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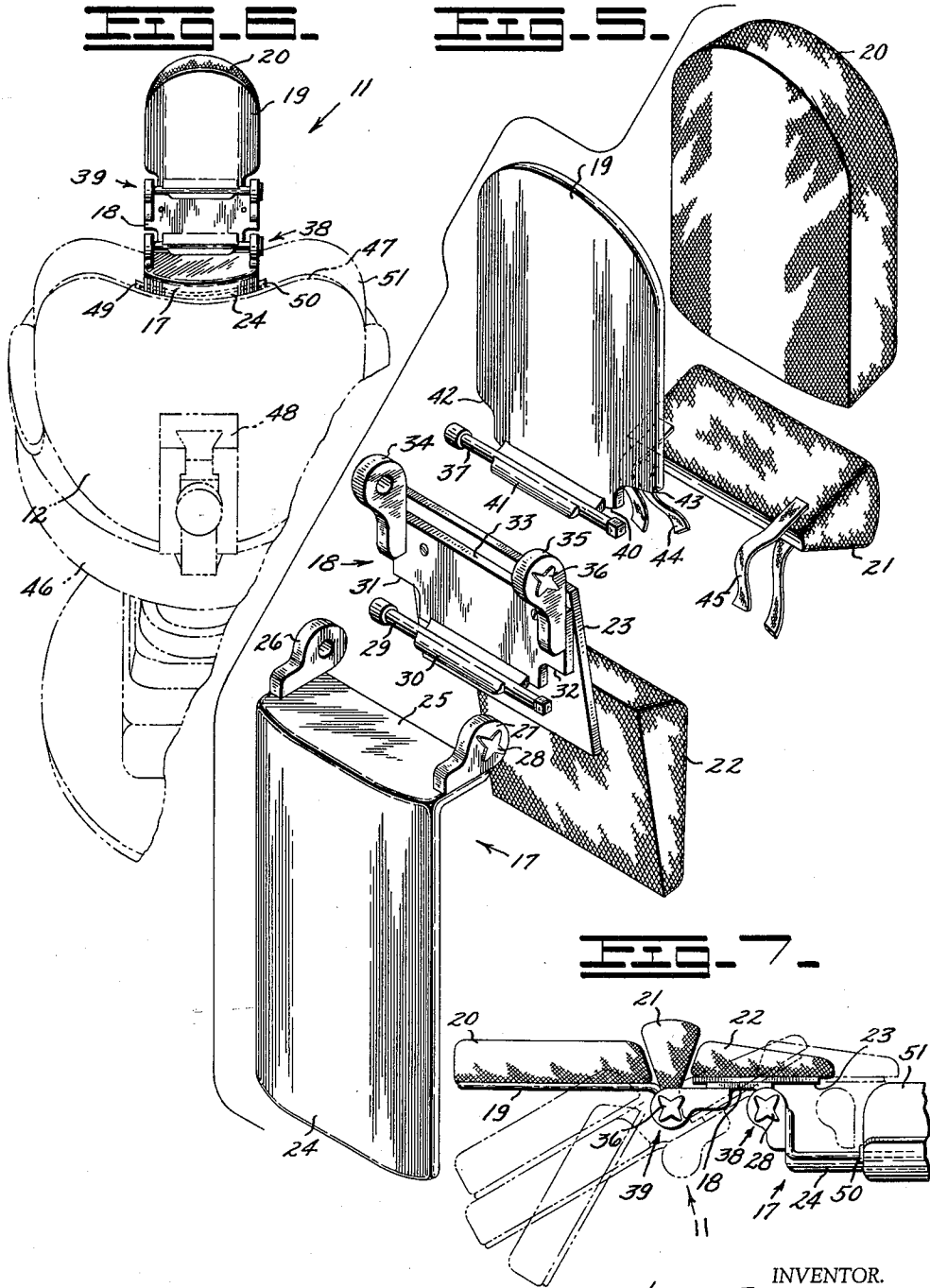
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HEAD REST

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HEAD REST

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The present invention relates to a headrest and more particularly to a headrest having particular utility as an accessory to dental chairs and the like wherein it is desirable to comfortably position the patient in a substantially horizontal position at a comfortable elevation so that the physician, dentist or hygienist can conveniently have access to the mouth or oral cavity of the patient. Still more particularly the invention is addressed to providing a headrest structure easily installed in existing equipment or new equipment wherein a pair of spaced apart parallel horizontal axis pivots provide articulated shoulder, neck, and head adjustments as between adjacent planal plates with intermediate padding and without obstructions depending from the rear of the head plate.

