M. L. CROMER.

ADJUSTABLE CHAIR.

APPLICATION FILED NOV. 11, 1912.

1,117,979.

Patented Nov. 24, 1914.

2 SHEETS—SHEET 1.

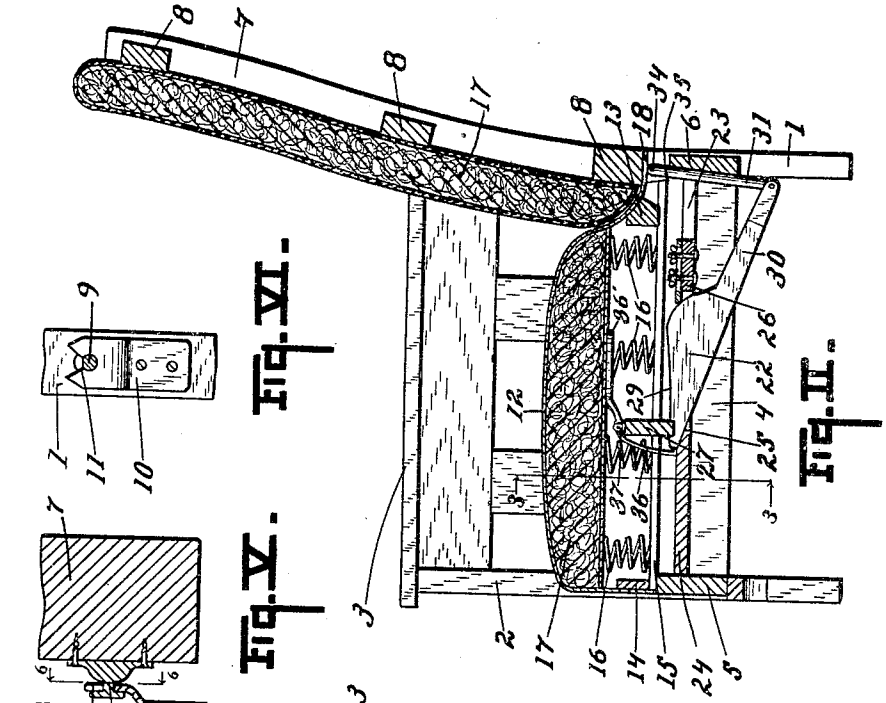


Fig. II.

Fig. VI.

Fig. V.

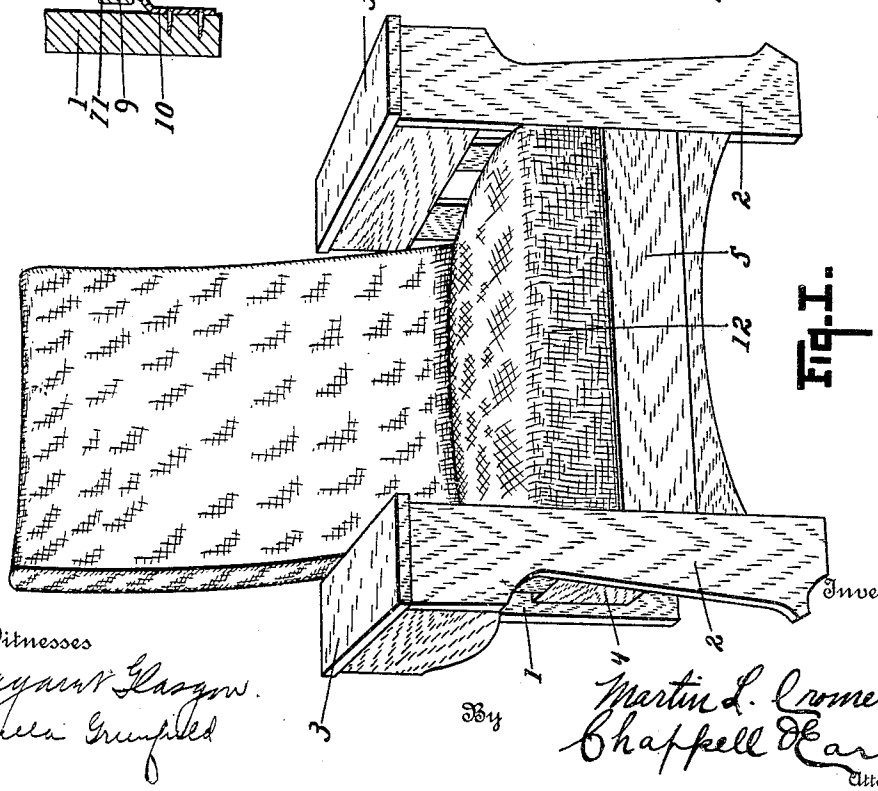


Fig. I.

