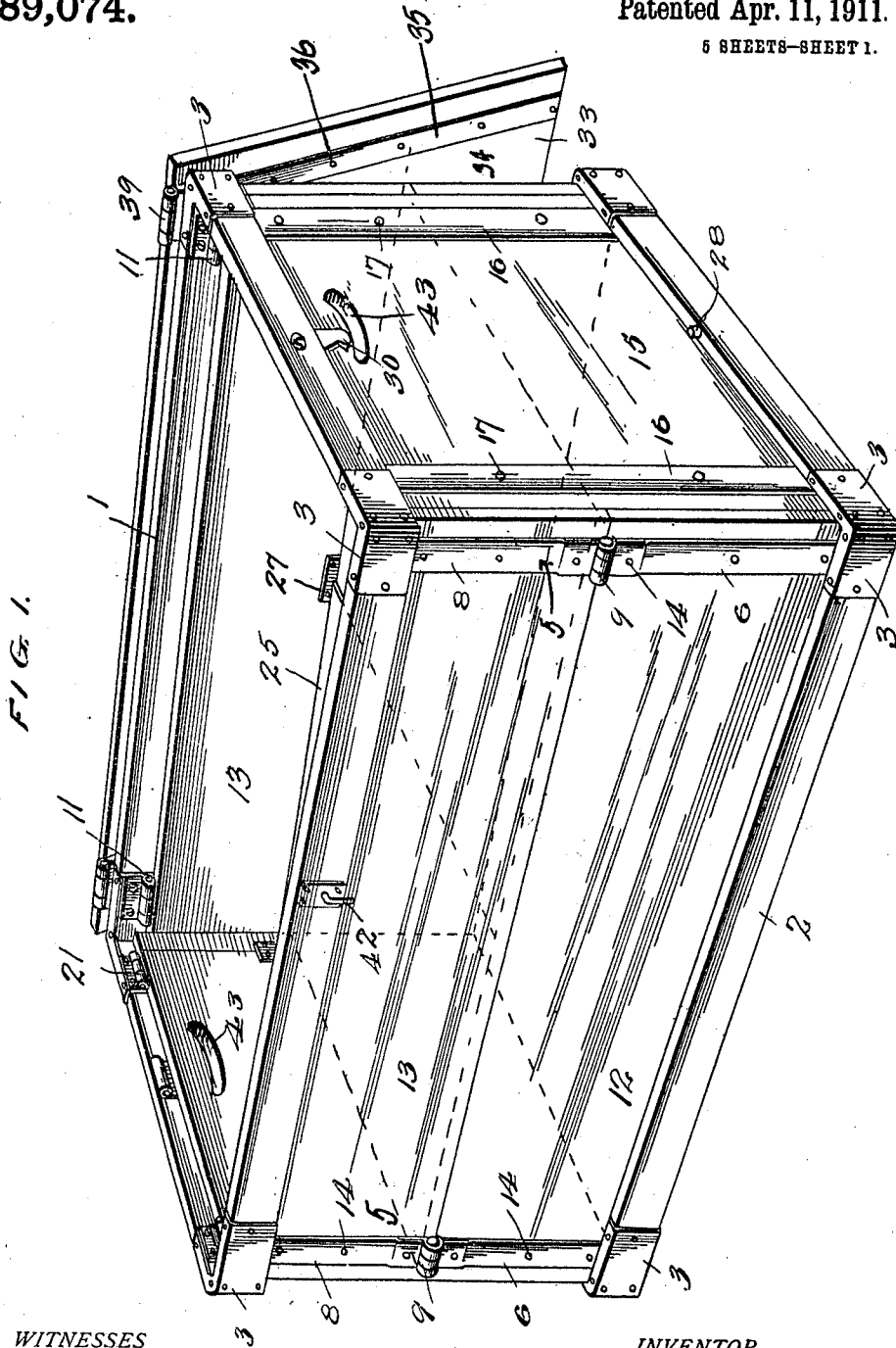


C. H. STALL.
FOLDING CRATE OR BOX.
APPLICATION FILED SEPT. 20, 1910.

989,074.

Patented Apr. 11, 1911.

5 SHEETS-SHEET 1.



WITNESSES

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5 SHEETS—SHEET 2.

