

(Model.)

W. H. CADWELL.

2 Sheets—Sheet 1.

FOLDING CRATE.

No. 328,381.

Patented Oct. 13, 1885.

Fig. 1.

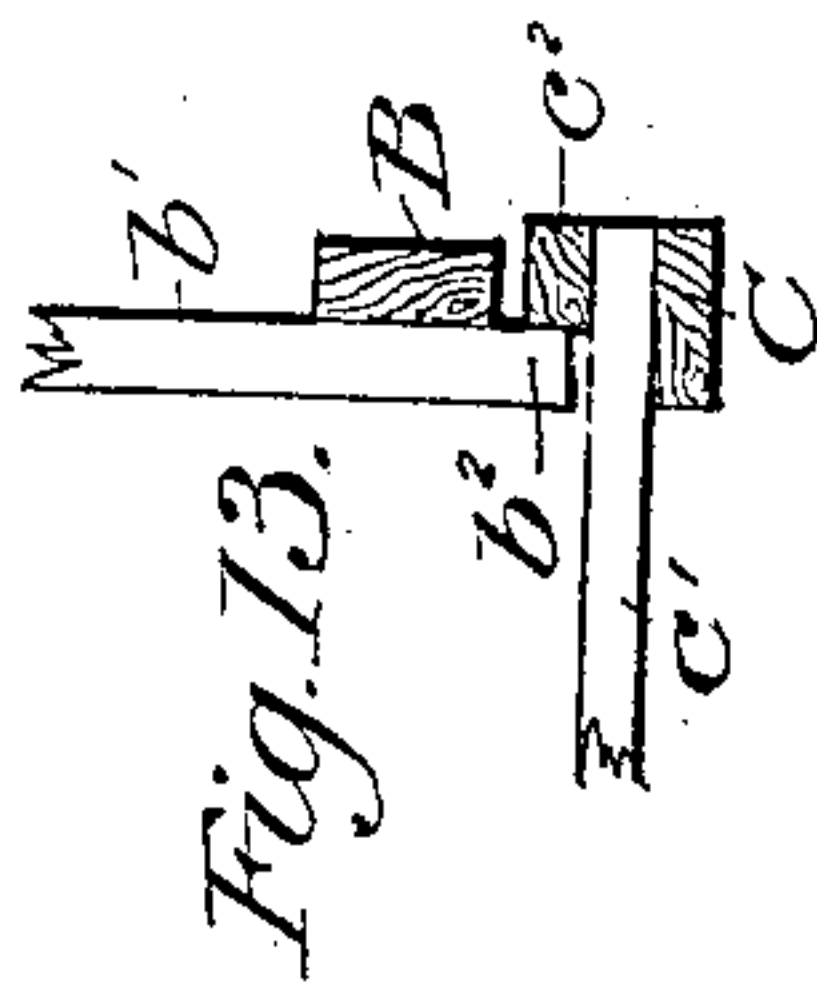
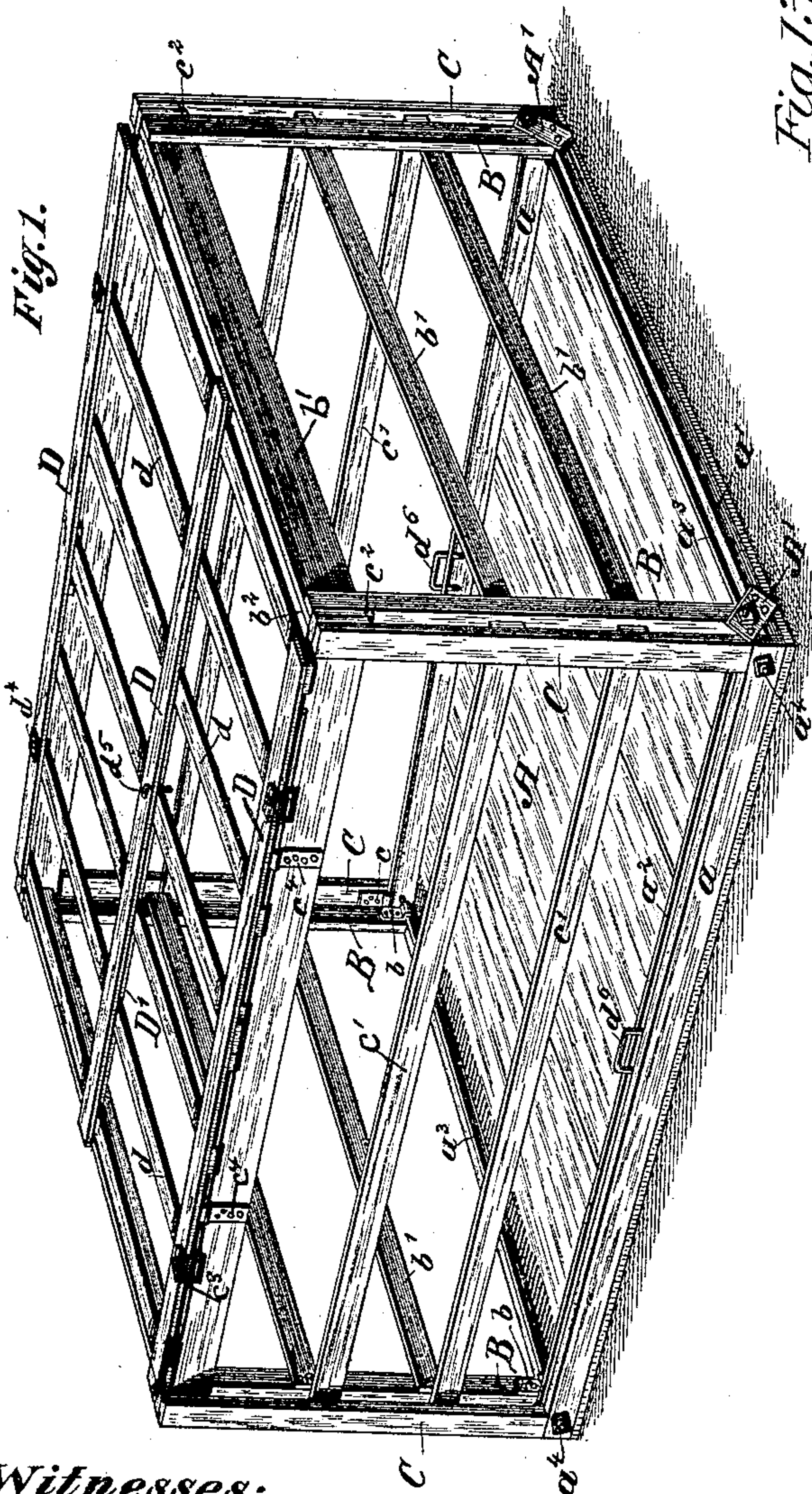
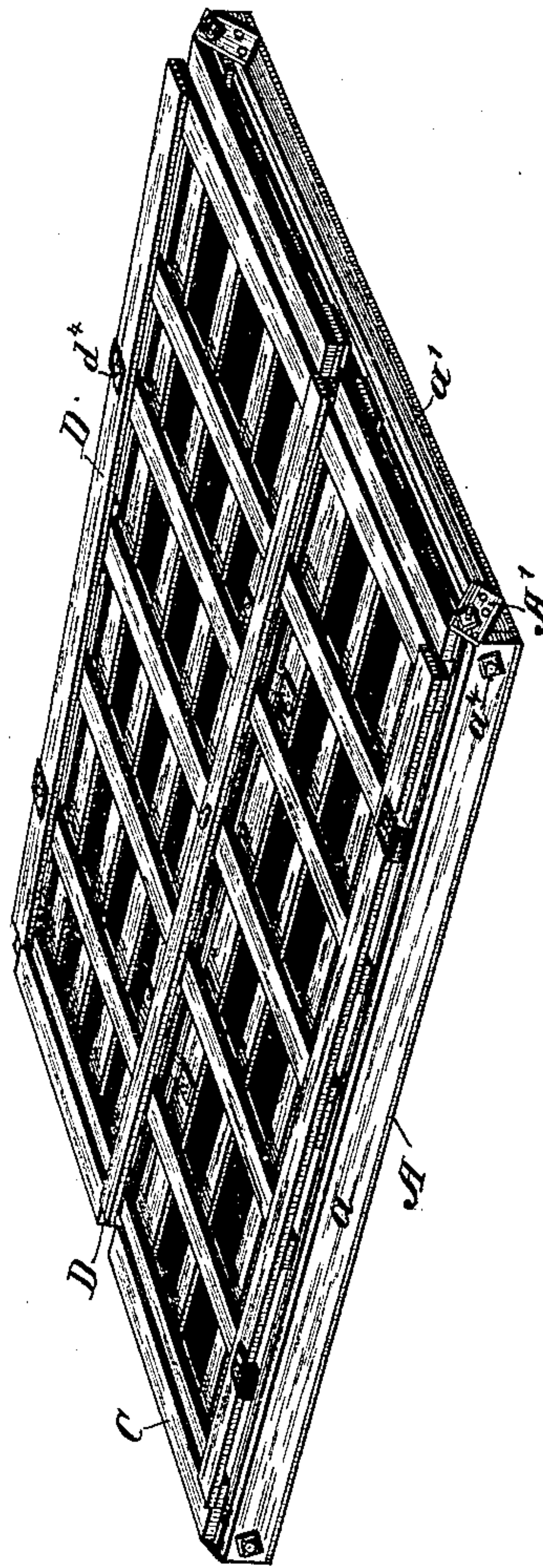