Witnesses

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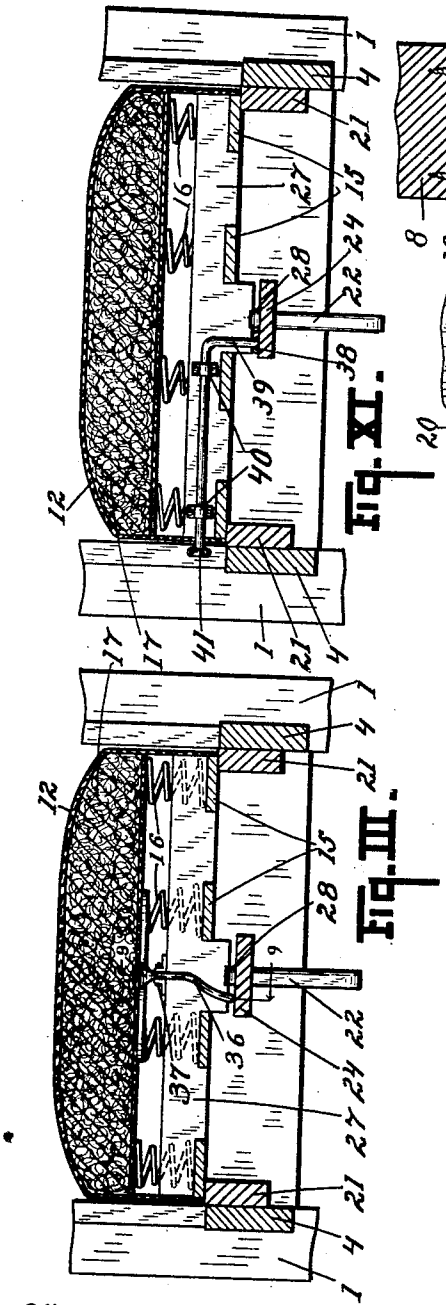


Fig. XI.

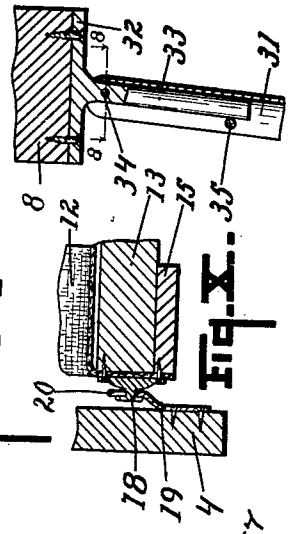


Fig. X.

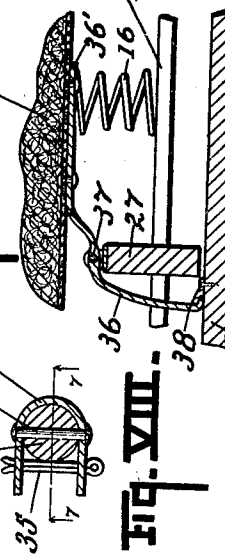


Fig. VII.



Fig. IX.

Fig. VIII.

Fig. III.

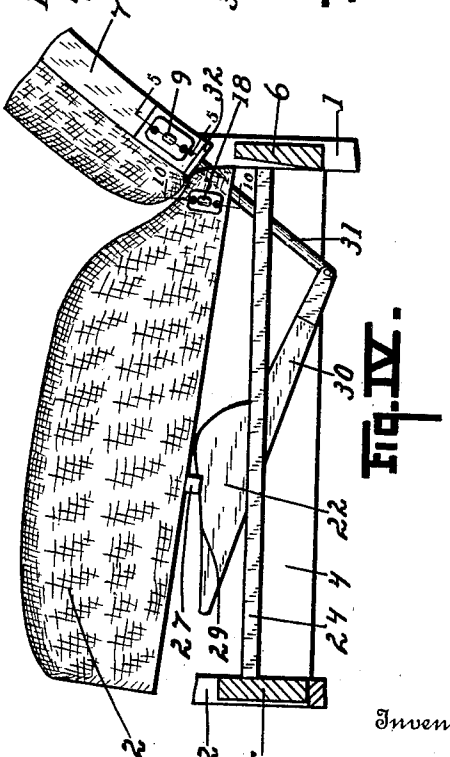


Fig. IV.

