No. 865,430. PATENTED SEPT. 10, 1907.

L. E. REYNOLDS.

KNOCKDOWN BOX.

APPLICATION FILED MAY 29, 1905.

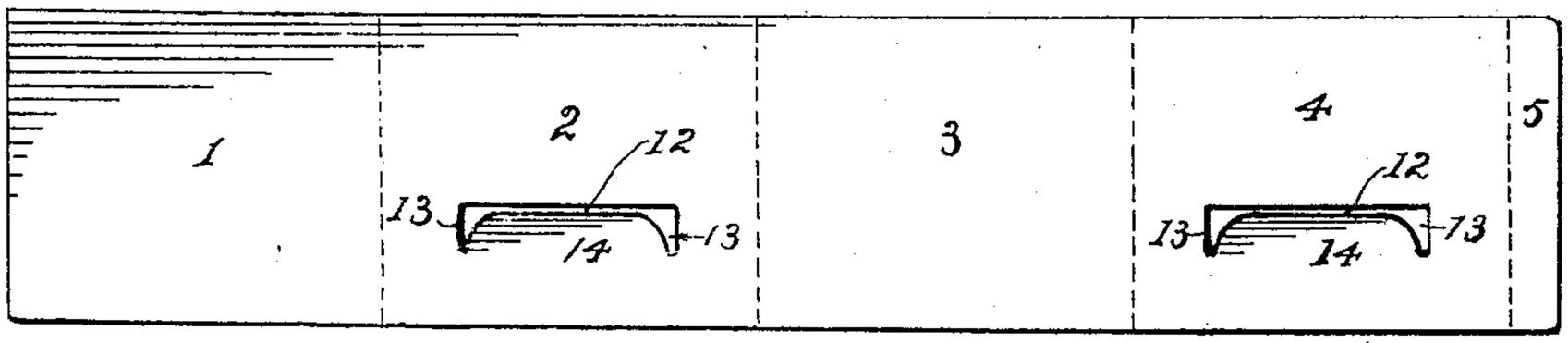

Fig. 1.

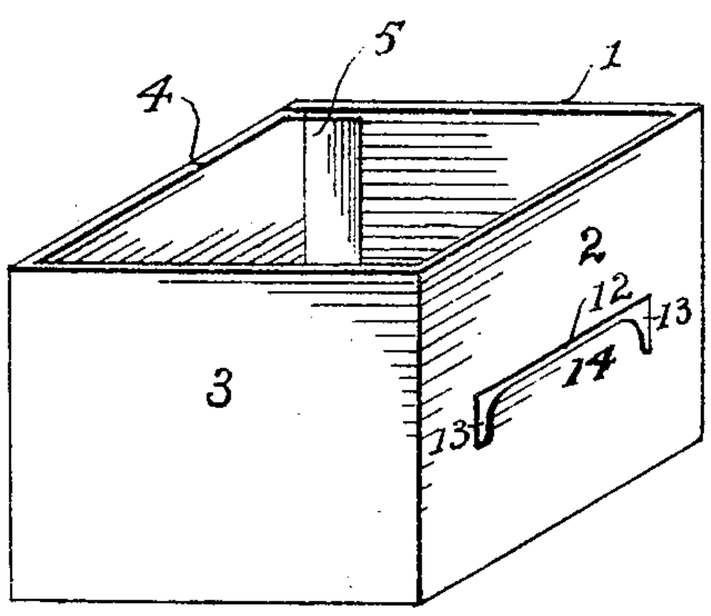

Fig. 2.

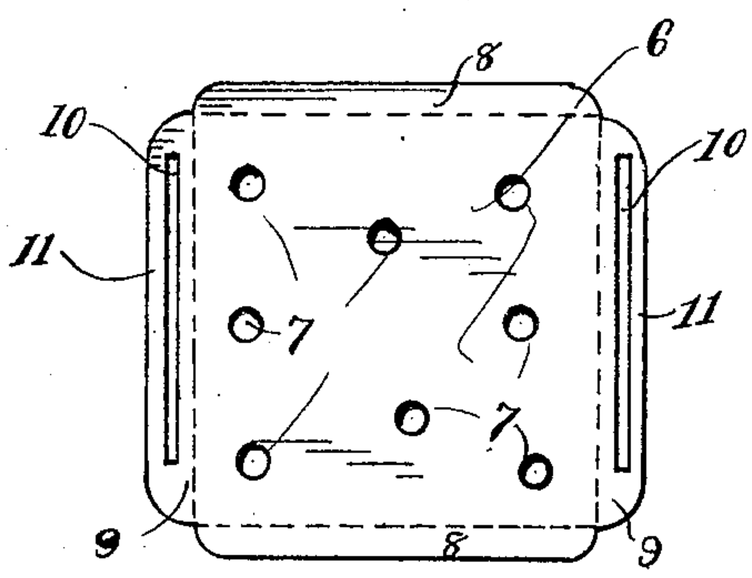

Fig. 3.

