

947,563.

3 SHEETS--SHEET 1.

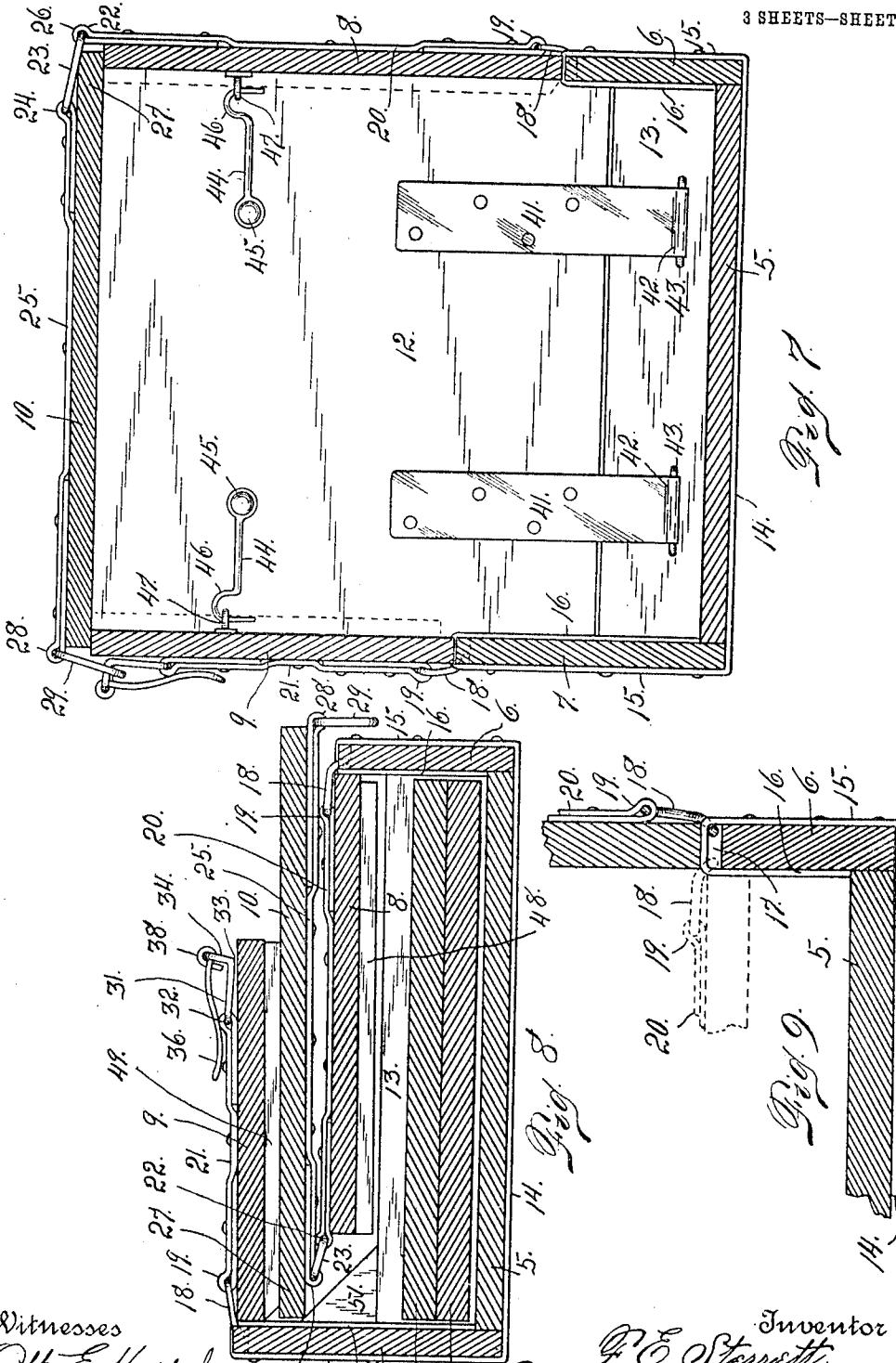


F. E. STERRETT.
FOLDING CRATE OR BOX.
APPLICATION FILED MAR. 29, 1909.

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Patented Jan. 25, 1910.

