UNITED STATES PATENT OFFICE

CHAIR SEAT SUPPORT

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6 Claims. (Cl. 155—95)

1. This invention relates to an improvement in chair seat supports, especially designed and adapted for use on ships.

One application of the invention is in the mess hall or dining hall of ships where the seats are arranged in rows along the sides of the table on which meals are served. The quarters of ships, especially those used for military operations, are frequently quite crowded, and, of course, ships of this character must make their voyages regardless of weather conditions. In heavy weather if a seat is free to swivel or tilt or slide, it is uncomfortable and many times dangerous to the occupant of the seat.

The present invention proposes a seat or chair support which provides for positioning of the seat close to the table when it is in use by the occupant, and in which provision is made to secure the whole of the seat against rocking, rotating, or sliding when it is in use, and yet the user of the seat may readily manipulate the same to facilitate his approach to and seating thereon and his arising from and leaving the seat.

A further object is to provide a chair or seat support of this character, which is simple, rugged, closely organized and compact in construction, easily manipulated, and economical to manufacture and install.

Other objects and advantages reside in certain novel features of the construction, arrangement, and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming a part of this specification, and in which:

Figure 1 is a view partly in side elevation and partly in diametrical, vertical cross section, showing a seat or chair support embodying the present invention;

Figure 2 is a plan view of the seat or chair support shown in Figure 1, a portion of the head piece being broken away for the sake of illustration;

Figure 3 is a view in horizontal cross section taken on line 3—3 of Figure 1, parts being shown in top plan for the sake of illustration;

Figure 4 is a view in transverse, vertical cross section taken on line 4—4 of Figure 2, with parts shown in elevation for the sake of illustration;

Figure 5 is a fragmentary view partly in longitudinal, vertical cross section and partly in side elevation showing a modified form of the invention;

Figure 6 is a view in transverse, horizontal sec-

2. tion on line 6—6 of Figure 5 and looking in the direction of the arrows; and

Figure 7 is a view in transverse, vertical cross section taken on line 7—7 of Figure 5 and looking in the direction of the arrows.

Referring to the drawings, and more particularly to Figures 1 to 4, inclusive, it will be seen that in one embodiment of the invention the seat or chair support comprises a base 10, which may be a flat piece of mild steel, or other suitable metal, and which is directly fastened to the deck on which the chair is to be supported. A weld 11 may be employed to fasten the base plate 10 to the deck. A post or hollow column 12 is provided and has a flange 13 of annular form welded to its lower end and resting flatly on the base plate 10. Suitable fastening means, such as stud bolts 14 and lock washers 15, securely fasten the flange 13 and consequently also the post 12 to the base plate 10.

The upper end of the post or column 12 is open and receives a bearing designated generally at 16. This bearing 16 has a tubular or sleeve-like body portion 17 which is of cylindrical form and which is closed at its lower end by an integral lower end plate 18. Externally the body portion 16 and the end plate 18 are provided with integral reinforcing and strengthening ribs 19. In this way the structure may be made relatively light and yet is sufficiently strong and rugged to perform its intended purpose. The upper end of the tubular body portion 17 of the bearing 16 is provided with an integral outwardly directed flange structure designated as a whole at 20. When the bearing 16 is assembled with the upper end of the post 12, its tubular body portion 17 extends down into the interior of the post and its ribs 19 engage the inner peripheral wall of the post. This flange structure 20 of the bearing 16 rests on the upper end of the hollow post and portions of it project outwardly therefrom. The bearing 16 is held in place in the post by means of a dowel pin, or other suitable fastening device, designated at 21.

A vertical shaft 22 is supported in the bearing 16 for rotation with respect thereto. The periphery of the shaft is in rotative engagement with the inner peripheral surface of the tubular body portion 17 of the bearing 16 whereby a radial bearing is provided for the shaft. The lower end of the shaft 22 is beveled as at 23 and bears against the lower closed end 18 of the bearing sleeve, thereby providing a vertical thrust bearing for the shaft. While the shaft is free to ro-

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spect to its bearing sleeve by means of a set screw 25 threaded through the post and through the bearing sleeve and having its inner end projecting into an annular groove 26 provided in an intermediate portion of the shaft 27. The upper end of the shaft 27 projects above the flange 28 of the bearing sleeve and has a supporting and guide plate 29 securely fastened thereto. As shown in Figure 1, the upper end of the shaft may be reduced, the supporting plate 29 being formed with a margin of the opening of the supporting plate to rigidly interconnect these parts.

