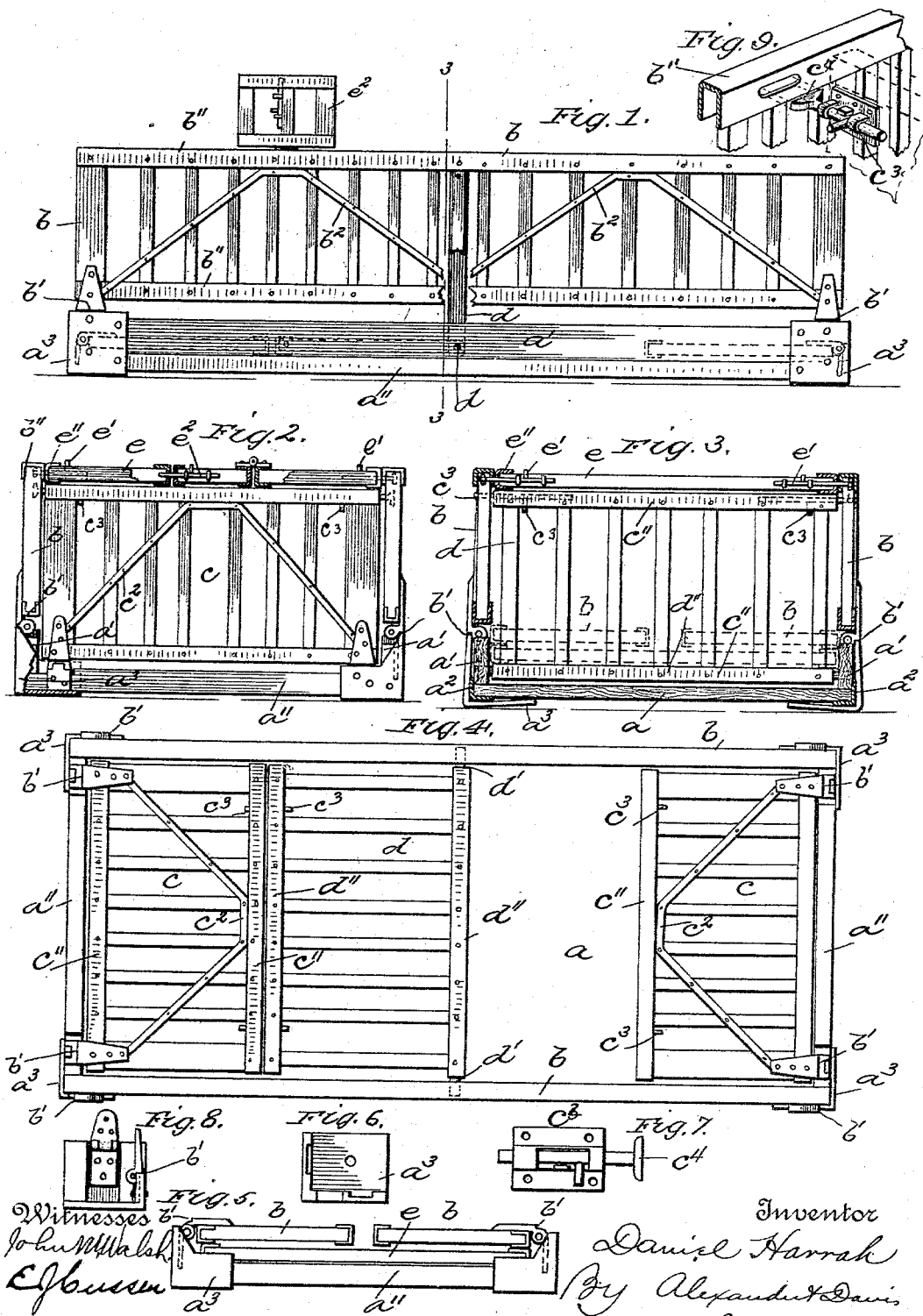


(No Model.)

D. HARRAH.
FOLDING CRATE, BOX, &c.

No. 490,281.

Patented Jan. 24, 1893.



UNITED STATES PATENT OFFICE.

DANIEL HARRAH, OF GILA, ILLINOIS.

FOLDING CRATE, BOX, &c.

SPECIFICATION forming part of Letters Patent No. 490,281, dated January 24, 1893.

Application filed June 3, 1892. Serial No. 435,377. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HARRAH, a citizen of the United States, residing at Gila, in the county of Jasper and State of Illinois, have invented certain new and useful Improvements in Folding Crates, Boxes, &c., of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 represents a side elevation of my improved poultry crate or coop, a portion of one of its sides being broken away to show the central partition and the partition and ends being shown, in dotted lines, folded down upon the bottom of the crate; Fig. 2 an end view, partly in section; Fig. 3 a transverse vertical sectional view; Fig. 4 a plan, showing the top removed and the ends and partition folded down for transportation; Figs. 5 an end view of the crate folded for transportation; and Figs. 6 and 7 detail views, respectively, of the corner boxes and the locking bolts employed. Fig. 8 a detail view of the inside of one of the metallic corner boxes. Fig. 9 a detail perspective view showing more clearly one of the locking-bolts and the adjacent part of one of the sides with which the bolt-head engages.

