No. 716,756. Patented Dec. 23, 1902.

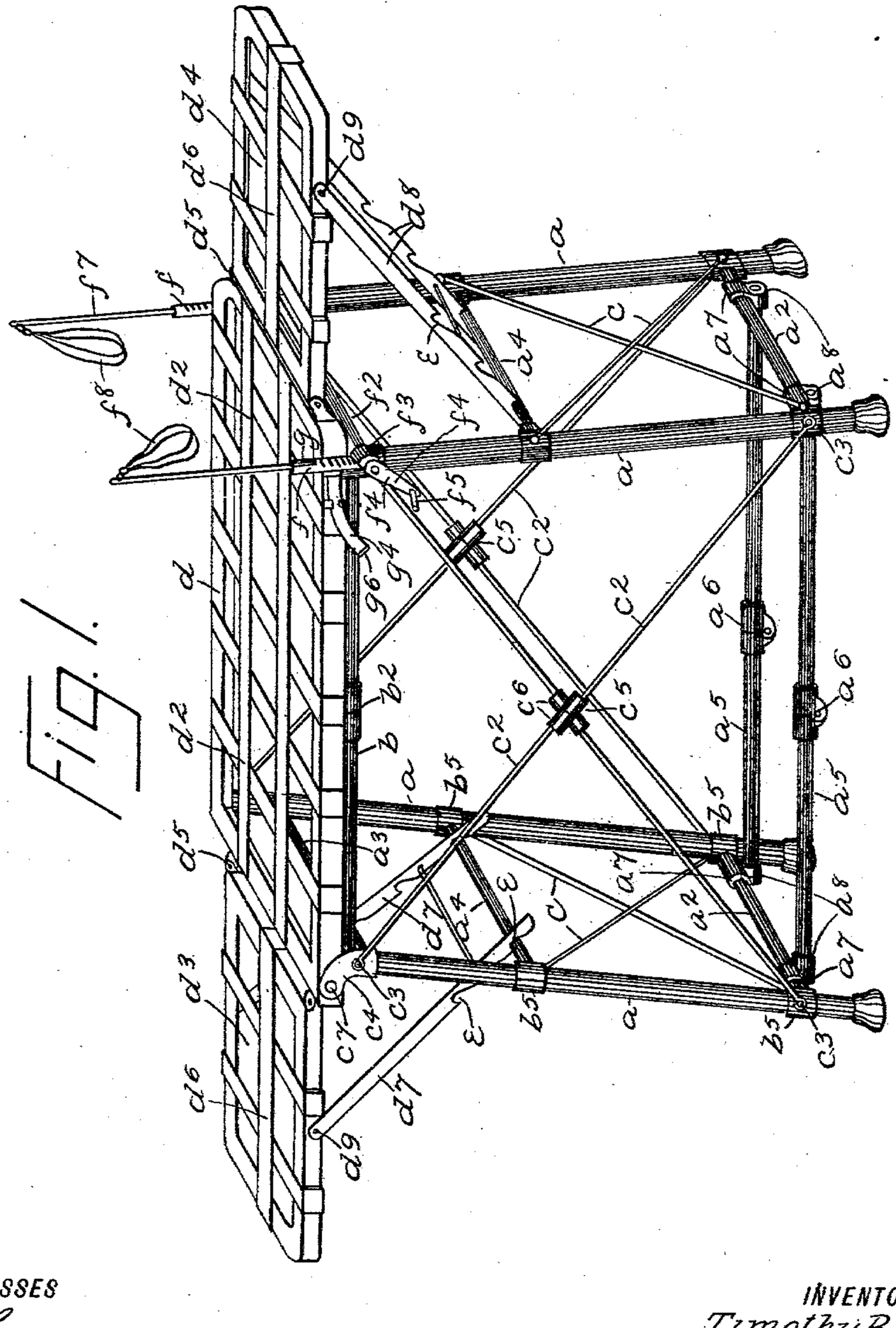
T. B. POWERS.

SURGEON'S OPERATING TABLE.

(Application filed Apr. 7, 1902.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.



WITNESSES

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(No Model.) 4 Sheets—Sheet 2.

