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HEADREST

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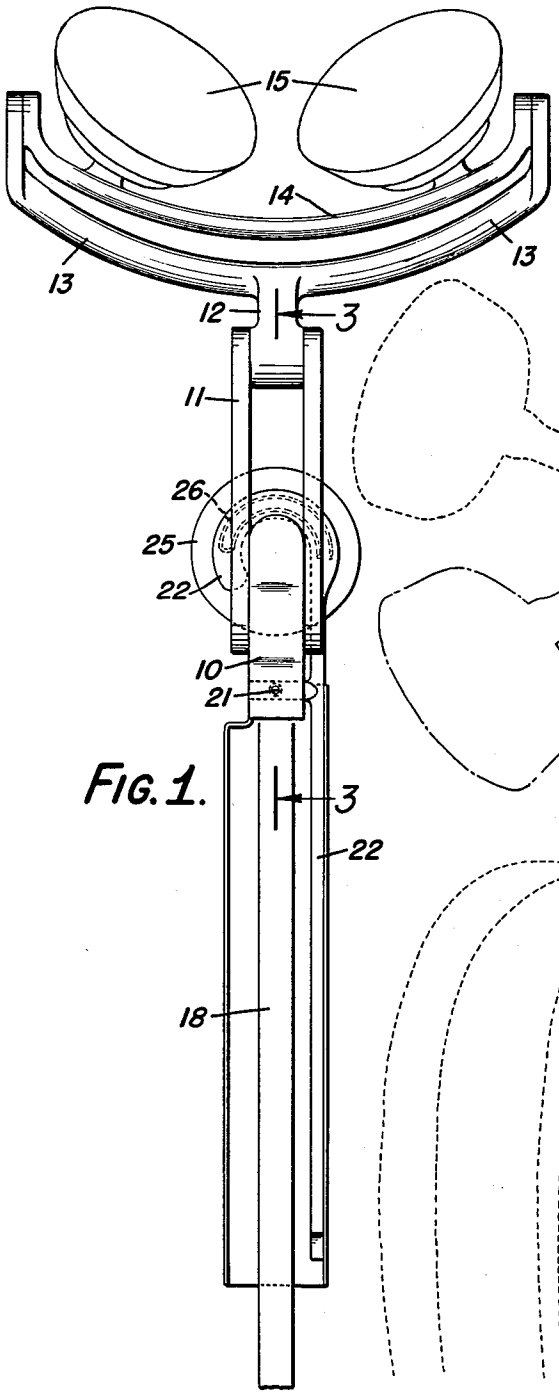


FIG. 1.