This invention relates to certain improvements in folding shipping-crates, coops, boxes and cases, and it has for its object to produce a crate that will be very strong and simple in construction and which may be very readily and compactly folded when not in use, as will more fully hereinafter appear.

Referring to the drawings, *a* designates the bottom of the crate which has secured to its four edges the vertical strips or boards *a'* *a''* which project above the bottom a suitable distance, the side strips being slightly higher than the end ones. Embracing the lower longitudinal edges of the crate and secured thereto are the angular sheet metal strips *a²*, which add strength and rigidity to the crate and prevent wear, and secured to each of the four lower corners of the crate is a three-sided metal box *a³*, whose sides extend up on the outside of the crate and are secured to the strips *a'* *a''* and whose bottom part extends in under the bottom and is rigidly secured thereto; these boxes or corner pieces also serve to add rigidity and durability to the crate.

Hinged directly above the side-strips *a'* are the sides *b* of the crate, the lower leaves of the hinges being rigidly secured to the inner adjacent sides of the corner boxes and the upper parts of the hinges being secured on the exterior of the sides. Thus hinging the sides renders them capable of being folded inwardly when the crate is not in use, and to prevent them swinging too far outwardly when opened out shoulders *b'* are formed on the upper parts of the hinges and adapted to abut against the upper edges of the adjacent sides of the corner boxes, these sides of the boxes being sufficiently extended for that purpose. For the purpose of strength and lightness, these sides are preferably constructed of a series of vertical wooden bars having strong sheet metal channel-irons *b''* embracing and secured over their ends, and to further strengthen the sides and tie the vertical bars together one or more bowed strips *b³* may be secured to their outer sides, as shown.

The ends *c* of the crate are preferably constructed similarly to the sides, that is, they are made of vertical slots having their ends set in channel-irons *c''*, and bowed braces *c²* are employed to strengthen them. These ends are hinged above the end-strips *a''* their hinges being secured to the adjacent sides of the corner-boxes *a³* and provided with shoulders *b'* which abut against the upper edges of said adjacent sides of the corner-boxes and serve to prevent the ends from swinging too far outwardly. Pivoted at a point between the ends is a vertical partition *d* which is adapted to fold down close upon the bottom of the crate, as shown in Fig. 4, its pivots *d'* *d'* being, for this purpose, located at its lower corners and journaled in the side strips *a'*, this partition being of the same dimensions as the end-pieces. To lock the ends and sides and partitions in their raised positions, sliding locking bolts *c³* are secured on the upper corners of the ends *c* and the partition *d*, these bolts being adapted to enter holes or slots in the sides of the crate and thereby brace and lock all the folding parts together.

It is evident that any other suitable devices may be employed to lock the folding parts in their vertical positions, if desired, but I prefer the horizontally-sliding-bolt and I prefer to form on the outer end of each of the

bolts an elongated head or button c^4 (see Fig. 7), which will enter the slot in the side and when turned a quarter of a revolution cannot be withdrawn without turning it back again in line with the slots, as is evident, which construction will prevent the parts spreading or folding by accident or rough usage.

The top part e of the crate is preferably constructed of transverse bars having their ends embraced by strong metal channel-bars e'' , similarly to the sides and ends, and is provided at each of its corners with a horizontally sliding bolt e' , which is constructed similarly to the bolts c^3 and which is adapted to engage slots formed in the upper channel-irons of the sides and thereby secure the top in place. It will be observed that this top sets down between the sides, flush with their upper edges, and rests upon the upper edges of the ends and partition, and it is provided with two hinged doors locked by bolts similar to those described.

To fold the crate, for return shipping, the ends and partitions are first folded down upon the bottom of the crate, where they will lie flush with the upper edges of the end-strips a'' ; the removable top e is then laid on top of the folded sections, as shown in Fig. 3, and finally the sides are folded inwardly upon the top section, the folded sides coming flush with the side strips a' as shown. In this folded condition the crate occupies but a small fraction of the space it occupies when erected or unfolded, whereby it will be particularly adapted for shipping purposes, as is evident. This capability of being folded into a small compass is the most essential feature of this

invention, although its great strength and rigidity when erected are by no means minor advantages.

It is evident that I do not intend limiting myself to poultry crates, as the invention may be adapted to shipping boxes and cases of various kinds with equal advantages, as is obvious. It will also be obvious that any suitable number of partitions may be employed.

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

1. The combination of a bottom, metal boxes secured over its lower corners, folding sides having their hinges secured to these boxes, folding ends having their hinges secured to adjacent sides of these boxes, the hinges of the sides and ends being provided with shoulders abutting against the adjacent sides of the boxes, and a movable top, substantially as described.

2. In a folding crate the combination of a bottom, sides and ends hinged thereto and adapted to fold inwardly, said sides and ends being constructed of vertical slats and horizontal metal bars formed U-shaped in cross section and embracing the ends of the vertical bars and secured thereto, a removable top and means for locking the parts together, substantially as described.

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

DANIEL HARRAH.

Witnesses:

T. W. SOUERS,
N. C. MOTHENY.