

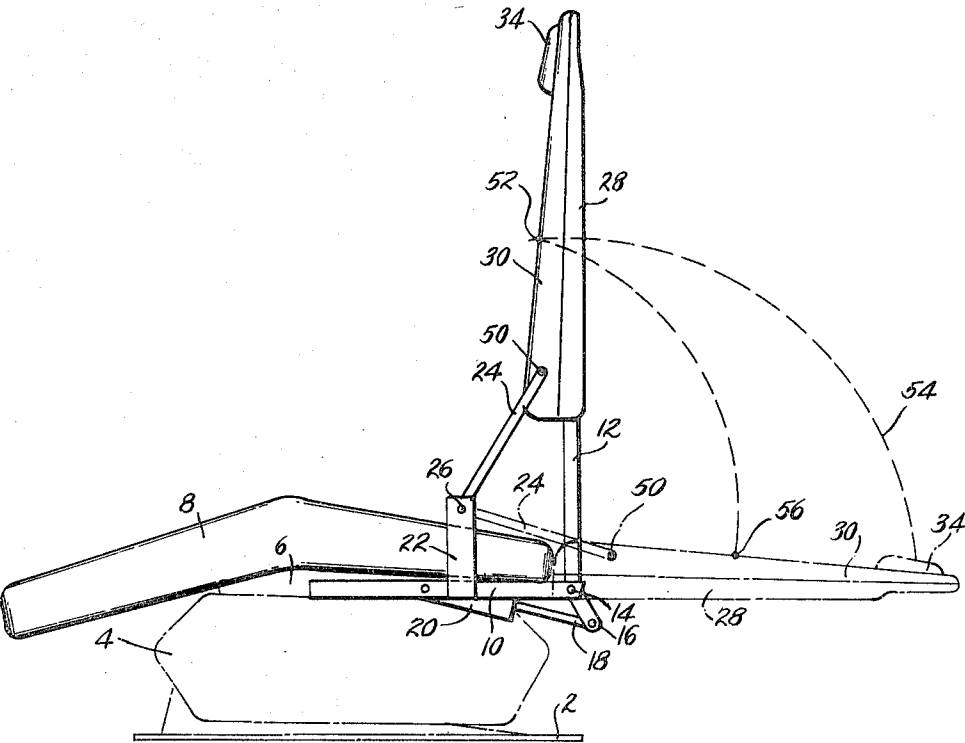
[72] Inventor **Maurice Lory**
Paris, France
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[73] Assignee **Etablissements Quetin**
Paris, France
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[31] **174,532**

