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1,686,631

A. J. MAY

HEADREST

Filed May 18, 1923

2 Sheets-Sheet 1

Fig. 1

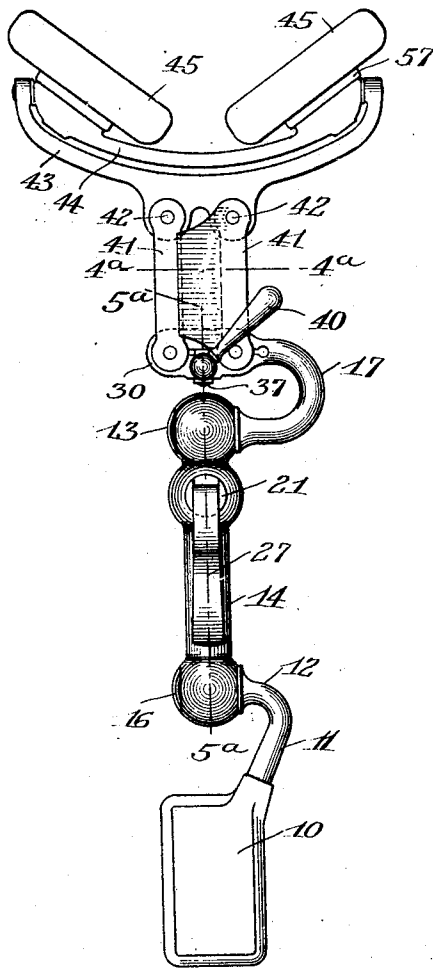


Fig. 2

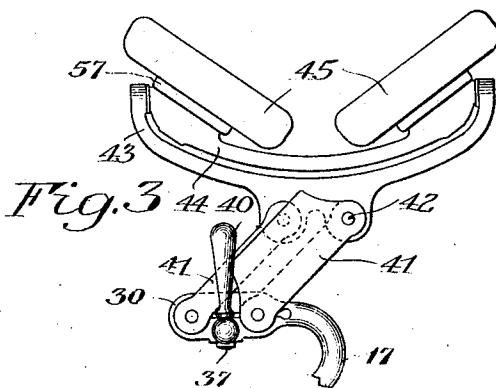
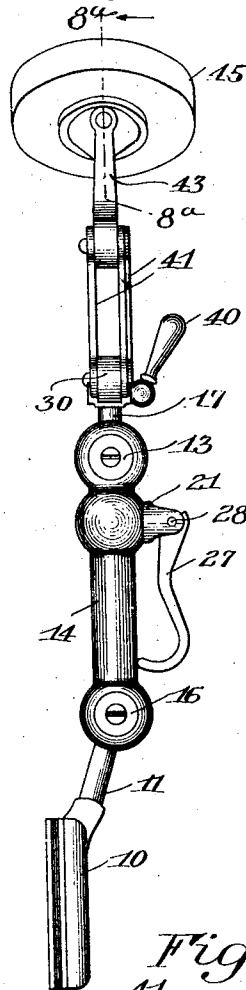
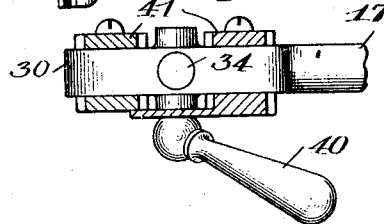


