J. F. WALTON.

ADJUSTABLE CHAIR.

APPLICATION FILED JULY 12, 1915.

1,271,636.

Patented July 9, 1918.

3 SHEETS—SHEET 1.

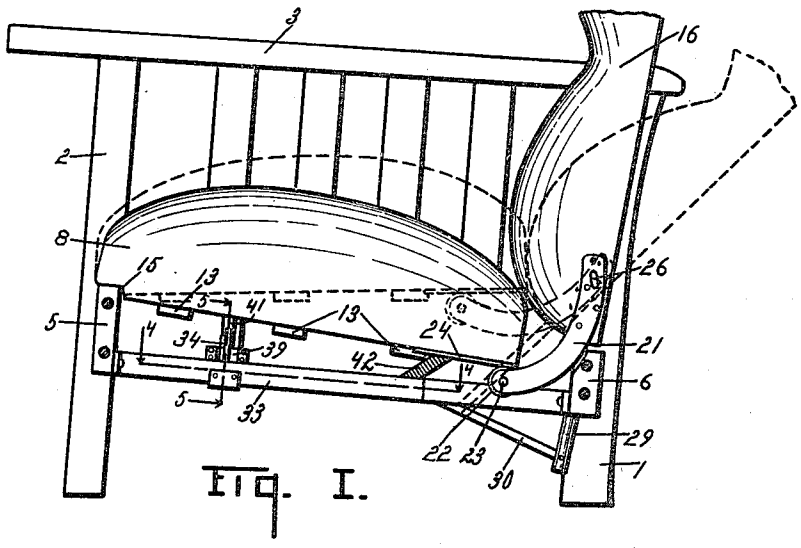


Fig. I.

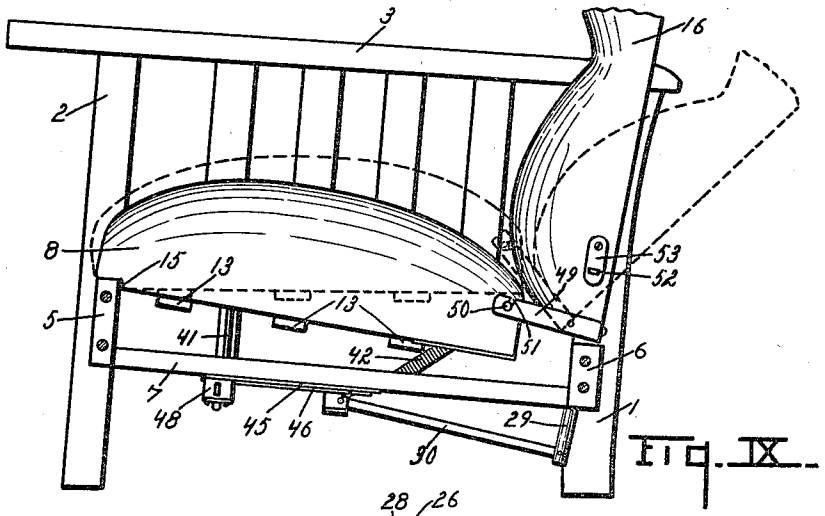


Fig. IX.

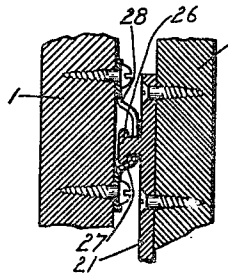


Fig. VIII.

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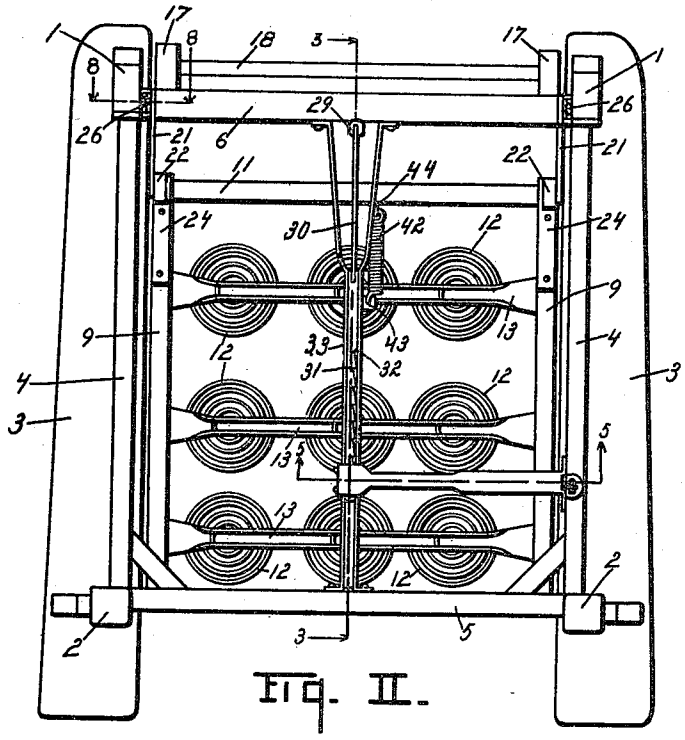


