

(No Model.)

2 Sheets—Sheet 1.

J. TEEL.
FOLDING BED.

No. 537,869.

Patented Apr. 23, 1895.

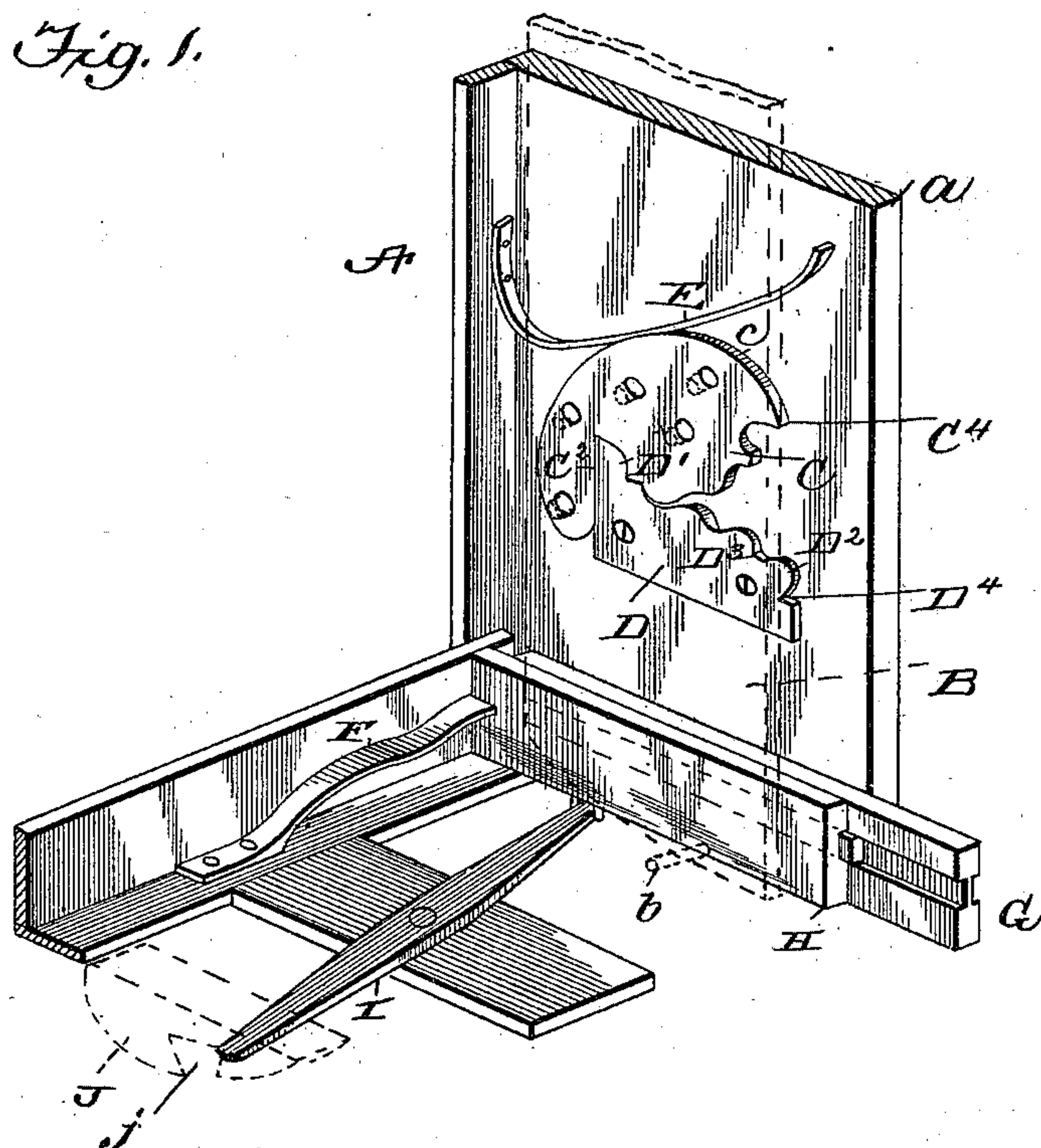


Fig. 4.

