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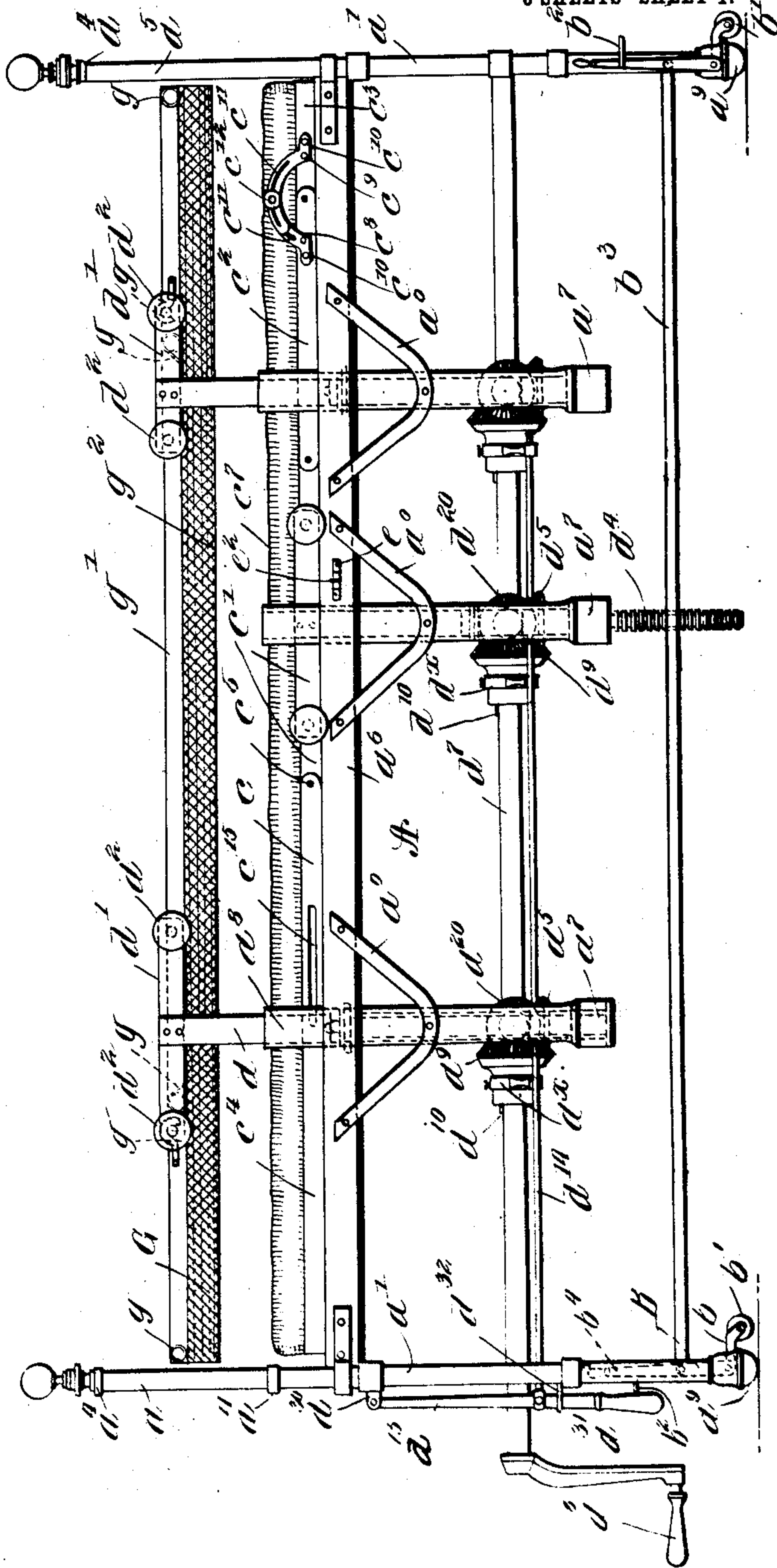
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BED.

APPLICATION FILED OCT. 12, 1906.