Fig. 2.



Witnesses:

*Chas. Baird*

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Inventor:

*William H. Cadwell*

*by Munday, Evans & Adcock  
his attys*



(Model.)

2 Sheets—Sheet 2.

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Fig. 3.

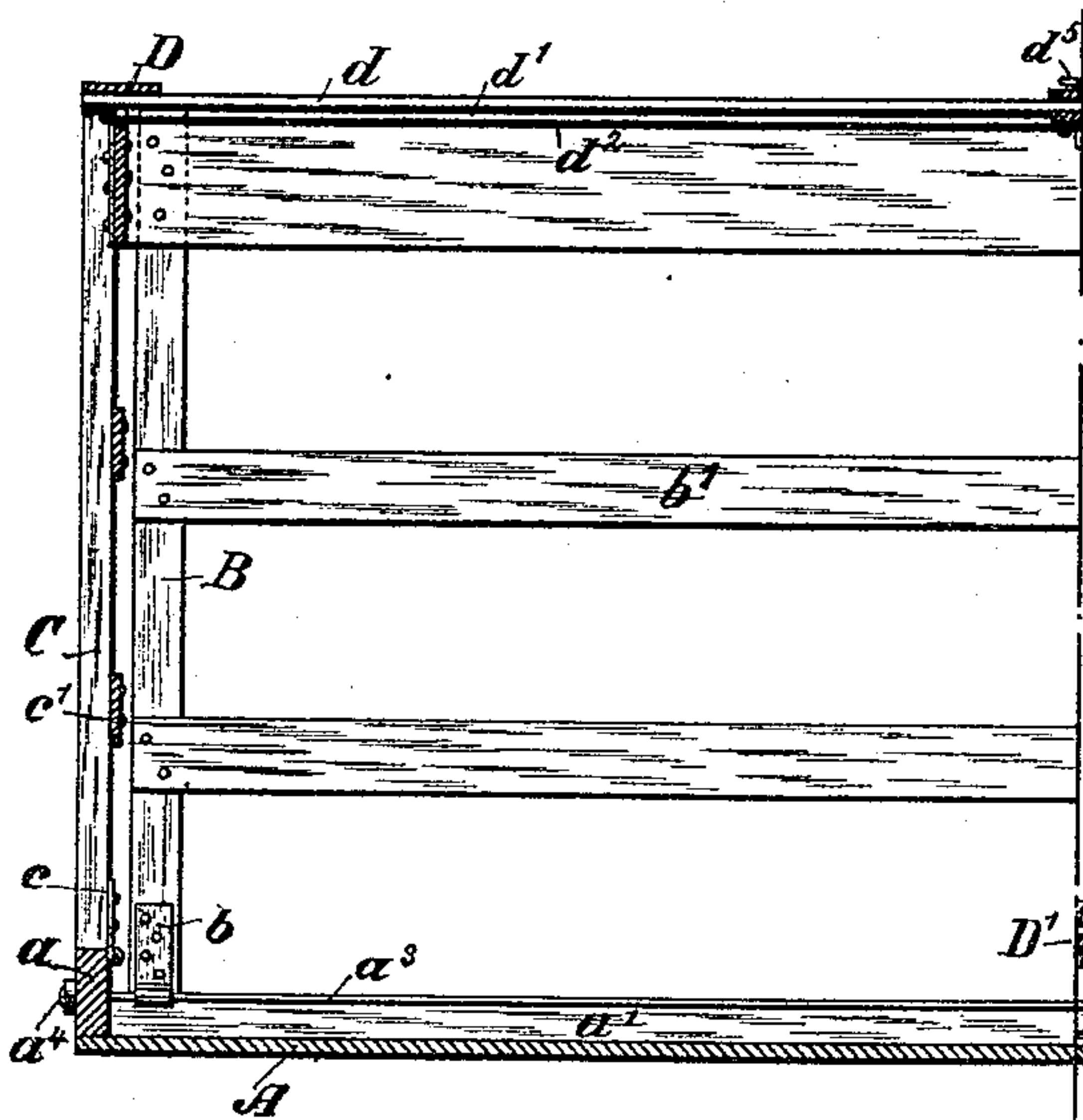


Fig. 7.

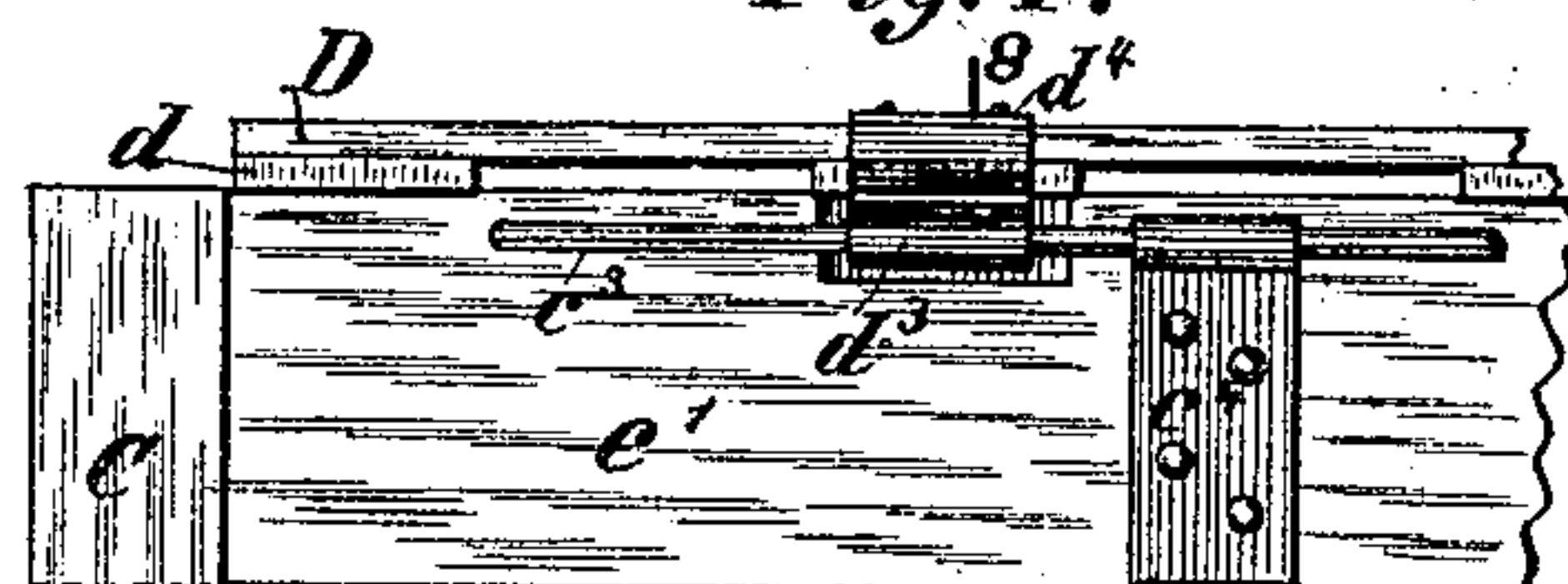


Fig. 8.

