(No Model.) 3 Sheets—Sheet 1.

W. D. MAYFIELD.

DENTAL OPERATING CHAIR.

No. 385,468. Patented July 3, 1888.

Fig. 1.

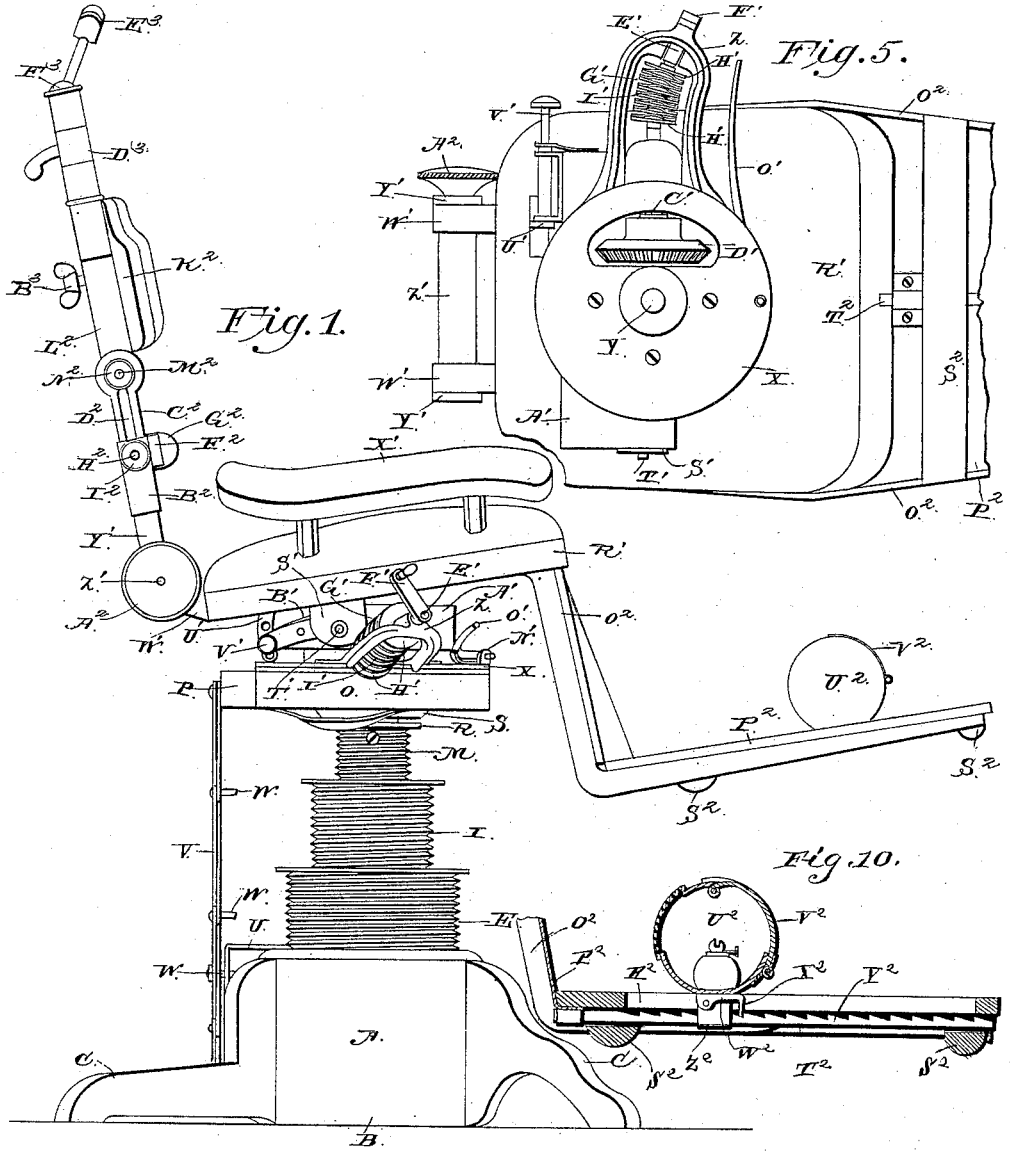
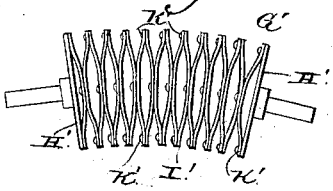


Fig. 5.

Fig. 10.

Fig. 7.



Witnesses.
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Fig. 4.

