

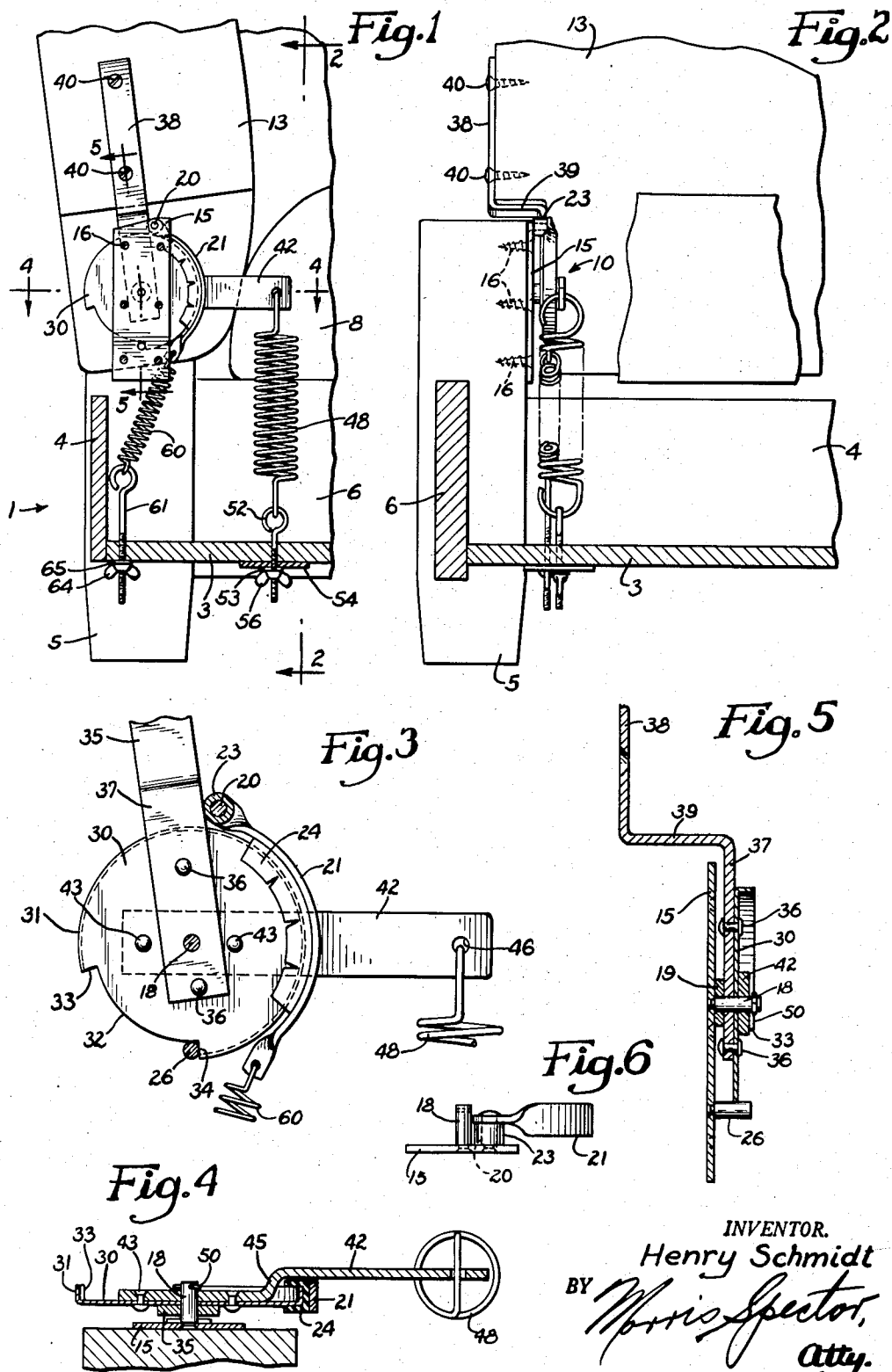
May 8, 1956

H. SCHMIDT

2,744,566

BRACKET FOR BACK REST OF ARTICLE OF FURNITURE

Filed May 10, 1951



1

2,744,566

BRACKET FOR BACK REST OF ARTICLE OF FURNITURE

Henry Schmidt, Chicago, Ill., assignor to H. Schmidt Mfg. Co., Chicago, Ill., a corporation of Illinois

Application May 10, 1951, Serial No. 225,555

1 Claim. (Cl. 155—160)

This invention relates to brackets for the back rest of an article of furniture, particularly hinge brackets such as are used for mounting the reclining back of a chair.

