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W. F. HEROLD

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SWIVEL CHAIR MOUNTING

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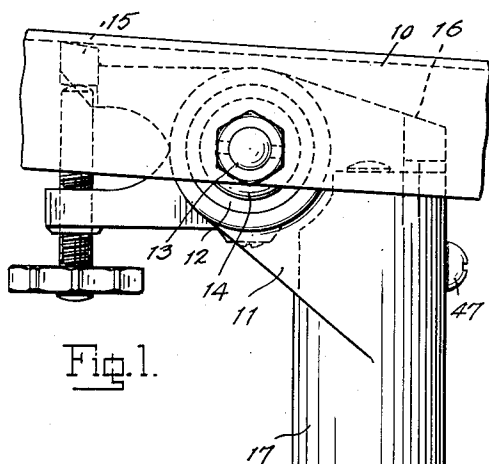


Fig. 1.

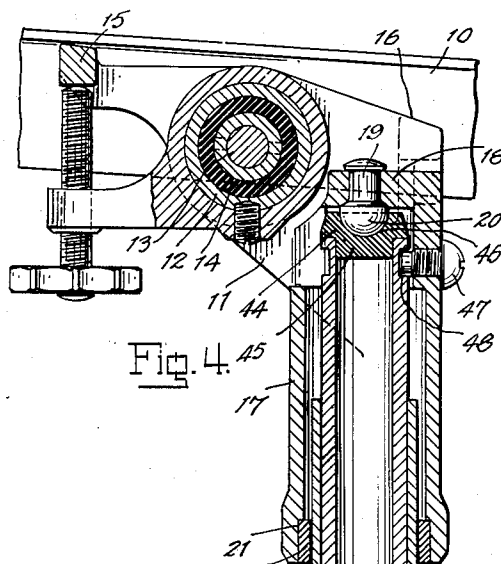


Fig. 4.

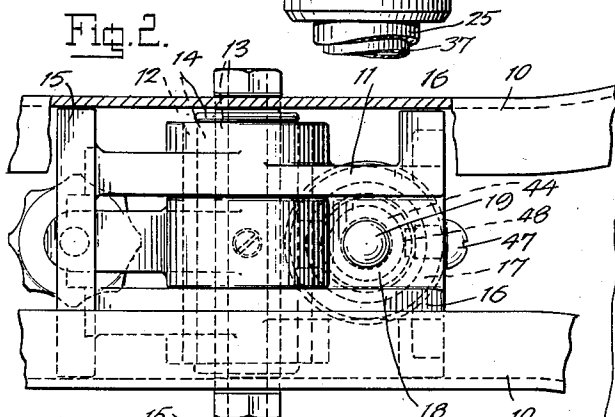


Fig. 2.

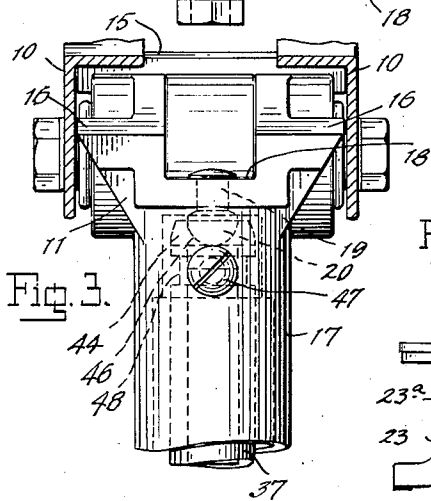


Fig. 3.

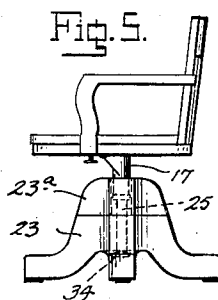
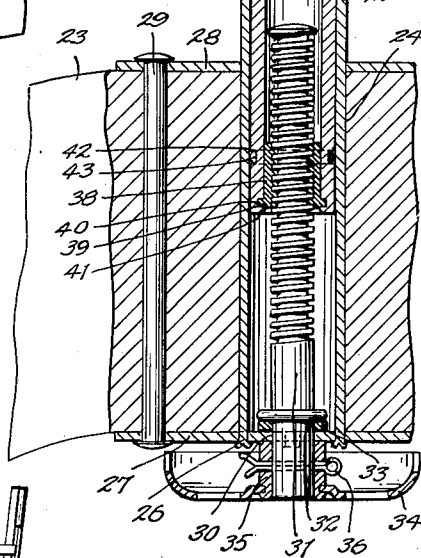


Fig. 5.



INVENTOR.
WALTER F. HEROLD
BY
Walter F. Herold
ATTORNEY.

UNITED STATES PATENT OFFICE

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SWIVEL CHAIR MOUNTING

Walter F. Herold, Bridgeport, Conn., assignor to
The Bassick Company, Bridgeport, Conn., a corporation of Connecticut

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11 Claims. (Cl. 155—93)

The present invention relates to an improved swivel chair mounting, and has for an object to provide a 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 mounting in which the exposed part of the post between the base and the chair seat support is stationary and free from grease or dirt, and further in which the adjustment parts are concealed and are operable from the underside of the base, to the end that the upper portion of the base will be free of parts that may soil or injure clothing coming in contact therewith and also lends itself to the carrying out of more pleasing designs in the base.

