

April 30, 1963

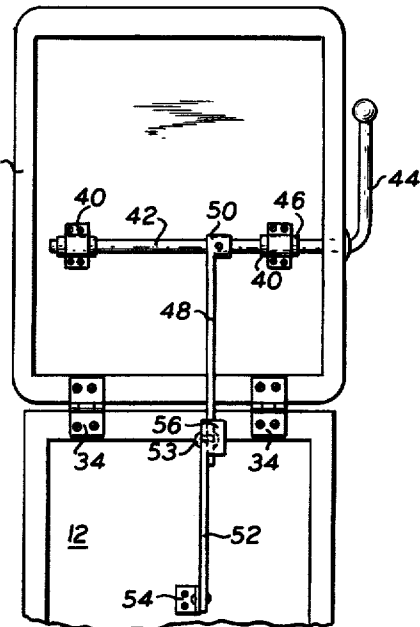
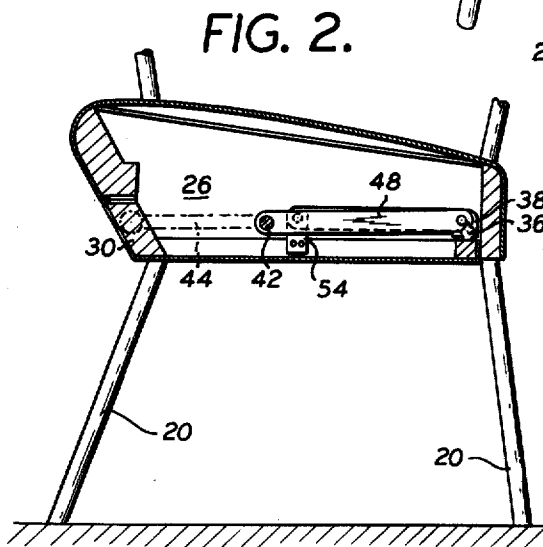
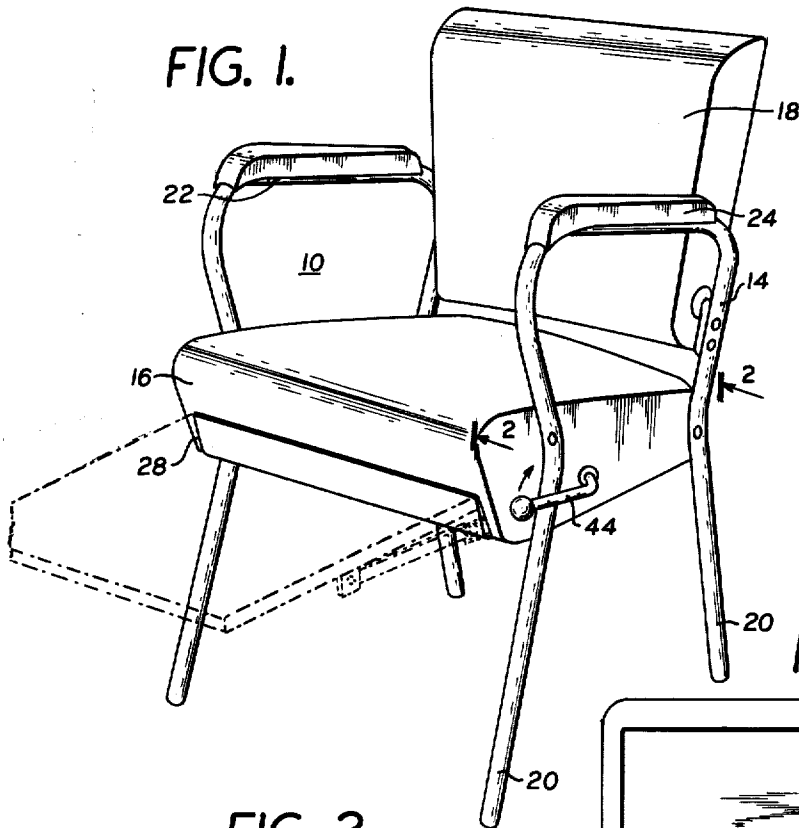
H. FIDEL

3,087,757

CHAIR

Filed April 14, 1961

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FIG. 5.