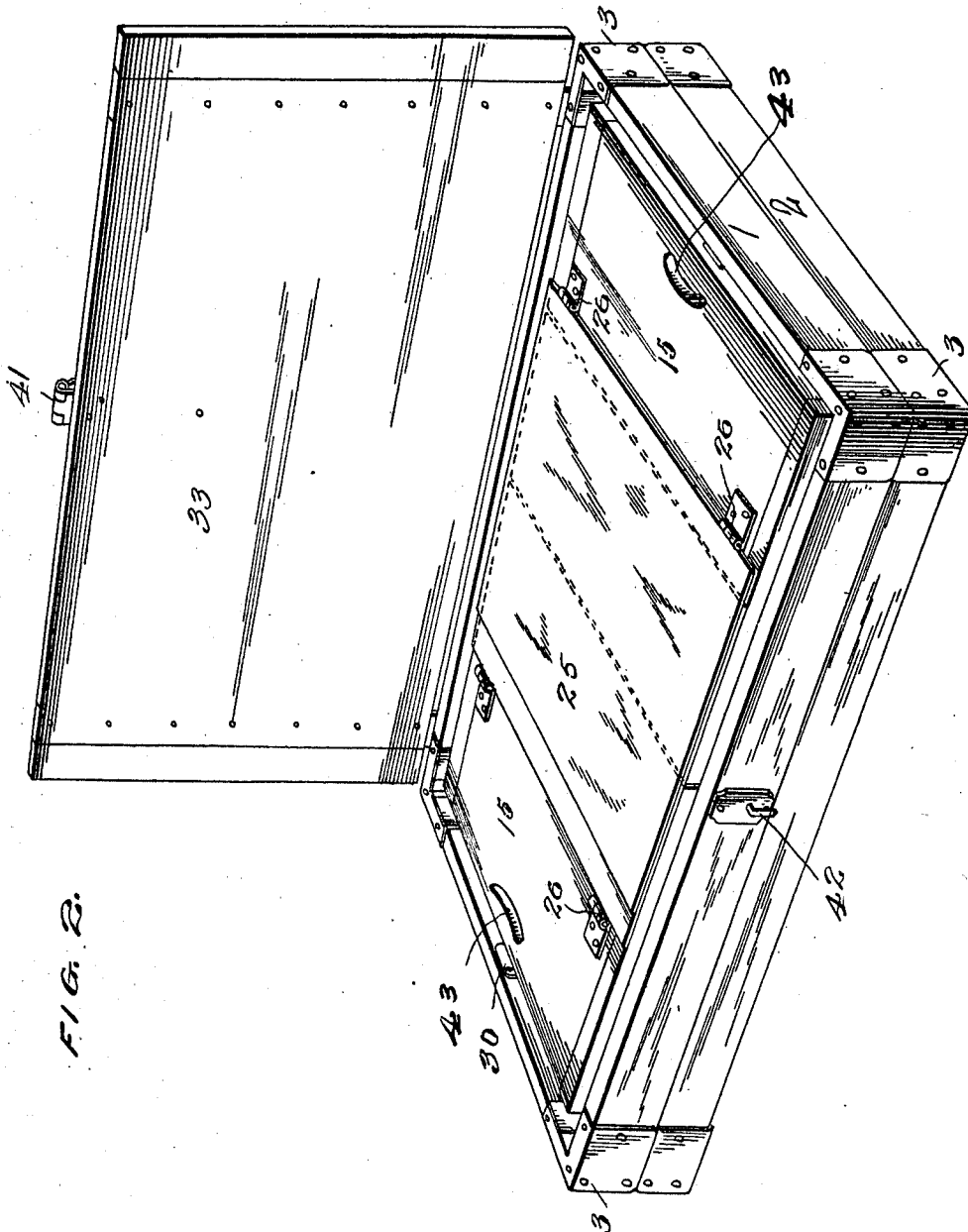


FIG. 2.