Fig. II.

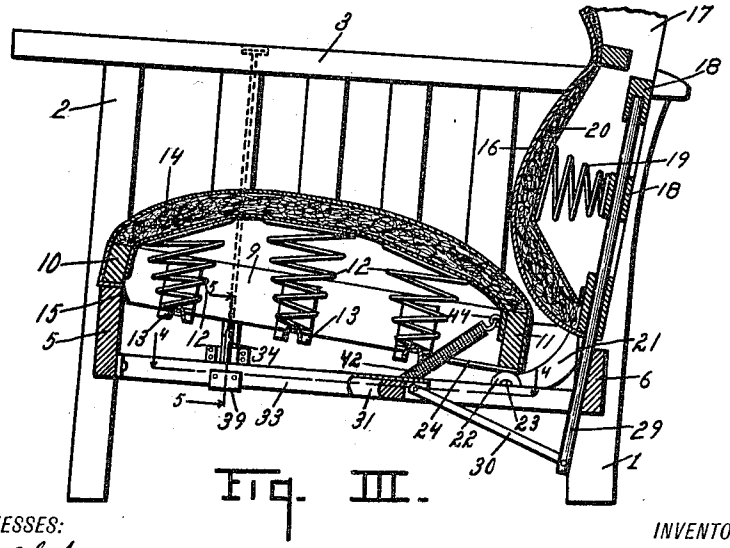


Fig. III.

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3 SHEETS—SHEET 3.