6 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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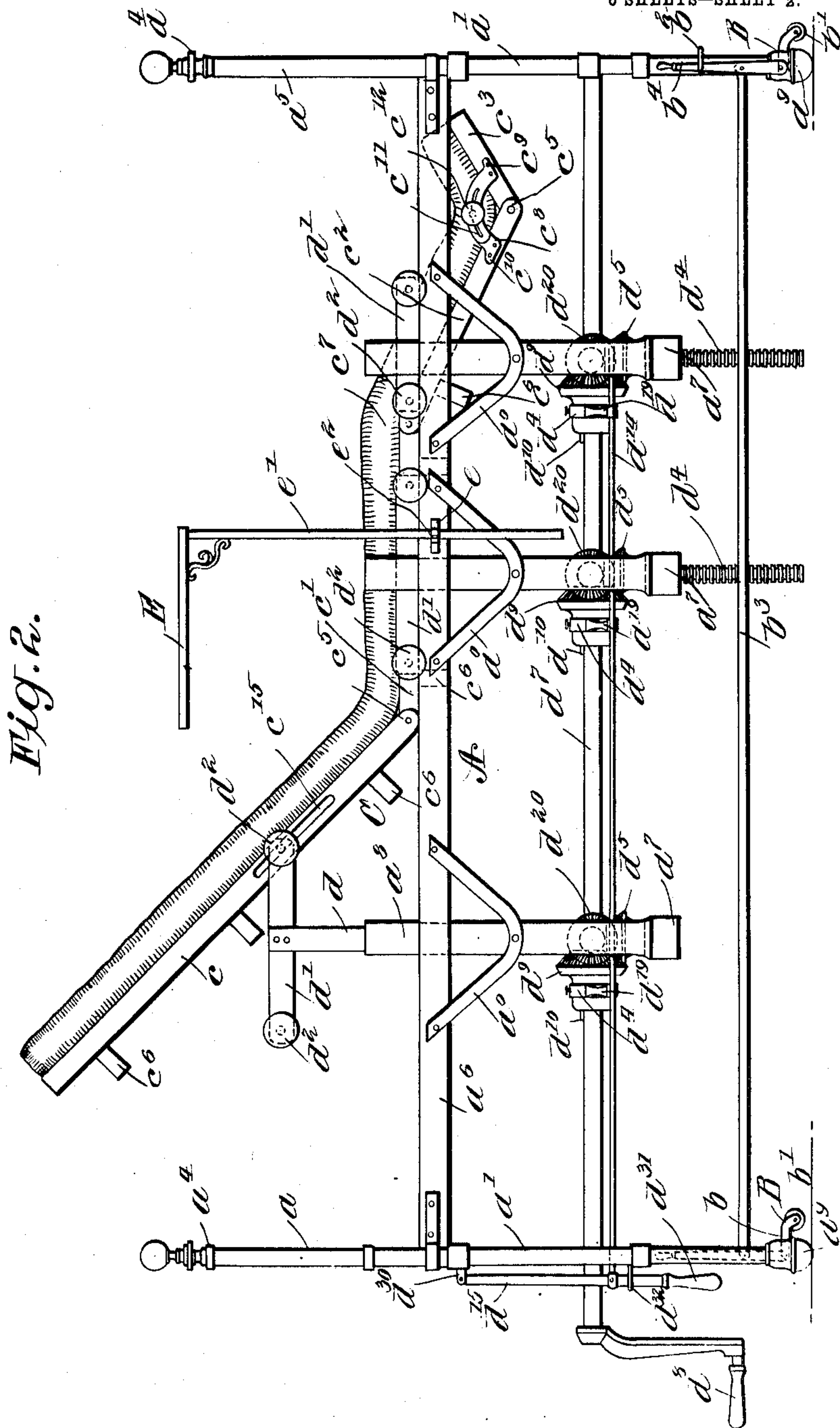
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6 SHEETS—SHEET 2.



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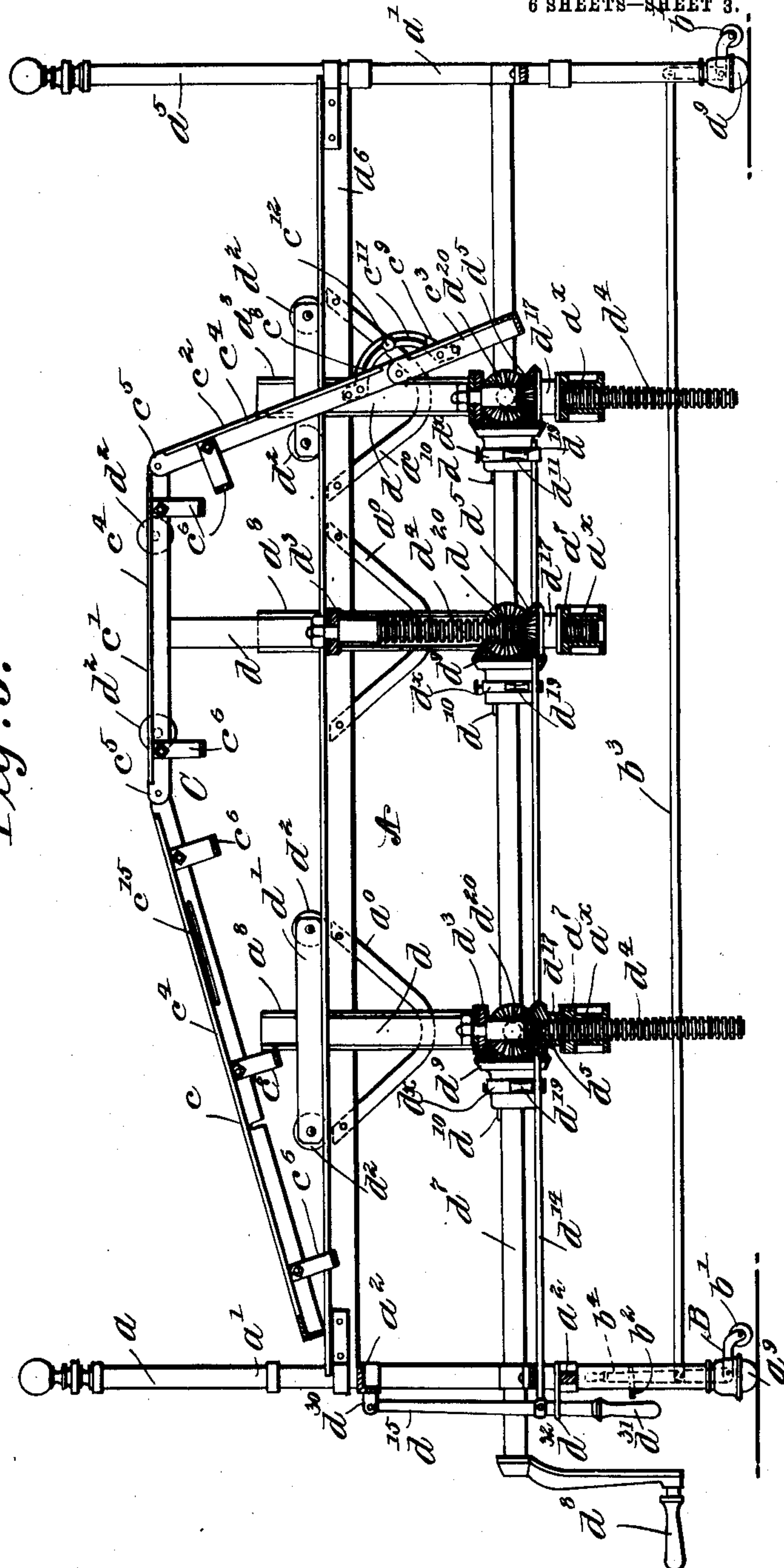
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6 SHEETS—SHEET 3.

