. 13.

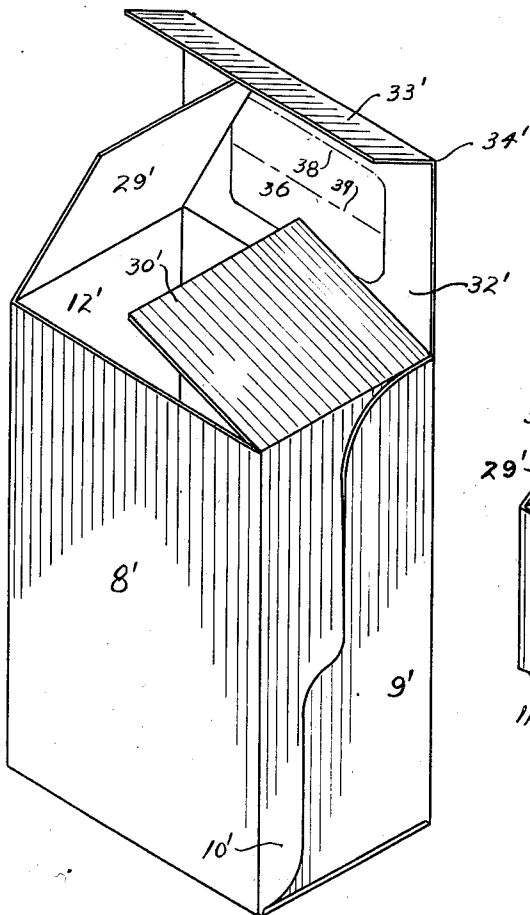


FIG. 14.

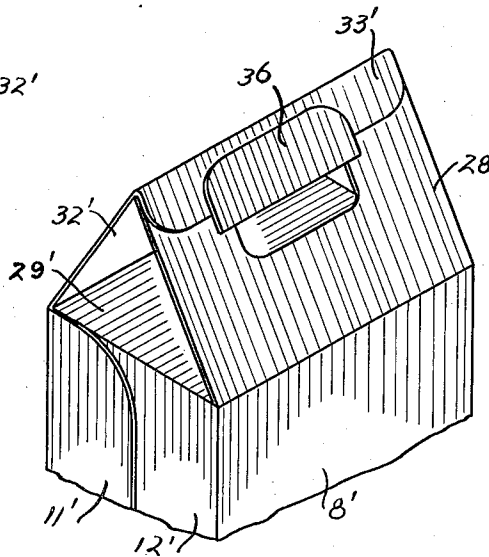


FIG. 15.

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UNITED STATES PATENT OFFICE

2,047,017

WEIGHT-LATCHED BOX

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Harold Van Doren, John G. Rideout, and
Charles K. Ellsworth, trustees

Application July 19, 1934, Serial No. 736,036

19 Claims. (Cl. 229—52)

The present invention pertains to a novel box made of cardboard or similar material and designed particularly for carrying bottles, but also suitable for other contents. The box is made of a blank of stock so scored, cut and assembled that a latching operation at the side walls holds the box together. In this connection, one of the objects of the invention is to provide such a box wherein the weight of the contents on the bottom serves to secure the latching engagement of the parts at the side walls. This is accomplished by providing a latch that requires a relative downward movement of one of its elements in the latching operation, and extending these elements along the bottom of the box to take the load.

Further, the formation of the blank is such that these elements may also be extended upwardly within the box to serve as partitions between the bottles. In other words, a substantially rectangular blank provides not only the sides of the box, but also the interior partitions.

Another object of the invention is to provide a box having a top structure so made that it may readily be transformed into a handle for carrying the box in a suspended position. The top of the box may be assembled in a flat condition for shipping purposes, but a handle at the top is desirable when the box is carried from the retail store by the customer. With this fact in view, the top is so made that it may be pulled out of its flat condition and reassembled as a converging structure held together by interlocking tabs from one side to the other, which tabs also form openings for insertion of the hand.