It is one of the objects of the present invention to provide a spring hinge bracket which can be mounted on the frame of a chair and which supports the back rest of the chair in such a manner as to permit tilting of the back of the chair. In its more specific aspects the present invention relates to mounting brackets of the above type which are provided with a spring for urging the back rest in one direction and a friction brake for holding it in the position to which it has been moved. It is an object of the present invention to provide a mounting bracket of the above mentioned character that is of a simple construction and may be easily and quickly secured in position on the chair.

It is a further object of the present invention to provide a mounting bracket of the above mentioned character consisting of a minimum number of parts to be assembled on the job. In accordance with the principles of the present invention the mounting bracket consists of two major parts that can easily and quickly be secured together or separated. One of the parts is adapted to be mounted on the stationary structure of the chair and the other part is adapted to be connected to the back rest or the frame of the back rest. In the preferred construction the parts of the bracket are secured to the respective parts of the chair, while the bracket parts are separate from one another, and then fitted together. It is a still further object of the present invention to provide such a structure wherein fitting of the parts together may be very easily and quickly accomplished.

It is a still further object of the present invention to provide a hinge bracket of the above mentioned character wherein the brake is permanently secured to one of the bracket parts and arranged to facilitate securing of the brake to the bracket parts.

It is a still further object of the present invention to provide a bracket of the above mentioned character with stops for limiting the relative movement of the bracket parts and thereby limiting movement of the back rest.

It is a still further object of the present invention to provide a hinge bracket of the above mentioned character wherein the force of the brake that holds the back rest in its adjusted position may be adjusted, and wherein the force of the return spring that returns the back rest to its initial position may also be adjusted each independently of the other. In chairs of the above mentioned character the force required to tilt the back in one direction is equal to the sum of the forces of the brake and of the return spring, whereas the force required to move the back rest in the reverse direction is the difference between the force of the brake and the force of the return spring. By providing for the adjustment of both the return spring and the brake it is possible to provide a combination wherein the force required to push the back rest back may be made as great as desired by the individual using the chair, while

2

the force required to return the back rest can be made very little, or even negative. In the chairs of the past the force of the return spring has generally been fixed. By adjusting the brake one was able to increase the force required to push the back rest back, but such increase necessarily also resulted in an increase in the force required to return the back rest to its initial position. By the present invention, since it is the sum of the two variable forces that determines the pressure required to move the back rest in one direction and it is the difference of the two variable forces that determines the force required to return the back rest to its initial position, adjustment of the two variable forces, namely, the force of the return spring and the force of the brake spring can be made to produce any desired sum and also any desired difference. This is not possible in the hinge brackets where only the brake force (or only the return spring force) may be adjusted.

It is a still further object of the present invention to provide a back rest bracket of the above mentioned character which is simple and economical of construction, reliable and efficient in its operation, and economical to install.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a transverse sectional view of a portion of a chair to which the present bracket has been applied, parts of the chair being broken away to show a side view of the hinge bracket;

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

Figure 3 is a side view of the bracket of Figure 1 drawn to a somewhat larger scale;

Figure 4 is a sectional view taken along the line 4—4 of Figure 1;

Figure 5 is a sectional view taken along the line 5—5 of Figure 1 and looking in the direction of the arrows; and

Figure 6 is a top view of the stationary mounting plate.

Reference may now be had more particularly to the drawing wherein like reference numerals designate like parts throughout.