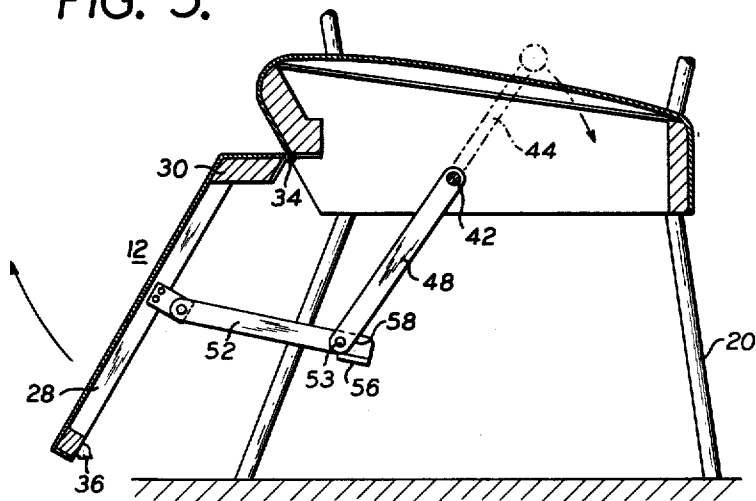
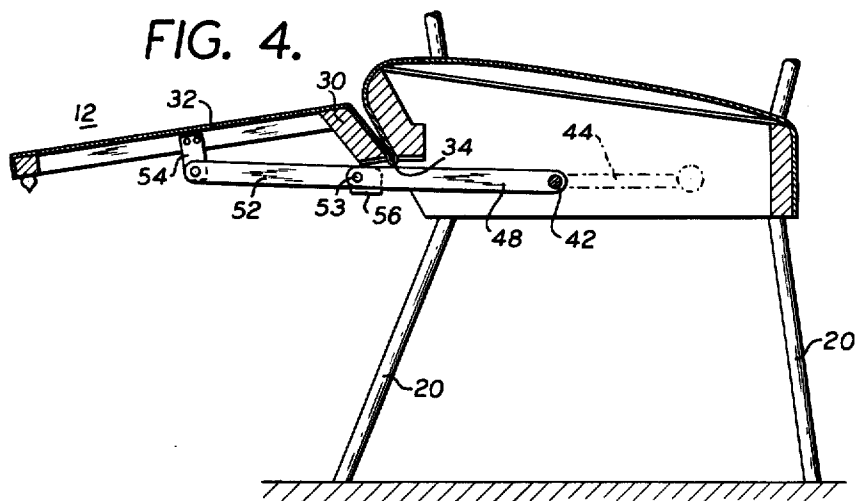


FIG. 4.



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FIG. 9.

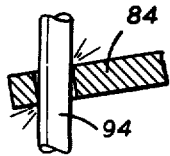


FIG. 10.

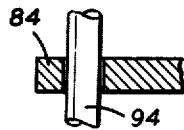


FIG. 8.

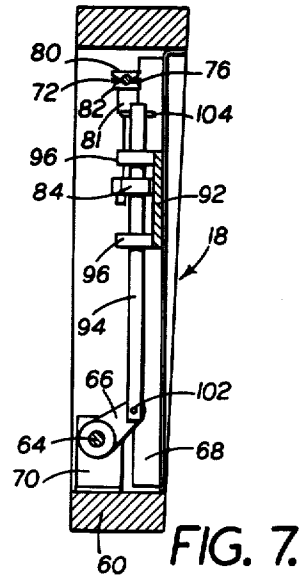
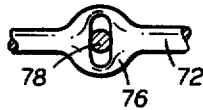
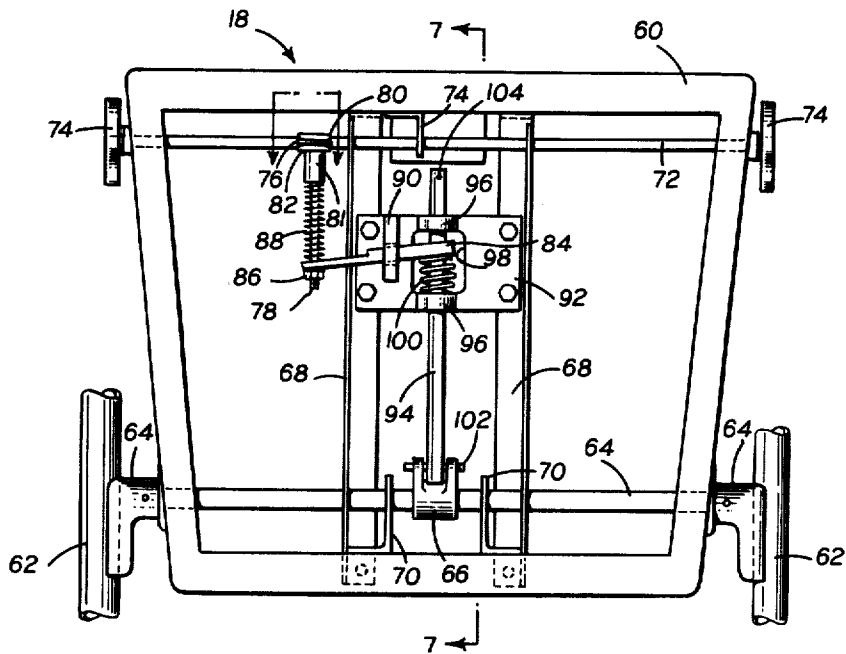


