Oct. 29, 1940. A. E. JONES 2,219,814

CHAIR

Filed April 24, 1939

Fig. 1.

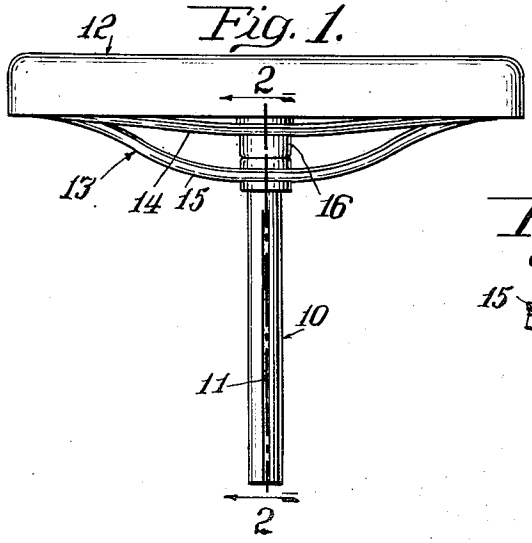


Fig. 2.

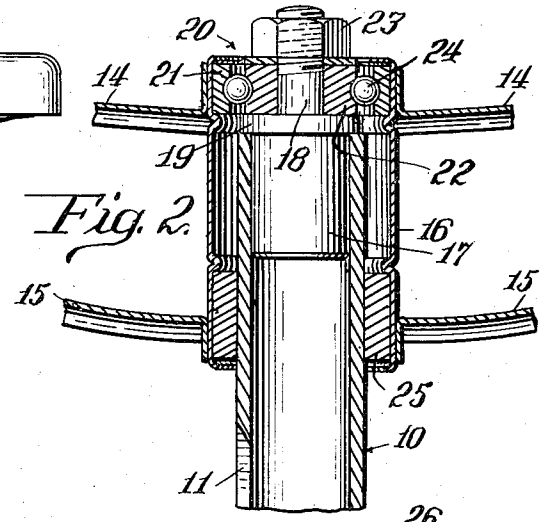
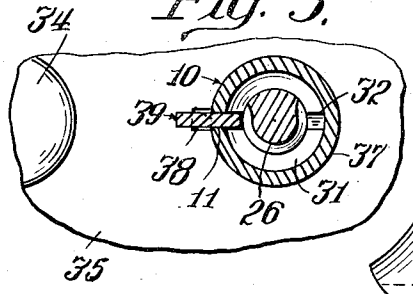


Fig. 3.



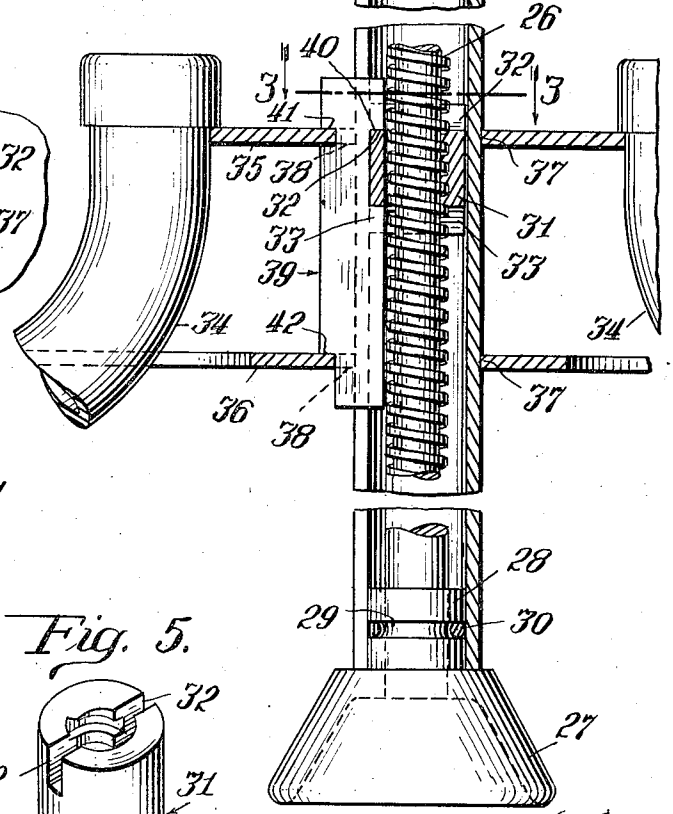


Fig. 4.

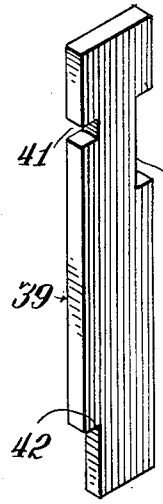
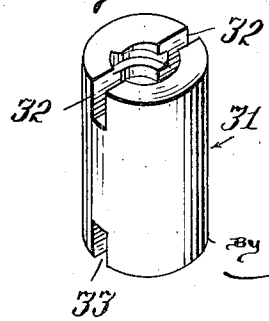


Fig. 5.