Fig. 3.



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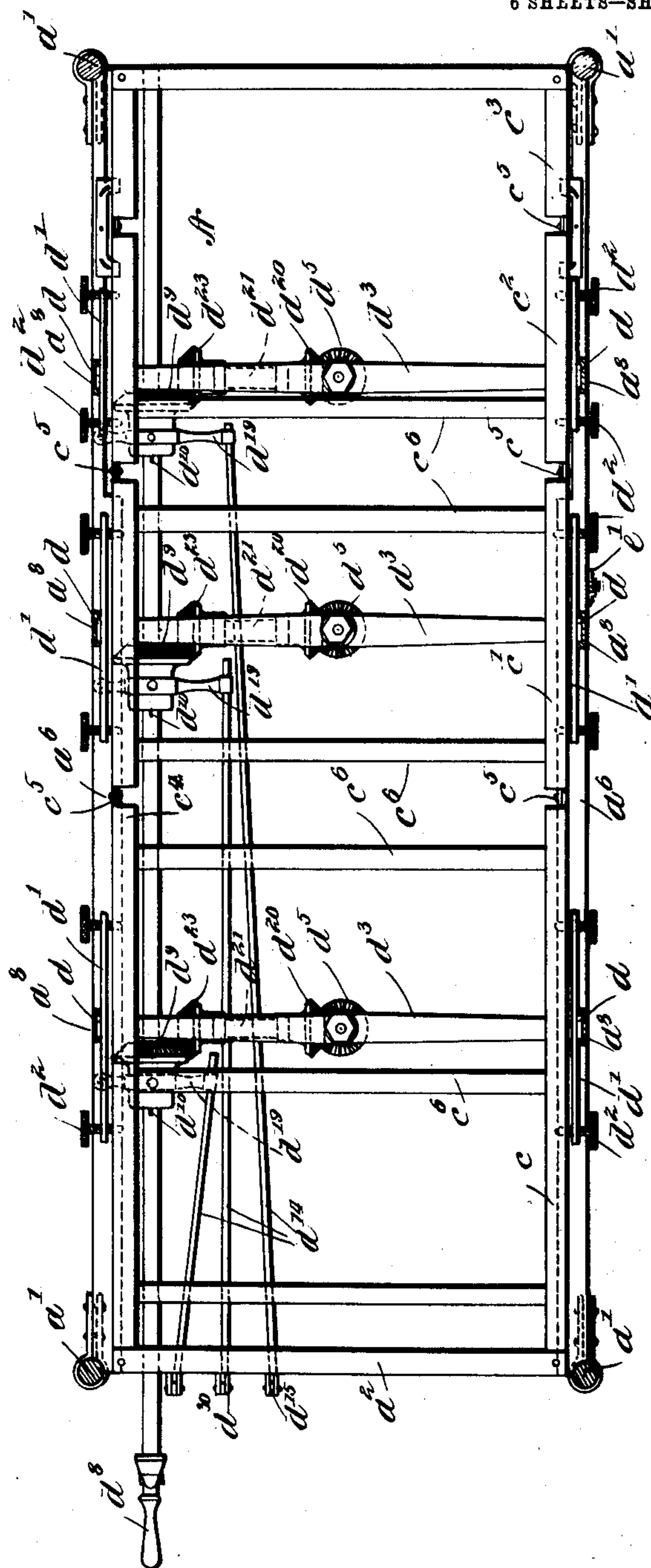
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6 SHEETS—SHEET 4.

Fig. 4.



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6 SHEETS—SHEET 5.

Fig. 6.