A head piece, designated generally at 28, is slidably supported on the supporting and guide plate 27. The head piece 28 may be constructed in various ways. One construction is shown to advantage in the drawings and comprises a lower channel 30 and an upper interfitting channel 30. The channel 30 is smaller than the channel 29 and is dimensioned and proportioned to fit down into the channel 29 with the side flanges of the channel 29 engaged with the inner face of the side channels of the channel 29. The base or body portion 31 and 32 of the channels 29 and 30 are spaced from each other and this space provides a guideway or bearing 33 in which the supporting plate 27 is slidably fitted. The channels 29 and 30 are securely held together by rivets 34 which are also employed to fasten the arms 35 of the spider to the head piece. The body portion 31 of the channel 29 is provided with an elongated slot 31' extending lengthwise thereof and symmetrically disposed with respect to the center line thereof. The shaft 27 extends through this slot 31'. With this construction the head piece 28 may slide back and forth on its supporting plate 27. However, the side faces of the supporting plate 27 are in direct sliding engagement with portions of the side flanges of the channel 29 which provide the side walls of the guide way 33 with the result that the head piece 28 and supporting plate 27 are constrained to rotate together.

The arms 35 of the spider are of conventional form and are designed to engage with and to be fastened to the underside of a seat in the usual way. The seat is illustrated diagrammatically at S in Figure 1.

With this type of construction the seat S may be rotated about the vertical axis of the post 12 and may be slid back and forth toward the table (not shown).

The present invention proposes that when the seat is slid rearwardly and away from the table, it shall be free to rotate but only through a limited angular distance in either direction. And the invention also proposes that when the seat is slid forwardly as far as it may be toward the table, it may be snapped against sliding or turning movement when moved as far as it may be towards the table, a locking pin or key, designated generally at 42, is moved to the rearward portion of the head piece 28 and engaged therewith. This locking pin or key 42 is designed for cooperation with the keeper slot or keyway, designated at 43, which is in fixed relation to the post 12. The pin 42 is shown to advantage in Figure 1 and is provided with a collar or flange 44 which engages the underside of the bottom of the lower channel 29 and with an attaching portion 45 which extends through an opening in the bottom of the channel 29 and is riveted or staked thereto. The lower end of the locking pin or key 42 is beveled as at 46. The keeper slot or keyway 43 is preferably defined by wings 47 which may be integral rearward extensions of the flange 20 and which have their confronting faces tapered as shown, to facilitate entrance of the pin 42 into the slot or keyway 43. The keeper slot or keyway 43 is so dimensioned that when the pin 42 enters as far as it may, then the pin or key 42 is snugly held by the opposed walls of the slot 43.

To releasably secure the pin 42 in the keeper slot 43 a pivoted latch, designated generally at 48, is provided. This latch is a bar-like piece of metal pivotally mounted or fulcrumed intermediate its ends, as at 49, on fulcrum lugs 50 which are integral with and depend from the underside of one of the wings 47. The outer end of the latch bar 48 is enlarged or weighted, as at 51, so that the inner end of the latch is biased to swing upwardly and in between keeper lugs 52 formed integral with and depending from the other wing 47. The portion of the latch being bar located in between the lugs 50 and 52 is provided with a beveled latch tongue 53 or projection 54 which engages the bevel of the locking pin or key 42 when the head piece is disposed rearwardly or in the position shown in Figure 1. Consequently, when the seat is pushed forwardly, the bevels of the pin 42 and of the latch being projection 53 coast automatically cam the latch bar 48 down and allow the pin 42 to ride over its latch being projection 53, after which the weight or bias of the latch bar 48 causes its latch being projection 53 to swing upwardly and substantially vertical faces of the pin and latch being bar to engage, thereby releasably holding the seat against either sliding or
The user of the chair may readily release the same by grasping the enlarged end 51 of the latch and lifting upwardly on the same. The forward movement of the seat is limited by the engagement of the rear end wall of the slot 31 with the shaft 22. The rearward movement of the seat is limited by the engagement of the pin 36 with the end of the slot extension 10.

With the construction such as described, the chair or seat may be releasably locked against movement either in or out of use. The user of the chair may readily conveniently position the same to enable him to seat therein with ease and grace by simply lifting up on the enlarged outer end of the latch bar 48 and pulling rearwardly on the seat. He then may turn the seat in either direction to present it for convenient sitting. When seated, he may swing around and face the table and then shift forwardly until the latching bar automatic locking key or locking pin 42 in its keeper slot 43 which consequently secures the seat against either rotating or sliding movement.

The embodiment of the invention shown in Figures 5 to 7 is identical with that shown in Figures 1 to 4 hereinabove described save in three particulars. In this modified form of the invention a ball bearing 65 is incorporated in the thrust bearing between the lower end of the shaft 22 and the lower end wall 18 of the bearing 16. The ball bearings directly engage the lower end wall 18 of the bearing 16 and also is accommodated in a conical recess 61 formed in the lower end of the shaft 22. The second particular in which the modified form of the invention varies from that previously described is in that fact that ball bearings 62 are provided between the supporting plate 27 and the corresponding to the supporting plate 21 and 27, the lower channel 28 and that similar ball bearings 63 are provided between the top of the supporting post, a combined radial and thrust bearing carried by the upper end of the post, a vertical shaft fitted and supported in the bearing at the lower end of the shaft 22, and due to the provision of the ball bearings which are interposed between the supporting plate 21 and the upper end of the shaft 22 and the channels which go to make up the head piece.

