No. 650,042. Patented May 22, 1900.

A. L. GILMER.

DENTAL CHAIR.

(Application filed July 26, 1899.)

(No Model.) 2 Sheets—Sheet 1.

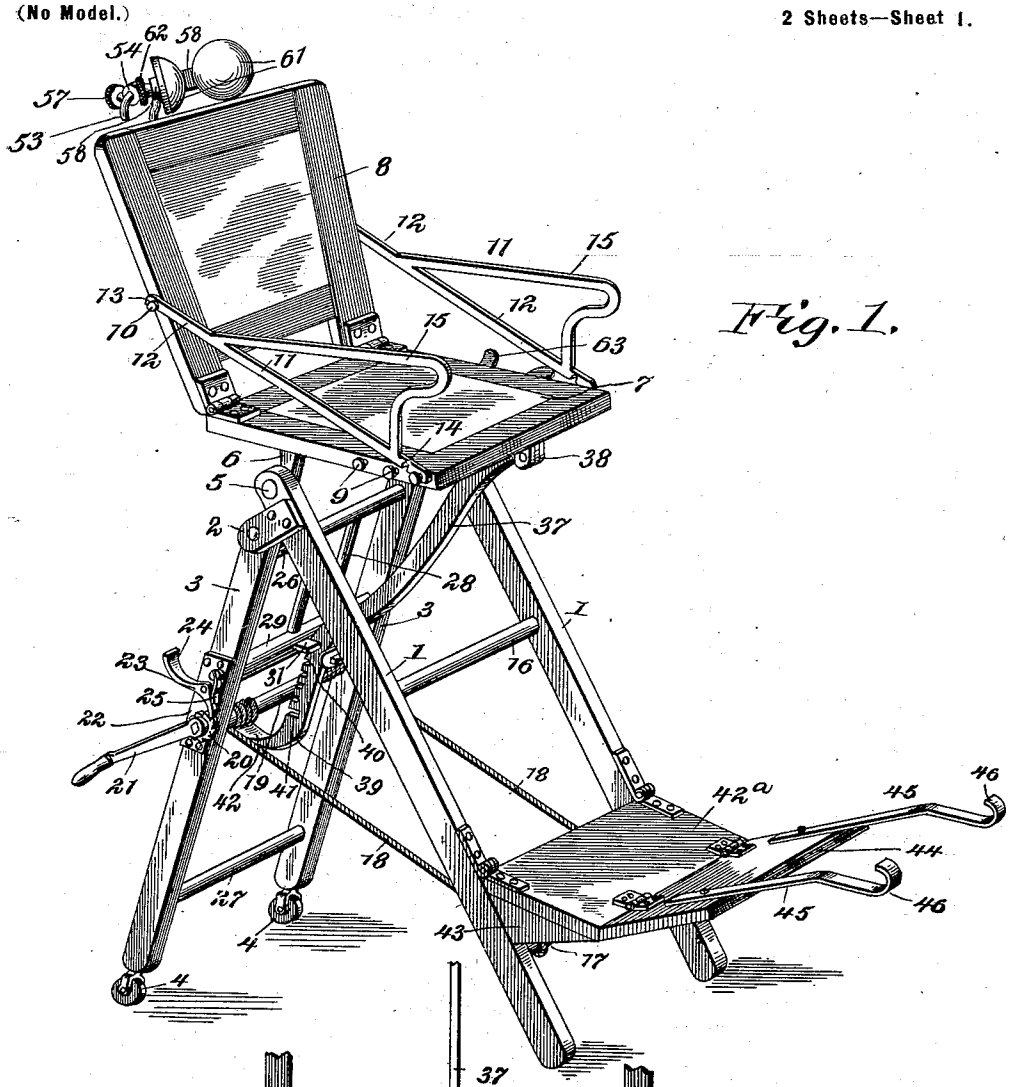


Fig. 1.