Fig. 2.

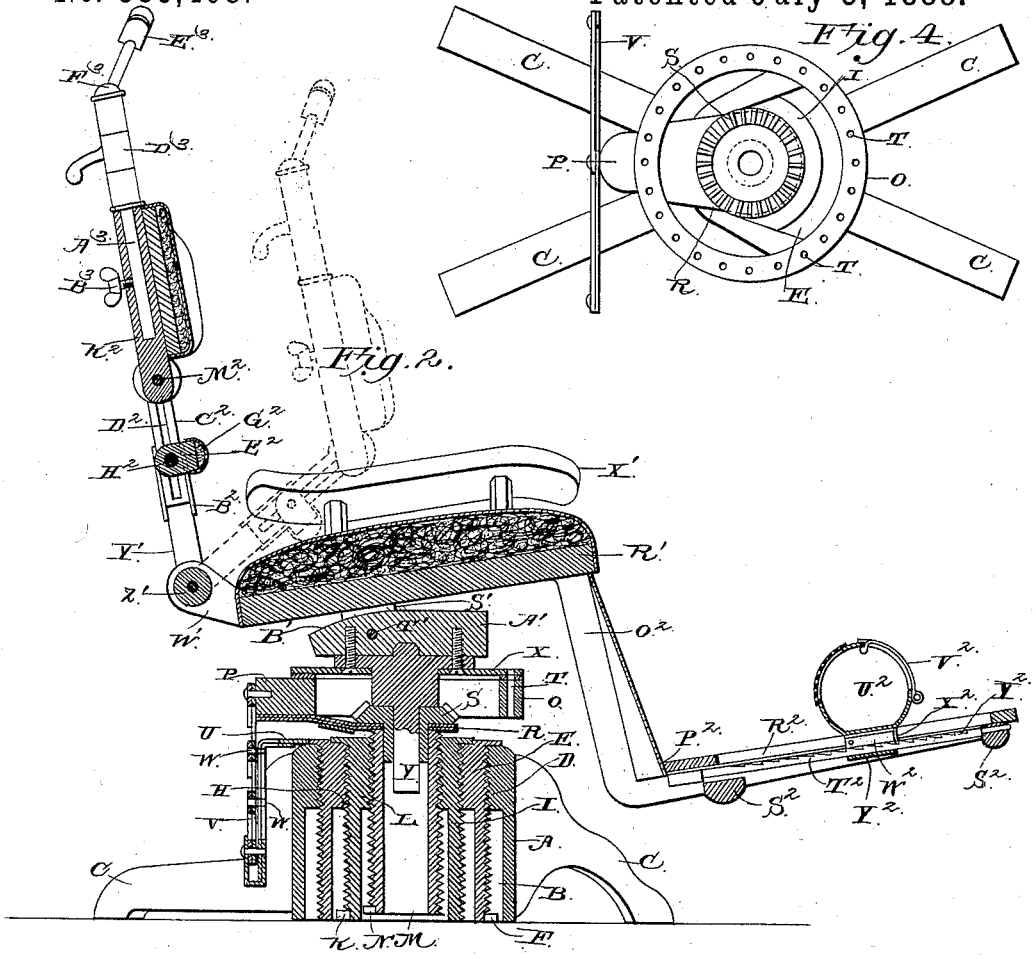
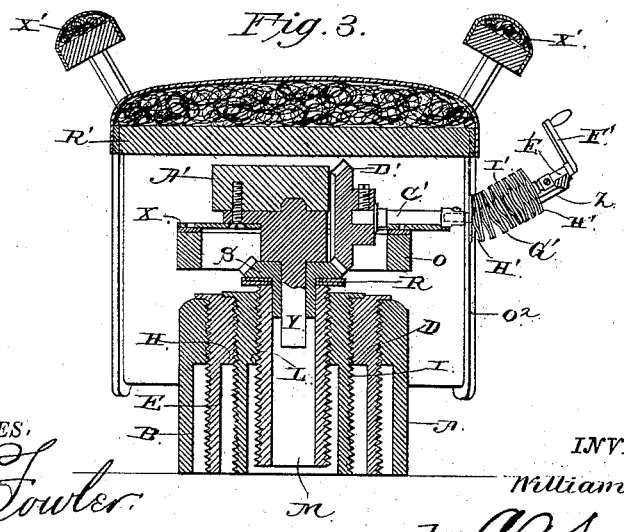


Fig. 3.