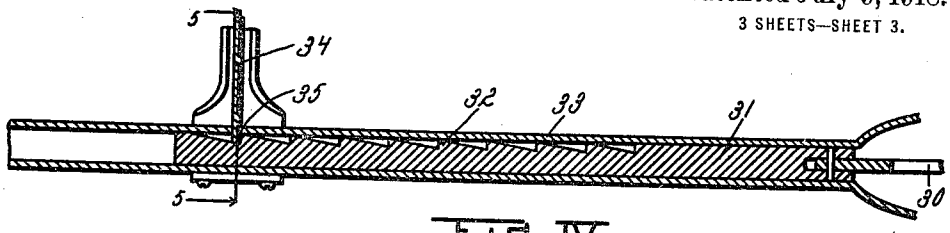


FIG. IV

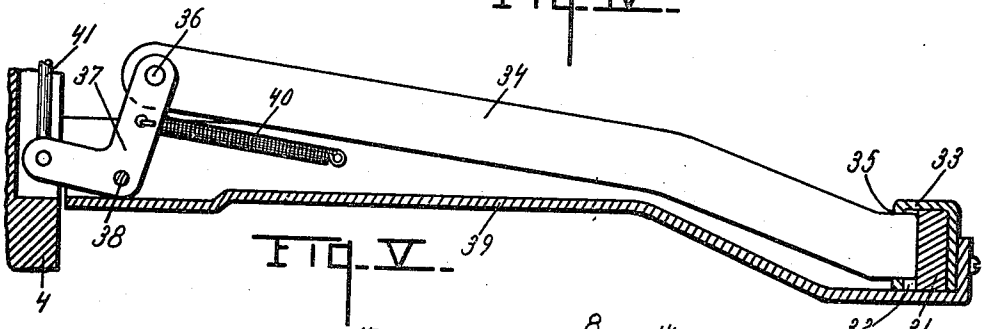


FIG. V

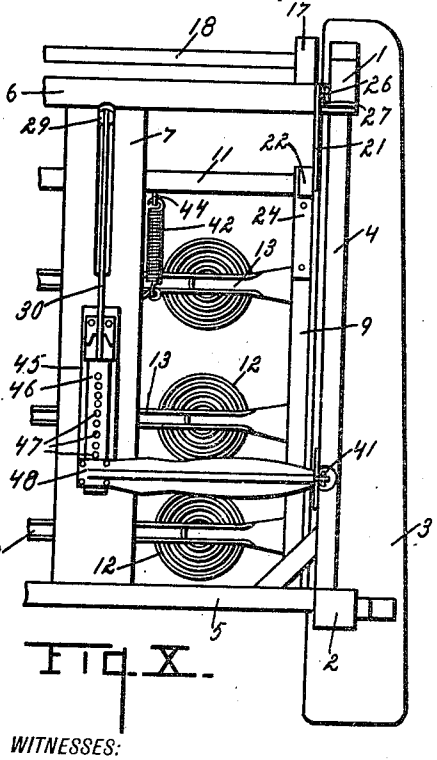


FIG. X

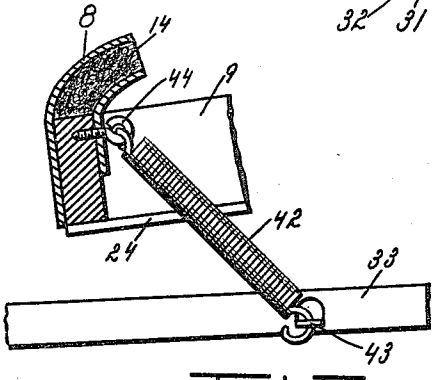


FIG. VI

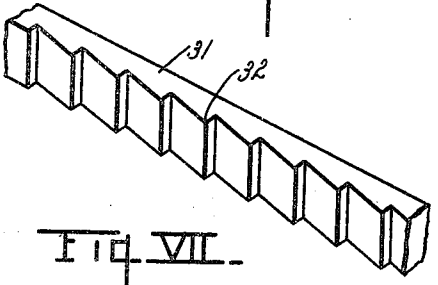


FIG. VII

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UNITED STATES PATENT OFFICE.

JERROLD F. WALTON, OF STURGIS, MICHIGAN.

ADJUSTABLE CHAIR.

1,271,636. Specification of Letters Patent. Patented July 9, 1918.

Application filed July 12, 1915. Serial No. 39,365.

To all whom it may concern:

Be it known that I, JERROLD F. WALTON, a citizen of the United States, residing at Sturgis, county of St. Joseph, State of 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.

My improvements are especially designed by me for embodiment in adjustable chairs of the "Morris" chair type, although readily adapted for use in other types of chairs.

The main objects of this invention are:

First, to provide an improved adjustable chair having an adjustable back and means for retaining it in any adjusted position and one in which the movement of the back to and from its vertical position, whether occupied or unoccupied, is steady and gradual.

Second, to provide an improved adjustable chair embodying these advantages which is simple and economical in structure and very easy to operate and at the same time one which is strong and durable and not likely to get out of repair.

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 detail side view of a structure embodying the features of my invention, one side of the chair frame being removed to better show the arrangement of the parts, the adjustable back and seat being shown in one position by full lines and in another by dotted lines.

Fig. II is an inverted view.

Fig. III is a detail vertical section on a line corresponding to the broken line 3—3 of Fig. II.

Fig. IV is an enlarged detail horizontal section on a line corresponding to line 4—4 of Fig. I, showing details of the adjusting means.

Fig. V is an enlarged detail vertical transverse section on a line corresponding to line 5—5 of Figs. I, II, III and IV, showing further details of the adjusting means.

Fig. VI is an enlarged detail vertical section showing the seat actuating spring.

Fig. VII is a detail perspective view of the rack of the back adjusting mechanism.

Fig. VIII is a detail vertical section through the hinge or pivot for the back on a line corresponding to line 8—8 of Fig. II.

Fig. IX is a detail side elevation of a modified structure, one side of the chair being removed, the adjustable back and seat being shown in one position by full lines and in another by dotted lines.

Fig. X is a detail inverted view of the structure appearing in Fig. IX.

In the drawing similar reference numerals 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 framework of the chair comprises the usual rear and front posts 1 and 2 respectively, the arms 3, and the rails 4 connecting the front post to the rear post and the front and rear cross bars 5 and 6 respectively.

In the modified structure shown in Figs. IX and X the frame is also preferably provided with a horizontally disposed bottom piece 7 on which the locking mechanism is mounted.

The seat, designated generally by the numeral 8, consists, in the embodiments illustrated, of a rectangular frame made up of side rails or bars 9 and front bar 10 and a rear bar 11.

The coiled cushion springs 12 are carried by spring supports 13. The springs are covered with a suitable upholstery 14.