Fig. 4



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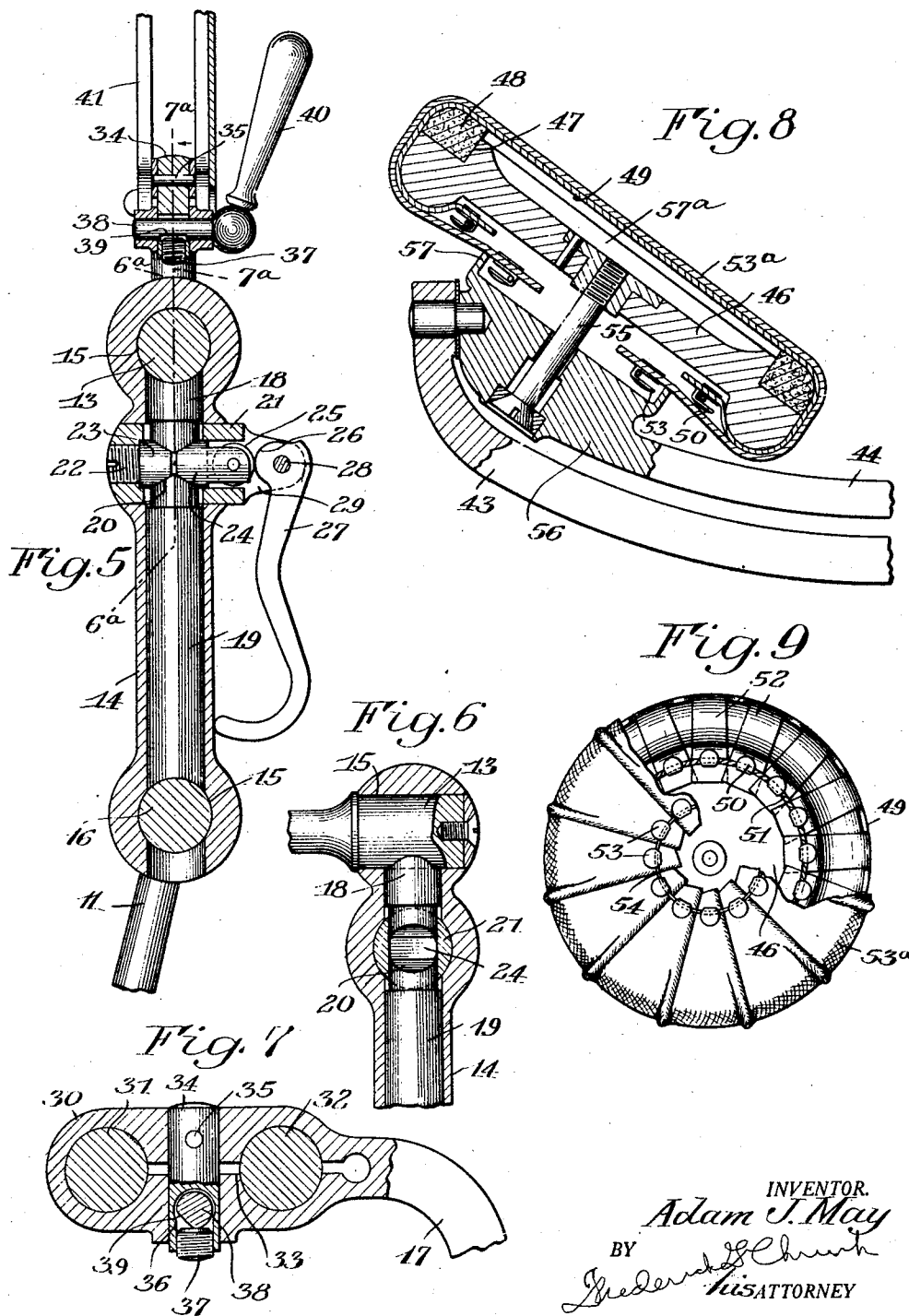
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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HEADREST.

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This invention relates to head-rests of the variety adapted, for example, for use with chairs or other articles of furniture, and more particularly with dentists' chairs for supporting the head of the patient during an operation, one object of the invention being to provide a practical and efficient head-rest capable of being quickly and conveniently adjusted through a wide range of different positions and securely clamped in such positions. Another object is the provision of such a head-rest with an advantageous supporting pad having a form of construction which is simple in character, comprising but a few parts, which forms a comfortable and effective support for the head of the patient, and which may be easily disassembled for the purpose of replacing the covering or other part.

To these and other ends the invention resides in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a rear elevation of a head-rest embodying the present invention.