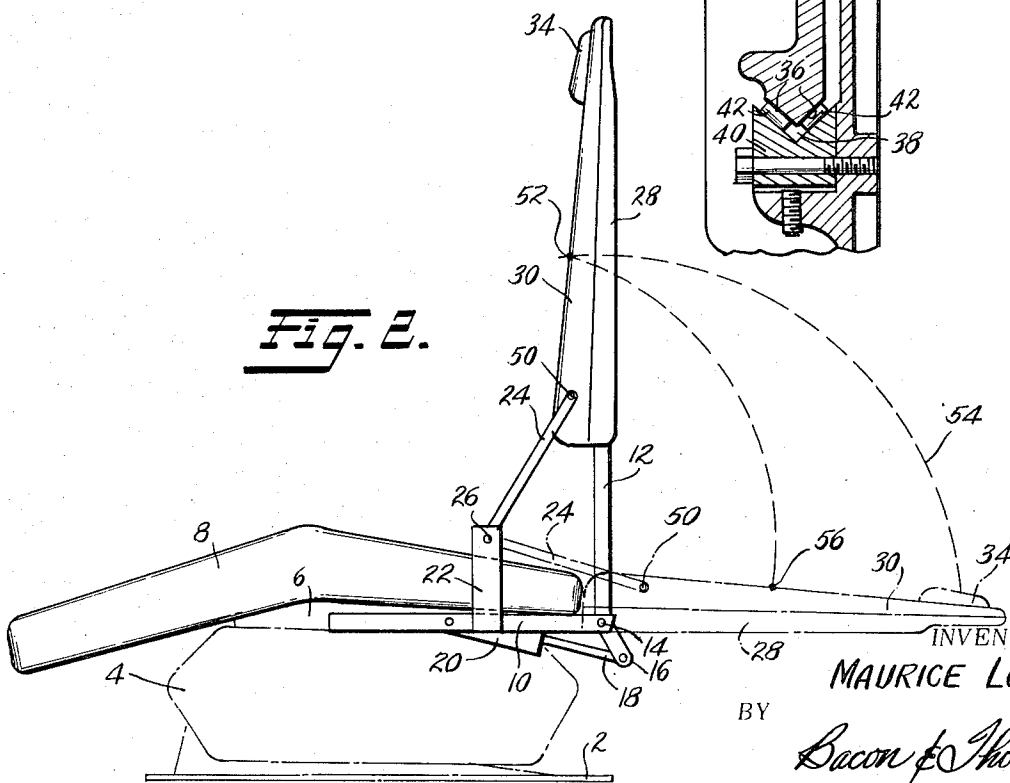
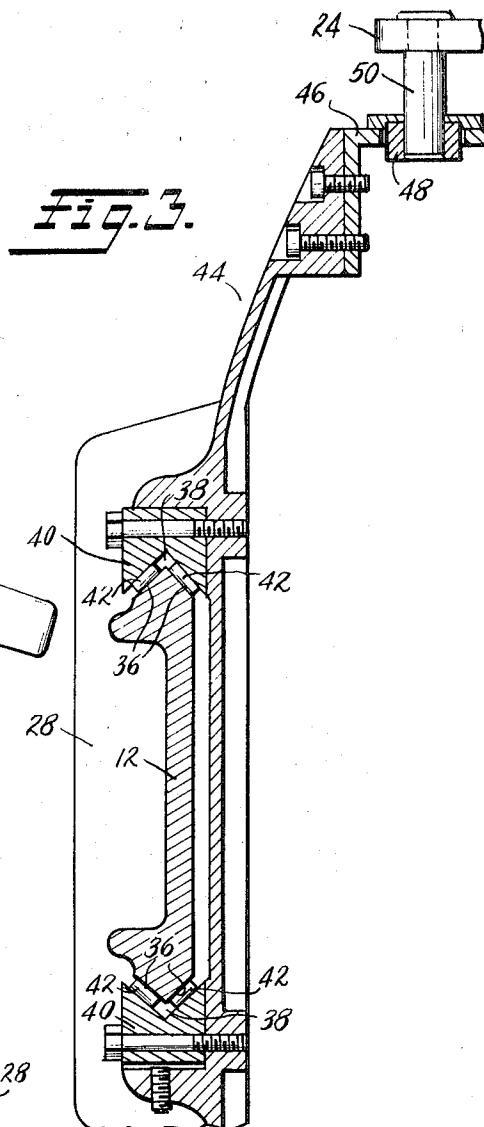
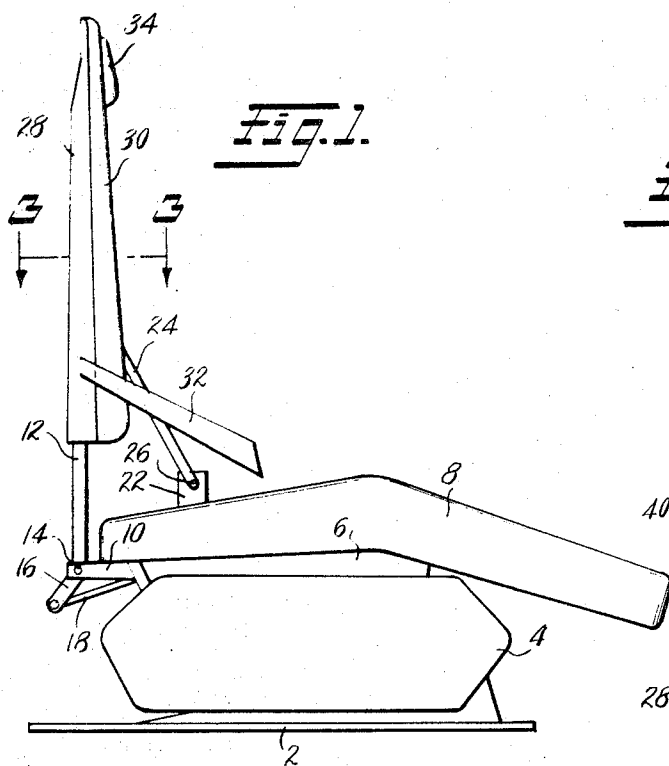
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Primary Examiner—Paul R. Gilliam
Attorney—Bacon & Thomas