FIG. 6.



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This invention relates to chairs having movable footrests, such as the type of chair used in beauty parlors, barber shops, and the like. More particularly, this invention is directed to novel and simplified operating means for extending and retracting a footrest movably associated therewith.

The present invention is directed to a chair having a footrest that is hinged along the front edge of the seat of the chair so as to be moved between a forwardly extending position in substantial alignment with the chair seat and a retracted position. Heretofore the operating mechanisms provided for such purpose have been complex and costly. Frequently, such mechanisms have not been operable by the occupant of the chair. Further, in many instances when the footrest is in retracted position it is in vertical abutment against the front edge of the seat, so that there is no accessible foot room beneath the chair and consequently the occupant is not offered a maximum degree of comfort.

Another object of the present invention is to provide a single operating mechanism for moving a footrest from an extended to a retracted position, and vice versa.

A further object is to provide a chair with a movable footrest which when in retracted position folds beneath the chair seat and abuts in parallel relationship against the underside of the chair seat to form the bottom thereof so as to provide ample free foot room beneath the chair and thereby maximize the comfort of the occupant.

Another object is to provide a chair with a retractable footrest and an adjustable back, the footrest and the back each separately and independently adjustable by the occupant of the chair.

The above and other objects, characteristics and features of this invention will become more apparent from the following description taken in connection with the accompanying illustrative drawings.

In accordance with the present invention, I provide a chair having a seat with a recess on the underside thereof to accommodate the footrest when in retracted position. An operating means for the footrest is provided comprising a toggle assembly including a pair of links having adjacent ends thereof pivotally connected, one of the links having its opposite end pivotally connected to the footrest, the other of the links having its opposite end secured to a rotatable shaft extending transversely of the chair through the seat thereof. This shaft projects beyond one side of the chair and has an operating handle secured thereto which can be manipulated by the chair occupant to rotate the shaft and hence operate the toggle linkage.

When the toggle is in collapsed condition the two levers are disposed within the recess and between the underside of the seat and the bottom side of the footrest, the two links of the toggle each extending in the same direction toward the back of the seat from their pivotal interconnection. By moving the operating handle the shaft is rotated to swing the links down and out into an extended aligned

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position slightly beyond a 180° relation, in which position means on the links interengage to prevent further movement in the same direction, thus "locking" the toggle. During this operation the footrest is swung first downwardly and then outwardly to its projected position, the farthest projection occurring when the links are in 180° relationship to one another. As the links move beyond this position to lock the toggle, the footrest is very slightly retracted, the weight of the footrest against the links serving to maintain the toggle in locked condition.

The footrest is returned to the fully retracted position simply by rotating the handle to thereby rotate the shaft in the reverse direction, thereby moving the toggle through the 180° position and collapsing the toggle. During the retraction, the footrest is first slightly extended (at the 180° position of the links), then gradually swung down and folded under the chair and into the recess in the underside of the seat. Desirably a spring type of retaining catch releasably holds the footrest in the retracted position against the underside of the seat.

