

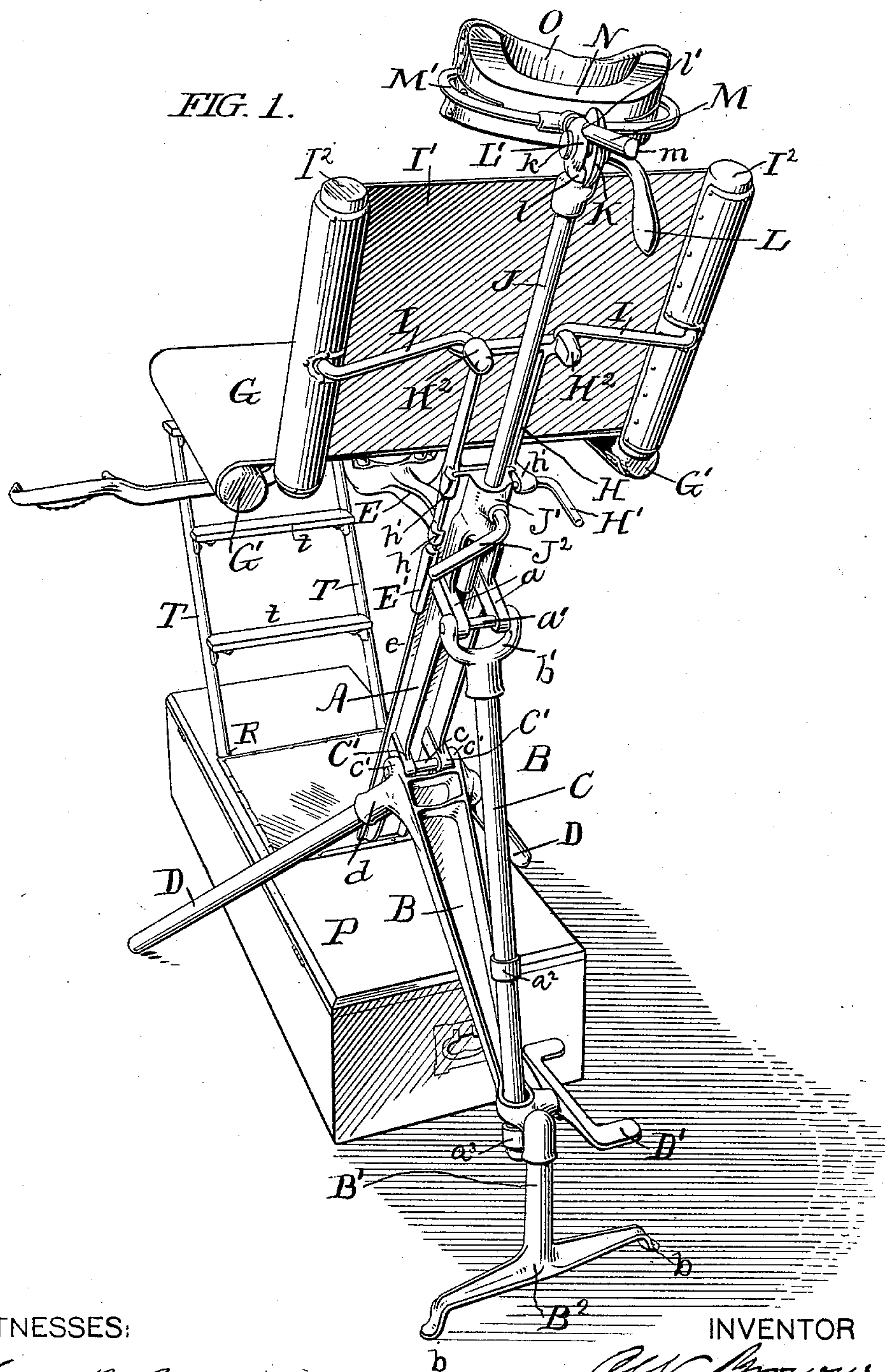
(No Model.)

4 Sheets—Sheet 1.

A. W. BROWNE.  
DENTAL CHAIR.

No. 538,407.

Patented Apr. 30, 1895.



WITNESSES:

