June 16, 1925. 1,542,508

F. KOENIGKRAMER

CHAIR

Filed Aug. 2, 1922 2 Sheets-Sheet 1

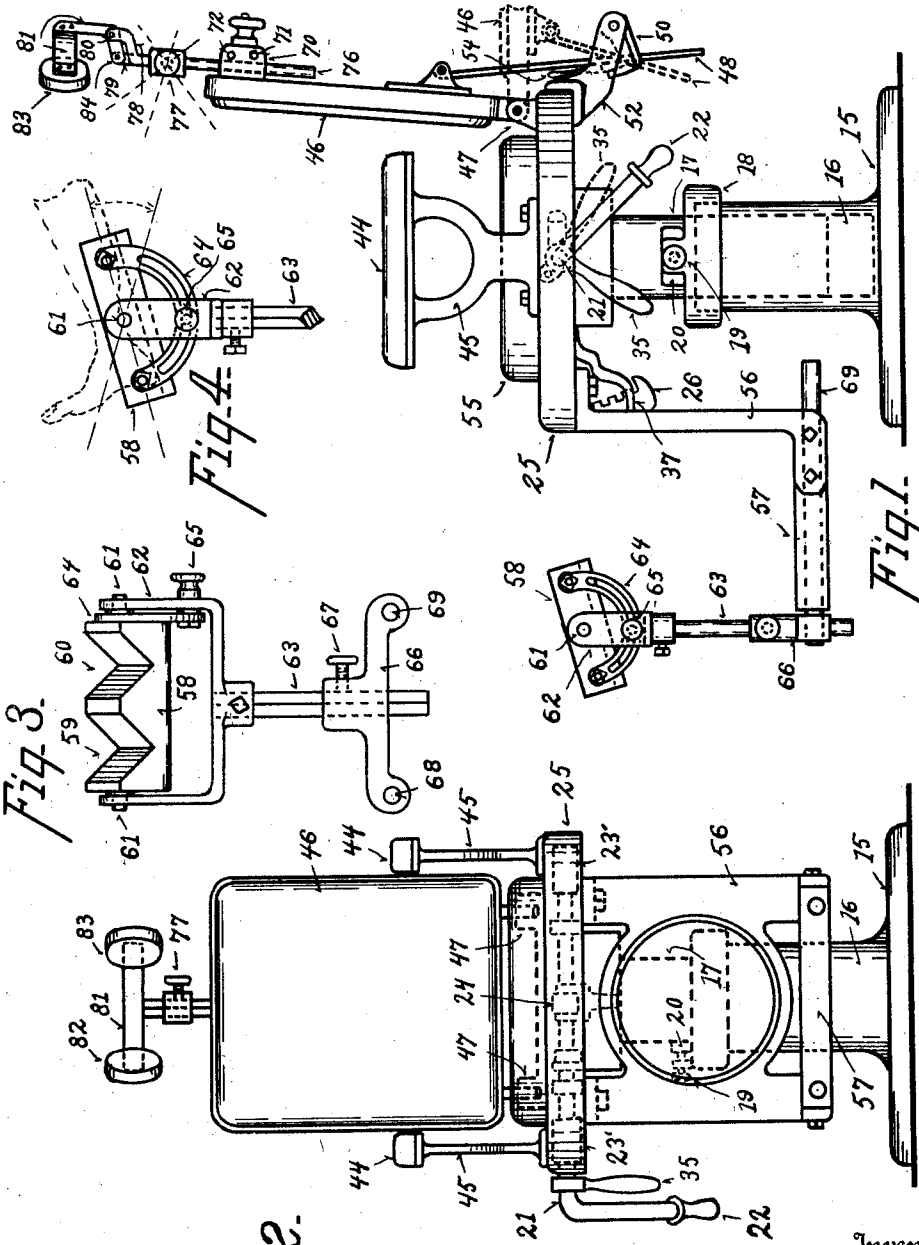


Fig. 1.

Fig. 3.

Fig. 2.

Fig. 4.