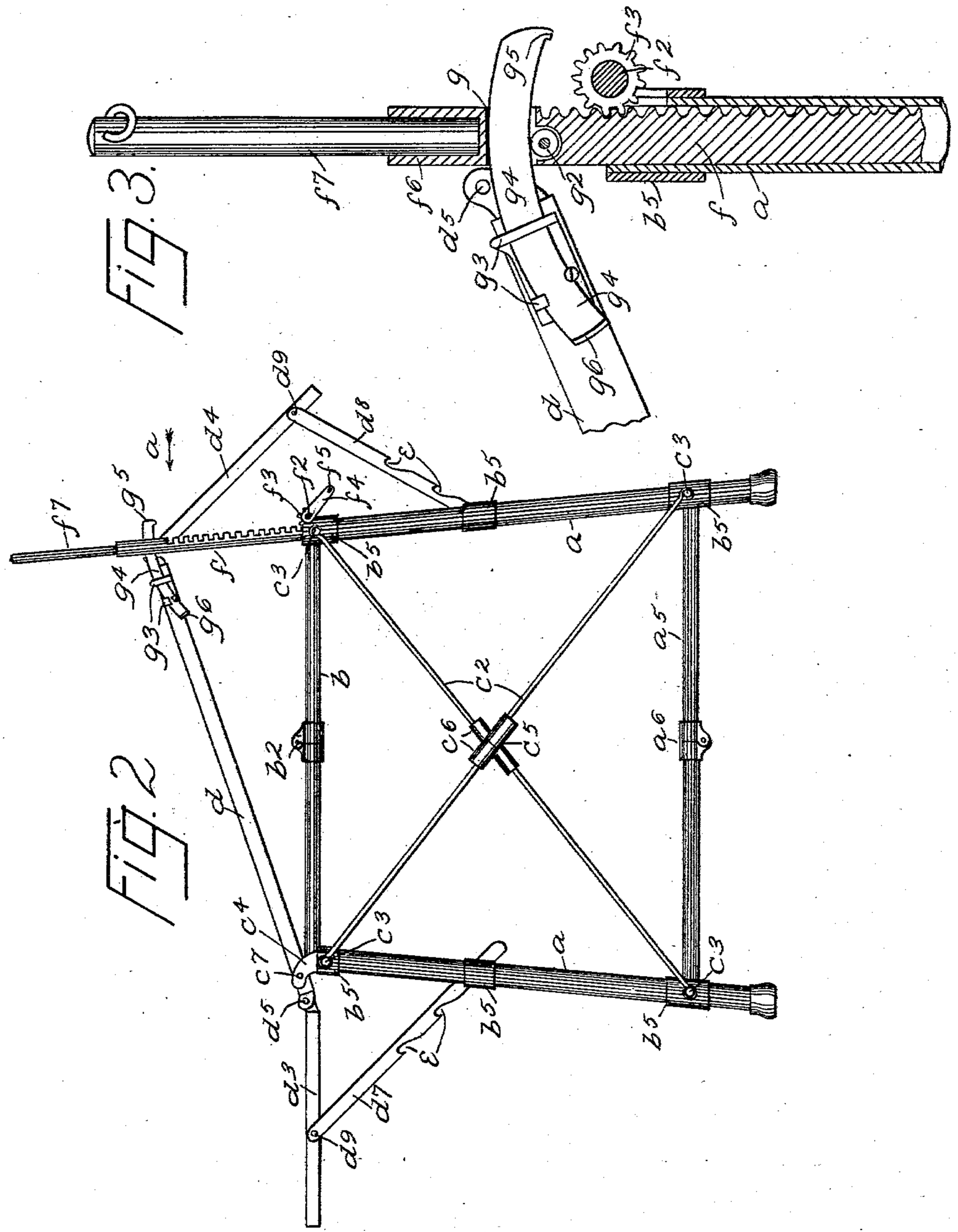

FIG. 2.

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(No Model.) 4 Sheets—Sheet 3.

