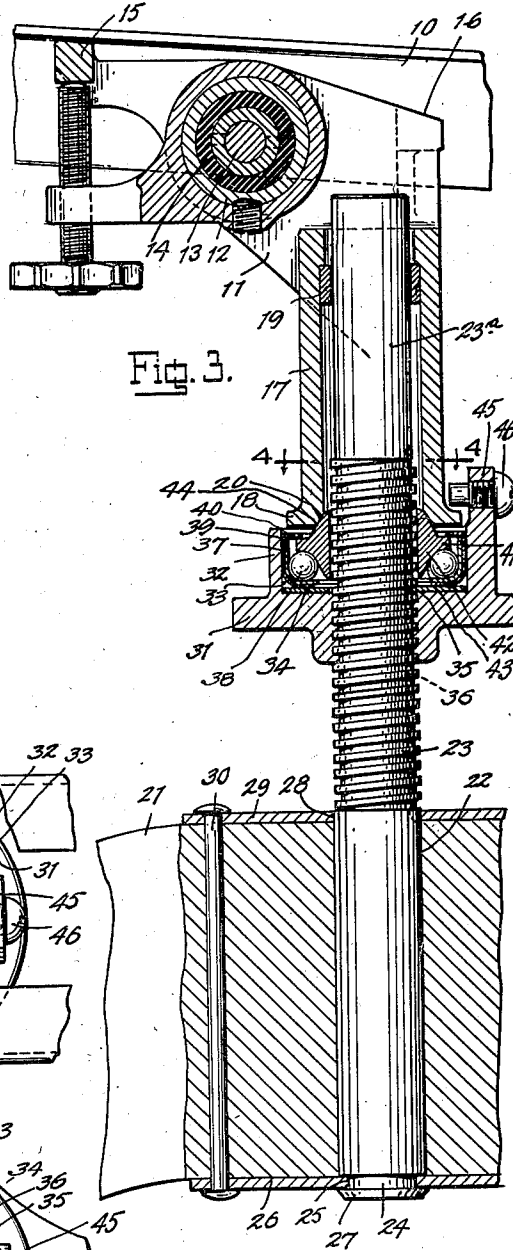
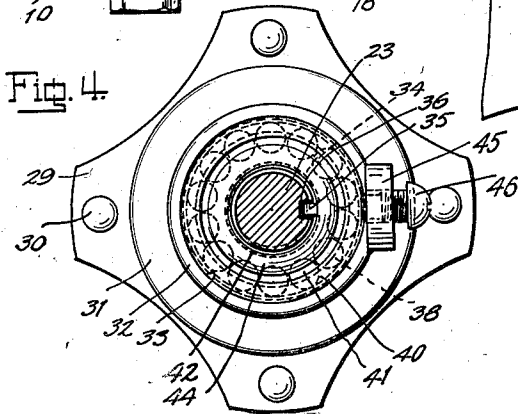
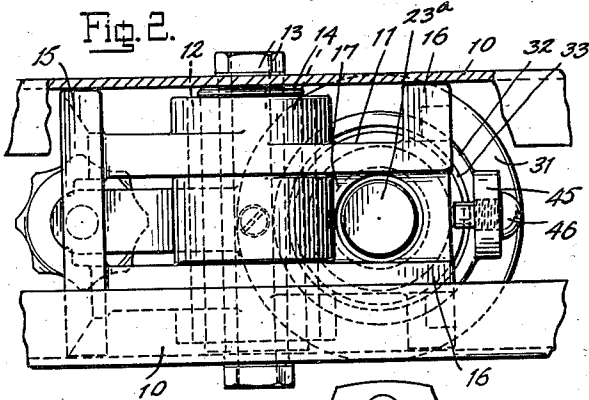
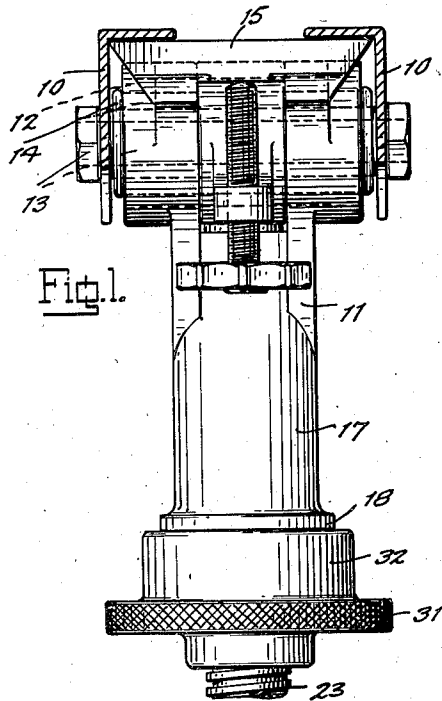


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SWIVEL CHAIR MOUNTING
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SWIVEL CHAIR MOUNTING

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7 Claims. (Cl. 155—93)

The present invention relates to an improved swivel chair mounting, and has for an object to provide a ball-bearing swivel mounting by means of which the chair seat may be swiveled with a very easy action without effecting the vertical adjustment, and further to provide means by which the chair seat may be vertically adjusted with facility. A further object is to provide adjustment means which may be readily turned to adjust the height of the seat without the necessity for withdrawing pins, spring plungers, or other such locking means, and which when adjusted will remain in the adjusted position through frictional cooperation of the parts.