In Figure 1 there is shown the hinge bracket of the present invention applied to a chair which is otherwise of a conventional construction. The chair 1 comprises a conventional supporting frame having horizontal and vertical frame members 3 and 4 and four corner supporting legs, a rear leg being indicated at 5. The chair includes a stationary seat portion 6 that supports a conventional seat cushion 8 that rests thereon. Each of the two rear legs 5 has secured thereto a hinge bracket 10 of the present invention, only one of which is shown. The two hinge brackets are one a right and one a left. The hinge brackets provide a hinge support for a chair back rest 13 that may be upholstered in any conventional manner.

The hinge bracket 10 includes a flat mounting plate 15 that may be of any desired shape, for instance, rectangular, and has a series of countersunk holes therein for receiving six screws 16 whereby the mounting plate 15 may be attached to the arm or analogous stationary side member of the chair. The mounting plate 15 has a circular pivot pin 18, constituting an axle pin, welded or otherwise rigidly secured thereto and extending at right angles from the front surface thereof to constitute a pivot support for the movable portion of the hinge mechanism, as will be more fully explained. A spacer disc or ring 19 is welded to the plate 15 and to the pin 18. The mounting

plate 15 also has an additional circular pivot pin 20 welded or otherwise secured thereto for pivotally supporting an arcuate brake shoe 21. The brake shoe is maintained spaced from the mounting plate 15 by a short tubular collar or spacer ring 23 that is slipped onto the pivot pin 20 before the brake shoe 21 is positioned thereon. Thereafter the brake shoe 21 is slipped onto the pivot pin 20 and the end of the pivot pin is riveted over to hold the brake shoe in place while permitting oscillation of the brake shoe about the pivot pin 20. The brake shoe 21 has suitable braking material 24 secured to the inner surface thereof. This braking material may comprise a channel-shaped piece of rubber, the web of the channel being riveted to the brake shoe and the flanges embracing the movable portion of the bracket, as will be more fully set forth as this description proceeds. The rivets that secure the braking material to the brake shoe 21 are, of course, countersunk so that they do not engage the surface being braked. The mounting plate 15 also has a stop pin 26 welded thereto and projecting therefrom at right angles to the plate 15. This completes the construction of the mounting plate.

The mounting plate is attached to the frame of the chair to constitute the stationary portion of the hinge bracket when the movable portion is disassembled from the stationary portion. The movable portion of the bracket includes a circular metal disc 30 having a peripheral flange 31 that constitutes a brake drum. The disc 30 is slightly cut away at 32, as is also the flange 31, to provide stops 33 and 34 that cooperate with the pin 26 to limit the maximum extent of turning of the disc 30. The disc 30 has a chair supporting bar 35 secured thereto as by a pair of rivets 36—36. The chair supporting bar 35 may be of any desired construction, and in this instance comprises a metal strap or bar having a lower portion 37 and an upper portion 38 offset from the lower portion 37 by an offset part 39, as is clearly shown in Figures 1 and 2. The entire bar 35 is one strip of metal that may be forged or otherwise formed to the shape indicated. The upper portion 38 has means for securing it to the back rest 13 where it overlaps the rear portion of the chair arm rest whereby it supports the back rest. This means, in the present instance, comprises two countersunk holes through which extend screws 40—40 that secure the back rest thereto. Another bar 42 of metal is riveted to the inside face of the disc 30 as by a pair of rivets 43—43. This bar 42 has an offset portion 45 for passing the bar around the flange or brake drum 31. The bar 42 constitutes a lever for moving the movable portion of the hinge bracket. To that effect the bar 42 has a hole 46 for receiving the upper end of a return spring 48. A center hole is formed in the movable bracket assembly through the disc 30 and the inner and outer bars 35 and 42. The assembly is slipped on the circular pivot pin 18, the pin passing through the center hole, and is held in place against removal by a cotter pin 50 that is inserted through a hole in the pivot pin 18.

The lower end of the spring 48 is secured to an eye-bolt 52 that is passed through a hole in the frame board 3 of the chair and through a similar hole in a small rectangular bearing plate 54 that is secured to the under side of the board 3. A wing nut 56 threads on the shank of the eye-bolt 52 and bears against a spring lock washer 53 between it and the plate 54 and thus limits the outermost position of the eye of the eye-bolt 52, which position may be adjusted by turning of the wing nut 56.