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Witnesses
Otto E. Haddick
J. W. Thornburgh.

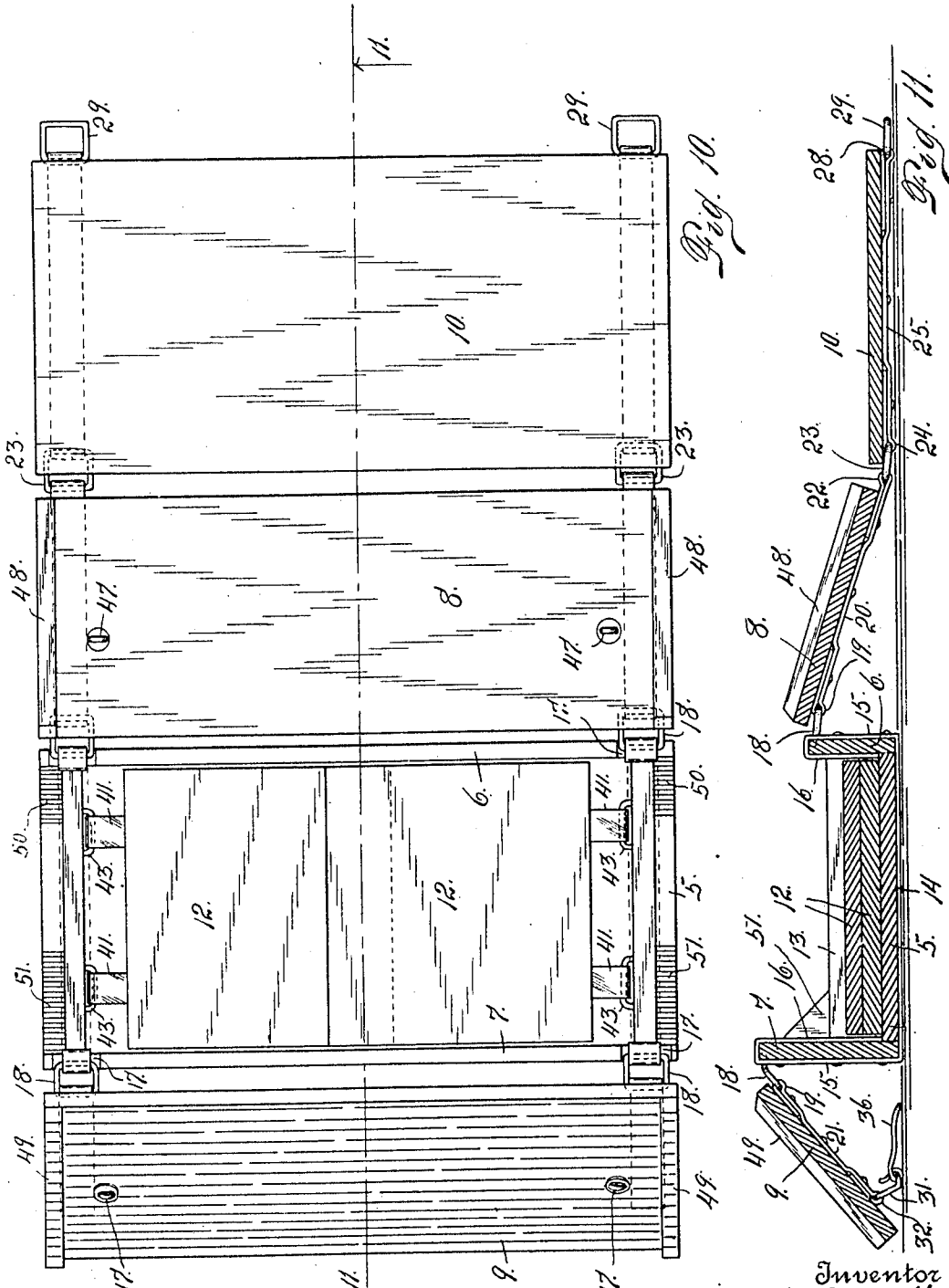
Inventor
F. E. Sterrett
By *[Signature]*
Attorney

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UNITED STATES PATENT OFFICE.

