(No Model.) 3 Sheets—Sheet 1.

T. A. LONG.

OPERATING CHAIR.

No. 370,071. Patented Sept. 20, 1887.

Fig. 1.

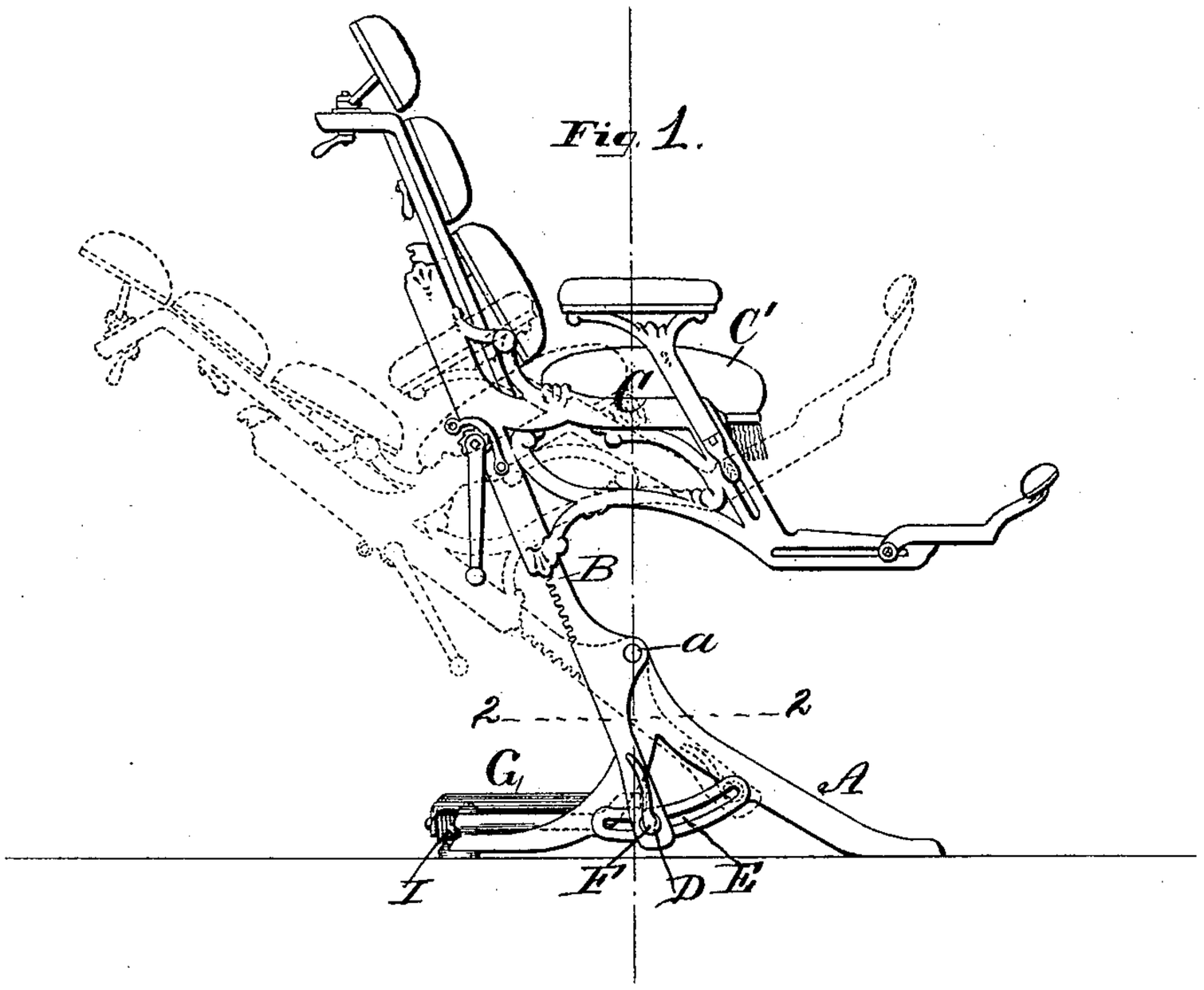
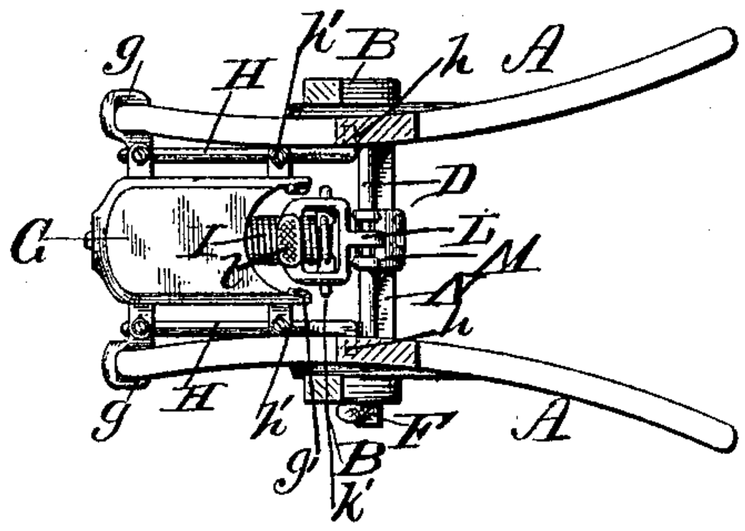


