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R. A. CRAMER
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TILTING UNIT FOR SWIVEL CHAIR
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Fig. 1.

INVENTOR.
Roy A. Cramer.

BY
Fishburn and Gold
ATTORNEYS.
This invention relates to chairs, and more particularly to improvements in posture chairs of the general swivel type having a seat and back tilting as a unit with adjustable tension.

Various chairs of swivel type and adjustable features have been designed heretofore but applicant believes the present invention employs a simple mechanism for chairs whereby the seat and back tilt as a unit on an adjustable tension mechanism not heretofore shown.

The principal object of the present invention is therefore to provide a chair of this character having a seat and back tilting as a unit on an adjustable tension mechanism.

Other objects of the invention are to provide an attractive chair made from welded frame material; to provide a base supported upon roller casters having a standard with mechanism for adjusting the height of the chair; to provide a seat for the chair; to provide a frame mechanism for the seat; to provide a back for the seat and having side arms integral with the frame for the seat and with the arms for the back of the chair; to provide the seat frame with downwardly extending, spaced arms for mounting of the frame on the standard; to provide means on the standard and engaging the cross arms on the seat frame for securing the seat frame to the standard; to provide said means with tilting pivotal mechanism including a rod pivoted to said means upon which is mounted a spring for adjusting the tension of the tilting mechanism; and to provide a chair of this character simple and economical to manufacture.

In accomplishing these and other objects of the invention, I have provided improved details of structure the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of the chair showing my invention.

Fig. 2 is a side view of the chair.

Fig. 3 is a side view of the chair with the back and seat tilted rearwardly and parts broken away to better illustrate the invention.

Fig. 4 is a fragmentary bottom view particularly illustrating the tilting and tensioning mechanism taken on the line 4—4, Fig. 2.

Fig. 5 is a cross-sectional view taken on a line 5—5, Fig. 4.

Fig. 6 is a cross-sectional view taken on a line 6—6, Fig. 4, particularly illustrating the mounting of the cross arms of the frame member.

Referring more in detail to the drawings:

1 designates a chair embodying the features of my invention comprising a base 2 mounted upon casters 3.

The base is here shown to consist of four arms as indicated at 4, welded or otherwise rigidly secured at their mating ends to a sleeve 5 in which is mounted a short sleeve 6 for receiving a standard 7 for mounting of the seat frame 8 of a seat 9. The sleeves 5 and 6 are provided with an aligned opening as indicated at 10 and secured therein by welding or other suitable means is a laterally extending sleeve 11 for a rod 12 on the outer end of which is a lever 13 having brackets 14 and a cam surface 15. The lever 13 is pivotally mounted on the rod 12 by pin 16. The standard 7 is provided with spaced sockets for receiving the end of the rod 12 for adjustably locking the standard at spaced points to adjust the height of the chair as is the usual practice.

A housing 17 having spaced slots 18 is provided for fitting over the arms 4 of the base to provide a smooth structure as illustrated in Fig. 1.

The frame 8 for the seat comprises a forward cross member 19 rounded as at 20 and 21 extending rearwardly to form side members 22 and 23 and extends rearwardly and upwardly to form arms 24 and 25 for the back 26. A rear cross member 27 is provided for the frame and is welded to the side members 22 and 23 as indicated at 28 and 29 (Fig. 4). Side arms 30 and 31 are provided with one of their ends welded to the side 22 and 23, respectively, as indicated at 32 (Fig. 2), and their other end welded to the sides of the back arms 24 and 25 as indicated at 33. The side arms 30 and 31 are provided with pads as indicated at 34 and 35. The back rest 26 is secured to the arms by screws or the like as indicated at 36 (Fig. 2).

I have here illustrated the framework of the chair, to be of tubular substantially square construction. The bottom of the seat 37 is secured to the frame work 8 of the rest by screws or the like 38 extending through openings 39 in the tubular framework structure. The seat and back are provided with removable coverings as indicated at 40 and 41.

Referring to the tilting mechanism, I provide a socket housing member 42 for engaging over the standard 7. The upper end of the standard has an annular groove 43 for receiving a pin 44 extending through the housing to retain the same thereon. The housing 42 has outwardly extending arms 45 and 46 turned forwardly and provided with openings 47 and 48 forming bearings for a rod 49.

