Jan. 5, 1971 O. M. A. D'HOUDAIN 3,552,797

ARMCHAIRS FOR DENTAL TREATMENT

Filed July 1, 1968

Fig-1

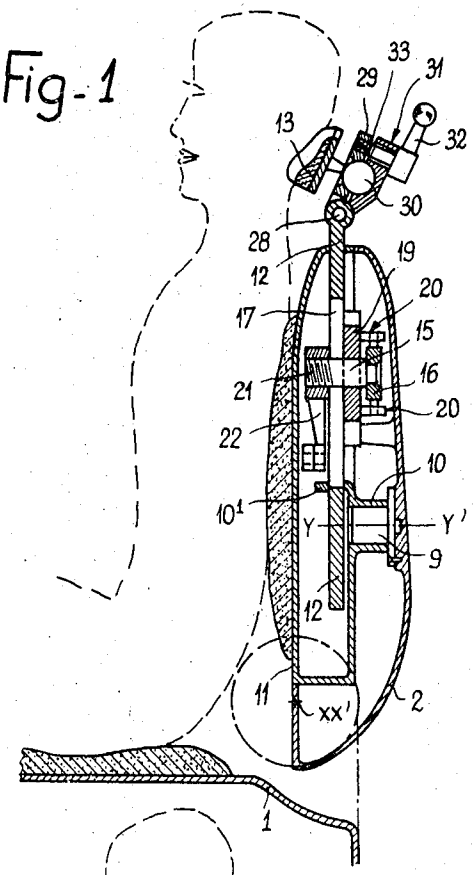
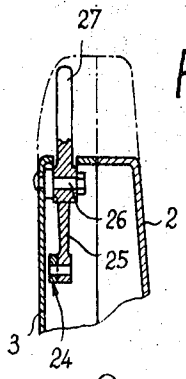


Fig-2



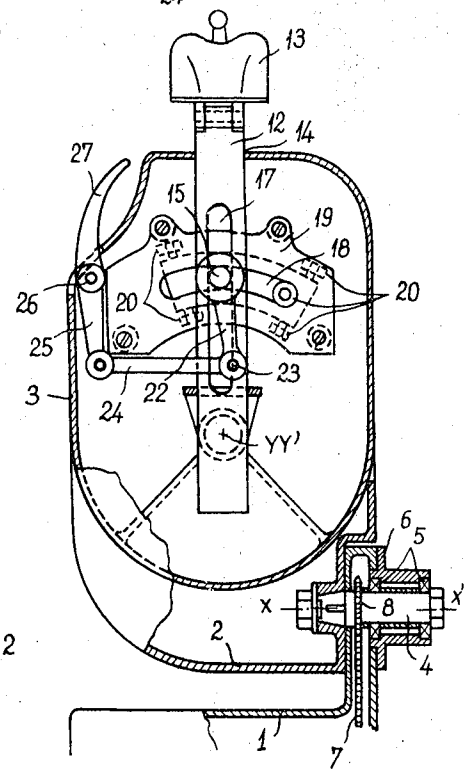


Fig-3

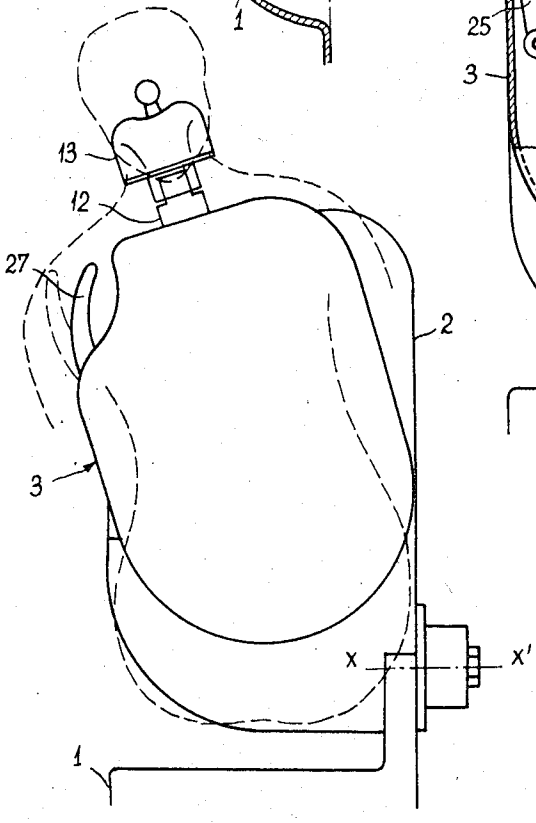


Fig-4

United States Patent Office 3,552,797 Patented Jan. 5, 1971

3,552,797

ARMCHAIRS FOR DENTAL TREATMENT

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Filed July 1, 1968, Ser. No. 741,581
Claims priority, application France, Aug. 3, 1967, 116,815
Int. Cl. A61g 15/00
U.S. Cl. 297—355 2 Claims

ABSTRACT OF THE DISCLOSURE

An armchair for dental treatment which comprises a frame which, in addition to the normal articulation permitting the forward and backward movement of the backrest portion, is provided with means permitting a second articulation of the backrest portion at right angles to the normal articulation. Thus the inventive chair allows an inclined lateral movement of the upper part of the patient's body without substantially altering the positioning of the rest of his body.