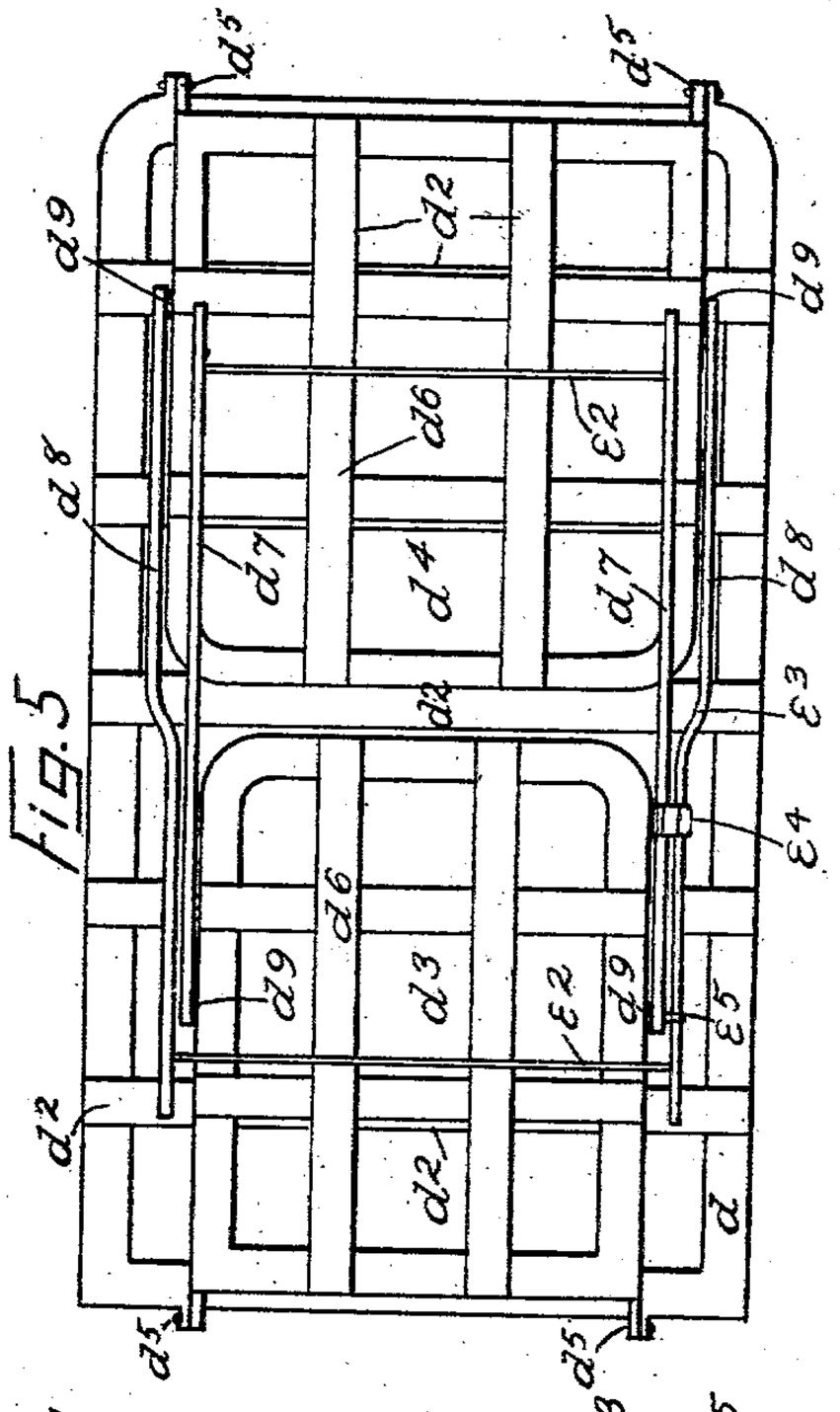

Fig. 5

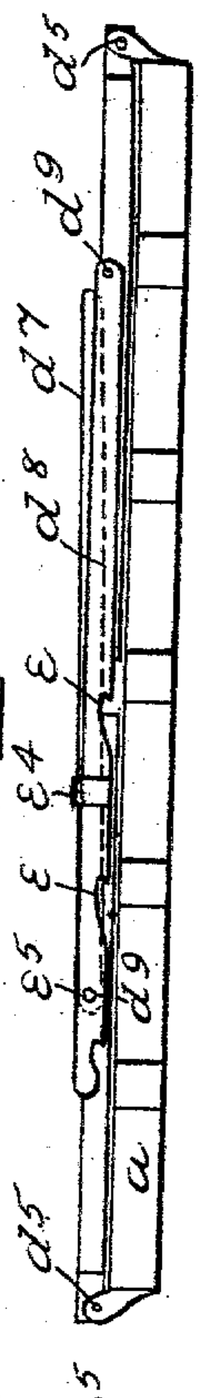

Fig. 6

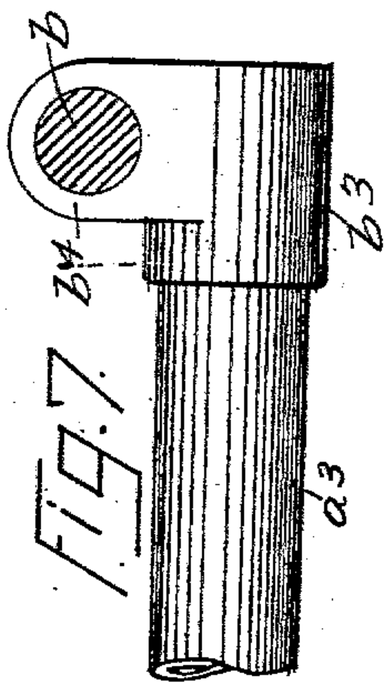

Fig. 7.

Fig. 4.

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(No Model.) 4 Sheets—Sheet 4.

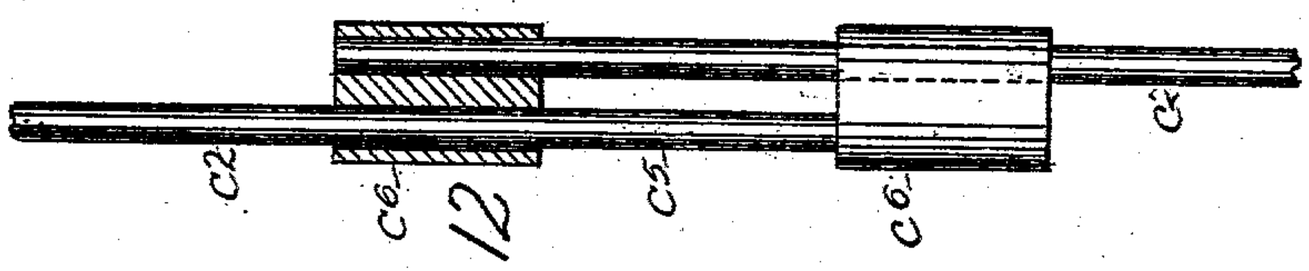

Fig. 7.

