Nov. 15, 1966 R. H. DE GASTON 3,285,657

CHAIR BACK ADJUSTING MECHANISM

Original Filed March 30, 1964

Fig. 1.

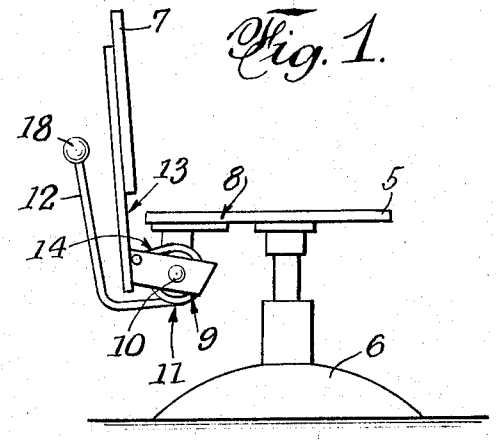


Fig. 2.

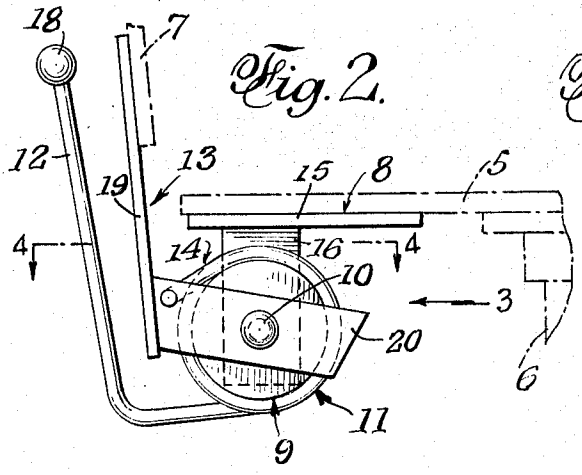


Fig. 3.

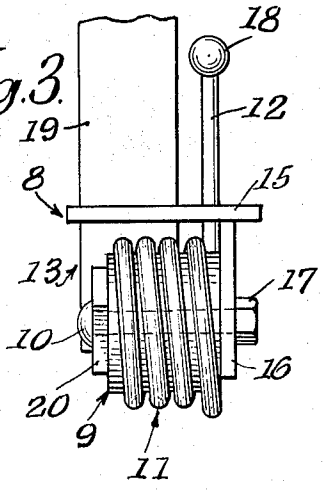
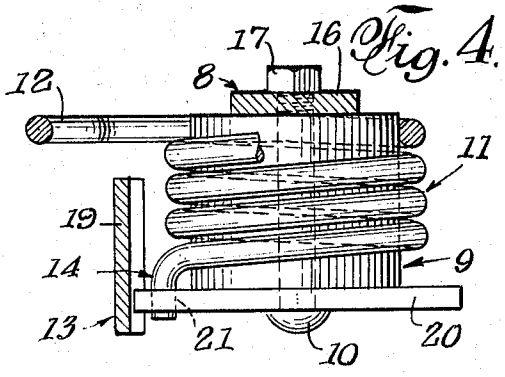


Fig. 4.



INVENTOR.

RAOUL H. de GASTON

BY C. G. Stratton

ATTORNEY

United States Patent Office 3,285,657 Patented Nov. 15, 1966

3,285,657

CHAIR BACK ADJUSTING MECHANISM

Raoul H. de Gaston, Lynwood, Calif., assignor to Henri L. Valette, Inglewood, Calif.

Continuation of abandoned application Ser. No. 355,546, Mar. 30, 1964. This application Aug. 9, 1965, Ser. No. 478,392

3 Claims. (Cl. 297—374)

This application is a continuation of my pending application, Serial No. 355,546, filed March 30, 1964, titled Chair Reclining Mechanisms, now abandoned.

This invention relates to chair construction and deals more specifically with mechanism for adjusting the angle of a chair back relative to chair seat to a chosen position.

An object of the present invention is to provide improved and simplified means for adjusting the angle of a chair back that eliminates ratchet mechanisms, such as used in existing chair structures.

Another object of the invention is to provide mechanism, as above characterized, that is easily adjusted without the need for tools of any sort whatever.

A further object of the invention is to provide chair back adjusting mechanism that may be adjusted to an infinite number of angularly inclined positions.

A still further object of the invention is to provide mechanism, as above characterized, that has long useful life, in that wear is minimal.

This invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The above objects are realized in a chair back adjusting mechanism that has a back that is pivotally mounted on the seat of the chair, said mount comprising a drum or cylinder that is freely rotational on a horizontal axis that extends in a transverse direction at the rear of said seat and is fixedly carried by the chair back, and a helical spring having several convolutions tightly wound on said drum with one end fixedly connected to the seat back and the other end being rearwardly and then upwardly extended to form a handle. Said spring is wound in a direction that causes it to tightly frictionally grip the fixed drum to hold the seat back non-movable against forces tending to move it in a backward direction, as when a person on the chair leans against said back. Said chair back retains its position due to the fact that the spring coils cannot turn over the surface of said drum, as explained, due to their frictional engagement with the drum.