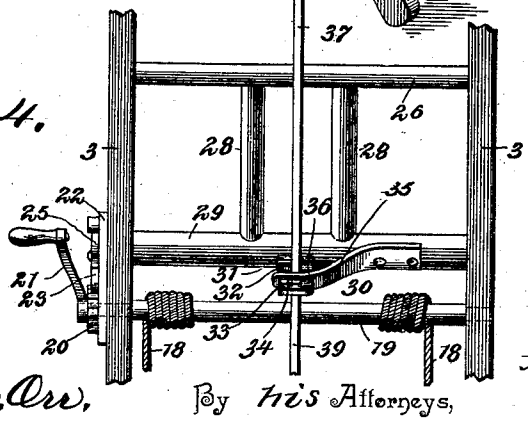


Fig. 4.

Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 2.

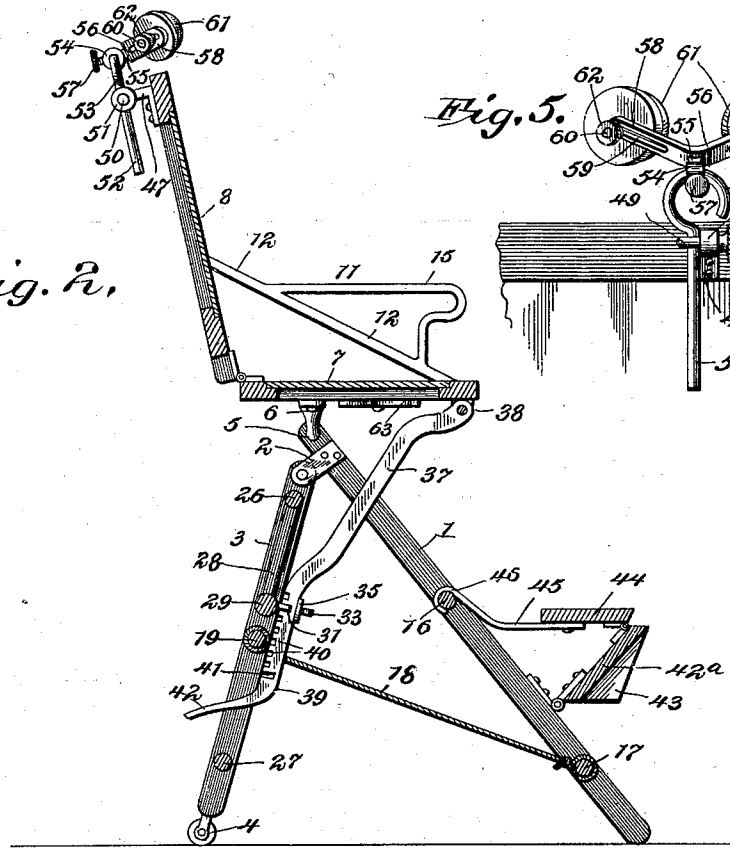
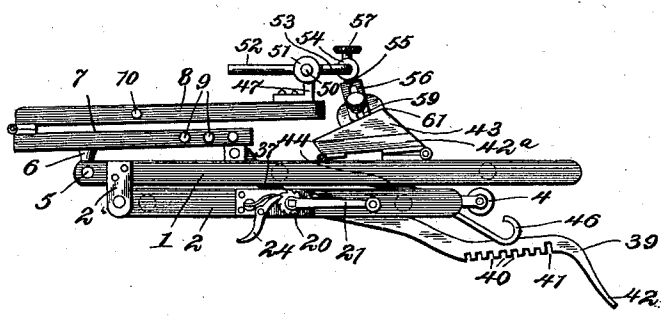


Fig. 5.

Fig. 3.



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UNITED STATES PATENT OFFICE.

ABRAHAM L. GILMER, OF ALAMOSA, COLORADO.

DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 650,042, dated May 22, 1900.

