No. 858,193. PATENTED JUNE 25, 1907.

L. L. MALLARD.

DENTAL CHAIR.

APPLICATION FILED JAN. 23, 1906.

3 SHEETS—SHEET 1.

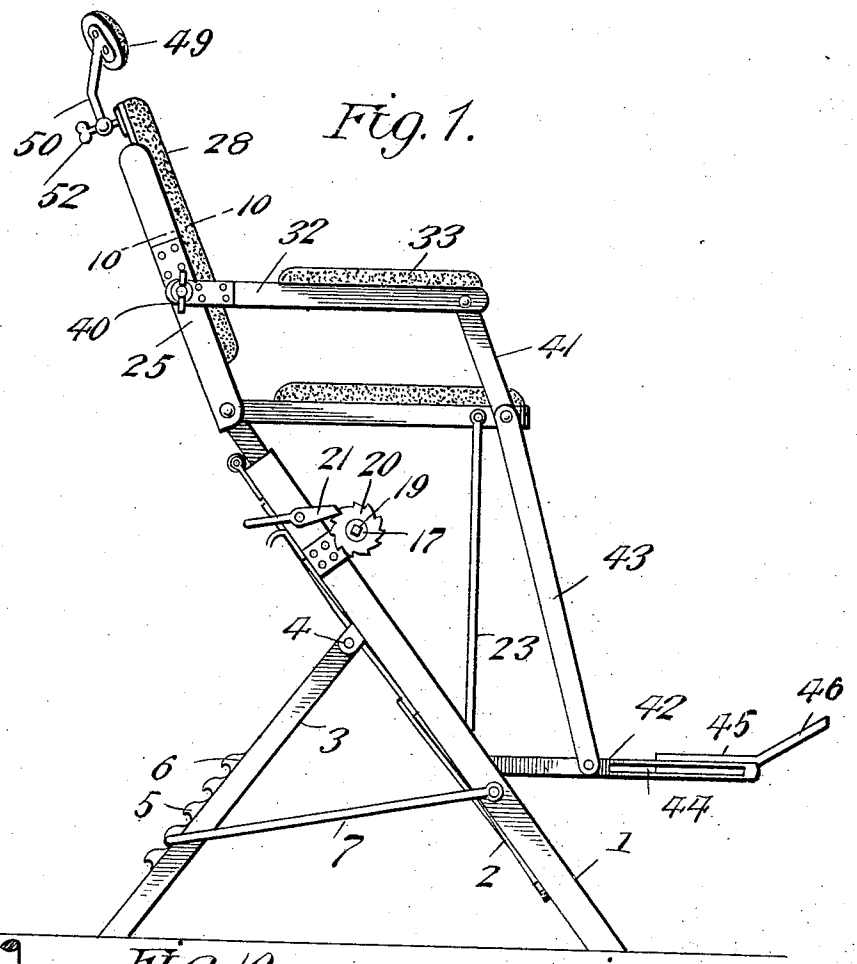


Fig. 1.

Fig. 10.

Fig. 9

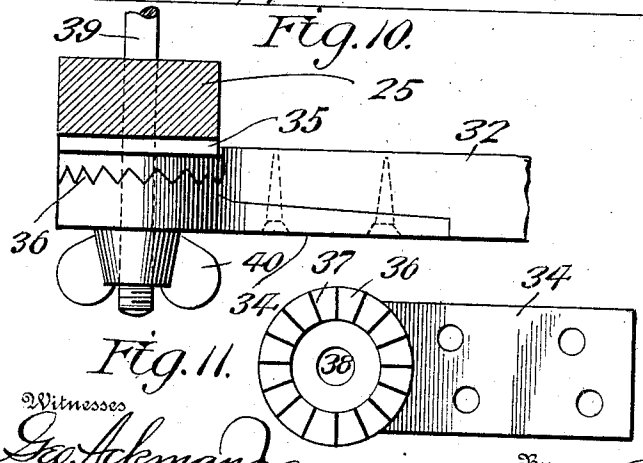
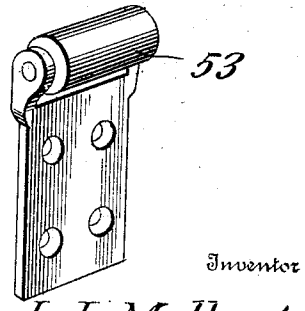


Fig. 11.