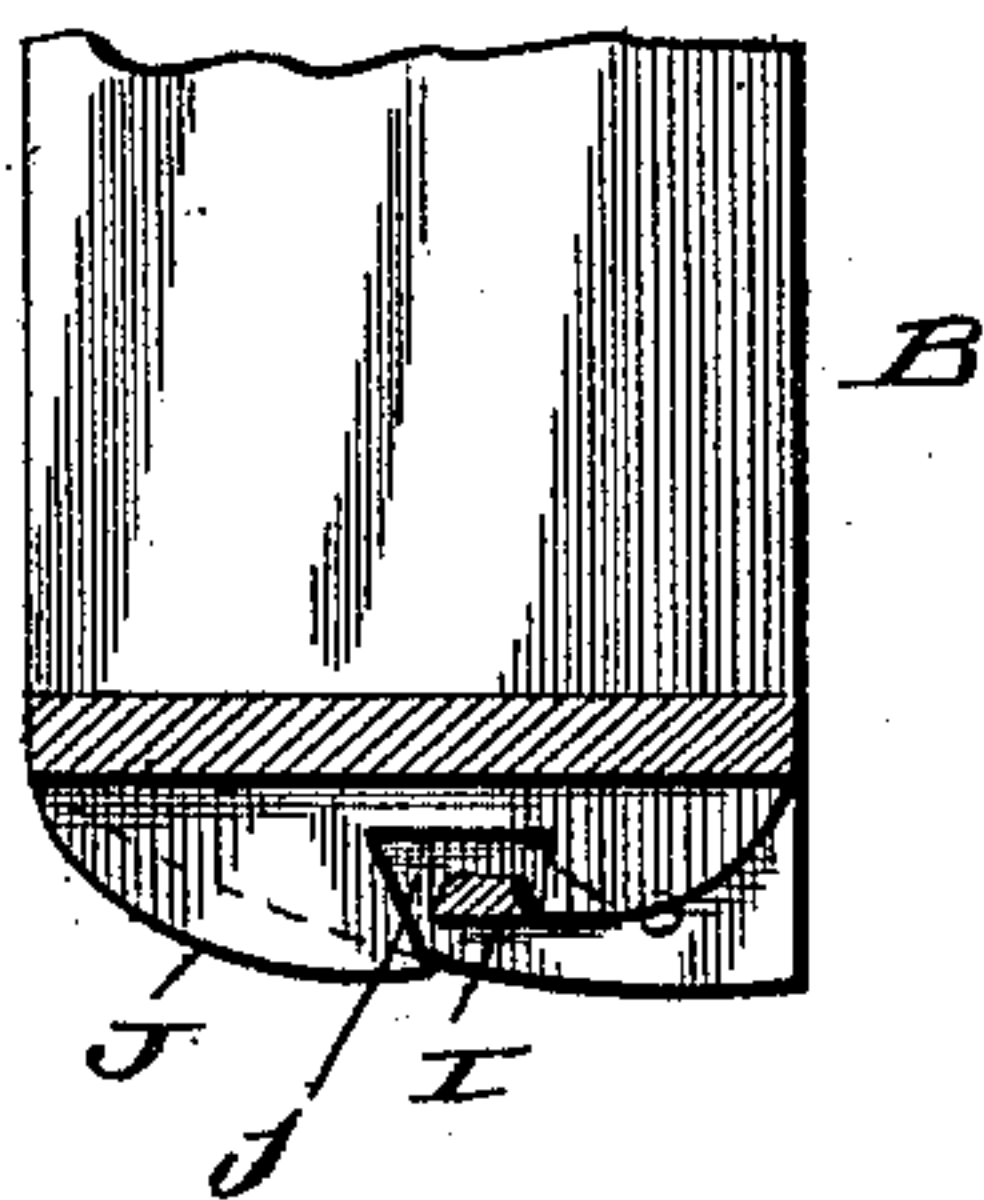