The side bars 9 are notched at 15 to engage the front bar 5 of the frame. The front bar 10 of the seat rests on the front bar 5 to permit the tilting of the seat, as clearly shown in Fig. III. The rear end of the seat is supported for tilting adjustment as will appear as the description proceeds.

The back, designated generally by the numeral 16, is formed of suitable side bars 17 connected by cross bars 18 and provided with suitable springs 19 and upholstery 20. At the lower end of the back I mount a pair of forwardly and downwardly projecting arms 21 having rollers 22 on which the rear

end of the seat rests. The rollers are carried by the inwardly projecting journals 23 on the arms. The seat is provided with flat bearing strips or ways 24 secured on the under sides of its side rails so that the rollers travel thereon as the back is tilted and the seat raised and lowered owing to the arms projecting below the hinge pivots of the back.

The hinge pintles 26 project from the plates or arms 21 to coact with the hinge members 27 secured on the inner sides of the posts 1. The hinge members are slotted at 28 to receive the headed pintles.

The back is provided with a downwardly projecting rod-like arm 29 which is preferably secured thereto by arranging in bores in the cross pieces thereof. The lower end of the arm projects below the seat and is connected by the link 30 to the ratchet bar 31 having forwardly facing teeth 32 thereon. This bar 31 is arranged in a channel-shaped way 33 extending from the front and rear cross pieces 5 and 6 of the frame of the chair. The ratchet bar has a sliding fit in this way (see Fig. IV). The locking bar or pawl 34 is arranged through a slot 35 in one side of the way to engage the ratchet teeth. The pawl 34 is pivoted at 36 to the lever 37 which is pivotally mounted at 38 on the cross bar 39, the inner end of which is secured to the way 33 and the outer end to the side of the chair frame.

A spring 40 holds the pawl 34 yieldingly in engagement with the ratchet bar, one end of the spring being secured to the bar 39 and the other to the lever 37.

A push rod 41 is provided for releasing the pawl. A coiled spring 42 is secured to an ear 43 on the way 33 and to the rear end of the seat at 44 to urge the seat normally downward and forward.

When the chair is occupied the back may be adjusted rearwardly by releasing the locking means by pressing down on the button of the push rod 41 and pressing on the back, the back moving with the body of the occupant.

Should the occupant of the chair move his body forward the back automatically follows, the ratchet bar sliding under the pawl. This is of very great advantage as the back is always left in its forward position when the occupant leaves the chair and, as stated, automatically follows the body to any position within its scope of adjustment when the occupant moves forward, the rearward adjustment being automatic except for the disengaging of the pawl.

In the modified structure shown in Figs. IX and X the back is supported in its adjusted positions by a locking mechanism, substantially that shown in the patent to Borgert, No. 1,087,526, dated February 17, 1914, issued to this applicant as assignee. In that structure a clutch mechanism, designated generally by the numeral 45, is mounted on the horizontal frame piece 7 below the seat. This clutch mechanism comprises a slide 46 having a series of clutch ball holes 47 therein. This slide is connected to the arm on the back of the chair by the link 30. The clutch ball mechanism, designated generally by the numeral 48, coacts with the slide to lock the back in any adjusted position against either forward or rearward movement. This clutch mechanism is controlled by the push rod 41, the same as the mechanism of the structure first described. In this structure the back does not automatically follow the body of the occupant to its forward position unless the lock is released, in which event it moves forward the same as that of the preferred construction.

In chairs of this type it has been quite common practice to provide a spring connected directly to the back for moving it forward to its upright position. In such an arrangement when the lock is released the back swings to its forward position with a jerk which is a strain on the mechanism and also usually startles the occupant. My improvements effectively overcome this objection. In the preferred construction the back moves forward with the occupant. In the modified construction when the chair is unoccupied and the locking means released the back also moves forward gradually. If, however, the occupant swings to an upright position without releasing the back and the back is released while the occupant is on the seat the back will move quickly to its upright position. For that reason the structure shown in Figs. I–VIII is of substantial advantage over that shown in Figs. IX and X.

In the modification shown in Figs. IX and X the back is provided with forwardly projecting arms 49 engaging pins 50 projecting laterally from the seat. The arms have slots 51 therein to receive the pins. The pintle members 52 are, in this structure, mounted on separate plates 53. The stop members 15 on the seat are arranged so that a slight sliding motion of the seat is possible although very slight sliding movement is required.