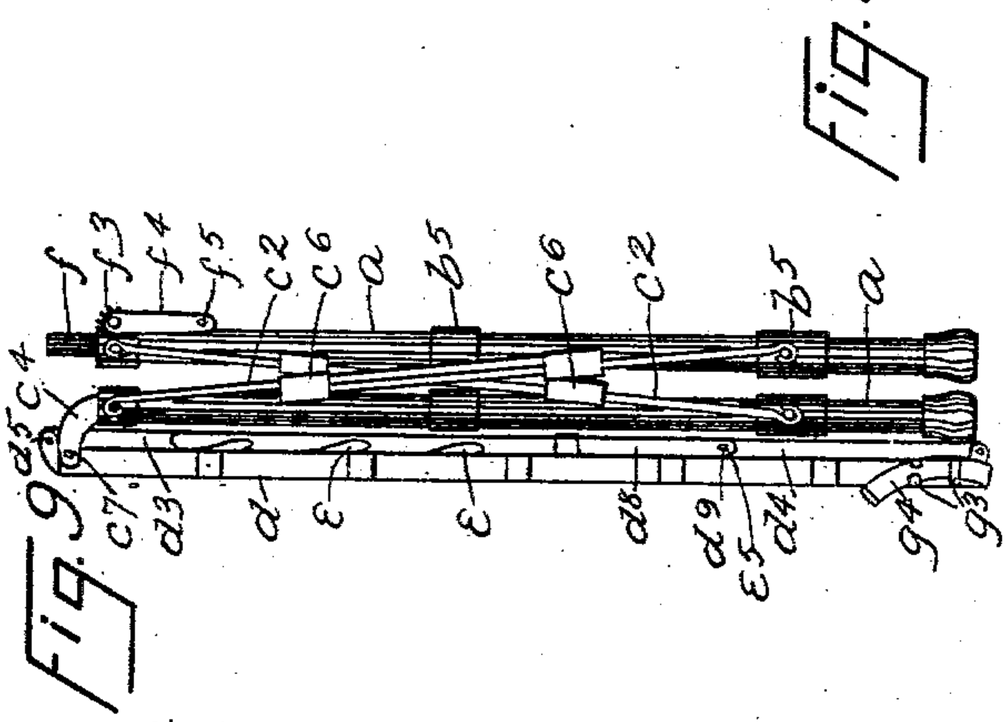

Fig. 9.

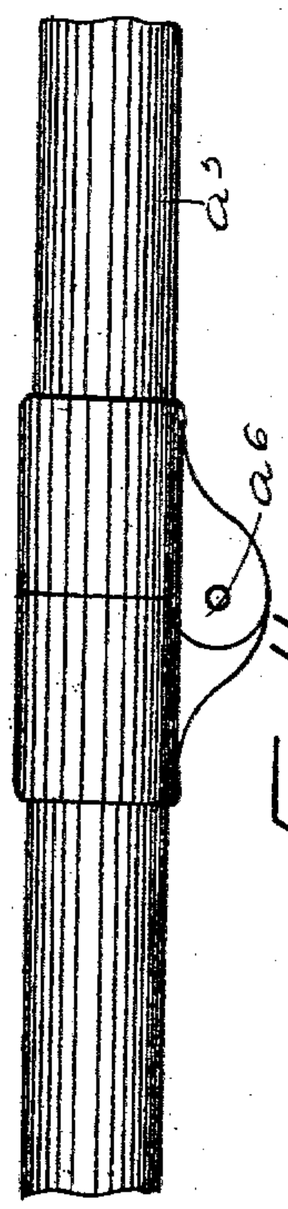

Fig. 10.

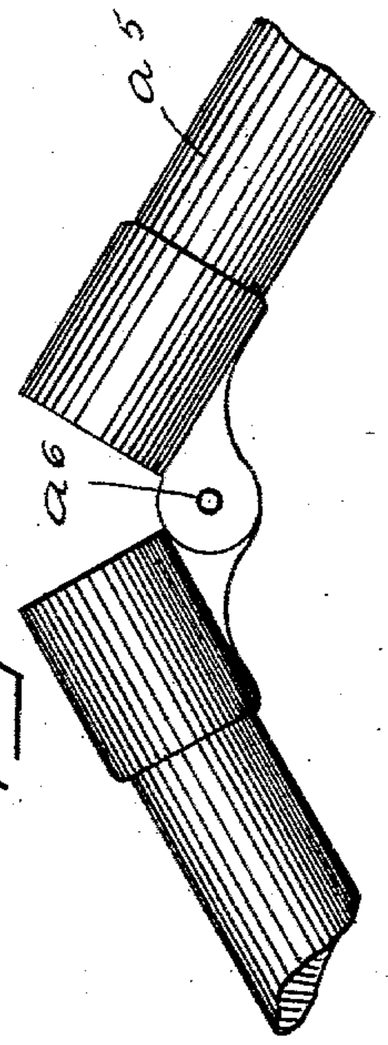

Fig. 11.

