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RECLINING CHAIR

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2 Sheets-Sheet 1

FIG. 1

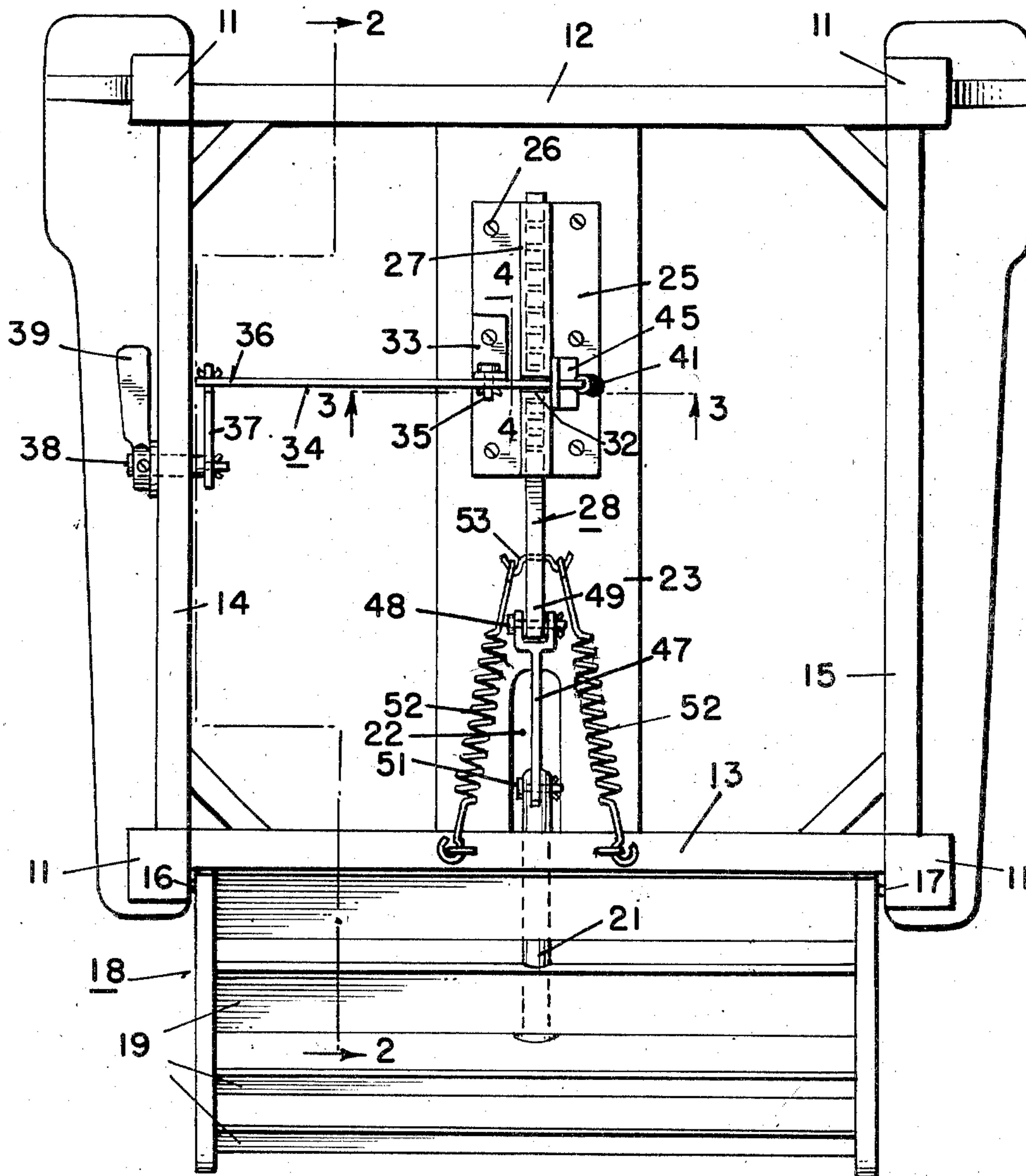
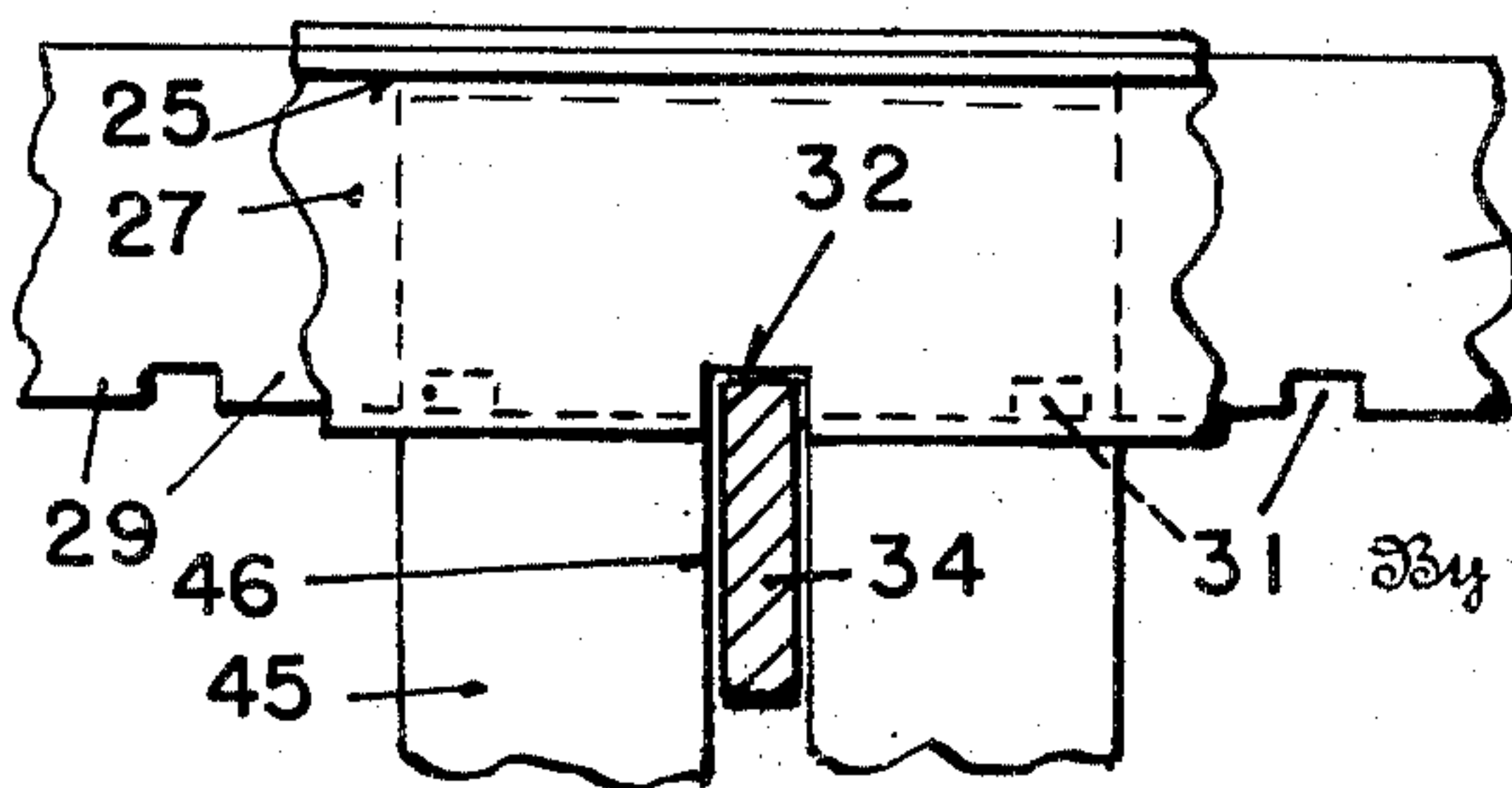