Angle shaped cross bars 50 and 51 are secured to the cross members 19 and 27 of the frame of the chair seat with the downward extended flange of the angle cross bar provided with opening 52 for receiving the rod 49. The end of the rod is turned laterally and inwardly and extends up and hooks over the other angle bar of the cross bar 50, as indicated at 54 (Fig. 6). The free end is provided with an opening 56 for a cotter pin 57 for retaining the rod on the cross bars.

A substantially V-shaped bracket 58 has a rear face 59 and forwardly extending side arms 60 and 61 with their edges welded to the downwardly extending flanges of the cross bars 50 and 51 as indicated at 62 and 63, the bracket being spaced forwardly from the mounting of the housing 42. The housing 42 has outwardly extending spaced ears 64 provided with aligned openings 65. The rear face 59 of the bracket 58 is provided with an opening 66 for receiving a rod 67 having a head 68 on its rear end provided with an opening 69 forming a bearing for a pin 70 adapted to extend therethrough and through the ears 64 on the housing 42 to pivotally connect the rod thereto. A plurality of resilient washers 71, such as leather or the like, are provided between the ends of the ears 64 and the rear face 59 of the bracket 58 as illustrated in Fig. 5.

A coil spring 73 is sleeved over the rod 67 and has one end engaging against the inner face 74 of the bracket 58 and its other end engaging against a keeper 75, engaging against a bearing member 76 which in turn engages against a boss 77 of a hand wheel 78. The boss of the hand wheel is internally threaded and adapted to engage the threads 79 of the rod 67. The rod is also provided with threads 80 at substantially the center thereof adapted
to receive a threaded nut 81 and a stopnut 82. The nuts 81 and 82 form a stop for a small coil spring 83 which engages over the rod 67 inside of the coil spring 73. A nut 84 is provided on the outer end of the rod 67.

The cross arms 50 and 51 are secured to the frame by plates 85 and extending across the ends of the cross members having internally threaded bosses 86. Screws 87 extend through the cross members 19 and 27 and engage in the bosses as best illustrated in Fig. 6.

With a chair constructed and assembled as described the height of the chair may be adjusted with the latch mechanism by operation of the lever 13 to disengage the rod 12 from the socket 17 and the standard moved up and down on the base. The tilting tension is adjusted by the hand wheel 78 exerting tension on the spring 73. In use of the chair when the occupant leans against the back 26 the chair will be tilted backwardly and depending upon the pressure upon the back of the chair the nuts 81 will engage the end of the small coil spring 83 and add additional tension to provide further resistance to the pressure on the back. The nut 82 is a jamb nut to hold the stop nut at a certain place on the rod. The washers 71 will provide some resiliency between the bracket member 58 and against the ears 64.

It will be obvious from the foregoing that I have provided an improved chair having tensioning means and tilting mechanism as a unit for quick adjustment and easy operation of the chair.

What I claim and desire to secure by Letters Patent is:

A chair including, a base, seat and back members, a frame for said seat, means securing the seat to the frame, said frame having longitudinally extending spaced bars underneath thereof having aligned transverse openings therein, a vertical standard in said base, a housing rotatably mounted on said standard having laterally extending arms provided with openings in the ends thereof forming bearing members, a pin extending through the openings in the arms on the housing and in said bars tiltably mounting the frame on the standard, one end of the pin having a hook engaging over one of the bars to hold the same in place, a bracket spaced forwardly of the housing and having forwardly extending sides rigidly secured to said bars, said bracket having a rear face having an opening therein, forwardly extending spaced ears on the housing having aligned openings therein, a threaded rod extending through the opening in the bracket having a head thereon, means pivotally connecting said head to said ears, cushioning means between the bracket and said ears, a handwheel adjustably mounted on said rod, a coil spring having one end engaging against the forward face of the bracket and the other against said wheel for providing tension on tilting movement of said seat and back members, a second coil spring on said rod inside said first coil spring, and stop means on said rod for engaging one end of the second spring for adding additional tension to said tilting mechanism.

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