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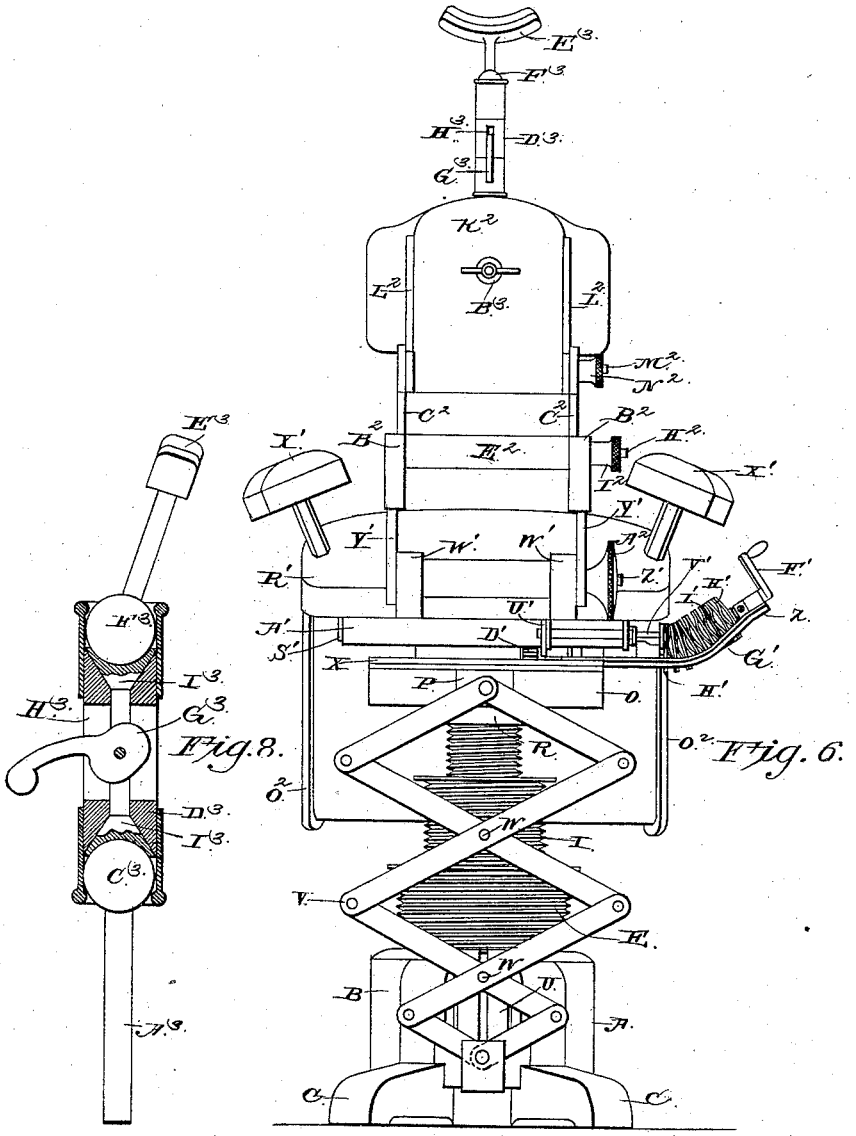
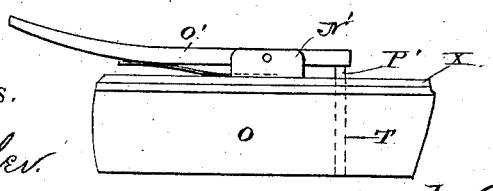


Fig. 8.

Fig. 6.

Fig. 9.



WITNESSES.

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his Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM DUDLEY MAYFIELD, OF FORT WORTH, TEXAS, ASSIGNOR TO W. F. MAYFIELD AND I. T. MAYFIELD, OF SAME PLACE.

DENTAL OPERATING-CHAIR.

SPECIFICATION forming part of Letters Patent No. 385,468, dated July 3, 1888.

Application filed August 12, 1887. Serial No. 246,791. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DUDLEY MAYFIELD, a citizen of the United States, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented a new and useful Improvement in Dental Operating-Chairs, of which the following is a specification.