Inventor

Arthur E. Jones

By Arthur Wm. Nelson

Attorney

Patented Oct. 29, 1940 2,219,814

UNITED STATES PATENT OFFICE

2,219,814

CHAIR

Arthur E. Jones, Elkhart, Ind., assignor to Posture Research Corporation, Elkhart, Ind., a corporation of Indiana

Application April 24, 1939, Serial No. 269,681

7 Claims. (Cl. 155—93)

This invention relates to improvements in chairs and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The chairs with which the invention is especially concerned are those used in offices and the like and wherein the seat is not only vertically adjustable with respect to the base but is also swivelled with respect thereto.

One of the objects of the present invention is to provide a novel structure in a chair of this kind whereby the seat supporting post is easily adjusted vertically with respect to the associated base.

A further object of the invention is to provide a structure of this kind, where all operating parts are enclosed in the post.

Another object of the invention is to provide a structure of this kind wherein the parts involved are reduced to a minimum and are easily assembled for low cost in production.

The above mentioned objects of the invention, as well as others, together with the several advantages will more fully appear as the specification proceeds.

In the drawing:

Fig. 1 is a view in front elevation of the seat of the chair and its supporting post.

Fig. 2 is a vertical sectional view through the seat post and associated parts of the chair, on an enlarged scale as taken on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal detail sectional view as taken on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of a certain spline or key employed in the improved chair structure and which will be more fully referred to.

Fig. 5 is a perspective view of a certain nut employed in the improved chair structure and which will also be more fully referred to.

Referring now in detail to that embodiment of the invention illustrated in the accompanying drawing, 10 indicates the seat supporting post of the chair which in this instance is tubular and is provided with a longitudinal slot 11 in one side that opens through the bottom end of the post as best appears in Fig. 1.

12 indicates the seat of the chair which is mounted upon a supporting spider 13 that includes top and bottom plates 14 and 15 respectively and which are connected together at their central portions by a spacer tube 16. The seat and its spider are rotatively mounted on the top end of the post by means of the following arrangement: A plug 17 is fixed in the upper end of the post and is provided with an axial stud 18 and a radial flange 19 that rests upon the top extremity of the post. 20 indicates, as a whole, a combined thrust and rotative antifriction bearing embodying therein an outer race 21, fixed to the top end of the spacer tube 16, an inner race 22 engaged on the flange 19 and secured to the stud 18 by a nut 23, and antifriction devices in the form of balls 24 arranged between said races. In the bottom end of the sleeve 16 is fixed a bushing 25 through which the post 10 extends for bearing engagement. By means of the above the seat is not only mounted for rotation on the seat post but it is held against endwise separation with respect to the seat post.

In the post 10 is located a screw 26 having a hand wheel 27 at its bottom end outside the bottom end of the post. This hand wheel has a portion 28 that bears against the inside of the bottom end of the post. In said portion is an annular groove 29 in which a pin 30 carried by the post 10 engages in a manner locking the screw against endwise movement in the post but permitting a turning movement of said screw in the post.

Within the post there is also located a nut 31 in which the screw 26 has threaded engagement. This nut, which best appears in perspective in Fig. 5, is provided along opposite sides with top and bottom recesses 32—33 respectively.

The base of the chair includes the legs 34 and vertically spaced upper and lower plates 35 and 36 having aligned center holes 37 through which the post 10 extends, said plates each having a recess 38 that opens into the center hole thereof.

39 indicates a spline in the form of a piece of flat bar stock as best shown in perspective in Fig. 4. This spline is of a length somewhat greater than the distance between the plates 35—36 and is of a thickness approximating the width of the slot 11 and the width of the recess 32—33 in the nut 31. In one margin of the spline is a recess 40 of a length to embrace or receive that part of the nut 31 between two of the recesses 32—33 at one side of the nut. In the other margin of the spline, near its top end is a recess 41 and the bottom end of said spline is made narrower than the rest of the spline to form a downwardly facing shoulder 42 thereon. When said spline is assembled in place, its central longitudinal portion is disposed within the slot 10, the recess 40 engages that part of

the nut 31 between the recesses 32—33 and the other margin is so disposed with respect to the plates that the recess 41 engages the recess 38 of the top plate 35 and the narrow bottom end of the spline engages in the recess 38 of the bottom plate 36 with the shoulder 42 engaging on the top surface of the plate 36 of the base.

By reason of the engagement of the recess 41 of said spline with the plate 35, it is apparent that said spline is secured against longitudinal displacement with respect to the plates 35—36. Also, by reason of the engagement of said spline, with the nut 31 as before mentioned, said nut is fixed with respect to the base of the chair.

To adjust the vertical position of the post 10, the hand wheel or member 27 is turned in the desired direction. This threads the screw through the nut 31. As the nut is fixed with respect to the spline, which in turn is fixed to the base of the chair through the plates 35—36 and as the spline further acts to prevent turning of the post 10, said post moves upwardly or downwardly, according to the direction in which the screw 26 is turned. Thus a construction is afforded wherein the post cannot turn relatively to the base but it can be adjusted upwardly or downwardly with respect to the base and the seat is turnably mounted or swivelled on the post.