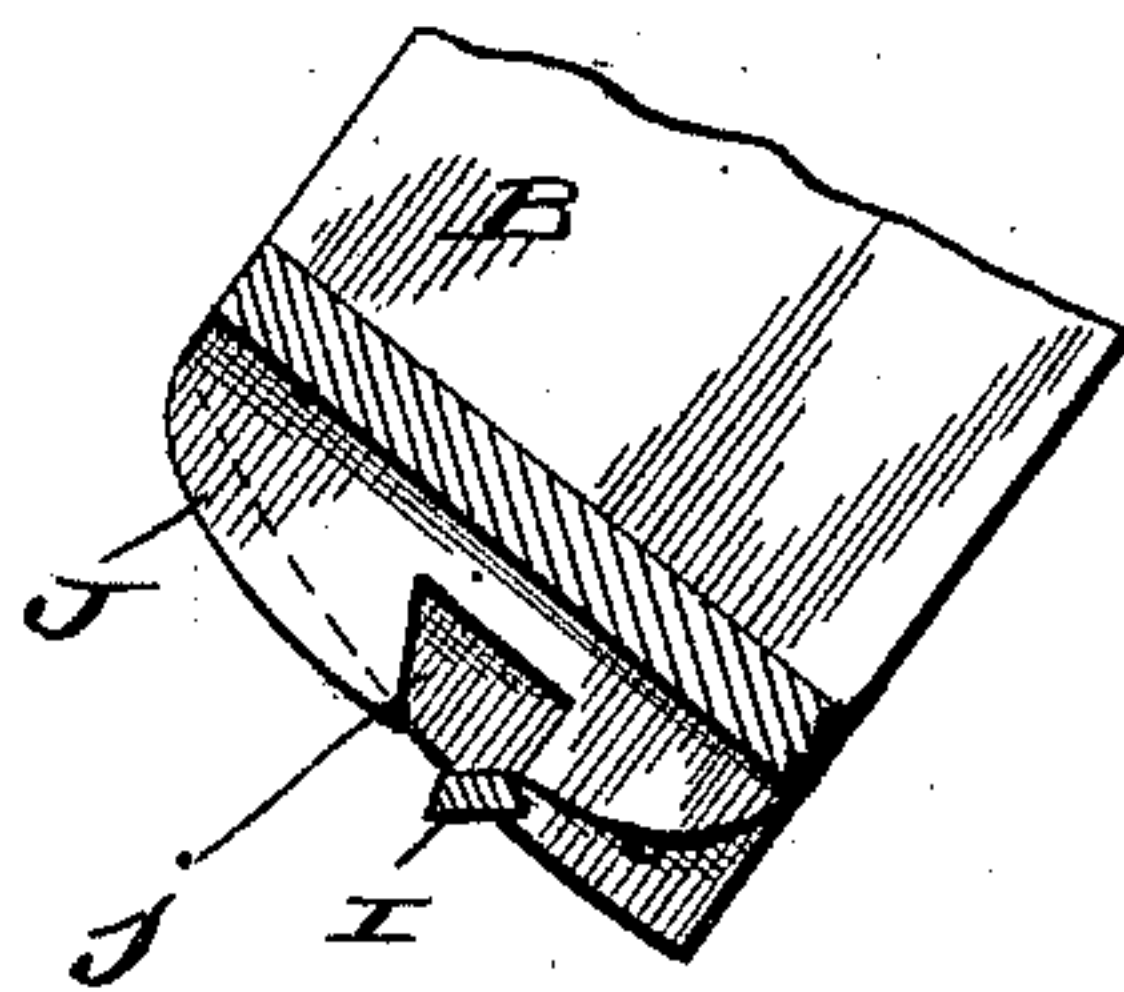