The present invention has for its object a back for an armchair used in density, such that it inherently permits the dentist to utilize the most favourable means of operating on the patient, both by a special arrangement of its constituent parts with a view to facilitating its use and by an appropriate method of construction of these various parts. The method of operation which is best adapted to the necessities of the dentist's work leads to the use of a chair which enables him to limit to the maximum extent the number and the amplitude of his movements during the operation, at the same time constantly ensuring that he has perfect visibility over the field of operation.

In certain positions of working at the side of or facing the patient, it is especially necessary to bring the patient's head as close as possible to the dentist's body when the latter is working in a sitting position.

The device forming the object of the invention, applied to the back of the chair, satisfies this requirement. It is in fact known that for the purpose of achieving this object, certain devices have been produced, starting from the idea of inclining the whole chair towards the side, giving the chair a rolling movement.

Devices of this kind, while they give the dentist an advantageous convenience of action, none-the-less constitute a costly solution due to the complexity of the mechanism utilized for its production, these mechanisms frequently acting against those of the other movements of the chair. On the other hand, these devices give a patient seated in such a chair, a particularly disagreeable and unstable position, contrary to the idea of relaxation which governs the design of present-day dental equipments, and adversely affecting the satisfactory work of the dentist.

The characteristic feature of the invention consists of acting on the back only of the chair and not on the whole chair, in such manner that in its movement, which may be described as a movement of inclination, it carries with the head and the upper part of the patient's body, without thereby substantially changing the position of the remainder of the body.

The chair-back, being adapted in its arrangement to the conditions for which it is intended, is constituted by a frame movable in rotation about an articulation fixed to the seat of the chair. This frame supports the chair-back proper, also movable in rotation about an axis at right angles to the articulation of the seat, the chair-back carrying the headrest with it in its rotation according to an appropriate method of construction. This headrest moves longitudinally along the axis of the chair-back proper and is immobilized by the action of the handle with locks it on the frame.

The invention will now be described in greater detail, by way of example with reference to the accompanying drawings, representing one form of construction of a chairback of this kind applied to an equipment for dental use, according to the invention, and in which:

FIG. 1 is a longitudinal section of the dental chair and its back;

FIG. 2 is a cross-section showing a detail of the locking system for the lateral inclination of the back;

FIG. 3 is a transverse section of the parts shown in FIG. 1;

FIG. 4 is an external transverse view of the chair-back in the inclined position.

Referring now ot FIG. 1, it can be seen that the seat of the chair is shown at **1** and that on this seat is articulated laterally the frame **2** which receives the chair-back proper **3** on which the patient's back rests. The articulation of the frame **2** on the seat **1** is provided along the axis X–X′ by a shaft **4** fixed to the frame **2** and capable of rotation by means of ball bearings **5** in a bearing **6** forming part of the seat **1**. A chain **7** running on a toothed wheel **8** carried by the shaft **4** is operated in a suitable manner so as to cause the frame **2** to rotate with respect to the seat **1** with an immobilizing or locking system for the control in the chosen position of inclination of the frame **2**.

The chair-back proper **3** is pivotally mounted on the frame **2** along the axis Y–Y′ and, in the construction given by way of example, a shaft **9** fixed to the frame **2** and at right angles to the shaft **4**, is mounted in a sleeve **10** which can rotate on the said shaft and carried by the frame **11** of the chair-back **3**.

Suitably guided on this frame **11** is arranged the support **12** of the headrest **13**, which can be moved by hand longitudinally for the setting in the frame **11** of the chair-back **3** by sliding in the extension **10′** of the sleeve **10** and at **14** in the frame **11**. The headrest support **12** can rotate at the same time as the chair-back **3** rotates about the axis Y–Y′, and a shaft **15** riveted at one of its extremities to a trolley **16** and passing through the slot **17** of the support **12** of the headrest can move radially at the same time as the chair-back **3** about the axis Y–Y′, being guided in a notch **18** of a plate **19** rigidly fixed to the frame **2**, this notch being concentric with the axis Y–Y′.

The trolley **16** carries rollers **20** which roll and are orientated on the plate **19**. The shaft **15** is provided at its other extremity with a threaded portion **21** in engagement with the threaded extremity of a lever **22** coupled in articulation at **23** with the extremity of a lever **24**, the other extremity of which is pivoted on the lever **25**, in turn articulated at **26** on the chair-back **3** and terminating in an operating handle **27**.

On the headrest support **12** is articulated, at **28**, the plate **29**, having a recess for a swivel joint **30** rigidly fixed to a rod coupled to the headrest **13**. A backplate **31** with a recess is applied over the swivel joint **30**, and this joint is fixed in the position which is given to it by the adjustment of the headrest, by clamping between the plates **29** and **31** by any appropriate device and, for example, by acting on a small lever **32** which is integral with a threaded rod **33** passing through the plate **31** and having its threaded extremity screwed into the plate **29**.