Inventor

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CHAIR

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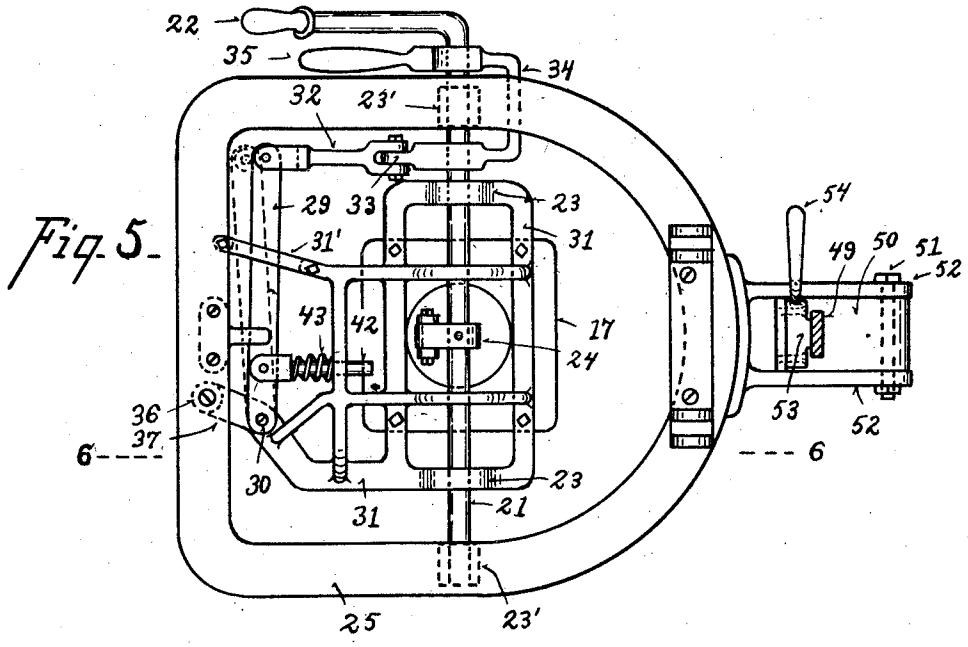


Fig. 5.

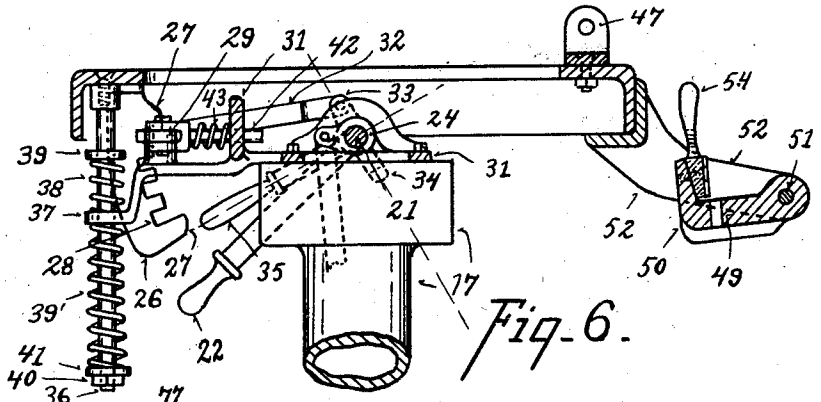


Fig. 6.

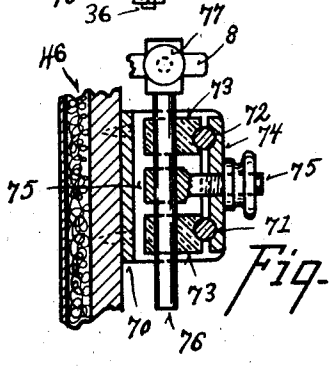


Fig. 7.

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Patented June 16, 1925. 1,542,508

UNITED STATES PATENT OFFICE.

FREDERICK KOENIGKRAMER, OF CINCINNATI, OHIO.

CHAIR.

Application filed August 2, 1922. Serial No. 579,195.

To all whom it may concern:

Be it known that I, FREDERICK KOENIGKRAMER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Chairs, of which the following is a specification.

My invention relates to improvements in chairs. One of its objects is to provide an improved chair apparatus adapted for use of chiropodists, and for similar purposes, as for instance, for optometrists, and for minor surgical operations. Another object is to provide improved chair seat and back adjusting apparatus. Another object is to provide improved means to cushion and lock the adjustments of the chair seat relative to the base. Another object is to provide an improved foot rest for chiropodists and surgical purposes. Another object is to provide improved means to support and adjust a head-rest upon and relative to the chair. Another object is to provide improved foot rest adjusting apparatus. My invention also comprises certain details of form and relation of component members, all of which will be fully set forth in the description of the accompanying drawings, in which:

Fig. 1, is a side elevation of a chair embodying my improvements.

Fig. 2, is a front elevation of the same with the foot rest detached.