Fig. 5.



Witnesses

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(No Model.)

2 Sheets—Sheet 2.

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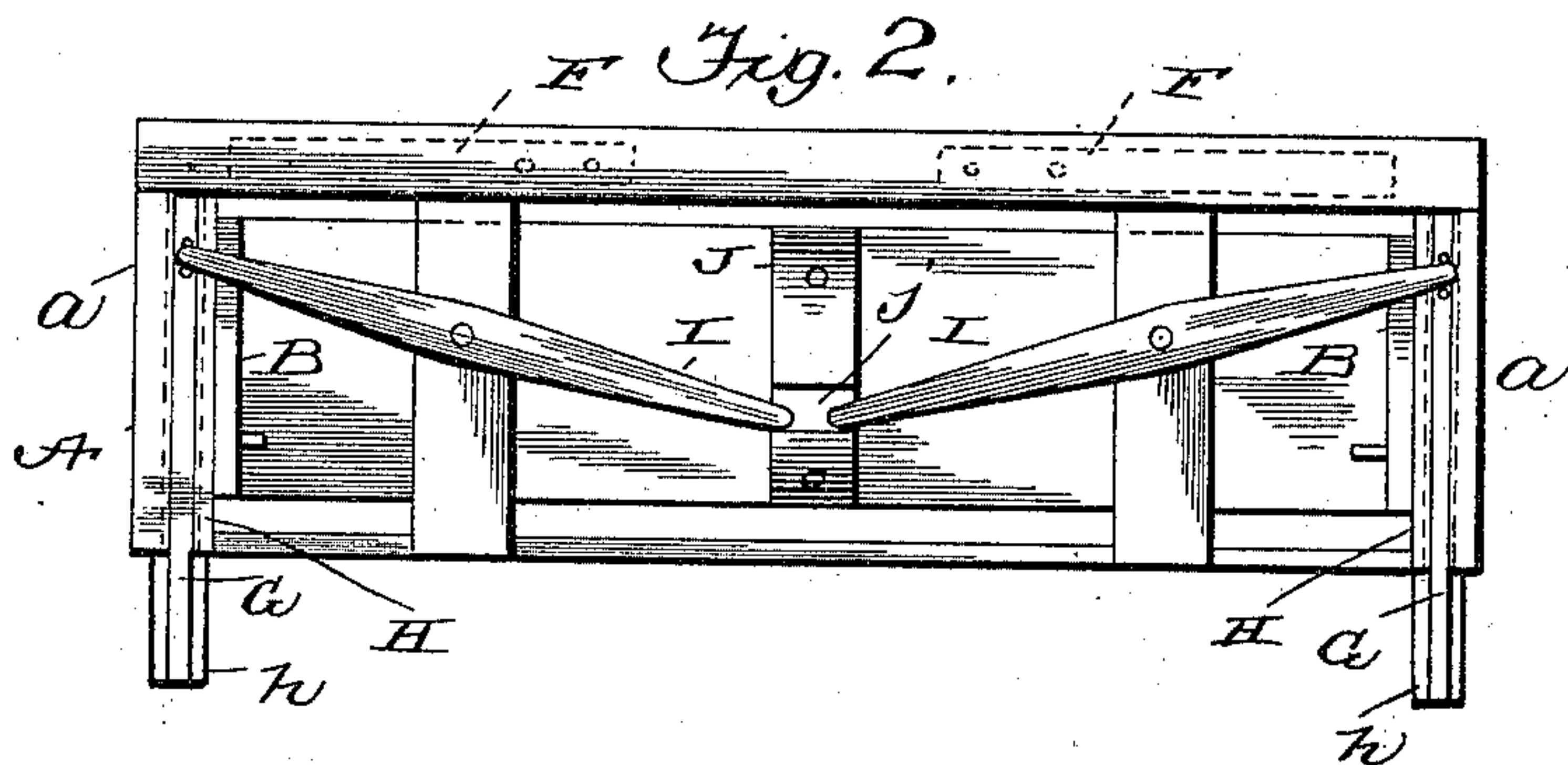