There has been shown in FIG. 4, the whole assembly of the chair-back and the headrest in a so-called inclined position with respect to the frame **2** with the inclined upper portion of the body of the patient, shown in a di-

agrammatic manner. The particular profile of the frame **2** shown in FIG. 3 permits the dentist to approach the patient more easily in the front working position.

The operation of the chair for adjustment of the position of the chair-back necessary in order to facilitate the dentist's work is as follows:

The movement of extension or retraction of the chair-back is effected by rotation of the frame **2** around the axis X–X' by acting on th chain **7** which drives the pinion **8** rigidly fixed to the frame **2**. The inclination of the chair-back **3** with respect to the seat **1** is thus adjusted.

In order to obtain the lateral inclination of the chair-back **3** on the frame **2** so as to effect a lateral displacement of the upper part of the patient's body, the dentist need only act on the operating handle **27** which rotates the chair-back **3** by means of the shaft **26** about the axis Y–Y', by rotation of the sleeve **10** on the shaft **9**. The angular displacement of the handle **27** acts through the levers **22**, **23** and **24** to slacken-off the nut of the lever **22** on the threaded rod **21**, which permits the movement of the shaft **15** in the notch **18** of the plate **19**. The laterally inclined adjustment position of the chair-back having been obtained, it is only necessary to release the handle **27** for the locking in the adjusted position to be obtained by screwing the threaded portion of the lever **22** on the threaded extremity **21** of the shaft **15**.

The adjustment of the position in height of the headrest support **12** is effected at the same time as the adjustment of the lateral inclination of the chairback, the immobilizing means by the threaded shaft **15** and the threaded portion of the lever **21** acting on the support **12**. With regard to the inclination of the headrest **13**, this is adjusted by acting on the small lever **32** which, when slackened-off, permits on the one hand the swivel joint **30** to rotate in the receesses of the plates **29** and **31**, and on the other hand, by releasing the back-plate **31** on the articulation **20**, to cause the whole of this headrest assembly to rotate on this pivotal axis. This rotation of the lever **32** can be limited to a fraction of a turn so as to provide rapid locking and release.

An examination of the various special features resulting from the mechnaisms described shows that:

A chairback for dental use is especially constituted by a frame articulated on the seat of the chair opposite the front position of the dentist with a view:

On the one hand to achieve the conditions of extension and retraction of this chairback;

On the other hand, by its particular profile, to enable the dentist to improve substantially his conditions of working.

This frame is furthermore arranged so as to receive the chairback proper which supports the patient, according to one form of construction, characterized by the fact that this chairback can be made available in rotation about an axis at right angles to the above-mentioned pivotal axis in order to obtain a lateral displacement of the upper part of the patient's body, this displacement being caused by a manual action of the dentist, on a handle articulated on the chairback proper, the rotation of which serves in particular to effect the locking or release of this chairback on the frame.

This chairback is further characterized by the fact that it drives in its movement a headrest articulated on a sliding support radial to the axis of rotation, the movement of which enables the dentist to adapt the headrest to the morphology of the patient.

According to an appropriate method of construction this sliding support can be released or locked at the will of the dentist, by acting on the handle.

The headrest is characterized by the fact that it is retained by a support comprising a swivel joint, the housing of which is formed in two parts: one is articulated on the sliding support, while the other serves as a locking flange for the headrest and sliding support assembly, by its simultaneous action on the swivel joint and the articulation.

What is claimed is:

1. An armchair for dental treatment comprising a frame having a seat portion, a backrest portion, first means providing an articulated mounting of said backrest portion on said frame about a first axis and permitting forward and backward movement of said backrest portion, second means providing an articulated mounting of said backrest portion about a second axis at right angles to the first axis and permitting said backrest to be inclined laterally independently of said first articulation whereby the head and upper part of the patient's body may be moved laterally without substantially altering the position of the remainder of the patient's body, manually operated lever means controlling said second articulation means to permit movement of said backrest portion and the locking in place thereof, said backrest portion having a frame with an arcuate slot therein which is concentric with the second articulation axis, a headrest support means mounted to slide along the longitudinal axis of said backrest portion and having a longitudinal slot therein, threaded shaft means passing through said longitudinal slot and movable in said arcuate slot in said frame, lever means connecting said shaft means to said manually operated lever means for immobilizing and freeing said shaft means whereby said headrest support means is simultaneously locked and freed with the lateral control of said backrest portion.

2. An armchair for dental treatment in accordance with claim **1**, further comprising a headrest mounted on said headrest support means by swivel joint means having a housing comprising two parts, one of said parts being articulated on said headrest support means and the other serving as a locking means, and means to selectively lock said parts.

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FRANCIS K. ZUGEL, Primary Examiner

U.S. Cl. X.R.

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