To the end of the pivoted brake shoe 21 there is connected the upper end of a brake spring 60, the lower end of which is secured to the eye of an eye-bolt 61 that passes through a hole in the frame of the chair and is secured in adjusted position by a wing nut 64 that threads on the shank of the eye-bolt 61 and bears through a spring lock washer ring 65 against the frame of the chair and thus determines the position of the eye of the eye-bolt 61.

This determines the tension that is placed on the brake spring 60.

As previously stated, the back rest 15 is supported by the two hinge brackets 10 on opposite sides of the chair, the hinge brackets being secured to the chair with the pins 18 of the two brackets in alignment, as is usual in hinge construction.

The chair is upholstered in any desired manner in order to conceal completely the hinge brackets. The adjusting wing nuts 56 and 64 are, of course, out of view, but are accessible for adjustment.

In normal use of the chair the spring 48 constantly urged the chair back rest 13 to its foremost position illustrated in Figure 1. The brake tends to hold the chair in any position in which the back rest has been moved. By adjusting the wing nut 64 to adjust the tension of the brake spring 60, one may make the braking force greater than or less than the force of the return spring 48 and thereby determine if the back rest is to remain in its adjusted positions or automatically return to its foremost position. By adjusting the wing nut 56 the tension of the return spring is also adjusted for accomplishing the same result. However, by providing for adjustment of both springs it is possible to maintain the tension of the brake spring 60 above that of the return spring 48 so that the back rest will remain in the position to which it has been moved. By providing any desired difference in the tension of the two springs one can thereby adjust the amount of force that will be required to return the back rest back as may suit the desires of the individual user of the chair. If desired, the adjustment can be made such that the back rest will always come back to the position of Figure 1 when the occupant of the chair leaves the chair. By having a small differential of spring forces the return force on the back rest may be made small so that the back rest may return to its position of Figure 1 slowly, even though the forces on the two springs are considerable, so that considerable back pressure is required to move the back rest counter-clockwise from the position of Figure 1.

From the above description it is apparent that I have provided a hinge bracket for an article of furniture, specifically for the back rest of a chair, which hinge bracket is simple and economical of construction, may be easily mounted in place, and offers a wide range of adjustment for the user of the chair.

In compliance with the requirements of the patent statutes I have here shown and described a preferred embodiment of my invention. It is, however, to be understood that the invention is not limited to the precise construction here shown, the same being merely illustrative of the principles of the invention. What I consider new and desire to secure by Letters Patent is:

A hinge bracket for the back rest of a tilted back chair said hinge bracket comprising a mounting plate for mounting the same on a chair frame, said mounting plate having an axle pin extending therefrom, a disc supported and rotatable on said axle pin, said disc having a peripheral flange comprising a brake drum, there being a gap in the disc of an arcuate extent less than the circumference of the disc, a stop pin extending from the mounting plate into said gap and in the opposite extreme positions of the disc being engaged on the opposite edges of the gap portion of the disc to stop angular movement of the disc, said disc having secured thereto on one side thereof a mounting strap projecting therefrom for mounting a back rest thereon and having secured to the opposite face thereof another mounting strap, a return biasing spring secured to the end of said other mounting strap, an additional pivot pin secured to the mounting plate and parallel to the axle pin and spaced therefrom a distance greater than the radius of the disc, a brake shoe pivoted to said last mentioned pin, spring means for pressing the brake shoe towards the brake drum, hand operated adjusting means for adjusting the force applied by the

2,744,566

5

return biasing spring, and hand operated adjusting means for adjusting the force applied by the said spring means, each of said hand operated means including a turnable member which is turnable to adjust its spring.

2,273,428
2,443,400

References Cited in the file of this patent

UNITED STATES PATENTS

1,929,471 Bank ----- Oct. 10, 1933

5

215,604
414,919

6

Bank ----- Feb. 17, 1942
Reinhold ----- June 15, 1948

FOREIGN PATENTS

Great Britain ----- Mar. 15, 1924
Great Britain ----- Aug. 16, 1934