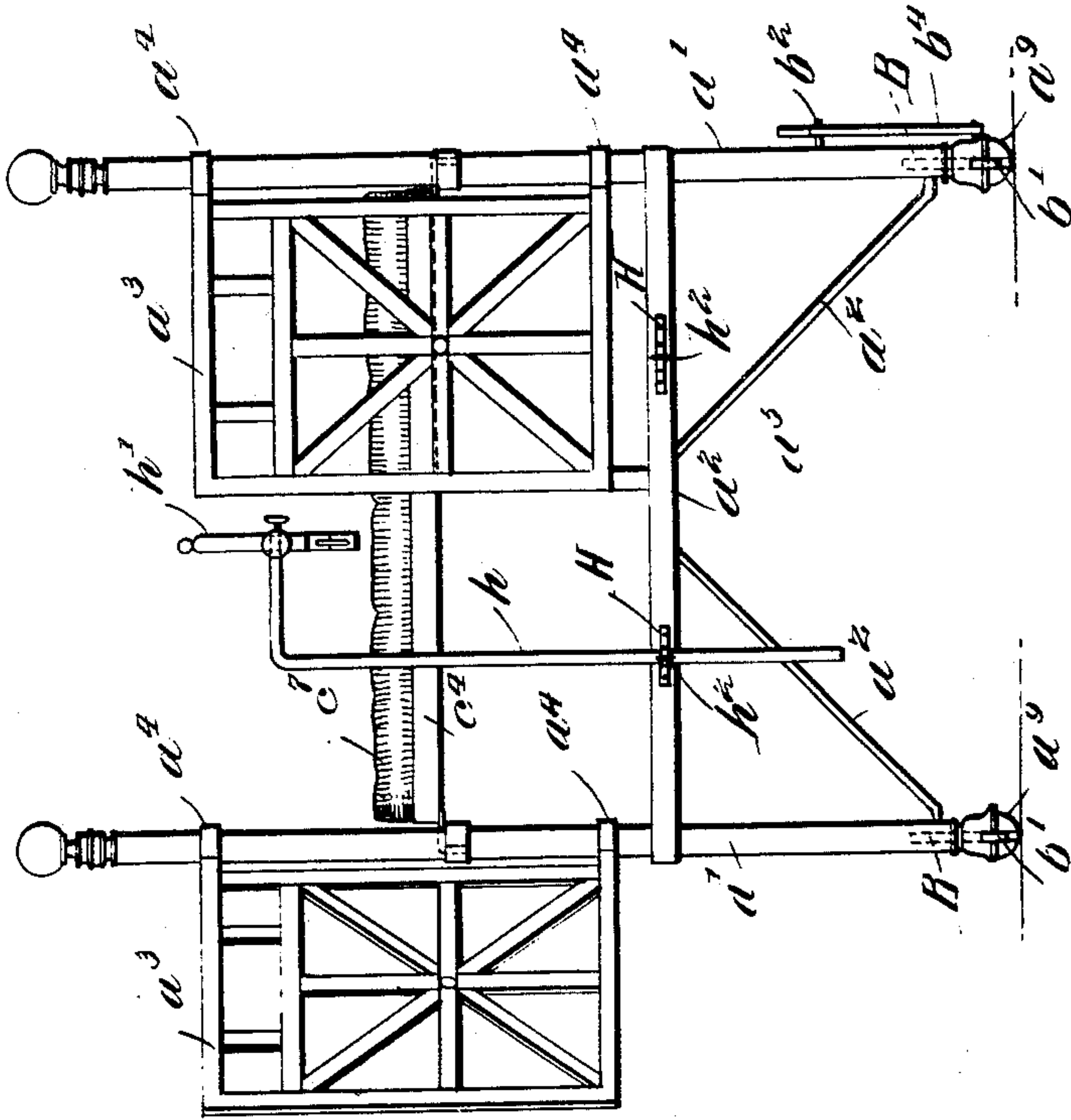
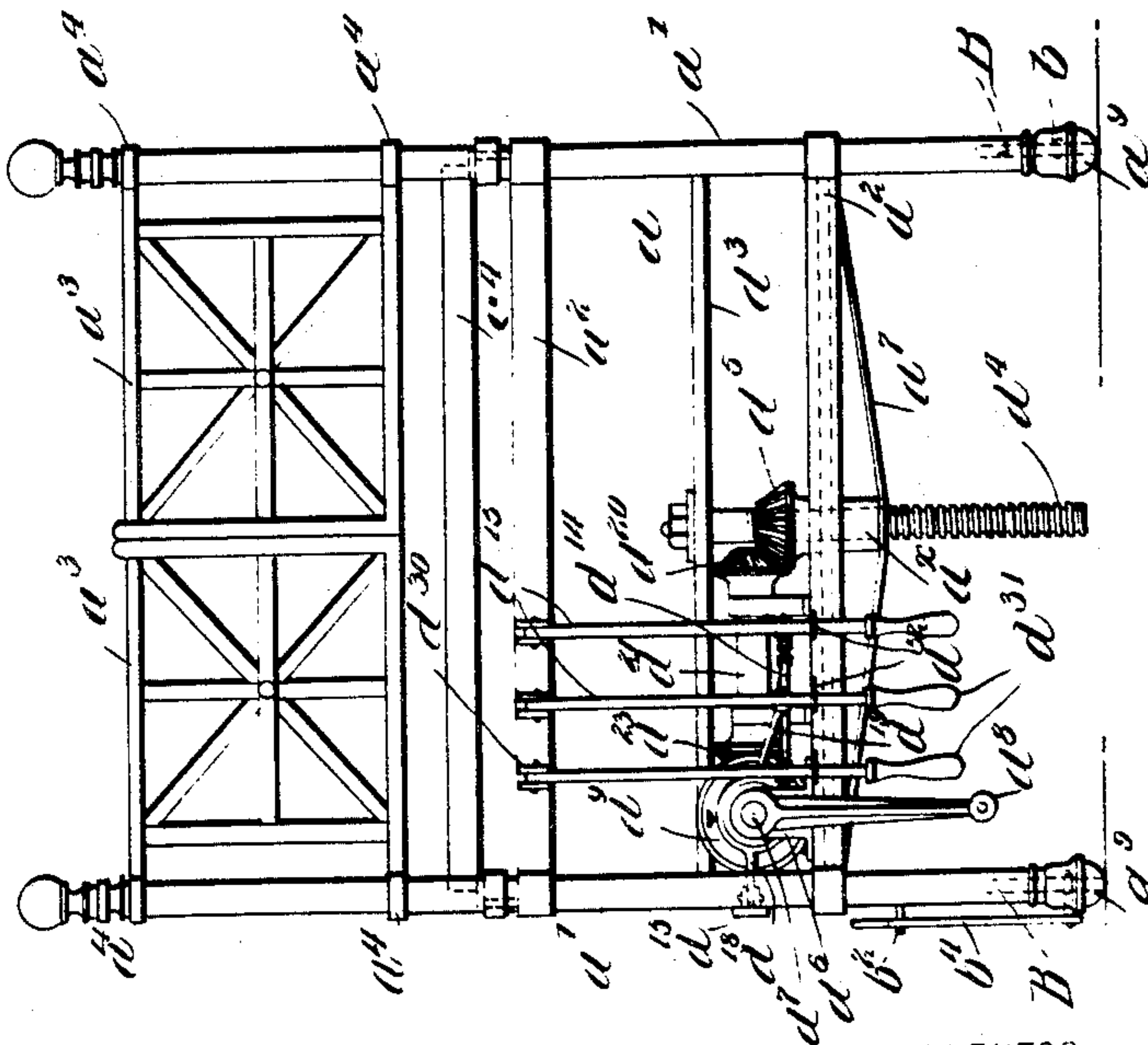