Fig. 3, is a front elevation of the foot rest detached.

Fig. 4, is a side elevation of the foot rest detached, showing one method of its application, and partly indicating its range of adjustment.

Fig. 5, is a plan of the chair seat with the seat, cushion detached.

Fig. 6, is a sectional detail taken on line 6—6 of Fig. 5.

Fig. 7, is a detail of the head-rest adjusting and clamping means.

The accompanying drawings illustrate the preferred embodiments of my invention in which 15 represents a chair base, preferably provided with a vertical cylinder 16 to receive a hydraulic plunger or standard 17 upon which the chair seat, back, arms and foot rest are all mounted, and which enables said parts to all be adjusted together to different positions vertically through the movements of said plunger vertically in said cylinder. Said plunger with the chair members carried thereby is also rotatably adjustable within the cylinder, and a collar 18 mounted upon the upper end of the cylinder and provided with a set screw 19 and a brake shoe 20 to engage the face of the plunger while the collar 18 is clamped to the exterior of the cylinder both by the action of the set screw 19, provides for rigidly locking the plunger against either movement relative to the base.

An actuating shaft 21 provided with a hand lever 22 is journaled in bearings 23 at the upper end of the plunger 17. A crank arm 24 carried by the shaft 21 actuates a hydraulic pump carried by and at the lower end of the plunger 17 to pump a liquid from a reservoir in the plunger 17 into the space within the cylinder below the plunger through one portion of the rotation of the shaft 21, and to open valve mechanism to return the liquid to its reservoir in the plunger at another position rotarily of shaft 21.

The shaft 21 also serves as a hinge axle by means of which the chair seat, back, arms and foot rest may all be adjusted rotatably to a variety of positions relative to the plunger 17, by reason of said shaft 21 being also journaled in bearings 23′ carried by the chair seat frame 25. In order to limit the rotary movement of the seat frame 25 relative to the shaft 21 I provide a toothed segment 26 attached rigidly to the seat frame 25 provided with two long teeth 27 at opposite ends and a plurality of shorter spaced teeth 28 intermediate of the teeth 27. A latch bar 29 is pivotally mounted at 30 on the bracket 31 carried rigidly by the upper end of the plunger 17. The opposite end of said latch bar is connected by a link 32 with a projection 33 carried by a yoke 34, which yoke 34 is journaled upon the shaft 21 and provided with an actuating lever 35 by means of which said latch bar may be shifted into and out of engagement with the spaced teeth 28 to release and adjust the chair relative to shaft 21 and to lock the chair to any adjusted position. The latch bar 29 can not be moved out of the path of the two long teeth 27, which thereby predetermine and limit the rotary adjustment of the chair seat upon the shaft 21. The free end of latch bar 29 is supported by guide 31′.

To cushion the rotary adjustment of the

chair seat upon the shaft 21 and thereby avoid sudden and severe shocks a rod 36 is attached rigidly to the seat frame 25 and is threaded through a slot in an arm 37 projecting from the bracket 31. A coiled spring 38 and washer 39 cushion the chair movement at one extreme of the chair movement as the seat is tilted forwardly, and a coiled spring 39′ and nut 40 and washer 41 cushion the chair movement as the seat is tilted rearwardly, thereby absorbing the shock and tending to counterbalance the weight of the chair as it is tilted rearwardly. A spring actuated plunger 42, pivotally attached to the latch bar 29 and with its spring 43 engaging the bracket 31, serves to continuously force the latch bar into engagement with the teeth 28 of segment 26 except when said latch bar is retracted by hand through the lever 35, to thereby prevent excessive or accidental movement of seat rotatably relative to the shaft 21.

Chair arms 44 are independently attached to the seat frame by means of brackets 45. The chair back 46 is hinged at 47 to the seat frame, and is adjustable relative to the seat frame through a range of movement from substantially the full line vertical position shown in Fig. 1 to the substantially horizontal dotted line position shown in Fig. 1. A bar 48 is pivotally attached at 49 to the rear of the chair back, and said bar is passed through a correspondingly shaped slot in a latch member 50 which latch member is pivoted at 51 between the forked arms of a bracket 52 attached to the seat frame. The free end of latch member 50 is turned nearly parallel to the bar 48, and a wedge 53 actuated by a hand lever 54 provides for a positive lock of the latch member 50 to the bar 48 to hold the chair back rigidly to any adjusted position. When the wedge 53 is not actively employed the chair back may be moved freely upwardly or forwardly and will be automatically held by the latch member 50 against movement in a reverse direction due to the canting and binding of the bar 48 in the slot in latch member 50. To lower the chair back the latch member 50 is lifted whereupon the bar 48 will move freely down through the slot in latch member 50. The chair back may thus be adjusted from a vertical to a horizontal position and rigidly locked or automatically latched. When the back is in a substantially horizontal position, it is also in substantially the same plane with the top of seat cushion 55 or even inclined downwardly therefrom so that the two of them form an operating table or bed suitable to perform minor operations on children. When the foot rest is elevated into substantially the same plane as the top of the seat cushion the foot rest, seat cushion and chair back together constitute a table support for an adult for minor operations.