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3 SHEETS—SHEET 2.

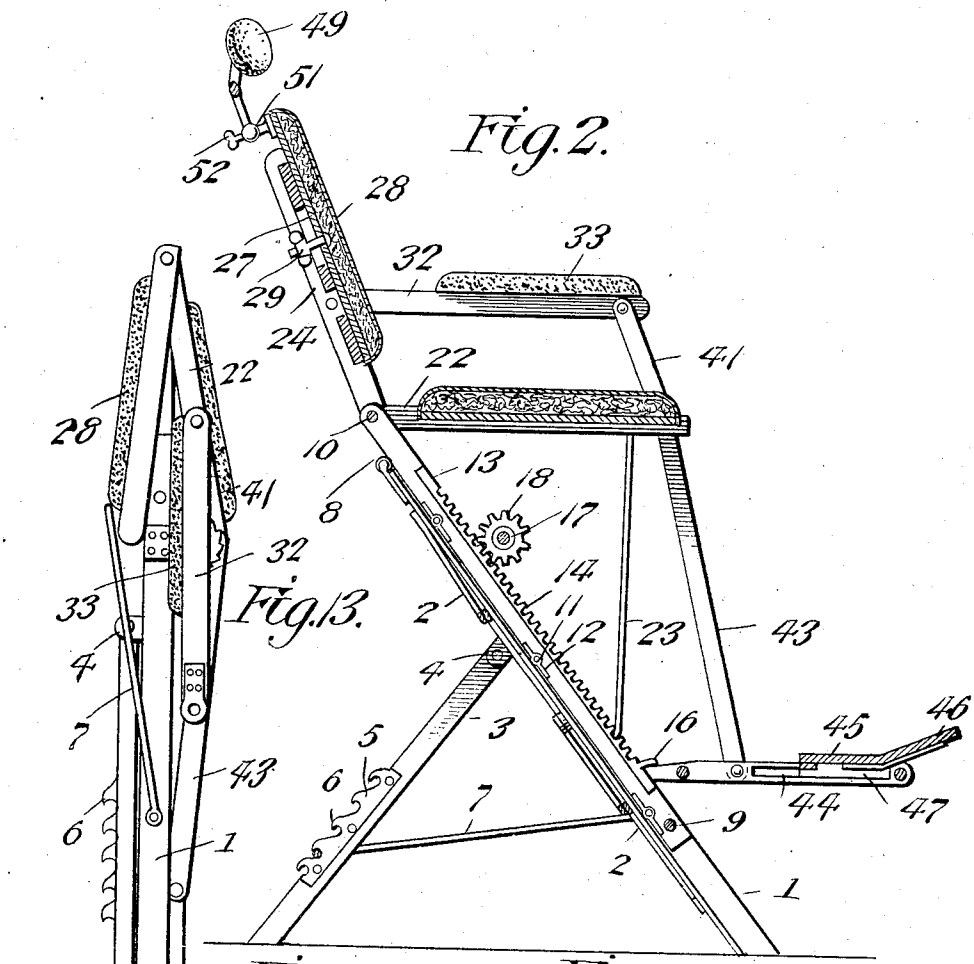


Fig. 2.

Fig. 13.

Fig. 12.

Fig. 8.

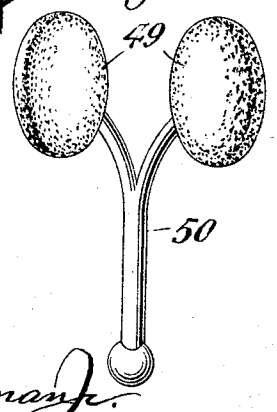
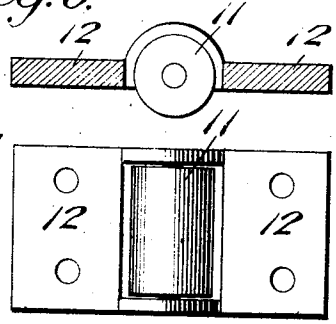


Fig. 7.



Witnesses

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3 SHEETS—SHEET 3.

Fig. 3.