Fig. 2 is a side elevation;

Fig. 3 is a view of parts shown in Fig. 1 unclamped and adjusted to a different position;

Fig. 4 is a sectional view on the line 4^a—4^a in Fig. 1;

Fig. 5 is a sectional elevation on the line 5^a—5^a in Fig. 1;

Fig. 6 is a sectional view on line 6^a—6^a in Fig. 5;

Fig. 7 is a sectional view on the line 7^a—7^a in Fig. 5;

Fig. 8 is a sectional view on line 8^a—8^a in Fig. 2, showing the details of construction of the head pad and its mounting, and

Fig. 9 is a view of the rear side of the head pad, detached and partly broken away.

Similar reference numerals throughout the several views indicate the same parts.

The embodiment of the invention at present preferred, and herein disclosed by way of illustration of the principles involved, comprises a form of head rest particularly suitable for use with a dentist's chair, having a supporting means or brackets adapted for attachment to the back of a chair, with parts adjustably connected with the bracket and

with each other for flexibly supporting the pad so that the latter may be easily adjusted to the various different positions required in use. The supporting bracket is indicated at 10, Fig. 1, as comprising a substantially plate like body portion adapted for attachment by any suitable means to an article of furniture, with an upwardly extending arm 11, curved horizontally as at 12 and terminating in a journal portion 16, Figs. 1 and 5.

Adjustably supported on bracket 10 is a columnar or tubular member 14 having a longitudinally extending bore as shown in Fig. 5, with a transverse bearing opening 15 at each end communicating with the longitudinal bore. The lower bearing 15 receives the bracket journal 13 so that member 14 is pivotally supported on the latter for movement in the present instance toward and from the chair. The upper bearing opening 15 of member 14 receives the journal 13 of a substantially U-shaped part or arm 17 more particularly described hereafter which is thus supported on the upper end of member 14 for pivotal movement toward and from the chair. The axes of the pivotal connections described above, between member 14, arm 17 and bracket 10, thus lie in a common plane. Arm 17 thus has a pivotal movement on member 14 toward and from the chair and also a body movement with member 14 in the same direction on bracket 10 thereby providing a wide range of adjustability for the head pad in this direction or plane, and effective means are provided for clamping these parts in position after adjustment.

In the bore of member 14 are arranged aligned thrust elements, or rods 18 and 19, sliding longitudinally in end to end relation in the bore as shown in Fig. 5. The outer ends of these elements extend adjacent the journals 13 and 16 of the arm and bracket, respectively, for clamping engagement with the latter when the elements are forced apart in opposite directions by clamping means described hereafter. The outer ends of the elements are curved concavely as shown to conform with the surfaces of the journals, while their contiguous inner ends are preferably V shaped to provide inclined cam surfaces.

The clamping means for the connections of member 14 comprises preferably a hollow substantially cylindrical member 21, Fig. 5.

slidably carried in a transverse opening in member 14 adjacent the contiguous ends of the thrust elements. Member 21 carries at one end a threaded plunger 22 having a wedge shaped inner end 23 projecting between the ends of the thrust elements, the plunger 22 being thus adjustable toward and from the thrust elements by means of its threaded connection with member 21. The opposite end of member 21 carries a similar wedge shaped plunger 24 sliding in the bore of member 21 toward and from the ends of the thrust elements for cooperation with the inclined cam surfaces of the latter to thrust the elements apart and their outer ends into clamping engagement with the journals 13 and 16 as described. The wedge means or plunger 24 is preferably provided with a friction reducing roller 25 at its outer end with which cooperates an eccentric cam profile 26 on a manipulative means or handpiece 27 pivoted as at 28 between spaced ear 29 of member 21. In the position of these parts in Fig. 5, handpiece 27 is in clamping position with the wedging means forcing the elements 18 and 19 apart into clamping co-operation with the pivotal connections of member 14. When the handle 27 is swung upwardly however the wedges are released by reason of the shape of the handle cam 26, so that in this position the thrust elements are released and the parts unclamped for adjustment, it being understood, of course that the movement of these thrust elements may be made very small to accomplish the desired result.