Any enlargement of the coils of the spring will enable the back to be angularly adjusted, in either direction, on the drum axis. To this end, the handle end of the spring is flexed in a rearward and downward direction to cause the spring coils to become enlarged. Now, the back may be adjusted to a desired angle of slope and, upon release of said handle, the spring coils automatically and instantly grip the drum to hold this adjusted position.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description and which is based on the accompanying drawing. However, said drawing merely shows, and the following description merely describes, one embodiment of the present invention, which is given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

FIG. 1 is a side elevational view of a chair having a pivotally adjustable back and provided with the adjusting means of the present invention.

FIG. 2 is an enlarged side elevational view of the present back adjusting means.

FIG. 3 is a front view as seen in the direction of the arrow 3 of FIG. 2.

FIG. 4 is a further enlarged plan sectional view of the present means as taken on the line 4—4 of FIG. 2.

FIG. 1 shows a chair that has a seat 5 that is mounted on a conventional pedestal 6, and is provided with a back 7.

The present chair back adjusting mechanism comprises generally a mounting bracket 8 that is affixed to the seat 5, preferably to the bottom face thereof, a drum or cylinder 9 fixedly carried by said bracket, an axle 10 extending through the horizontal axis of said drum and carried by the bracket 8, a coil spring 11 wound tightly around said drum 9 with one end 12 extending rearwardly and then upwardly, and a second bracket 13 to which the chair back 7 is affixed and rotationally mounted on the axle 10, the other end 14 of the spring 11 being anchored to the bracket 13.

The bracket 8 has a mounting plate 15 and a hanger bar 16 extending downwardly from said plate at one side thereof.

The drum 9 is shown as a smooth faced cylinder and extends laterally from the hanger bar 16.

The axle 10 is shown as a bolt that by means of a nut or threaded collar 17 is affixed to the hanger bar. The same has a headed end that extends beyond the drum 9.

The spring 11 is a conventional coil spring that has its convolutions of a size to frictionally grip the surface of the drum 9. The same comprises several turns with the end of one outer turn or convolution forming the end 12 which has a knob 18 at its upper end by means of which the same comprises a handle.

The bracket 13 comprises a plate 19 to which the chair back 7 is affixed and a forwardly extending plate 20 through a hole in which the mentioned head end of the axle 10 extends. The end 14 of the convolution on the opposite end of the spring 11 is anchored in said plate 20 by being extended laterally through a hole 21 in said plate.

Since the spring 11 is wound so as to tend to tighten around the drum 9 when the spring end 14 is pulled as by a rearward force on the chair back 7, said back 7 will remain in any angular position to which it has been adjusted. By flexing the handle end 12 of spring 9 in a rearward direction, the coils of the spring 9 are infinitestimally enlarged, such enlargement effecting sufficient release of the fixed drum, enabling the back 7 to be adjusted as desired while said handle is retained flexed, as described. Then, upon release of the handle 12, the spring 9 instantly grips the drum to hold the adjustment.

It will be evident that the spring 9 frictionally clutches the drum. Therefore, the mechanism constitutes a friction clutch that enables minute adjustment of the chair to be made.

While the foregoing has illustrated and described what is now contemplated to be the best mode of carrying out the invention, the construction is, of course, subject to modification without departing from the spirit and scope of the invention. Therefore, it is not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described this invention, what is claimed and desired to be secured by Letters Patent is:

1. Adjusting mechanism for a chair having a seat and a separate back, said mechanism comprising:

(a) a drum fixedly secured to the seat and on a horizontal axis transverse to the seat,

(b) a bracket carrying the chair back and freely pivotally mounted on said axis,

(c) a coil spring wound with its coils in friction tight engagement with the cylindrical surface of the drum,

(d) one end of said spring affixed to the mentioned bracket adjacent to the spring coils, and

(e) the opposite end being extended first rearwardly beneath the chair back and then upwardly and rearwardly behind the chair back, to form a handle that, when flexed in a rearward direction to cause enlargement of the convolutions of the spring, causes release of the friction grip between the spring and the drum, thereby releasing the back for adjustment to a desired angle on the mentioned axis.

2. Adjusting mechanism according to claim **1** in which

a second bracket is connected to the seat, and the drum is affixed to the latter bracket.

3. Adjusting mechanism according to claim **2** in which the mentioned axis comprises an axle extending from the latter bracket and through the drum.

References Cited by the Examiner

UNITED STATES PATENTS

376,886	1/1888	Holden	297—292
1,011,713	12/1911	Bainer	297—304
1,856,534	5/1932	Boery	297—374
3,104,130	9/1963	Martens	297—355

FRANK B. SHERRY, *Primary Examiner.*

R. B. FARLEY, G. O. FINCH, *Assistant Examiners.*