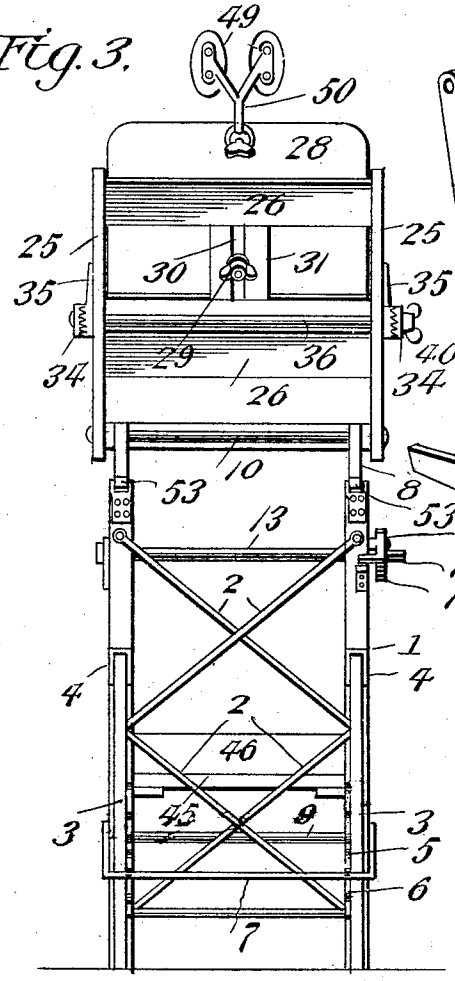


Fig. 4.

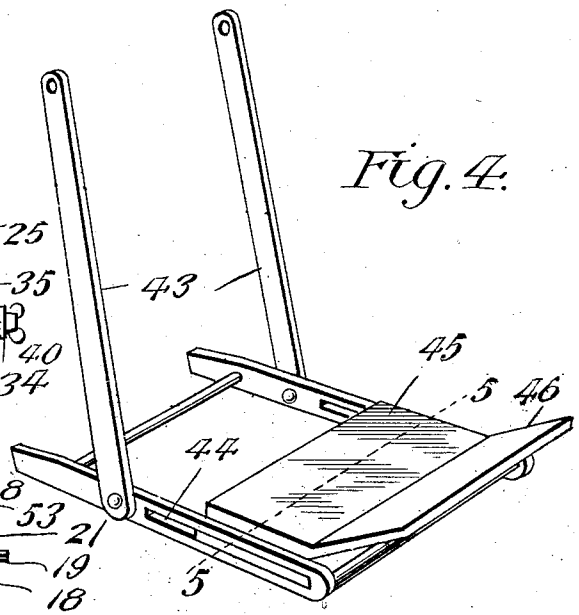


Fig. 5.

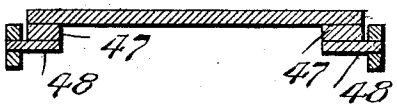


Fig. 6.



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UNITED STATES PATENT OFFICE.

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DENTAL CHAIR.

No. 858,193. Specification of Letters Patent. Patented June 25, 1907.

Application filed January 23, 1906. Serial No. 297,484.

To all whom it may concern:

Be it known that I, LOGAN L. MALLARD, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented new and useful Improvements in Dental Chairs, of which the following is a specification.

The invention relates to an improvement in dental chairs, and particularly to a chair so constructed as to provide for the ready independent adjustment of its various parts.

The main object of the invention resides in the production of a chair of the class described in which the seat, back, foot rest and head rest may be independently adjustable to enable the operator to arrange the parts of the chair in the relative positions desired; the construction providing further for the ready elevation of the seat and connected parts to arrange the chair at varying heights.

A further object of the invention is to so simplify the construction as to provide a chair of practically skeleton form, without sacrificing strength or durability, whereby the chair is rendered comparatively light and readily handled by the operator as desired.

The invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a view in side elevation of a chair constructed in accordance with my invention, Fig. 2 is a vertical central section of the same, Fig. 3 is a rear elevation of the same, Fig. 4 is a perspective view of the foot rest, Fig. 5 is a section of the same on line 5—5 of Fig. 4, Fig. 6 is a plan view of one of the slide bars for supporting the movable parts of the chair, Fig. 7 is a plan of one of the bearing rollers for the slide bar, Fig. 8 is a longitudinal central section of the same, Fig. 9 is a perspective of one of the bearing rollers carried by the chair leg, Fig. 10 is an enlarged broken sectional view taken on the line 10—10 of Fig. 1, Fig. 11 is a plan of one of the clutch plates for locking the back in adjusted position relative to the seat. Fig. 12 is a front elevation of the head rest. Fig. 13 is a side elevation showing the chair in folded condition.

