

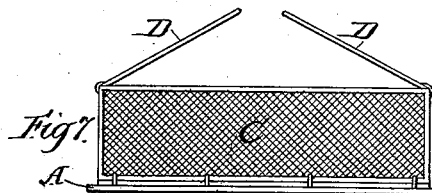
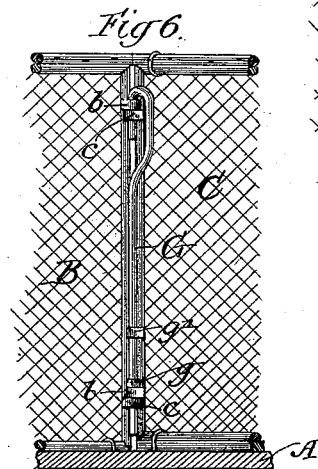
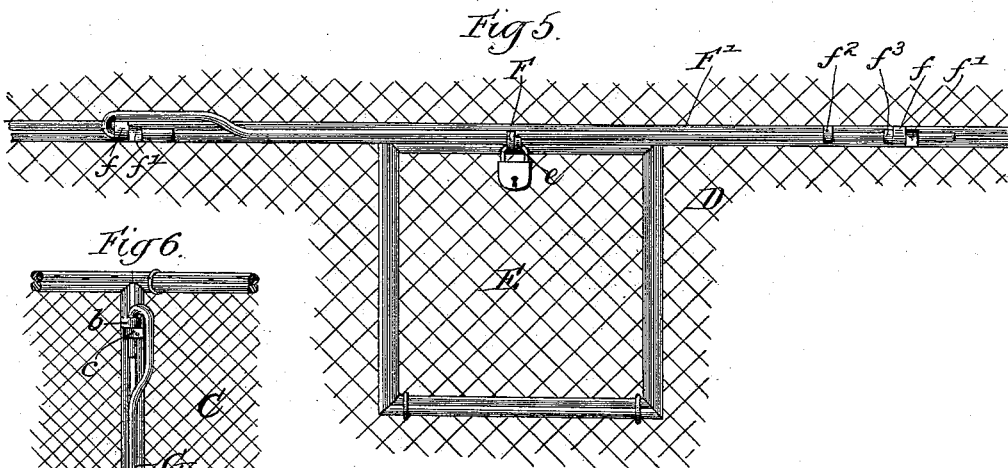
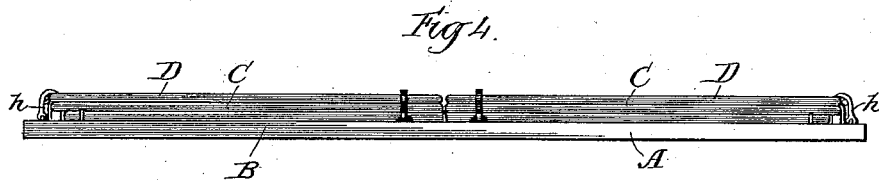
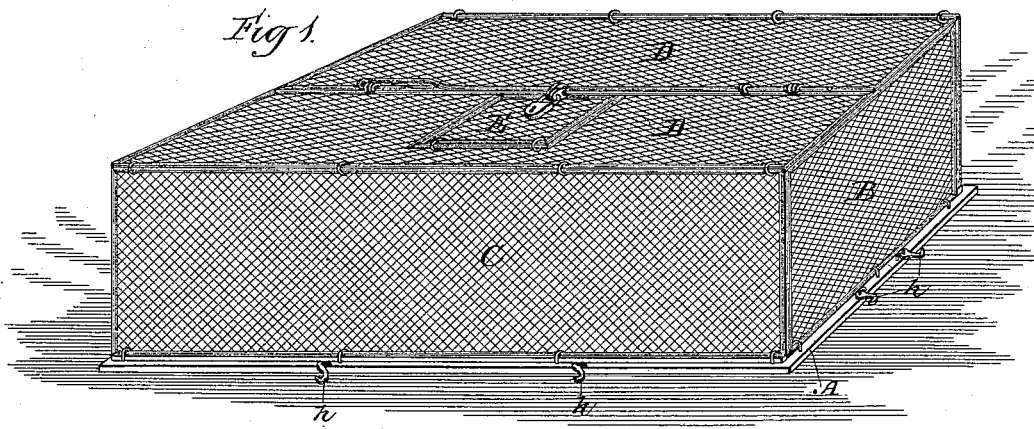
(No Model.)

