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TILTABLE CHAIR DEVICE

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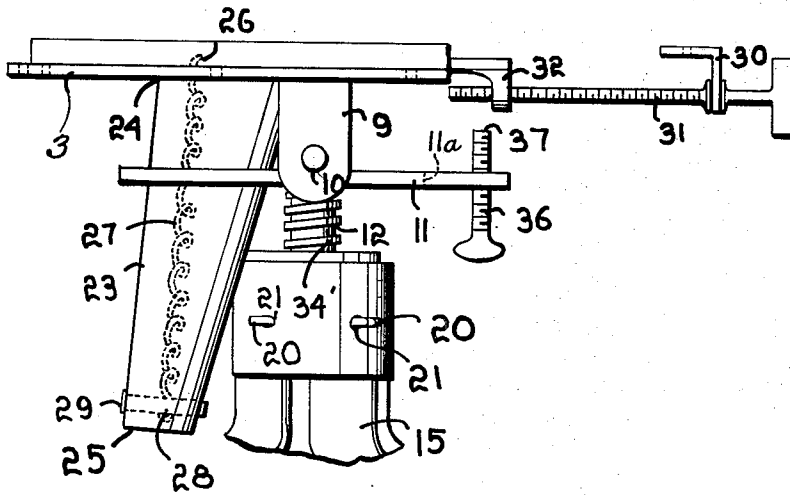


Fig. 1

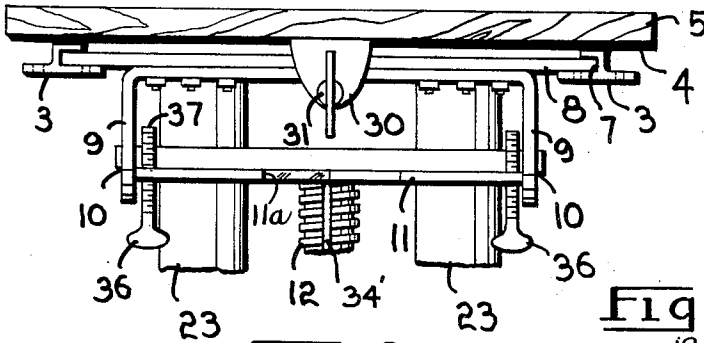


Fig. 2

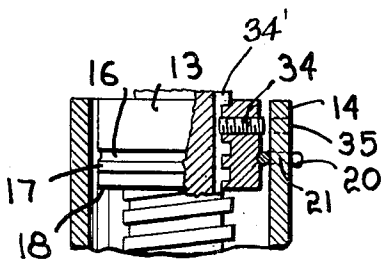


Fig. 3

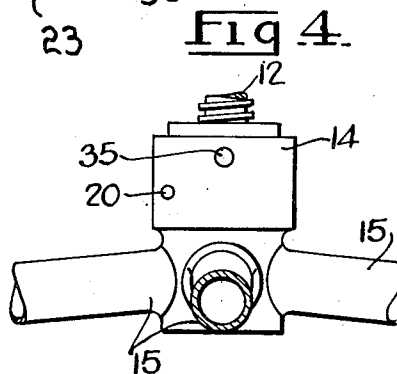


Fig. 4

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TILTABLE CHAIR DEVICE

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5 Claims. (Cl. 155-77)

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The invention relates to a tiltable chair device and more particularly relates to a chair iron of the yielding type.

An object of this instant invention is to provide a chair iron with a spring portion which is adapted to normally retain the chair upon which the iron is mounted in a normal position but which will permit the seat to be tilted or rocked.

Another object of this invention is to provide a chair iron which is slidably mounted on the nether side of the seat of the chair so that it may be positioned at various positions between the front and rear edge of the chair seat so that it can be adjusted to tilt or rock for persons of varying weight.

A further object of this invention is to provide a chair iron for mounting on the nether side of the seat of the chair between such seat and the legs which support the seat, whereby the seat may be tilted relative to the legs and rotated thereon.

Still another object of this invention is to provide a chair seat iron including channeled members secured to the nether side of the chair, a base plate slidably mounted in the channel members and a tiltable spindle plate secured to, but spaced from the base plate, there being spring means secured to the base plate and extending through the spindle plate to normally retain the two plates in substantial parallel relationship but yieldable whereby the base plate may be pivotal with respect to the spindle plate.

Another and further object and advantage of the invention will become more readily apparent from a study of the following description and drawings wherein:

Fig. 1 is a side elevation of the preferred embodiment of the chair iron,

Fig. 2 is a rear elevation of the construction shown in Fig. 1 illustrating the device on a chair seat,

Fig. 3 is a vertical sectional view partly in elevation showing the preferred relationship of the spindle, collar, and hub which permits rotation of the chair iron, and

Fig. 4 is a fragmentary view showing the manner in which the legs are attached to the hub.