Fig. 5.



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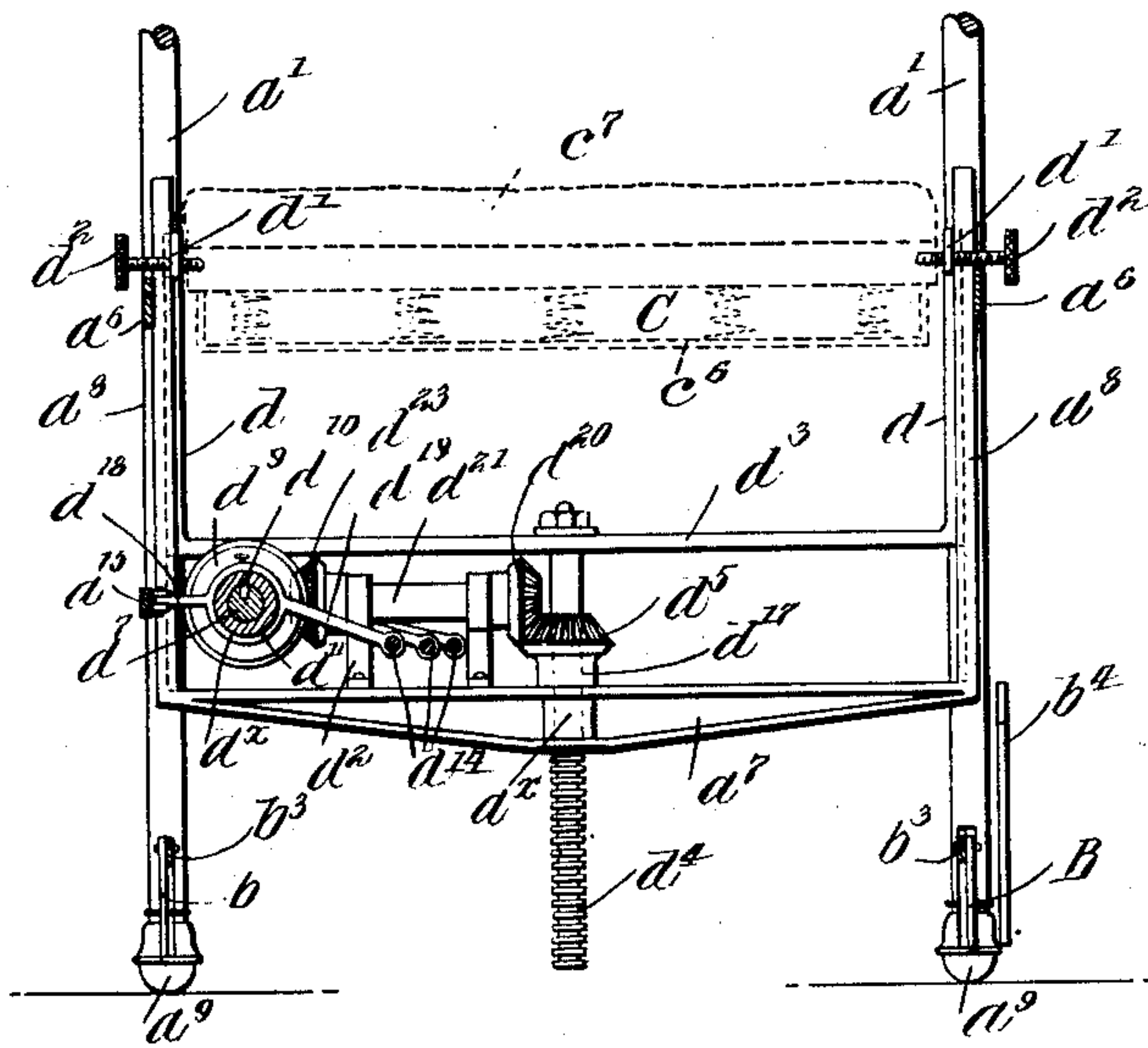
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6 SHEETS—SHEET 6.

