No. 667,869. Patented Feb. 12, 1901.

C. F. DAVIDSON.

SURGICAL CHAIR.

(Application filed Jan. 11, 1900.)

(No Model.)

Fig. 4.

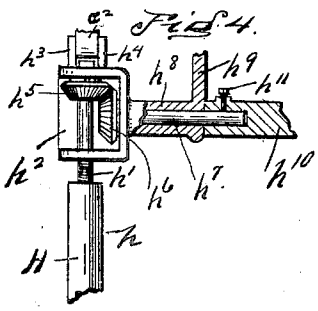


Fig. 1

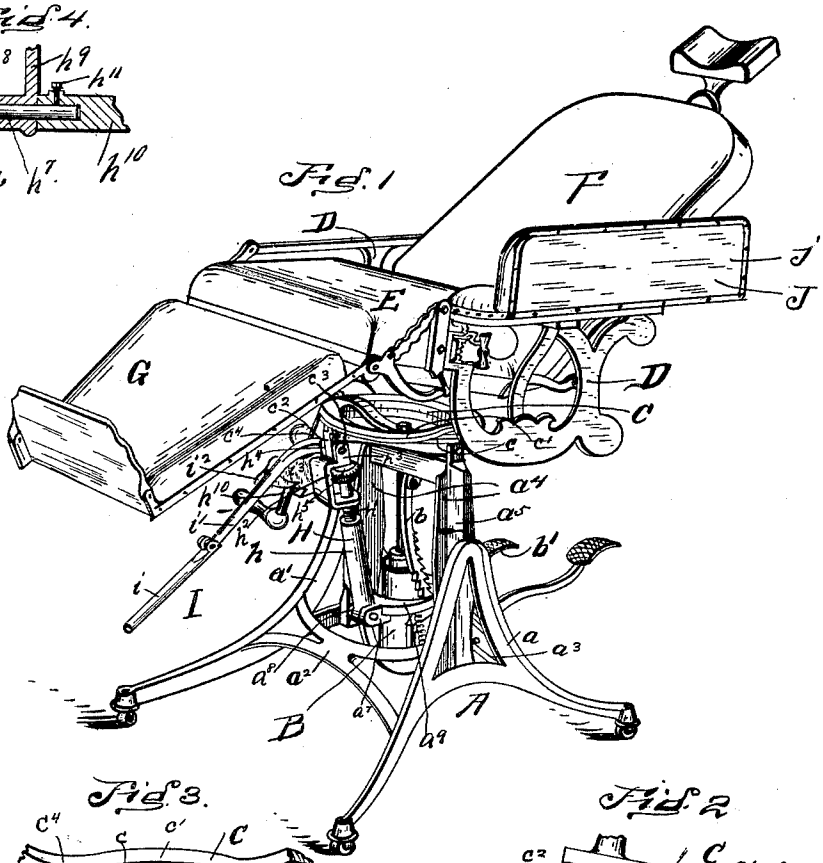


Fig. 3.