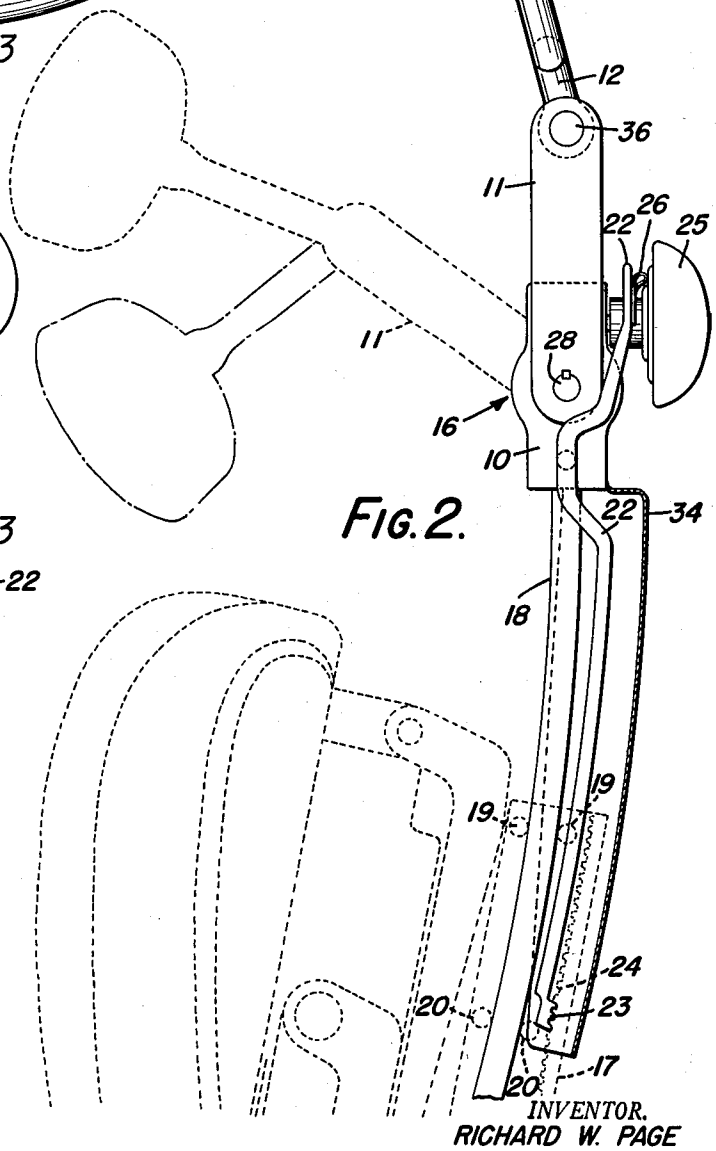


FIG. 2.

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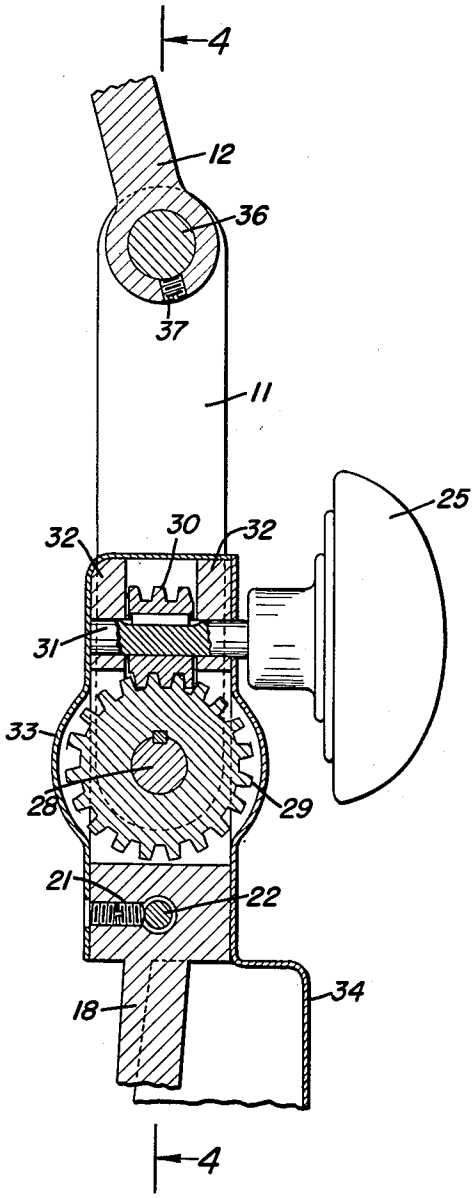


FIG. 3.

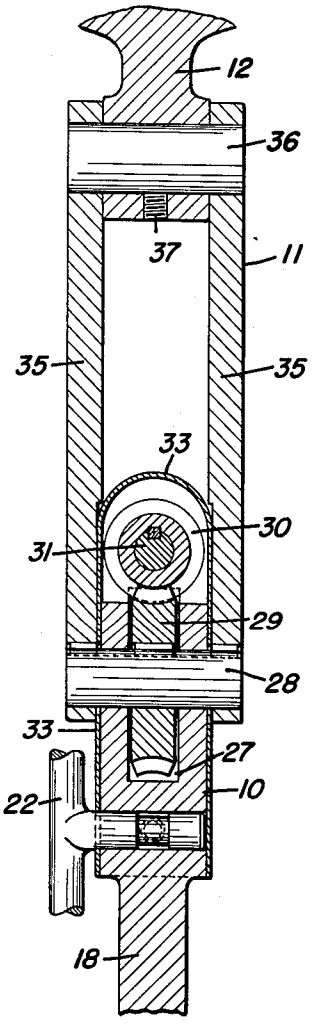


FIG. 4.

