A. J. POLER.

FLEXIBLE BACK ADJUSTMENT FOR CHAIRS.

APPLICATION FILED MAY 10, 1915.

1,182,854.

Patented May 9, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

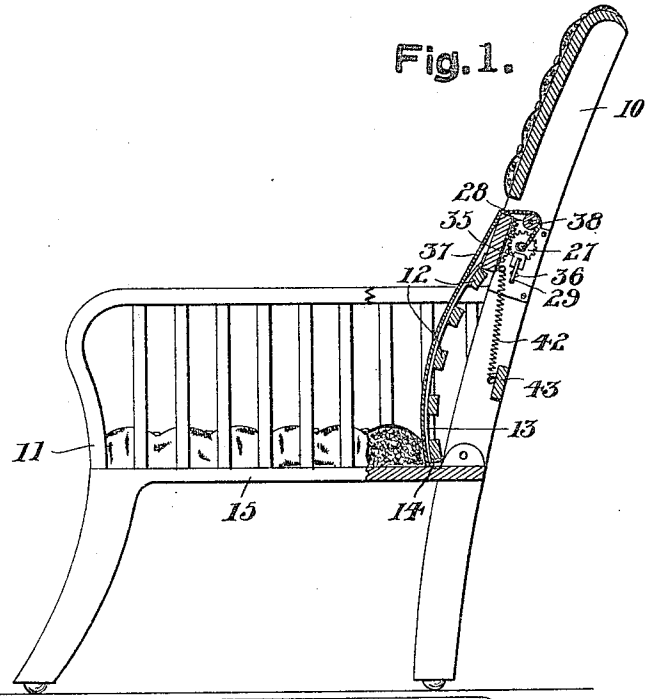
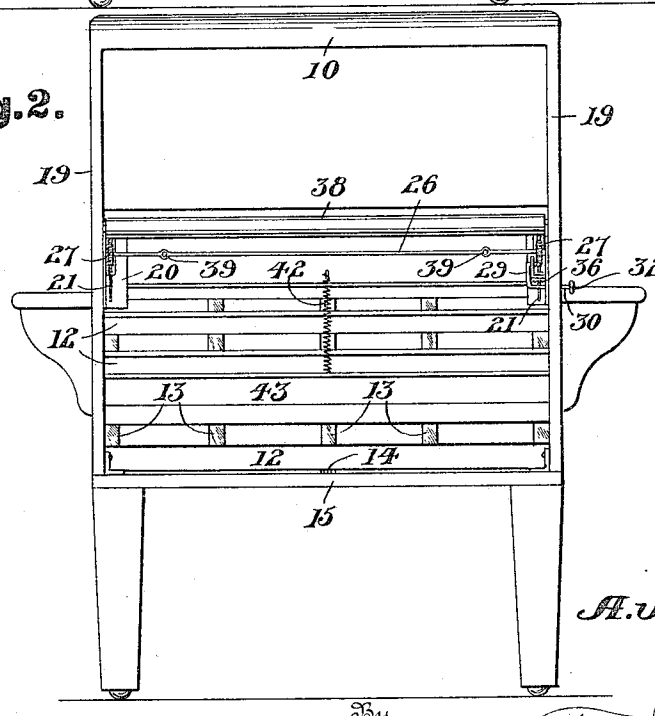