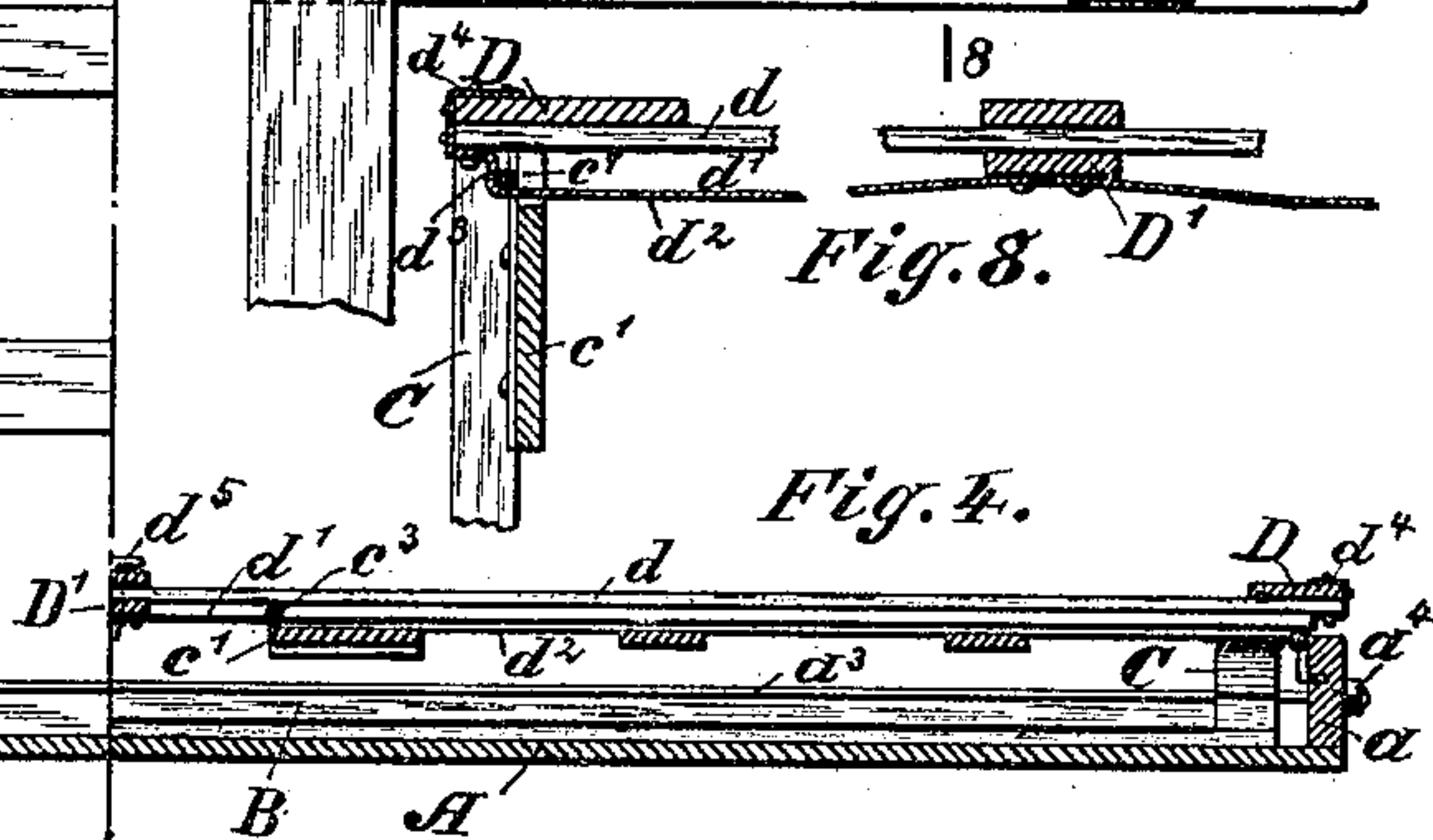


Fig. 4.

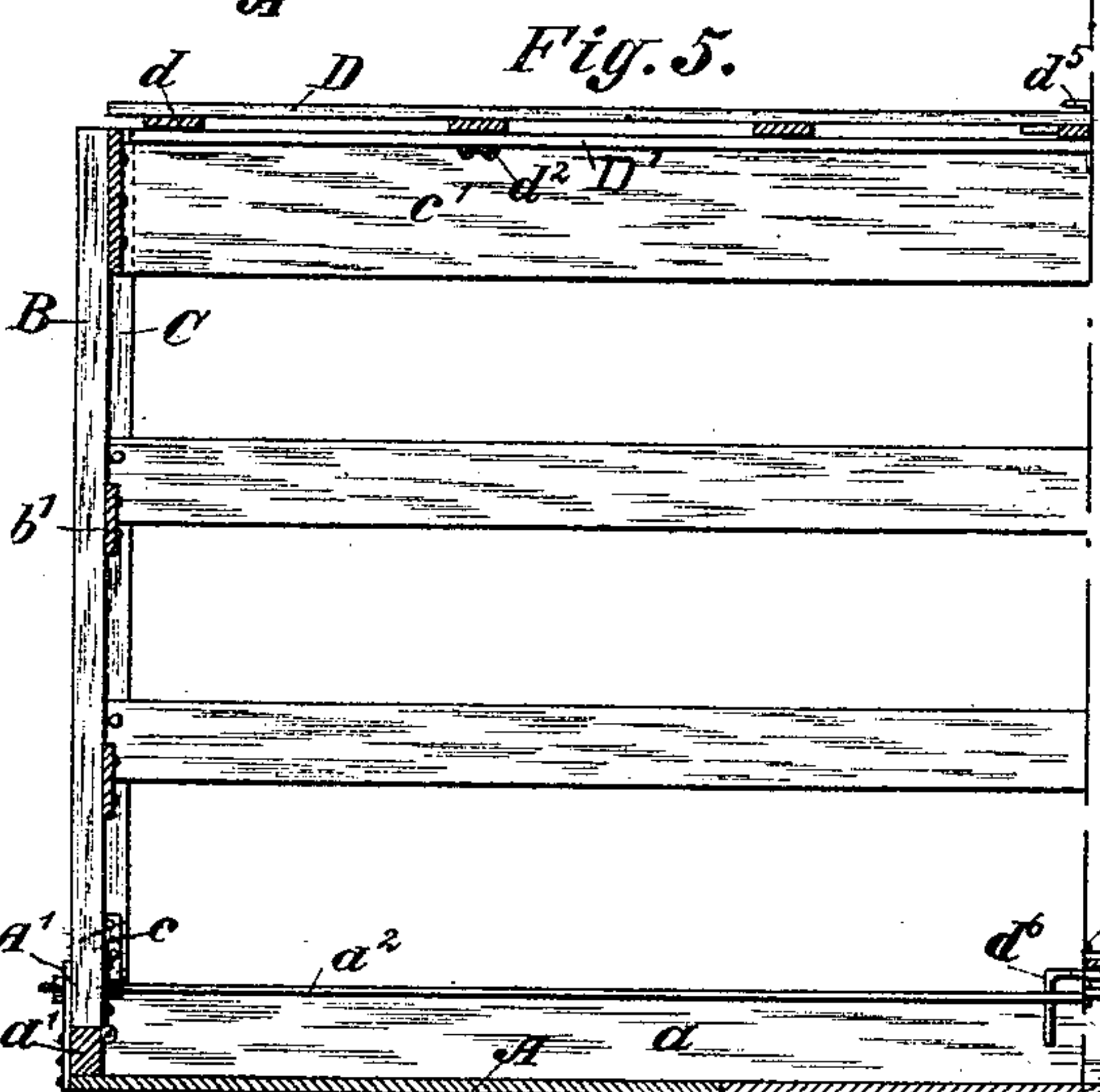


Fig. 9.