Prior art headrest structures have been primarily adapted to provide a "steady rest" or vice grip two point suspension of the head with little or no consideration for support of neck or shoulders. This was generally true since most devices considered that the head and torso of the patient should be in a generally erect sitting position. In recent years, the tendency in dental practices has been to more or less recline the patient for ease of access to the oral cavity and for overall comfort to the patient during prolonged oral procedures or treatment. Headrest equipment did not change with this shift in patient position and substantially all conventionally used headrests employ a single bar extending rearwardly and upwardly from an adjusting rack or way at the back of the chair. The bar carries either a single head platform or a double spaced apart padded head cradle or yoke. The padded portions may or may not be universally adjustable. With such equipment, when the patient is fully reclined, the dentist or hygienist must stand and bend over from the standing position to reach the work area. In some instances, high stools ease the strain from the back, legs, and feet, of the dentist or hygienist but does not allow the dentist or hygienist to get his or her legs under the back of the chair and headrest because of the interference with the headrest bar. As for the patient, as the position in the chair approaches horizontal considerable strain is experienced in the shoulder and neck region because of the lack of support between headrest and chair back. For tall persons, this discomfort is greatly magnified.

It is therefore among the objects of the present invention to provide a headrest which has no rearward extensions.

It is another object to provide a headrest structure which is fully adjustable to a variety of physical types and wherein comfortable support is provided for shoulders, neck, and head of the patient in substantially horizontal position.

It is still another object to provide a headrest structure which has high utility for patients in fully reclined position so that the dentist or hygienist may be comfortably seated with legs under the rest and the patient's head substantially in his or her lap.

Other objects include adaptability to use with existing dental chairs, full range of rapid adjustability, and extreme simplicity of structure and attendant economy.

Other objects including new comfort levels to dentist and patient will be readily appreciated by those skilled in the dental science and the arts of dental accessories as the description proceeds.

In the drawings:

FIGURE 1 is a perspective view of a patient reclining on a dental chair and indicating the support provided to

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the shoulders, neck and head of the patient using the herein described invention and illustrates the patient in ideal work position with respect to the seated dentist, physician, or hygienist. The patient and worker are illustrated in phantom line.

FIGURE 2 is a schematic top plan view of the device of the present invention illustrating the horizontal positioning of the rest for locating the head of a patient substantially in the lap of the worker, with the worker's legs extended beneath the headrest and working from the left side of the patient.

FIGURE 3 is a schematic top plan view of the device of the present invention as in FIGURE 2 and illustrating the worker at the right side of the patient.

FIGURE 4 is a schematic top plan view as in FIGURE 3 but indicating the ease of modesty position for female technical workers using the present position.

FIGURE 5 is an exploded perspective view of the device of the present invention indicating the extreme simplicity of the structure and construction details.

FIGURE 6 is a rear elevation view of the headrest structure of the present invention located in the back of a conventional dental chair in the upright position. The dental chair is illustrated in phantom line.

FIGURE 7 is a side elevation view of the headrest structure in the horizontal position and extending from the partially shown dental chair back and illustrating in phantom line the variety of quick adjustments available by use of the ratchet controlled pivots and wedge shaped neck cushion.