Referring particularly to the drawings my improved chair comprises legs 1, constructed of ordinary angle iron, and connected by a series of transversely arranged inclined braces 2, whereby the legs are tied in spaced parallel relation with the opening of the angle iron of each leg arranged on the inner side, that is toward the opposite leg. Brace legs 3 are pivotally connected at 4 to the main legs, on the inner side of which brace legs, near their lower ends are secured plates 5, formed with a series of regularly arranged hooks or projections 6 opening downward, and extending beyond the rear edge of the brace leg. A tie link 7 preferably of ordinary U-shape is pivotally connected at the terminals of its arms to the respective main legs, the cross bar of the link extending in rear of the brace legs and being of a size to engage either of the hooks 6, whereby the angular relation of the brace legs relative to the main legs may be adjusted to provide the desired incline of the main legs.

The movable parts of the chair, that is the seat, back and foot rest, are designed to be supported solely by slide bars 8, preferably rectangular bars of any desired material and of a size to fit within the opening of the angle iron. These slide bars, one for each main leg are maintained in spaced parallel relation by cross rods 9 and 10 secured at opposite ends of the slide bars, the latter forming the pivotal support for the seat and back, as hereinafter described. The rods are of such length and so secured to the slide bars as to slidably support the latter within the opening of the angle irons of the main legs, whereby said angle irons form the guideway or track for the slide bars in operation. To reduce the friction between the slide bars and angle iron to the minimum I provide the lowest or contacting surface of the slide bars with a series of bearing rollers 11 revolubly supported in a plate 12 adapted to be secured to the slide bar, the rollers being so positioned relative to the plate as to cause the slide bars to be supported from and guided in movement by said rollers contacting with the cooperating surface of the angle iron of the main legs.

The upper surface of each of the slide bars is provided with a rack plate 13 formed practically throughout its length with a series of regularly arranged teeth 14, the rack bar resting upon the surface of the slide bar and being preferably formed with a series of perforate projecting ears 15 through which screws or other fastening medium may be entered to engage the slide bar. Adjacent the lower end each rack bar is formed with

an elongated tooth or projection 16 for a purpose hereinafter described. The slide bars are moved relative to the main legs through the medium of a shaft 17 supported from the main legs and slightly above the slide bars. The shaft is provided near each end, or in alinement with each leg, with a cog pinion 18, of such size and so arranged as to cause engagement between the teeth thereof and the teeth of the adjacent rack bar. The shaft 17 extends in one direction beyond the outer edge of the adjacent main leg, and is squared as at 19 to receive a suitable crank handle or the like, whereby to manually operate the shaft and thereby move the slide bars. The operating parts are held in adjusted position through the medium of a ratchet 20 secured upon the shaft 17 adjacent the squared end thereof, a pawl 21 arranged for suitable manual operation being pivotally supported on the main leg to engage the ratchet and lock the shaft against independent revolution in one direction.

Pivotally supported upon the cross rod 10 connecting the upper ends of the slide bars is the seat 22, which may be of any shape and upholstered or plain as desired. The outer or free end of the seat is supported through the medium of depending rods 23, arranged near the side and forward edges of the seat, with their lower free ends designed for engagement with one or the other of the teeth 14 of the rack bars. The back 24 of the seat also of any desired shape and finish is pivotally supported upon the cross rod 10. While contemplating a back of any desired shape I prefer that the same be of skeleton formation including side plates 25 and cross strips 26, the side plates extending forward beyond the plane of the cross strip to provide side flanges or guides. Between these guides is mounted the back proper, comprising a plate 27 carrying a suitable cushion 28, the plate being rendered adjustable relative to the back frame by a thumb screw 29, the rod of which passes through a vertically arranged slot 30 formed in a strip 31 arranged centrally of the back plane and joining the cross strips 26, it being understood that in clamping the back cushion in desired relation to the back frame the thumb nut is designed to bind on the edges of the slot 30 and draw the plate 27 into frictional contact with the cross strips.