My invention relats to an improvement in dental operating-chairs; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a dental chair embodying my improvements, showing the dental chair elevated. Fig. 2 is a vertical longitudinal sectional view of the same with the chair lowered. Fig. 3 is a vertical sectional view on the plane at right angles to Fig. 2. Fig. 4 is a top plan view of the supporting-pedestal, the seat and its attachments being removed. Fig. 5 is an inverted plan view of the seat and its attachments. Fig. 6 is a rear elevation of my improved chair. Fig. 7 is a detail view of the coupling G'. Fig. 8 is a detail sectional view of the head-rest. Fig. 9 is a detail view of the spring-actuated detent O'. Fig. 10 is an enlarged vertical longitudinal sectional view of the foot-rest.

A represents the chair base or support, which comprises the vertical cylindrical portion B and the supporting-feet C, which radiate therefrom. In the upper end of the cylinder B is formed an inwardly-extending interiorly-threaded flange, D'.

E represents a hollow screw, which engages the threaded flange D, and is adapted to work vertically in the same when the screw is turned, as will be readily understood. The lower end of the screw is provided with an outwardly-projecting stud, F, which is adapted to engage the under side of the flange D when the screw is elevated, and thus limit the outward movement of the screw. In the upper end of the screw E is an inwardly-extending flange, H, which is interiorly threaded and with which engages a vertical hollow screw, I, which is smaller than the screw E, is provided at its lower end with a stop-stud, K, to engage the underside of flange H, and has at its upper end an inwardly-projecting interiorly-threaded flange, L.

M represents a screw which works in the threaded flange L, and is provided at its lower end with a stud, N, to engage flange L.

O represents a supporting-ring, which is provided on one side with an outwardly-projecting bracket, P.

R represents a bottom plate, which is arranged under the ring, and the center portion of which is swiveled to the upper end of the screw M. The said screw has a horizontal wheel, S, rigidly affixed to its upper end. In the upper side of the supporting-ring are a series of openings, T, which are arranged at suitable regular distances apart.

U represents a vertically-slotted plate, which is secured to the upper portions of the supporting-feet C on the rear side of the base A, and has its upper end turned forward and secured to the upper edge of the cylindrical portion of the base.

V represents a lazy-tongs, the lower end of which is pivotally connected to the lower plate, U, and the upper end of which is pivotally connected to the upper end of the bracket P. The bolts W form the fulcrums on which the levers or arms of the lazy-tongs are adapted to work vertically in the open slot in the guide-plate U, and thereby prevent the ring O from turning on the upper end of the elevating-screws when the latter are rotated.

X represents a circular plate, from the center of which depends a spindle, Y, that enters the central opening in the screw M. From one side of the plate X extends a curved bracket-arm, Z.

A' represents a platform or supporting-base, which is arranged on the upper side of the plate X, and the rear side of which is beveled or inclined on its upper side, as at B'.

C' represents a horizontal shaft, which is journaled in a suitable bearing-box on the upper side of the plate X, and to the inner end of this shaft is rigidly secured a miter-wheel, D', which is adapted to engage the wheel S on the upper end of screw M.

E' represents a short shaft, which is journaled in a box on the upturned curved outer

end of bracket-arm Z. The outer end of this shaft E′ has a crank, F′.

G′ represents a flexible coupling, which connects the inner ends of the shaft-sections C′ and E′. This coupling comprises a pair of circular disks, H′, which are rigidly attached to the inner ends of the shaft-sections, and a series of similar circular disks, I′, connected together in pairs near their peripheries by means of bolts K′, which are arranged at diametrically-opposite points on the circular disks, the bolts in each succeeding pair of disks being arranged at right angles to those in the preceding disk. Owing to the elasticity of the disks, and to the fact that they are connected together in pairs at a distance of a quarter-circle apart, the flexible coupling G′ may be bent in curved form, as shown, and is adapted to communicate rotary motion from the outer shaft-section, E′, to the inner shaft-section, C′, thus dispensing with the necessity of employing beveled gears to connect the shaft-sections together.

On the upper side of the plate X, at the front edge of the same, is formed a pair of ears, N′, between which is fulcrumed a spring-actuated lever, O′, the inner end of which has a depending stud, P′, adapted to engage either of the series of openings R in the upper side of the ring O, and thereby secure the plate to the said ring.

R′ represents the chair-seat, which is arranged on its under side with depending bracket-ears which engage the ends of a pivotal rod, T′, that extends transversely through the supporting-base A′. Near one of the rear corners of the chair-seat depends an arm, U′, provided with a series of openings adapted to be engaged by a spring-actuated detent, V′, which is secured to the rear side of the base A′ at one end thereof. From the rear side of the seat R′ projects a pair of brackets, W′.