2 Sheets—Sheet 1.

W. H. H. MULFORD.  
FOLDING CRATE.

No. 523,366.

Patented July 24, 1894.



Witnesses  
Wm. J. Fleming  
Geo. M. Cheen

Inventor  
William H. H. Mulford  
by L. H. L. his Atty.

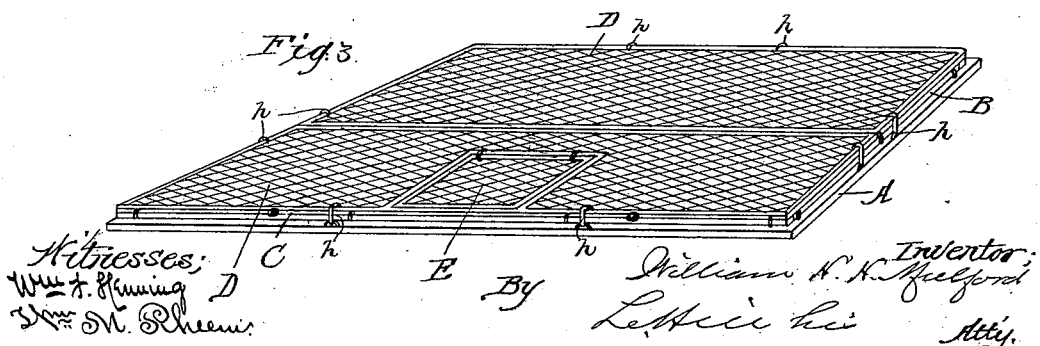
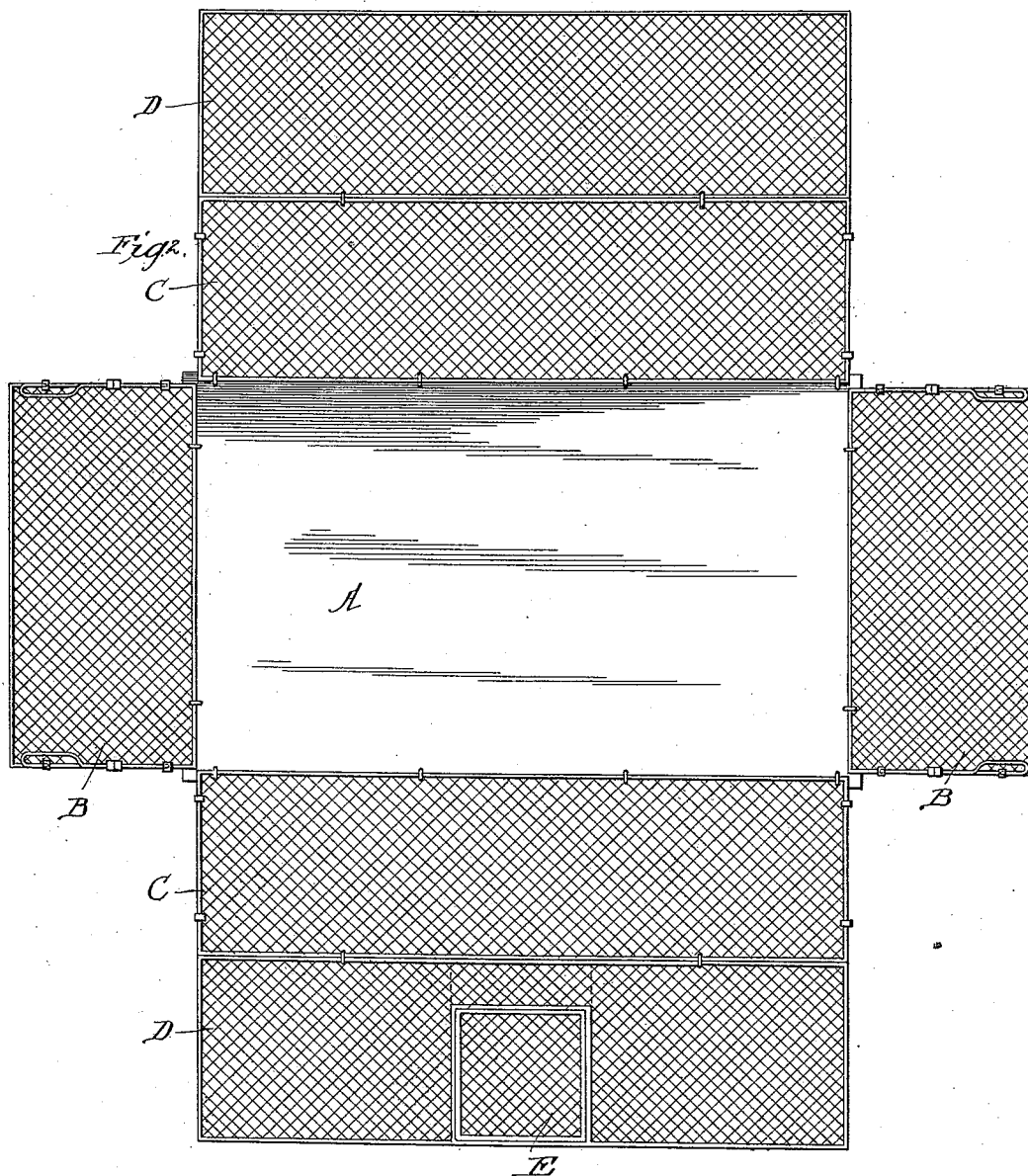
(No Model.)