In Fig. 2 the channel members 3 are shown secured to the nether side 4 of a chair seat 5. Slidably fitting within the grooves 7 of the channel members 3 is the base plate 8 of the chair iron. Secured to the base plate 8 and downwardly therefrom are the support arms 9 to which is pivotally secured at 10 the spindle

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plate 11. It is to be noticed that the spindle plate is normally substantially parallel to the base plate 8 and is spaced therefrom as shown in the drawings.

The spindle plate 11 forms the support for the downwardly vertically extending threaded spindle 12 which is secured in the collar 13 and hub 14 to which the chair legs 15 are connected. The collar 13 is threadedly connected to the spindle 12 and is provided with a groove 16 on its outer periphery 17 adjacent the lower end 18 thereof. The collar 13 may be rotatably mounted in hub 14 by means of the generally cylindrical key 20 fitting through the openings 21 in the hub 14 and riding tangentially in the groove 16 as illustrated in Fig. 3. Only one key 20 is shown but it will be evident that a second similar key may be similarly inserted through the opposite side of hub 14 into engagement with the opposite side of groove 16 to balance the rotary support of collar 13 in hub 14. It will also be understood that any other suitable means may be employed to provide rotatable support for the collar 13 in hub 14.

Spindle 12 is provided with a longitudinal key slot 34. A set screw 34 is screwed through a suitable hole in collar 13 and projects into key slot 34 to lock collar 13 against rotation relative to spindle 12. A hole 35 is provided in hub 14 through which screw 34 may be inserted or removed. Screw 34 is made to a length such that when it is screwed down into key slot 34, its outer end will not interfere with the relative rotation between collar 13 and hub 14.

Secured to the spindle plate 11, as by welding, are the tubular housings 23 of generally oval cross section which have one end in abutting relationship as at 24 with the base plate 8 with the other end extending below the plane of the spindle plate 11 and terminating at a point such as at 25. Secured to the base plate 8 adjacent the point of abutment 24 with the tubular housing 23 is one end 26 of the spring 27. The other end 28 of the spring 27 may be secured adjacent the end 25 of the housing 23 by any suitable means such as a pin 29 arranged in the housing 23.

The spring 27 serves to retain the base plate and the seat of the chair which is adjustably mounted on the base plate in a normal position but such springs will of course be yieldable to permit tilting of the chair seat as desired. The spring 27, being secured to the base plate 8 and to the pin 29 in the housing 23 forms a resilient connection between the base plate and the spin-

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dle plate, so that when the base plate and the chair seat are tilted with respect to the spindle plate 11 the spring tends to urge the base plate to its normal position.

In order to accommodate persons of varying weight it is desirable that the chair iron be adjustable so that it can be positioned fore and aft of the chair seat on which it is mounted. To this end, the bracket 30 may be secured to the chair seat and is arranged to rotatably support the threaded shaft 31 which is threadedly connected by means of a lug 32 welded to the rear of base plate 8. Rotation of the shaft 31 effects relative movement between the chair seat and the base plate, including the remaining connected assembly. The threaded connection between the shaft 31, lug 32 and bracket 30 serves to retain the chair seat in such relative position with respect to said base plate and connected assembly. A V-shaped notch 11a is provided in the center of the rear edge of spindle plate 11 to provide clearance for lug 32 when the chair seat is tilted rearwardly.

In order to disconnect hub 14 and legs 15 from spindle 12, keys 20 will be withdrawn from openings 21, thereby releasing the connection between the hub and collar 13. The hub and attached legs may then simply be withdrawn over the lower end of the spindle. To regulate the elevation of the chair seat relative to hub 14, screw 34 will be backed out of key slot 34¹ sufficiently to permit the outer end of the screw to enter hole 35, thereby locking collar 13 to hub 14. By then rotating the chair seat, spindle 12 will move up or down as desired in collar 13. When the desired elevation is attained, screw 34 will be screwed back into key slot 34¹ sufficiently to clear the inner periphery of hub 14. The chair seat may then swivel freely in hub 14 without any further change in elevation of the seat.

In order to regulate the degree of tilting permissible with the chair iron, suitable stops in the form of the elongated screws 36 are arranged in the spindle plate 11. If a large degree of tilt is desired, such screws will, of course, be rotated to provide the maximum amount of clearance between the nether side of the chair seat and the ends 37 of the screws 36. On the other hand, if a small degree of tilt is desired, the clearance between the ends 37 and the nether side of the chair seat will be diminished accordingly.

While it is believed that the operation and construction of the invention is apparent by reason of the foregoing, by way of amplification and illustration, it will be assumed that the device is to be mounted on a nether side of a chair seat in Fig. 2 of the drawings. When the chair is being used in a normal sitting position, the base plate 8 and spindle plate 11 will be substantially parallel and are resiliently retained in the position by reason of the springs 27 being connected in the base plate and adjacent to end 25 of the housing 23 which is spaced from the point of pivot 10 of the base plate 8 with respect to the spindle plate 11. As the chair seat is tilted, the base plate 8 will of course pivot with respect to the spindle plate 11 about the pivotal connection 10. While the spring is being stretched during such pivoting or rocking action, the spring will remain stretched so that when the base plate returns to normal position, the spring will again realign such plate and the spindle plate 11. Also the chair seat may be rotated in a complete circle

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by reason of the rotatable connection between the hub and collar previously described herein.