WITNESSES

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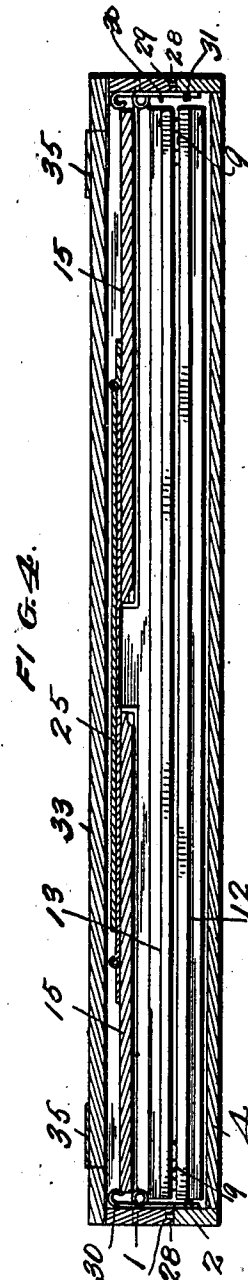
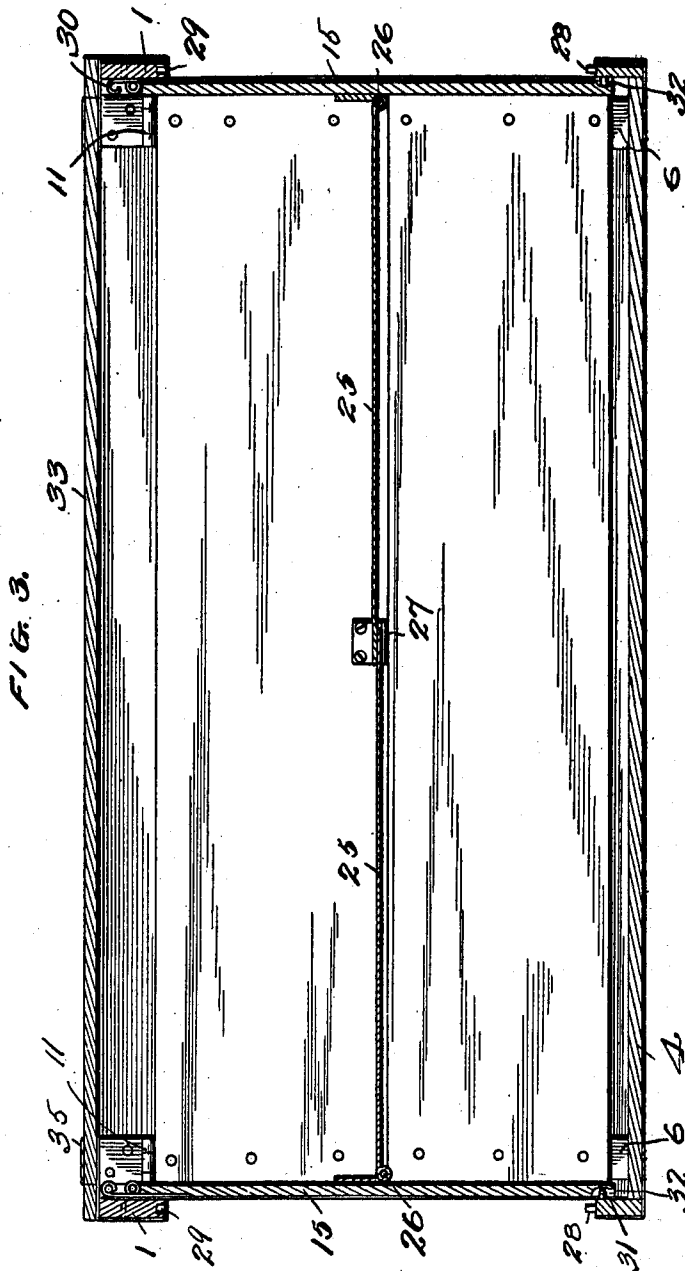
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Patented Apr. 11, 1911.