*Harry A. Barber*  
*Edw. F. Simpson, Jr.*

INVENTOR

*A. W. Browne*  
*My Atty J. H. Keston.*

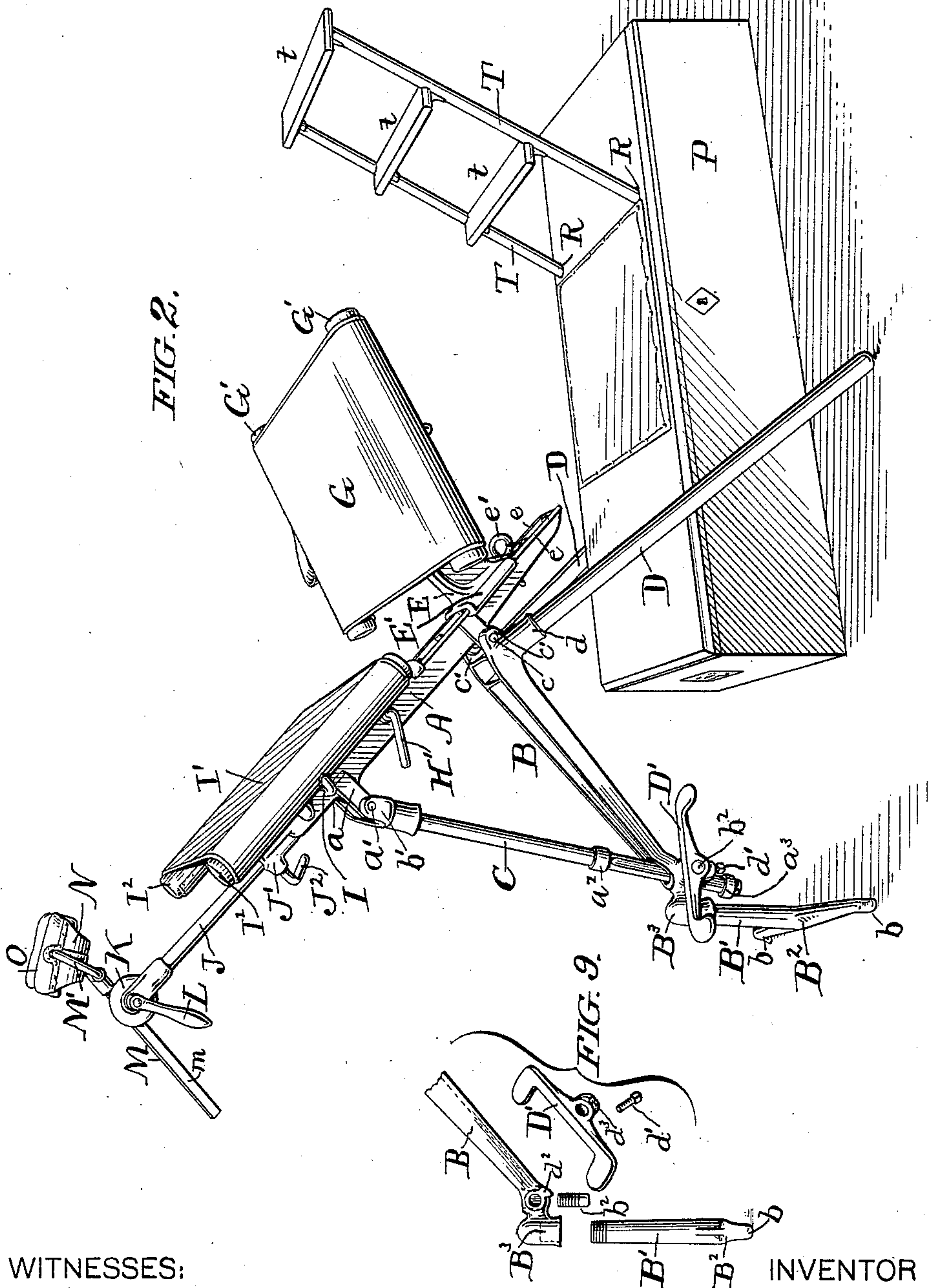
(No Model.)

4 Sheets—Sheet 2.

A. W. BROWNE.  
DENTAL CHAIR.

No. 538,407.

Patented Apr. 30, 1895.



WITNESSES:

Harry N. Barber  
Edw. F. Simpson, Jr.

INVENTOR

Wm. Brown  
J. S. Brown.