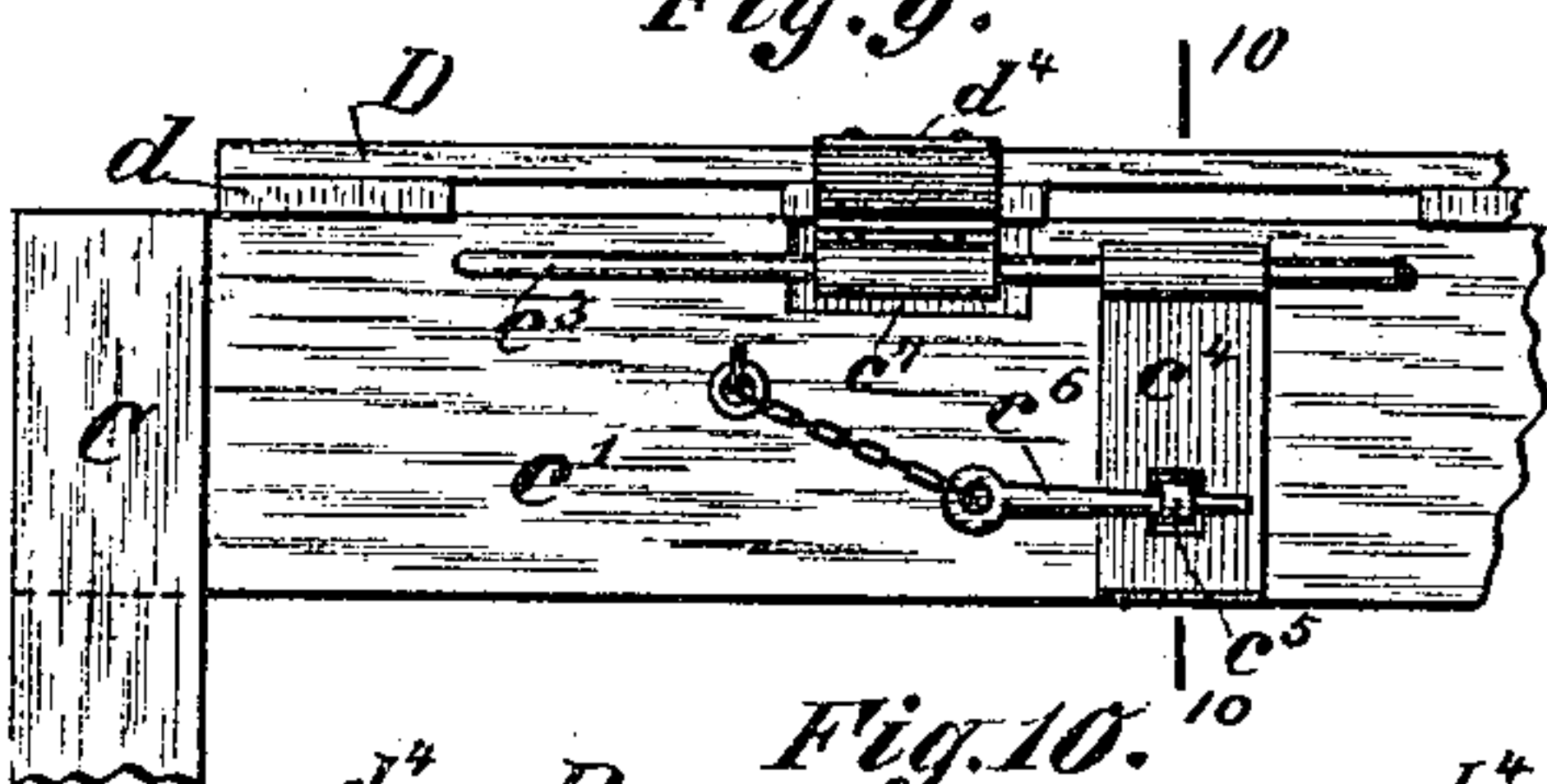


Fig. 10.