*Fig. 7.*



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# UNITED STATES PATENT OFFICE.

LORIN H. FLANDERS, OF MEMPHIS, TENNESSEE.

## BED.

No. 850,744.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed October 12, 1906. Serial No. 338,582.

*To all whom it may concern:*

Be it known that I, LORIN H. FLANDERS, a citizen of the United States, and a resident of Memphis, in the county of Shelby and State of Tennessee, have invented a new and useful Improvement in Beds, of which the following is a specification.

My invention is an improvement in beds, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

Referring to the drawings forming a part hereof, Figure 1 is a side view of my improved bed in its normal position. Fig. 2 is a similar view with the mattress-frame partially elevated. Fig. 3 is a longitudinal section. Fig. 4 is a top plan view. Fig. 5 is an end view of the head of the bed. Fig. 6 is an end view of the foot of the bed, and Fig. 7 is a transverse section on the line of one of the slideways.

In the present embodiment of my invention the bed comprises a frame A, composed of a head  $a$  and a foot  $a^5$ , connected by the side rails  $a^6$ . The head  $a$  and foot  $a^5$  are each composed of posts  $a^7$ , connected by cross-bars  $a^2$ , gates  $a^3$  being arranged above the cross-bars and hinged to the posts, as at  $a^4$ , for a purpose to be hereafter described.

Each of the posts is provided with a rounded foot  $a^9$ , normally resting upon the supporting-surface for the bed, and upon each of the posts is provided means B for elevating said post and bringing a roller into contact with the supporting-surface when it is desired to move the bed. The above-mentioned means comprises an angle-lever  $b$ , secured to the post near the lower end thereof, one of the arms of the angle-lever having journaled therein a roller  $b^1$  and the other arm being provided with a handle  $b^4$ , the said angle-levers upon each side of the bed being connected by a link  $b^3$ , whereby to cause the said angle-levers to operate in unison, and the angle-levers are retained in their adjusted position by catches  $b^2$ .

It will be understood from the above description that when it is desired to move the bed the angle-levers are turned to bring the rollers into contact with the supporting-surface for the bed, thus elevating the posts, whereby to permit the bed to move freely upon the rollers.

A plurality of vertical slideways are arranged transversely of the bed, each of said slideways comprising a U-shaped frame, the

arms  $a^8$  of the slideways being connected with the side rails and the body  $a^7$  being provided at its center with a vertical bearing  $a^x$  for a purpose to be hereafter described.

Slides are movably mounted in each of the slideways, the said slides comprising arms  $d$ , slidable in grooves in the arms of the slideways, and a body portion  $d^3$ , having a downwardly-projecting screw-threaded rod  $d^4$  at the center thereof, the rod passing through an internally-screw-threaded sleeve  $d^{17}$ , journaled in the bearing  $a^x$  in the body portion of the slideways.

The upper end of the sleeve  $d^{17}$  is provided with a bevel-gear  $d^5$ , meshing with a bevel-gear  $d^{20}$  upon a horizontal shaft  $d^{21}$ , journaled in bearings  $d^2$ , arranged upon the body  $a^7$  of the slideways, and having at its opposite end a bevel-gear  $d^{23}$ , meshing with a bevel-gear  $d^9$ , slidably mounted upon the shaft  $d^7$ , journaled in bearings  $d^6$  on the body of the slideway and provided at its outer end with a crank  $d^8$  for convenience in manipulating the same. The bevel-gears  $d^9$  are compelled to turn with the shaft  $d^7$  by means of a feather  $d^{10}$ , which, however, permits the sliding movement of the said gears.