Application filed July 26, 1899. Serial No. 725,188. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM L. GILMER, a citizen of the United States, residing at Alamosa, in the county of Conejos and State of Colorado, have invented a new and useful Dental Chair, of which the following is a specification.

This invention relates to dental chairs; and one object of the same is to provide a device of this character adapted to be folded in compact form for convenience in transportation from one point to another to accommodate an itinerant or traveling dentist or one having a practice extending over a large territory, and particularly in suburban districts, where it is necessary to make residential visits to patients, and for this purpose also to preserve a lightness of structure of a strong and durable nature and hold all the parts intact, so that they may be always ready for arrangement in setting up the chair in operative condition.

Further objects and advantages will appear in the subjoined description, as well as the novel structural features, which will be set forth in the claims, and the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a dental chair embodying the invention and shown in operative position. Fig. 2 is a central longitudinal vertical section of the same. Fig. 3 is an edge elevation or side view of the chair shown folded. Fig. 4 is a detail elevation of a part of the latter. Fig. 5 is a rear elevation of the head-rest attachment.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates front legs having secured thereto adjacent the upper ends ears 2, which are pivotally connected to the upper terminals of rear legs 3, having casters 4 attached to their lower terminals. The legs 1 are longer than the legs 3 and normally stand forward a considerable distance to provide a stable support or balance for the entire device, and by means of adjusting devices in part operable with both pairs of legs, which will be presently described, the vertical elevation of the chair may be varied. The upper terminals of the legs 1 are pivotally mounted on outstanding studs 5, carried by depending brackets 6, fixed to the opposite sides and on the under portion of a seat 7. This seat 7 will preferably have a flat upholstering to avoid obstruction to a close folding of the parts, and to the rear end thereof a back 8 is hinged or otherwise movably connected. From opposite side edges of the seat 7, adjacent the front end, a series of headed studs 9 project outwardly, and at a predetermined point on each side edge of the back 8 a single-headed stud 10 also extends sufficiently to provide a bearing. To the studs 9 and 10 arms 11 are movably and adjustably connected and preferably of skeleton form, comprising main connecting-bars 12, having single transverse slots 13 near the rear terminals, in the lower edges thereof, and two or more slots 14 adjacent the front terminals. Angular rests or gripping extensions 15 are supported by the bars 12 and so disposed that when the said bars are applied to the seat and back the upper edges will stand in a horizontal plane, or nearly so. The slots 13 are fitted over the headed studs 10 on the back 8, and the slots 14 are intended to receive the shanks of the studs 9, the change of attachment of the front terminals of the bars 12 being made in accordance with the angle of the back 8, and when folded the arms 11 hang down from the studs 10, being first disconnected from the studs 9, and thus avoid interference with the folding of the back on the seat. The said arms 11 hold the back 8 at the angle of adjustment desired relatively to the seat 7, and the pressure against the back while the seat is occupied will prevent accidental disconnection of the said arms.

The legs 1 are braced and held in parallel relation by upper and lower rounds 16 and 17, and to the lower round 17 the front ends of a pair of adjusting ropes, cables, or analogous devices 18 are attached and extend rearward to a winding-rod 19, rotatably mounted in the rear legs 3. The outer end of the rod 19 at one side has a ratchet-wheel 20 fixed thereon and also a crank-handle 21. The end of the rod having the ratchet-wheel 20 thereon extends through a metallic plate 22 on the exterior side of the legs 3, giving bearing to the said rod at this point, and pivotally connected to the said plate is a pawl 23, having a