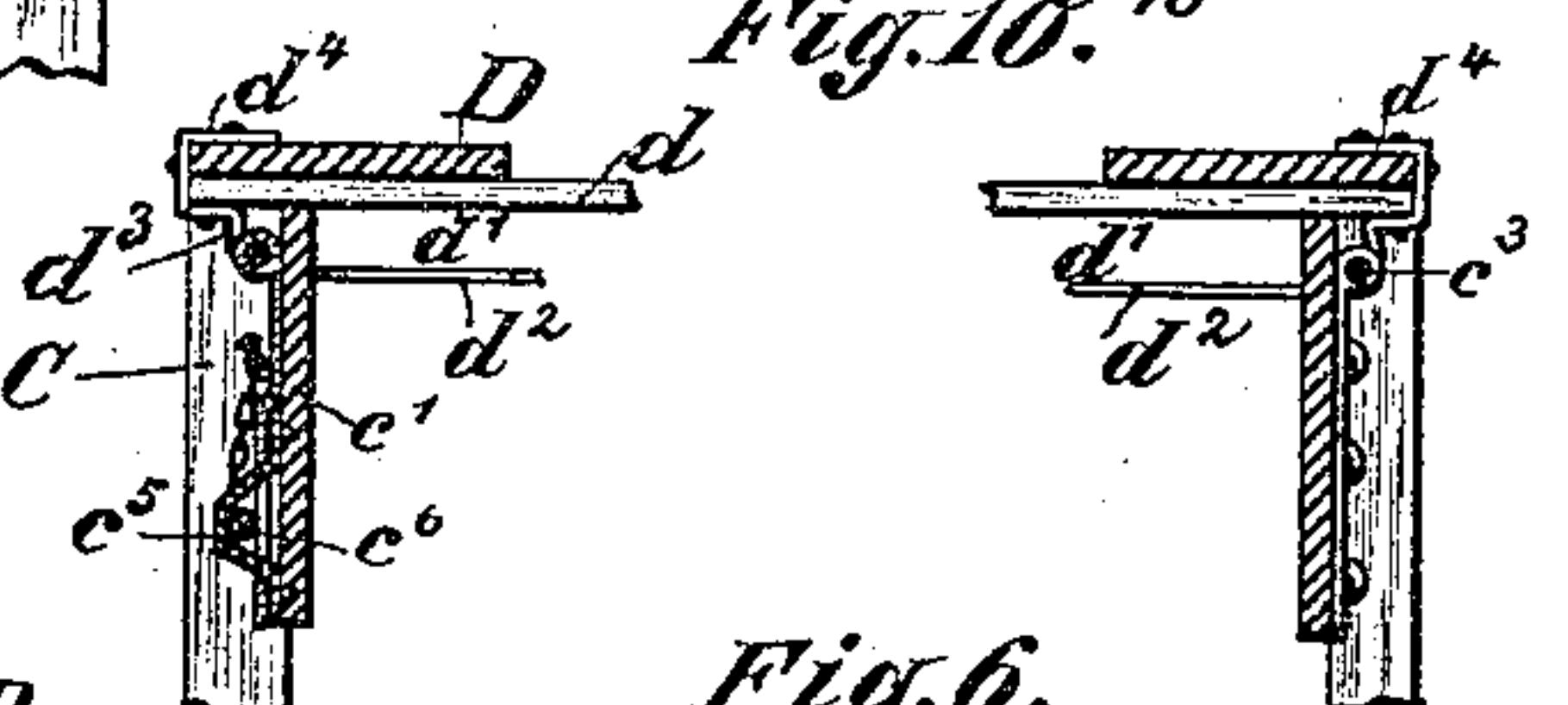


Fig. 6.

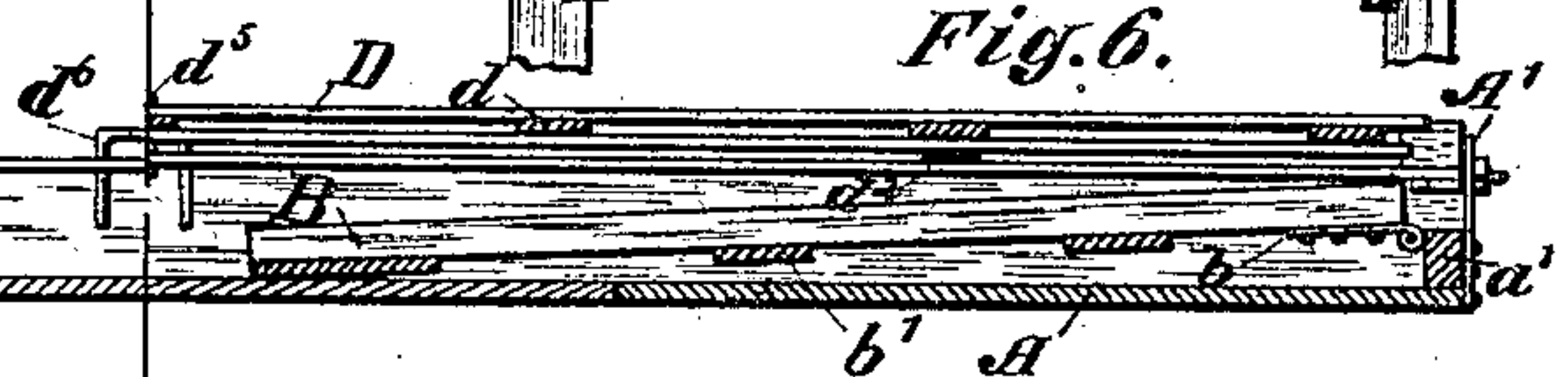


Fig. 11.

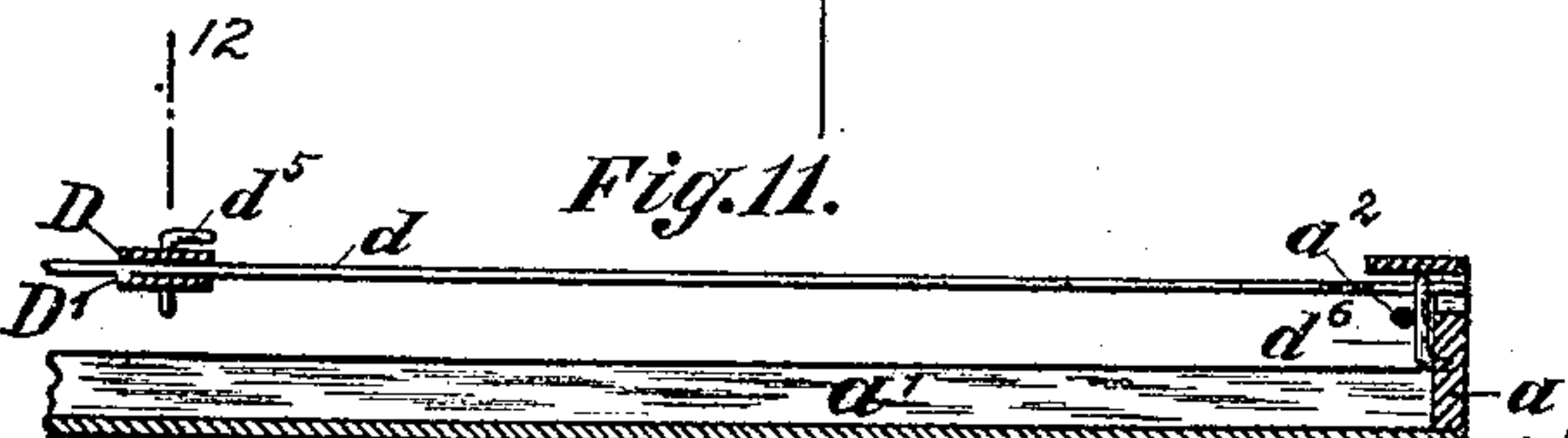
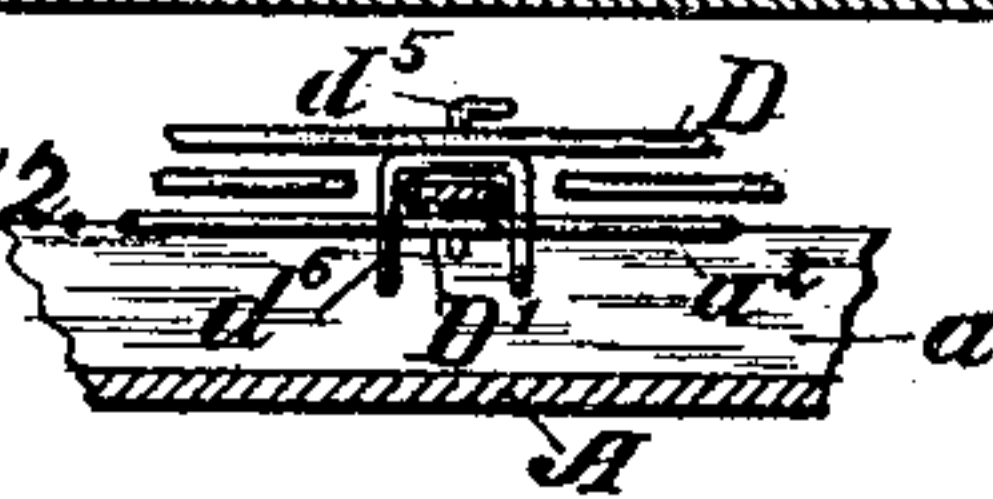


Fig. 12.