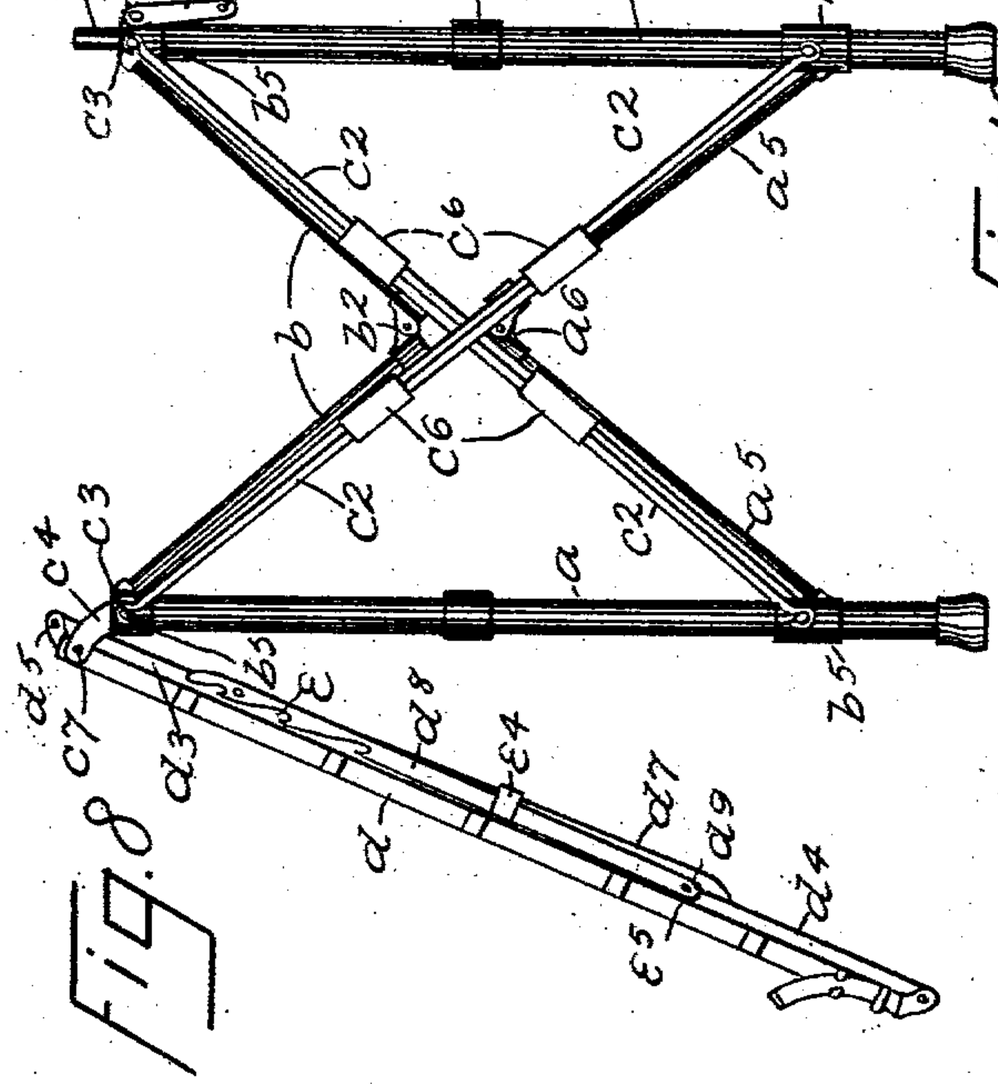

Fig. 8.

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UNITED STATES PATENT OFFICE.

TIMOTHY B. POWERS, OF NEW YORK, N. Y.

SURGEON'S OPERATING-TABLE.

SPECIFICATION forming part of Letters Patent No. 716,756, dated December 23, 1902.

Application filed April 7, 1902. Serial No. 101,751. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY B. POWERS, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Surgeons' Operating-Tables, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved operating-table for use by physicians and surgeons, the parts of which may be adjusted to any desired position when in use, so as to hold the body or limbs of a party to be operated upon in the desired position or positions, a further object being to provide a device of the class specified comprising a suitable framework by which the table proper is supported and in which the table is provided with folding end members which are adapted to be raised and lowered, the table proper being hinged at one end and provided with means for adjusting the height of the other end, all of said parts being so formed and connected that the entire apparatus, including the frame or support and the table proper, together with the end members, may be compactly folded together, so as be placed in a case for convenient shipment or transportation from one point to another.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by the same reference characters in each of the views, and in which—

Figure 1 is a perspective view of my improved operating-table in position for use; Fig. 2, a side view thereof with one end of the table proper raised; Fig. 3, a sectional side view of the means for raising one end of the table proper; Fig. 4, an end view looking in the direction of the arrow *a* in Fig. 2; Fig. 5, a plan view of the table proper and showing the end members folded thereover; Fig. 6, a side view thereof; Fig. 7, a side view of one of the horizontal bottom rods of the framework and showing the method of its connection with one of the transverse end rods of the framework; Fig. 8, a side view showing the entire table or apparatus partially folded; Fig. 9, a similar view showing the table or apparatus completely folded; Fig. 10, a side view showing the central joint of one of the horizontal side rods of the framework; Fig. 11, a similar view showing said side rod partially folded, and Fig. 12 a side view of two slidably-connected members which form a part of the sides of the framework.