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

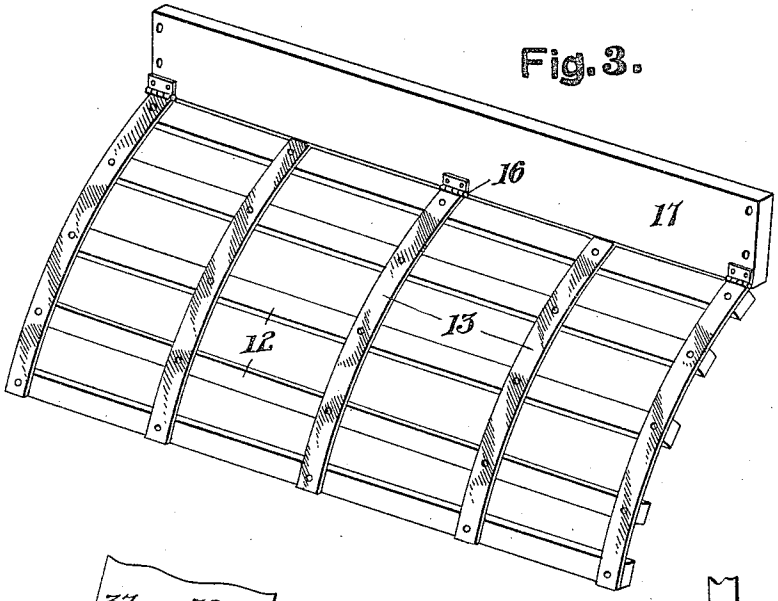


Fig. 4.

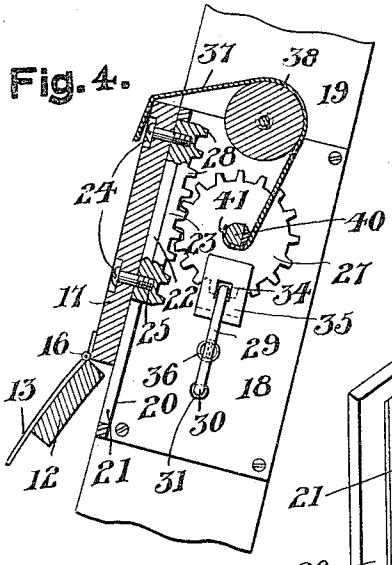
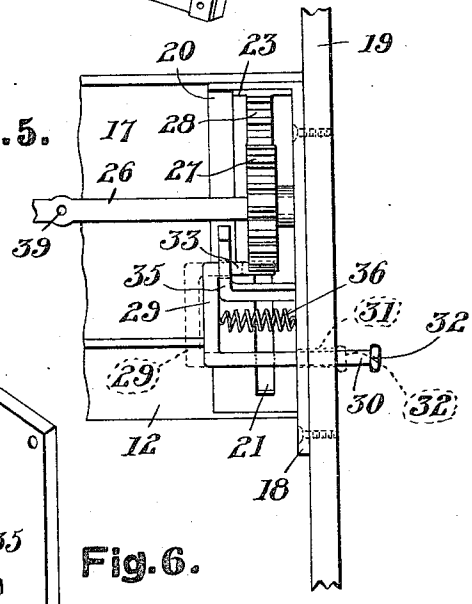


Fig. 5.



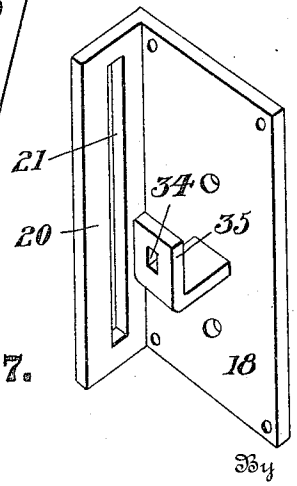
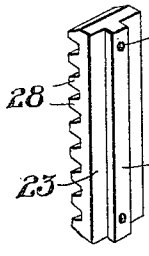


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

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FLEXIBLE BACK ADJUSTMENT FOR CHAIRS.

1,182,854. Specification of Letters Patent. Patented May 9, 1916.

Application filed May 10, 1915. Serial No. 27,017.

To all whom it may concern:

Be it known that I, ALTON J. POLER, a citizen of the United States, residing at Medina, in the county of Orleans and State of New York, have invented certain new and useful Improvements in Flexible Back Adjustment for Chairs, of which the following is a specification.

This invention relates to certain new and useful improvements in flexible back adjustment for chairs.

The primary object of the invention is the provision of a flexible portion of the supporting part of a chair back and especially that portion thereof which normally comes in contact with the lumbar region or the small of the back of the occupant of the chair, and such portion being locked in its adjusted position conforming to the shape of the occupant's back, the chair is rendered more comfortable as well as hygienic.

A further object of the invention is to provide a flexible upholstered chair back portion normally projected under tension and adapted to be released and thereafter locked in position upon being depressed by the occupant of the chair.