X′ represents a pair of arm-rests with which the chair-seat is provided, the said arm rests being arranged on opposite sides of the chair-seat, and the latter and the arm-rests being upholstered in any suitable manner.

Y′ represents a pair of arms which have their lower ends pivoted on a rod, Z′, that extends transversely through the brackets W′. One end of the said rod is screw-threaded, and is provided with a clamping screw or nut, A^2, which is adapted to compress the inner ends of the arms Y′ firmly against the outer sides of the brackets W′, and thereby support the said arms at any desired angle. The said arms Y′ are provided on their inner sides with parallel guide flanges or ways B^2.

C^2 represents a pair of extensible arms, the inner ends of which bear against the opposing sides of arms Y′, and are guided by or in the ways or flanges B^2. The said arms C^2 are provided with longitudinal slots D^2.

E^2 represents a cross-bar the ends of which bear against the opposing sides of arms C^2. The said cross-bar is provided on its front side at its ends with projecting shoulders F^2, which bear against the front edges of the arms Y′. This cross-bar E^2 is upholstered on its front side, as at G^2.

H^2 represents a rod which passes through openings in the upper ends of arms Y′, and through the slots D^2, and through a longitudinal opening in the cross-bar E^2. One end of the said rod is screw-threaded, and on the same is fitted a clamping-nut, I^2, which is adapted to secure the arms C^2 at any desired longitudinal adjustment in the arms Y′.

K^2 represents the back board, which is upholstered on its front side, and is provided at its side edges with metallic plates L^2. A pivotal rod, M^2, extends through aligned openings in the upper ends of the arms C^2, and in the lower side of the back board, thus pivotally connecting the said back board to the said arms, and on one end of the pivotal rod M^2 is secured a clamping-nut, N^2, by means of which the back may be supported at any desired angle.

O^2 represents a pair of supporting-arms, which are attached to the sides of the chair-seat, extend downward from the front side of the platform a suitable distance, and are then bent outward and extend beyond the front side of the chair-seat, as shown. The outer horizontal portions of the said arms are connected by a foot-board, P^2, which is provided with a longitudinal slot, R^2. The said outer portions of the arms O^2 are connected by a pair of cross-bars, S^2, on which the foot-board is supported.

T^2 represents a longitudinal rod, which extends under the slot R^2, and is secured to the cross-bars S^2, as shown.

U^2 represents a hollow cylindrical foot-rest, which is preferably made of metal and has its upper side perforated, and is provided on its front side with a hinged door, V^2. From the lower side of the cylindrical foot-rest, at the center of the same, depends a detent-ear, W^2, the lower front corner of which is provided with an engaging-point, X^2, which is adapted to engage a series of rearwardly-extending ratchet-teeth, Y^2, on the upper side of the rod T^2.

Z^2 represents a clip, which slides longitudinally on the rod T^2, extends upward from the same, and to which is pivoted the ear W^2. By means of this construction the foot-rest may be moved longitudinally on the foot-board and secured thereto at any desired adjustment, as will be readily understood.

A lamp or other suitable source of heat is designed to be placed in the foot-rest, so as to keep the feet of the patient warm during the dental operation.

A^3 represents a rod which is adapted to enter a vertical opening in the upper side of the back board, K^2. The said rod is vertically movable in the said back board, and is secured therein at any desired vertical adjustment by a set-screw, B^3. The upper end of the rod has a ball, C^3.

D^3 represents a cylindrical sleeve, which is provided at its lower end with a socket to receive the ball C^3.

E^3 represents a head-rest of the shape shown, which is provided on its under side with a ball, F^3, that fits in a socket in the upper end of the sleeve. An eccentric-cam, G^3, is journaled in a central opening, H^3, projecting from one side thereof.

I^3 represents a pair of clamps the outer ends of which bear against the balls in the sockets at the ends of the sleeve, and are provided with cups adapted to the contour of the said balls, and the inner ends of which bear against opposite edges of the cam. When the latter is turned in one direction, the clamps are caused to recede from the balls, and when the same is turned in a contrary direction the clamps are adapted to bear against the balls and thereby secure the rod A^3 and the head-rest to the slide or neck portion at any desired angle, as will be readily understood.