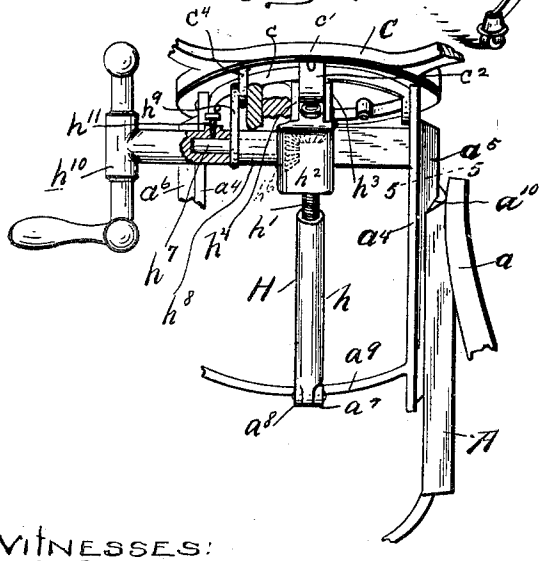


Fig. 2

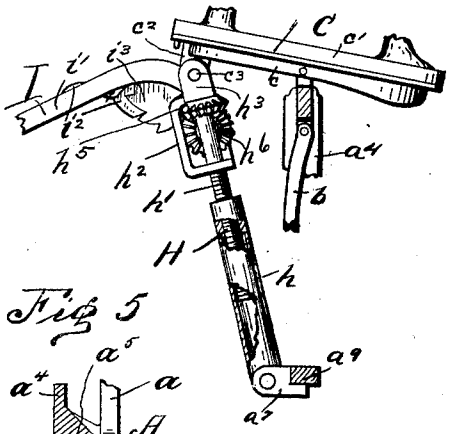


Fig. 5

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES F. DAVIDSON, OF CANTON, OHIO, ASSIGNOR TO ADAM C. McDOWELL, ANDREW M. McCARTY, AND ALBERT HOEFFER, OF SAME PLACE.

SURGICAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 667,869, dated February 12, 1901.

Application filed January 11, 1900. Serial No. 1,040. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. DAVIDSON, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented new and useful Improvements in Surgical Chairs, of which the following is a specification.

My invention relates to improvements in surgical chairs; and it consists in providing a positively-controlled and at the same time easily-operated tilting mechanism whereby there may be obtained in chairs of this character what is known as the "knee-chest" position, desirable in certain surgical operations, as will be hereinafter more fully described and claimed.

In the accompanying drawings, similar letters of reference refer to similar parts.

Figure 1 is a perspective view of a surgical chair illustrating my invention. Fig. 2 is a detailed side view of the tilting mechanism. Fig. 3 is a detailed front view of the tilting mechanism. Fig. 4 is a front view of the miter gear-wheels and their supporting-frame. Fig. 5 is a section on the line 5 5 of Fig. 3.

A represents the base of the chair, which may be of any desired form, but I have shown it constructed of two lateral frames a and a', joined together front and rear by the connecting-braces a^2 and a^3. On the inside of the lateral frames a and a' I provide V-shaped grooves a^{10}, in which is supported the traveling frame a^4, which has formed upon both sides projecting V-shaped ribs a^5 and a^6, adapted to travel in the V-shaped grooves in the supporting-frame.

The traveling frame is adapted to be raised and lowered by any of the well-known means; but I have shown and prefer to employ the oil-pump mechanism B, and for the purpose of locking the frame in any desired elevation I provide a toothed ratchet-bar b and a locking-dog b'.

On the upper part of the traveling frame a^4 there is mounted a turn-table C, the lower member of which, c, is journaled on either side of the traveling frame a^4. The upper member c' carries the seat-supporting frame D, upon which there is supported the seat E, the back F, and the leg-rest G, which I have shown hinged together in the usual form.

For the purpose of tilting the seat-support frame backward and forward of the vertical line and at the same time having it under the positive control of the operator and to counterbalance the weight of the patient upon the chair I provide the operating-jack H, which consists of a tubular nut h, having a hinged connection with projecting lugs a^7 and a^8, cast integral with the lower brace a^9 of the traveling frame a^4. In the tubular nut h there is mounted the screw-threaded shaft h', the upper end of which is journaled in the supporting-frame h^2, which has a hinged connection with the lower member c of the turn-table C, by means of projecting lugs h^3 and h^4, which receive a depending lug c^2, formed on the under side of the lower member c of the turn-table, and are held together by means of the bolt c^3. On the upper end of the screw-threaded shaft h' there is securely mounted the miter gear-wheel h^5, which meshes with the miter gear-wheel h^6, mounted upon a shaft h^7, carried by a box h^8, cast integral with the gear-carrying frame h^2 and which is supported at its outer end by means of the connecting-brace h^9, which has a hinged connection with a depending lug c^4, formed on the under side of the lower member c of the turn-table. To the outer end of the shaft h^7 there is attached the operating crank or lever h^{10}, which may be of any desired form and is held in engagement therewith by means of the thumb-nut h^{11}, which passes through the operating-lever and impinges against the shaft.