A still further object is to provide a flexible chair back portion adjustable in contour and provided with stretched upholstering automatically changing its tension upon the operation of the flexible portion.

With these general objects in view and others that will appear as the nature of the invention is better understood, the same consists in the novel combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings forming a part of this application and in which like-designating characters refer to corresponding parts throughout the several views:—Figure 1 is a central longitudinal sectional view through a chair back provided with the present device, parts of the chair being shown in side elevation, and parts being broken away. Fig. 2 is a rear elevation thereof with parts removed. Fig. 3 is an enlarged perspective view of the flexible back portion detached. Fig. 4 is an enlarged central sectional view through the upper part of the flexible back portion illustrating the adjusting means at one side of the chair back. Fig. 5 is a rear elevation thereof. Fig. 6 is a perspective view of one of the mechanism mounting plates, and Fig. 7 is a perspective view of the shifting rack detached.

The present invention may be provided upon any form of chair, but is especially serviceable in connection with reclining chairs and is herein illustrated in the form of a flexible lower engaging portion of the back member 10 of a chair 11 of the kind commonly known as Morris chairs.

The flexible back portion which is best illustrated in Fig. 3 is preferably formed of transversely arranged wooden slats 12 secured in parallelism to a plurality of spring steel bands 13 arranged longitudinally of the chair back. The lowermost one of the said slats 12 is hinged as at 14 to the chair bottom 15, while the upper ends of any desired number of bands 13 are provided with hinged connections 16 secured to a shiftable adjusting board 17.

Mounting brackets 18 are secured to the inner faces of the opposite side rails 19 of the chair back and are provided with angularly inwardly extending flanges 20 upon their forward edges. Each of the said flanges 20 is provided with a longitudinal slot 21 adapted for the sliding reception of a longitudinal lug 22 of a rack plate 23. The said rack plate 23 is positioned with its lug 22 slidably arranged within the bracket flange slot 21 and extending slightly forwardly therethrough, the rack plate being secured to the rear face of the board 17 and adjacent its end by means of screws 24 passing through the said board and entering the receiving sockets 25 of the plate lug.

A shaft 26 is transversely journaled between the back rails 19 and is provided with a pinion 27 adjacent its opposite ends in constant mesh with the teeth 28 of the adjacent rack plate 23.

A releasing latch is provided for each of the pinions 27 in the form of a U-shaped rod 29 having an outwardly extending end 30 slidably arranged through a side perforation 31 in the chair rail and terminating in an operating push button 32. The inner end 33 of the rod 29 extends through a perforation 34 in an angular frame 35 of the said bracket 18 and is positioned in alinement with the toothed portion of the pinion 27

whereby a compression spring 36 normally retains the said rod end 33 in engagement with the teeth of the pinion.

Any desired form of unholstery such as the flexible leather back 37 is secured at its lower end at the point of the hinged connection between the flexible back portion and the chair bottom while the upper end of the said upholstery extends over the top of the shifting board 17 and thence over and in contact with an idler roller 38 transversely journaled between the back rails 19. The afore-mentioned shaft 26 is provided with perforations 39 upon a flattened portion thereof and a wooden bar 40 is thereby secured to the said shaft, while the upper end of the upholstery 37 is firmly attached to the said wooden bar 40 by means of tacks 41 or other similar hold-fast devices.

A helical tensioning spring 42 for the flexible back portion is connected between the board 17 and the transverse brace 43 of the chair back whereby a normal tendency is given to the said back portion to bow inwardly of the chair as best illustrated in Fig. 1 of the drawings. It will be understood that any desired number of similar springs 42 may be employed and that the shifting of the board 17 is rendered possible by the flexibility of the spring steel connecting bands 13.

