ABSTRACT OF THE DISCLOSURE

A tilting chair construction includes a tiltable seat which is mounted for tilting movement around a horizontal axis adjacent to and parallel with the forward portions of the seat and its mounting. The mounting for the seat is secured to a chair base at a point remote from said horizontal axis to prevent overbalancing of the chair. A locking arrangement is provided between parts of the seat mounting assembly.

The present application is for an improvement over my prior Patent No. 3,131,904, issued May 5, 1964 for tilting chair construction.

The present invention relates to tilting chair constructions and more particularly to such chairs used in offices and domestic households.

Previous proposed tilting chair constructions included objectional features such as a definite rise in the seat at the front thereof upon tilting of the seat support and the base which supports the seat was positioned at the central portion of the seat which could result in the tipping over of the chair.

SUMMARY OF THE INVENTION

In accordance with my invention a tilting chair construction includes support means for a chair seat comprising a housing and a support panel assembly having a pair of frame elements supported only by one end of the housing at the forward ends of the frame elements so that the frame elements may be tilted about a horizontal axis without an appreciable rise of the front of the seat support and seat thereon. A piece support frame element may be used if desired. A base for the chair is connected to the housing at a point remote from said horizontal axis and the forward ends of the frame elements and beyond the longitudinal central portion of said elements so that the chair will not tip over regardless of the tilt of the seat support and the weight placed on the seat. The frame elements are elongated and the base is connected to the chair beyond the longitudinal central portion of the elements which in this instance is in beyond the forward half of the tiltable elements and adjacent the rear thereof. A locking arrangement is provided on the housing for receiving locating features movable upon the tilting of said elements downwardly at the rear thereof. The chair is adapted for commercial and domestic household use.

It is therefore an object of my invention to provide a new and improved tilting and locating arrangement in a tilting chair.

Another object of my invention is to provide a new and improved tilting arrangement in a chair which limits the rise of the chair seat at the front thereof upon the tilting of the rear portion of the seat and to support the seat so that it will not tip over regardless of the degree of tilting and weight placed on the seat.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

In the drawings:

FIGURE 1 is a view in elevation of the front of a chair having an iron embodying features of my invention;

FIGURE 2 is a view in elevation of the bottom of the chair iron embodying features of my invention;

FIGURE 3 is a front view in elevation of the iron shown in FIGURE 2;

FIGURE 4 is an end view in elevation of the iron shown in FIGURE 2;

FIGURE 5 is a top view in elevation of a portion of the iron shown in FIGURE 2;

FIGURE 6 is a fragmentary view in cross section showing the locking arrangement for the chair when in a non-tilted position; and

FIGURE 7 is a fragmentary view in cross section showing the locking arrangement for the chair when the chair is tilted to its lowermost position.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also, it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring to FIGURE 1 of the drawings the numeral 10 designates in general a chair having a tiltable chair iron 12. A chair seat 14 is mounted upon the iron 12 for pivotal movement. The chair includes a base 16 and a mounting 20 on the base.

The chair seat support means 30 includes a seat support frame assembly or tiltable means having two laterally spaced tiltable elongated angular frame members or elements 22 each having a vertical wall 24 and a horizontal wall 26. The elements 22 may be combined in one piece if desired. The support means 30 for said elements are positioned between and secured to the vertical walls 24 of said elements adjacent the forward ends 32 thereof. The support means 30 include two tubes 40 each having their outer ends 42 rigidly secured to the frame elements 22 on the vertical walls thereof adjacent ends 32. The opposite or inner ends 44 of the tubes 40 are arranged in spaced apart relation as shown in FIGURE 2. Within the tubes 40 is a support torsion bar tube 50 which extends through the tubes 40 and between the inner ends 44 of tubes 40. Within the torsion bar tube 50 is a hexagon torsion bar 60 which forms a torsion bar unit. The support means 30 includes the tubes 40, tube 50 and torsion bar 60 and support the elements 22 at their forward ends to permit tilting of the elements 22. The seat 14 is mounted on the elements 22 with the front part thereof being adjacent to the front part of the elements 22 and when it is
used the rear ends 64 of the elements will tilt downwardly to a desired tilted position while the forward ends 32 rise only slightly because the support means are secured to the frame elements adjacent their forward ends. An adjustment mechanism arm 70 is used to adjust the effectiveness of the torsion bar 60 so that the resiliency of the bar is suitable for any desired weight placed on the chair seat 14. The support means 30 details and the details of the torsion bar 60 and its relation to the tubes 40 and 50 and connections thereof are not described herein as the details thereof and the operation of torsion bars are well known and such details and operation thereof are found clearly disclosed and claimed in my aforesaid prior Patent No. 3,131,904 which describes the operation of the parts herein disclosed. Briefly the support means 30 also includes supporting arms 80 on one end of a housing 84. The torsion bar tube extends through the arms 80 so that the arms support the tube 50, tubes 40 and elements 22. The arms 80 provide a pivotal connection for the seat support frame assembly wherein the tubes 40 may tilt on the tube 50 and tube 50 may tilt on the arms 80. The torsion bar is connected on one end with the end of the bar 50 and the other end of the bar is connected to the adjustment mechanism arm 70 so that when the element 22 tilts the torsion bar will tend to rotate with the tube 50 until the tube 50 ceases to rotate and the bar becomes twisted so resiliently control the tilting of the elements 22 and the seat. The tube 50 ceases to rotate when it is tilted by a connection between it and the supporting housing as disclosed in the aforesaid patent to which reference is made to such details which are not a part of the invention claimed herein.