For the purpose of counterbalancing the weight of the patient and assisting in the operation of restoring the chair to its normal position I provide a hinged lever I, consisting of two parts i and i', the inner member of which, i', has a hinged connection with the turn-table and carries a dog i^2, which engages the projecting ratchet-bar i^3, supported upon the lower member of the turn-table.

To the ordinary arm-rest J, I provide an extension j of a sufficient height and properly upholstered for the knees of the patient to rest upon.

In operation the patient is seated in the

chair when the back, seat, and leg-rest are tilted into the same plane with the arm-rest. The patient is then placed upon his side, knees and elbows resting upon the extension of the arm-rest, when the leg-rest is dropped down and the chair turned half-way around upon the pivotal point of the turn-table. The operating-lever h^{10} is then turned, and the motion is then transmitted, by means of the miter gear-wheel, to the screw-threaded shaft h', which travels in the swinging nut H, carrying up with it the turn-table, causing it to tilt upon its pivotal points, and carrying with it the seat-supporting frame, and by continuing the operation the patient may be placed in the extreme oblique lateral position desirable for certain operations. To assist in restoring the chair to its normal position and to counterbalance the weight of the patient, the hinged lever I is opened, and by weight applied to the outer member thereof the weight of the patient is counterbalanced and the operating-lever h^{10} is more easily turned and the chair more quickly restored to its normal position. Heretofore it has been impossible to obtain this extreme lateral position in chairs of this character for the reason that the tilting mechanism consisted of a ratchet and a dog mechanism or such other devices as were not positively controlled, and unless very carefully managed the operator would lose control of the mechanism.

It will be observed that by the means herein described the tilting mechanism of the chair is controlled at all times by the operator and at the same time is simple in its construction and operation and that the simplicity of its construction permits of its manufacture at a small cost, and it will of course be understood that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a surgical chair, the combination of a supporting-frame, a tilting turn-table mounted thereon, a seat-supporting frame carried by the turn-table, means for tilting the turn-table and seat-supporting frame, and a counterbalancing device connected directly with the turn-table, whereby the chair-seat frame may be moved on said turn-table and the weight of the patient also counterbalanced and an easy restoration of the parts to the normal position effected, substantially as set forth.

2. In a surgical chair, the combination of a supporting-frame, a tilting turn-table mounted thereon, a seat-supporting frame carried by the turn-table, means for tilting the turn-table and seat-supporting frame, a counterbalancing lever composed of pivoted sections one of which has a pivotal connection with the turn-table, and locking mechanism for holding said lever in adjusted position, substantially as set forth

3. In a surgical chair, the combination of a base, a supporting-frame vertically adjustable thereon, means for raising and lowering said frame, a tilting turn-table mounted on the supporting-frame, a seat-supporting frame carried by the turn-table, a counterbalancing lever connected with the turn-table, and mechanism for tilting the turn-table and seat-supporting frame, comprising a jack having a hinged connection with said supporting-frame and turn-table, and operating means therefor, substantially as set forth.

4. In a surgical chair, the combination of a base, a supporting-frame vertically adjustable thereon, means for operating said frame, a turn-table carried by and mounted to tilt on the supporting-frame, a seat-supporting frame carried by the turn-table, and mechanism for tilting the turn-table and seat-supporting frame, said mechanism comprising a gear-supporting frame pivoted to the turn-table, a tubular nut pivoted to the turn-table-supporting frame, a screw-shaft coöperating with the nut and having its upper end mounted in said gear-supporting frame and carrying a gear, an operating-shaft pivotally mounted on the turn-table and carrying a gear meshing with said gear on the screw-shaft, and an operating-crank connected with said operating-shaft, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES F. DAVIDSON.

Witnesses:
CHAS. R. MILLER,
CHAS. M. BALL.