Fig. 2.



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by his Atty Wm. F. Peyton

(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

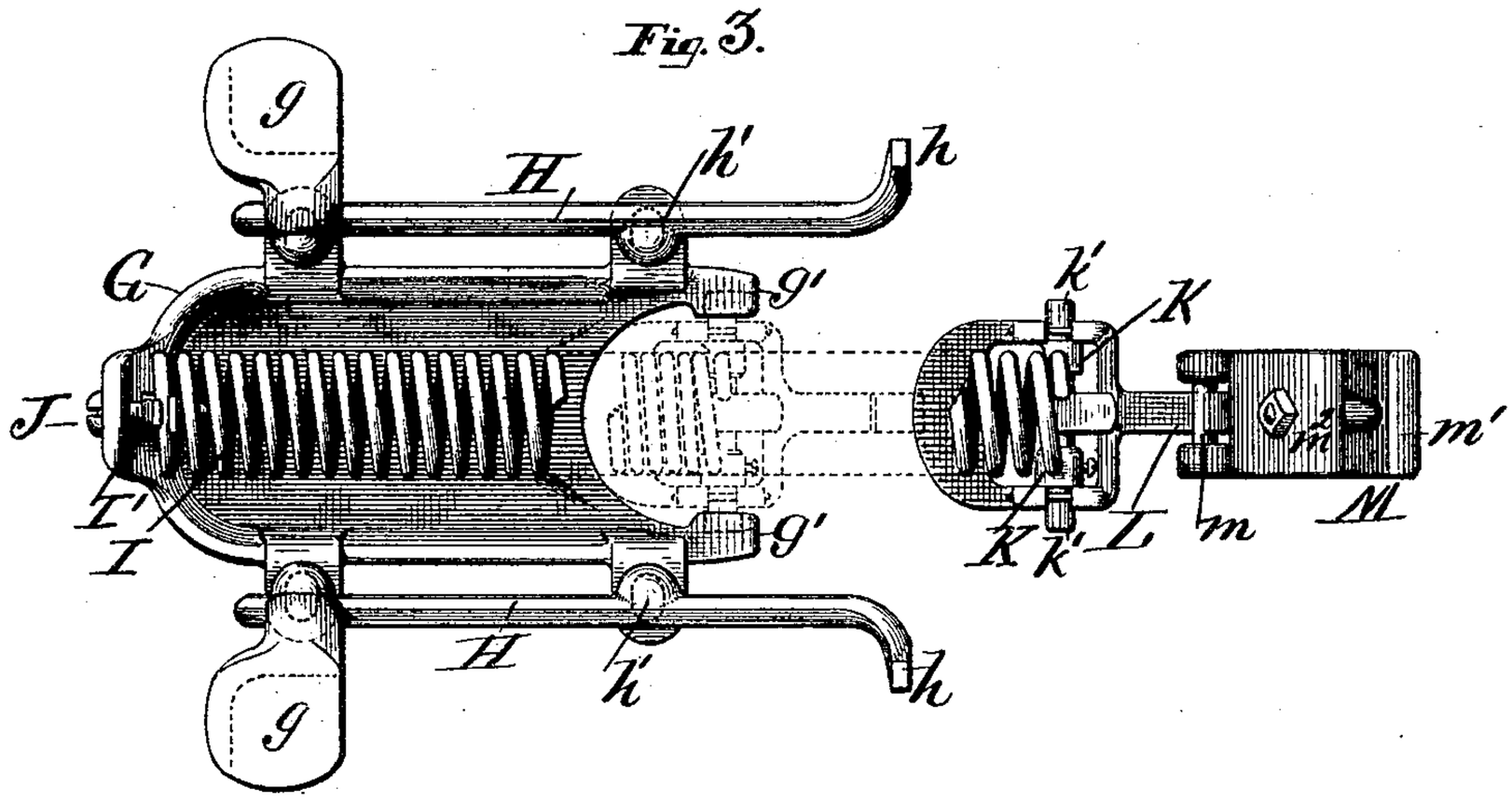
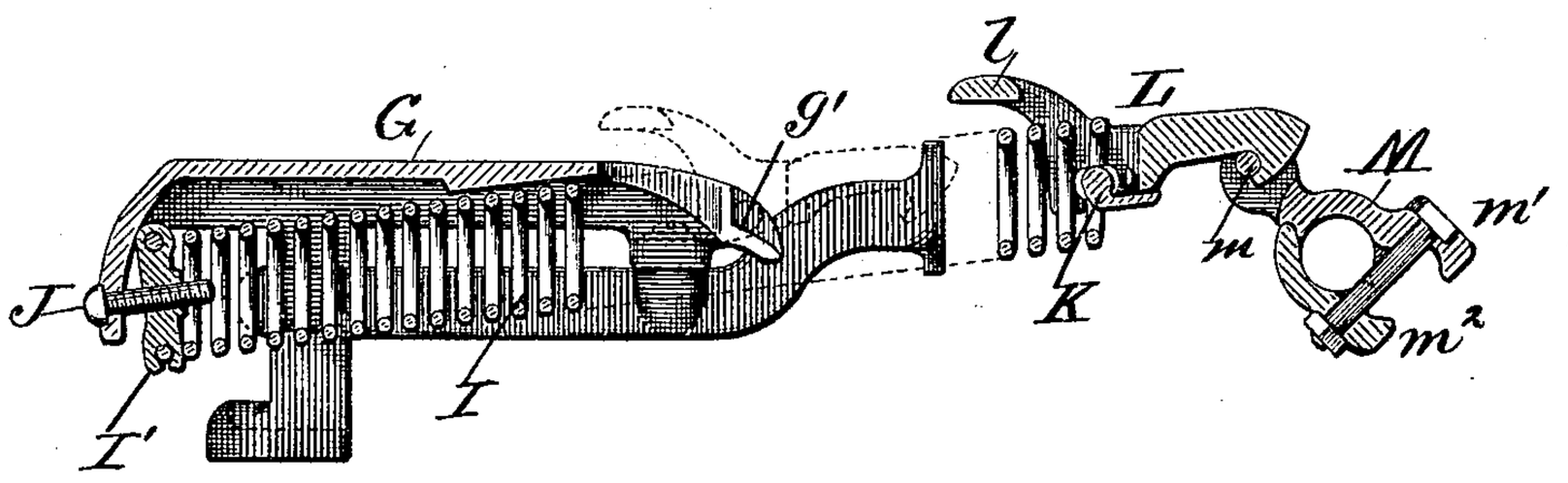


Fig. 4.