The box is preferably made of single-face corrugated stock with the corrugations on the outside. The blank is so cut and assembled that the top or lid has a flap which is inserted against a similar flap on one of the side walls, with the corrugations of one in mesh with those of the other. This peculiar engagement of the flaps assists in bracing the box and holding the lid in closed position in the manner described below and more fully pointed out in my co-pending application, Serial No. 736,034 filed July 19, 1934.

The invention is fully disclosed by way of example in the following description and in the accompanying drawings in which

Figure 1 is a plan view of the scored blanks;

Figure 2 is a vertical section of the box;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a side elevation of the box;

Figure 5 is a perspective view of the box;

Figure 6 is a plan view of the blank for a modified box;

Figure 7 is a vertical section of said box;

Figure 8 is a section on the line 8—8 of Figure 7;

Figure 9 is a side elevation of the box;

Figure 10 is a section on the line 10—10 of Figure 7;

Figure 11 is an elevation of the assembled handle;

Figure 12 is an end view thereof;

Figure 13 is a section on the line 13—13 of Figure 11;

Figure 14 is a perspective view of the box, and Figure 15 is a perspective view of the assembled handle.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

In Figure 1 is shown a substantially rectangular blank 1 laid out with two lengthwise score lines 2 and 3 near the longitudinal edges and two transverse score lines 4 and 5 near the center to define three rectangles designed to constitute respectively a side wall 6 of the box, the bottom 7 and the opposite side wall 8. Outward of the line 2 are two strips 9 and 10 defined by the lines 2, 4, and 5. Similarly, strips 11 and 12 are formed outside the line 3 and correspond in shape to the strips 9 and 10 respectively.

From the point of intersection of the lines 5 and 2, a cut is taken into the strip 10 on an arc 13 and then continued lengthwise of the strip as at 14 to approximately the mid-point 15 of the strip whence the cut is continued on a curved line 16 to the outer longitudinal edge of the strip. In this manner a flap 17 is separated from the strip 10, leaving a notch or recess in the strip. The cut 16 leaves a rounded finger 18 extending into the recess. From the point 15 a notch 19 is cut in the median line of the strip 10 for a purpose which will presently appear. A straight cut 20 is taken along the line 2 between lines 4 and 5 so that the flap 17 may be said to extend as far as the line 4 and to hinge thereon.

In like manner, a similar flap 21 is cut out of the strip 12, extending as far as the line 4 and hinging thereon by virtue of a cut 22 along the line 3 between the lines 5 and 4. Where the flaps are of uniform width, along the cuts 14, they are of more than half the width of the respective strips 10 and 12 for a purpose which will presently appear. The strips 10 and 12 are of equal width as shown.

The outer corner of each strip 9 and 11 is re-

cessed along a substantially median line 23 and is so formed as to leave a convex piece 24 extending into the recess. A notch 25, similar to the notch 19, is cut in strips 9 and 11 along the median line and towards the line 4.

The folding of the blank to form the box, with the exception of the top, will now be described. The strips 9 and 11 are folded inward on the lines 2 and 3 respectively, and the flaps 17 and 21 are folded inward on the line 4, so that they extend across the blank. The blank is now folded upward on the lines 4 and 5, bringing the flaps upon the bottom 7. The strips 10 and 12 are then folded on the lines 2 and 3 respectively toward the outer faces of the strips 9 and 11 respectively. The strips 10 and 12 are pulled slightly upward along the strips 9 and 11 to permit the fingers 18 to be passed through the notches 25 to the interior of the box. The notches 19 and 25 are so positioned that the contacting strips latch or interlock thereat when the strips 10 and 12 are moved downward to return the bottom 7 to a level position with the sides 6 and 8 perpendicular thereto.

The box is designed to be suspended or carried with the bottom 7 downward so that the load rests on the horizontal parts 17^a and 21^a of flaps 17 and 21. The load on the flaps and bottom 7 creates a downward pull on strips 9, 10, 11, 12 to hold them against relative slipping, thereby securing the joints or latches at the notches 19 and 25.