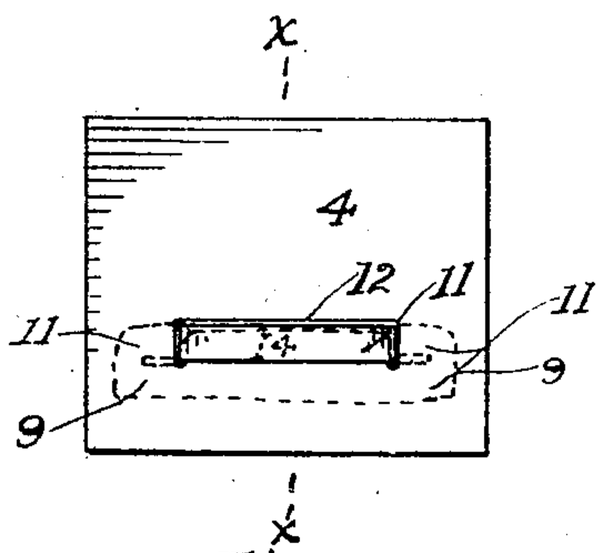

Fig. 4.

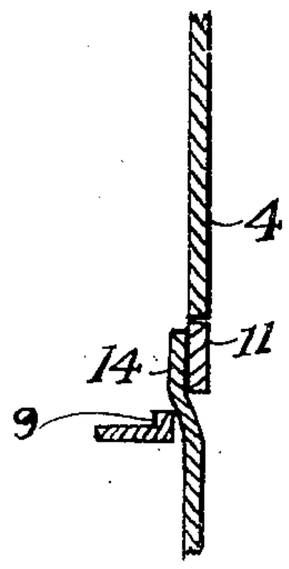

Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

LEANDER E. REYNOLDS, OF GRAND RAPIDS, MICHIGAN.

KNOCKDOWN BOX.

No. 865,430. Specification of Letters Patent. Patented Sept. 10, 1907.

Application filed May 29, 1905. Serial No. 262,786.

To all whom it may concern:

Be it known that I, LEANDER E. REYNOLDS, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented new and useful Improvements in Knockdown Boxes, of which the following is a specification.

My invention relates especially to boxes designed for the shipment of berries, or other small fruits, though it can well be used for other purposes, and its object is to construct such a box which will be very cheap; which can be shipped in knockdown condition; which can be easily and quickly set up, and which, when assembled, will be firm and rigid. This object I accomplish by the means shown in the accompanying drawings, in which—

Figure 1 is a plan view of the blank from which the sides of the box are made. Fig. 2 shows these sides formed up to make a rectangular box, but without the bottom. Fig. 3 is a plan of the blank from which the bottom of the box is formed. Fig. 4 is a side plan of one of the sides of the box illustrating the interlocking means between the bottom and side. Fig. 5 is an enlarged detail in cross-section on line *x*—*x* of Fig. 4.

I intend to construct this box from strawboard, or material of that nature, although veneers or other cheap and light material might be used.

I first construct a rectangular blank, as shown in Fig. 1, which is then scored at the dotted lines so that it will fold easily at right angles upon these lines. The parts 1, 2, 3 and 4 will then become the sides of a rectangular box. The part 5 is a flap which may be glued or otherwise attached to the part 1, thus holding the parts in position. The four sides, however, may be attached together in any well known manner.

I have found that when the box is constructed of strawboard and the flap 5 is attached to the part 1, it will collapse, so that the sides 1 and 4 lie together, and the sides 2 and 3 lie together and take up only twice the thickness of the material, while, at the same time, the attachment between the parts 1 and 4 remains perfect, and the parts can, at any time, be expanded into rectangular form.

I construct a bottom from a blank of the form shown in Fig. 3. The dotted lines in this figure also indicate scoring which will permit the edges to turn at right angles to the body and thus will form four flaps. The flaps 8 8 may be turned in either direction, and their office is only to stiffen the bottom and maintain more perfect contact with the sides. For this purpose it will usually be more advantageous to turn them so that they will extend upwardly from the bottom when in position, as they will thus have a tendency to close any opening which might be left by the bulging of the sides away from the bottom. The flaps 9 9 may, if desired, be wider than the flaps 8 8 and each flap 9 carries a longitudinal slot 10 at a suitable distance from its edge. This leaves between such slot and the edge a strip 11 with its edges free and with its ends united to the body of the flap 9.