At an appropriate point longitudinally of the back frame I arrange arms 32, which extend forward in parallel relation to the seat and may if preferred be provided with arm cushions 33. The ends of the arms are connected to the back by independent locking means, illustrated particularly in Figs. 10 and 11 and comprising two plates 34—35 secured respectively to the arm and to the side plate of the back frame. Each plate is provided with a disk-shaped end 36, formed with a peripheral and annular series of corrugation or teeth 37 and with a central opening 38 to receive a pivot rod 39. The teeth 37 of the respective plates 34—35 are designed to cooperate, the pivot rod extending beyond the plate 34 and being threaded to receive a thumb nut 40, whereby the teeth 37 of the respective plates may be forced into co-operative locking engagement to secure the back and arm in relatively fixed relation. By loosening the thumb nut 40 the binding engagement of the respective teeth is freed to permit the independent adjustment of the arm and back frame as desired. By preference the pivot rod 39 extends the full transverse width of the back frame, forming the pivot rod for each of the arm securing means, thus necessitating the use of but a single rod and materially bracing the back frame. The forward ends of the arms are connected by supporting links 41 with the adjacent ends of the seat, each end of the links, of course, being pivotally connected to the particular adjacent part.

42 represents the foot rest supported from the free or forward edge of the seat by strips or hangers 43, the lower ends of which are connected with a foot rest intermediate the ends thereof. The foot rest is preferably of skeleton form and comprises side bars held in proper relative relation by cross rods, the forward ends of each of the side bars being longitudinally slotted at 44. The foot rest proper comprises a plate 45 having a forwardly upwardly inclined end 46, the plate being of a width approximate the width between the side bars of the foot rest frame. On the lower side and adjacent the side edges of the plate are arranged cleats 47, extending longitudinally of the plate and supporting guide strips 48, which extend beyond the edges of the cleats and are adapted to seat within the slots 44, whereby the foot rest proper may be moved longitudinally of the frame to the desired position. The rear ends of the side bars of the foot rest frames are adapted, when the foot rest has been turned down into operative position, to each engage beneath the adjacent enlarged tooth 16 of the rack bar, and the head rest, comprising the usual spaced and relatively inclined pads 49 supported from a central standard 50, is adapted for adjustable connection with the back proper of the chair through the medium of a ball and socket locking connection 51 controlled through the medium of a set screw 52, all of which parts are usual in structures of this character.

In operation the seat 22 may be inclined relative to the main legs by causing the foot rods 23 to engage the appropriate teeth of the rack bars, while the back may be adjusted relative to the seat and to the legs through operation of the locking connection between the plates 34—35 as previously described. The seat, foot rest and back may be elevated

to the desired extent relative to the main legs by operation of the shaft 17 in the proper direction, causing the cog pinions to force the legs and thereby the slide bars longitudinally of the legs.

It is readily apparent from the above described construction that the respective parts of the chair may be readily folded into a small compass when desired, as each part has pivotal connection with its supporting element and is adapted for movement relative to said element to permit the necessary folding.

In order to support and guide the slide bar in upper extended position, I prefer to secure to the main leg a roller bracket 53, comprising a roller and a plate adapted to be bolted or otherwise secured to the under side of the main leg with the roller in position to receive and support the slide bar.

It is to be noted that owing to the pivotal connections between the various parts of the chair as described, the structure as a whole is readily adapted for folding in a comparatively small compass, as shown in Fig. 13.

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

1. A dental chair comprising main legs, slide bars movably mounted in the legs, means for adjusting the slide bars relative to the legs, a seat pivotally connected to the slide bar, a foot rest connected to and supported solely by the seat, and a projection formed on each slide bar beneath which the rear end of the foot rest is adapted to be removably engaged, whereby to prevent a forward tilting of said foot rest when in operative position.

2. A dental chair comprising main legs, slide bars movably mounted in the legs, means for adjusting the slide bars relative to the legs, a seat pivotally connected to the slide bar, a foot rest connected to and supported solely by the seat, and a projection formed on each slide bar beneath which the rear end of the foot rest is adapted to be removably engaged, whereby to prevent a forward tilting of said foot rest when in operative position, a portion of said foot rest being slidably mounted relative to the remaining portion to provide for adjustment of the foot rest to and from the slide bars.

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

LOGAN L. MALLARD.

Witnesses:
H. S. BROZZELL,
L. S. BULLARD.