In constructing the frame or framework of my improved operating-table I provide four corner-posts *a*, preferably composed of steel tubes, and said posts *a* are connected at each end of the frame or framework and near the bottom of said posts by a transverse rod a^2 and at the top thereof by transverse rods a^3, and said posts are also connected intermediate of the top and bottom and nearer the top than the bottom by transverse rods a^4, all of said rods being preferably composed of steel tubes. The transverse rods a^2 at each end of the frame or framework are connected by two horizontal side rods a^5, which are composed of separate members hinged together at a^6, so as to fold upwardly, and the connection of the rods a^5 with the rods a^2 is made by means of sleeves a^7, through which the rods a^2 pass and which are free to turn on said rods a^2, and these sleeves are provided with downwardly-directed members a^8, in which the ends of the rods a^5 are rigidly secured. The top end rods a^3 are also connected by side rods *b*, which are composed of two parts hinged together at b^2, so as to fold downwardly, and the connection between the rods *b* with the top end rods a^3 is made by means of sleeves b^3, through which said end rods pass, and said sleeves are provided with upwardly-directed members b^4, in which the rods *b* are rigidly secured, and on an examination of Fig. 4 it will be seen that the bottom side rods a^5 are set inwardly of the corner-posts *a*, while the top side rods *b* are closely adjacent to said crank-posts, and in the operation of folding the separate parts together, as hereinafter described, the rods a^5 fit inwardly of the rods *b*. The connection between the transverse end rods a^2, a^3, and a^4 and the corner-posts *a* is preferably made by means of T-couplings b^5, and the end posts are connected at each end by small diagonally-arranged rods *c*, which are connected therewith at points where the end rods a^2 and a^4 are secured thereto, and the sides of the

frame or framework are braced by the diagonally-arranged rods c^2, which are pivotally connected with the top and bottom portions of the corner-posts a, as shown at c^3, this connection being preferably made by means of T-couplings b^5, as clearly shown, and at the top of the left-hand end of the framework are secured curved jaws c^4, to which the table proper is pivoted or hinged, and the diagonally-arranged rods c^2 at the sides of the frame or framework are composed of two parts connected at c^5, as shown at Fig. 12, said parts being each provided with a head c^6, through which the other bar passes and is free to slide.

The table proper, which is designated by the reference character d, comprises a framework which is hinged to the jaws c^4 at c^7 and is substantially rectangular and oblong in form and the sides of which are connected by transversely-arranged spring-metal bands d^2, which are stretched thereover, and said table proper is provided at its opposite ends with hinged members d^3 and d^4, which are so hinged thereto at d^5 as to be capable of folding flat on the top of the table proper and also to swing downwardly therefrom, and said hinged members d^3 and d^4 are also composed of rectangular and oblong frames, over which are placed transversely-arranged spring-metal strips d^6, which may be secured to said frames in any desired manner. The hinged table members d^3 and d^4 are provided at their opposite sides, respectively, with arms d^7 and d^8, which are hinged thereto at d^9, and these arms are provided in their bottom edges with notches or recesses e, which are adapted to engage the transverse end rods a^4, as clearly shown in Fig. 1, and by means of these arms d^7 and d^8 the hinged end table members d^3 and d^4 may be raised or lowered, as will be readily understood. The arms d^7 and d^8 of each of the hinged table members d^3 and d^4 are connected by transverse rods e^2, and the hinged table member d^4 is preferably wider than the other, as shown in Fig. 5, and the arms d^8 thereof are curved inwardly centrally, as shown at e^3, and one of said arms is provided with a clip e^4, which overlaps the adjacent arm d^7 of the other hinged table member d^3 when the parts are folded together, as shown in Fig. 5, and the end of the last-named arm d^7 at the point where it is pivotally connected with the corresponding hinged frame member d^3 is provided with a lug or projection e^5, adapted to pass through a corresponding opening in the said arm d^8.

Mounted in the top ends of the corner-posts a, at the right-hand end of the frame or framework, are vertically-movable rack-bars f, and supported transversely on the top portions of the said corner-posts is a shaft f^2, provided with gears f^3, which operate in connection with said rack-bars to raise and lower the latter. The shaft f^2 is provided at one end with a crank f^4, having a transversely-movable handle f^5, and the upper ends of the rods f are provided with sockets f^6, adapted to receive rods f^7, which are designed to support bands f^8, through which the lower limbs of the party operated upon may be passed when it is desired to raise said limbs or hold them at a certain elevation. The rack-bars f are also provided near their upper ends with transverse slots or openings g, in the bottom portions of which are preferably mounted antifriction-rollers g^2, and the sides of the table proper are provided with keepers g^3, through which are passed curved slides g^4, which also pass through the slots or openings g and rest on the antifriction-rollers g^2, and the outer ends of which are provided with downwardly-directed projections g^5 and the inner ends thereof with outwardly-curved members g^6, which serve as handles for the manipulation of said slide when the table proper is withdrawn from the rack-bars f; but when the said table or one end thereof is raised, as shown in Fig. 2, the slides g^4 serve to hold said end of table in connection with the rack-bars f. By means of the crank f^4 on the shaft f^2 the rack-bars f may be raised and lowered to any desired point, and by sliding the handle f^5 inwardly, as shown in Fig. 4, the said handle will come in contact with the adjacent corner-posts a and will hold one end of the table proper and the corresponding hinged member d^4 in the raised position, the handle f^5 operating as a lock to prevent the turning of the shaft f^2, as will be readily understood.

