(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 345 229 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **89830213.8**

(22) Date of filing: **16.05.89**

(51) Int. Cl.4: **A 61 G 15/00**

(30) Priority: **31.05.88 IT 348488**

(43) Date of publication of application:
06.12.89 Bulletin 89/49

(84) Designated Contracting States:
CH DE ES FR GB GR LI SE

(71) Applicant: **CASTELLINI S.p.A.**
Via Saliceto, 22
I-40013 Castelmaggiore (Bologna) (IT)

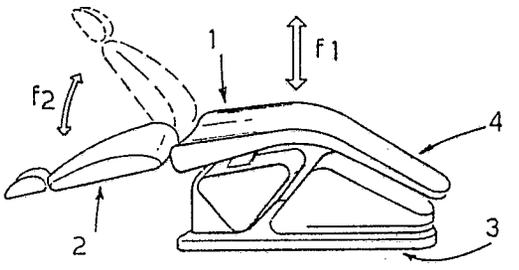
(72) Inventor: **Castellini, Franco**
Via Bellinzona, 60
I-40135 Bologna (IT)

(74) Representative: **Lanzoni, Luciano**
c/o BUGNION S.p.A. Via Farini, 37
I-40124 Bologna (IT)

(54) A chair for medical use, in particular in dentistry.

(57) In a chair comprising at least a seat (1) and a back (2), supported by a permanent base (3), the seat is height-adjustable only, remaining angled permanently downward toward the rear; the back (2) is hinged to the seat (1) in such a way as to give at least three basic positions: one substantially upright, another substantially horizontal, and a downwardly angled position set below the horizontal in which the back (2) and seat (1) are brought into alignment and the occupant of the chair assumes Trendelenburg's position.

FIG 2



EP 0 345 229 A2

Description

A chair for medical use, in particular in dentistry

The invention relates to a chair for medical use in general, and for use in dentistry in particular. The art field of medical appliances, and more in particular, of dental surgery appliances, embraces chairs that can be adjusted to different postural positions as and when required; in addition to the numerous positions called for in routine medical practice, these include Trendelenburg's position, so-called, a reclining posture in which the legs of the patient are raised above the level of his (or her) head, and which ensures a freer flow of blood to the head in conditions where the brain may be starved of oxygen.

Chairs in current use that are capable of assuming the Trendelenburg position consist in a base, a seat supported by the base, and a back articulated with the seat, and offer three basic adjustments:
-of the seat, which can be raised and lowered to suit the height of the patient;
-of the back, which can be angled in relation to the seat to arrange the body of the patient (and more especially the head, in the case of dentistry) in the position required by the practitioner;
-of seat and back together, which can be rotated or tilted fully into the Trendelenburg position.

Conventionally, the controls operating these three adjustments are independent of one another. The chairs in question are particularly suitable for dentistry, given that the practitioner is able to manoeuvre the patient from the sitting to the supine position as and when necessitated by the type of treatment being carried out.

Given the necessity for so many separate controls, however, and the bulkiness of the components used to produce the reclining movement, the structure of the conventional chair is rendered complex and considerably expensive.

Moreover, it becomes difficult to select and effect an adjustment with any great speed, given that the user must first make quite certain that the correct control is being selected.

Accordingly, the object of the invention is to provide a chair that is capable of reclining into the Trendelenburg position, simple in construction and operation, and therefore economical.

The stated object is realized in a reclining chair as characterized in the appended claims, which consists in a base, a seat supported by the base, and a back articulated with the seat, wherein the seat is angled down toward the back away from the horizontal, and adjustable for height only, whilst the back is adjustable through at least three positions, of which one lies below the horizontal and coincides with Trendelenburg's position. The main advantage of the chair disclosed is that of its simple construction and operation.

The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

fig 1 is the schematic illustration of a possible embodiment of the chair, seen in perspective;

fig 2 is a longitudinal section through the chair, from which certain parts are omitted for ease of consultation.