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2,740,467

HEADREST

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Application September 6, 1951, Serial No. 245,337

4 Claims. (Cl. 155—177)

The present invention relates to head rests of the variety adapted for use with dental, surgical, barber and other types chairs, one object of the invention being to provide an improved device of this class having a more simple, practical and efficient type of construction.

Another object is to provide such a head rest having an easily operated and conveniently located adjusting mechanism. More specifically, it is an object of the invention to provide a head rest with means by which the usual head supporting pads can be adjusted both vertically and towards and from the patient's head by a single hand of the operator.

A further object is to provide a head rest having the above advantages in which the adjusting mechanism is self-locking and holds said parts in predetermined positions of adjustment.

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 front elevation of a head rest embodying the present invention;

Fig. 2 is a side elevation showing the means for mounting the same on the back of a dental chair or the like;

Fig. 3 is an enlarged sectional elevation substantially along line 3—3 in Fig. 1, and

Fig. 4 is a sectional elevation substantially along line 4—4 in Fig. 3.

My invention provides an improved head rest which is greatly simplified in operation and also provides advantages from an operational and sanitary point of view, which have not heretofore been obtainable, and which are very important, particularly in the practice of modern dentistry.

Dental chair head rests have, over a long period of years, been constructed with one or more lockable joints which have made it possible to secure the headrest pads in a comfortable position for all types of patients. In effect, this adjustment permits the head rest pads to be swung in a large or small arc towards and from the patient's head for adjustably supporting the same, the head rest pads and adjusting assembly being mounted on a lockable slide to provide vertical adjustment of the head rest assembly.

To change the adjustment of the head rest pads through the medium of the head rest adjusting assembly, it has heretofore been necessary to use two hands; one to release and lock the head rest lock and the other to support the pads when unlocked and place the pads in the desired position. The necessity for using two hands to accomplish this adjustment has been very objectionable for a long period of years for the reason that it frequently becomes necessary to slightly change the position of the patient's head in the middle of an operation. Inasmuch as the operator invariably has an operating instrument in one hand at such times, it becomes necessary to lay down

the instrument and otherwise interrupt the operating procedure in order to make the slight adjustment.

Furthermore, this breaks the sterility chain by requiring that the dentist touch with the hand which he uses for operating a part of the chair that might not be perfectly sterile. This might be prevented by placing a towel between the hand of the operator and the locking lever but it would not be practical to place a towel between the hand that supports the head rest pads and the head rest because it might get caught in the head rest adjustment and would otherwise be an awkward and difficult procedure.

This invention provides an adjustable head rest pad supporting device in which the joints are not freely swingable and therefore do not require the use of one hand to support it. The adjustment is accomplished through the medium of a worm gear which makes it possible for the operator to place the head rest pads into any desired position by using one hand only. Moreover, the adjustment can be made without taking the instrument held by the other hand out of the mouth of the patient.

The head rest assembly is mounted on the back of a chair for vertical adjustment relative thereto and has a locking means thereon which is adapted to be controlled by a suitable operating lever. The upper end of this lever extends sufficiently close to the means for actuating the worm gear so that said actuating means and lever may be operated with one hand either simultaneously or separately to change the position of the head rest pads relative to the head rest supporting assembly, or to move the entire head rest supporting assembly relative to the back of the chair, or to make both adjustments at the same time. Furthermore, because of the close positioning of these actuating means, both may be covered with the same sterile towel to prevent carrying infection from one patient to another.

The preferred form of the invention, herein disclosed by way of illustration, preferably comprises a supporting arm or member 10 which is adapted to be mounted on the back of a dental chair or the like, as hereafter described, a second or intermediate supporting arm or member 11 pivotally fastened to arm 10 adjacent the lower end thereof, and a supporting arm or yoke 12 which is pivotally fastened to arm 11 as shown in Figs. 1 and 2. Arm 12 is formed with laterally spaced branches 13 which serve to pivotally support an inner yoke member 14 carrying a pair of pivoted head rest pads 15, as shown, for example, in Letters Patent of the United States to Adam J. May, No. 1,940,361.