[54] **RECLINING CHAIR**
3 Claims, 3 Drawing Figs.
[52] U.S. Cl. **297/361,**
312/64, 312/316, 312/355
[51] Int. Cl. **A47c 3/00,**
B60n 1/02
[50] Field of Search **297/71, 64,**
343, 354, 355, 361

ABSTRACT: A chair having a seat and a back support pivoted to the seat on a fixed hinge axis adjacent the rear edge of the seat. A chair back is slidable along the back support toward and from the hinge axis. A link is pivoted at one end to the seat at a point forwardly of and above the hinge axis and is pivoted at its other end to the slidable chair back above the hinge axis so that rearward tilting of the back support and seat back causes the seat back to slide toward the hinge axis.





INVENTOR.
MAURICE LORY
 BY
Bacon & Thomas
 ATTORNEYS

RECLINING CHAIR

BACKGROUND OF THE INVENTION

The present invention concerns an improved reclining chair, usable more particularly as an operating chair, which suppresses the "undressing" effect on the user or the patient during tilting of the back.

The role played by an operating chair in a medical practitioner's work is well known and particularly with reference to dental practitioners. In the construction of such a chair, account must be taken of the nature of the operations to be performed and such other requirements as will facilitate the work of the practitioner, diminish the effects of fatigue, and ensure the comfort of the patient.

Once the patient is seated in the chair it is desirable that he feel at ease, relaxed and comfortable, and thus be more receptive to undergoing all the indignities of the operation to be performed.

With conventional reclining back chairs, movement of the back from an upright to a reclining position, while the user is seated therein, results in relative movement between the user's back and the tiltable chair back wherein the chair back slides upwardly along the user's back and produces what is referred to as the "undressing" effect since it tends to pull the user's clothes upwardly. This effect is due to the fact that the patient or user, in moving from an upright to reclining position, pivots his upper body portion about an axis defined by his hip joints, which is always above the seat cushion and forwardly of the seat back, whereas the back of a chair conventionally swings rearwardly about an axis much lower than the hip joints and located rearwardly thereof.

The obvious solution to the above problems would be to locate the hinge axis for the seat back in such a manner that it is in axial alignment with the axis defined by the hip joint of the patient. However, such a solution is difficult to achieve, particularly in view of the fact that all patients are not of the same size or physique.

SUMMARY OF THE INVENTION

The present invention involves a reclining chair structure wherein the tilting axis of the seat back is placed in a more or less conventional and readily accessible position relative to the seat's cushion and wherein a seat back portion is slidably mounted, for up and down movement, on a tiltable back support that is hingedly mounted relative to the seat cushion. Linkage means are provided between the seat frame and the slidable seat back cushion so that the seat back cushion is drawn downwardly toward the hinge axis in response to rearward tilting movement of the seat back support. The connecting mechanism may be in the nature of a rigid link or flexible cable or chain of fixed length, all as will be more fully described.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view, viewed from one side of the chair of the present invention;

FIG. 2 is a side elevational view from the opposite side of the chair of FIG. 1 and showing the seat back in upright position in full lines and in reclining position in broken lines; and

FIG. 3 is a fragmentary horizontal sectional view, on an enlarged scale, taken substantially along the line 3-3 of Fig. 1, with the seat back cushion being omitted.

DESCRIPTION OF A PREFERRED EMBODIMENT

The reclining chair of the present invention is illustrated, by way of example, as comprising a suitable base 2 on which a housing 4 is mounted. It is contemplated that the housing 4 include operating mechanism for tilting or raising and/or lowering the seat frame 6 mounted thereon. Such operating mechanism may take the form of hydraulic devices of the type disclosed in French Pat. No. 1,465,365, dated June 17, 1964. Suitable controls for the hydraulic operating mechanism are

conventional and contemplated but are not illustrated herein. The seat frame 6 supports the seat cushion 8, which, for purposes of the present description, is fixed relative to the base 2 and housing 4. The seat frame 6 includes rearwardly extending bracket means 10 on which a seat back support 12 is pivotally mounted about a fixed axis 14 extending generally parallel and adjacent to the rear edge of the seat cushion 8. The seat back support 12 has a portion 16 extending downwardly below the axis 14 and which may be connected to the operating rod 18 of a hydraulic cylinder 20 (see also FIG. 2) for effecting tilting and control of the seat back support 12 about the axis 14.