The chair according to the invention is of the type consisting in a base 3, a seat 1 supported by the base, and a back 2 articulated with the seat about a pivot 22.

The seat 1 is carried by the base 3 on a pair of parallelogram or quadrilateral linkages 6 located one at either side of the base. Means by which to adjust the height of the seat 1, consisting in a fluid power cylinder 5, are installed internally of the base 3, connected to the base on the one hand and the quadrilateral linkages 6 on the other. The structure of the chair back 2 incorporates a rigidly associated appendage 7 at the bottom end, affording a pivot 8a to which one end of a second fluid power cylinder 8 is hinged, the remaining end of the cylinder being anchored hingedly to a pivot 8b afforded by the structure of the seat 1. According to the present invention, the seat 1 is angled with respect to the horizontal x-x through an angle denoted α, sloping downwards toward the chair back 2; as to movement, the seat 1 can be simply raised or lowered (see arrow denoted f1), which signifies that the quadrilateral linkage 6 will be proportioned such that no rotational movement is described by the seat 1 in the vertical plane when shifted by the fluid power cylinder 5. The back 1, on the other hand, is articulated to the seat 1 in such a way as to assume at least three basic positions: one substantially upright, another substantially horizontal, and a further position angled downwards and below the horizontal.

In practice, the back 2 is adjustable through a given arc (see arrow f2) by operation of the second fluid power cylinder 8, and can be set in almost any position between the upright limit (illustrated in bold line in fig 2) and the below-horizontal Trendelenburg position (bold line in fig 1).

In a preferred embodiment, the appendage 7 and the relative cylinder 8 will be proportioned such that, in the lower limit position, the structure of the back 2 is inclined away from the horizontal through an angle α that brings it into coplanar alignment with the seat 1.

Clearly enough, the angular distance denoted α must be calculated such that with the back 2 tilted down below the horizontal, the legs (or at very least the knees) of the patient, will be raised above head height; in short, the angle α is such that the lower limit position coincides with Trendelenburg's position.

The angle of the seat 1 can be selected or altered either by altering the angle α of the supporting structure and/or by appopriate modification of the upholstery conventionally fitted to furniture of the type in question, for example, increasing the depth of the cushion material selectively between the back 2 and the knee area.

The chair might also be provided with a foot rest 4

articulated by way of a hinge 9 to the end of the seat 1 farthest from the back 2 and affording a plurality of stable settings, each at a given angle in relation to the seat 1, which would be selected in either infinitely variable or discrete steps (using a clamp-and-release or jacking mechanism), by working the rest 4 itself into a position that brings the hinge 9 to the required setting. With a chair thus embodied, the normal sitting position assumed by a patient will be with feet below knee height, though the knees can be raised up above the level of the patient's head when the back 2 is reclined fully below the horizontal, as described above.

The chair described and illustrated will be seen to be extremely simple and economical in embodiment, whilst affording all the operating positions of essential importance; furthermore, the number of controls is limited to two, and the movements can be produced to advantage by way of a single lever shifted through two directions disposed at right angles to one another.

Claims

1) A chair for medical use, in particular for use in dentistry, of the type comprising at least a seat (1) and a back (2) articulated one to the other and supported by a base (3),
characterized
-in that the seat (1) is angled down and away from the horizontal toward the back (2), and adjustable for height only when in use; and
-in that the back (2) is articulated with the seat (1) in such a way as enables it to assume at least three positions: one substantially upright, another substantially horizontal, and a further limit position, angled downwards below and away from the horizontal, which corresponds to the conventional Trendelenburg position.

2) A chair as in claim 1, wherein selection of the angled, below-horizontal limit position brings the back (2) substantially into coplanar alignment with the seat (1), creating a single reclining plane.

3) A chair as in claim 1, with upholstered seat (1) and back (2), wherein the angle of the seat (1) in relation to the horizontal is determined or altered by selectively increasing the depth of the seat upholstery, departing from the end of the seat to which the back (2) is articulated.