FIG. 4



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FIG. 2

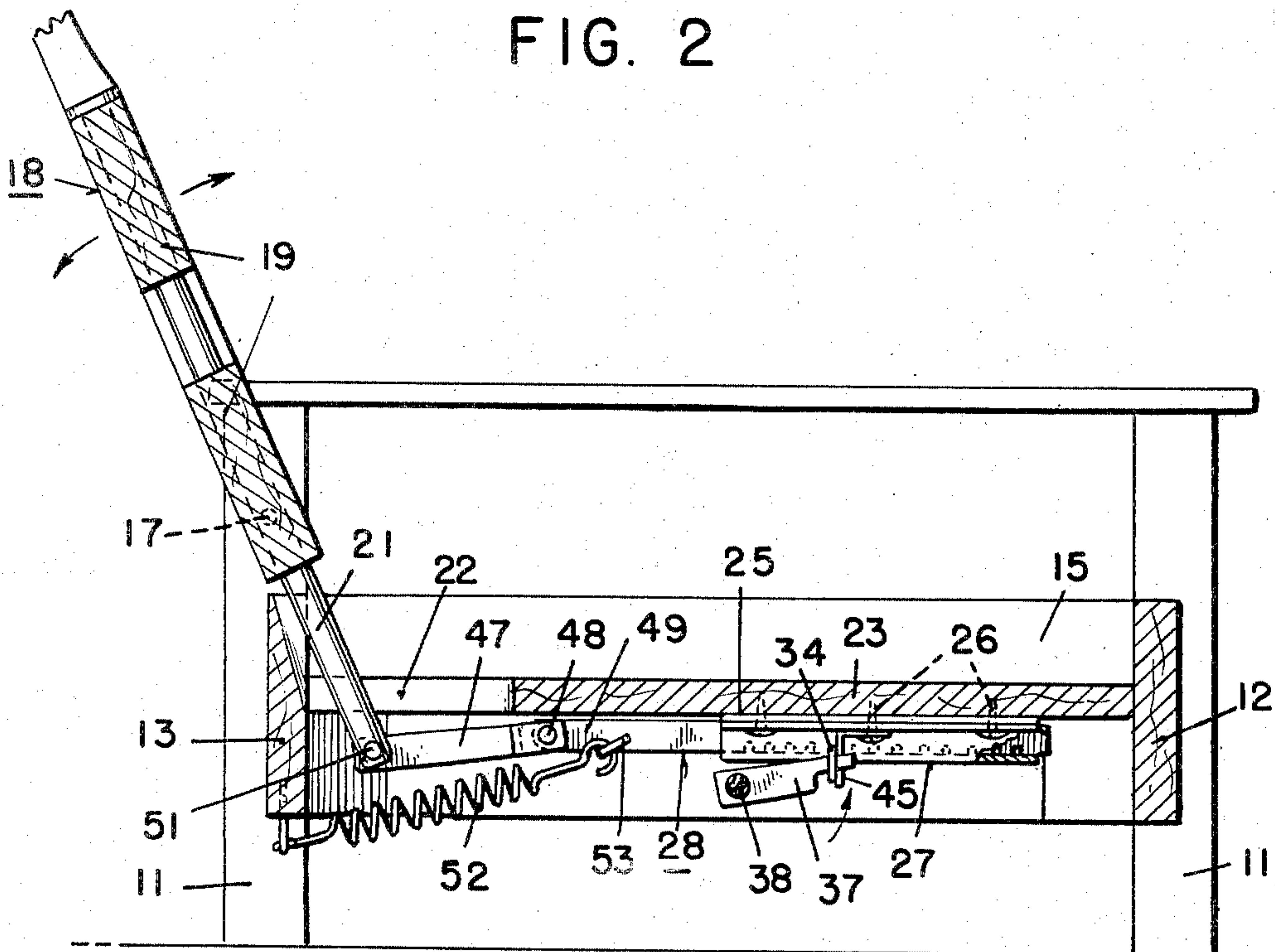
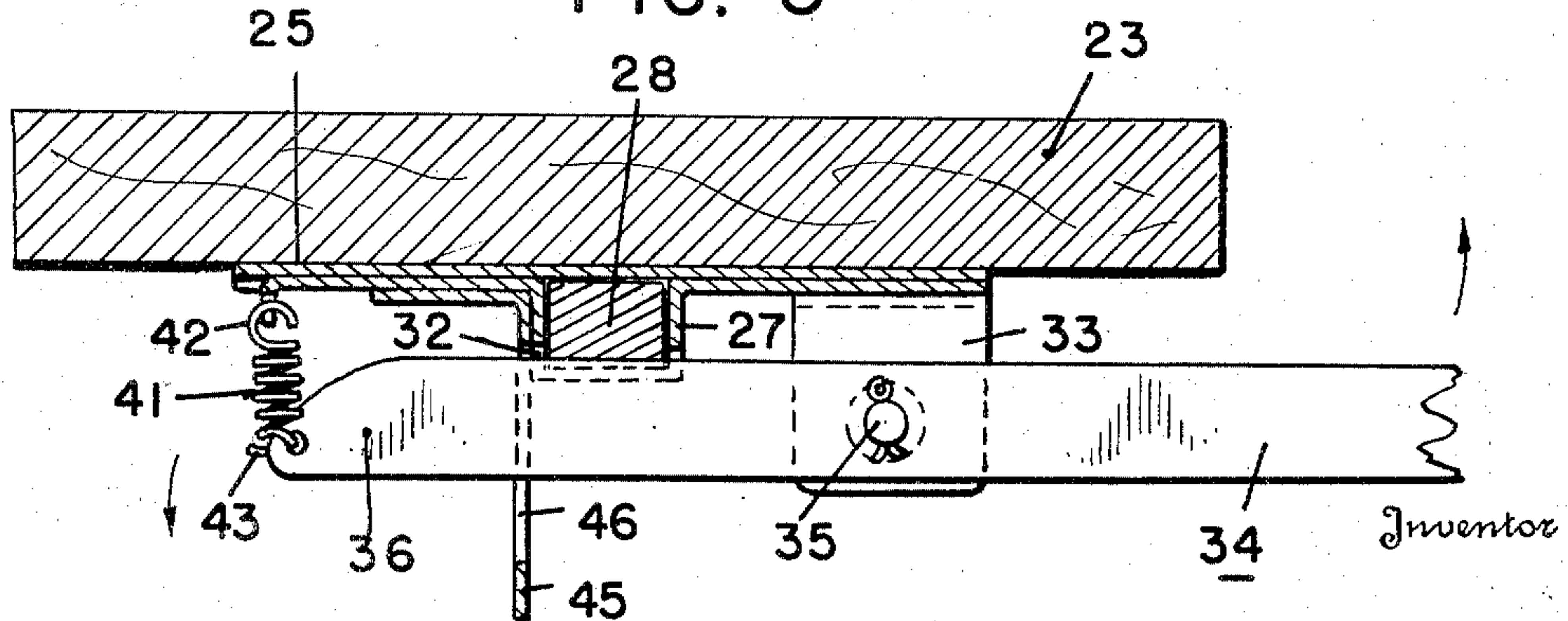