In operating the device for the accommodation of an occupant of the chair, the person seated therein inwardly moves the releasing latch handles 32, thus releasing the opposite latches from the shaft pinion 27 and allowing a depressing of the flexible back portion to the desired degree required by the occupant and whereupon a release of the handles 32 allows the latches to automatically lock the shaft 26 with the flexible portion in its adjusted position. The teeth of the rack plates being in constant mesh with their respective pinions 27, it will be seen that any shifting of the board 17 longitudinally of the chair back will result in revolving the shaft 26. The upholstery 37 being attached to the said shaft by means of the wooden bar 40, it will be seen that any upward adjustment of the board 17 upon depressing of the flexible portion, automatically takes up the slack in the upholstering 37, while a downward movement of the board 17 when the flexible portion is moved by the spring 42, allows the upholstering to be unwound from the wooden bar 40. In this manner as just described, the upholstering will therefore automatically accommodate itself to the movements of the flexible back portion during the active operation of the latter.

The complete operation of the device will therefore be apparent as the manipulation of the flexible chair back portion to accommodate the back of the occupant when comfortably seated within the chair has been fully described as well as the manner of automatically retaining the back unholstering in its perfect condition during the operation of the chair.

While the form of the invention herein shown and described is what is believed to be the preferred embodiment thereof, it is nevertheless to be understood that minor changes may be made without departing from the spirit and scope of the invention as claimed.

What I claim as new is:—

1. A chair provided with a flexible adjustable back portion, upholstering provided therefor, and automatic tensioning means for the said upholstering.

2. A chair provided with a flexible back portion, adjusting means for the said back portion, locking means for the said adjusting means, a flexible upholstering member spanning the said flexible back portion, and automatic tensioning means for the said upholstering member operatively connected to the said adjusting means.

3. A chair provided with a flexible back portion, a normal positioning spring for the said portion, locking adjusting means for the said portion, a flexible upholstering for the said portion, and automatic adjusting means for the said upholstering operable simultaneously with the operation of the said flexible back portion.

4. A chair having back rails, a flexible frame positioned inwardly of said rails, hinged connections between the said frame and the bottom of the chair, a shifting board hinged to the upper end of the said frame, lower springs connected between the said board and chair rails, and adjustable shifting means for the said board.

5. A chair having back rails, a flexible frame positioned inwardly of said rails, hinged connections between the said frame and the bottom of the chair, a shifting board hinged to the upper end of the said frame, lower springs connected between the said board and chair rails, adjustable shifting means for the said board, a flexible upholstering having one end thereof secured adjacent the bottom of the said chair and extending over the said flexible portion and board, and automatic adjusting means for the said upholstering operatively connected at its upper end to the said back adjusting means.

6. A chair having back rails, a flexible frame positioned inwardly of said rails, hinged connections between the said frame and the bottom of the chair, a shifting board hinged to the upper end of the said frame, lower springs connected between the said board and chair rails, a transverse shaft journaled between the said rails, pinions upon the opposite ends of the said shaft, toothed rack plates carried by the said board

and having their teeth in constant mesh with the teeth of the said pinions, and releasing latches for the said pinions.

7. A chair having back rails, a flexible frame positioned inwardly of said rails, hinged connections between the said frame and the bottom of the chair, a shifting board hinged to the upper end of the said frame, lower springs connected between the said board and chair rails, a transverse shaft journaled between the said rails, pinions upon the opposite ends of the said shaft, toothed rack plates carried by the said board and having their teeth in constant mesh with the teeth of the said pinions, releasing latches for the said pinions, flexible upholstering spanning the said back portion and board, a bar carried by the said shaft, and securing means between the said bar and the upper end of the said upholstering.

8. A chair having a back and a bottom, spring bands arranged longitudinally of the said back, transverse slats carried by the said bands, hinged connections between the said bottom and the lower one of the said slats, a transversely arranged shiftable board hinged to the upper ends of said bands, resilient normal positioning means connected between the said board and back, rack and pinion connections for the said board, and normal locking releasing latches for the said pinions.

9. A chair having a back and a bottom, spring bands arranged longitudinally of the said back, transverse slats carried by the said bands, hinged connections between the said bottom and the lower one of the said slats, a transversely arranged shiftable board hinged to the upper ends of said bands, resilient normal positioning means connected between the said board and back, rack and pinion connections for the said board, normal locking releasing latches for the said pinions, a flexible upholstering spanning the said slats, bands, and board, and automatic tensioning means attached to the upper end of the said upholstering.

In testimony whereof I affix my signature.

ALTON J. POLER.

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