Witnesses

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UNITED STATES PATENT OFFICE.

MARTIN L. CROMER, OF STURGIS, MICHIGAN.

ADJUSTABLE CHAIR.

1,117,979. Specification of Letters Patent. Patented Nov. 24, 1914.

Application filed November 11, 1912. Serial No. 730,653.

To all whom it may concern:

Be it known that I, MARTIN L. CROMER, a citizen of the United States, residing at Sturgis, Michigan, have invented certain new and useful Improvements in Adjustable Chairs, of which the following is a specification.

This invention relates to improvements in adjustable chairs.

The main objects of this invention are,—First, to provide an improved adjustable chair which may be easily adjusted by the occupant of the chair to any position within its scope of adjustment. Second, to provide an improved adjustable chair embodying these advantages, in which the mechanism operates automatically and is operated by the disposition of the weight of the occupant. Third, to provide in an adjustable chair means for locking the parts in their normal position which is automatically released by the weight of the person sitting in the chair. Fourth, to provide an improved adjustable chair which is simple and economical in structure and has no delicate parts to be broken or disarranged in use.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure I is a front perspective view of a chair embodying the features of my invention. Fig. II is a vertical central section from front to rear. Fig. III is a vertical transverse section on a line corresponding to line 3—3 of Fig. II. Fig. IV is a detail view showing the seat and back in one adjustment, the frame being shown in vertical section. Fig. V is a detail section on a line corresponding to line 5—5 of Fig. IV, showing details of the back supporting hinge. Fig. VI is a detail section on a line corresponding to line 6—6 of Fig. V. Fig. VII is a detail vertical section on a line corresponding to line 7—7 of Fig. VIII, showing structural details of the back supporting arm. Fig. VIII is a transverse section of the back supporting arm, on a line corresponding to line 8—8 of Fig. VII. Fig. IX is a detail vertical section on a line corresponding to the broken line 9—9 of Fig. III, showing details of the catch. Fig. X is a detail section on a line corresponding to line 10—10 of Fig. IV, showing details of the seat hinge or pivot. Fig. XI is a detail section corresponding to that of Fig. III, of a modified structure, the modification being in the latch which is designed to be released by hand.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the chair frame of the structure illustrated consists of rear posts 1, and front posts 2 which are extended to form the front and rear legs of the chair. On the upper ends of the posts are arms 3. The posts are connected by side pieces 4, and the front and rear crosspieces 5 and 6 respectively.

The back is made up of side bars 7 connected by cross pieces 8. The back is hinged to the rear post, the hinge connections consisting of stud-like pivot members 9 mounted on the side pieces of the back and coacting bearing members 10 on the inner sides of the rear posts 1. The members 10 are stampings, the bearing portions being offset and slotted at 11 to receive the pivot studs. The pintles are flattened on one side so that they can be introduced through the slots into the bearings 10 when presented edgewise to the slots. This permits the ready mounting of the back and also permits its removal.

The seat 12 is provided with a frame consisting of back piece 13, front piece 14, and connecting bottom piece 15. Cushion springs 16 are mounted on these bottom pieces and suitable upholstering 17 is supported by the springs. The seat is pivoted within the chair frame, pintle members 18 being mounted on the ends of the rear frame piece 13 of the seat and bearing members 19 on the side pieces 4 of the frame. These bearing members are slotted at 20 to receive the pintles and are similar to the bearing members 10 for the back. The seat is thus pivotally supported for tilting adjustment, it being supported in its normal or lowered position on the front piece 5 of the chair frame and cleats 21 secured on the inner sides of the frame side pieces 4.

The means for adjustably supporting the

back comprise the tilting seat and the wedge-shaped cam 22 coacting therewith and suitably connected to the arm 31 projecting downwardly from the back through the slot 23 in the horizontally disposed piece 24 extending between the front and rear frame pieces. At the forward end of the slot 23 is an upwardly inclined slide bearing 25 for the cam. The adjustable stop 26 limits the rear movement of the cam in the slot. The seat is provided with a cross piece 27 having a member 28 thereon resting on the cam.