By means of the construction herein described it will be seen that one end of the table proper may be raised to any desired height whenever necessary, and by means of the rack-bars f, the rods f^7, and the straps f^8 one or both of the legs or limbs of the party to be operated upon may be raised whenever necessary and held as long as desired in the raised position. It will also be seen that either of the hinged end members d^3 and d^4 may be raised to a horizontal position and swung downwardly or upwardly at an incline and held at any desired inclination. The hinged end members d^3 and d^4 may also be folded flat on the top of the table proper, and the hinged arms d^7 and d^8 may be folded compactly thereover or adjacent thereto. The top side rods b of the main frame or support may be folded downwardly at the middle thereof, the bottom side rods a^5 may be folded upwardly at the middle thereof, and the table d, with the hinged end members d^3 and d^4 folded thereover, may be turned entirely over on its pivotal supports at c^7, as shown in Fig. 8, and in this position of the table and its attachments the end portions of the frame may be folded together, this process being shown in Fig. 8, and the end portions of the frame may be compactly folded together, as shown in Fig. 9, and the table proper and its attachments folded adjacent to one end portion thereof, and in this operation the diagonally-arranged side rods c, which are com-

posed of separate parts, slide together, as shown in Figs. 9 and 12. The entire apparatus may thus be folded into a compact form, and may when in this condition be placed in a suitable case prepared therefor, and may be conveniently carried from one point to another or transported or shipped whenever desired, and in the form shown in Fig. 9 may be stored when not in use in a closet or other suitable receptacle.

It will be observed that by means of the lug or projection e^5 (shown in Fig. 5) and the clip e^4 the arms d^7 and d^8 are secured in the folded position, and it will also be understood that said arms are composed of spring metal, and in order to connect one of the arms d^8 with the lug or projection e^5 both of the arms d^8 are swung to the right until said lug or projection will pass through one of said arms, as clearly shown, and in this position of the parts the hinged members d^3 and d^4 are folded over the table proper and the arms thereof are locked together and to one of said hinged members, and the said hinged members and said arms will remain in the closed or folded position until one of the arms d^8 is disconnected from the lug or projection e^5, which may be done by swinging said arm outwardly, as will be readily understood. It will also be observed that, as hereinbefore described, one end of the table proper may be raised to any desired height, and in this operation the slides g^4 move freely through the slots g in the rack-bars f over the antifriction-rollers g^2, and when the parts of the table or apparatus are to be folded together, as shown in Fig. 9, the slides g^4 are detached from the rack-bar, and when the table proper or the free end thereof is in its lowest position, as shown in Fig. 1, the slides g^4 may be connected with or detached from the rack-bar; but whenever it is desired to raise said end of said table these slides must be passed through said rack-bars, as shown in Fig. 3, and by disconnecting the slides g^4 from the rack-bars the said rack-bars may be raised without raising the corresponding end of the table proper, as will be readily understood, this being frequently necessary in certain classes of operations.

The table proper is preferably of about the same dimensions as one end of the frame or support, and the hinged end members d^3 and d^4 are of such length that they do not overlap when folded flat on said table proper, and this construction facilitates the folding together of said parts, as shown in Fig. 9.

The diagonally-arranged rod c^2 at the opposite sides of the frame or support, which are composed of two parts slidably connected and also pivotally connected with the top and bottom portions of the frame, constitute an important element of this construction, and when in the position shown in Fig. 2 to brace the parts of the frame against longitudinal movement and by reason of the method of connecting the parts of these rods, which is fully shown in Fig. 12, the said parts slide together in the operation of folding the end portions of the frame together, as illustrated in Fig. 8, and this operation is automatic, and it will be observed that the joints of the separate parts of the rods a^5 and b are in vertical line with the connections of the separate parts of the rod c^2, which facilitates the folding together of the separate parts, and these rods when in their extended position, as shown in Fig. 2, also aid in preventing the accidental buckling or bending of the joints of the rods a^5 and b.

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

1. An operating-table comprising a frame or support, the ends of which are adapted to be folded together, a table proper hinged to the top of the frame or support at one end thereof, and adapted to be folded adjacent to said end and being also substantially of the same dimensions as said end, end members hinged to the end of said table proper, means for holding said end members in a horizontal or in an inclined position, rack-bars mounted in the end of the frame or support opposite the hinged end of the table proper and provided with slots or openings in upper end thereof, slides connected with the sides of the table proper, and adapted to be passed through the slots or openings in the upper ends of said rack-bars, a shaft supported at the top of the said end of the frame or support and provided with gears operating in connection with said rack-bars, a crank for operating said shaft, and a movable handle-pin passing through the end of said crank and operating in connection with said end of the frame or support to lock said shaft, substantially as shown and described.

2. An operating-table comprising a frame or support the ends of which are adapted to be folded together, a table proper hinged to the top of the frame or support at one end thereof, and adapted to be folded adjacent to said end and being also substantially of the same dimensions as said end, end members hinged to the end of said table proper means for holding said end members in a horizontal or in an inclined position, rack-bars mounted in the end of the frame or support opposite the hinged end of the table proper and provided with slots, slides connected with the sides of the table proper, and adapted to be passed through the slots in the rack-bars, a shaft supported at the top of said ends of the frame or support and provided with gears operating in connection with said rack-bars, a crank for operating said shaft, and a movable handle-pin passing through the end of said crank and operating in connection with said end of the frame or support to lock the said shaft, said rack-bars being also provided with sockets and rods adapted to be placed in said sockets and provided with belts, substantially as shown and described.