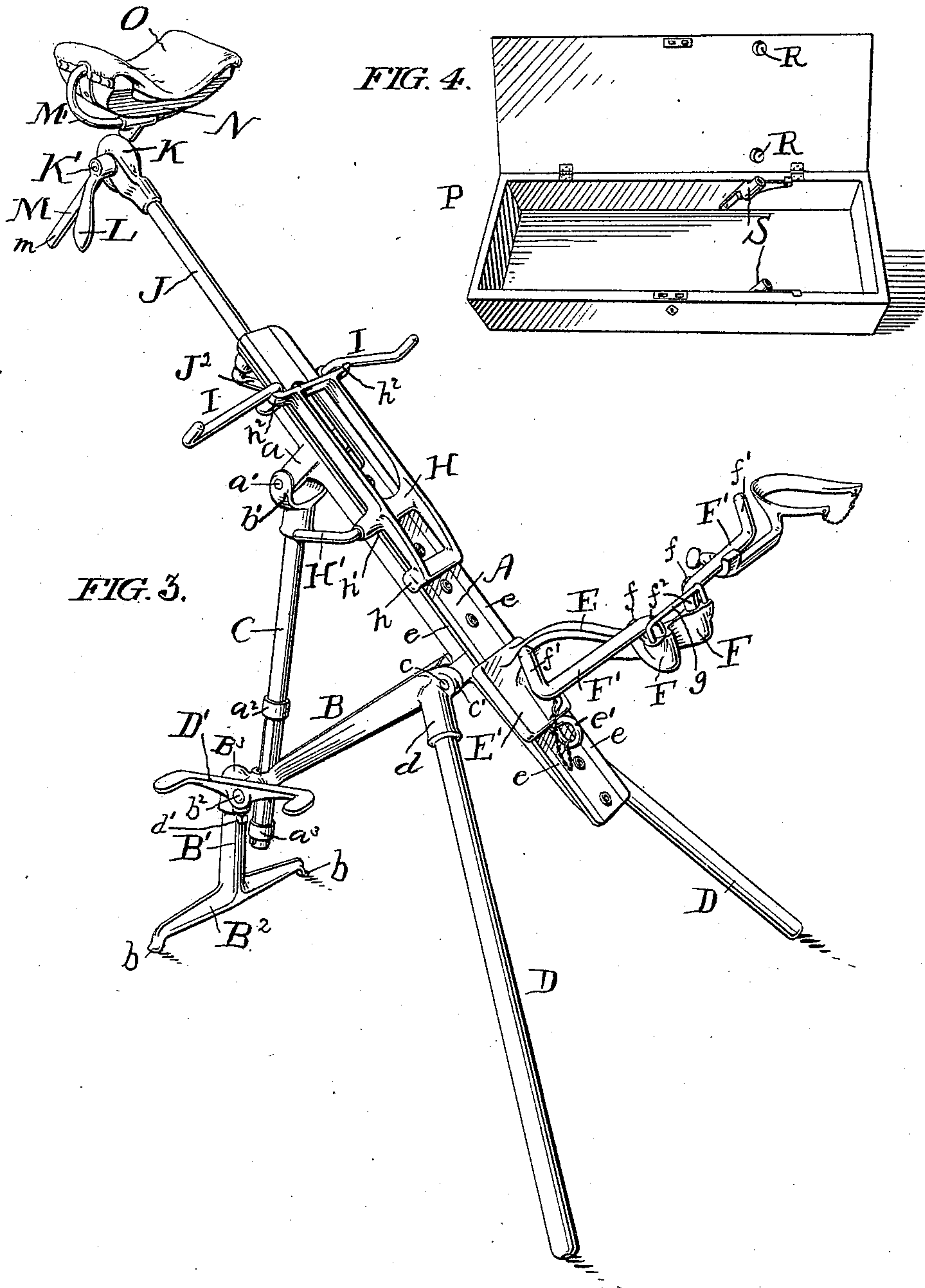
(No Model.)

4 Sheets—Sheet 3.

A. W. BROWNE.  
DENTAL CHAIR.

No. 538,407.

Patented Apr. 30, 1895.



WITNESSES:

Harry B. Barker  
Edw. F. Simpson, Jr.

INVENTOR

A. W. Browne  
By *[Signature]* J. H. Weston.

(No Model.)

4 Sheets—Sheet 4

A. W. BROWNE.  
DENTAL CHAIR.

No. 538,407.

Patented Apr. 30, 1895.

FIG. 7.