The face 29 of the cam is preferably curved as shown. The cam is provided with an arm 30 connected to the arm 31 projecting downwardly from the back through the slot 23. This arm 31 is connected to the back by the bracket 32 which is provided with a downwardly projecting shank 33. The bracket is secured to the under side of the lower cross piece of the back. The arm 31 is U-shaped in cross section and arranged with its upper end embracing the shank 33 and pivoted thereto at 34. The removable pin 35 locks the arm in its extended position.

The seat is retained in its normal or lowered position and the back locked in its normal or forward position by means of the catch 36 which is pivoted on the cross piece 27 of the frame to engage the keeper 38 on the horizontal piece 24. The catch 36 pivoted at 37 is extended into a plate 36′ which is engaged by a part of the cushion springs 16 which actuate the catch to its engaging position. When the springs are compressed as by the weight of a person sitting on the cushion, the catch is released.

In the modification shown in Fig. IX, the latch 39 is mounted in clips 40 on the front side of the cross piece 27 and is provided with a finger piece 41 accessible at the side of the cushion. The catch is engaged by gravity. The arm 31 is pivotally connected to the back so that it may be collapsed when the chair is packed for shipping or storage.

With the parts arranged as pointed out, the chair may be automatically adjusted by the occupant to any position within its scope and is retained in its adjusted position without special manipulation or locking means.

The face of the cam is preferably inclined forwardly and curved downwardly as shown as it is found that this assists in returning the parts to their normal position.

I have illustrated and described my improved chair in detail in a simple and practical embodiment. My improvements are capable of very great variation in structural details without departing from my invention. I do not attempt to illustrate all the various modifications which I contemplate as the disclosure made will enable those skilled in the art to which this invention relates to embody the same as conditions or taste may dictate. I desire to be understood as claiming my improvements specifically in the form illustrated as well as broadly within the scope of the appended claims.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent is:

1. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat frame pivoted at its rear end to said chair frame for tilting adjustment on its pivots, said seat frame being supported by its pivots against longitudinal movement in the chair frame, the pivots for said back and seat being disposed adjacently and so that the lower end of the back overhangs the rear end of the seat, a horizontal piece having a longitudinal slot therein disposed on said chair frame centrally below said seat frame, there being a cam member bearing at the forward end of said slot, a downwardly projecting arm on said back, a cam member having a wedge-shaped cam arranged in said slot for longitudinal movement on said bearing and supported laterally by the edges of said slot, said cam member being provided with an arm rigid therewith and pivotally connected to said arm on said back, a cross bar on said seat frame resting on said cam so that the seat is tilted and supported on its pivots and said cam when the cam member is moved longitudinally on its bearing by the movement of the back and the back is yieldingly retained in its adjusted positions, cushion springs mounted on said seat frame, a catch pivotally mounted on said cross bar on said seat frame, and a keeper arranged on said horizontally disposed piece so that the catch engages therewith when the seat is in its normal position, said catch being actuated to its engaging position by said cushion springs and being disengaged by compressing said springs, as by the weight thereon of an occupant of the chair.

2. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat pivoted at its rear end to said chair frame for tilting adjustment on its pivots, said seat being supported by its pivots against longitudinal movement in the chair frame, the pivots for said back and seat being disposed adjacently and so that the lower end of the back overhangs the rear end of the seat, a horizontal piece having a longitudinal slot therein disposed on said chair frame centrally below said seat frame, there being a cam member bearing at the forward end of said slot, a downwardly projecting arm on said back,

a cam member having a wedge-shaped cam arranged in said slot for longitudinal movement on said bearing and supported laterally by the edges of said slot, said cam member being provided with an arm rigid therewith and pivotally connected to said arm on said back, a cross bar on said seat frame resting on said cam so that the seat is tilted and supported on its pivots and said cam when the cam member is moved longitudinally on its bearing by the movement of the back and the back is yieldingly retained in its adusted positions.

3. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat pivoted at its rear end to said chair frame for tilting adjustment and so that the lower end of the back and the rear end of the seat are in close proximity, said seat being supported by its pivots against longitudinal movement, a horizontal piece having a longitudinal slot therein disposed on said chair frame centrally below said seat, a downwardly projecting arm on said back, a longitudinally movable rearwardly inclined member arranged in said slot and pivotally secured to said arm, said member being provided with an upwardly facing cam rigid therewith, the face of the cam being curved downwardly, and a bearing member on said seat frame resting on said cam whereby the cam is moved longitudinally on its bearing and the seat is tilted and supported on its pivots and said cam when the back is moved on its pivots from its normal position and the parts coact to retain the back in its adjusted position.

4. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat pivoted at its rear end to said chair frame for tilting adjustment, a horizontal piece having a longitudinal slot therein disposed on said chair frame centrally below said seat frame, a downwardly projecting arm on said back, a longitudinally movable cam member arranged in said slot and pivotally secured to said arm, and a bearing member on said seat frame resting on said cam member whereby the cam is moved longitudinally on its bearing and the seat is tilted on its pivots when the back is moved on its pivots and the parts coact to retain the back in its adjusted position.

5. In a chair, the combination with the chair frame, of an adjustable back pivotally mounted on said chair frame, a seat pivoted at its rear end to said chair frame for tilting adjustment and supported by its pivots against longitudinal movement, the pivots for the seat and back being disposed so that the rear end of the seat and the lower end of the back are in close proximity, a downwardly projecting arm on said back, a cam member disposed in a rearwardly inclined position and pivotally secured to said arm, said cam member being provided with an upwardly facing wedge-shaped cam having a downwardly curved face, a bearing by which the forward end of said cam member is supported for sliding and pivotal movement, and a member on said seat resting on said cam so that the seat is tilted on and supported by its pivots and said cam when the cam is moved from its normal position by the adjustment of the back and the back is retained in its adjusted positions by the coaction of the seat and cam member therewith.

6. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat pivoted at its rear end to said chair frame for tilting adjustment, a downwardly projecting arm on said back, a cam member provided with a wedge-shaped cam pivotally secured to said arm, a supporting bearing for the forward end of said cam member, and a member on said seat resting on said cam so that the seat is tilted on and supported by its pivots and said cam when the cam is moved from its normal position by the adjustment of the back and the back is retained in its adjusted positions by the coaction of the seat and cam member therewith.

7. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat pivoted at its rear end to said chair frame for tilting adjustment, said seat being supported against longitudinal movement, a cam member having a wedge-shaped cam rigid therewith, a bearing by which the front end of said cam member is supported for sliding and pivotal movement, a downwardly projecting arm on said back pivotally secured to the rear end of said cam member whereby when the back is moved rearwardly on its pivot the cam member is moved forwardly and its rear end raised and vice versa, and a member on said seat in front of its pivots resting on said cam so that as the cam member is moved forwardly by the rearward movement of the back the seat is simultaneously tilted on its pivots, all coacting for the purpose specified.

8. In a chair, the combination with a chair frame, of an adjustable back mounted on said chair frame, a tilting seat, operating connections for said back and seat whereby they are simultaneously adjusted, a catch on said seat, a coacting keeper on said frame, and cushion springs for said seat disposed to actuate said catch to its engaging position, said catch being disengaged by compressing said springs, as by the weight thereon of an occupant of the chair.

9. In a chair, the combination with the frame, of a hinged adjustable back, a tilt-

ing seat, means for adjustably supporting said back comprising said tilting seat, a cushion for said seat, a keeper on said frame, and a coacting catch on said seat arranged to be actuated to its engaging position by said cushion and to be disengaged by weight or pressure on the cushion.

10. In a chair, the combination with the frame, of an adjustable back comprising side and cross pieces, means for adjustably supporting said back comprising a bracket secured to the under side of the bottom cross piece and provided with a downwardly projecting shank, an arm U-shaped in cross section, arranged with its upper end embracing said shank and pivoted thereto, and a pin arranged through said arm to engage said shank, whereby the arm is supported in its extended position.

11. In a chair, the combination with the frame, of an adjustable back, means for adjustably supporting said back comprising a bracket secured to said back and provided with a downwardly projecting shank, an arm U-shaped in cross section, arranged with its upper end embracing said shank and pivoted thereto, and a pin arranged through said arm to engage said shank, whereby the arm is supported in its extended position.

12. In a chair, the combination with the frame, of an adjustable back, means for adjustably supporting said back comprising a bracket secured to said back, and an arm pivotally secured to said bracket and provided with means for locking it in its extended position.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

MARTIN L. CROMER. [L. S.]

Witnesses:

JAY J. STANTON,

CORA CROMER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."