It is apparent that substantially all operating parts are within the post which presents a smooth rounded external surface for sliding engagement in the holes 37—37 of the plates 35—36. With such an arrangement, it is easier to keep the operating parts lubricated without the lubricant accumulating on the outside of the post to soil the stockings of the person occupying the seat. The parts involved are few in number and of a simple construction. Therefore, the cost of making said parts and assembling them is such that the chair may be produced at a relatively low cost. As the seat turns on the post, which does not turn in the base, the chair is not so apt to squeak in use.

While in describing the invention I have referred in detail to the form, arrangement and construction of the parts thereof, this is to be considered only in the illustrative sense so that I do not wish to be limited thereto except as may be specifically set forth in the appended claims.

I claim as my invention:

1. In a chair, the combination of a tubular chair seat supporting post having a longitudinal slot in one side thereof, a supporting base and means carried thereby and through which the post extends for a sliding guided longitudinal movement, a screw arranged in said post, a member on said screw outside the bottom end of said post for turning said screw, means for preventing relative endwise movement between said post and screw when the latter is turned by means of said member, a nut in said post and with which said screw has a threaded engagement, and means associated with said means carried by said supporting base and extending through said slot in the post for holding the nut against both a rotative and a longitudinal movement.

2. In a chair, the combination of a tubular chair seat supporting post having a longitudinal slot in one side thereof, a supporting base and means carried thereby and through which the post extends for a sliding guided longitudinal movement, a screw arranged in said post, a member on said screw outside the bottom end of said post for turning said screw, means for preventing relative endwise movement between said post and screw when the latter is turned by means of said member, a nut in said post and with which said screw has a threaded engagement, means associated with said means carried by said supporting base and extending through said slot in the post for holding the nut against both a rotative and longitudinal movement, and a chair seat rotatively mounted on the top end of said post.

3. In a chair, the combination of a tubular chair seat supporting post having a longitudinal slot in one side thereof, a supporting base and means carried thereby and through which the post extends for a sliding guided vertical movement, a screw arranged in said post, a member on said screw outside the bottom end of said post for turning the screw, said member on said screw including a part having a circumferential groove therein, means carried by said post and engaging in said groove and whereby said member and screw may be turned in said post but are held against longitudinal movement therein, and means associated with said means carried by said supporting base and extending through said slot in the post for holding the nut against both a rotative and a longitudinal movement.

4. In a chair, the combination of a tubular chair seat supporting post having a longitudinal slot in one side thereof, a supporting base and means carried thereby and through which the post extends for a sliding guided longitudinal movement, a screw arranged in said post, a member on said screw outside the bottom end of said post for turning said screw, means for preventing relative endwise movement between said post and screw when the latter is turned by means of said member, a nut in said post and with which said screw has a threaded engagement, said nut having recesses in its opposite ends, and means associated with said means carried by said supporting base and extending through said slot to engage in said recesses in said nut for holding said nut against both a rotative and a longitudinal movement.

5. In a chair, the combination of a tubular seat supporting post having a longitudinal slot in one side thereof, a supporting base including legs and top and bottom plates connecting the top end of said legs together and through which plates said post extends for sliding guided longitudinal movement, a screw arranged in said post, a member on said screw outside the bottom end of the post for turning said screw, means preventing relative endwise movement between said post and screw when the latter is turned by said member, a nut in said post and with which the screw has a threaded engagement, a spline extending through said slot and having one edge portion formed to have an interengaging connection with one of said plates and having its other edge portion engaged with said nut in a manner holding the nut against both a rotative and a longitudinal movement.

6. In a chair, the combination of a tubular seat supporting post having a longitudinal slot in one side thereof, a supporting base including legs and top and bottom plates connecting the top ends of said legs together and through which plates said post extends for sliding guided longitudinal movement, a screw arranged in said post, a member on said screw outside the bottom end of the post for turning said screw, means preventing relative endwise movement between said post and screw when the latter is turned by said

member, a nut in said post and with which the screw has a threaded engagement and which nut has top and bottom end recesses therein, a spline extending through said slot and having an edge portion formed to have an interengaging connection with one of said plates and having its other edge portion formed to engage in said top and bottom end recesses of the nut so as to hold the nut against a turning movement and against a longitudinal movement.

7. In a chair, the combination of a tubular chair seat supporting post having a longitudinal slot in one side thereof, a supporting base including legs and means carried by said legs and through which the post extends for a sliding guided longitudinal movement, a screw arranged in said post, a member fixed to the bottom end of the screw for turning the same, said member including a portion journalled in the bottom end of the tube and having a circumferential groove therein, means carried by the post end engaging in said groove of said portion for holding the same against longitudinal movement with respect to the post but permitting a turning movement of said screw, a nut in said post and with which the screw has a threaded engagement, and a member fixed to said means carried by said legs and having a portion extending through the slot in said post and engaging the nut in a manner holding the same against both a turning and an endwise movement.

ARTHUR E. JONES.