Referring now to FIG. 2, the seat frame structure 6 is provided with an upstanding, fixed bracket 22 at one side of the seat and to the upper end of which a rigid link 24 is pivotally connected about an axis 26.

The seat back 28 having a seat back cushion 30 thereon is slidably mounted on the seat back support 12 for vertical sliding movement thereon. As shown in FIG. 1, the seat back may also be provided with a suitable arm rest 32 and a headrest 34. Referring to FIG. 3 wherein the seat back support 12 is shown as having oppositely bevelled edge portions 36 spaced from and parallel to the walls of V-shaped grooves 38 formed in guide members 40 secured to the seat back 28, it is to be noted that the view of FIG. 3 omits the seat back cushion, for clarity of illustration.

Between the bevelled surfaces 36 and walls of grooves 38 are a plurality of roller bearings 42. Suitable caging means (not shown) are provided to retain the roller bearings between the relatively movable parts and to limit movement therealong. It will be apparent that the structure illustrated in FIG. 3 permits ready and easy vertical sliding movement of the seat back 28 along the back support member 12. As also shown in FIG. 3, the seat back 28 includes wing portions 44 extending laterally and to which the cushion 30 may be secured. A suitable bracket 46 is mounted on one edge of the seat back wing portion 44 and carries thereon a bearing 48 in which pivot pin 50 is journaled. Pivot pin 50 defines the axis about which link 24, previously described, is pivotally joined to the seat back structure. As shown, the pivot pin 50 is secured to an end of the link 24.

Referring now to FIG. 2, it will be seen that, when the seat back is in an upright position, a center portion of the patient's back will rest against the back cushion 30 at about the point 52, for example. If the seat back 28 and support 12 were to swing rearwardly about axis 14 as a single unit, the point 52 would follow the dotted line 54, which would obviously bear against the patient's back at a much higher point than when the patient is in an upright position and would require adjustment of the headrest. In fact, the point 52 would move to about the position shown in dotted lines for the headrest 34, and it is obvious that such relative movement would tend to dislodge or displace the patient's clothing. In view of the manner in which the seat back 28 can slide on the back support 12 and the relative positions of the pivot axes 14 and 26, rearward swinging movement of the seat back support 12 to the dotted line position will result in the link 24 drawing seat back 28 downwardly toward axis 14 to the position shown by dotted lines in FIG. 2 and the point 52 on the seat back cushion will move to about the point indicated at 56. It will be readily apparent that, in the upright and reclining positions, the points 52-56 will always be at about the same distance from the hip axis of the patient and his or her head will always be at the headrest 34.

As stated previously, the link 24 need not be a rigid link but may be any suitable chain, cable or the like which is essentially inextensible and of fixed length.

While a single specific embodiment of the invention has been shown and described herein, the same is merely illustrative of the principles involved and other forms may be resorted to.

I claim:

1. A reclining chair comprising; a fixed seat portion; a back support pivotally mounted relative to said seat portion about

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an axis adjacent and fixed relative to the rear edge of said seat portion by pivot means fixed to said seat; a seat back slidably carried by said back support for sliding movement thereon toward and from said axis; and control link means pivotally connected to said seat and seat back and responsive to rearward swinging movement of said back support about said axis for sliding said seat back along said back support toward said axis to thereby substantially eliminate relative movement between said seat back and the back of a person seated on said seat portion when moving from an upright to a reclining posi-

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tion.

2. A reclining chair as defined in claim 1 wherein said control link means comprises an inextensible member of fixed length pivotally connected at one end to said seat back and at its other end to said fixed seat portion at a point displaced laterally of said axis.

3. A reclining chair as defined in claim 2 wherein said point is displaced upwardly and forwardly of said axis.

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