The invention will be more completely understood by reference to the accompanying drawings wherein:

FIG. 1 is a perspective view of the chair with the footrest in retracted position, the dotted lines serving to show the footrest in extended position;

FIG. 2 is a fragmentary sectional view taken along the line 2-2 of FIG. 1, partly broken away, showing the footrest retracted;

FIG. 3 is a fragmentary plan view of the bottom of the chair, the footrest partially broken away to illustrate the operating mechanism;

FIG. 4 is a view similar to FIG. 2, showing the footrest in extended position;

FIG. 5 is a view similar to FIG. 2, showing the footrest in intermediate position between extension and retraction;

FIG. 6 is an elevation view of the back of the chair, with the cover removed to show the adjusting mechanism;

FIG. 7 is a sectional view along the line 7-7 of FIG. 6;

FIG. 8 is a sectional view along the line 8-8 of FIG. 6; and

FIGS. 9 and 10 are enlarged sectional views of the adjustment lock illustrating two different positions thereof.

Referring to the drawings and particularly to FIGS. 1-5, the invention illustrated as applied to a chair 10 of the type used in beauty parlors, having a footrest 12 pivotally connected thereto. Chair 10 is provided with U-shaped members 14 which support the seat 16 and back 18 of the chair. The lower ends 20 of the U-shaped members serve as legs for the chair and the upper portions 22 serve as support for arm rests 24. The seat 16 is provided with a recess 26 along the underside thereof which accommodates the footrest when in retracted position.

Footrest 12 consists of a base 28 that is substantially rectangular in side elevation and an end member 30 attached thereto, this end member being parallelepiped in side elevation. The footrest generally has a cover 32 of leather, plastic, scuff-resistant fabric or the like over its outer surface. The rear edge of member 30 of the footrest 12 is hinged to the front edge of the seat 16 by a piano hinge 34. The width of the footrest 12 is just slightly less than the width of the recess 26 along the underside of the seat 16, so that the footrest nests snugly in said recess when in retracted position. Footrest 12 is

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releasably retained in this position by a projecting bottom 36 on the bottom of the base 28 which snaps into spring 38 mounted in the back portion of recess 26. Bottom 36 and spring 38 form a resilient frictional retaining catch of the type used on the doors of kitchen cabinets and the like.

Brackets 40 mounted on the inner surfaces of the sides of seat 16 rotatably support a shaft 42 having a projecting end connected to an operating handle 44. Collars 46 retain the shaft 42 in position, and handle 44 is bowed outwardly to clear the adjacent chair leg 20.

Shaft 42 is connected to footrest 12 by a toggle mechanism. This toggle mechanism comprises a link 48 having a hub 50 secured to shaft 42 for rotation therewith. The other end of link 48 is pivotally connected to one end of another link 52 as at 53, which link 52 has its other end pivotally connected to a bracket 54 fixed to base 28 of footrest 12. The end of link 52 adjacent connection 53 is provided with an L shaped bracket attachment 56 adapted to engage the bottom of link 48 when the toggle is extended to thereby lock the toggle in a slightly over-centered condition.

In order to move footrest 12 from its retracted position (FIG. 2) to its extended position (FIG. 4), handle 44 is rotated clockwise thereby rotating shaft 42 in a clockwise direction (as viewed in FIGS. 2, 4 and 5). This causes the pivotal juncture 53 between links 48 and 52 to rotate clockwise until links 48 and 52 extend in opposite directions from pivotal juncture 53 in 180° relation. As rotation of handle 44 is continued the links pass beyond the 180° position until the bracket 56 on link 52 engages the edge 58 of link 48. This locks the toggle with the footrest 12 extended. The greater the downward force upon the footrest, the more secure the lock will be. The footrest is retracted by simply rotating handle 44 counter-clockwise thereby breaking the toggle and reversing the direction of movement of links 48 and 52 until button 36 engages receiving spring member 38. At this point footrest 12 is received in recess 26 and forms the bottom of seat 16, with links 48 and 52 disposed within recess 26 between the seat and the underside of the footrest.

In accordance with the preferred form of my invention, I combine my novel footrest with a reclining back, which back is adjustable independently of the footrest.

Referring to FIGS. 6 through 10, back 18 includes a suitably padded quadrilateral frame 60 of wood or metal to which a back cover is secured. Back 18 is pivotally supported on upright portions 62 of tubular frame 14 by means of a cross shaft 64 extending through the sides of frame 60 and having brackets 64 secured on its outer ends shaped to conformingly fit portions 62 to which brackets 64 are riveted or bolted. A crank 66 is secured to the midpoint of shaft 64, which latter is held against turning by brackets 64.