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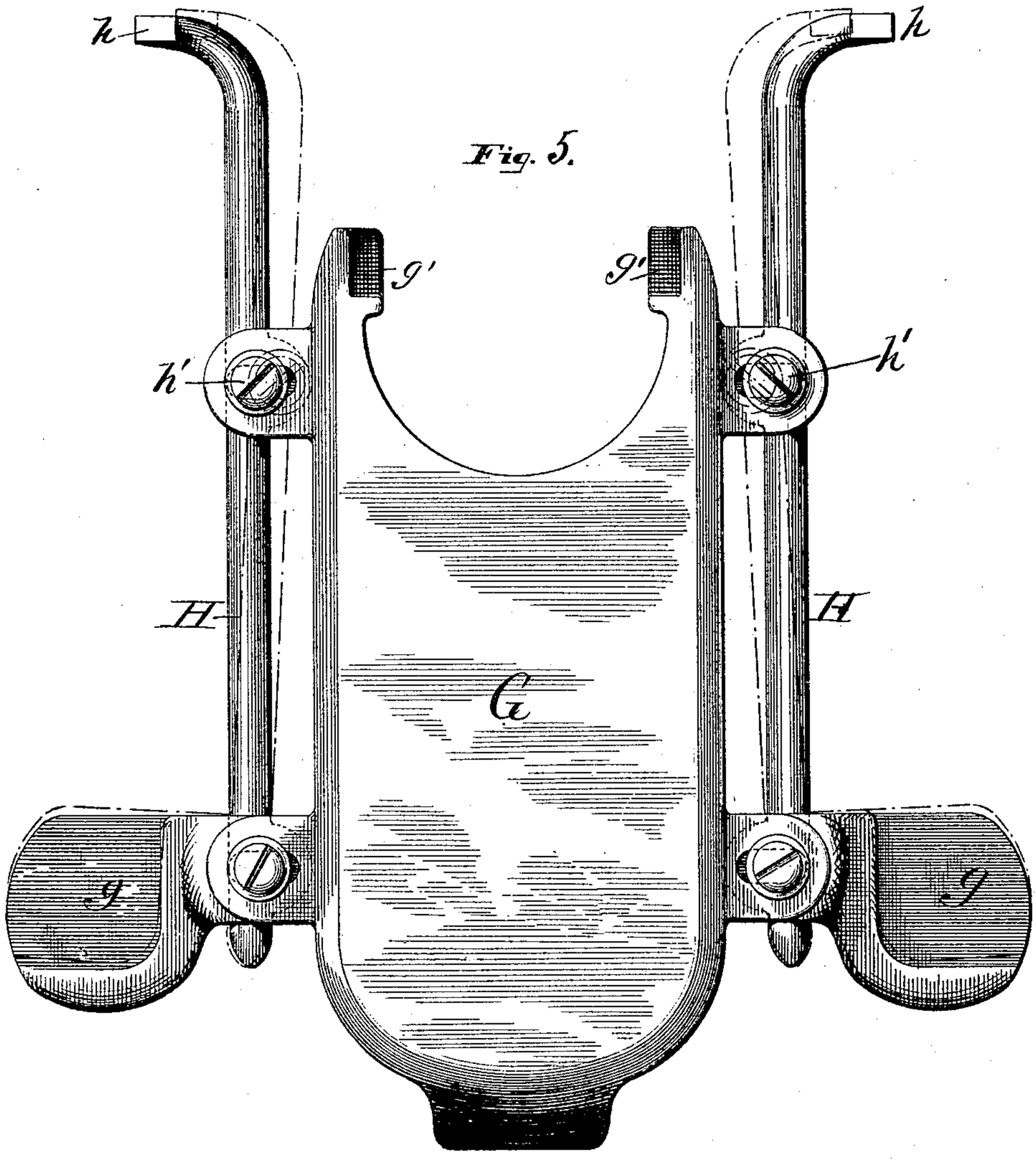
(No Model.) 3 Sheets—Sheet 3.

T. A. LONG.

OPERATING CHAIR.

No. 370,071. Patented Sept. 20, 1887.

Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS A. LONG, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF SAME PLACE.

OPERATING-CHAIR.

SPECIFICATION forming part of Letters Patent No. 370,071, dated September 20, 1887.

Application filed December 16, 1886. Serial No. 221,767. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. LONG, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Operating-Chairs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates more particularly to improvements in that class of operating-chairs in which the chair-body is fitted to slide up and down upon supporting-bars pivoted near their lower ends to the base of the chair, whereby the chair-body is given a wide range of vertical adjustment upon said supporting-bars, while said body may be rocked backward and forward or inclined to any desired angle by the rocking of said supporting-bars upon the base or platform. This type of operating-chairs was, as I believe, originated by J. B. Morrison, and his chair is well known in the art as the "Morrison chair," it having been extensively introduced into public use. I have therefore shown in the accompanying drawings my present improvements as applied to a Morrison chair, which will be sufficient to illustrate them.