Another object is to provide a swivel mounting in which the swivel support is self-centering so that side play and looseness is eliminated, and wear is automatically compensated.

Another object is to provide a mounting having a fixed threaded post in which the threads are out of contact with the rotatable swivel bearing parts.

With the above and other objects in view an embodiment of the invention is shown in the accompanying drawing, and this embodiment will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawing:

Fig. 1 is a front elevation of a chair iron embodying the invention.

Fig. 2 is a top plan view, a portion of the top flange of one of the spider arms being broken away.

Fig. 3 is a vertical sectional view.

Fig. 4 is a sectional plan view of the bearing, taken along the line 4—4 of Fig. 3, the chair iron being removed.

Similar reference characters indicate corresponding parts throughout the several figures of the drawing.

Referring to the drawing, the chair iron illustrated comprises a pair of angular cross-section spider arms 10—10 adapted to be screwed to the under side of a chair seat in the usual manner, and mounted for tilting movement upon a support 11, which in accordance with the invention is mounted for vertical adjustment and swiveling movement. The construction of the tilting mounting forms no part of the invention, so that it is sufficient to merely state that the one illustrated comprises a joint element of the type as disclosed in my co-pending patent application Serial No. 695,989, filed October 31, 1933, which matured into Patent No. 2,008,209, issued July

29, 1935, and in which an outer sleeve member 13 is secured at its ends to the spider arms 10—10 and an intermediate tubular resilient member 14 of rubber is disposed between them under tension, and which normally retains the spider arms in contact with the forward stop 15 of the bracket while permitting tilting movement rearwardly against the inclined stop members 16—16.

The support 11 is provided with a vertically disposed tubular post portion 17 having an outwardly extending flange 18 at its lower end. A bearing ring 19 is set into the bore of this post near the upper end and the lower end of the bore is beveled, as at 20.

The chair base 21, which is preferably of the usual type consisting of four radially extending downwardly curved legs, is provided with a central cylindrical passage 22 in which is engaged and secured the shank of a screw shaft 23, the lower end of this shank being reduced, as at 24, and secured in the aperture 25 of a plate 26 disposed at the lower side of the chair base by heading over said reduced portion, as at 27. The shaft 23 projects upwardly through the aperture 28 of an apertured plate 29 disposed at the upper side of the chair base, the plates 27 and 29 being secured by tie rods 30 extending between them through the chair base.

The screw shaft 23 is provided at its upper end with a plane cylindrical extension portion 23^a, which in the assembled relation slidably and rotatably engages the bearing ring 19 of the chair iron support, and upon the threaded portion there is engaged an adjustment nut and ball-bearing assembly.

The nut 31 which is in the form of a hand wheel or knob is internally threaded to engage the threads of the screw shaft and is provided at its upper side with a cylindrical flange 32 forming a pocket 33. In the base of this pocket there is disposed a flat ring washer 34 having a projecting lug 35 at its inner periphery which engages a vertically extending key slot 36 in the screw-shaft. A ball-bearing cup is disposed in the pocket above the washer 34 and comprises an inner cup member 37 in the form of a flanged ring carrying a series of anti-friction balls 38, and an outer cup-member 39, also in the form of a flanged ring, and having an inwardly bent lip 40 at its upper edge extending loosely over the annular flange 41 of a bearing ring 42, loosely disposed about the screw-shaft. The bearing ring has a lower bearing surface 43 tapered upwardly and outwardly and extending laterally at the upper end, which engages the balls in diagonally

opposed relation to the cup member 37 which engages the outer and lower sides, and an upper beveled bearing surface 44 upon which the beveled surface 20 of the chair iron bracket seats. The balls have three point contact with the surface 43 of the bearing ring 42 and the bottom and side surfaces of the bearing cup 37, so that the bearing ring is self-centered. As the opening of the ring fits loosely about the threaded portion of the post 23 there will be no frictional or wearing contact therewith as the chair seat is swiveled. The self-centering bearing ring also automatically compensates for wear.

An upwardly projecting lug 45 formed on the nut 31 is provided with a set screw 46 which projects above the annular flange 18 of the chair iron bracket to retain the latter in assembled relation.

In the normal operation of the mounting the chair iron support and the bearing ring 42 have free swiveling movement about the stationary screw-shaft, the weight of the person seated in the chair pressing the non-rotatable washer 34 tightly between the ball bearing cup members and the base of the pocket 33, so that there is no tendency for the nut to turn. The bearing ring 19 which takes side thrust engages the stationary screw-shaft extension portion 23^a and therefore has no tendency to impart rotary movement to the adjustable parts of the mounting. When the chair seat is being adjusted the weight of the person seated in the chair is removed, so that there is very little friction between the washer and the nut, and the latter may therefore be readily turned to adjust the height of the chair.