2 Sheets—Sheet 2.

W. H. H. MULFORD.  
FOLDING CRATE.

No. 523,366.

Patented July 24, 1894.



Witnesses:  
Wm. T. Fleming  
Jas. M. Rhein.

By

Inventor:  
William H. H. Mulford  
Leitch & Co. Attys.

# UNITED STATES PATENT OFFICE.

WILLIAM H. H. MULFORD, OF STREATOR, ILLINOIS.

## FOLDING CRATE.

SPECIFICATION forming part of Letters Patent No. 523,366, dated July 24, 1894.

Application filed December 8, 1892. Serial No. 454,481. (No model.)

### *To all whom it may concern:*

Be it known that I, WILLIAM H. H. MULFORD, a citizen of the United States of America, residing at Streator, in the county of La Salle, State of Illinois, have invented certain new and useful Improvements in Folding Crates, of which the following is a specification.

Referring to the accompanying drawings, wherein like reference-letters indicate like parts, Figure 1. is my improved crate set up for use. Fig. 2. is the same opened out preparatory to folding. Fig. 3. is the same folded for transportation or storage, when not in use. Fig. 4. is an enlarged end-view of the same when folded. Figs. 5. and 6. are detail views; and Fig. 7. is a modified form.

In shipping many things, such as live fowls, bread, fruits, vegetables, &c., it is necessary to use crates for the protection of the articles. These crates have to be made strong and durable enough to accomplish the desired end, and hence the cost is such that they are usually returned to the shipper, refilled and again used; sometimes this occurs many times. Such crates are bulky and take up much room, so that the return freight, drayage and handling in returning the empty crates, usually termed "empties," is an important item of expense to be considered.

The object of my invention is to provide a crate that shall be safe in its use and durable in its construction, that will obviate a large portion of the expense of handling the "empties."

My invention consists in certain arrangements of the sections of a folding crate and in certain fastening devices and grasping and holding members by which the sections of the crate are held and maintained securely in their respective open and closed positions, to be particularly described and pointed out in my claims.

In the drawings A. represents the bottom of the crate, which is preferably of wood and in one piece.

B. B. are the ends of the crate, which are so pivotally attached to the bottom as to be adapted to fold downward upon it.

C. C. are the sides, also pivotally attached to the bottom and adapted to fold downward.

D. D. are the top sections, pivotally attached to the top edge of the sides and adapted to be folded upon the same either backward or forward.

E. is a small door located in one of the top sections, for filling or emptying the crate.

E'. is a rod extending along the inner side of one of the top sections, bent in such a manner at one end with a return bend, that an end thrust will slide it in the eyes *f. f.*, the ends entering the eyes *f'. f'*. in the other top section and thus firmly holding the two top sections firmly together at their meeting point in the center of the crate.

*f<sup>2</sup>*. is an eye through which the rod slides, and acts as a stop against which the stop *f<sup>3</sup>*. on the rod strikes to prevent the rod being entirely withdrawn.

F. is a hasp on the rod *F'*. which comes in close contact to a similar hasp *e.* on the door E., so the two may be locked together with one lock, thus preventing the opening of the door, or the withdrawal of the rod, and securing the contents of the crate from interference. It is obvious that the hasp F. and hasp *e.* may both be provided with latches, if desired.