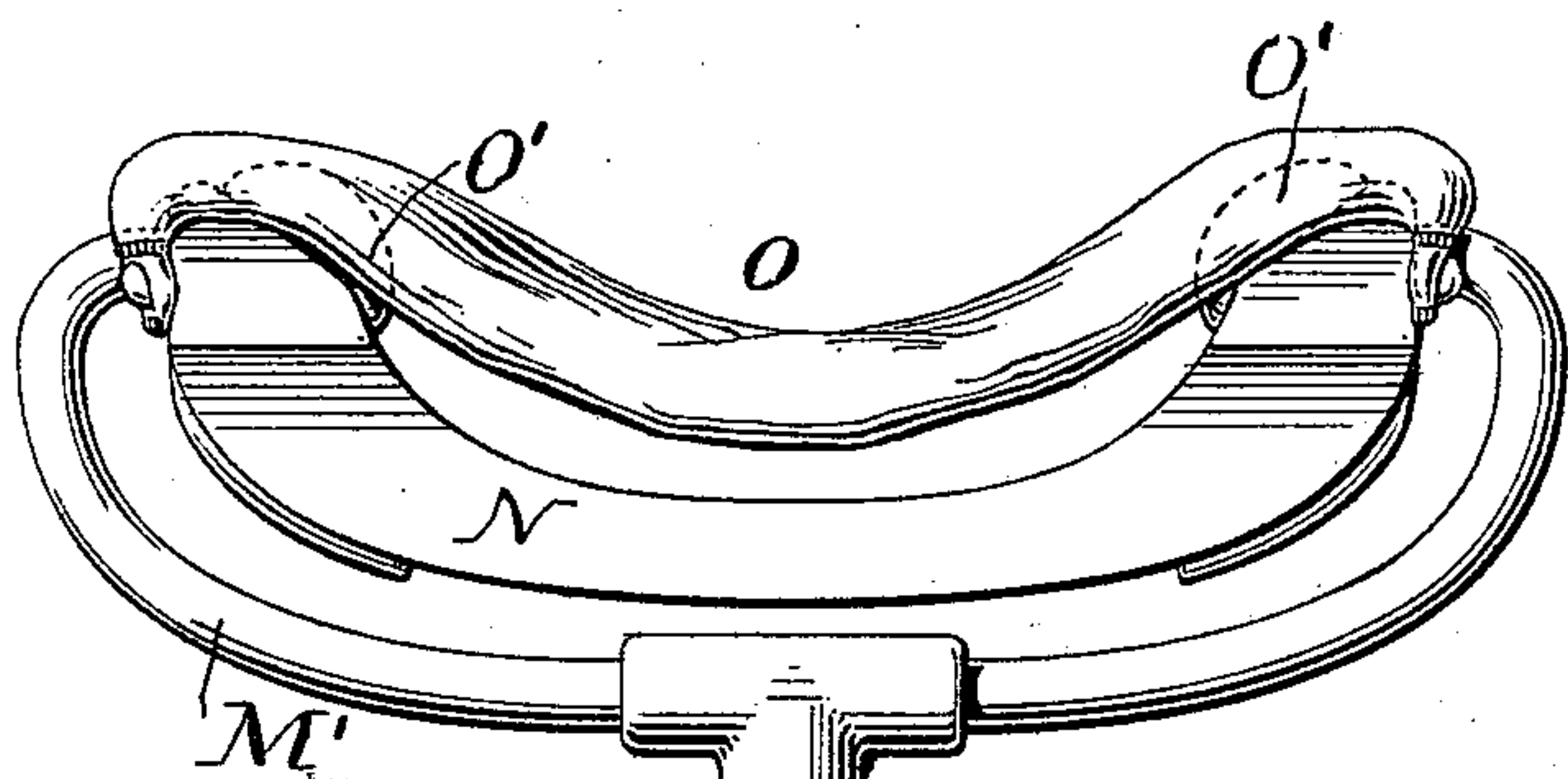


FIG. 5.

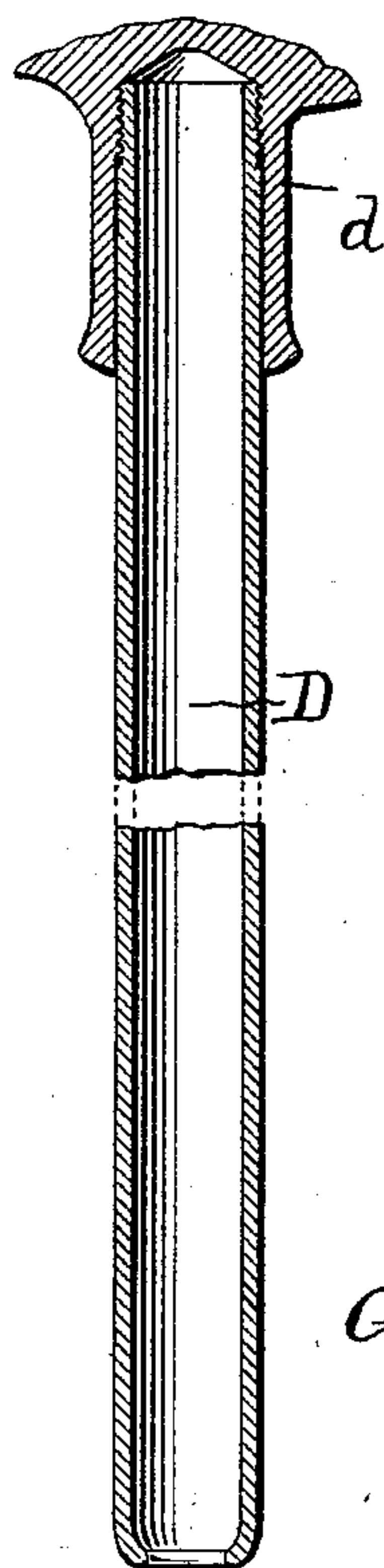


FIG. 8.