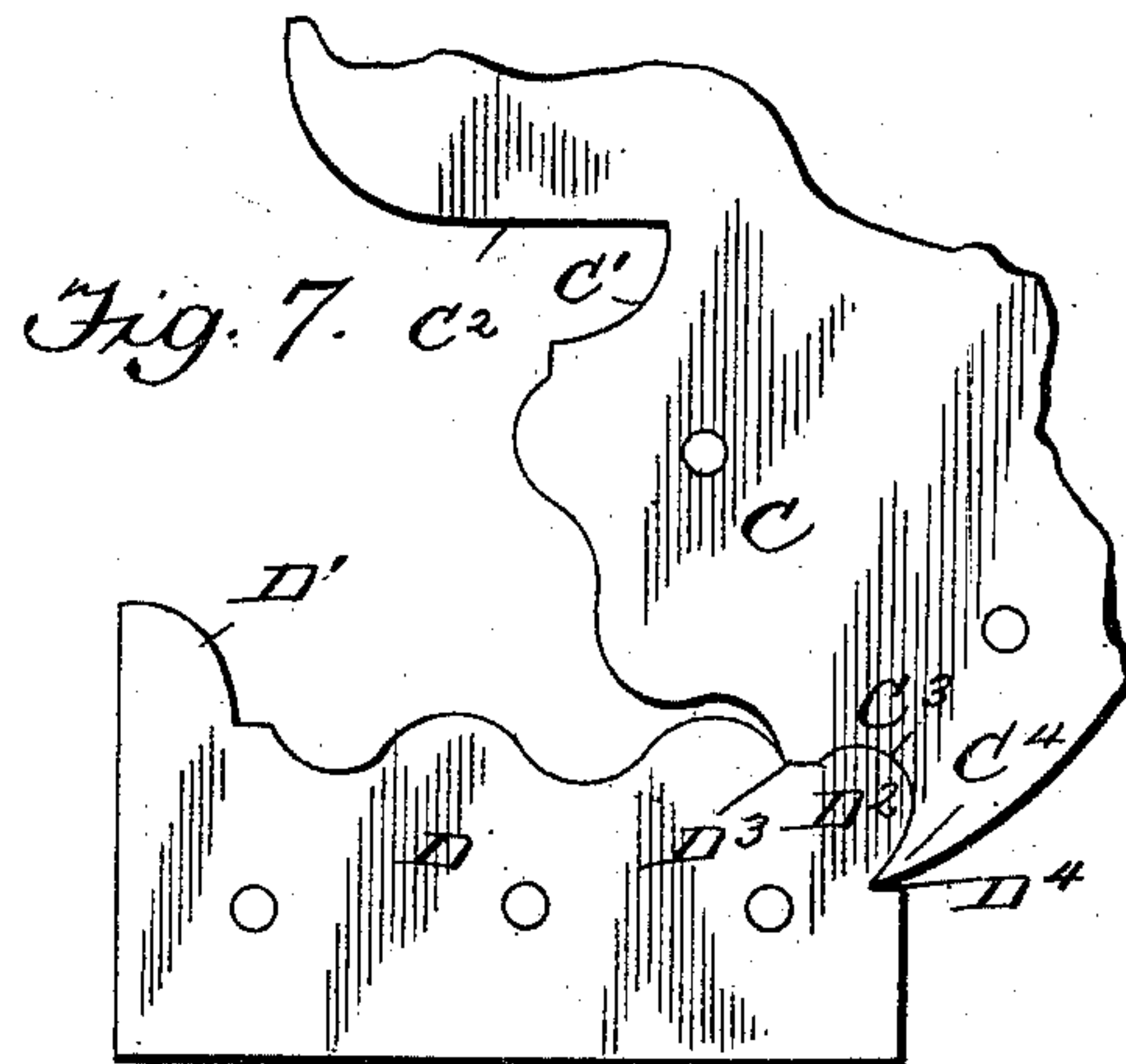
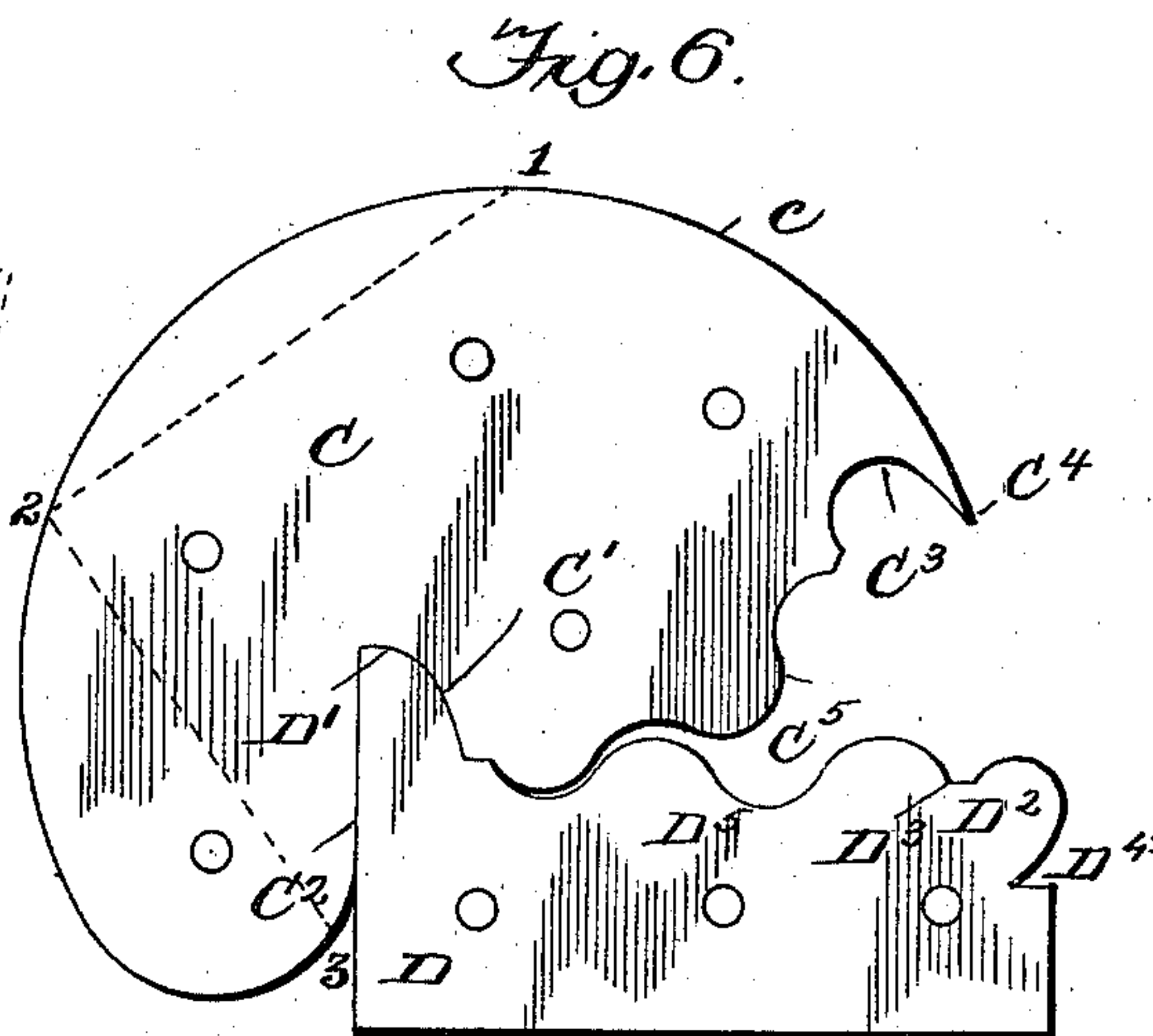
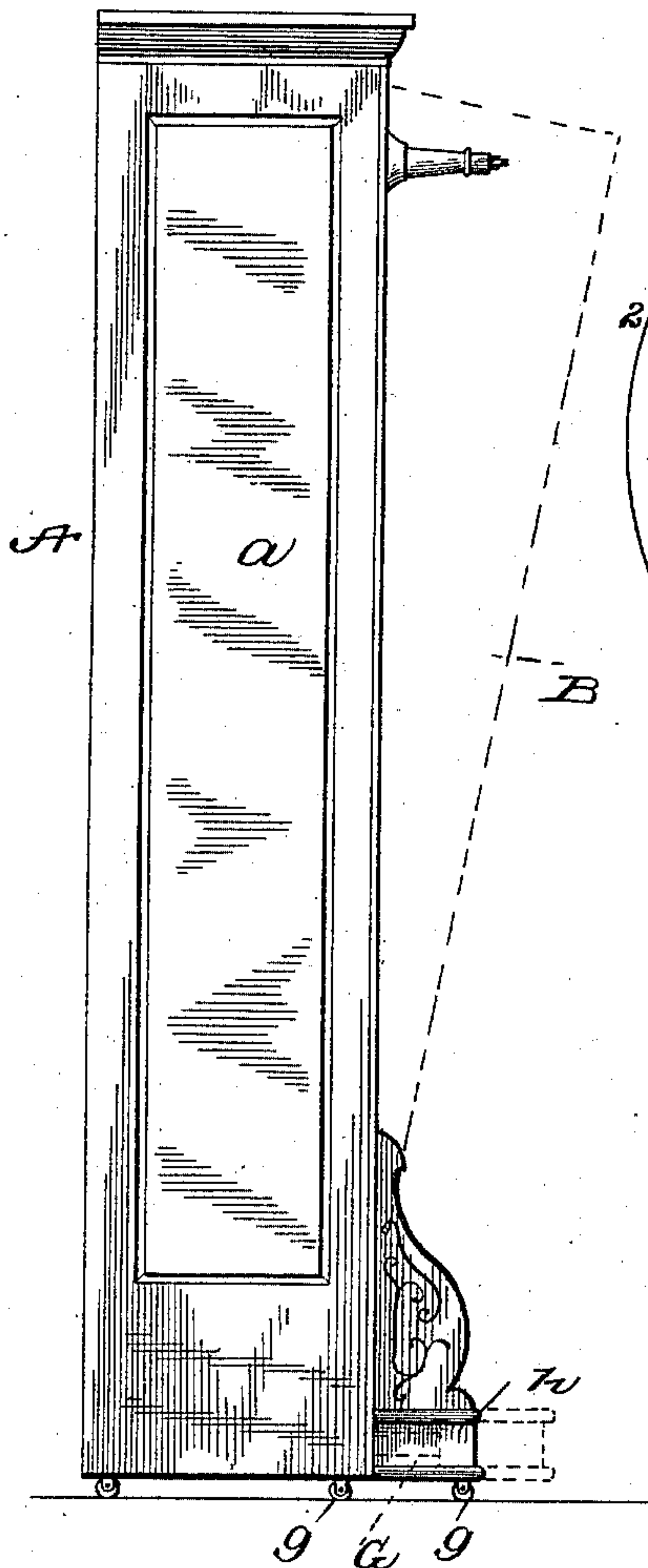


