Oct. 23, 1928. **1,688,576**

H. F. DOYLE

RECLINING CHAIR

Filed May 14, 1926 2 Sheets-Sheet 1

Fig. 1

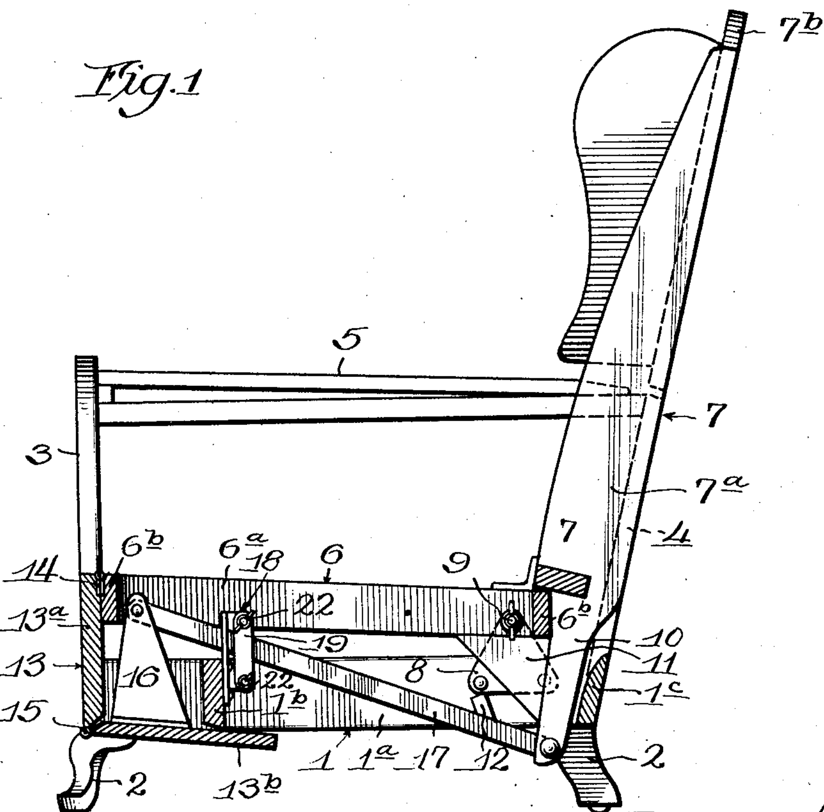
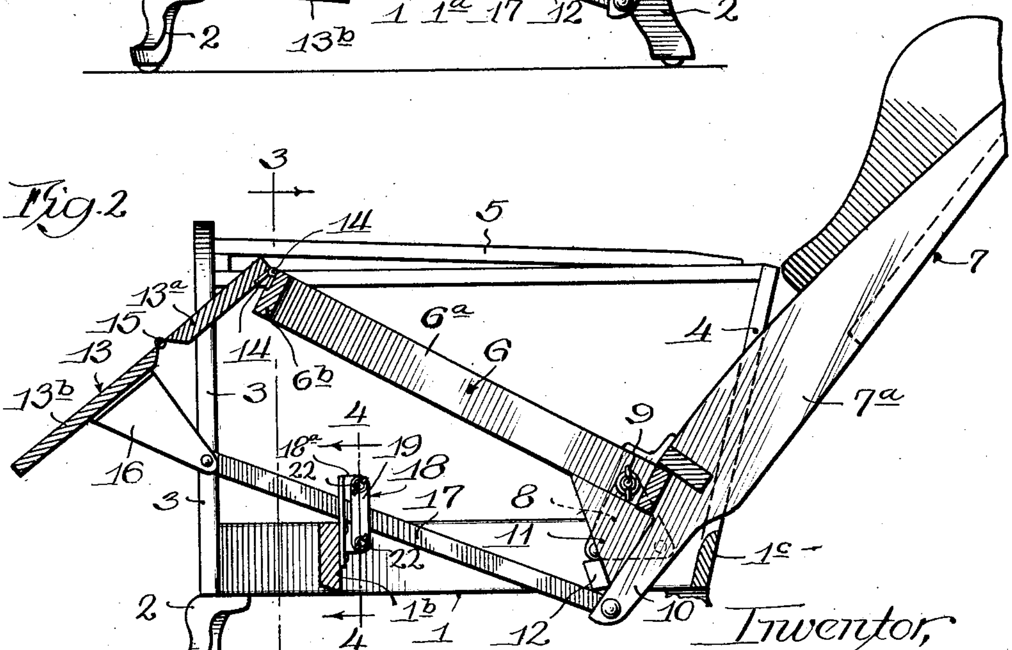


Fig. 2



Inventor,
Harry F. Doyle,

Witness
Chas. R. Koursh.