FIG. 3



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RECLINING CHAIR

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1 Claim. (Cl. 155—161)

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This invention relates to reclining chairs and particularly concerns the adjustment mechanism for securing the reclining back of a chair in any desired position.

In the development of reclining chairs of this type, some chairs have used an adjustment whereby the reclining back could be selectively held in a number of different positions. Other types of reclining chairs permit the back to be secured in any position within limits. This invention concerns improvements in the first type of chair. The mechanism for holding the back of a reclining chair usually includes the member formed with a series of teeth and a stop member for engaging the teeth. Movement of the back usually would cause relative movement between these two members, and upon engagement of the teeth by the stop member the back could be held at any one of several positions. However, the mechanisms for holding the back in position did not securely hold. That is, they permitted a certain amount of play or movement of the back. With use, this condition becomes aggravated until a person sitting in a chair had an insecure feeling.

It is the major object of the present invention to provide a back adjustment which will hold the back securely and firmly.

It is another object of this invention to provide a reclining chair with an adjustment mechanism which will not become loosened and insecure with use of the chair.

A further object of the invention is to provide an adjustment mechanism for a reclining chair which will steadily hold the chair back in any selected position and will continue to do so for the life of the chair.

Other objects and advantages of the invention will become apparent from the following specification taken in connection with the accompanying drawings wherein:

Figure 1 is a bottom view of a reclining chair embodying the invention in its preferred form;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is an enlarged cross section of the adjustment portion of the reclining mechanism taken on the line 3—3 of Figure 1; and

Figure 4 is another enlarged section of the adjustment mechanism taken on the line 4—4 of Figure 1.

In its preferred form, the invention includes an elongated casing secured on a base plate to the under side of a seat frame of a reclining chair. This casing and a rack slidable therein

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have correspondingly rectangular cross sections providing a snug sliding fit. The rack has teeth on its under face engaged by a stop member pivoted to the under side of the seat frame and having a spring forcing it through a slit in the casing into engagement with the teeth. The rack is connected by a link to the reclining back frame of the chair, and a spring tends to force the rack in a direction to move the chair back to upright position.

Referring now to the drawings, a reclining chair is shown having the conventional seat frame including four corner posts 11 with front and rear rails 12 and 13 and side rails 14 and 15. Pivoted at 16 and 17 to the rear posts is a back frame 18 having cross members 19, 19. A post 21 extends through to the cross members 19, 19 and through a slit 22 formed in a central member 23 of the seat frame to a position below the seat frame as shown most clearly in Figure 2.

The mechanism for securing the reclining back 18 in any desired position includes a base plate 25 secured as by screws 26, 26 to the under side of the seat frame. An elongated casing 27 having a square or rectangular cross section is mounted on the base plate 25 so it extends longitudinally of the seat frame and is positioned centrally with respect to the side rails 14 and 15. A rack 28 also of square or rectangular cross section snugly fits within the elongated casing 27 to slide longitudinally thereon. The rack is provided with teeth 29, 29 which are spaced apart a smaller distance as shown at 31, 31. These teeth are arranged on the lower face of the rack 28.