The means for adjustably mounting the head rest assembly supporting structure shown generally at 16, Fig. 2, on the back 17 (Fig. 2) of a dental chair or the like, preferably comprises a slide or rod 18 which has a rectangular cross-section and which forms the lower portion of arm 10. Slide 18 is slightly curved, as shown in Fig. 2, and is adapted to slide longitudinally through upper and lower pairs of guide rollers 19 and 20, respectively, mounted in any suitable manner on back 17. Arm 10 has pivotally attached thereto by a set screw 21 (Figs. 1 and 3) a longitudinally extending lever 22 the lower end of which is serrated so as to form a series of teeth 23 which are adapted to releasably engage the teeth of a rack 24 secured to back portion 17. The upper portion of lever 22 is curved about the hub portion of an actuating wheel 25, the operation of which will be hereafter described, and when said upper portion is moved to the right, as viewed in Fig. 2, toward wheel 25, against the tension of a spring 26 (Fig. 2), the lower portion is moved to the left, thereby releasing teeth 23 from engagement with rack 24 and allowing supporting structure 16 to be raised or lowered relative to the back of the chair. When it is desired to lock the supporting structure in desired position, it is

only necessary to release lever 22, the lower portion of which then moves into engagement with rack 24.

The upper portion of supporting arm 10 is bifurcated as at 27 (Fig. 4) and has a transversely extending shaft 28 rotatably mounted in bearing openings in the arms thereof. A worm wheel 29 is keyed to shaft 28 adjacent the center thereof, as shown in Fig. 4, and is engaged by a worm 30 which in turn is keyed to a shaft 31 located above and extending transversely to shaft 28 as shown in Figs. 3 and 4. Shaft 31 is supported by a pair of bearing blocks 32 mounted on the upper portion of a casing 33 which is fastened by welding or any known and suitable manner to supporting arm 10 adjacent the upper end of rod portion 18, as shown in Fig. 3. The right side 34 of casing 33, as viewed in Figs. 2 and 3, extends downwardly beyond the lower end of pivoted lever 22 and acts as a protective cover or guard for preventing dirt, clothing or other articles from being drawn into chair back portion 17 during the downward movement of supporting structure 16. Actuating wheel 25 is mounted on the right end of shaft 31 and provides a convenient means for rotating worm 30 which in turn rotates worm wheel 29 and shaft 28.

Supporting arm 11 preferably comprises a pair of side plates 35 (Fig. 4) which are keyed at one end thereof to the opposite ends of shaft 28. Plates 35 at the opposite ends thereof have aligned bearing openings which are adapted to frictionally engage the opposite ends of a transversely extending shaft 36 which in turn is fixed to the lower end of yoke 12 by a set screw 37 (Fig. 3). Although yoke 12 is held in position relative to arm 11 only by the frictional engagement between shaft 36 and plates 35, a suitable clamping means of known construction, such as that disclosed in Patent No. 2,445,869, issued July 27, 1948, to H. J. Beyer, may be added for securely locking yoke 12 in the desired position relative to arm 11. As supporting arm 11 is fixed to shaft 28, as above, said arm may be readily swung to desired position relative to arm 10, by turning actuating wheel 25 which, through worm 30 and wheel 29, rotates shaft 28 and arm 11 about the longitudinal axis of said shaft, as shown by full and broken lines in Fig. 2.

In operation, therefore, the head rest structure may be quickly and easily adjusted to support the patient's head in the most comfortable position by merely swinging supporting arm 11 about arm 10 through the rotation of actuating wheel 25, as described above, and then moving outer yoke 12 about the opposite end of arm 11, as shown by broken and dashed lines in Fig. 2. Inner yoke 14 is then moved relative to outer yoke 12 and pads 15 moved about their pivotal connections with inner yoke 14 so as to be in the desired position for supporting the patient's head, as well understood in the art. Inner yoke 14 and head rest pads 15 are sufficiently free to move, with light frictional resistance, relative to outer yoke 12 and inner yoke 14, respectively, so that, in effect, pads 15 are self-positioning about this double pivotal axis, and will position themselves for best meeting the direct line of pressure of the patient's head. As worm wheel 29 and worm 30 are self-locking, arm 11 cannot move relative to arm 10 except by the rotation of actuating wheel 25, and thus, these arms will remain in the desired adjusted position.