Offield Mehlhope Scott & Poole Attys.

Oct. 23, 1928. H. F. DOYLE 1,688,576

RECLINING CHAIR

Filed May 14, 1926 2 Sheets-Sheet 2

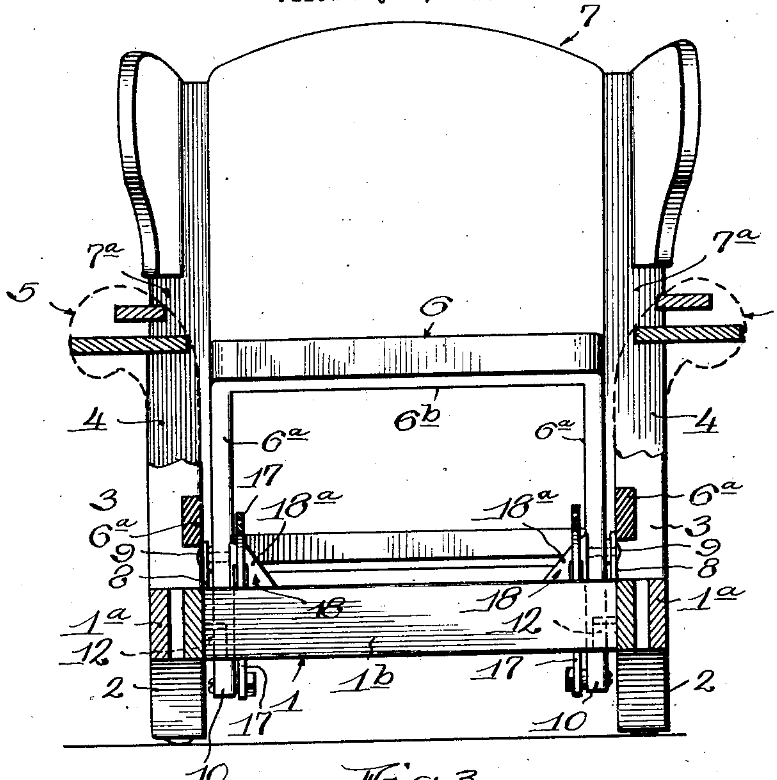


Fig. 3

Fig. 4

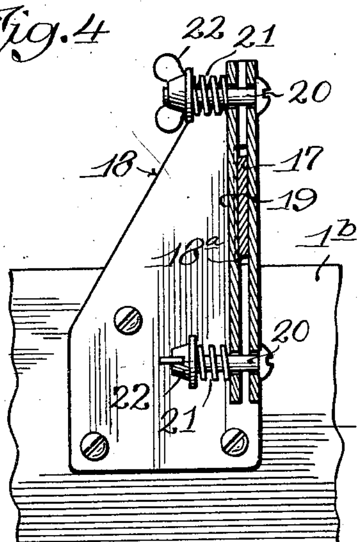
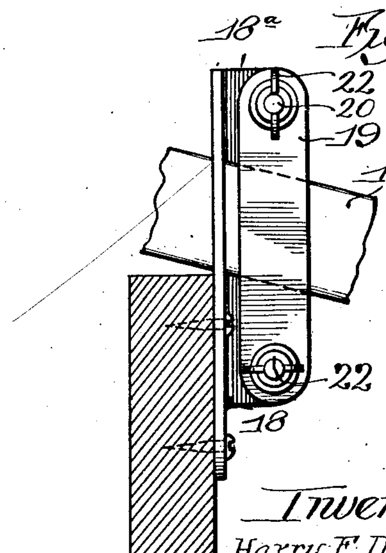


Fig. 5



Inventor,
Harry F. Doyle,

Witness:
Chas. R. Koursh.