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN TEEL, OF GRAND RAPIDS, MICHIGAN.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 537,869, dated April 23, 1895.

Application filed June 4, 1892. Renewed September 7, 1894. Serial No. 522,343. (No model.)

To all whom it may concern:

Be it known that I, JOHN TEEL, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Folding Beds; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a detail perspective view of a portion of a folding bed, showing the operative parts thereof which embody my present invention. Fig. 2 is a bottom view thereof. Fig. 3 is an end view. Figs. 4 and 5 are detail views of the catch block for actuating the sliding brace levers. Figs. 6 and 7 are detail views showing the bed-rail supporting blocks and connections in the positions assumed when the bed frame is raised, and lowered, respectively.

This invention is an improvement upon folding beds, and its objects are to reduce the number of parts in the bed, to narrow the base of the bed-case; yet provide means for automatically bracing or supporting it while the bed frame is being lowered; to provide improved spring arrangements for cushioning and controlling the lowering of the bed frame so that it will not fall with a shock, and which will assist in elevating or closing the frame, and to improve the hinge support of the frame on the case. These objects I have attained in the present invention which consists in the improved constructions and combinations of parts which will hereinafter be distinctly described and claimed.

Referring to the drawings by letters,—the bed casing A may be of any suitable construction and ornamentation, having vertical sides *a* and open front.

B, B, are the side rails of the bed frame suitably connected as usual, and C designates a plate attached to the outer side of each rail B near the head end thereof, and bearing upon an opposed plate D fixed to the inner face of each side piece *a* of the casing near the lower end thereof, said plates together constituting a shifting hinge or pivotal support and lock for the frame upon the casing.

Plate D is substantially rectangular in

shape, and is fastened to the frame in about a horizontal position. On the rear upper corner of said plate is a projection D' rounded on its front edge, and at the front upper corner of the plate is a rounded knuckle D². A flattened portion D³ is formed on the upper edge of plate adjoining this knuckle, and an angular recess D⁴ being formed in the front edge of the plate adjoining the knuckle. The edge of plate C which rests upon the upper edge of plate D has at one end a recess C' adapted to fit on projection D' when the frame is in a vertical position or closed, and it also has a portion C² which abuts against the rear end of plate D when the frame is raised. At the opposite corner of the plate C is a recess adapted to fit knuckle D² when the frame is lowered and at one side of said recess is a point C⁴ which will enter recess D⁴ and a bearing portion C³ which will rest upon surface D³ when the frame is lowered.

The bearing edge of plate C in relation to the supporting edge of plate D, is substantially rounded, so that but a small portion of the edges of the plates will be ordinarily in contact. When the frame is vertical the recess C' fits on projection D', see Fig. 4, and the frame is thereby both supported vertically in the casing, and its head end (which is then lowest) is effectually prevented from slipping forward or backward in the casing. When the frame is lowered the plate D rocks on the plate C until bearing C³ contacts with bearing D³. Simultaneously knuckle D² enters the corresponding recess in plate C and point C⁴ enters recess D⁴. The head end of the frame is then supported on the casing, see Fig. 5, while the interlocking knuckle D² and bearing C³ prevents longitudinal movement of the frame in the casing, and interlocking point C⁴ with recess D⁴ prevents the head of frame being lifted vertically off plate C. In order to prevent slipping of the plates in relation to each other while the frame is being raised or lowered, I preferably form their meeting edges between points C' C³, D' D³, respectively with interlocking scallops as shown at C⁵, D⁵.

The upper edge of plate C is rounded as at *c* and upon it bears a rubbing spring arm E, one of which is attached to each side of the casing above the plates C, D. The office of

these springs is to counteract the weight of the frame and enable it to be lowered without jarring, and the plates C are so formed that as the frame lowers, the contact point between the spring and edge of plate will shift farther away from the point of contact between the plates C, D, thereby causing the spring to increase its pressure on the plate C and to serve as a brake to prevent falling of the frame by gravity and also assisting in the closing of the bed. The curvature of edge c of plate C is such, that between the points 1 and 2 as indicated in Fig. 6, the pressure of the spring thereon will increase as the frame is lowered, and about and between points 2 and 3, the pressure of spring will gradually decrease so that as the bed reaches the horizontal the strain on spring E is relieved. Of course as the frame lowers it tends to drop faster and faster by gravity and the power necessary to stop or cushion its descent must correspondingly increase. It is desirable however to have it lower quickly.

F designate springs which are fastened to the lower back bar rail of the casing their free ends extending toward the sides of the casing in position to contact with pins b secured to the extremities of the side rails B next the head board. Said springs and pins are so placed that as the frame nearly reaches the horizontal "opened" position the springs catch under the springs and check the descent of the frame which then assumes the horizontal without jar. Springs F also assist materially in the "closing" of the bed.

It is necessary in order to prevent the case toppling over when the frame is lowered or raised, that the casing should have a deep firm foundation unless it is to be rigidly fastened in place. These wide bases appear clumsy, and hence in many beds safety has been sacrificed for appearance sake.