nose to fit the teeth of the ratchet-wheel 20 and also provided with a rear projection 24 to form means for releasing the pawl from the teeth of the ratchet and against the resistance of a spring 25, which holds the nose of the pawl normally engaged with the ratchet-wheel. By winding the ropes, cables, or other devices 18 on the rod 19 the legs 1 are drawn nearer toward the legs 3 and the seat 7 is correspondingly elevated, as well as the remaining parts in connection therewith. By releasing the pawl 23 from the ratchet-wheel 20 the ropes, cables, or other devices 18 may be equally unwound from the rod 19 and the legs 1 spread apart a greater distance from the legs 3, and thereby lower the seat 7 and other parts in connection therewith. This adjustment is very advantageous in raising or lowering the patient occupying the chair to accommodate particular operations or variations in the stature or size of both patient and operator. The legs 3 are also rigidly braced and held in parallel relation by upper and lower rounds 26 and 27, the round 26 having a pair of spaced intermediate rounds 28 extending therefrom and to an enlarged transverse support 29, also having its opposite ends fixed to the legs 3. To the support 29 a retainer 30 is secured and comprises a forwardly-projecting keeper 31, having a slot 32 opening out one side thereof, and thereby forming an outer hook 33. The inner edge of the hook 33, adjacent the terminal thereof, is recessed, as at 34, to provide a limiting-stop for the free end of a plate-spring 35, secured to an adjacent portion of the support 29. The free end of the spring 35 is formed with a slot 36, which extends longitudinally of the spring and is fitted over the hook 33, said slot being of less length than the distance between the unbroken edge of the keeper 31 and the free end of the said hook to prevent the spring from becoming disconnected from the keeper. Therefore it will be understood that the spring is applied to the keeper before it is secured to the support 29, and the terminal of the slot 36 nearest the free end of the hook 33 bears against the limiting-stop provided by the recess 34 when said spring is projected outwardly and is thus braced in its operation. The retainer 30 coöperates with and serves as a lock for an adjustable tilting bar 37, having its upper end pivotally attached to about the center of the lower front end portion of the seat 7, as at 38. From the point of its attachment to the seat 7 the tilting bar is of such longitudinal contour as to extend rearward toward the support 29 and has an intermediate straight locking portion 39, with a series of notches or slots 40 in the rear edge, the lowermost one 41 being deeper than those above. The unattached rear extremity 42 of the said tilting bar is flattened and extended rearwardly between the legs 3 to provide a foot-tread or pressure-surface for operating the bar and changing its adjustment. The straight portion 39 of the bar is movable through the keeper 31, and the notches or slots 40 are adapted to fit over the rear wall of the slot 32 and hold the tilting bar in adjusted position, separation of the bar from the wall set forth being prevented by the pressure of the spring 35 against the front edge of said bar. The bar 37 has a slight lateral play in view of its length, and by making the pivotal connection to the seat 7 thereof slightly loose and in folding the parts of the chair it is necessary to detach or disengage said bar from the keeper 31, and to accomplish this the said bar is elevated until the lower notch or slot 41 is in line with the parts of the keeper, which permits a clearance by reason of the fact that the length of the said lower notch or slot is greater than the distance between the plane of the free end of the spring and the rear portion of the keeper, and by this means the spring will remain undisturbed at all times relatively to the said keeper, but the bar 37 can be quickly detached from or rearranged in the retainer.

To the lower portions of the legs 1 a foot-rest 42^a is hinged or pivotally connected, and to the under side, adjacent opposite ends, angular supports 43 are fastened to bear against the adjacent edges of the said legs and hold the foot-rest at a proper angle. This foot-rest will be applied to the legs 1 at such a point that persons of average stature or even greater can be comfortably accommodated. It is necessary also to make provision for operating upon children or persons of small stature, and consequently an auxiliary rest 44 is hinged to the outer edge of the rest 42^a and normally supported at an upward angle to the latter, as shown by Fig. 1. When in this position, the said auxiliary rest may be utilized as a foot-brace for the patient; but when the rest as an entirety must be drawn nearer to the seat 7 the rest 42^a is drawn upwardly, as shown by Fig. 2, and the auxiliary rest 44 thrown over, the parts being held in this position by means of arms 45, having hooked ends 46 removably fitted over the round 16. In this latter arrangement the under side of the auxiliary rest 44 as shown arranged in Fig. 1 becomes the support for the feet of the patient, and without the use of cumbersome or complex foot-rest-adjusting attachments means are thus provided for adding comfort to the patient occupying the chair and also to assist the operator. The parts of the foot-rest closely fold when the remaining members of the chair are folded, the distance between the outer edges of the arms 45 being less than the distance between the legs 1 to allow said arms to be passed between the legs and avoid objectionable exterior projections.