Offield Towle Linthicum Scott & Towle Attys

Patented Oct. 23, 1928. 1,688,576

UNITED STATES PATENT OFFICE.

HARRY F. DOYLE, OF AURORA, ILLINOIS, ASSIGNOR TO KROEHLER MFG. CO., OF NAPERVILLE, ILLINOIS, A CORPORATION OF ILLINOIS.

RECLINING CHAIR.

Application filed May 14, 1926. Serial No. 109,007.

This invention relates to improvements in reclining chairs, and more particularly to the so-called easy chairs, characterized by an adjustable back and a foot or leg rest which may be extended from the front of the chair and at approximately the same angle to the horizontal as the back.

The object of the present invention is to provide an improved construction for a chair embodying the characteristics above mentioned in such a way that the leg rest is operated by and movable simultaneously with the reclining back of the chair.

A further object of the invention is to provide an improved construction for a chair having a leg rest so constructed and arranged as to partially fold and disappear beneath the chair seat when the back is shifted forward to an upright sitting position.

While I am aware that the general features of construction above outlined have been the subject matter of prior applications for Letters Patent, there are certain improved features which are thought essential to the practical manufacture and use of such a chair, and it is to these improvements that the present disclosure is directed. For instance, it is proposed that the shifting of the seat to the desired reclining position shall be accomplished entirely by the shifting of the weight of the occupant from a sitting or reclining posture, thus doing away entirely with springs and manually controlled adjusting devices. This result is accomplished by mounting the seat on pivots located substantially in the vertical line of the weight of the occupant when sitting upright in the chair, and by the application of friction, to permit the seat to tilt backwardly without loss of balance.

A preferred embodiment of the invention is disclosed in the accompanying drawings, in which

Figure 1 is a view in side elevation of the chair in upright position.

Figure 2 is a view in side elevation of the chair in reclining position.

Figure 3 is a front view of the chair partially in vertical section as taken on line 3—3 of Figure 2.

Figure 4 is an enlarged detail view of one of the friction regulating devices taken on line 4—4 of Figure 3; and

Figure 5 is an enlarged detail view in side elevation of one of the friction regulating devices.

For convenience, the chair embodying the improved features of construction is illustrated in skeleton form, that is, with the springs and upholstering removed so as to show more clearly the frame structure.

The chair is preferably of the deep lounging type, and consists generally of a relatively stationary chair frame and a tilting seat and back, pivotally mounted in the stationary frame. The seat and back are integral and therefore remain at a fixed angle to each other.

The chair frame is of the usual construction, being made up of a rectangular main frame 1, consisting of side frame members 1^a and front and rear cross members 1^b and 1^c, respectively, the front cross members being spaced back some six or eight inches from the forward ends of the side frame members. At the corners of the main frame are legs 2, and also the front and rear lateral uprights 3, 3 and 4, 4 between the upper ends of which, extend the arms 5, 5.

The seat and back frames 6 and 7 are simply constructed of side and cross rails 6^a, 6^b and 7^a, 7^b, respectively, rigidly connected together at an angle slightly greater than a right angle, and suitably braced at their junction.

Adjacent the rear ends of the side frame members 1^a, 1^a and fastened to the inner faces thereof, are triangular plates 8, 8 projecting a short distance above their upper edges. Through the ends of the plates extend pivot bolts 9, 9 which also pass through the side rails 6^a of the seat frame 6, the latter in normal position extending just above the main frame of the chair and at a right angle thereto.

The vertical or longitudinal rails 7^a, 7^a of the back frame are extended below the seat frame to form downwardly extending arms 10, 10 which are braced by triangularly shaped blocks 11, 11. Nailed to the inside face of the side frame members and forwardly of the pivot points are stop blocks 12, 12 which lie in the path of the arms 10, 10 and act to limit the rearward tilting of the seat.