An elongated casing 27 is formed with a transverse slit opening 32 having a width corresponding to the spacing 31 between the teeth 29 on the rack. A bracket 33 mounted on the base plate 25 forms a support for a stop member 34 pivoted to the bracket 33 as by a pin 35. The bracket 33 thus pivotally supports the stop member 34 in alignment with the split opening 32. The pivot 35 is positioned near the casing 27.

One end 36 of the stop member 34 extends to a point adjacent the side rail 14 and is connected to a lever 37 on a shaft 38 rotatable in the side rail 14 by a hand lever 39. A tension spring 41 is connected at 42 to the base plate 25, and is also connected to the other end 43 of the stop member 34. The tension spring, being connected between the base plate and the stop member tends to force the stop member into the slit 32 so it will engage the spacing between the teeth 29 on the rack 28. Movement of the stop member 34 about the pivot 35 is guided by a guide

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45 mounted on the base plate 25 and formed with an elongated opening 46 to accommodate the stop member 34.

It will be apparent that movement of the hand lever 39 upwardly with respect to the chair will turn the shaft 38 in a direction to move the lever 37 counter-clockwise as seen in Figure 2. This will move the end 36 of the stop member 34 upwardly so the other end of the stop member is withdrawn from engagement with the teeth in the rack 28.

The link 47 is pivotally connected to the end 49 of the rack which is nearest the back of the chair. The other end of the link 47 is pivotally connected at 51 to the post 21. Inasmuch as the post 21 extends below the pivots 16, movement of the rack 28 toward the back of the chair tends to move the back frame 18 toward its upright position. A pair of tension springs 52, 52 are connected to a hook 53 on the rack 28 and have their other ends connected to the rear rail 13 so the rack is at all times under tension, tending to move it toward the back of the chair and to thereby move the back of the chair toward its upright position.

From the foregoing explanation, it will be apparent that the reclining back frame 18 may be positioned and securely held in a number of selected positions by engagement of the stop member 34 between different ones of the teeth 29, 29 in the rack 28. The rack itself is snugly held in the elongated casing at all times, so there is very little lateral play when the chair back is placed in any desired position. Since the rack is at all times under tension of the springs 52, 52 it is securely held in engagement with the stop member. Since the width of the stop member corresponds to the spacing between the teeth in the rack, and the slit opening in the casing is also of corresponding width, there is very little longitudinal play of the rack when the stop member is engaging the teeth. The tension spring 41, which holds the stop member in engagement with the teeth of the rack, is made quite powerful and thus further adds to the steadiness and security of the adjusting mechanism. A strong spring may be used in this case because the pivot for the stop member is much nearer the spring end than it is to the lever operated end of the member. This gives an occupant of the chair a considerable mechanical advantage so less effort is required to move the stop member against the tension of the spring 41. To place the reclining chair back frame in any desired position, the occupant of the chair merely moves the lever 39 in an upward direction to release the stop member 34 from engagement with the teeth of the rack 28. The rack is then free to slide within the elongated casing until the chair back is placed in the desired position. The occupant of the chair then releases the lever 39 and permits the stop member to again move

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in the slit opening of the casing into engagement with the teeth of the rack. Once the stop member engages the rack, the chair back is steadily and securely held in the desired position by the snug fit of the elongated casing, and the cooperation of the stop member with the slit opening 32 in the casing and the opening 46 in the guide 45 to prevent longitudinal movement of the rack.

What I claim is:

A reclining chair having a seat frame, a back frame pivoted on said seat frame to swing about a horizontal axis between upright and reclining positions, and a vertical post in said back frame extending below the pivots, in combination with reclining back adjustment apparatus comprising a base plate secured to the underside of said seat frame, an elongated casing of rectangular cross-section mounted on said base plate and extending longitudinally of said seat frame, a rack of rectangular cross-section slidable longitudinally in said casing, said rack having transversely extending teeth formed on the bottom of said rack at spaced intervals shorter than the length of said teeth, said casing being formed with a transverse slit opening extending across its bottom and partially up the side of said casing toward said seat frame, said slit being of a width corresponding to the spacing between said teeth, a bracket on said base plate at one side of said casing adjacent the slit therein, a stop member consisting of a lever pivoted to said bracket having one end extending across said casing aligned with said slit and the other end extending away from said casing toward one side of said seat frame, a tension spring connected between said one end and said base plate, a guide on side base plate having a vertically extending slot aligned with said slit, said lever being of a thickness corresponding to the width of the spacing between said teeth on the rack and having its one end extending through said slot, a shaft extending through said one side of said frame, a handle on the outer end of said shaft, a crank on the inner end of said shaft coupled to said other end of said lever to move said lever against the force of said spring upon operation of said handle, and a link pivotally connected to said post and to the rear part of said rack.

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