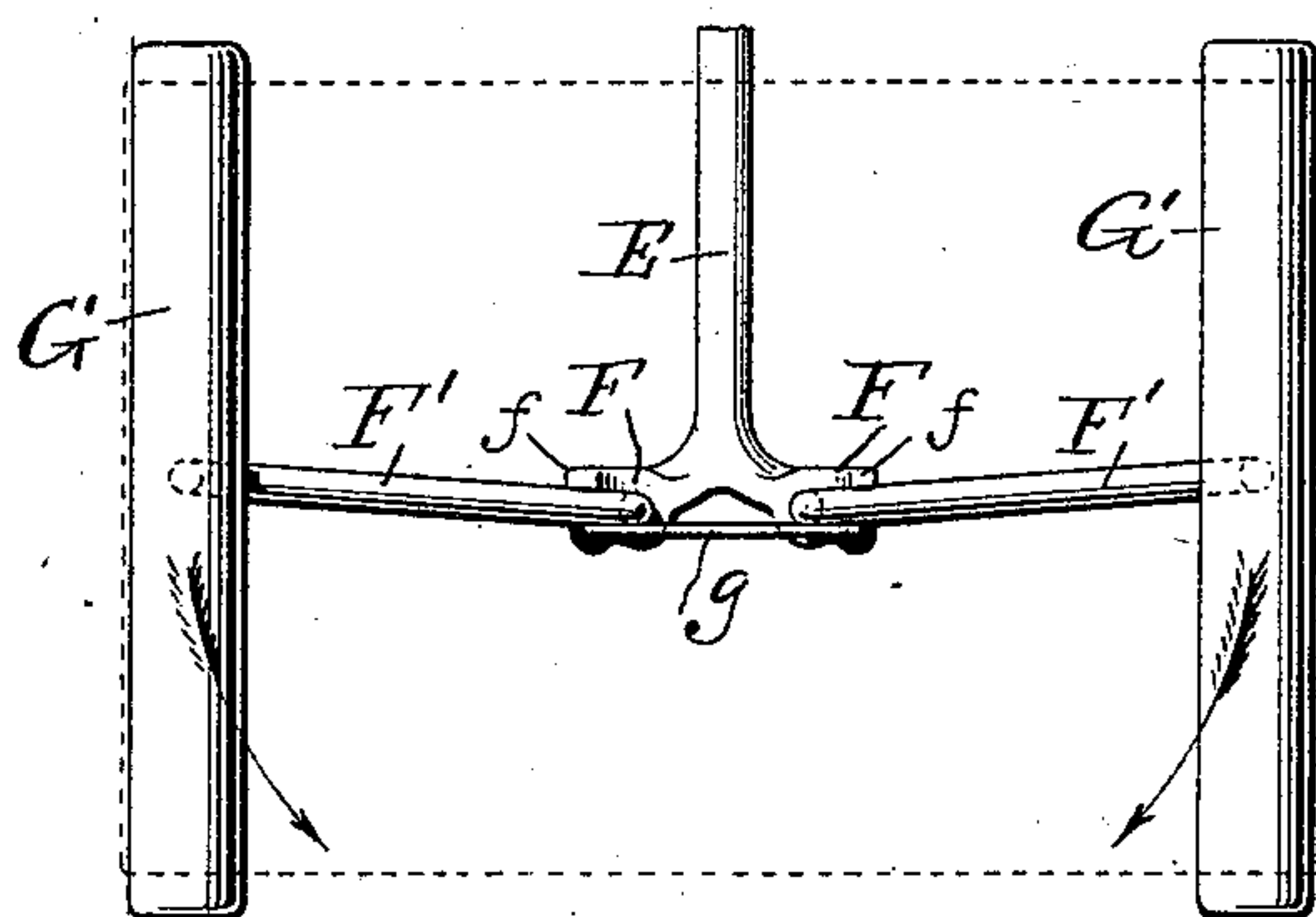
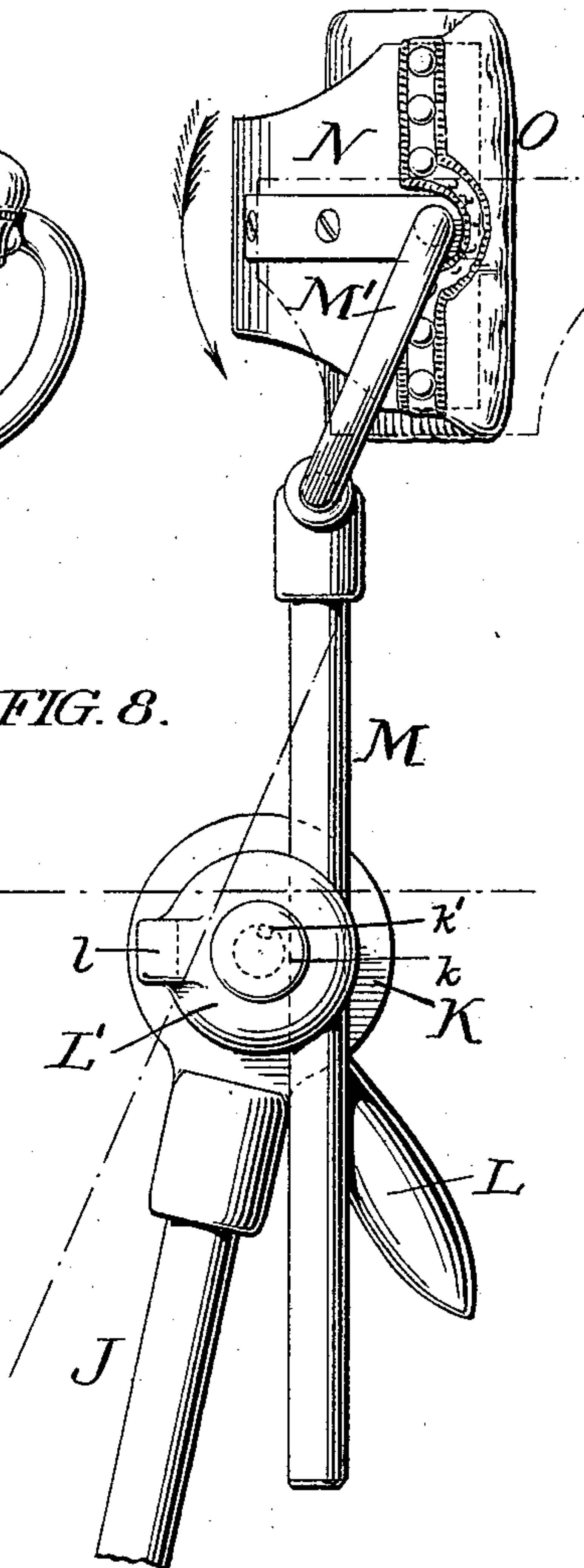


FIG. 6.