5 SHEETS-SHEET 3.



WITNESSES

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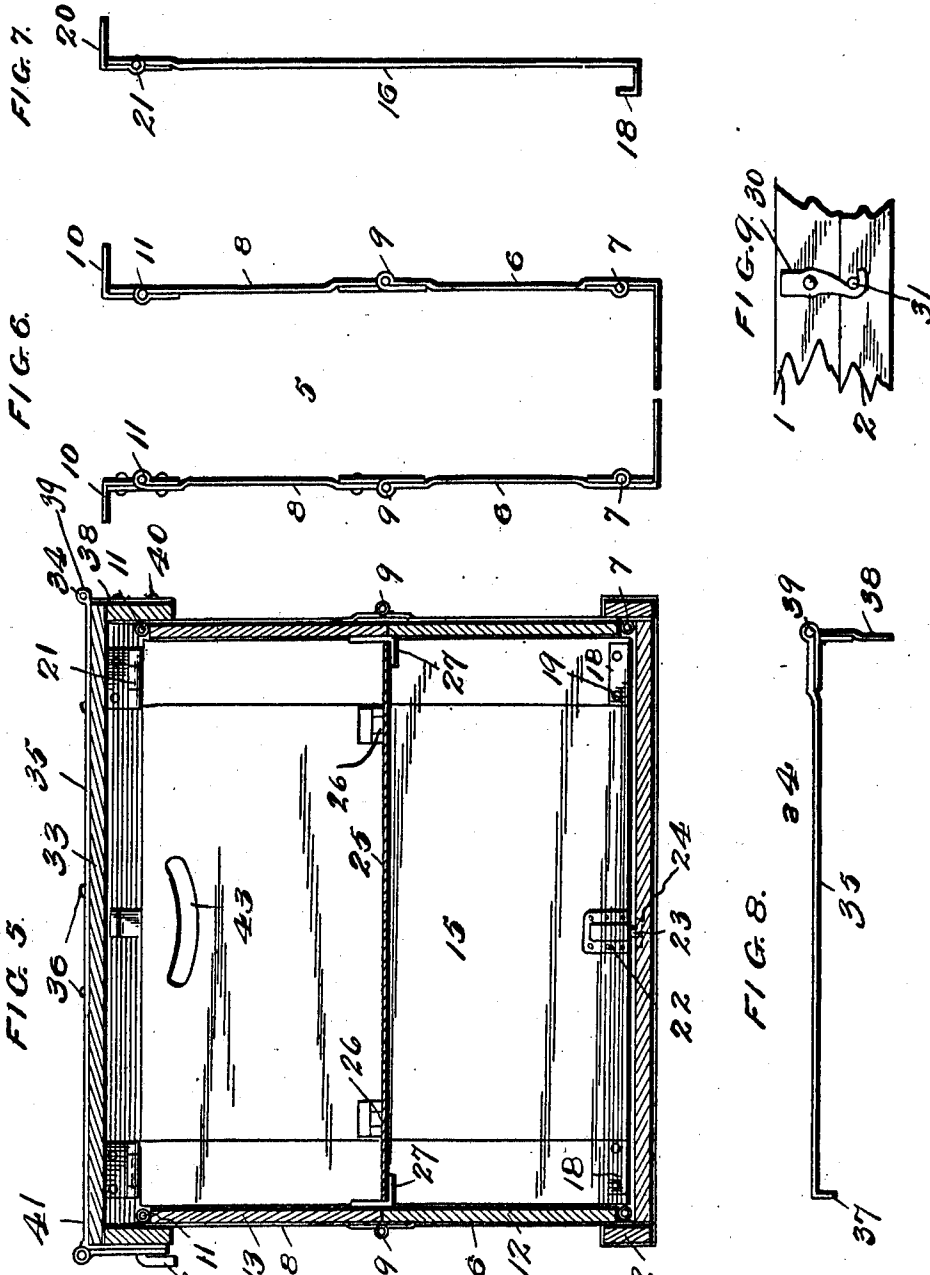
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6 SHEETS-SHEET 4.