General Description

In general, a slide or carrier plate is provided. This plate is slidably positioned between chair back and cushion support in either new or old chairs so as to be adjustable upwardly from the upper periphery of the chair back. A shoulder support plate is also provided which provides an extension from the carrier plate and is pivotal with respect thereto. The pivot is ratchet controlled. The shoulder support plate, in turn, is provided with ratchet means pivotally articulating it to the headrest plate. Thus, the plates are articulated in end to end position. There are no rearward appendages on the headrest plate and the headrest plate is preferably concavo-convex in form, the upper face being slightly concave. Cushions are secured to the upper faces of the shoulder support plate and headrest plate. A neck cushion of generally wedge shaped cross sectional configuration is provided intermediate the headrest and shoulder support cushions or pads. The neck cushion is loosely connected to one of the pivotal connections (between headrest plate and shoulder plate) so as to float upwardly and downwardly in relation to angular adjustments as between the two plates. The ratchet controlled pivots are parallel and spaced apart from each other, the first allowing pivot of the shoulder support plate about the pivot axis in relation to the fixed carrier plate, the second pivot controlled ratchet adjusting the angular relationship between the headrest plate and shoulder support plate. Thus, a wide range of adjustment to the physical shape of patients is provided by the movement of adjacent plates into and out of planal register. When the chair is tilted back to the reclining horizontal position, the worker can effectually cradle the head of the patient in his lap so that efficiency of the worker is greatly increased by ready access to the work area from a comfortable seated position. A hinge plate in substantial hinged register with the shoulder support plate provides overriding of the chair back cushion with the shoulder cushion where desired. Quite simply, the device comprises a plurality of articulated plates extending from a chair and means to rapidly check or adjust the amount of articulation between each plate member.

Specific Description

Referring more particularly to the drawings in FIGURE 1, a headrest device 11 in accord with the present invention is shown in operation on chair back 12. The patient 13 is positioned horizontally so that the headrest plate 19 is positioned substantially in the lap of the dental worker 14, with the legs 15 of the dental worker extended under the headrest. The dental worker 14 is seated on a chair height stool 16 and the oral cavity 17 of the patient 13 is readily accessible for work. Lighting under these circumstances is very good and both upper and lower portions of the mouth are easily serviced with comfort to both patient 13 and dental worker 14.

The head of the patient is easily tilted up to see the teeth in the lower jaw or tilted back to allow visual and working access to the upper jaw in the oral cavity. The head of the patient is easily rolled from side to side on the gentle concave upper cushion of the rest plate 19. This enhances side access to the oral cavity with the further advantage of controlled rolling of the head.

FIGURES 2, 3 and 4 illustrate the variety of work positions available to dental workers while using the device illustrated in FIGURE 1. The chair back 12' is schematically represented in the horizontal position. The headrest device 11' extends from the chair back 12' and the dental worker 14' (female worker 14'' in FIGURE 4) is comfortably seated over the operating area, with his or her legs extendable beneath the headrest device. This horizontal positioning without interference to worker leg room is accomplished by avoidance of interference resulting from previously used fixtures extending downwardly from the headrest for connection outboard of the chair back when the chair is reclined.

In FIGURE 5 the elements comprising the headrest device 11 are shown and described in an exploded view. Slide plate 17 is shown as positioned for connection to shoulder support plate 18. Shoulder plate 18 is, in turn, positioned for articulated attachment to the headrest plate 19. The headrest pad 20, which forms the cushion facing for headrest plate 19, is shown in disassembled relationship to the headrest plate 19. The wedge shaped neck pad 21 is shown in its relative position below the head pad 20. The shoulder pad 22, slightly tapered on its lowermost portion, is positioned for securing to the shoulder support plate 18. The shoulder pad 22 is secured to the shoulder support plate 18 by means of the intermediate auxiliary plate 23 which is in loose floating or flapping relationship with respect to shoulder plate 18. As will be seen, this permits the shoulder pad 22 to override the cushion of the chair back 12 when desired while still providing shoulder support on the cushion of the chair back 12.

The slide plate 17 is slightly concavo-convex in form in the slide portion 24. As will be seen this assists in locking the plate 17 in its guides. At the upper end of the slide plate 17 an offset 25 is provided. The offset 25 adjusts the headrest structure 11 into substantial planal register with the surface of the chair back 12. Bearing brackets 26 and 27 are provided on each side of the slide plate 17 and more particularly on the offset 25 thereof. The bracket 27 houses a ratchet and pawl mechanism (not shown) which is engageable or releasable and reversible by simple manipulation of the rotating pawl control lever or knob 28. Inasmuch as a wide variety of ratchet mechanisms are readily available and since the ratchet mechanism per se is non-inventive no further description is thought necessary. The ratchet joint permits selected hinge pivot movement as between adjacent plates.