WITNESSES:

*Harry R. Barber*  
*Edu. S. Simpson, Jr.*

INVENTOR

*A. W. Browne*  
*By Atty J. P. Peyton.*



# UNITED STATES PATENT OFFICE.

ARTHUR W. BROWNE, OF PRINCE'S BAY, NEW YORK, ASSIGNOR TO THE  
S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA,  
PENNSYLVANIA.

## DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 538,407, dated April 30, 1895.

Application filed November 17, 1894. Serial No. 529,125. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR W. BROWNE, a citizen of the United States, residing at Prince's Bay, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Dental 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 to certain improvements, as hereinafter claimed, applicable to portable dental chairs constructed in sections which may readily be assembled for use and disconnected and compactly packed for convenient transportation.

In the accompanying drawings, which represent a suitable embodiment of my improvements, Figure 1 is a rear and side perspective view of the chair in position for use, with the box which serves for packing the chair arranged as a foot-board or platform for the chair and support for the foot-rest thereof. Fig. 2 is a front and side perspective view on a smaller scale than Fig. 1, and with a changed adjustment of parts. Fig. 3 is a view substantially corresponding with Fig. 2, except that the box, foot-rest, seat, and back-pad are omitted. Fig. 4 is a view in perspective, on a reduced scale, of the combined packing-box, foot-board or platform, and foot-rest support, with the lid raised to show how the box is adapted to support the foot-rest. Figs. 5 to 9, inclusive, are views showing details of construction, Fig. 5 being a longitudinal section through one of the legs and its connecting-socket; Fig. 6, a plan view of devices for supporting the seat; Fig. 7, a front elevation of the pad, block, carrier, and carrier-rod of the head-rest; Fig. 8, a side elevation of the same, with the vertically-adjustable head-rest supporting-rod and means by which the head-rest carrier-rod is adjustably connected with the supporting-rod; and Fig. 9, a view in perspective showing, separately, parts for securing the frame-bar in its position of adjustment.

A frame bar or main section A of the chair is adjustably supported by suitable legs, and

has adjustably connected with it an appropriate seat and suitable back and head rest pads. Three supporting legs are provided, and the rear one is composed of an upper section B and a lower section B' adjustably connected with the upper section and terminating at its lower end in a cross foot piece B<sup>2</sup> having feet or bearing points *b b* at its opposite ends. The leg section B has jointed connection at its upper end with the frame bar A. A pivot *c* passing through forks *c' c'* of the leg and through lugs *C' C'* of the frame bar serves to make proper connection. Two diverging front legs D D are detachably connected with the frame bar by way of the rear leg. Threaded sockets *d d* of the leg section B serve to connect the front legs, the upper ends of which are threaded to screw into the sockets.

An arm C serving to adjust the inclination of the frame bar A and maintain it in its position of adjustment, is jointed to the frame bar above the jointed connection of the legs with this bar. This adjusting arm C is jointed at its upper end to lugs or short arms *a a* of the frame bar by a pivot *a'* passing through these lugs and through the forked end *b'* of the adjusting arm. At its lower end the frame bar adjusting arm passes through a socket or loose bearing in the rear leg adjacent to the lower or rear end of the upper section B of this leg. That portion of the adjusting arm C which is adapted to slide in the bearing socket in the rear leg is flattened on one side to adapt it to be securely clamped in the position desired by means of a clamp screw *b<sup>2</sup>* working in the rear leg section B and operated by a treadle-like foot lever D'. A set screw *d'* serves to lock the clamp screw to the foot lever, and lugs *d<sup>2</sup> d<sup>3</sup>* on the rear leg and on the lever serve to limit movement of the lever when actuated to operate the clamp to release the adjusting arm. A shoulder or fixed collar *a<sup>2</sup>* and a detachably secured collar *a<sup>3</sup>* on the adjusting arm serve to limit its sliding or endwise movement in the bearing socket of the rear leg in adjusting the inclination of the frame bar by rocking it about its pivotal connection with the supporting legs. A removable cross-pin passing through the



adjusting arm beneath the collar  $a^3$  may be employed to retain this collar in place (see Fig. 3) or this collar may be screwed in place, if preferred.

5 The lower section of the rear leg is detachably connected with the upper section thereof and adapted to be turned so as to properly adjust the bearing feet  $b b$  to insure a firm support of the chair upon an uneven floor.  
10 To provide for the attachment and turning movement of the lower section of the leg it is screw threaded at its upper end and engaged with a threaded socket  $B^3$  at the lower end of the upper section of the leg.

15 It will be seen that by adjustment of the adjusting arm the inclination of the frame bar may be varied, as desired, this bar rocking about its jointed connection with the legs, and that the adjusting bar may easily and  
20 quickly be clamped and unclamped by actuation of the clamp lever by the foot. It will further be seen that the front legs may quickly be detached, the rear leg sections disconnected, and the upper section of the rear leg  
25 and the adjusting arm folded up to the frame bar after the collar  $a^3$  is removed and the adjusting arm drawn from the socket of the rear leg, thus providing for the compact packing of the parts for convenient transportation.  
30 tion.