While I have shown and described several constructions in which the invention may be advantageously embodied, it is to be understood that the constructions shown have been selected merely for the purpose of illustration or example, and that various changes in the size, shape, and arrangement of the parts may be made without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A chair support comprising a post having its upper end at least hollow, a bearing having a tubular portion interfolded within the upper hollow end of the post, the tubular portion having a closed lower end, a flange structure integral with the upper end of the tubular portion resting on the top of the post, means for securing the bearing to the post, a vertical shaft having a radial bearing on said tubular portion and having a thrust bearing on the closed lower end thereof, said shaft projecting above the bearing, a guide plate fixed to the upper end of the shaft, a head piece having a guide way within which said guide plate is mounted for relative longitudinal movement of the head piece and guide plate, a guide plate and guide way constraining the head piece and the guide plate to corresponding rotative movement, a stop pin fixed to the guide plate, said guide way having a slot therein through which the stop pin projects, stop lugs on the flange structure cooperating with the stop pin to limit turning movement of the guide plate and head piece in either direction, and releasable means for locking the head piece against turning or sliding movement in one relative adjustment of the head piece and guide plate.

2. A chair support comprising a post having its upper end at least hollow, a bearing having a tubular portion interfolded with the upper hollow end of the post, a tubular portion having a closed lower end, a flange structure integral with the upper end of the tubular portion resting on the top of the post, means for securing the bearing to the post, a vertical shaft having a radial bearing on said tubular portion and having a thrust bearing on the closed lower end thereof, said shaft projecting above the bearing, a guide plate fixed to the upper end of the shaft, a head piece having a guide way within which said guide plate is mounted for relative longitudinal movement, the guide plate and guide way constraining the head piece and the guide plate to corresponding rotative movement, a stop pin fixed to the guide plate, said guide way having a slot therein through which the stop pin projects, stop lugs on the flange structure cooperating with the stop pin to limit turning movement of the guide plate and head piece in either direction, and releasable means for locking the head piece against turning or sliding movement in one relative adjustment of the head piece and guide plate.

3. A seat comprising a post, a combined radial and thrust bearing carried by the upper end of the post, a vertical shaft fitted and supported in
said bearing for rotation and having its upper end projecting above the bearing, a supporting and guide plate fixed to the upper end of the shaft, a head piece having a guide way in which said supporting and guide plate is slidably inter-fitted whereby the head piece may slide lengthwise of the plate but is constrained to rotate therewith, and means for limiting the extent to which the supporting and guide plate may rotate in either direction and comprising a stop pin fixed to the supporting and guide plate, said guide way having a slot therein through which the stop pin projects, and stop lugs fixedly connected to the post and cooperate with the stop pin to limit turning movement of the guide plate and head piece in either direction.

4. A seat comprising a post, a combined radial and thrust bearing carried by the upper end of the post, a vertical shaft fitted and supported in said bearing for rotation and having its upper end projecting above the bearing, a supporting and guide plate fixed to the upper end of the shaft, a head piece having a guide way in which said supporting and guide plate is slidably inter-fitted whereby the head piece may slide lengthwise of the plate but is constrained to rotate therewith, and releasable means for locking the head piece against sliding or rotative movement relative to the supporting and guide plate in one relative position of the head piece and supporting and guiding plate and comprising a lock pin fixed to the head piece and projecting downwardly therefrom, means fixedly interconnected with the post and defining a keeper slot with which said lock pin is cooperative in one relative adjustment of the head piece and guide and supporting plate to prevent turning movement of the head piece, and a latch cooperable with the lock pin to prevent relative sliding movement of the head piece and supporting and guiding plate.

5. A head piece comprising a post, a vertical shaft supported on the upper end of the post for rotation and having its upper end projecting above the post, a supporting and guide plate fixed to the upper end of the shaft, a head piece having a guide way in which said supporting and guide plate is slidably inter-fitted whereby the head piece may slide lengthwise of the plate but is constrained to rotate therewith, means for biasing the plate and head piece to a predetermined angular position with respect to the post, and comprising a pin fixed to the supporting and guide plate and extending downwardly therefrom, a torsion spring surrounding the shaft and having terminals embracing the pin, and means fixed with respect to the post for resisting movement of either terminal in one direction, and releasable means for locking the head piece against sliding or rotative movement relative to the supporting and guide plate in one longitudinal adjustment of the head piece and supporting and guide plate.

6. A seat support comprising a post, a shaft rotatively mounted in said post, a supporting and guiding plate carried by said shaft, a head piece limitedly slidably mounted on said plate, and means locking said head piece against rotative and sliding motion comprising a pair of inter-engageable members, one of said members being carried by said post and the other member carried by said head piece, said members being moved into inter-engaging relationship to prevent rotation of said head piece upon sliding said head to one extreme of its travel, and a latch releasably holding said members in inter-engaging relationship to prevent sliding movement of said head piece.

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