FRANK E. STERRETT, OF DENVER, COLORADO.

FOLDING CRATE OR BOX.

947,563.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed March 29, 1909. Serial No. 486,458.

To all whom it may concern:

Be it known that I, FRANK E. STERRETT, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Folding Crates or Boxes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in folding crates or boxes, my object being to provide a construction of this class which shall be readily collapsible, whereby it becomes practicable for the consignee to return the crates or boxes in collapsed form for reuse in shipping goods.

My present improvement embodies certain novel features of construction, all of which will be fully understood by reference to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a perspective view of a box containing my improvements. Fig. 2 is a front view in detail illustrating the fastening device. Fig. 3 is a side elevation of the same looking in the direction of arrow 3, Fig. 2. Fig. 4 is a view similar to Fig. 2, but showing the fastener in the locked position. Fig. 5 is a side view of the same or a view looking in the direction of arrow 5 Fig. 4. Fig. 6 is a side elevation in detail showing the locking arm of my improved fastener. Fig. 7 is a cross section taken through the box shown in its position for use. Fig. 8 is a similar view showing it in collapsed or knock-down form. Fig. 9 is a fragmentary sectional view on a somewhat larger scale. Fig. 10 is a top plan view showing the box in its extended form. Fig. 11 is a sectional view of the same taken on the line 11—11 Fig. 10.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the bottom; 6 and 7 upwardly projecting stationary side members connected with the bottom; 8 and 9 either side members hinged to the stationary side members 6 and 7 respectively; 10 the top member hinged to the side member 8; and 12, 12 two end members hinged to stationary end members 13.

The bottom of the box is provided with a metal strip 14 which extends upwardly on the stationary side 6 and 7 as shown at 15 and downwardly on the inside of these members as shown at 16. At the upper edge of each of the members 6 and 7, the material is slightly cut away to leave elongated bearings 17 which are engaged by links 18, the latter also engaging hinge-eyes 19 formed at the lower extremities of metal strips 20 and 21 secured to the hinged members 8 and 9 of the box.

By virtue of the elongated bearing 17 for the link 18, the said link is allowed to travel inwardly from the full line position in Fig. 9 to the dotted line position in the same figure during the operation of folding the sides 8 and 9 of the box inwardly to the position shown in Fig. 8. By virtue of this special hinged construction, the parts 8 and 9 of the box are permitted to fold inwardly without cutting away any material or weakening the box where the hinges are located.

The extremity of each metal strip 20 remote from the hinge-eye 19, is provided with an eye 22 which projects slightly beyond the adjacent edge of the box member 8 and is connected by a link 23 with a hinge 24 of a metal strip 25 extending transversely across the top of the box. The hinge-eye 24 is located a short distance from the adjacent longitudinal edge 26 of the top of the box leaving a part 27 projecting beyond the said eye 24, to permit the top member 10 to fold inwardly flush with the inner surface of the stationary member 7 when the box is in the collapsed position (see Fig. 8).

The extremity of each metal strip 25 remote from the hinge-eye 24 is provided with a hinge-eye 28, which projects slightly beyond the adjacent edge of the top member 10 and is engaged by a link 29 adapted to interlock with an angle link 30 whose body member 31 engages a hinge-eye 32 formed in one extremity of the metal strip 21. The angle link 30 is bent at 33 to form two members 31 and 34 which occupy positions preferably at right angles to each other. Pivotaly mounted or fulcrumed upon the angle member 34 is a locking lever 35 which as shown in the drawing is composed of an integral piece of wire having a long arm 36 and a relatively short arm 37, the two arms extending virtually at right angles to each other. The wire is bent at the angle of the two arms to form an eye 38 through

which the extremity 39 of the member 34 of the angle link passes.