WITNESSES
C. H. Stall.
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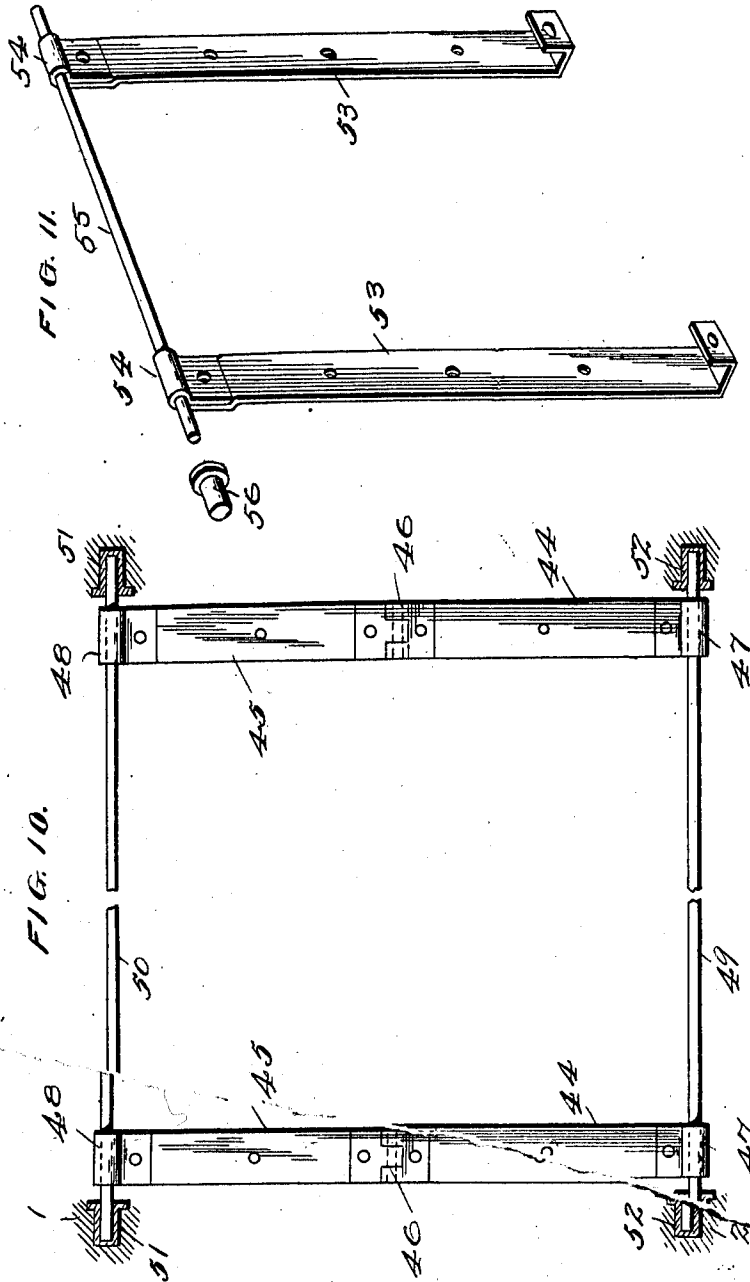
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C. H. STALL.
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989,074.

Patented Apr. 11, 1911.

5 SHEETS—SHEET 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES H. STALL, OF ALTOONA, PENNSYLVANIA, ASSIGNOR TO UNITED STATES FOLDING BOX AND CRATE COMPANY, OF ALTOONA, PENNSYLVANIA, A CORPORATION OF ARIZONA TERRITORY.

FOLDING CRATE OR BOX.

989,074.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed September 20, 1910. Serial No. 582,857.

To all whom it may concern:

Be it known that I, CHARLES H. STALL, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Folding Crates or Boxes, of which the following is a specification.

My invention relates to folding crates or boxes.

An important object of this invention is to provide a box or crate, which may be folded when not in use to occupy the minimum amount of space, and which is simple in construction and cheap to manufacture.

A further object of this invention is to provide a box or crate of the above character, having folding partitions for dividing the same into upper and lower horizontal compartments.

A further object of this invention is to provide a folding box or crate, which is strong without being very heavy, and which is very durable.

Other objects and advantages of this invention will appear in the course of the following description.

In the accompanying drawings forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a perspective view of the crate or box, showing the same in its distended position and the lid folded back, Fig. 2 is a similar view, showing the crate or box in its folded position, Fig. 3 is a central vertical longitudinal sectional view through the crate or box, the same being in its distended position, Fig. 4 is a similar view, the crate or box being in its folded position, Fig. 5 is a transverse vertical sectional view through the crate or box, the same being in its distended position, Fig. 6 is a side view of one of the strap hinge-members employed upon the crate or box, Fig. 7 is a similar view of one of the hinges for the ends of the crate or box, Fig. 8 is a similar view of a hinge for the lid, Fig. 9 is a fragmentary view of portions of upper and lower frames of the crate or box, and showing a latch for securing the same together, when the crate is in its folded position, Fig. 10 is a top plan view of a slightly modified form of hinge for use in connection with the sides of the box or crate, and Fig.

11 is a perspective view of a slightly modified form of means for securing the ends to the other parts of the crate or box.