The upper section of the rear leg is shown as longitudinally ribbed or flanged—that is, made U-shaped in cross section, to impart to it desired strength without unnecessary  
35 weight, and the main section or frame bar A is formed with ribs or flanges extending longitudinally thereof at its back.

A seat supporting arm or bracket E is adjustable up and down the frame bar A and  
40 adapted to be locked thereto to locate the seat at any desired height. The adjustable seat supporting arm is shown as fitted to slide up and down upon guide-ways  $e e$  formed upon the frame bar, which with the guide-ways extends below as well as above the point of  
45 pivotal support of this bar by the supporting legs. A row of holes extends lengthwise of the frame bar, and a stop pin  $e'$  adapted to engage the desired one of these holes beneath the slide  $E'$  which connects the seat supporting arm with the frame bar, serves to uphold  
50 this arm in its position of adjustment. At its front or outer end the seat supporting arm is provided with two projections or short arms  $F F$  extending laterally thereto in opposite directions. These side projections  $F F$  have  
55 upwardly extending lugs  $f f$  at their outer extremities, and inside and near each of these lugs there is a socket or bearing formed to receive the inner ends of two seat attaching rods  $F' F'$ , one rod being fitted to turn in each bearing socket. The attaching rods are exactly alike, each being bent at its opposite ends in opposite directions so as to constitute  
60 pivoting ends  $f' f^2$ , the one projecting upwardly and the other downwardly, when the rods are in use. The seat proper G consists

of a piece of carpet, canvas, or equivalent flexible material suitably secured at its ends to stretcher bars  $G' G'$  each of which is provided underneath and midway its length with a socket or bearing. These sockets receive the outer pivoting ends of the seat attaching rods.

It will be seen that the seat attaching rods  
75 may readily be pivotally fitted in their bearing sockets in the seat supporting arm, and the seat stretcher bars then pivotally adjusted to the outer ends of the attaching rods, after which the backward swing of the rods into  
80 contact with the lugs  $f f$  spreads out the flexible seat and properly stretches it. As will be seen by reference to Fig. 6, when the attaching rods are swung back until their further movement is arrested by their contact  
85 with the stop lugs  $f f$ , the outer ends of the attaching rods pivotally connecting with the seat stretcher bars extend back of a line drawn centrally through the bearing sockets for the inner ends of the attaching rods, and the  
90 stretching strain on the flexible material of the seat acts to prevent that slight spreading apart of the stretcher bars which would be required to admit of forward swing of the attaching rods. The weight of a person upon  
95 the seat increases resistance to the forward swing or folding toward each other of the attaching rods. To positively prevent accidental forward swing of the attaching rods a suitable securing device, such as the staple-  
100 like rod  $g$ , may be employed. The ends of this securing rod  $g$  are detachably engaged with sockets in the side projections of the seat supporting arm in advance of the attaching rods, as will readily be understood. It  
105 will be seen that by extending the frame bar below the point of pivotal connection of the legs therewith, the seat may be adjusted to a very low position.

A back pad carrier H is adjustable up and  
110 down the frame bar A and adapted to be locked thereto to secure the pad at the height desired. This pad carrier H is shown as provided with two sets of guide way lugs  $h h h'$   
115  $h'$ , at and above its lower end, having sliding engagement with the guide ways  $e e$  of the frame bar. A clamp consisting of a screw having an operating handle  $H'$  serves to lock the pad carrier to the frame bar in the desired position. At opposite sides of its upper  
120 end the pad carrier is provided with bearing sockets  $H^2 H^2$ , to receive the bent pivoting ends of two pad attaching rods I I which are duplicates of each other, and similar to the seat attaching rods  $F' F'$  except as to dimensions, each pad attaching rod being bent at  
125 right angles to its main length at its opposite ends to constitute pivoting ends. The back pad  $I'$ , of suitable flexible material, is attached at its ends to stretcher bars  $I^2 I^2$  provided, like  
130 the seat stretcher bars, with socket bearings for the outer ends of the swinging pad attaching rods. When swung out into operative position the pad attaching rods bear down-



ward upon side lugs or short lateral projections  $h^2$   $h^2$  of the pad carrier.

An endwise movable head rest supporting rod J is fitted to slide up and down and turn in a socket or bearing J' of the frame bar A, at the back thereof, and a suitable clamp, such as a pinch screw provided with the handle J<sup>2</sup>, serves to lock the rod in its position of adjustment. Beneath its bearing the rod J works between the strengthening longitudinal ribs or flanges at the back of the frame bar. At its upper end the supporting rod terminates in a head or enlargement K of substantially circular or disk form. A clamp bolt K' having a head  $k$  at one end, and screw threaded at its opposite end, has its threaded end passed through a central opening in the head K of the supporting rod J. A spline and groove connection  $k'$  between the screw bolt and supporting rod head prevents turning of the bolt in this head. A clamp handle L having screw-threaded connection with the bolt serves to move it endwise in the supporting rod head. The clamp bolt passes centrally through a movable disk-like clamp section L' and the bolt head engages this movable section. An inwardly projecting lug  $l$  on the movable section of the clamp serves to limit its movement toward the section of the clamp constituted by the supporting rod head K. A groove  $l'$  in the inner face of the adjustable clamp section serves to make engagement between the clamp and an adjustable carrier rod M of the head rest. This carrier rod is rounded on its surface which engages with the clamp groove and is provided with a flattened side  $m$  which bears against the inner face of the clamp section constituted by the head K of the head rest supporting rod J. A bow-like head rest carrier M' is rigidly connected with the upper end of the carrier rod, and a curved or concaved head rest block or frame N is jointed in the carrier so as to be capable of swinging or rocking, the block being pivotally connected with the inwardly projecting ends of the carrier. A head rest pad O (in this instance a swagging pad or "slack strap" is employed) is connected with the head rest block. Side pads O' O' (see dotted lines Fig. 7) are suitably attached to the inner surfaces of the ends of the concave head rest block N, and the slack strap O passes loosely over these side pads and is attached to the outer surfaces of the ends of the head rest block, thus providing for a free self-adjustment of the slack strap to the head of a patient seated in the chair.