In addition to the above adjustability, the entire supporting structure 16 may be readily raised or lowered relative to the back 17 of the chair by merely moving the upper end of lever 22 to the right, as viewed in Fig. 2, and then sliding rod portion 18 through rollers 19 and 20 to the desired position, at which point rod 22 is released and, under the action of spring 26, swings teeth 23 at the lower end thereof into locking engagement with rack 24, thereby holding supporting structure 16 in the desired position. The juxtaposed positioning of lever 22 and wheel 25 enables the operator to make both pivotal and vertical adjustments of arm 11 in a convenient manner with a single hand without having to interrupt the operation or lay down any tools held in the other hand. Moreover, because of this juxtapositioning, a towel may be placed over said wheel and lever so that the above adjustments may be made without interrupting the operator's chain of sterility thereby eliminating the need for the operator to halt his work and resterilize his hands.

It will thus be seen that the invention accomplishes its objects and while it has been herein disclosed by reference to the details of a preferred embodiment, it is to be understood that such disclosure is intended in an illustrative, rather than a limiting sense, as it is contemplated that various modifications in the construction and arrangement of the parts will readily occur to those skilled in the art, within the spirit of the invention and the scope of the appended claims.

I claim:

1. A head rest for a chair comprising a pair of interconnected supporting members, one of said members being provided with means for attachment to a chair and having a pair of shafts mounted thereon perpendicularly to each other for rotary movement in situ, a worm wheel mounted on one of said shafts, a worm mounted on the other of said shafts and engaging said wheel for rotating the same, the other of said members having a supporting arm pivotally mounted thereon and being fixed to said first mentioned shaft for rotation therewith relative to said first mentioned member, said supporting arm having head rest pads mounted thereon, and manually operable means on said second mentioned shaft for rotating the same for swinging said other member.

2. A head rest for a chair comprising a pair of interconnected supporting members, one of said members being provided with means for attachment to a chair and having a pair of shafts mounted thereon perpendicularly to each other for rotary movement in situ, a worm wheel mounted on one of said shafts adjacent the center thereof, the other of said members being provided with a supporting arm having head rest pads mounted thereon, and having a pair of spaced side plates secured to said worm wheel shaft adjacent the ends thereof for swinging movement therewith relative to the first member, a worm mounted on the other of said shafts and engaging said worm wheel for rotating the same, and manually operable means on the other of said shafts for rotating the same for swinging said other member relative to said first member.

3. A head rest for a chair comprising a pair of interconnected supporting members, one of said members being provided with a supporting slide and the other of said members being connected to the first member for swinging movement relative thereto and having a supporting arm pivotally mounted thereon, said supporting arm having head rest pads mounted thereon, a worm wheel fixed to one of said members for rotation therewith, a worm mounted on the other of said members for rotation in situ, said worm engaging said worm wheel for effecting swinging movement of said other member, manually operable means for rotating said worm, means for attachment to the back of said chair comprising spaced rollers for supporting and guiding the movement of said slide, relative to said chair back, a rack mounted on said chair back, and a locking lever movably connected with said slide and having teeth at one end thereof releasably engaging said rack for holding said slide in vertically adjusted position relative to said chair back, the opposite end of said lever being located adjacent said manually operable means for operation therewith by a single hand for concomitantly raising and lowering and swinging said other member and adjusting the position of said head rest pads.

4. A head rest for chairs comprising a pair of interconnected supporting members, one of said members being provided with a supporting slide and having a pair of relatively perpendicularly extending shafts mounted there-

on for rotary movement in situ, a worm wheel mounted on one of said shafts adjacent the center thereof, the other of said members being provided with a supporting arm having head rest pads mounted thereon, and having a pair of spaced side plates secured to said worm wheel shaft adjacent the ends thereof for swinging movement therewith relative to the first member, a worm mounted on the other of said shafts, manually operable means on the other of said shafts for rotating the same and said worm for swinging said other member relative to said first member, means for attachment of said first member to the back of a chair, comprising guide means for said slide and means for locking the same in vertically adjusted position, and means movably connected with said slide including means for cooperation with said locking means and an operating part located adjacent said manually operable means for operation therewith by a single hand for concomitantly raising and lowering and swinging said other member and adjusting the position of said head rest pads.

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