An adjustable head-rest is supported by the upper central portion of the back 8 and comprises an angle-support 47, fastened to the back and carrying an eye 48, which is in a plane parallel with the securing member of the said angle-support. This positions the

opening through the eye 48 in a transverse direction, and therein is mounted an eyebolt 49, having the screw-shank 50 thereof supplied with a clamping nut or collar 51. The eye member of the eyebolt 49 is larger than the eye 48, carried by the angle-support 47. By this is meant that the said eye member of the eyebolt is of greater dimension than the opening of the said eye 48, so that a firm clamping may be effected between the said parts. Adjustably mounted in the eyebolt is the straight shank 52 of a head-rest rod having an upper curved terminal 53, on which is adjustably fitted a collar 54, provided with a lug extension 55, connected to the central bowed portion of a yoke 56. The said collar 54 can be easily moved on the curved terminal 53 in opposite directions within certain limitations, and thus change the angle of the yoke 56. To sustain the angle of adjustment of the yoke 56 through the movement of the collar 54 on the terminal 53, a set-screw 57 is mounted in said collar and adapted to bind against the said terminal. The opposite arms 58 of the yoke 56 are provided with longitudinal slots 59 adjacent their free ends to adjustably receive the center pins or studs 60 of cushions 61, said center pins or studs 60 being screw-threaded and receive nuts or analogous clamping devices 62. The said cushions 61 are circular in form, as shown, but their contour can be varied and are also suitably upholstered. The cushions 61 form a rest for the head of the patient and are adjustable to and from each other to conform to the contour of the back of the head or to prop and hold the head in a position most convenient for the operator. Through the adjustment of the yoke 56 on the terminal 53 the angle of the head of the patient can be regulated, and, furthermore, by moving the shank 52 vertically in the eye member of the eyebolt 49 by first loosening the clamping nut or collar 51 the elevation of the cushions above the top edge of the back 8 can be conveniently regulated. After the adjustment of the shank 52 has been obtained and as desired the clamping nut or collar 51 is tightened against the eye 48, thus drawing the eye member of the eyebolt 49 closely against the opposite side of the said eye 48 and clamping the adjacent portion of the shank above and below the eye member of the eyebolt and effecting a rigid securement.

In folding the chair and arranging it as shown by Fig. 3 the legs 1 and 3 are drawn together, the arms 11 detached at their front ends, the back 8 folded down on the seat 7, and said back and seat then swung forward on the legs 1, all of which is permitted after the bar 37 is first disconnected from the retainer 30, and finally the rests 42^a and 44 are also folded over on the legs 1. The legs 1 and 3 are held closely together by winding the ropes, cables, or other devices 18 on the rod 19, and the remaining folded portions may be held closely against adjacent parts by a suitable binding or other means. In this folded form the chair can be easily carried from one place to another either manually or be temporarily stored in a part of a vehicle. When the back and seat are folded down on the legs 1, it is preferred that the foot-rest 42^a and the auxiliary rest 44 will have been first brought up against the said legs, so that the under side of the said rest 42^a will stand outermost and provide a receptacle for the cushions 61 of the head-rest through the medium of the supports 43 at the opposite under end portions of the said rest 42^a. In rearranging the chair for use the parts can be quickly adjusted and the tilting bar 37 connected up to the retainer 30.