The bearing structures 26 and 27 receive the shaft 29. The shaft 29 is secured to the shoulder support plate 18 as by welding or other convenient means. A stop 39 extends radially from the center of the shaft and limits the total angular travel of the plate 18 by ultimate engagement with the offset 25 of slide plate 17. One end 29'

of the shaft 29 is upset to be operably inserted in the ratchet bearing housing 27. As will be appreciated where welding is used to attach the ratchet articulating joint to the shoulder support plate 18, the welding is accomplished at assembly. Relief sections 31 and 32 are provided in the shoulder support plate 18 to clear the bearing brackets 26 and 27 respectively. On the edge 33 of the shoulder support plate 18 another pair of bearing brackets 34 and 35 are provided in spaced apart relationship. As in the brackets 26 and 27, the bracket 35 houses a ratchet assembly, the control pawls of which are operated by the knob-like lever 36. The brackets 34 and 35 receive the shaft 37. The brackets 34 and 35 and shaft 37 thereby comprise a ratchet controlled articulated joint 38 which functions as the joint 39. The shaft 37 is in turn secured to the headrest plate 19 at the lower edge 40 thereof. Attachment of the shaft 37 to the headrest plate 19 is by means of welding or other convenient fastening means. Where preferred welding is used, the weld is accomplished at assembly. One end 37' of the shaft 37 is upset to nest operably in the ratchet bracket 35. A stop 41 extends radially from the shaft 37 which limits rotation of the headrest plate at the joint 39 by predetermined engagement with the shoulder support plate 18. Clearance relief 42 and 43 is provided in the lower corners of the headrest plate 19 so as to clear the brackets 34 and 35. Thus, these plates are articulated by ratchet controlled joints 38 and 39 in parallel spaced apart relationship. Plates 18 and 19 are movable together by operation of joint 38 and the headrest plate 19 is independently movable in respect to the plate 18 by operation of the joint 39.

The shoulder rest pad 22 provides a cushioned upper surface for the shoulder support plate 18 and is allowed to float in respect to the plate 18 by reason of intermediate attachment to the auxiliary plate 23. This is best understood by reference to FIGURE 7. The headrest pad 20 is secured to the upper concave face of the headrest plate 19 as by adhesives or other fastening means. The wedge shaped neck pad 21 spans the gap between pads 20 and 22 and is secured loosely as by means of ties 44 and 45 to the shaft 37 of joint 39'. In accord with the relative movement between plates 18 and 19 the neck pad 21 moves inward and outward dependent upon the wedging action as between adjacent pads 20 and 22.

Referring to FIGURE 6 the wholly assembled headrest device is shown in assembled position extending from the back 12 of a dental chair 46. The steel back plate 47 of the chair 46 provides support for the slide portion 24 of the slide plate 17. This permits the removal of all headrest apparatus previously extending from the ways 48 thereby providing clearance of the headrest area when the chair back 12 is tilted to the reclining position as in FIGURES 1, 2, 3 and 4. Metal guides 49 and 50 assure lateral control over the slide plates 17 so that with the back plate 47 a guideway is established permitting selected extension and insertion of the headrest 11. By reason of the concavo-convex form of the slide portion 24 of the slide plate 17, any pressure applied to the headrest 11 locks the slide 24 against movement by springing action against the back plate 47 and guides 49 and 50. Relaxation of pressure on the headrest device 11 makes movement of the slide plate 17 quite easy.

FIGURE 7 shows the structure shown in FIGURE 6 in elevation view and indicates the range of adjustment by reason of the parallel spaced apart articulating joints or pivots 38 and 39.

The chair back 12 is shown reclined to the horizontal position. The slide plate 17 is shown inserted in the guideway established by the guides 49 and 50 thus leaving a clean chair back. The headrest 11 is elevated to form a continuation of the chair back 12, the cushion or shoulder pad 22 being allowed to float over the chair cushion 51 when the slide plate 17 is fully inserted in the chair 46.

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In operation, headrest structures in accord with the present invention have brought comfort and relief to dental workers and patients alike. From the patient's point of view, the new headrest supports and cushions the shoulders neck and head without any confining effect felt by the use of prior "head vise" type apparatus. The wide range of adjustment to physical types has brought relief to large and small persons. The new positioning of the patient permitted by the new headrest structure places the dentist, physician or technician in most favorable working position. The wide range in tilting adjustments allow excellent vision and access to the oral cavity. By simple rolling of the head on the headrest cushion the side mouth areas are readily available.