G. is a rod similar to F. in construction and operation for securing together the adjacent ends of the sides and ends, and passing through the eyes *b. c.* operates in the same manner. When the rod G. is in place, securing together an end and side section, and the top is closed and in place, the corner of the top rests upon or above the top of the rod and prevents its withdrawal, without folding back the top to expose the top of the rod, the stop *g.* and eye *g'*. prevent the rod's entire withdrawal at any time.

A simple straight rod may be used if preferred, as also in place of the rod F., but I prefer to use the device described, as it is simple and durable, and prevents the separation of the parts, and as also furnishing a cheap and effective device for the purpose.

Other simple means, as hooks, rings, &c., may be employed if desired, and a latch added to the door E. and another to hold the hasp F. if preferred, without departing from the spirit of my invention.

It will thus be seen that the crate when set

up is firm, rigid and reliable, and is also capable of being quickly and easily folded into a small space. It is also easily cleaned.

The sides and ends may be attached to the bottom in any of the well-known ways permitting the folding of the parts. I prefer to use staples, passing over the lower frame-rod and into the bottom for this purpose, as it is both cheap and serviceable. If preferred, the sides and ends may be so attached to the bottom as not to allow of an outward opening beyond a line perpendicular to the bottom, or nearly so.

The crate may be constructed of wire upon rod frames, as shown in the drawings, or may be made of wicker or willow work, or other preferred material. The form of the crate may also be varied to suit the purpose to which it is to be put. In an open crate the top sections are simply dispensed with. But these modifications do not depart from the spirit of my invention.

The mode of operation is as follows: Taking a crate set up as in Fig. 1., the bar F. is unlocked and moved endwise, the top sections thus disconnected are turned back. The bars G. are then withdrawn sufficiently to disconnect the end and side sections. The end sections are then folded inward and lie flat down upon the bottom, the side sections are then folded inward and lie flat down upon the end sections, and the top sections are folded back or outward, and lie upon the side sections. Small grasping and holding hooks *h* may be employed to hold the sections firmly to the bottom, and give compactness in handling. (See Figs. 1, 3, and 4.) For the purpose of allowing the side sections to fold down flat upon the ends, the sides are raised the thickness of the end sections above the bottom by means of small strips of wood or their equivalents.

It is obvious that, if desired, the top sections may be attached to the ends, as shown in Fig. 7, instead of to the sides. When, in square crates the operation would be the same, but in crates having a greater length than breadth, the two top sections when the crate is folded would overlap each other unless the height of the crate was exactly one-half the length of the same, when the top sections could fold back upon the ends in a similar manner to that shown in Figs. 3. and 4. In the preferred construction, the height is one-half the width of the crate and hence when folded the

top sections come to the edge of the bottom, as shown in Figs. 3. and 4.

The door may extend clear across from one side of the section to the other, if preferred, as shown in dotted lines in Fig. 2.

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

1. In a folding crate, the bottom section A; end sections B B; and side sections C C; in combination with the bars G, having a return bend at its upper end, and adapted to slide in eyes attached to the end of either a side or end section where the two come together, and provided with means to prevent the entire withdrawal of the bar from said eyes; and eyes upon the adjacent end or side section adapted to receive the ends of the bar G, whereby, when the ends of the side and end sections are brought in close contact the said bar may be longitudinally moved to secure the said parts together; substantially as and for the purposes set forth.

2. In a folding crate of the kind described, the bottom A; end sections B, B, side sections C, C, and top sections D, D, pivotally attached to the side sections; in combination with the bar F, eyes *f f'* *f*<sup>2</sup> and stop *f*<sup>3</sup> upon one top section and the eyes *f' f'* upon the other top section adapted to receive the ends of the bar F, whereby upon bringing the edges of the top sections D, D, close together and moving the bar F longitudinally the two will be firmly secured together; substantially as described.

3. In a folding crate of the kind described, the combination of the top sections D, D, pivotally attached to the side sections, and a door E, arranged in one of the sections D, and having a hasp *e* upon its front edge; with the rod F having the hasp F' formed thereon adapted to come in close contact with the hasp *e* and be secured thereto when the crate is set up; substantially as described.

4. In combination, the bottom A, ends B, B, sides C, C, and top D, D, all adapted to fold upon said bottom; with the grasping and holding hooks *h h* pivotally secured to the bottom adapted to secure said parts in the folded position to the bottom; substantially as described.

WILLIAM H. H. MULFORD.

Witnesses:

H. G. YOUNG,  
W. C. FLICK.