In two opposite sides of the box, as in 2 and 4, I cut a horizontal slot 12, and depending therefrom at each end, vertical slots 13 13, thus leaving, surrounded by a slot upon the top and both sides, the tongue 14. For the most efficient operation of the device, the slots 13 should be just a trifle longer vertically than the width of the strip 11, so that the strip 11, passing through such vertical slots, will be held both at top and bottom without much, if any, play.

The four sides being assembled, as shown in Fig. 2, and expanded to rectangular form, I take the bottom blank 6 and fold upward at right angles thereto the four flaps 8 8 and 9 9, and insert the same into the box from the top, pressing it downward. It should be so placed that the flaps 9 9 come in contact with the sides 2 and 4. As the bottom passes downward, I press or spring the tongue 14 inwardly so that it will enter the slot 10. The tendency is for the strip 11 to spring outwardly at the same time the tongue 14 is pressed inwardly, and the result would therefore be that, if we were observing the structure in Fig. 2 as the bottom was being seated, the strip 11 would enter the slot 12 and the central portion of the strip would pass outside of the upper end of the tongue 14, while the strip 11, near its ends, would pass from the outside of the box to the inside of the box through the slots 13 13. As the seating operation was continued, this strip would pass on down through the slots 13 until the downward motion of the bottom was checked by the contact of the underside of the strip 11 with the bottom of the slots 13. The strips 11 being of the proper width and the tongue 14 exerting an outward pressure, the strip 11, as soon as the top thereof reached the slot 12, would spring out therethrough. The strip 11 would then occupy the position shown in Fig. 4, passing from the inside of the box out through one slot 13, passing horizontally along outside of the tongue 14, reëntering the box at the other slot 13, held from downward motion by the contact of its edges with the bottoms of the slots 13, and held from upward motion by the contact of its upper edge with the main body of the side 4 at the upper edge of the slot 12. This locking engagement on the central line *x*—*x* of Fig. 4 is shown more in detail in Fig. 5. The bottom can not go further downward because the tongue 14 and the slots 13 prevent, and it can not move upward because the strip 11 comes into contact with the body 4. If it is desired to remove the bottom, the body 4 should be sprung outwardly at its central portion. This permits the strip 11 to slip up off from the tongue 14, and thereupon the bottom and side are disengaged. The holes 7 7 in the bottom I find desirable for purposes of drainage and ventilation, and may be of any suitable shape

and number. I find it desirable, also, to coat the upper surface of the bottom and the inner surface of the sides with paraffin, or some waterproof material. This locking engagement could be used upon more than two sides of the box if desired, but will not usually be necessary. If, as may be the case, the bottom, from moisture or otherwise, is inclined to sag, it can not do so in any considerable degree, because the sides will retain the bottom in the proper position and keep it stretched, and they will do so with especial efficiency on account of the peculiar locking arrangement described.

I have shown in the side of the box a horizontal slot with two vertical slots depending therefrom; but evidently the number and arrangement of these slots are not material, so long as they provide a means whereby the locking strip attached to the bottom may spring out into double engagement with the sides and lock against motion in either direction.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

1. In a box of the class described, a plurality of collapsible side-section members, one of the latter having an upwardly projecting locking strip defined by a horizontal slot and end slots at an angle to such horizontal slot, and a bottom having a slotted flap member adapted to be turned at an angle, the locking strip passing through the slot of the flap member of the bottom, the flap projecting through the horizontal slot and into the angular slots when the bottom and side section members are associated, thereby locking the bottom against movement in both vertical directions.

2. A box of the class described comprising a body composed of a plurality of collapsible side-section members having slots formed in opposite members to provide upwardly projecting locking strips, and a bottom with edge flaps, two of the flaps being longitudinally slotted to receive the locking strips when the bottom is inserted in the body, the flaps of the bottom being projected outwardly and having the free edges thereof adjacent to the edges of the slots in the side section members to lock the bottom against movement in both vertical directions.

3. In a box of the class described, the combination of side and bottom members, one member having a slot therein and the other member having a slot at an angle to the slot of the first mentioned member, whereby there is formed an intervening tongue with a free end, and the other of said members having a flap with two free sides adapted to enter said slots in the first member and engage the tongue, the tongue and flap projecting in reverse directions when the bottom and side members are associated, and said tongue and flap preventing the bottom from having upward or downward movement.

4. In a box of the class described, the combination of side and bottom members, two of the side members having slots therein intersected by angular slots to provide upwardly projecting tongues, and the bottom member having edge flaps which are adapted to be projected upwardly, two of the flaps being longitudinally slotted to receive the tongues of the side members and project outwardly through the slots of the latter to obstruct upward movement of the bottom, the tongues preventing the said bottom from having downward movement.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LEANDER E. REYNOLDS.

Witnesses:
MARY S. TOOKER,
A. C. DENISON.