I have illustrated and described a preferred and satisfactory embodiment of the invention but it will be obvious that changes may be made therein, within the spirit and scope thereof as defined in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a swivel chair mounting, a chair seat support having a tubular bearing portion having a reduced diameter side thrust bearing portion near its upper end, a chair base, a post secured to said base projecting upwardly having a plane cylindrical upper end portion slidably and rotatably engaging said side thrust bearing portion, said post having a threaded portion between said plane cylindrical upper end portion and said chair base, said tubular bearing portion being out of contact with said post below said side thrust bearing portion, an adjustment nut engaged with said threaded portion, annular bearing means carried by said nut at its upper side and engaged by the lower end of said tubular bearing and rotatably surrounding said post, means whereby said tubular bearing is centralized with respect to said annular bearing means, and means whereby said annular bearing means is centralized with respect to said nut.

2. In a swivel chair mounting, a chair seat support having a tubular bearing portion, an annular side thrust bearing ring at the upper end of said bearing portion, of smaller internal diameter than said tubular bearing portion, a chair base, a post secured to said base projecting upwardly and slidably and rotatably engaging said bearing ring, said tubular bearing portion being out of contact with said post below said bearing ring; said post having screw threads, an adjustment nut engaged with said screw threads, and annular bearing means carried by said nut at its upper side and engaged by the lower end of said tubular bearing portion, said tubular bearing portion and said

annular bearing means having cooperative bearing surfaces adapted to centralize said bearing portion with respect to said annular bearing means.

3. In a swivel chair mounting, a chair seat support having a tubular bearing portion, a chair base, a post secured to said base projecting upwardly and slidably and rotatably engaging said tubular bearing portion, said post having screw threads, an adjustment nut engaged with said screw threads, annular bearing means carried by said nut at its upper side comprising an annular series of ball bearings, means annularly surrounding said balls to limit their outward displacement, and bearing means at the lower end of said tubular bearing portion engaging said balls inwardly of their central line of rotation and pressing them outwardly, said bearing means being centralized with respect to the vertical axis of said tubular bearing portion and adapted through said engagement with said annular series of balls to centralize said tubular bearing portion with respect to said annular series of balls.

4. In a swivel chair mounting, a chair seat support having a tubular bearing portion, a chair base, a post secured to said base projecting upwardly and slidably and rotatably engaging said tubular bearing portion, said post having screw threads, an adjustment nut engaged with said screw threads, annular bearing means carried by said nut at its upper side comprising an annular series of ball bearings, means annularly surrounding said balls to limit their outward displacement, a bearing ring rotatable about said post supported upon said ball bearings and including an upwardly and outwardly tapered bearing surface adapted to urge said balls outwardly, said tubular bearing portion being supported at its lower end upon said bearing ring, said bearing means being centralized with respect to the vertical axis of said tubular bearing portion and adapted through said engagement with said annular series of balls to centralize said tubular bearing portion with respect to said annular series of balls.

5. In a swivel chair mounting, a chair seat support having a tubular bearing portion, a chair base, a post secured to said base projecting upwardly and slidably and rotatably engaging said tubular bearing portion, said post having screw threads, an adjustment nut engaged with said screw threads, annular bearing means carried by said nut at its upper side comprising an annular series of ball bearings, a bearing ring rotatable about said post supported upon said ball bearings, said tubular bearing portion being supported at its lower end upon said bearing ring, and means whereby the cooperating engaging surfaces of said tubular bearing portion and said bearing ring are self-centering.

6. In a swivel chair mounting, a chair seat support having a tubular bearing portion, a chair base, a post secured to said base projecting upwardly and slidably and rotatably engaging said tubular bearing portion, said post having screw threads, an adjustment nut engaged with said screw thread, annular bearing means carried by said nut at its upper side comprising an annular series of ball bearings, means annularly surrounding said balls to limit their outward displacement, a bearing ring rotatable about said post supported upon said ball bearings and including an upwardly and outwardly tapered bearing surface adapted to urge said balls outwardly, said tubular bearing portion being supported at its lower end upon said bearing ring, and means

whereby the cooperating engaging surfaces of said tubular bearing portion and said bearing ring are self-centering.

7. In a swivel chair mounting, a chair seat support having a tubular bearing portion, a chair base, a post secured to said base projecting upwardly and slidably and rotatably engaging said tubular bearing portion, said post having screw threads and a vertically extending key slot, an
5 adjustment nut engaged with said screw threads,
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annular bearing means carried by said nut at its upper side comprising an annular series of ball bearings and a bearing ring rotatable about said post supported upon said ball bearings, and engaged by the lower end of said tubular bearing portion, and a locking ring frictionally engaged between said bearing means and said nut having a projection engaging said key slot. 5

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