Further, the unloaded box with the top open can be disassembled by bringing the flaps 17 and 21 flat against the strips 9 and 11 and pulling these parts downward along the strips 10 and 12 and across the ends of the bottom. Obviously, disassembling cannot occur while the load on parts 17^a and 21^a prevents the flaps 17 and 21 from coming into surface engagement with the strips 9 and 11.

Incidentally, the more convenient method of assembling the box from the blank is the reversal of the described manner of disassembling. These methods cause no buckling of the stock at the strips, since the strips latch and unlatch with a sliding, rather than an overcast, movement.

The outer or upper edge of the side wall 8 is defined by another transverse score line 26 which extends across the strips 10 and 12. A pair of notches 27 in the prolongations of the lines 2 and 3 and outward of the line 6 define three flaps 28, 29, and 30, integral respectively with the parts 8, 10, and 12.

The outer or upper edge of the side wall is defined by a transverse score line 31. Beyond this line is an extended portion 32 of equal area to the bottom 7 and designed to become the top of the box. Beyond this section is a narrow tab or strip 33 defined by a score line 34, for a purpose which will presently appear.

The assembly of the box, with the exception of the top structure, has already been described. The bottles are inserted to rest on the horizontal or rectangular parts of the flaps 17 and 21 and to engage opposite sides of the vertical parts of the flaps, the latter serving as partitions to prevent breaking of the bottles against one another. After the box has been filled, the flap 28 is turned inward towards the side wall 8, and the flaps 29 and 30 are folded inward to a substantially horizontal position. The top piece 32 is now brought downward and the flap 33 thereof is inserted against the flap 28, being held in contact therewith by the flaps 29 and 30. It will

be noted that the flaps 28 and 33 are in engagement with each other at their corrugated surfaces, with the corrugations of one lying parallel to those of the other. The two flaps naturally take such a position that the corrugations of one mesh or interlock with those of the other to provide an increased area of frictional contact and an effective brace against side play, as fully described in my copending application, Serial No. 736,034, filed July 19, 1934.

In Figures 6 to 15 is shown a somewhat modified construction for a box of greater width to contain more bottles and also having a handle at the upper end. The blank 1' from which the box is made is scored and cut in substantially the manner already subscribed to form side walls 6' and 8', a bottom 7', end wall strips 9', 10', 11', and 12', and particularly flaps 17' and 21'. It will be seen that the bottom and end walls of this box are wider than the box previously described, in order to accommodate two rows of three bottles each rather than one row. The flaps 28', 29', and 30' are wider than in the previous construction, having a dimension lengthwise of the blank, equal to the width of the bottom piece 7'.

Tabs 35 and 36 are cut out of the members 28' and 32' respectively, remaining intact with the blank on lines 37 and 38 respectively equidistant from and parallel to the end 39 of the blank and the score line 34'.

With the exception of the top, the box is assembled and filled in the manner already described, the bottles resting on the horizontal parts 17' and 21' of flaps 17' and 21' and being partitioned by the vertical parts of the flaps. These vertical portions are of such width as to pass through all the lines of tangency in a plane depthwise of the box. A partition consisting of a sheet of cardboard 40 notched at 41 may be inserted between the longer rows of bottles and positioned to receive the members 17' and 21' in its notches. This partition may come out of one of the corners of the blank as shown in Figure 6, and since there are two available corners, a double partition may be used if desired.

To close the upper end, the flap 28' is turned inward against the side wall 8' as shown in Figure 8 and may be scored at 42 and 43 to facilitate insertion. The flaps 29' and 30' are turned inward to a horizontal position, and the flap 32' is brought over them. The short flap 33' is now inserted against the flap 28' and held in contact therewith by the members 29' and 30', with the results already described.