In order to lock the cover in the closed position, the arm 36 of the lever 35 is first 5 passed upwardly through the link 29 (see Figs. 2 and 3). In this event the short arm 37 of the lever projects outwardly and the lower extremity of the link 29 occupies a position just above the short arm of the 10 lever. The lever is then actuated by throwing its long arm downwardly against the link 29, whereby the free end of the said link is thrown into the angle 40 formed by the two arms 36 and 37 of the locking lever. 15 Then as the downward and inward movement of the lever arm 36 is continued, the lower extremity of the link 29 is carried inwardly and occupies a position in the rear of the lever arm 36 and just below the short 20 arm 37, the latter serving to carry the lower end of the link 29 outwardly when the arm 36 of the lever is manipulated to interlock with the lid of the box.

As shown in the drawing, the metal strips 25 extend entirely around the box near the opposite extremities thereof, thus duplicating the locking devices, strip members and links which have heretofore been given reference characters in connection with the hinge 30 members of the box.

The end members of the box are each hinged to an adjacent stationary end member 13 by means of metal strips 41 secured to each end member 12 and movably connected as shown at 42 with hinged members 35 33 which as shown in the drawing are composed of staples driven in to the adjacent stationary end member of the box.

Each end member 12 is further provided 40 with hooks 44 pivotally connected with the member 12 as shown at 45. The hook member 46 of each hook is adapted to engage an eye 47 secured to and protruding from the inner surface of the adjacent side member 45 8 or 9 of the box as the case may be. These hooks serve to securely retain the hinged side members 8 and 9 of the box in place when the latter is in use, whereby the said side members are prevented from bulging outwardly. 50

When the box is in use, the various members are in the position shown in Figs. 1 and 7 of the drawing, while when the box is collapsed, it is in the position shown in Fig. 8 of the drawing. This collapsed position of 55 the parts is obtained by unlocking the lid, disengaging the hooks 44 from the hinged side members, folding the end members inwardly successively, then folding the side member 8 inwardly upon the end members, then the top member in the opposite direction causing it to engage the outer surface 60 of the member 8, the edge 26 of the top member being thrown to engagement with the stationary side member 7, in order to bring

the opposite edge of the top member as nearly flush as possible with the outer surface of the stationary side member 6; after which the hinged side member 9 is folded inwardly on top of the top member (see 70 Fig. 8).

In folding the side members 8 and 9 inwardly, it must be remembered that the links 18 are carried inwardly through the elongated bearings 17, until the surfaces of 75 the side members 8 and 9 are brought flush on the inner surfaces of the adjacent stationary side members 6 and 7 after which the hinged side members are free to fold inwardly to position at right angles to the 80 respective stationary members with which they are connected.

The folding side members 8 and 9 of the box are provided with reinforcing strips or cleats 48 and 49 which serve not only to 85 strengthen the parts with which they are directly connected, but also engage the folding ends of the box and prevent the latter from moving outwardly due to pressure from within. The stationary side members 90 6 and 7 are also provided outside of the end members with triangular parts 50 and 51 which engage the bottom 5 as well as the side members 6 and 7. These parts also 95 strengthen the end members as will be readily understood.

Having thus described my invention, what I claim is:

1. A folding box including a bottom having upwardly projecting stationary side 100 parts, and other side parts hinged to the stationary parts, one set of the straps having elongated eyes, extending through the side of the box to permit the hinged parts to move inwardly before folding until the outer 105 surfaces of the hinged parts are flush with the inner surfaces of the stationary parts, substantially as described.

2. A folding box including a bottom having upwardly projecting stationary side parts and 110 other side parts hinged to the stationary parts, the stationary and hinged members being provided with metal straps, and links connecting the straps to form the hinges, one set of these straps having elongated eyes 115 approximately equal to the thickness of the side parts to allow the hinged members to move inwardly before folding until the outer surfaces of the hinged members are flush with the inner surfaces of the stationary 120 members, substantially as described.