Each of the gears  $d^9$  is provided with a circumferential groove  $d^{11}$ , in which is a collar  $d^x$ , having at one end an arm  $d^{18}$ , pivoted to a brace  $a^{15}$ , connecting the head and the foot board, and having at its other side an arm  $d^{19}$ , connected with a link  $d^{14}$ , the said link extending toward the head of the bed and being pivoted to a lever  $d^{15}$ , pivoted to the cross-bar at the head of the bed, as at  $d^{30}$ , and provided with a grip  $d^{31}$ , whereby to manipulate the said lever. Guides  $d^{32}$  are arranged on the cross-bar adjacent to each of the levers  $d^{15}$ , whereby to guide said levers in their movement.

A mattress-frame C, comprising a plurality of sections  $c$ ,  $c'$ ,  $c^2$ , and  $c^3$ , hinged together, as at  $c^5$ , is supported upon the frame of the bed, the said mattress-frame being composed of angle-irons  $c^4$ , connected together at suitable intervals by cross-bars  $c^6$ , upon which the mattress  $c^7$  is supported, the said cross-bars being offset downwardly from the angle-bars, as clearly shown in the drawings. The section  $c^3$  is retained in its adjusted position with respect to the section  $c^2$  by means of segments  $c^8$   $c^9$ , slotted, as at  $c^{11}$ , and secured to the respective sections, as at  $c^{10}$ , the segments being retained in their adjusted position with respect to each other



by means of a set-screw  $c^{12}$  engaging the slots of the segments. By loosening the set-screw the section  $c^3$  may be moved with respect to the section  $c^2$ , and when the set-screw is tightened the section  $c^3$  is retained in its adjusted position.

Each of the arms  $d$  of the slides is provided at the top thereof with a cross-bar  $d'$ , extending longitudinally of the bed and provided at each end with set-screws  $d^2$  threaded therethrough, the one end of the set-screw being adapted to engage beneath the flange of the angle-iron  $c^4$  of the mattress-frame, as shown in Fig. 4.

At suitable positions on the longitudinal bars are arranged sliding bearings  $e$ , in which may be moved the staff  $e'$  of a table  $E$ , the said staff being secured in its adjusted position by means of a set-screw  $e^2$  traversing the bearing and engaging the staff.

It is sometimes desirable to lift the patient above the mattress in order that the bed-coverings may be changed, and for this purpose I have provided the hammock-frame  $G$ , provided at suitable intervals with hooks  $g$ , which may engage with the set-screws  $d^2$  of the slides  $d$ . In using the hammock the set-screws are turned until they are disengaged from the flange of the side rails  $a^6$ , after which the hooks of the hammock-frame are engaged therewith, and by turning the crank  $d^8$  the slides are elevated together with the hammock, leaving the mattress-frame and the mattress in their normal position.

On the cross-bar of the foot of the bed are arranged a pair of spaced slideways  $H$ , in which are slidably mounted angle-bars  $h$ , provided on their angular parts with leg-rests  $h'$ , the said leg-rests being of ordinary form and construction and the angular bars being retained in their position by set-screws  $h^2$  traversing the slideways and engaging the angle-bars.

In operation, the mattress-frame being in its normal position and each of the bevel-gears  $d^9$  being in mesh with the respective bevel-gears  $d^5$ , rotation of the shaft  $d^7$  will move all of the slides upward, thus moving the mattress-frame in its entirety and with the sections in their aligned position. If it is desired only to raise the head-section  $c$ , whereby to bring the patient into a sitting position with the legs extended, the bevel-gears actuating the slides connected with the sections  $c'$   $c^2$  are moved out of mesh with the respective gears  $d^5$  by means of the levers  $d^{15}$  connected therewith, when rotation of the shaft  $d^7$  will move the head-section into angular position with respect to the other sections, as clearly shown in Fig. 2.

It will be evident that many other positions may be given to the mattress-frame by connecting and disconnecting the gears actuating the respective pairs of slides. The hinged gates on the head and foot board are

for the purpose of permitting the approach of the physician or nurse directly to the head or feet of the patient, the gates being opened for this purpose, as shown in Fig. 6.

It will be noticed from an inspection of Fig. 2 that the angle-irons  $c^4$  of the section  $c$  of the mattress-frame  $C$  are slotted, as at  $c^{15}$ , the slot being in position to be engaged by the set-screws  $b^2$  on one end of the cross-bar  $d'$  nearest the head of the bed, the slot acting to limit the angle of the section  $c$  and the adjacent section. Suitable braces  $a^0$  are made use of in connection with the slideways and side rails, and other braces  $a^2$  are made use of in connection with the footboard.

The mattress-frame  $G$  consists of side rails  $g'$ , connected by the hammock-netting  $g^2$ , and, if desired, the side rails may be braced by cross-bars at the ends thereof.