In the Morrison type of chair, when the chair-body is adjusted low down, so as to be near the pivots of the supporting-bars and just above the base of the chair, the weight of the patient is forward or in front of the pivots of said bars, and consequently when the chair and patient seated therein is to be tilted backward the strength of the operator has to be exerted to effect such adjustment against the weight of the patient, while when the chair is adjusted well up on the supporting-bars and said supporting-bars are in their normal perpendicular position the weight of the patient is still forward of the pivots of said bars; but in tilting said bars the weight of the patient is soon brought back of the perpendicular, owing to the increased radius of the chair-seat, and the strength of the operator must then be exercised to support or sustain not only the weight of the chair-body, but of the patient also, in the further backward tilting operation. This call upon the strength of the operator is objectionable; and it is the object of my present improvements to provide a counterbalancing and compensating mechanism to relieve the operator wholly or in part from the weight of the patient when the chair-body is adjusted well up on the bars, while relieving the operator from the effects of this counterbalancing mechanism, which would act in the reverse direction when the chair-body is adjusted low down to the base.

In the aforesaid drawings, which show my improvements as applied to a Morrison chair in the best way now known to me, Figure 1 is a view in side elevation of the improved chair, the dotted lines in said figure showing the chair as tilted backward from the perpendicular, and in which case the chair-body is adjusted well up on the bars, with the weight of the chair and patient back of the perpendicular. Fig. 2 is a horizontal section through the chair-base on the line 2 2 of Fig. 1, showing a plan view of the compensating devices; and Fig. 3 is an inverted plan view of my improved compensating device. Fig. 4 is a longitudinal section therethrough. Fig. 5 is a detail plan view, enlarged, of the adjustable connections which aid in securing the compensating devices to and releasing them from the chair.

The chair-base consists of two side frames, A A, connected at their upper ends by a brace-bar, *a*, the ends of which form journals or pivotal points for the parallel supporting-bars B B, on which the chair-body C is fitted to be raised and lowered in the usual way of the Morrison chair, said supporting-bars B B therefore rocking on the pivot or pivots *a*, so that the chair-body may be adjusted backward and forward in order to incline the patient to the desired degree in the performance of operations. The lower ends of said supporting-bars B B extend below their rocking pivots *a*, and are connected by a tightening or clamp bar, D, the ends of which work in or pass through curved or sector slots E at the opposite sides of the chair-base. A clamp handle or lever, F, is fitted at one side of the chair-base, and by its movement the side bars, B B, may be clamped at any desired point in their range of

rocking or tilting movement. All the above is the common construction of the well-known Morrison chair.

When the vertically-movable chair-body C is adjusted low down on the side supporting-bars, B B, so as to be near the base of the chair, which would be the position, for example, when the patient is tall and the operator short, it is obvious that the chair-seat C′ is forward of the pivots of the said bars B B, and in tilting the patient, when the clamping device F is loosened, the strength of the operator is exerted against the weight of the patient in tilting or pulling him backward; but little strength is required in thus tilting the patient for the reason that the patient is near the fulcrum of the side bars, B B, while a long leverage may be had by the operator to perform this tilting operation. On the contrary, however, when the chair-body is raised well up on the side bars, B B, but a slight movement suffices to carry the weight of the patient to the rear of the pivotal point or fulcrum of the said side bars, which necessitates the operator's sustaining the weight not only of the chair-body, but of the patient seated therein, and as it thus requires the exercise of considerable strength and is very objectionable I have devised my improvements to avoid it.

To this end I preferably employ the following organization: A frame, G, having socket-rests *g g* for the rear ends of the base-frames A A to rest in, is fitted between said base-frames A A so as to be securely locked thereto when the chair is in position for operation. Parallel side rods, H H, are jointed at their rear ends to said frame G, and provided at their front ends with engaging-lugs *h h*, adapted to fit in recesses or behind flanges of said frames A A. In order readily to fit said frame G between the side frames, A A, of the chair-base, I preferably connect the side rods, H H, to the frame G, near their forward ends, by means of adjustable connections *h′ h′*, which may consist of slots and set-screws, whereby the front ends of the said side rods, H H, may be moved toward each other, so as to enable them to be readily passed in between said side frames, A A, of the chair-base, and when in position may be moved outward, so as to engage their locking-lugs with the grooves or seats of said side frames, as before described. Upon tightening the set-screws *h′ h′*, constituting the adjustable connections, the said rods H H are rigidly locked to the chair-base, as will be obvious.