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.

It is particularly proposed in the present invention to provide a telescoping supporting post upon which the chair iron is swivelly mounted, and which uniformly supports the iron in any position of adjustment.

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 side elevation of a chair iron embodying the invention, the end portions of the spider arms and the support-post being broken away.

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 rear elevation.

Fig. 4 is a vertical sectional view.

Fig. 5 is a reduced side elevation of a chair in which the base is designed to enclose the swivel mounting post.

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 seat support or bracket 11, which in accordance with the invention is mounted for vertical adjustment and swiveling movement. The particular 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, S. N. 695,898, filed October 31, 1933, in which an outer sleeve member 12 is secured with respect to the bracket 11, an inner spindle element 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 seat support or bracket 11 is provided with a vertically disposed tubular post or bearing portion 17 having a transverse head portion 18 closing its upper end, and within which head portion there is secured the shank 19 of a pivot bearing stud 20, the latter being of spherical form and co-axial with the vertical axis of the post 17. Within a shouldered recess 21 at the lower end of the tubular post 17 there is engaged a bearing ring 22.

The chair base 23, which is preferably of the usual type consisting of four radially extending downwardly curved legs, is provided with a central cylindrical passage 24 in which is engaged and secured a cylindrical tubular post 25. The lower end of this post is staked, as at 26, or otherwise suitably secured to a plate 27 disposed at the lower side of the chair base, and projects upwardly through the aperture of an apertured plate 28 disposed at the upper side of the chair base, the plates 27 and 28 being secured by tie rods 29 extending between them through the chair base.

The plate 27 is provided within the lower end of the post 25 with a bearing aperture 30 in which the lower end of an adjustment screw-shaft 31 is rotatably engaged. For this purpose the shaft 31 is provided with a flange 32 near its lower end forming a shoulder which engages upon a washer 33 disposed about the shaft at the upper side of the plate 27, and a hand wheel or knob 34 has its hub 35 secured upon the downwardly projecting

end of the shaft at the under side of the plate 27 by means of a cotter-pin 36.

Within the post 25 there is telescopically engaged a vertically adjustable tubular telescoping extension member 37 having an internally threaded nut 38 secured within its lower end which engages the screw-shaft 31. This nut is preferably secured in the extension member by engaging a flange lip 39 at its lower end in a shouldered recess 40 in the lower end of the extension member and swedging over the end of the extension member as at 41. The upper end of the screw-shaft is provided with a head which limits the upward adjustment of the extension member 37 and prevents the nut from leaving the screw-shaft. An annular recess 42 is provided in the outer surface of the extension member 37 in which is engaged a split spring friction ring 43 engaging through outward spring pressure with the inner surface of the post 25.

At the upper end of the extension member 37 there is provided a bearing block 44 having a shouldered shank 45 set into the opening of the extension member and provided with a spherical recess 46, in which the bearing stud 20 is adapted to seat in the assembled relation, the post 25 being slidably and rotatably engaged with the bearing ring 22. The seat support or bracket is retained upon the extension member, so that it cannot be accidentally lifted off, by means of a set screw 47 engaging an annular recess 48 provided in the extension member near its upper end. The bearing block 44 is preferably formed of self-lubricating metal, as for instance oil impregnated bronze.

In the normal operation of the mounting the seat support or bracket will have free swiveling movement about the post 25 and extension member 37, the friction produced between the nut 38 and screw-shaft 31 by the weight of the person seated in the chair being sufficient to prevent any tendency of the extension member 37 to turn through the slight friction produced during rotation of the bearing stud 20 in the bearing block 44. The bearing ring 22 which takes side thrust engages the stationary post 25 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 normally seated in the chair is removed, so that there is very little friction between the nut 38 and the screw-shaft 31, and the latter may therefore be readily turned. During this operation the split spring ring 43 frictionally holds the extension member 37 against relative rotation with respect to the post 25, while at the same time permitting it to have relative longitudinal movement. The adjustment screw 31 is completely concealed and protected from dust and dirt. It may be originally packed with grease, and thereafter will usually not require any further lubrication.

The chair iron seat support or bracket it will be observed is of very simple form, and may be conveniently formed of cast metal, the only parts then requiring machining operations and fitting being the bearing stud 20, ring 22 and set screw 47.

As shown in Fig. 5 the chair base 23 may be provided with a pedestal portion 23^a forming a closure about the post 25. This is made possible by the provision of the adjustment nut 34 at the bottom of the base, and obviously permits of the carrying out of more artistic designs than has been heretofore possible with chairs in which the adjustment means was arranged at the upper side of the base.

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, a bearing portion carried by said chair seat support, vertical thrust pivot bearing means carried by said bearing portion, side thrust annular bearing means carried by said bearing portion, a chair base, a fixed tubular post secured to said base projecting upwardly and having sliding bearing relatively to said annular bearing means to take side thrust, a vertically adjustable member carried by said post, bearing means carried by said member engaging said vertical thrust pivot bearing means, and means within said tubular post for effecting the vertical adjustment of said member relative to said tubular post.