As will be readily appreciated, the headrest of the present invention is adaptable to both original equipment and accessory use. In some chairs where there are interfering bolts and fasteners through the back plates, the slide portion 24 of the slide plate 17 is slotted to avoid interference. Conversion is thus very simply accomplished. Similarly, the control elements may be oriented for either left or right hand usage.

Having thus described my invention certain obvious modifications will occur to those skilled in the art. Such modifications are intended to fall within the scope of the invention limited only by the scope of the hereinafter appended claims.

I claim:

1. A headrest for dental chairs and the like comprising: a slide plate; a first ratchet hinge member secured to one end of said slide plate; a shoulder support plate hingedly secured to said slide plate by said ratchet hinge member; a second ratchet hinge member in spaced relationship to said first hinge member and secured to said shoulder support plate; and a headrest plate hingedly secured to said shoulder support plate.

2. A dental headrest comprising: a slide plate; a ratchet adjustment pivot on said slide plate; a shoulder pad plate pivotally connected to said slide plate; an auxiliary plate in substantial register with said shoulder pad plate; a second ratchet adjustment means secured to said shoulder pad plate; a head pad plate secured pivotally to said second ratchet means on said shoulder pad plate; a shoulder pad secured to said hinge plate; a head pad secured to said head pad plate; and a wedge shaped neck pad intermediate said shoulder and head pads and secured to the pivot established by said second ratchet means.

3. A headrest for dental chairs and the like comprising: a guide member; a slide plate confined by and extendable from said guide plate; a first ratchet hinge connected to said slide plate; a shoulder support plate operably secured to said ratchet hinge; a second ratchet hinge on said shoulder support plate; a headrest plate connected to said second ratchet hinge; a pad on said headrest; an auxiliary plate on the upper surface of said shoulder plate and hinged thereto; a shoulder support pad on said auxiliary plate; and a wedge shaped neck cushion intermediate said headrest and said shoulder rest

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pads and movable in accord with movement as between said shoulder support plate and said headrest plate.

4. In a headrest for dental chairs and the like the combination of: a dental chair having a reclineable back including a metal back plate and cushion structure; a guideway in said back intermediate said back plate and said cushion; a slide plate guidably movable and extendable from said guideway; an upturned flange on said slide plate; a shoulder support plate hinged to said upturned flange of said slide plate; a headrest plate hinged to said shoulder support plate; ratchet control means at said hinges providing controlled articulated movement as between said slide plate, said shoulder plate, and said headrest plate; cushion pads facing said headrest plate and in said shoulder rest plate; and a wedge shaped neck cushion intermediate said cushion pads and movable in accord with angular planal displacement of said head and shoulder plates.

5. In a structure as set forth in claim 4 and including a shoulder pad plate hingedly secured to the upper surface of said shoulder support plate shifting said shoulder pad cushion into and out of resistor with said chair back in accord with movement of said slide plate.

6. A dental headrest for adjustable insertion in the back of a dental chair comprising: a concavo-convex head pad plate being generally hemispheric in form; an axle mounted on the lower edge of said head plate and in transverse relation thereto; a head pad secured to said head plate on the concave surface thereof; a shoulder pad plate having an upper surface; ratchet means on said shoulder pad plate for pivotally receiving the ends of said axle; a hinge plate pivotally secured to the upper surface of said shoulder pad plate; a shaft on said shoulder pad plate; ratchet means engageable with said shaft; a carrier plate to which said ratchet means are secured, said carrier plate being contoured; a guideway receiving said contoured carrier plate for sliding adjustment; pad rests covering the upper surfaces of said head and hinge plates; and a wedge shaped neck pad intermediate said pad rests and secured loosely to said ratchet means.

7. A headrest for dental chairs and the like comprising: a chair defining a recess between the back and cushion thereof; a slide plate extendable and retractable from said recess defined between said chair back and said cushions; a head rest plate extending from said slide plate at the extendable end thereof; an articulating hinge intermediate said slide plate and said head rest plate; and a second plate hingedly secured to said first head rest plate in pivotal articulated relation therewith; and selective locating means at said hinge connections between said adjacent plates for selectively adjusting the plane positioning of said plates.

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