A compensating or counterbalancing spring, I, is securely connected at its rear end to a plate, I′, having a screw-threaded opening, into which a set-screw, J, is screwed, so as to securely connect the rear end of said spring with the rear end of the frame G, as is shown in Fig. 4. The front end of said spring I is securely connected to a cross-bar, K, and upon said cross-bar K is jointed a latch or hooked frame, L, so that said latch may be rocked upon said cross-bar as a pivotal support, and in order to effect this rocking movement of said latch its rear end is preferably raised so as to lie above the spring I and form a foot-operating connection, *l*. The front end of said latch L is fitted to hook over or engage a rod or connecting device, *m*, of a clamp-frame, M, which is adapted to be fitted and clamped upon or to the cam or locking rod D, before described, and also to a rigid brace-plate, N, connecting the extreme lower ends of the side supporting-bars, B B, as clearly shown in Fig. 2, whereby said clamp-frame is rigidly clamped to and travels with the locking-rod D and connecting-plate N of said side supporting-bars. Said clamp-frame M preferably consists of two sections or plates, *m′ m²*, having recesses or seats to fit them to the bar D and brace-plate N, and united by a bolt and nut, as clearly shown in Figs. 3 and 4.

The front end of the frame G terminates in two inclined planes or shoulders, *g′ g′*, to receive or constitute seats for the ends *k′ k′* of the cross-bar K when said cross-bar is drawn back by the contraction of the spring I, which is the normal position of the parts when the supporting-bars B B are in their normal vertical or perpendicular position. When in this position, the latch L may be readily rocked on its pivotal connection with said cross-bar K, in order to disengage the latch from the clamp-frame M, and for an obvious reason, for, if not disengaged from said clamp-frame, the operator in tilting the chair backward would be compelled to move not only the weight of the patient, but overcome the pull of the spring also until the patient had passed the perpendicular line. Therefore, when the chair-body is adjusted low down toward the chair-base, it is desirable that the compensating device be disconnected, and the rocking latch affords a ready means for this disconnection; but when the chair-body is adjusted well up on said side supporting-bars, B B, the compensating device will not be disconnected, for the reason that but a slight movement will be necessary to carry the patient and chair-body across the perpendicular, when it is desirable that the compensating devices should come into play to take the weight off the operator.

In order to permit the ready disconnection of the locking-latch L from the clamping-frame M, I prefer that it be loosely jointed to the cross-bar K. Obviously, also, after said locking-latch has been disconnected it will automatically re-engage the clamping-frame as soon as the chair-body is again brought into a perpendicular position.

My invention is not limited to details, nor to any particular kind of operating-chair, and many changes in the compensating device can be effected without departing from my invention, some of which changes will readily suggest themselves to a skilled mechanician.

I claim as my invention—

1. The combination, substantially as herein-

before set forth, of the chair-base, the tilting supporting-bars mounted thereon, the chair-body fitted so as to be vertically adjustable on said supporting-bars, and the weight compensating or relieving mechanism fitted with a connecting and disconnecting device, whereby it may be thrown into and out of operation, substantially as described.

2. The combination, substantially as herein-before set forth, of a base, a tilting chair body or seat, and a weight-relieving mechanism fitted with an automatic or self-connecting device between said base and said chair body or seat, substantially as described.

3. The weight-relieving mechanism for tilting or inclining chairs, fitted with a connection for the base of the chair, and with a self-connecting coupling for a tilting portion of the chair, substantially as described.

4. The weight-relieving mechanism for tilting or inclining chairs, fitted with a rocking coupling-latch, L, having an operating-connection by which it may be disconnected from the portion of the chair with which it engages, substantially as described.

5. The weight-relieving mechanism for tilting or inclining chairs, fitted with a locking-connection, such as the socket-rests *g g*, for the feet of a chair-base, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

T. A. LONG.

Witnesses:
ELI T. STARR,
JAS. F. LYND.