3. In an operating-table, a frame or support

provided with corner-posts, transverse end rods connected therewith at or near the top and bottom thereof, horizontal side rods connected with the transverse end rods and composed of separate parts hinged together preferably at or near the middle the said rods being adapted to fold inwardly against the end frames a table proper hinged to said frame or support at one end of the top thereof, hinged members connected with the opposite ends of said table, means for holding said hinged members in a horizontal or inclined position, and means for raising one end of said table proper and the corresponding end member hinged thereto, substantially as shown and described.

4. In an operating-table, a frame or support provided with corner-posts, transverse end rods connected therewith at or near the top and bottom thereof, horizontal side rods connected with the transverse end rods and composed of separate parts hinged together at or near the middle, the said side rods being adapted to be folded inwardly against the end frames, a table proper hinged to said frame or support at one end of the top thereof, hinged members connected with the opposite ends of said table, means for holding said hinged members in a horizontal or inclined position, and means for raising one end of said table proper and the corresponding end member hinged thereto, consisting of rack-bars mounted in the corner-posts of said frame, slides connected with the sides of the table proper and movable in slots formed in said rack-bars, a shaft provided with gears operating in connection with said rack-bars and means for locking said shaft, substantially as shown and described.

5. In an operating-table, a frame or support provided with corner-posts, transverse end rods connected therewith at or near the top and bottom thereof, horizontal side rods connected with the transverse end rods and composed of separate parts hinged together at the middle, the said side rods being adapted to fold inwardly against the end frames, a table proper hinged to said frame and supported at one end of the top thereof, hinged members connected with the opposite ends of said table, means for holding said hinged members in a horizontal or inclined position, the means for raising one end of said table proper and the corresponding end member hinged thereto, consisting of rack-bars mounted in the corner-posts of said frame, slides connected with the sides of the table proper and movable in slots formed in said rack-bars, a shaft provided with gear operating in connection with said rack-bars and means for locking said shaft, said rack-bars being also provided at their upper ends with detachable rods having means for supporting limbs, substantially as shown and described.

6. An operating-table comprising an oblong rectangular frame consisting of end members and side members, the side members composed of top and bottom rods pivoted together centrally, the top rod being adapted to fold downwardly and the bottom rod upwardly, said side members being also provided with diagonally-arranged brace-rods pivotally connected with the frame proper at their ends and composed of separate members slidably connected at the middle thereof, substantially as shown and described.

7. An operating-table comprising a frame or support consisting of end members and side members, the side members being composed of top and bottom rods hinged together centrally, the top rod being adapted to fold downwardly and the bottom rod upwardly, said side members being also provided with diagonally-arranged brace-rods, the ends of which are hinged to the frame proper, said rods being also composed of separate parts slidably connected at the middle, a table proper hinged to one end of the frame at the top thereof, supplemental end members hinged to the table proper at the ends thereof, means for holding the said supplemental members in a horizontal or inclined position and means for raising one end of the table proper and the corresponding member hinged thereto, substantially as shown and described.

8. An operating-table comprising a frame, the side portions of which are composed of top and bottom members hinged respectively to fold downwardly and upwardly, and diagonally-arranged rods hinged respectively to diagonally opposite top and bottom corners of the frame and composed of pieces slidably connected, substantially as shown and described.

9. An operating-table comprising a frame, the side portions of which are composed of top and bottom members hinged respectively to fold downwardly and upwardly and diagonally-arranged rods hinged respectively to diagonally opposite top and bottom corners of the frame and composed of pieces slidably connected, and a table proper hinged to one end of said frame at the top thereof, and provided with supplemental end members hinged thereto, and means for holding the supplemental end members in a horizontal or inclined position, substantially as shown and described.

10. An operating-table comprising a frame, the side portions of which are composed of top and bottom members hinged respectively to fold downwardly and upwardly and diagonally-arranged rods hinged respectively to diagonally opposite top and bottom corners of the frame and composed of pieces slidably connected, and a table proper hinged to one end of said frame at the top thereof, and provided with supplemental end members hinged thereto, means for holding the supplemental end members in a horizontal or inclined position, and devices for raising one

end of the table proper and the corresponding end member hinged thereto, substantially as shown and described.

11. An operating-table comprising a frame, the side portions of which are composed of top and bottom members hinged respectively to fold downwardly and upwardly and diagonally-arranged rods hinged respectively to diagonally opposite top and bottom corners of the frame and composed of pieces slidably connected, and a table proper hinged to one end of said frame at the top thereof, and provided with supplemental end members hinged thereto, means for holding the supplemental end members in a horizontal or inclined position, and devices for raising one end of the table proper and corresponding end member hinged thereto, said table proper being of the same dimension at one end of the frame or support, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 4th day of April, 1902.

TIMOTHY B. POWERS.

Witnesses:
F. A. STEWART,
F. F. TELLER.