A pair of angle irons 68 extend in spaced relation vertically of frame 60 between the upper and lower members thereof. On the lower rail of frame 60, a pair of angle brackets 70 are mounted between angle irons 68, and shaft 64 extends through angle irons 68 and brackets 70. Near the upper end of frame 60 a shaft 72 extends through the side rails of frame 60 through angle irons 68 and through an angle bracket 74 secured to the upper rail of frame 60 between angle irons 68. Shaft 72 has operating handles 75 secured to either end and is formed with a flattened eye 76 (FIG. 8) between one angle iron 68 and the nearer side rail of frame 60.

A bolt 78 extends through eye 76 and has a head 80 engaging the upper side of the eye. A sleeve 81 is slidable on bolt 78 and has a head 82 engaging the lower side of eye 76. The lower end of bolt 78 is threaded and extends through an aperture in the outer end of a locking bar 84. Locking bar 84 is adjustably positioned on bolt 78 by a nut 86 on the bolt, and a spring 88 embracing bolt 78 urges head 82 of sleeve 81 against eye 76 and bar 84 against nut 86.

Bar 84 extends with substantial clearance through an

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apertured boss 90 on a saddle plate 92 bolted to angle irons 68. The inner end of bar 84 is apertured to loosely embrace a rod 94 slidable through central apertured bosses 96 on plate 92 the plate having an aperture 98 between bosses 96. A coil spring 100 embraces rod 94 between bar 84 and the lower boss 96. A pin 102 connects the lower end of rod 94 to crank 66 and a pin 104 in the upper end of rod 94 limits relative downward movement of the rod.

The adjustment lock arrangement operates as follows. In the position shown in FIGS. 6 and 9, the combined action of springs 80 and 100 biases locking bar counter-clockwise and holds eye 76 flatly pressed between 80 and 82. In this position, bar 84 is cocked so that the corners of its inner aperture "bite into" rod 94, as shown in FIG. 9, and thus lock plate 92 and rod 94 against relative movement. If either handle 75 is rotated, eye 76 is turned to pull up head 80 and bolt 78. This swings bar 84 to the position of FIG. 10 so that rod 94 may move freely through the aperture in the inner end of bar 84. Back 18 may thus pivot about rod 64 relative to tubular frame 14 and is locked in adjusted position by releasing handle 75.

Accordingly, it will be seen that both the footrest and the back are each separately and independently adjustable by the user of the chair.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What I claim is:

1. A chair comprising a body including a frame, a seat having a recess in the underside thereof mounted to said frame, a back, and a footrest having one edge thereof pivoted to said seat along the front edge thereof, releasable spring means on the underside of said footrest adapted to cooperate with spring-engaging means on the underside portion of said seat for retaining the footrest in retracted position within said recess and in abutting parallel relation with the underside of said seat, a rotatable shaft extending transversely of said chair and mounted in said seat, an operating handle secured to one end of said rotatable shaft and projecting therefrom with the free end thereof accessible from said seat, and a toggle assembly operatively connecting said rotatable shaft with said footrest, said toggle assembly comprising a first link having one end pivotally secured to the underside of said footrest, a second link pivotally secured at one end to said first link and having its other end fixedly secured to said rotatable shaft, and means for locking said links against pivotal movement when positioned in the operative elevated position of said footrest comprising a transversely extending abutment on one of said links extendable under and engageable with the other link at a point adjacent the pivotal connection of said links, whereby said footrest may be released from its extended position and retracted by rotation of said rock shaft, thereby causing said links to pivot downward and rearward so as to draw said footrest into said recess to abut in parallel relation against the underside of said seat.

2. In a chair having a seat with a front and two sides, a shaft rotatably mounted on said seat parallel to said front, a handle fixed to said shaft for rotating the latter, a bottom for said seat pivotally mounted along the front thereof, and a toggle connecting said shaft to said bottom, said toggle including a first link fixed at one end to said shaft for rotation thereof and pivotally connected at its other end to one end of the other of said links, the other end of said other link being pivotally connected to said bottom, said toggle parts being so positioned and proportioned that when said bottom is in underlying relation with said seat said links are substantially in side-by-side relation and when said shaft is rotated about 180°, said links are substantially in alignment in end-to-end rela-

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tionship and said bottom extends outwardly of said chair to serve as a footrest therefor, and abutment means on one of said links adapted to engage the other of said links when they are substantially in end-to-end relation for preventing relative movement of said link in a given direction, said bottom being retractable from said outwardly extending position by rotation of said shaft whereby said links pivot downwardly and rearwardly so as to cause said bottom to abut in parallel relation against the underside of said seat.

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