Means are also provided for adjusting the head pad or pads to different positions substantially parallel with the common plane of the axis of the pivotal connections of member 14, or in other words with the back of the chair, comprising preferably a parallel motion linkage between the mounting for the head pads hereafter described and the arm 17. To this end the latter preferably has a horizontally extending upper end 30, Figs. 1 and 7, in which are formed spaced bearings for the journals 31 and 32 carried by the lower ends of the links which support the pad mounting. This end of arm 17 is preferably slotted or split as at 33, Fig. 7, to provide for enlargement and contraction of these bearings for releasing and clamping the journals as well understood in the art. The arm end 30 has inserted in an opening therein extending through both of its halves a plug 34 fixed to the arm at one side of the journal bearings as by means of a pin 35. The other end of plug 34 is chambered longitudinally and transversely as at 36 to receive in its end a threaded adjustable stop 37 and above the latter a transversely extending spindle 38 rotatably supported at its ends in bearings in the arm end 30 on the opposite side of the bearings for the journals 31 and 32. Spindle 38 is slabbed off as at 39

opposite the stop 37 and is rotated in its bearings by means of a handle 40. It is apparent from this construction that when spindle 38 is rotated by means of handle 40 to the position shown in Fig. 7, its portion of longer radius engages the stop 37 and forces plug 34 longitudinally relative to the side of arm 17 in which spindle 38 is carried, thus drawing the arm portions on the opposite sides of slot 30 together into clamping engagement with the link journals 31 and 32 whereby the links are firmly clamped in adjustable position.

The parallel motion linkage referred to above comprises preferably a pair of spaced links 41 on each side of the upper end of arm 17 and pivotally connected with the latter by means of the journals 31 and 32 as already described. The upper ends of these links are each pivotally connected as at 42 with an outer pad supporting yoke 43. The spaced ends of the latter pivotally support the respective ends of an inner yoke 44 which thus swings to different positions within the outer yoke. At the ends of the inner yoke are carried on suitable mountings the head pads 45 more particularly described hereafter.

The head pad construction is best shown in Figs. 8 and 9 as comprising an imperforate supporting plate or backing member 46 having in the present instance a circular shape although this shape may be varied of course as preferred. Backing member 46 is preferably of increased thickness adjacent its periphery, as shown in Fig. 8, the forward side of which is provided with a seat 47 in which is carried a raised annular marginal portion 48 of soft resilient material such for example as sponge rubber forming a yielding support for one or more sheets of flexible material stretched over the forward side of the backing as shown. In the present embodiment it is preferred to first apply an inner sheet 49 of leather fabric or other suitable material which is stretched taut on the marginal portion 48 across the forward side of the pad with the peripheral portion of the sheet folded over on the rear side of the pad and there secured, as by means of a plurality of securing devices, or hooks 50, with which is engaged a draw cord 51 for stretching and holding the sheet which is thus supported on the forward side of the pad by the soft marginal portions 48 exclusively. In the present instance two such covering sheets are employed although one or a still larger number of sheets may be used. With two sheets however, it has been found advantageous to slit the periphery of the inner sheet to form spaced strips 52 to avoid overlapping folds and consequent unevenness in this under sheet. The outer sheet 53 is applied and stretched by similar means, the folded over portions of this sheet however being overlapped as shown and se-

cured by similar hooks 53 and a cord 54. The use of two sheets increases the strength and resistance of the covering and the outer sheet may if desired have an outer surface ornamentally finished in any suitable manner.

The pad backing is supported by means of a screw 55 threadedly engaged therewith, the screw being carried by an enlargement or mounting 56 formed at the ends of the inner yoke 44. Mounting 56 has a flange 57 projecting toward the rear side of the pad and of a diameter sufficient for enclosing the securing hooks 53 of the outer pad covering sheet as shown. When the pad backing is drawn home on its mounting by means of screw 55, flange 57 reflects the sheet portion on the rear side of the pad thereby increasing the tautness with which the sheets are preliminarily applied. This construction provides between the covering material on the forward side of the pad and the depressed intermediate portions of the backing a substantially air tight chamber 57^a in which the air is compressed by impact of an object on the pad to increase the cushioning effect and also support the covering. The construction described affords a pad of a simple and economical form comprising but few parts combining softness and comfort for the head of the patient with the requisite strength and durability, and the covering material may be quickly and conveniently removed and replaced as conditions may require. The pad is at the same time compact and of a neat appearance.