In the drawings, wherein is illustrated a preferred embodiment of my invention, the crate or box is shown as comprising upper and lower preferably rectangular frames 1 and 2, respectively. Each of these frames may preferably have its corners provided with caps or castings 3, as shown, for strengthening and protecting the same. The lower frame 2 is provided with a bottom 4 having rigid connection with the same in any suitable manner. Pairs of strap hinge-members 5 are disposed near the ends of the frames 1 and 2, as shown. As shown in Fig. 6, each of the strap hinge-members 5, when the crate or box is in its distended position, is substantially U-shaped. Each of the strap hinge-members has its lower transverse portion screwed or riveted to the lower surface of the bottom 4, the free ends of this lower transverse portion being bent upwardly and dispensed within suitable openings formed between the bottom 4 and the side strips of the lower frame 2. These up-turned ends have hinged connection with straps 6, as shown at 7, which straps in turn are hinged to straps 8, as shown at 9. The upper ends of the straps 8 have hinged connection with angle straps 10, as shown at 11. The straps 10 are screwed or riveted to the side pieces of the upper frame 1 near the end piece of the same. The horizontal portions of these angle straps are disposed upon the upper edge of said side pieces and rigidly connected therewith by any suitable means. These horizontal portions are covered by portions of the caps 3.

The sides of the crate or box are foldable, and each of said sides comprises strips 12 and 13, which are screwed or riveted respectively to the straps 6 and 8, as shown at 14. The adjacent edges of the strips 12 and 13 meet in a plane passing through the hinged joints 9, as shown. The foldable sides are disposed within the frames 1 and 2, being secured to the inner sides of the strap spring-members 5, as above stated.

End pieces 15 are disposed between the foldable sides and adjacent the ends of the same, as clearly illustrated in Fig. 1. Each of the end pieces 15 is provided upon its outer side and near its vertical edges with

straps 16, which are screwed or riveted to said end piece, as shown at 17. The lower end of each of the straps 16 is bent as shown in Fig. 7, to extend below the lower end of the end piece 15, and this lower end is bent upwardly as shown at 18 to be rigidly secured to the inner surface of said end piece, as clearly illustrated in Fig. 5 at 19. The upper end of each of strips 16 has hinged connection with an angle strip 20, as shown at 21. This angle strip is rigidly connected with the end piece of the upper frame 1, as shown, and has the horizontal portion thereof disposed upon the upper edge of said end piece and rigidly connected with the same in any suitable manner. This horizontal portion is covered by a portion of the cap 3. The end pieces 15 thus have their upper ends hinged to the inner surfaces of the ends of the upper frame 1.

As shown in Fig. 1, the box or crate is in its distended position, the end pieces 15 being substantially vertically disposed. Each of the end pieces 15 is retained in this vertical position by means of a latch 22 suitably secured to the same upon its inner surface and near its lower end. This latch comprises a sliding bolt 23 adapted to engage an opening or socket 24 formed in the bottom 4, as clearly illustrated in Fig. 5.

From the construction of the above referred to parts, it is obvious that when the latches 22 are manipulated to disengage the end pieces 15 from the bottom 4, the lower ends of said end pieces may then be swung inwardly to position said end pieces in a substantially horizontal plane above and out of engagement with the upper side strips 13, which may be effected on account of the fact that the hinged joints 21 are disposed in a horizontal plane above the hinged joints 11. After the end pieces 15 have been thus positioned, the strips 12 and 13 may be folded inwardly, whereby the crate or box has the appearance, as best illustrated in Fig. 2. When the crate or box is folded as above described, the strips 13 rest upon the strips 12 which are in turn disposed upon the bottom 4. The end pieces 15 are disposed upon the strips 13.

In order that the crate or box may be divided for use into a plurality of horizontal compartments, partition walls or plates 25 are provided, which have their outer ends pivotally connected to the inner surfaces of the end pieces 15 midway of the horizontal edges of said end pieces, by means of hinges 26. The inner ends of the partition walls 25 may preferably overlap, as shown in Fig. 3, and such overlapped ends are supported by suitable brackets 27, which are rigidly secured to the side strips 13 intermediate the ends thereof and adjacent their lower edges. Attention is called to the fact that these brackets are so positioned that they are not

engaged by the end pieces 15 when the latter are swung inwardly and upwardly for folding the crate or box, as above stated. The position of the partition walls 25, when the box or crate is in its distended position, is best illustrated in Figs. 3 and 5, while the position of such partition walls after the crate or box has been folded, is best illustrated in Figs. 2 and 4. When the crate or box is in its folded position, the upper and lower frames 1 and 2 directly engage each other, as shown in Figs. 2 and 4.

The end pieces of the lower frame 2 are provided preferably midway of their ends with upstanding studs 28, adapted to snugly fit within openings or sockets 29 formed upon the end pieces of the upper frame 1, for preventing relative displacement of the frames 1 and 2. The frames 1 and 2 are locked in this engagement with each other by means to be next described.