The operation of my invention is as follows: In order to raise or lower the chair, the shaft C′ is turned by means of this shaft, so as to cause the wheel D′ to rotate, and by engaging with the wheel S impart rotary motion to the screws. When the seat is lowered to the position shown in Fig. 2, the hollow screws are fitted one within the other, and when the seat is raised to the position shown in Fig. 1 the screws are extended one above the other, the said screws being telescoped. In order to turn the chair-seat on its supporting-pedestal, it is only necessary to bear down upon the outer end of the lever N′, so as to cause the detent at the inner end thereof to disengage the opening R in the upper side of the ring O. The chair-seat may be tilted to any desired angle, inasmuch as it is pivoted on the supporting-base A′, by disengaging the detent V′ from the arm U′. The said detent and arm serve to support the chair-seat at any desired inclination when adjusted. The back by being provided with the arms Y′ and the sliding extensible arms C^2 is adapted to be adjusted to any desired length, and may be secured at any desired angle by reason of the pivotal bolt-rods and their clamping-nuts, as hereinbefore described. When the patient is a child, the arms Y′ are first folded down upon the rear side of the chair-seat, and the back board is then adjusted to any desired position upon the chair-seat, as shown in dotted lines in Fig. 2.

Having thus described my invention, I claim—

1. The combination of the base A, having the telescopic nested elevating-screws, the support O, having the arm R swiveled to the upper end of the inner screw, the gear-wheel S, rigidly secured to the upper end of the said inner screw, the platform A′, having the depending spindle Y swiveled in the upper end of the inner screw, the chair-seat supported on the platform, and the crank-shaft journaled to the platform and having the wheel D′ meshing with the wheel S, and the extensible devices connecting the support O to the base, substantially as described.

2. The combination of the base A, having the vertically-slotted guide-plate attached thereto, the telescopic elevating-screws supported on the base, the support swiveled to the upper end of the elevating-screws, and the lazy-tongs connecting the base to the support, having the fulcrum-bolts engaging the slot in the guide-plate, substantially as described.

3. The combination, in a chair, of the elevating-screws, the support O, swiveled to the upper end thereof and having the series of openings T, and the chair-seat swiveled to the upper end of the screw and provided with a detent to engage the openings T, substantially as described.

4. The combination of the base A, having the telescopic elevating-screws, the support O, having the arm R swiveled to the upper end of the inner screw, the platform A′, having the depending spindle Y swiveled in the said inner screw, whereby said platform is adapted to turn on said support, the crank-shaft journaled to the platform and geared to the elevating-screws, the detent T′, secured to the platform, and the chair-seat hinged or pivoted to the platform, adapted to tilt or incline thereon, and provided with the arm U′, adapted to be engaged by the detent, substantially as described.

5. The combination, in a chair, of the foot-board having the longitudinal slot, the rod arranged under the said slot, the foot-rest arranged on the foot-board, and the clip sliding on the rod and attached to the foot-rest, whereby the latter may be longitudinally adjusted on the foot-board, substantially as described.

6. The combination, in a chair, of the foot-board having the longitudinal slot the rod arranged under the said slot and provided with ratchet-teeth on its upper side, the foot-rest arranged on the foot-board and having the depending ear extending through the slot, and provided with a point adapted to engage the teeth of the rod, and the clip sliding on the said rod, and to which the depending ear of the foot rest is pivoted, substantially as described.

7. The combination of the chair-seat having the rearward-extending brackets W′, the arms Y′, pivoted to the said brackets and having the guide-flanges B^2, the arms C^2, having the slots D^2 and fitted against the inner sides of arms Y′, and the rod H^2, extending through the slots D^2 and the arms Y′, and having the clamping-nut and the back pivotally connected to the upper ends of the arms C^2, substantially as described.

8. The combination, with a pair of elevating-screws, the miter-wheel S, attached to the inner screw, the support swiveled to the elevating-screw, the chair-seat attached to the support and having the curved arm projecting from one side, the shaft-sections C′ and E′, journaled to the curved arms and arranged at

an angle to each other therein, the shaft-section C′, having the miter-wheel D′ at its inner end to engage the wheel S, and the flexible coupling G′, connecting the opposing ends of the shaft-sections, substantially as described.

9. The combination, in an operating-chair, of the rod A^3, attached to the back and vertically adjustable thereon, said rod having the ball at its upper end, the head-rest having the ball on its lower side, the sleeve having the sockets in its ends to receive the balls, the cam pivoted in the sleeve, and the clamps arranged in the sleeve between the cam and the balls, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM DUDLEY MAYFIELD.

Witnesses:
A. D. ANSELL,
I. T. MAYFIELD.