The operation of the head rest has been explained in detail in connection with the description of its construction and it is clear that by swinging handle 27 upwardly member 14 may be unclamped and swung pivotally toward and from the chair. Arm 17 may be similarly swung on member 14 to adjust the location and angular position of the pads as desired. When so adjusted these parts are rigidly clamped in position by depressing the handle. Also by manipulation of handle 40 the pad supporting yokes are released for movement on the parallel motion linkage laterally of the chair and reclamped as adjusted by the handle. The inner yoke of course swings within the outer yoke, all of these adjustments affording an exceedingly flexible support for the pads which is also easily manipulated and clamped. The pads are simple and economical in construction providing a soft and comfortable supporting surface combining effectively with the flexibility of the surface to afford an advantageous and efficient apparatus.

I claim as my invention:

1. In a head rest, the combination of a supporting bracket, a columnar member having at one end an adjustable connection with said bracket, a head rest having an adjustable connection with the other end of said member,

thrust elements extending longitudinally in said member with their inner ends spaced one from the other and their outer ends adjacent said adjustable connections, respectively, non-rotatable wedge means interposed between said inner ends for a transverse sliding movement between said elements to bring their outer ends into clamping cooperation with said adjustable connections, and manipulative means including a pivotal element adapted to slide said wedge means transversely between said thrust elements.

2. In a head rest, the combination of supporting means provided with a journal, a head rest provided with a journal, a columnar member having transverse bearings at its ends for said journals, respectively, a pair of thrust elements extending longitudinally in said member with their inner ends spaced one from the other and their outer ends adjacent the respective journals, clamping means slidable between said elements for forcing them longitudinally in opposite directions into engagement with said journals to clamp the latter immovably in their bearings and a pivoted cam for actuating said slidable clamping means.

3. In a head rest, the combination of supporting means provided with a journal, a head rest provided with a journal, a tubular member having at its ends bearing openings for the respective journals extending transversely through the bore of said member, a pair of thrust elements extending in end to end relation through the bore of said member with their outer ends adjacent the respective journals, and clamping means at the adjacent inner ends of said elements including a slidably mounted wedge and a swingingly mounted operating member therefor for forcing the thrust elements in opposite directions into engagement with said journals to clamp the same immovably in their bearings.

4. In a head rest, the combination of supporting means provided with a journal, a head rest provided with a journal, a columnar member having transverse bearings at its ends for said journals, respectively, a pair of thrust elements extending longitudinally in said member with their inner ends spaced one from the other and their outer ends adjacent the respective journals, relatively movable wedge members interposed between said element ends, and manipulative members toward the other for operating one of said wedge means including a hand lever to force said elements in opposite directions into engagement with said journals to clamp the latter immovably in their bearings.

5. In a head rest, the combination of supporting means provided with a journal, a head rest provided with a journal, a columnar member having transverse bearings at its ends for said journals, respectively, a pair of thrust elements extending longitudinally of

said member with their inner ends contiguous and their outer ends adjacent the respective journals, said elements having inclined cam surfaces at their contiguous ends, relatively movable wedge members interposed between said cam surfaces, and a handpiece pivoted on the exterior of said member having a cam surface cooperating with said wedge members for forcing one toward the other to press said elements in opposite directions into clamping engagement with said journals.

6. In a head rest, the combination with a supporting bracket adapted for attachment to a chair back and having a journal, a head rest having a journal, a tubular member having transverse bearing openings in its ends extending through the bore of said member for receiving said journals, respectively, a pair of rods in end to end relation in said member bore with their outer ends adjacent the respective journals, said rods being substantially V-shaped at their contiguous ends, a wedge adjustably carried by said member to project from one side between said rod ends, a wedge movably carried by said member on the opposite side of said rod ends, and a handpiece pivoted on said member and provided with means for forcing said movable wedge between the ends of said rods to force the latter apart into clamping engagement with said journals.