I claim—

1. A bed comprising a headboard and a footboard, side rails connecting the head and the foot board, vertical slideways arranged transversely of the bed, said slideways comprising U-shaped frames, the arms of the frames being connected with the side rails and the body of the frames having a bearing at the center thereof, an internally-threaded sleeve provided at its upper end with a bevel-gear journaled in the bearing, slides comprising U-shaped frames having the arms thereof movable in the arms of the slideways, and the body portion thereof provided with a screw-threaded rod depending from its center and passing through the screw-threaded sleeve, a transverse shaft journaled upon the body portion of each of the slideways, and provided at each end with a bevel-gear, one of said bevel-gears meshing with the bevel-gear on the sleeve, a shaft journaled longitudinally of the bed, a plurality of bevel-gears mounted upon the said shaft, each engaging the bevel-gear of a transverse shaft, means for rotating said shaft, means at the head of the bed for moving the bevel-gears on the longitudinal shaft in and out of mesh with the gears on the transverse shafts, a mattress-frame in connection with the bed, said frame comprising a plurality of hinged sections, and a connection between the respective slides and the section of the mattress-frame adjacent thereto.

2. A bed comprising a headboard and a footboard, side rails connecting the head and the foot board, vertical slideways arranged transversely of the bed, said slideways comprising U-shaped frames, the arms of the frame being connected with the side rails and the body of the frame having a bearing at the center thereof, an internally-threaded sleeve provided at its upper end with a bevel-gear journaled in the bearing, slides comprising U-shaped frames having the arms thereof movable in the arms of the slideways, and the body portion thereof provided with a



screw-threaded rod depending from its center and passing through the sleeve, a transverse shaft journaled upon the body portion of each of the slideways, and provided at  
 5 each end with a bevel-gear, one of said bevel-gears meshing with the bevel-gear on the sleeve, a shaft journaled longitudinally of the body, a plurality of bevel-gears mounted for longitudinal movement upon said shaft,  
 10 each of said bevel-gears being adjacent to a bevel-gear of the transverse shaft, means for moving the bevel-gears on the transverse shaft into and out of engagement with the bevel-gears on the horizontal shafts, a mat-  
 15 tress-frame comprising a plurality of hinged sections, and a connection between the respective slides and the section of the mattress-frame adjacent thereto.

3. A bed comprising a headboard and a  
 20 footboard, side rails connecting the head and the foot board, vertical slideways arranged transversely of the bed, said slideways comprising U-shaped frames, the arms of the  
 25 frames being connected with the side rails and the body of the frames having a bearing at the center thereof, an internally-threaded sleeve provided at its upper end with a bevel-gear journaled in the bearing, slides compris-  
 30 ing U-shaped frames having the arms thereof movable in the arms of the slideways, and the body portion thereof provided with a screw-threaded rod passing through the sleeve, means engaging each of said bevel-  
 35 gears for turning the sleeve whereby to raise and lower the rod, means for connecting and disconnecting each of said means from said respective bevel-gears, a mattress-frame in con-  
 40 nection with the bed, said frame comprising a plurality of hinged sections, and a connection between the respective slides and the section of the mattress-frame adjacent thereto.

4. A bed comprising a headboard and a footboard, side rails connecting the head and the foot board, vertical slideways arranged  
 45 transversely of the bed, said slideways comprising U-shaped frames, the arms of the frames being connected with the side rails and the body of the frames having a bearing at the center thereof, slides comprising U-  
 50 shaped frames having the arms thereof movable in the arms of the slideways, and the body portions thereof provided with a screw-threaded rod passing through the bearing, a screw-threaded sleeve journaled in each of  
 55 the bearings and engaging the rod, means engaging each of the sleeves whereby to rotate the same, a sectional mattress-frame in

connection with the bed, and a connection between the respective slides and the section of the mattress-frame adjacent thereto. 60

5. A bed comprising a headboard and a footboard, side rails connecting the head and the foot board, vertical slideways ar-  
 ranged transversely of the bed, said slide- 65 ways comprising U-shaped frames, the arms of the frames being connected with the side rails, slides comprising U-shaped frames hav-  
 ing the arms thereof movable in the arms of the slideways, means for elevating and de- 70 pressing the slides with respect to the slide-  
 ways, a mattress-frame in connection with the bed, said frame comprising a plurality of hinged sections, and a connection between  
 the respective slides and the section of the mattress-frame adjacent thereto. 75

6. A bed comprising a headboard and a footboard, side rails connecting the head and the foot board, a mattress-frame in con-  
 nection with the bed, said frame comprising a plurality of hinged sections, means for mov- 80 ing said sections bodily and in unison with respect to the bed, and means for connecting and disconnecting each of said sections from  
 said moving means.

7. A bed comprising a headboard and a 85 footboard, a mattress-frame comprising a plurality of hinged sections in connection with the bed, means for moving said sections bodily with respect to the bed and means for  
 connecting and disconnecting each of said 90 sections from said moving means.

8. The combination with a bed-frame, of vertical slideways arranged transversely thereof, slides movable in the slideways, means for elevating and depressing the slides 95 with respect to the slideways, a mattress-frame in connection with the bed, said frame comprising a plurality of sections, a connection between the respective slides and the sections of the mattress-frame adjacent 100 thereto, and means for connecting and dis-  
 connecting the slides and the sections.

9. A bed comprising a headboard and a footboard, and a mattress-frame in con-  
 nection with the bed, said headboard and foot- 105 board comprising each posts connected by cross-bars below the level of the mattress-frame, and gates hinged to each of the posts above the level of the mattress-frame.

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Witnesses:

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