FIG1

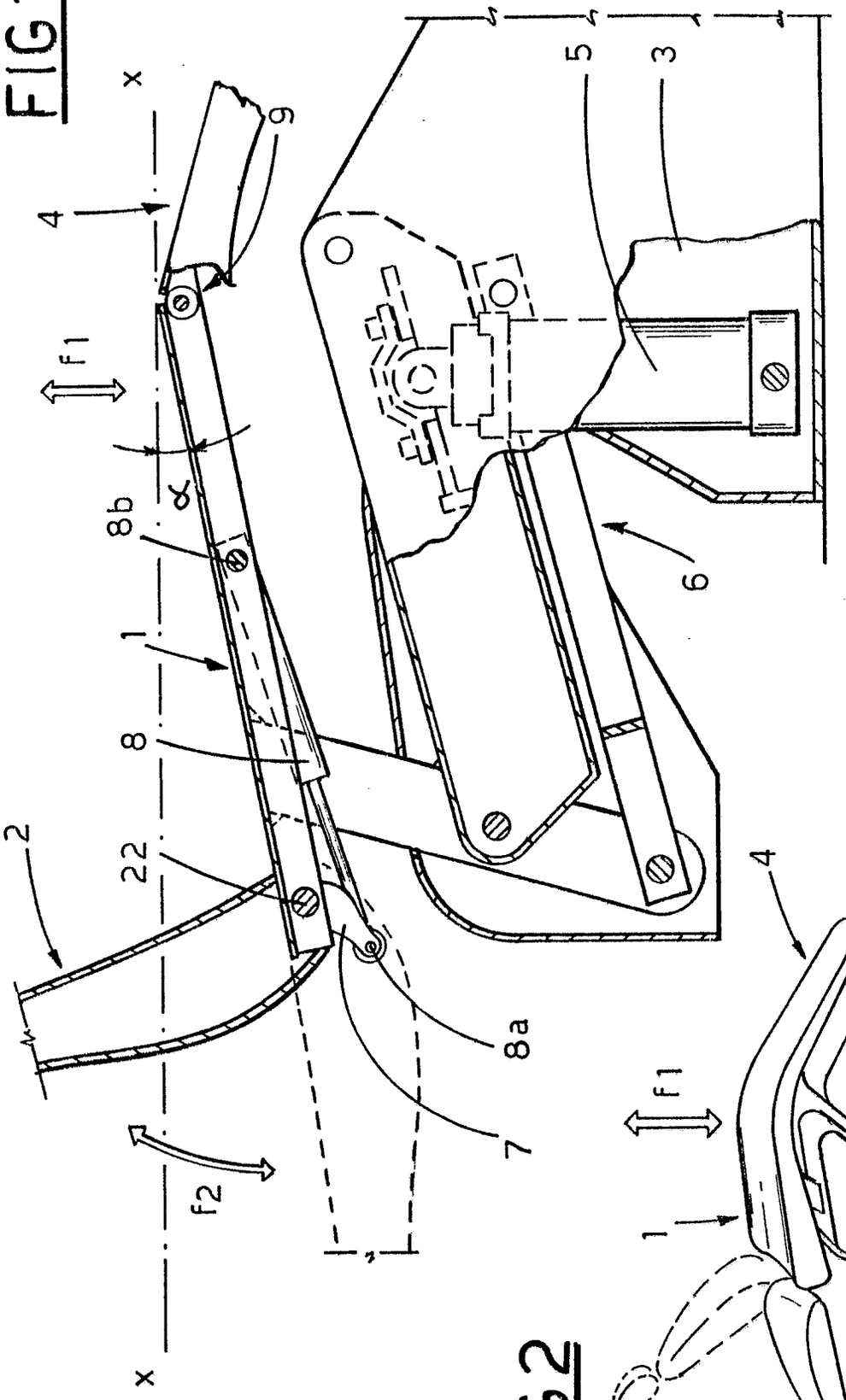


FIG2