7. In a head rest, the combination of supporting means, a columnar member having at one end a pivotal connection with said means, a U-shaped arm having upper and lower substantially parallel portions, the latter having pivotal connection with the other end of said member, longitudinal thrust elements carried by said member with their inner ends in contiguous relation and their outer ends adjacent said pivotal connections, respectively, manipulative means for thrusting said elements in opposite directions into engagement with said pivotal connections for immovably clamping said arm, member and supporting means together, a bracket for supporting a head rest, a parallel motion linkage connecting said arm and bracket, and clamping means upon the upper portion of the arm for securing said bracket in adjusted position on the arm.

8. In a head rest, the combination of supporting means, a columnar member having at one end a pivotal connection with said means, an arm having upper and lower substantially parallel portions, the latter of which is pivoted upon the other end of said member, said pivotal portions having axes in a common plane, longitudinal thrust elements carried by said member with their inner ends in contiguous relation and their outer ends adjacent said pivotal portions, respectively, manipulative means for thrusting said elements in opposite directions into engagement with said pivotal portions to immovably clamp the

parts in adjusted position, an element for supporting a head bracket, and a parallel motion connection pivoted to swing on the upper portion of the arm for moving the element to different positions of adjustment.

9. In a head rest, the combination of a supporting bracket, a part adjustably connected with said bracket, a U-shaped arm adjustable upon said part, clamping means for securing said arm in adjusted position, a head pad and a mounting therefor, parallel links connecting said arm and pad mounting, and clamping means upon the arm for securing said links and mounting in adjusted position.

10. In a head rest, the combination of a supporting bracket, a columnar member having an end adjustably connected with said bracket, a curved arm including upper and lower substantially parallel portions, the latter of which is adjustably connected with the other end of said member, means for clamping said arm, member and bracket together in adjusted position, a pair of head pads, yoke means supporting said pads, parallel links each pivotally connected with said yoke and the upper portion of the arm, and means for clamping said links and yoke in adjusted position on said upper arm portion.

11. In a device of the class described, the combination with a head rest and a supporting bracket, of a tubular member adjustably connected with said head rest and bracket, thrust elements disposed within said tubular member for effecting a clamping action between the latter and said bracket and head rest, a slide mounted for movement transversely of said tubular member, wedge members carried by the slide with their adjacent ends engaging the adjacent ends of the thrust elements, and a roller on the slide and a pivoted handle having a cam for moving one of the wedge members toward the other whereby to move the plunger elements in opposite directions.

12. In a device of the class described, the combination with a head-rest and a supporting bracket, of an intermediate member adjustably connected with said head-rest and bracket, thrust members disposed within said intermediate member with their inner ends contiguous and their outer ends arranged for cooperation with said head-rest and bracket whereby to hold the head-rest and intermediate member in different positions of adjustment, a slide mounted for free movement in a transverse guideway formed on said intermediate member, oppositely disposed members carried by the slide, each of which engages the contiguous ends of said thrust members and one of which is slidably mounted for movement toward the other to move said thrust members in opposite directions and a member movable upon the slide to effect movement of said slidably mounted member.

13. In a device of the class described, the

combination with a head-rest and a supporting bracket, of an intermediate member adjustably connected with said head-rest and bracket, thrust members disposed within said
5 intermediate member with their inner ends contiguous and their outer ends arranged for cooperation with said head-rest and bracket whereby to hold the head-rest and intermediate member in different positions of adjustment, a slide mounted for free movement in
10 a transverse opening formed in said intermediate member, spaced actuating members carried by the slide having wedge shaped portions extending between the contiguous
ends of said thrust members, one of said actuating members being free to move upon the
15 slide and a member mounted to swing upon the slide and having a cam portion for moving the last mentioned actuating member whereby to move said thrust members in opposite
20 directions.

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