Each of the end pieces of the frame 1 has a hook member 30 pivotally connected with the same upon its inner side and midway of its ends, in connection with which see Figs. 1, 3, 4 and 9. This hook member is adapted to engage a pin or stud 31 disposed upon the inner side of the end piece of the lower frame 2.

From the description of the above referred to parts, it is obvious that the frames 1 and 2 may be securely locked together in their folded positions by the hook members 30 and the same cannot be separated until said hook members are moved out of engagement with the pins 31. Attention is called to the fact that the lower ends of the end pieces 15 may be provided with recesses 32 for receiving said pins 31, as clearly illustrated in Fig. 3.

The numeral 33 designates a lid, which is connected with the upper frame 1 by means of hinges 34, as illustrated in Figs. 1, 5 and 8. The lid 33 may preferably have a pair of the hinges 34, which are connected with said lid near the ends thereof. Each of the hinges 34 comprises a strap 35 which is disposed upon the outer surface of the lid 33 and screwed or riveted to the same, as shown at 36. This strap 35 has one end thereof bent downwardly as shown at 37, for engagement with one edge of the lid. The opposite end of the strap 35 has pivotal connection with a strap 38, as shown at 39. The strap 38 is rigidly connected with the rear side piece of the frame 1, as shown at 40. The lid 33 is provided adjacent its forward edge and midway of its ends with a hasp 41, which is rigidly secured to said lid by any suitable means. This hasp is adapted for engagement with a rotatable latch 42, suitably mounted upon the forward side piece of the frame 1. It is to be understood however, that any suitable means may be employed to lock the lid to the upper frame

1. The end pieces 15 may preferably be provided with hand openings 43 formed through the upper portion thereof, which openings are disposed below the upper frame 1, when the box or crate is in its distended position, as clearly shown in Fig. 1.

In Figs. 10 and 11, I have illustrated slightly modified form of means for connecting the foldable sides to the frames 1 and 2 and the end pieces 15 with the frame 1. When employing the means shown in Fig. 10, the strap hinge-members 5 are dispensed with, and the side strips 12 and 13 are rigidly connected respectively, with straps 44 and 45. There is one strap 44 and 45 secured to each end of the strips 12 and 13 respectively. The straps 44 and 45 have a hinged joint, as shown at 46. The free ends of these straps are provided respectively, with knuckles 47 and 48 respectively, having suitable axial openings formed there-through for receiving longitudinally disposed rods 49 and 50. The end pieces of the frames 1 and 2 are provided adjacent their ends with bushings 51 and 52 respectively, for receiving the ends of the rods 50 and 49. By the construction of the above referred to parts it is obvious that the foldable sides including strips 12 and 13, are hinged respectively to the frames 2 and 1 and to each other, and that said strips may be folded inwardly in a similar manner as described in connection with the first form of my invention. In employing the means shown in Fig. 11 in connection with each of the end pieces 15, the hinge shown in Fig. 7 is dispensed with and said end piece rigidly connected with straps 53, by means of screws or the like. These straps have their lower ends bent, as shown, in a similar manner to the way in which the lower end of the strap 16 is bent and for a similar purpose. The upper ends of the straps 53 are provided with knuckles 54, having axial openings formed therethrough for receiving a transverse rod 55. This transverse rod has each end thereof rotatably mounted within a bushing 56, which is suitably mounted within the side strip of the upper frame 1 and near the end thereof. The rod 55 is thus pivotally connected with the side strips of the frame 1 and disposed in a plane above the longitudinal rods 50, so that the end piece 15 may be swung inwardly and upwardly to assume a substantially horizontal position out of engagement with the strips 13, in a similar manner as described in connection with the first form of my invention.

From the above description and explanation, taken in connection with the drawing, it is thought that the use and operation of the various parts of my crate or box, are obvious and it would therefore be unnecessary to further recite the same.

I wish it understood that the forms of my invention herewith shown and described, are to be taken as preferred examples of the same, and that certain changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In a crate or box, upper and lower frames, foldable sides having connections with said frames, end pieces having connections with one of said frames, and partition walls connected with the end pieces for dividing the crate into a plurality of compartments.

2. In a crate or box, upper and lower frames, foldable sides having connections with said frames, end pieces having pivotal connections with one of said frames, partition walls having pivotal connections with said end pieces for dividing the crate into a plurality of compartments, and means for supporting the inner ends of said partition walls.