I have illustrated and described my improvements in detail in the form in which I have embodied the same. I have not attempted to illustrate or describe various modifications which might be necessary or desirable in embodying my improvements in other forms of chairs, as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as conditions may require.

I desire, however, 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 as 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 mounted at its front end on said frame for tilting adjustment thereon, downwardly and forwardly projecting arms at the lower end of said back, rollers on the lower ends of said arms, said seat being provided with ways resting on said rollers whereby the rear end of the seat is raised and lowered with the adjustment of the back, a spring connected to said frame and to said seat urging the rear end of the seat downwardly, a downwardly projecting supporting arm on said back, a channeled slide way disposed below said seat, a rack having forwardly facing teeth arranged in said slide way, a link connecting said rack to said supporting arm on said back, a pawl arranged through one side of said channeled slide way to coact with said rack teeth, a spring for holding said pawl yieldingly in engagement with said teeth, and means for retracting said pawl.

2. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat mounted at its front end on said frame for tilting adjustment thereon, downwardly and forwardly projecting arms at the lower end of said back, rollers on the lower ends of said arms, said seat being provided with ways resting on said rollers whereby the rear end of the seat is raised and lowered with the adjustment of the back, a downwardly projecting supporting arm on said back, a channeled slide way disposed below said seat, a rack having forwardly facing teeth arranged in said slide way, a link connecting said rack to said supporting arm on said back, a pawl arranged through one side of said channeled slide way to coact with said rack teeth, a spring for holding said pawl yieldingly in engagement with said teeth, and means for retracting said pawl.

3. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat mounted at its front end on said frame for tilting adjustment thereon, downwardly and forwardly projecting arms at the lower end of said back, rollers on the lower ends of said arms, said seat being provided with flat ways resting on said rollers whereby the rear end of the seat is raised and lowered with the adjustment of the back, a spring connected to said frame and to said seat urging the rear end of the seat downwardly, a downwardly projecting supporting arm on said back, a slidable rack having forwardly facing teeth, a link connecting said rack to said supporting arm on said back, a pawl coacting with said rack, a spring for said pawl, and means for retracting said pawl.

4. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat mounted at its front end on said frame for tilting adjustment thereon, downwardly and forwardly projecting arms at the lower end of said back, rollers on the lower ends of said arms, said seat being provided with flat ways resting on said rollers whereby the rear end of the seat is raised and lowered with the adjustment of the back, a downwardly projecting supporting arm on said back, a slidable rack having forwardly facing teeth, a link connecting said rack to said supporting arm on said back, a pawl coacting with said rack, a spring for said pawl, and means for retracting said pawl.

5. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat mounted at its front end on said frame for tilting adjustment thereon, an arm on said back supporting the rear end of said seat, a spring connected to said frame and to said seat urging the rear end of the seat downwardly, a downwardly projecting supporting arm on said back, a channeled slide way disposed below said seat, a rack having forwardly facing teeth arranged in said slide way, a link connecting said rack to said supporting arm on said back, a pawl arranged through one side of said channeled slide way to coact with said rack teeth, a spring for holding said pawl yieldingly in engagement with said teeth, and means for retracting said pawl.

6. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat mounted at its front end on said frame for tilting adjustment thereon, an arm on said back supporting the rear end of said seat, a spring connected to said frame and to said seat urging the rear end of the seat downwardly, a downwardly projecting supporting arm on said back, a slidable rack having forwardly facing teeth, a link connecting said rack to said supporting arm on said back, a pawl coacting with said rack, a spring for said pawl, and means for retracting said pawl.

7. In a chair, the combination with a chair frame, of an adjustable back pivotally mounted on said chair frame, a seat loosely mounted at its front end on said frame for tilting adjustment thereon, an arm on said back supporting the rear end of said seat, a spring connected to said frame and to said seat urging the rear end of the seat downwardly and forwardly, and a ratchet means for supporting said back.

8. In a chair, the combination with a chair frame of an adjustable back pivotally mounted on said chair frame, a seat mounted at its front end on said frame for tilting adjustment thereon, arms supporting the rear end of said seat projecting forwardly at the lower end of said back, a spring connected to said frame and to said seat urging the rear end of the seat downwardly, a downwardly projecting back supporting arm on said back, and a locking means mounted on said frame and connected to said back supporting arm permitting automatic return of the seat and back to their normal position.

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

JERROLD F. WALTON. [L. S.]

Witnesses:
THOS. J. COLLINS,
H. A. KRAFT.

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