Witnesses:

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# UNITED STATES PATENT OFFICE.

WILLIAM H. CADWELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF,  
WARREN W. CADWELL, AND L. C. RIGGS, ALL OF SAME PLACE.

## FOLDING CRATE.

SPECIFICATION forming part of Letters Patent No. 328,381, dated October 13, 1885.

Application filed April 27, 1885. Serial No. 163,619. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. CADWELL, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Folding Crates, of which the following is a specification.

My invention relates to improvements in folding crates or coops; and its object is to produce a strong, cheap, and durable crate of simple construction that may be folded into compact shape and that may be easily and quickly unfolded or set up for use.

In my invention the bottom of the coop is provided with side and end rails, the side rails being enough higher than the end rails to permit the sides of the coop to fold over or on top of the ends. The slats composing the sides and ends of the crate are all nailed on the inside of their hinged posts. This greatly strengthens the crate, as pressure from the inside has no tendency to burst off the slats. The end posts are hinged at the inside top edge of the end rails, so that the ends when folded down do not lie flat upon the bottom of the coop, but incline slightly, and touching or resting upon the bottom only at their top edges. By this means any dirt or obstructions that may be frozen or otherwise adhering to the bottom of the coop will not prevent the proper folding of the ends, and there will therefore be no tendency to pry or burst off the hinges. The end posts are hinged to tie-rods, preferably made of about No. 6 or 8 steel wire, extending through from one side rail to the other, these rods thus serving not only as hinge or pivot bolts for the ends of the coop, but as tie-rods to brace and strengthen the structure; and the sides of the coop or their posts are in like manner hinged to similar tie-rods, which extend along the inside top edge of the side rails, and between corner or brace plates which fit on the outside of the end rails and over the ends of the side rails. The four tie-rods thus serve to firmly bind the end and side rails together, and in conjunction therewith form a very rigid and strong frame, which, when combined with the folding sides and ends, will not rack out of rectangular shape, so as to prevent or obstruct the folding of the coop. The top of the crate

is simply a rectangular frame composed of the slats and the cross-pieces to which they are nailed. It is hinged or flexibly connected to the sides of the coop, at the top thereof, by means of hinge bolts or rods secured to the sides, and which fit in suitable slots or guide-ways on the underside of the top of the coop. These slots or guides are preferably formed by securing strips of hoop-iron along the under side of two or more of the slats composing the top. As the sides fold inward, the hinge bolts or rods travel along these slots, so that the top descends upon the folded sides. When the crate is folded down, it will thus be seen the folded ends shut down inside the side rails, the folded sides shut down inside the brace or corner plates and flush with the end rails, while the rigid top and bottom embrace the folded parts between them, thus preventing any possibility of the hinged parts flying open in handling. In order to lock the coop folded, I provide the side rails with staples, which engage the ends of the sliding or movable slat of the top when the coop is folded. When the crate is opened or set up, the sides are prevented from shutting inward by the ends, against which the former fit or abut. The ends are prevented from shutting inward by a cross-piece secured on the under side of the top slats, against the ends of which cross-piece the top slats of the ends abut. The ends are prevented from closing outward by blocks or stops on the inside of the sides, and the sides are prevented from closing outward by the hinge bolts or rods at their upper edge fitting in the slots or guides of the top.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figures 1 and 2 are perspective views of my folding crate, showing the same opened and closed. Figs. 3, 4, 5, and 6 are central vertical sections taken at right angles to each other, in Figs. 3 and 5 half the crate being shown open, and in Figs. 4 and 6 half the same closed. Fig. 7 is an enlarged detail side view of the hinge-connection between the top and side. Fig. 8 is a section on line 8 8 of Fig. 7. Fig. 9 is a view similar to Fig. 7, but from the opposite side of the crate. Fig. 10 is a section on line 10 10 of Fig. 9. Fig. 11



is a section showing the movable slat of the top in elevation, and Fig. 12 is a section on line 12 12 of Fig. 11. Fig. 13 is a detail plan view of one of the top corners of the crate, showing the ends and sides erected.

In said drawings, A represents the bottom of the crate, and  $a$  and  $a'$  the side and end rails, to which the bottom boards are nailed. The tie-rods  $a^2$ , which extend along the inside upper corner or edge of the side rails,  $a$ , pass through holes in the corner brace-plates  $A'$ , which brace-plates are secured by nails to the outside of the end rails and to the ends of the side rails. The tie-rods  $a^3$ , which extend along the inside upper corner of the end rails,  $a'$ , pass through holes in the side rails. All these tie-rods have threaded ends and nuts  $a^4$  on one end, so that they may be properly tightened to brace and strengthen the frame.

The end posts, B, are hinged to the tie-rods  $a^3$  by suitable hinges,  $b$ , and the side posts, C, are pivoted to the tie-rods  $a^2$  by the hinges  $c$ , so that the lower ends of these posts, when the same are erected, will rest squarely on top of the rails  $a$  and  $a'$ . The end slats,  $b'$ , as well as the side slats,  $c'$ , are all nailed on the inside of their respective posts, so that pressure from within will have no tendency to burst them off. The ends  $b^2$  of the slats  $b'$ , or of one or more of them, project slightly beyond their posts B, so that the same will strike against blocks or stops  $c^2$ , nailed on the inside of the side slats,  $c'$ , at their ends, and thus prevent the hinged ends of the coop from opening outward past their upright position.