From the above description it will be seen that the head rest pad has a very wide range of adjustment, and that it is adapted to swing freely in its carrier to readily adjust itself to the proper position for supporting the head of a patient seated in the chair. As the head rest proper or pad is pivotally suspended or hung in its carrier with its central portion below the points of pivoting, it will be seen that

the pad is rendered self-adjusting or is readily swung or rocked by the pressure of the head upon it, without interfering with the various adjustments which may be imparted by the head rest supporting rod and the carrier rod. It will further be seen that as the supporting rod J is supported by the frame bar independently of the back pad, this pad may be moved up or down without altering the position of the head rest pad, so that after a patient is seated in the chair and the head rest properly adjusted the back pad may freely be adjusted to accommodate the patient.

In the top of the box P in which the various parts of the chair may compactly be packed for convenient transportation (see Fig. 4) there are two openings R R into which project, when the lid of the box is closed, metal tubes S S secured to opposite sides of the box. These tubes constitute sockets for supporting the standards T T of a foot rest shown as provided with three step-like rests  $ttt$  at different heights for the feet of patients occupying the chair. The box is adjusted so as to constitute a platform or foot board for the chair when in position for use, as plainly shown, the diverging front legs straddling the box.

I claim as my invention—

1. The combination, in a dental chair, of the frame bar adjustable as to inclination, the front and rear supporting legs having jointed connection therewith above its lower end, the adjusting arm having jointed connection at one end with the frame bar and adjustable and detachable connection at its opposite end with the rear supporting leg, means for maintaining the adjusting bar in the position of adjustment, the seat adjustable up and down the frame bar, and means for maintaining the seat in its position of adjustment either above or below the juncture of the legs with the frame bar, substantially as set forth.

2. The combination, in a dental chair, of the frame bar, the front supporting legs, the rear supporting leg composed of the upper and lower sections, said lower section having turning connection with the upper section and being provided with the cross foot bar having the two bearing points, one at each extremity thereof and by which only it has contact with the floor, the chair seat supported by the frame bar and adjustable up and down, and means for maintaining the seat as adjusted, substantially as set forth.

3. The combination, in a dental chair, of the supporting legs, the frame bar having connection with said legs above its lower end and provided with the guide-way extending lengthwise thereof both above and below the juncture of the frame bar with the legs, the seat supporting arm having the slide adjustable upon the frame bar guide-way, and means by which said arm may be upheld in its position of adjustment to secure the seat either below or above the juncture of the legs with the frame bar, substantially as set forth.



4. The combination of the seat supporting arm, the swinging seat attaching rods pivotally connected with said arm, the flexible seat, and its stretcher bars carried by the seat attaching rods, substantially as set forth.

5. The combination of the frame bar, the seat supporting arm fitted to slide at its inner end upon the frame bar and provided with the bearing sockets at its outer end, means for maintaining the seat supporting arm in its position of adjustment upon the frame bar, the swinging seat-attaching rods pivoting in the bearing sockets of the seat-supporting arm, the flexible seat, its stretcher bars carried by the seat-attaching rods, and means for limiting the swinging movement of the seat-attaching rods, substantially as set forth.

6. The combination of the back pad carrier provided with the bearing sockets and lateral projections, the swinging pad attaching rods pivoting in said bearing sockets and bearing downward upon said lateral projections, the flexible back pad, and its stretcher bars carried by the pad-attaching rods, substantially as set forth.

7. The combination, in a dental chair, of the frame bar, the seat adjustable along said

bar, means for upholding the seat in its position of adjustment, the back pad carrier adjustable along the frame bar independently of the seat, means for securing it in its adjusted position, the head rest pad, its vertically adjustable supporting rod supported by the frame bar independently of the seat and back pad carrier, and means for securing said rod in its position of adjustment, substantially as set forth.

8. The combination of the bow-like head rest carrier, means for adjustably supporting it, the curved or concaved head rest block or frame pivotally connected at its ends with said carrier to swing or rock freely, the side pads supported upon the inner surfaces of the ends of the head rest block or frame, and the slack strap pad having connection at its ends with the head rest block or frame, substantially as set forth.

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

ARTHUR W. BROWNE.

Witnesses:

SEYMOUR CASE,  
GEO. D. HECK.