The attachments usually employed in connection with dental chairs for holding extraneous devices can be applied at will, and as an evidence of this a cuspidor-holder 63 is movably attached to one side of the seat 7 and comprises a fork, into which a cuspidor may be easily inserted and readily withdrawn. When the said cuspidor-holder 63 is not in use or at the time that the chair is folded, it can be pushed under the seat 7 and out of the way.

Many advantages will appear from time to time to those using the device, and it is obviously apparent that changes in the proportions, size, and minor details can be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new is—

1. In a dental chair, the combination of front and rear pairs of legs attached to each other, a seat mounted on a portion of the legs, and having a back, a foot-rest movably attached to the front legs, and an auxiliary member pivotally connected to and adapted to be turned over on said foot-rest, having devices for connecting the same with a part of the front legs.

2. In a dental chair, the combination of a seat having a back, front and rear pairs of legs, to which the said seat is attached, and a foot-rest hinged to the front legs and having an auxiliary adjustable member provided with hook-arms adapted to be connected to the said front legs.

3. In a dental chair of the character set forth, the combination of front and rear pairs of legs pivotally connected, a seat movably attached to the front pair of legs and having a back, means for adjusting the legs toward each other, a retainer on the rear pair of legs, and a tilting bar pivotally connected to the seat and adjustable in and removable from the said retainer.

4. In a dental chair of the character set forth, the combination of front and rear pairs of legs pivotally attached to each other, a seat adjustably supported by one pair of said legs solely, the said legs being movable toward or away from each other, to vary the elevation of said seat, a back movably attached

to the seat, and means for tilting the seat, extending from the front of the latter and engaging with the rear pair of legs only.

5. In a dental chair of the character set forth, the combination of front and rear pairs of legs movably attached to each other, a seat movably supported by a pair of said legs, a keeper projecting from the remaining portion of the said legs and having a slot in one side, a spring extending across and fitting over a portion of the keeper, and a tilting bar having its upper end pivotally attached to the seat and a portion thereof movable through the keeper, said portion of the tilting bar movable through the keeper having notches or slots in the rear edge, the lowermost one of which is deeper than those above.

6. In a dental chair of the character set forth, the combination of front and rear pairs of legs pivotally connected to each other, a seat movably attached to the front pair of legs and having a back, a keeper projecting forwardly from the rear pair of legs, a spring applied over a part of the said keeper, and a tilting bar movably connected to the said seat and having a portion vertically shiftable through the keeper against the resistance of the said spring.

7. In a dental chair of the character set forth, the combination of front and rear pairs of legs pivotally secured to each other in adjustable relation, a seat movably attached to the front pair of legs and having a back adjustably connected thereto, a tilting device connected to the seat, and a retainer supported by one pair of legs, the said tilting device being adjustable in and detachable from the retainer, whereby all the parts may be closely folded in compact form.

8. In a dental chair of the character set forth, the combination of a front pair of legs, a rear pair of legs pivotally connected to the front pair of legs, a seat movably supported by and above the front pair of legs and adapted to be held in tilted adjustment, a back movably attached to the said seat, the back being foldable on the seat and the two latter parts movable down over the front legs and bear on the latter, a foot-rest foldably mounted on the front legs, and means for holding the legs in close contact when folded.

9. In a dental chair of the character set forth, the combination of front legs, rear legs pivotally attached thereto, a seat, a foot-rest movably connected to the front legs and having an auxiliary hinged to the outer edge thereof, and provided with hooked arms adapted to be connected to a portion of the legs to thereby hold the auxiliary in position for use as a rest.

10. In a dental chair of the character set forth, the combination of front legs, rear legs pivotally attached thereto, a seat movably and solely connected to the upper extremities of the front legs and having a back, means for giving the seat an independent angular adjustment, a winding-rod mounted in the rear legs, and a flexible winding device extending from opposite portions of the said winding-rod to the front legs, whereby the said legs may be adjusted to vary the elevation of the seat.

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

ABRAHAM L. GILMER.

Witnesses:
M. BRUMBLY,
F. J. BRUMBLY.