In order to make shallow casings I can make the casing as shallow as desired, yet effectually prevent its toppling over in opening or closing the bed, by the following simple automatically operated means:

G, G, represent sliding pieces mounted between opposed boards H, H, on the lower ends of the sides of casing adapted to be projected forwardly and preferably somewhat longer than the sides of casing are wide, so the front ends of said pieces project beyond the casing beneath brackets or pedestals h, h, attached to the front of casing, and of any suitable ornamental design. Each piece has a roller g on its front end. I, I, are levers pivoted to bottom pieces of the casing near opposite sides thereof, and their outer ends are respectively loosely engaged with pieces G so that as said pieces are oscillated they will slide pieces G in or out. The inner ends of said levers lie close together, and are adapted to be engaged by a catch block J which is secured to the back of the head board of frame. This block is provided with a transverse notch j which is adapted to receive the ends of the

levers I. When the frame is raised the catch block stands horizontal with the ends of levers I resting therein as indicated in Fig. 4, and pieces G are retracted as indicated in Fig. 3. As the frame is lowered the catch block is of course moved rearwardly and upwardly. Its rearward movement causes levers I to oscillate and its upward movement causes it to gradually release the ends of levers by slipping vertically therefrom as indicated in Fig. 5. This movement of levers I take place upon the initial downward movement of the frame, and therefore the pieces G are projected outwardly, as indicated in dotted lines in Figs. 3 and 1 bracing the casing by forming an auxiliary base therefor and increasing the depth of base, so that toppling over of the casing as the bed is lowered is effectively prevented. As the frame is raised the catch block descends and it re-engages the ends of levers I, I, and causes them to retract the pieces G just as the frame reaches its vertical position.

The rear side of block J is made thicker than its front side as at j' to insure catching the levers I upon the closing of the frame. This construction of course enables me to use a very shallow casing with perfect safety to the user, and to make the beds more compact, lighter and less expensive.

The frictional device to prevent falling of the frame in lowering it, and the automatic extensible auxiliary base, braces or legs, I deem the most essential feature of this present invention, and do not wish to limit myself to the specified forms herein shown, as obviously various modifications may be made in the mechanical features or arrangement of parts to embody these essential improvements.

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

1. In a folding bed the combination of the casing and the frame pivotally mounted thereon and a cam-shaped plate attached thereto, with a spring adapted to bear on said plate and act as a brake to control the descent of the frame, the resistance of the spring gradually increasing as the frame is lowered, substantially as and for the purpose described.

2. In a folding bed the combination of the casing, the frame, the bearing plates respectively attached to casing and frame for supporting the latter on the former; with a spring arranged to act against the plates attached to frame to control the lowering of the frame, substantially as and for the purpose specified.

3. In a folding bed the combination of the casing, the frame, the plates having a curved edge secured to the side rails of frame and supporting the frame upon the casing with the springs bearing upon the edges of said plates to control the descent of the frame by frictional contact, substantially as described.

4. The combination with the frame and casing, of the plates C and D the former having

a recess C' at one end having one rounded and one straight edge, and a recess and point C³, C⁴, at its other end, and plate D having a projection D' at one end shaped like and adapted to engage recess C' to lock the frame in upright position, and also having a projection D², and shoulder D⁴ at its other end respectively adapted to engage the recess and point C³, C⁴, when the frame is lowered, substantially as and for the purpose specified.

5. In a folding bed the combination of the casing the plates D attached thereto having projection D' with the frame and plates C attached thereto resting upon plates D and having recesses C', and the flat springs fixed to the casing and bearing upon the outer edges of plates D, substantially as and for the purpose specified.

6. In a folding bed the combination of the casing and frame, with the plates C and D constructed substantially as herein shown and described on their meeting edges and respectively attached to the casing and frame, and the flat springs E bearing upon the edges of plates D, as and for the purpose set forth.

7. In a folding bed the combination of the casing, the frame, the plates having a curved

edge secured to the side rails of frame and supporting the frame upon the casing with the springs bearing upon the edges of said plates to control the descent of the frame by frictional contact, and the flat springs attached to casing and adapted to engage the head ends of the rails as the frame is lowered, substantially as described.

8. The combination of the casing, the sliding pieces attached to the lower end thereof, and the oscillating levers for shifting said pieces; with the swinging bed frame mounted in said casing and adapted to operate said levers, substantially as and for the purpose described.

9. The combination of the casing, the sliding pieces G, and the levers I; with the frame B, and block J, all constructed and arranged to operate substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN TEEL.

Witnesses:

ARTHUR E. DOWELL,
JAMES R. MANSFIELD.