3. In a crate or box, upper and lower frames, foldable sides having pivotal connections with said frames, end pieces disposed between said foldable sides and having pivotal connections with the upper frame, partition walls having pivotal connections with said end pieces intermediate the ends thereof, the inner ends of said partition walls overlapping, and brackets connected with the foldable sides for supporting such overlapping ends.

4. In a crate or box, upper and lower frames, foldable sides having hinged connections with said frames, and pieces disposed between said foldable sides and having hinged connections with the upper frame in a plane above the hinged connections of the foldable sides with the upper frame, so that said end pieces may be swung inwardly and upwardly out of engagement with said foldable sides, and a lid connected with said upper frame.

5. In a crate or box, upper and lower frames, foldable sides having hinged connections with said frames, and end pieces disposed between said foldable sides and having hinged connections with the upper frame in a plane above the hinged connections of the foldable sides with the upper frame, so that said end pieces may be swung inwardly and upwardly out of engagement with said foldable sides.

6. In a crate or box, upper and lower frames, a bottom connected with the lower frame, normally approximately U-shaped strap hinge-members having the transverse portions thereof suitably connected with said bottom, the upper ends of said strap

hinge-members having connections with the upper frame, side strips connected with the normally upstanding portions of said strap hinge-members for forming foldable sides
5 for the crate, and end pieces disposed between the foldable sides and having hinged connections with the upper frame.

7. In a crate or box, upper and lower frames, a bottom connected with the lower
10 frame, normally approximately U-shaped strap hinge-members having the transverse portions thereof rigidly connected with said bottom, the upper ends of said strap hinge-members having connections with the upper
15 frame, side strips connected with the normally upstanding portions of said strap hinge-members for forming foldable sides for the crate, and end pieces disposed between the foldable sides and movable out of
20 engagement therewith.

8. In a crate or box, upper and lower frames, a bottom connected with the lower frame, strap hinge-members having the transverse portions thereof connected with
25 said bottom, foldable sides connected with the upstanding portions of said strap hinge-members, end pieces having hinged connections with the upper frame and adapted to be swung inwardly and outwardly out of
30 engagement with the foldable sides, and means for detachably connecting the lower ends of said end pieces with said bottom.

9. In a crate or box, upper and lower frames, a bottom connected with the lower
35 frame, strap hinge-members having the transverse portions thereof connected with said bottom and the upper portions thereof connected with the upper frame, foldable sides connected with the upstanding portions of said strap hinge-members, end
40 pieces having hinged connections with said upper frame and adapted to be swung inwardly and outwardly out of engagement with said foldable sides, and means to lock
45 the upper and lower frames together, when the crate is folded.

10. In a crate or box, upper and lower frames, foldable sides connected with said frames, end pieces disposed between said
50 foldable sides and connected with the upper frame so that the same may be swung inwardly and upwardly out of engagement with the foldable sides, one of the frames having a stud connected therewith and the

other frame being provided with a socket
55 to receive said stud, whereby the relative displacement of the frames is prevented when the crate is folded, and means carried by said frames for detachably locking the same together when the crate is folded.
60

11. In a crate or box, upper and lower frames, longitudinally disposed rods connected with said frames, strap hinges connecting pairs of said rods, foldable sides connected with said strap hinges, and end
65 pieces disposed between said foldable sides and having connections with the upper frame so that they may be swung upwardly and inwardly out of engagement with said foldable sides.
70

12. In a crate or box, upper and lower frames, longitudinally disposed rods connected with said frames, strap hinges connecting pairs of said rods, foldable sides connected with said strap hinges, and end
75 pieces disposed between said foldable sides and movable into and out of engagement therewith.

13. In a crate or box, upper and lower frames, bushings mounted within said
80 frames, longitudinally disposed rods having their ends mounted within said bushings, strap hinges connecting pairs of said rods, foldable sides connected with said strap hinges, and end pieces disposed between said foldable sides.
85

14. In a crate or box, upper and lower frames, foldable sides connected with said frames, transverse rods connected with the upper frame near the ends thereof, straps
90 connected with said rods, and end pieces connected with said straps to be disposed between said foldable sides.

15. In a crate or box, upper and lower frames, foldable sides connected with said
95 frames, bushings mounted within the upper frame near the ends thereof, transverse rods having their ends disposed within said bushings, and end pieces connected for support with said rods and normally disposed between said foldable sides.
100

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

CHARLES H. STALL.

Witnesses:

W. W. WHITE,
CHAS. W. REEDER.