The top of the crate, consisting of the cross-pieces D and slats  $d$  nailed thereto, is provided with an additional cross-piece,  $D'$ , on its under side, preferably near the middle, against the ends of which the top end slats,  $b'$ , abut, thus preventing the hinged ends of the crate from shutting inward. Slots or guides  $d'$  are formed along the under side of the top by securing strips of hoop-iron or wires  $d^2$  along the under side of two or more of the slats  $d$ , space being made between the slats and hoop-iron strips by reason of the cross-piece  $D'$ , and by offsets  $d^3$ , near the ends of the hoop-iron strips.

Blocks may be inserted at the ends of the hoop-iron strips to give the necessary space.

The ends  $d^4$  of the strips  $d^2$ , I bend over the edge of the top of the crate to give additional strength. Hinge bolts or rods  $c^3$ , secured to the sides by the straps  $c^4$ , fit in these slots  $d'$ , and serve to connect the hinged sides to the top by a sliding hinge joint or pivot, so that the sides can fold inward, while the top of the crate descends upon the folded sides.

The straps  $c^4$  may be nailed directly to the upper slats  $c'$  of the sides; but I prefer to secure these straps  $c^4$  by staples  $c^5$  and bolts  $c^6$  upon one side, so that when the crate is used for shipping bulky articles the top may be opened or thrown back on the hinges at one side by removing the pins  $c^6$  for convenience in filling the same.

One of the slats  $d$  of the top, preferably the

middle one, is left loose, so that it may be slipped longitudinally to make an opening for admission of poultry, &c. This slat is secured 70 in place by a removable pin,  $d^5$ , and staples  $d^6$  are secured to the side rails,  $a$ , to receive the ends of this sliding slat when the coop is folded and lock the same in that position.

In closing the crate the hinged ends are 75 first folded inward, the top being sprung upward at the middle sufficiently to permit the hinged ends to pass by the end of the cross-piece  $D'$ . This can be readily done by the hand, as the slats  $d$  of the top are thin and 80 elastic. The sides are next folded inward, and the top descends upon the sides, when the movable slat  $d$  is slipped first one way and then the other, until it engages both the staples  $d^6$  and the pin  $d^5$ , inserted to hold it in place. 85

The upper slats  $c'$  of the sides have notches  $c^7$ , for the hoop-iron straps  $d^2$  to pass through.

By this construction of my folding crate it will be observed that the swelling of the wood, by getting wet, &c., will not interfere with the 90 proper and easy folding of the same.

My crate folds very compactly, as the first or lower slats  $c'$  of the sides falls inside of the posts B of the ends when the crate is folded, instead of lying on top of said posts, and the 95 top falls inside of the side posts, thereby bringing all the slats, those of the ends, sides, and top, directly and compactly on top of each other.

I claim—

1. The combination, in a folding crate, with bottom A, of hinged end posts, B, having slats  $b'$  secured on the inside of said posts, and hinged side posts, C, having slats  $c'$  secured 100 on the inside of said posts, the first or lower side slat,  $c'$ , falling inside the end posts, B, when the crate is folded, substantially as specified. 105

2. The combination of bottom A with hinged end and side posts, B C, having slats  $b'$   $c'$ , secured on the inside thereof, and a top, 110 D  $d$ , said side slats,  $c'$ , falling inside said end posts, B, and said top D  $d$  falling inside said side posts, C, when the crate is folded, substantially as specified.

3. The folding crate consisting of bottom A, 115 provided with side rails,  $a$ , and end rails,  $a'$ , tie-rods  $a^2$  and  $a^3$ , and brace-plates  $A'$ , folding ends B  $b'$ , and sides C  $c'$ , hinged to said tie-rods, said sides being provided with hinge bolts or rods  $c^3$ , and top D  $d$ , provided with slots  $d'$ , 120 engaging said rods  $c^3$ , substantially as specified.

4. The combination of bottom A, with side and end rails,  $a$   $a'$ , tie-rods  $a^2$   $a^3$ , brace-plates  $A'$ , and folding sides and ends hinged to said 125 tie-rods, substantially as specified.

5. The combination of a bottom provided with side and end rails and tie-rods with folding sides and ends hinged to said tie-rods and a top having sliding hinge-joints connecting 130 the same with said sides, substantially as specified.

6. The combination of a bottom provided with side and end rails with folding sides and



ends hinged at the upper inside edge of said side and end rails, said sides and ends having their slats secured upon the inside of their posts, substantially as specified.

5 7. The combination of a bottom provided with side and end rails and tie-rods with folding sides and ends hinged to said tie-rods, said sides and ends having their slats secured on the inside of their posts, and said sides being  
10 provided with blocks or stops against which said ends open or abut, substantially as specified.

8. The combination of bottom A, provided with side and end rails,  $a$   $a'$ , and tie-rods  $a^2$   $a^3$ ,  
15 with brace-plates  $A'$ , posts B C, hinged to said tie-rods, slats  $b' c'$ , secured on the inside of said posts, said slats  $b'$  (one or more) projecting beyond said posts B, and said slats  $c'$  having stops or blocks  $c^2$ , substantially as  
20 specified.

9. The combination of a bottom provided with side and end rails with hinged sides and ends and a top having sliding hinge-joints connecting the same with said sides, substan-  
25 tially as specified.

10. The combination of a bottom provided with side and end rails, hinged sides and ends, said sides being provided with hinge rods or bolts  $c^3$ , and a top, D  $d$ , having strips or rods

$d^2$ , secured on the under side of one or more 30 of said slats  $d$  to form guides for said rods or bolts  $c^3$ , substantially as specified.

11. The combination of a bottom provided with side and end rails with hinged sides and ends and a top having sliding hinge-joints 35 connecting the same with said sides, said top being provided with a cross-piece,  $D'$ , for said ends to abut against, substantially as specified.

12. The combination of a bottom having 40 side and end rails with hinged sides and ends, said side rails being provided with staples  $d^6$ , and a top having sliding hinge-joints connecting the same with said sides, and said top being provided with a movable slat,  $d$ , to engage 45 said staples  $d^6$  to lock the crate when closed, substantially as specified.

13. The combination of a bottom having side and end rails with hinged sides and ends and a top having sliding hinge-joints connect- 50 ing said top with said sides, said hinge-joints being detachably connected to one of said sides, so that said top may be opened on its opposite hinge, substantially as specified.

WILLIAM H. CADWELL.

Witnesses:

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M. R. BRAINARD.