An apron 56 is attached to the front of the seat frame 25 and depends therefrom, and a step or foot rest 57 is rigidly attached to said apron. I also provide in addition to the foot rest 57 an adjustable foot rest 58 which is preferably provided with two troughs or channels 59 and 60 adapted respectively to support one or both feet or the lower portion of the legs of a patient in a variety of positions suitable to be operated upon as for instance by a chiropodist. The foot rest 58 is pivotally supported at 61 in a forked bracket 62 carried by a vertical shank or stem 63, preferably of polygonal cross section. A slotted segment 64 attached to the foot rest 58 at opposite ends and a clamping bolt 65 enable the foot rest 58 to be adjusted to different angular positions and clamped rigidly to the yoke 62. The shank 63 is non-rotatably and vertically adjustable in a cross bar 66 to which it may be rigidly clamped by a set screw 67. The cross bar 66 is rigidly mounted upon rods 68, and 69 which slide endwise in corresponding recesses in the foot rest member 57, where they are held by spring tension against too free a movement in said recesses. The foot rest 58 may thus be adjusted horizontally to and from the seat frame through a considerable range of adjustment, and also adjusted vertically and to different angles of inclination, whereby the foot of the patient may be caused to rest in one of the channels 59 or 60, as shown in dotted line Fig. 4, with the foot upwardly or downwardly directed from the seat cushion, or with the lower portion of the leg supported in one of the channels 59 or 60 and the entire foot overhanging the foot rest 58, as may be most convenient for the patient or operator.

Attached to the rear of the upper portion of the chair back is a yoke shaped bracket 70 carrying two parallel horizontally positioned rods 71 and 72. A carriage composed of two sections 73 and 74 is mounted to slide horizontally on the rods 71 and 72. A clamping bolt 75 connects the two carriage sections together, and when tightened serves to clamp the two carriage sections together, and also at the same time to clamp the shank 76 of a head rest rigidly to said carriage sections. The shank 76 is adjustable to various positions vertically relative to said carriage sections, and also laterally with said carriage sections whereupon tightening of a single bolt 75 clamps all the members rigidly in position, and facilitates a wide range of adjustment for the head rest and a quick adjustment thereof. A clamping bolt 77 serves to clamp two bars 78 and 79 together face to face. The bar 78 is pivotally attached at 80 to a yoke 81 which carries two head rest pads 82 and 83. The bar 79 is pivotally attached at 84 to the

yoke 81. By sliding bars 78 and 79 upon each other a variety of adjustments of the yoke 81 and pads 82 and 83 are attainable. The bar 78 and 79 may also be turned to lie at right angles to the shank 76 to secure a greater variety of positions for the head rest.

The apparatus herein shown and described is capable of considerable modification within the scope of the claims without departing from the spirit of my invention.

What I claim is:

1. A chair comprising a base provided with a cylinder, a vertically adjustable hydraulic plunger mounted in said cylinder and serving as a chair pedestal, an axle journaled to the upper end of said plunger serving as a pump shaft and provided with a hand lever operable to actuate a hydraulic pump within said plunger to raise and lower said plunger, a chair seat member comprising a seat, back, and foot-rest, pivotally mounted upon and above said axle, a vertically disposed toothed segment carried by said seat member, a latch bar carried by said pedestal and yieldingly actuated to normally engage one of the teeth of said segment, a hand lever adapted to retract said latch bar when it is desired to adjust said seat member upon said axle, and resilient means to limit the movement of said chair seat member relative to said plunger at opposite extremities of its movement.