Hinged to the forward edge of the seat

frame and more accurately, to the front rail 6^b thereof, is the leg rest 13. This leg rest consists of two hinged-together sections 13^a and 13^b, the upper section in its normal position extending vertically downward from the top edge of the main chair frame 1. Hinges 14 connect the top edge of the section 13^a to the rail 6^b. Connected by means of hinges 15 to the bottom edge of the leg rest section 13^a, is the other section 13^b considerably greater in width than the upper section, and normally extending at right angles thereto, and rearwardly beneath the seat frame, in fact, its width is somewhat greater than the distance from the lower edge of the section 13^a to the floor.

Secured to the back face of the lower section 13^b of the leg rest are two arms 16, 16 preferably in the form of triangular plates attached lengthwise along the edges of said section. Extending from the lower ends of the arms 10, 10 at the rear of the seat frame, to the ends of the arms 16, 16 are bars 17, 17 having pivotal connections at each end, said bars in the upright position of the seat (Figure 1) extending upwardly at an angle of about 30° to the horizontal from back to front, just clearing the top edge of the front cross member 1^b, which, as already pointed out, is spaced some distance to the rear of the front edge of the seat frame. Secured to the rear face of the cross member 1^b are two friction clutch members 18, 18 projecting above the cross members in line with the bars 17, 17. Each clutch member has a flange 18^a bearing flatwise against one face of each bar, and a corresponding adjustable plate 19 secured thereto by means of bolts 20, 20 and bearing against the opposite face of the bar. On these bolts are coiled springs 21 and wing nuts 22 which may be tightened or loosened to vary the tension exerted by the springs against the plate 19, and hence the frictional resistance offered by the clutch members to the endwise movement of the bars 17, 17.

From the foregoing description, it will be seen that in the backward tilting of the seat and back, the leg rest 13 is simultaneously extended, its extension partaking of a combined downward swinging of the lower section 13^b into the plane of the upper section 13^a, and a bodily movement of both sections relative to the seat frame in an outward direction. This movement is manifestly transmitted to the leg rest through the bars 17, 17 which move endwise, with but a limited transverse displacement.

In the fully reclined position, as shown in Figure 2, the seat is tilted upwardly and the back downwardly while the leg rest extends outwardly and downwardly in approximately parallel relation to the back, thus affording complete support for the body in a natural reclining posture.

As already suggested, the movement of the seat and back is controlled entirely by the occupant in shifting the weight forwardly or rearwardly. This lifting of weight, however, can be controlled so as to avoid sudden tilting movement and the attendant feeling of insecurity, and for this reason the friction clutches are employed, which act on the bars to resist the sudden shifting of weight and permit the seat to be brought to rest in an intermediate position without effort on the part of the occupant to maintain the seat in equilibrium.

An added advantage of the friction clutches is the compensating effect of the frictional resistance to the unstability of the seat, being pivoted, as it is, below the center of gravity of the weight of the occupant. Hence, it is possible to use a single and inexpensive type of trunnion which can be wholly concealed from view, depending on the clutch members to control the tilting movement. For obvious reasons, the clutch members are adjustable so that the friction can be varied to secure the required amount of resistance.

Having disclosed a preferred embodiment of my improved chair construction, I claim as my invention:

1. A reclining chair comprising a chair frame, a tiltable frame hung on trunnions in said chair frame and forming seat and back portions, a leg rest hinged to the forward edge of said seat, a bar extending from front to rear of said chair frame beneath said seat and pivotally connected at its rear end to said tiltable frame and at its front end with said leg rest, said chair frame having a transverse frame member below said seat and rearwardly of the leg rest, friction plates mounted on said frame members and embracing said bar and adjustable tension means acting on said plates.

2. A reclining chair comprising a chair frame, a seat pivotally mounted in said frame, a leg rest hinged to the front edge of said seat, and consisting of an upper portion adapted to swing relative to said seat, and a lower portion adapted to extend beneath the seat in the upright position thereof and to swing outwardly into the plane of said upper section, an arm extending downwardly from said seat adjacent the rear thereof, a bar extending forwardly from said arm and operatively connected with the lower portion of said leg rest, and friction members mounted on said chair frame intermediate the ends of said bar and adapted to embrace said bar.

Signed at Naperville, Ill., this 11th day of May, 1926.

HARRY F. DOYLE.