2. In a swivel chair mounting, a chair seat support, a tubular bearing portion carried by said chair seat support, vertical thrust pivot bearing means carried by said bearing portion, a chair base, a fixed post secured to said base projecting upwardly and having sliding bearing in said tubular bearing portion to take side thrust, a vertically adjustable member carried by said post, bearing means carried by said member engaging said vertical thrust pivot bearing means, and means for effecting the vertical adjustment of said member relative to said fixed post.

3. In a swivel chair mounting, a chair seat support, a tubular bearing portion carried by said chair seat support, vertical thrust pivot bearing means carried by said bearing portion, a chair base, a fixed tubular post secured to said base projecting upwardly and having sliding bearing in said tubular bearing portion to take side thrust, a vertically adjustable extension member carried within said tubular post, bearing means carried by said extension member engaging said vertical thrust pivot bearing means, and means for effecting the vertical adjustment of said extension member.

4. In a swivel chair mounting, a chair seat support having a tubular bearing portion, a centrally disposed vertical thrust pivot bearing provided in said bearing portion, annular side thrust bearing means in said bearing portion, a chair base, a tubular post secured to said base projecting upwardly and having sliding bearing in said side thrust bearing means, bearing means carried by said post and engaged by said vertical thrust bearing, and adjustment screw within said post adapted to be turned to affect the vertical adjustment of said bearing means.

5. In a swivel chair mounting, a chair seat support, a bearing portion carried by said chair seat support, vertical thrust pivot bearing means carried by said bearing portion, a chair base, a fixed tubular post carried by said base having sliding bearing relatively to said bearing portion and providing a vertically extending passage entirely above the under side of said base, a vertically adjustable member within said passage having bearing engagement with said vertical thrust pivot bearing, and means for vertically adjusting said member comprising a manually operable rotatable member mounted at the underside of said base, threaded means entirely within said passage adapted to be rotated by said rotatable member, and threaded means carried by said vertically adjustable member entirely within

said passage and cooperating with said first threaded means whereby rotation of said first threaded means imparts vertical movement to said second threaded means and said vertically adjustable member.

6. In a swivel chair mounting, a chair seat support having a tubular bearing portion, a chair base, a tubular post secured to said base projecting upwardly and having sliding bearing in said tubular bearing portion, a telescoping extension slidably mounted in said tubular post, means for vertically adjusting said extension relative to said post, and bearing means carried at the upper end of said extension and engaged by said bearing portion.

7. In a swivel chair mounting, a chair seat support, a bearing portion carried by said chair seat support, vertical thrust pivot bearing means carried by said bearing portion, a chair base, a fixed tubular post carried by said base having sliding bearing relatively to said bearing portion and providing a vertically extending passage entirely above the under side of said base, a vertically adjustable member within said passage having bearing engagement with said vertical thrust pivot bearing, and means for vertically adjusting said member comprising a manually operable rotatable member mounted at the underside of said base, a vertically disposed screw entirely within said passage adapted to be rotated by said rotatable member, and a nut carried by said vertically adjustable member engaging said screw whereby rotation of said screw imparts vertical movement to said nut and said vertically adjustable member.

8. In a swivel chair mounting, a chair seat support having a tubular bearing portion, a chair base, a tubular post secured to said base projecting upwardly and having sliding bearing in said tubular bearing portion, a telescoping extension slidably mounted in said tubular post, a nut carried by said extension, a rotatable vertically disposed screw disposed in said tubular post and engaging said nut for adjusting said extension in

said post, and manually operable means at the end of said screw and disposed at the underside of said base for turning said screw.

9. In a swivel chair mounting, a chair seat support having a bearing portion, a chair base, a tubular post secured to said base projecting upwardly, a telescoping extension slidably mounted in said tubular post, a nut carried by said extension, a manually rotatable vertically disposed screw disposed in said tubular post and engaging said nut for adjusting said extension in said post, a friction ring disposed between said post and said extension adapted to resist relative rotation between them, and bearing means carried at the upper end of said extension and engaged by said bearing portion.

10. In a swivel chair mounting, a chair seat support, a bearing portion carried by said chair seat support, a chair base, a tubular post secured to said base projecting upwardly, a telescoping extension member slidably mounted in said tubular post, means for vertically adjusting said extension member, a spring friction ring disposed between said post and said extension member carried by one of them and engaging the other under spring pressure adapted to resist relative rotation between them while permitting relative vertical movement, and bearing means carried at the upper end of said extension member and engaged by said bearing portion.

11. In a swivel chair mounting, a chair seat support, bearing means carried by said chair seat support, a chair base, a fixed tubular cylindrical post secured to said base, a cylindrical telescoping extension member slidably mounted in said tubular cylindrical post, means for vertically adjusting said extension, spring means disposed between said post and said extension member adapted to resist relative rotation between them while permitting relative vertical movement, and bearing means carried by said extension member and engaged by said bearing means of said chair seat support.

WALTER F. HEROLD.