2. A chair comprising a base provided with a cylinder, a vertically adjustable hydraulic plunger mounted in said cylinder and serving as a chair pedestal, a substantially horizontal axle journaled to the upper end of said pedestal and operable as a rock-shaft to actuate a hydraulic pump located within said pedestal, a chair seat rotatably mounted upon said rock-shaft relative to said pedestal to enable said chair seat to be adjusted to different positions of inclination, a rack member carried by and depending from said seat, a pawl mounted upon said pedestal and resiliently energized to normally engage said rack member, a hand lever journaled upon said rock-shaft and operable from the exterior of said seat to retract said pawl when it is desired to adjust said seat, and a hand lever operable from the exterior of said seat to actuate said rock-shaft and thereby operate said hydraulic pump.

3. A chair comprising a base provided with a cylinder, a vertically adjustable hydraulic plunger mounted in said cylinder and serving as a chair pedestal, a substantially horizontal axle journaled to the upper end of said pedestal and operable as a rock-shaft to actuate a hydraulic pump located within said pedestal, a chair seat rotatably mounted upon said rock-shaft relative to said pedestal to enable said chair seat to be adjusted to different positions of inclination, a rack member carried by and depending from said seat, a pawl mounted pivotally upon said pedestal and resiliently energized to normally engage said rack member, means to yieldingly limit the adjustment of said chair seat at opposite extremities of its movement relative to the pedestal, a hand lever operable from the exterior of said seat to retract said pawl when it is desired to adjust said seat, and a hand lever operable from the exterior of said seat to actuate said rock-shaft and thereby operate said hydraulic pump.

4. A chair comprising a base provided with a cylinder, a vertically adjustable hydraulic plunger mounted in said cylinder and serving as a chair pedestal, a substantially horizontal axle journaled to the upper end of said pedestal and operable as a rock-shaft to actuate a hydraulic pump located within said pedestal, a chair seat rotatably mounted upon said rock-shaft relative to said pedestal to enable said chair seat to be adjusted to different positions of inclination, a rack member carried by and depending from said seat, a pawl mounted upon said pedestal and resiliently energized to normally engage said rack member, a yoke-shaped hand lever journaled upon said rock-shaft and operable from the exterior of said seat to retract said pawl when it is desired to adjust said seat, and a hand lever operable from the exterior of said seat to actuate said rock-shaft and thereby operate said hydraulic pump.

5. A chair comprising a base provided with a cylinder, a vertically adjustable hydraulic plunger mounted in said cylinder and serving as a chair pedestal, a substantially horizontal axle journaled to the upper end of said pedestal and operable as a rock-shaft to actuate a hydraulic pump located within said pedestal, a chair seat pivotally mounted upon and above said axle, a vertically disposed toothed segment carried by said seat, a latch bar carried by said pedestal and yieldingly actuated to normally engage one of the teeth of said segment, a hand lever adapted to retract said latch bar when it is required to adjust said seat upon said axle, and resilient means to limit the movement of said chair seat at opposite extremities of its movement.

6. A chair comprising a base provided with a cylinder, a vertically adjusted hydraulic plunger mounted in said cylinder and serving as a chair pedestal, a substantially horizontal axle journaled to the upper end of said pedestal and operable as a rock-shaft to actuate a hydraulic pump located within said pedestal, a seat, chair back, and foot rest pivotally mounted upon and above said axle, a vertically disposed toothed segment carried by said seat, a latch bar car-

ried by said pedestal and yieldingly actuated to normally engage one of the teeth of said segment, a hand lever adapted to retract said latch bar when it is required to adjust said seat upon said chair seat, and resilient means to limit the movement of said axle at opposite extremities of its movement.

7. A chair comprising a base provided with a cylinder a vertically adjusted hydraulic plunger mounted in said cylinder and serving as a chair pedestal, an axle journaled to the upper end of said plunger and provided with a hand lever operable to raise and lower said plunger, a chair seat member comprising a seat, back, and foot rest, pivotally mounted upon and above said axle, a vertically disposed toothed segment carried by said seat member, a latch bar carried by said pedestal and yieldingly actuated to normally engage one of the teeth of said segment, a hand lever adapted to retract said latch bar when it is required to adjust said seat upon said axle, and resilient means to limit the movement of said chair seat member at opposite extremities of its movement.

In testimony whereof I have affixed my signature.

FREDERICK KOENIGKRAMER.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,542,508, granted June 16, 1925, upon the application of Frederick Koenigkramer, of Cincinnati, Ohio, for an improvement in "Chairs," errors appear in the printed specification requiring correction as follows: Page 4, line 5, claim 6, for the words "chair seat" read *axle*, and line 6, for the word "axle" read *chair seat;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of July, A. D. 1925.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.