3. A folding box including a bottom having upwardly projecting stationary side parts, other side parts hinged to the stationary parts, the stationary and hinged parts being pro- 125 vided with metal straps, the straps of the stationary parts passing over the upper edges of the said parts, the said edges being recessed beneath the straps, and links connecting the metal straps of the hinged mem- 130

bers with the metal straps of the stationary members and engaging the elongated recesses of the stationary members to allow the hinged members to move inwardly before folding until the outer surfaces of the hinged members are flush with the inner surfaces of the stationary members, substantially as described.

4. A folding box including a box having upwardly projecting stationary side parts, folding side parts hinged to the stationary parts, the hinges including links loosely engaging bearings with which the folding parts are provided, and engaging elongated recesses formed in the upper edges of the stationary members and closed at the top, to allow the folding members to move inwardly before folding until their outer surfaces are substantially flush with the inner surfaces of the stationary members, substantially as described.

5. A folding box including a bottom having upwardly projecting stationary side parts of unequal height and folding side parts hinged to the stationary side members, the hinges having elongated eyes and links engaging said eyes, the latter being approximately equal in length to the thickness of the side parts to allow the folding parts to move inwardly before folding until the outer surfaces of the folding parts are substantially flush with the inner surfaces of the stationary parts, the folding side parts being of unequal width, substantially as described.

6. A folding box comprising a bottom having upwardly projecting side stationary parts of unequal height, folding side parts hinged to the stationary parts, the folding parts being of unequal width to harmonize with the inequality in height of the stationary parts, a folding top member hinged to one of the folding side members, the hinge including a link and bearings therefor with which the connected members are respectively provided, the link bearing of the top member being located at a distance from the adjacent edge of the top member for the purpose set forth.

7. A folding box including a bottom having upwardly projecting stationary side parts, folding members hinged to the stationary side parts, a folding top member, the top member and one of the folding side members being provided with hinge bearings, and a link connecting said bearings to form a hinge joint, the hinge bearing of the folding side member projecting above the top of the same, while the hinge bearing of the top member is located at a distance from the adjacent edge of the last named member for the purpose set forth.

8. A folding box including a bottom

having upwardly projecting stationary side members of unequal height, folding side members hinged to the stationary members and differing in width to harmonize with the difference in height of the stationary members, a folding top member hinged to one of the folding side members, a fastening means for connecting the top member to the other folding side member, said fastening means comprising a link connected with the top member, an angle link connected with the said side member and a lever fulcrumed on the angle link and having arms extending substantially at right angles to each other, one arm of the said lever being adapted to pass through the link of the top member for fastening purposes, substantially as described.

9. A folding box including a stationary bottom having upwardly projecting stationary side members, folding side members hinged to the stationary members, a folding top member hinged to one of the folding side members, and means for fastening the top member to the other folding side member, comprising two links respectively attached to the parts to be connected, one of the links having a part forming an angle with the body of the link, the angle part of the one link being adapted to pass through the other link, and a lever fulcrumed on the angle part of one link and having arms extending approximately at right angles to each other, substantially as described.

10. A folding box having means for fastening two of the folding members together, comprising two links respectively attached to the parts to be connected, one of the links having a part forming an angle with the body of the link, the angle part of the one link being adapted to enter the other link, and a lever fulcrumed on the angle part of one link and having arms extending approximately at right angles to each other, one of the lever arms being adapted to pass through the other link for fastening purposes, substantially as described.

11. The combination with a folding box, of means for fastening two of the folding members together, comprising two links respectively attached to the parts to be connected, a portion of one of the links being adapted to enter the other link, and a lever fulcrumed on the protruding link portion and having arms forming a suitable angle, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK E. STERRETT.

Witnesses:

JESSIE F. HOBART,

A. EBERT O'BRIEN.