The box assembled in this condition may be used for shipping bottles from the bottle factory to the bottler and from the latter to the retailer. Due to the size and weight of this box, it cannot be carried without a handle as easily as the smaller box previously described. By a suitable readjustment, the flaps 28' and 32' in conjunction with the tabs 35 and 36 are adapted to serve as a handle, as shown in Figures 11 to 15. The flap 32' is raised as in Figure 14 and then the flap 28' is pulled out of the box and brought into a converging relation to the member 32', the short flap 33' being disposed inward or outward of the flap 28'. The tab 35 is now pushed inward to a horizontal position, and it will be seen that this tab is of such length as to engage the opposite member 32'. The tab 36, which is approximately twice as long as the tab 35, is now pushed inward and through the opening 35' formed by the tab 35, whereby it passes beneath the tab 35 in engagement therewith. Where the tab 36 intersects the 75

opening 35', it is preferably scored at 39 so that it may be folded upwardly against the outer side of the member 28'. It may also be cut at 40 at the ends of the score line 39 to interlock with the member 28' at the ends of the opening 35', the tab 36 being slightly wider than tab 35.

The construction thus formed constitutes a convenient handle for carrying the box in a suspended position. The hand is inserted first in the opening 36' so that the fingers project through the opening 35', and the horizontal parts of the tabs 35 and 36 rest on the fingers. The knuckles require a longer opening than the fingers, and such a longer opening is provided by the removal of the longer tab 36 which must be longer than the tab 35 in order to extend through the opening 35'. The horizontal parts of both tabs constitute a strong double brace between the converging members 28' and 32'.

It will be evident that various combinations of the two embodiments here illustrated may be employed. For example, the larger box may have a top similar to that of the smaller box, that is, without the handle formation. Also, in either construction the vertical parts of the flaps 17, 21, 17', 21' may be cut off to dispense with the partitioning arrangement, leaving only the horizontal or bottom parts thereof for reinforcing the bottom and preventing disassembling of the box.

Although specific embodiments of the invention have been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention, as indicated by the appended claims.

What I claim is:

1. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, the strips at a given end of the bottom being formed to interlock with one another by a downward movement of one relatively of said side walls, whereby a load on the bottom secures the interlock.

2. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, the strips at a given end of the bottom being formed to interlock with one another by a downward movement of one relatively to the other, a handle joining the upper ends of said walls, whereby a load on the bottom secures the interlock, and a flap extending from the bottom edge of one of said strips along the inner surface of the bottom to receive the weight of at least a part of the load.

3. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, the strips at a given end of the bottom being formed to interlock with one another by a downward movement of one relatively to the other, whereby a load on the bottom secures the interlock, and a flap extending from the bottom edge of one of said strips along the inner surface of the bottom to receive the weight of at least a part of the load, a portion of said flap being directed upward within the box to serve as a partition therein.

4. A box comprising a bottom and two side

walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, the strips at a given end of the bottom being formed to interlock with one another by a downward movement of one relatively to the other, a handle joining the upper ends of said walls, whereby a load on the bottom secures the interlock, and flaps extending from the bottom edges of two opposite strips along the inner surface of the bottom to receive the weight of at least a part of the load.

5. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, the strips at a given end of the bottom being formed to interlock with one another by a downward movement of one relatively to the other, whereby a load on the bottom secures the interlock, and flaps extending from the bottom edges of opposite strips along the inner surface of the bottom to receive the weight of at least a part of the load, a portion of each of said flaps being directed upward within the box to serve as partitions therein.

6. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, one strip at each end wall being notched from the bottom upward, the other strip at each wall having an extension at its bottom edge complementary to and of such size as to fill the notch in the first strip, said other strips being adapted to interlock with the notches of the first strips by a downward movement of the latter, whereby a load on the bottom secures the interlock, the extensions being directed along the inner surface of the bottom to receive the weight of at least a part of the load.

7. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, one strip at each end wall being notched from the bottom upward, the other strip at each end wall having an extension at its bottom edge complementary to and of such size as to fill the notch in the first strip, said other strips being adapted to interlock with the notches of the first strips by a downward movement of the latter, whereby a load on the bottom secures the interlock, the extensions being directed along the inner surface of the bottom to receive the weight of at least a part of the load, a portion of each extension being directed upward in the box to serve as a partition therein.

8. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, one strip of each end wall being notched from the bottom upward, the other strip at each end wall having an extension at its bottom edge complementary to and of such size as to fill the notch in the first strip, said other strips being adapted to interlock with the notches of the first strips by a downward movement of the latter, whereby a load on the bottom secures the interlock, the extensions being directed along the inner surface of the bottom to receive the weight of at least a part of the load, a portion of each extension being directed

upward in the box to serve as a partition therein, said portions having a width greater than half the distance between the side walls.

9. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall toward the opposite side wall and adapted to form end walls, a flap extending from the bottom edge of one of said strips along the inner surface of the bottom to receive the weight of at least a part of the load, a portion of said flap being directed upward within the box to serve as a partition therein.

10. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, one strip at each end wall being notched from the bottom upward, the other strip at each wall having an extension at its bottom edge complementary to and of such size as to fill the notch in the first strip, the extensions being directed along the inner surface of the bottom to receive the weight of at least a part of the load.

11. A box comprising a bottom and two side walls extending upwardly therefrom, a strip extending from each upright edge of each side wall towards the opposite side wall and adapted to form end walls, one strip at each end wall being notched from the bottom upward, the other strip at each wall having an extension at its bottom edge complementary to and of such size as to fill the notch in the first strip, the extensions being directed along the inner surface of the bottom to receive the weight of at least a part of the load, a portion of each extension being directed upward within the box to serve as a partition therein.

12. In a box having opposed side walls, extensions from the upper edges of said walls and converging upwardly towards each other, and a tab cut out of one of said extensions except at the upper edge of the tab and passed through an opening in the other extension, thereby forming a handle.

13. In a box having opposed side walls, extensions from the upper edges of said walls and converging upwardly towards each other, and a tab cut out of one of said extensions except at the upper edge of the tab and passed through an opening in the other extension, thereby forming a handle, the opening complementary to the tab having a larger vertical dimension than the opening receiving the tab.

14. In a box having opposed side walls, extensions from the upper edges of said walls and converging upwardly towards each other, and a tab cut out from one of said extensions except at the upper edge of the tab and passed through

an opening in the other extension, thereby forming a handle, a turn-down from the upper edge of one of said extensions and extending to the level where said tab bridges the extensions.

15. In a box having opposed side walls, extensions from the upper edges of said walls and converging upwardly towards each other, tabs cut respectively out of said extensions and having their upper edges intact with the extensions, one of said tabs being turned inward and engaging the opposite extension, the other tab being wider than the first and passing through the opening formed by the first.

16. In a box having opposed side walls, extensions from the upper edges of said walls and converging upwardly towards each other, tabs cut respectively out of said extensions and having their upper edges intact with the extensions, one of said tabs being turned inward and engaging the opposite extension, the other tab being longer than the first and passing through the opening formed by the first, and a turn-down from the upper edge of one of said extensions and extending to the level of said tabs where they bridge the extensions.

17. A handle structure comprising two sheet members converging upwardly into substantial contact at their upper edges, tabs cut respectively out of said members and having their upper edges intact with the members, one of said tabs being turned inward and engaging the opposite member, the other tab being longer than the first and passed through the opening formed by the first.

18. A handle structure comprising two sheet members converging upwardly into substantial contact at their upper edges, tabs cut respectively out of said members and having their upper edges intact with the members, one of said tabs being turned inward and engaging the opposite member, the other tab being longer than the first and passed through the opening formed by the first, and a turn-down from the upper edge of one of said members and extending to the level of said tabs where they bridge the extensions.

19. In a box having opposed side walls, extensions from the upper edges of said walls and converging upwardly towards each other, and a tab cut out of one of said extensions except at the upper edge of the tab and passed through an opening in the other extension, thereby forming a handle, said tab being removable from said opening to disengage said extensions from each other, said extensions being swingable downward so that one overlies the other, the overlying extension being of sufficient size to constitute a flat lid in the plane of the upper edges of the side walls.

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