While any suitable number of springs may be provided, it has been found that two serve the purpose quite well as shown in the drawings. The device can be made in various sizes to be adapted to various size chair seats without departing from the scope of this invention.

Broadly the invention contemplates an improved chair iron construction.

What is claimed is:

1. A chair seat having a seat iron comprising channel members secured to the nether side of the chair seat, a base plate slidably fitting in said channels, a screw rotatably secured to said chair seat and threadedly connected to said base plate so that said chair seat can be moved relatively to the base plate, support arms secured to one side of said base plate and extending downwardly therefrom, a spindle support plate pivotally secured to said arms, a threaded spindle secured to and extending vertically downward from said spindle plate, a collar threaded on said spindle, a hub mounted around and secured to said collar, housing means abutting said base plate, secured to said spindle plate and extending therethrough and spring means secured at one end of said housing and at the opposite end of said housing to said base plate whereby said springs tend to retain said base plate and spindle plate in parallel relationship, but which are yieldable when the seat is tilted to allow tilting of said base plate.

2. A chair seat having a seat iron comprising, channel members mounted on the nether side of the chair seat, a base plate slidably mounted therein, means to retain said channels at predetermined positions along said base plate, a spindle support plate pivotally secured to, but spaced from said base plate, said base plate and spindle plate normally maintaining a substantially parallel relationship, spring support means secured to said spindle plate and abutting said base plate at one end of said support means and terminating at a point spaced downwardly from said spindle plate at the other end of said support means, spring means stretched from said base plate adjacent the point of abutting relationship of said support means to the end of said support means spaced downwardly from said spindle plate, said spring means acting to normally retain said base plate and connected chair seat in substantially parallel relationship with said spindle plate, but yieldable as the chair seat is tilted to accommodate the weight of a person sitting on the chair seat.

3. A chair seat having a seat iron comprising, channel members mounted on the nether side of the chair seat, a base plate slidably mounted therein, means to retain said channels at predetermined positions along said base plate, a spindle support plate pivotally secured to, but spaced from said base plate, said base plate and spindle plate normally maintaining a substantially parallel relationship, spring support means secured to said spindle plate and abutting said base plate at one end of said support means and terminating at a point spaced downwardly from said spindle plate at the other end of said support means, spring means stretched from said base plate adjacent the point of abutting relationship of said support means to the end of said support means spaced from said spindle plate, said spring means acting to normally retain said base plate and connected chair seat in substantially parallel relationship with said spindle plate, but yieldable

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as the chair seat is tilted to accommodate the weight of a person sitting on the chair seat, and additional means for rotatably connecting the chair iron to the legs of the chair seat, said means including, a spindle extending vertically down from said spindle plate, a collar threaded on said spindle, and a hub mounted on said collar.

4. A chair seat having a seat iron comprising, channel members mounted on the neather side of the chair seat, a base plate slidably mounted therein, means to retain said channels at predetermined positions along said base plate, said means including a bolt rotatably secured to the chair seat and threadedly connected to said base plate, a spindle support plate pivotally secured to, but spaced from said base plate, said base plate and spindle plate normally maintaining a substantially parallel relationship, spring support means secured to said spindle plate and abutting said base plate at one end of said support means and terminating at a point spaced downwardly from said spindle plate at the other end of said support means, spring means stretched from said base plate adjacent the point of abutting relationship of said support means to the end of said support means spaced from said spindle plate, said spring means acting to normally retain said base plate and connected chair seat in substantially parallel relationship with said spindle plate, but yieldable as the chair seat is tilted to accommodate the weight of a person sitting on the chair seat.

5. A chair seat having a seat iron comprising, channel members mounted on the nether side of the chair seat, a base plate slidably mounted therein, means to retain said channels at predetermined positions along said base plate, said

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means including a bolt rotatably secured to the chair seat and threadedly connected to said base plate, a spindle support plate pivotally secured to, but spaced from said base plate, said base plate and spindle plate normally maintaining a substantially parallel relationship, spring support means secured to said spindle plate and abutting said base plate at one end of said support means and terminating at a point spaced downwardly from said spindle plate at the other end of said support means, spring means stretched from said base plate adjacent the point of abutting relationship of said support means to the end of said support means spaced from said spindle plate, said spring means acting to normally retain said base plate and connected chair seat in substantially parallel relationship with said spindle plate, but yieldable as the chair seat is tilted to accommodate the weight of a person sitting on the chair seat, and additional means for rotatably connecting the chair iron to the legs of the chair seat, said means including, a spindle extending vertically down from said spindle plate, a collar threaded on said spindle, and a hub mounted on said collar.

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