The housing 84 is mounted on a bearing 90 which rests on the mounting 20 which is secured to the base 16 and is of a position close on its upper end bar which supports the bearing 90 and the housing 84. A swivel post 100 is mounted at one end thereof on the base 16 and the other end thereof extends into a bearing 102 in the housing 84 which provides a swivel connection about a vertical axis between the base 16 and the housing 84. A slip ring 106 at the top of post 100 prevents the accidental removal of the housing 84 from the post 100. The arms 80 of housing 84 support the seat support frame assembly and the frame elements 22 adjacent their forward ends while the base 16 and swivel post are positioned in the housing remote from the horizontal axis of the support means and beyond the central portions of the elongated frame elements 22.

To position the frame elements 22 for tilting about a horizontal axis adjacent the forward part of the frame elements and the swivel post 100 in a housing portion remote from said axis and adjacent the rear of the housing and at the rear of the longitudinal central portion of said elements it has the advantage that the front of the seat 14 does not rise an appreciable amount and the chair is properly balanced against tipping over regardless of the weight on the seat 14.

The housing 84 is U-shaped having the spaced apart arms 80 to which are connected locking means catches 110 in the form of bars positioned in space relationship one above the other with the uppermost catch being closer to the rear of the housing 84 than the lowermost catch. The catches are used to receive a pivotally mounted plate locking 116 of tiltable locking means 118. The locking means 118 is a rectangular frame in shape having four vertical walls with the two sides adjacent the forward ends thereof being secured in fixed relation to the inner ends 44 of tubes 40 and provide a spacer therefor. The locking means rotates with the tubes 40 upon the tilting of the frame elements 22 causing the rear end of the locking means to tilt downwardly to move the hook 116 downward as shown in FIGURE 7. This movement 116 tilts the seat support to be locked in its lowermost tilted position, In the event it is desired to tilt the locking means a lesser amount so that the hook 116 engages the uppermost catch or the one immediately therebelow the torsion bar may be adjusted to vary the resiliency thereof. By providing a locking engagement it is possible to lock the seat of the chair at a selected tilted position so that the seat does not return to its original position when the weight is removed from the seat. The hook 116 is pivoted on the locking means 118 by a rod or handle 120 which extends through the side walls of the locking means 118 and the rod is actuated by an arm 124 extending through a vertical wall frame element 22 to a position outside of the chair.

When the hook 116 is released from the catches 110 the seat 14 rises at the rear thereof due to the action of the torsion bar 60. The seat 14, however, is limited on its upward movement by U-shaped stop 130 which is attached to locking means 118 by its ends and the connecting part of the ends is positioned below the housing 84 to engage the underside of the housing when the seat has moved upwardly to the desired position where the stop prevents further upward movement. The downward movement of the seat is limited by engagement of rod 120 with the upper horizontal portion of housing 84.

As shown in FIGURE 4 the seat 14 is attached to the seat support assembly at the forward edges thereof and the seat may extend rearwardly to any desired position without tilting of the chair. Thus when a user engages the seat 14 the tilting rod 120 is locked in position by a connection between the bar and stops and is locked in a desired tilted position while the adjustment therefor may be made at the side of the chair.

While one exemplary embodiment of the invention has been described in detail, it will be apparent to those skilled in the art that the disclosed embodiment may be modified. Therefore, the foregoing description is to be considered exemplary rather than limiting, and the true scope of the invention is that defined in the following claims.

I claim:

1. In a tilting chair having a base, a chair seat and support means mounting said seat upon said base for pivotal movement about a vertical axis and for tilting movement about a horizontal axis; the improvement wherein said support means comprises a housing mounted on said base for pivotal movement about said vertical axis, support arm means fixed upon said housing and projecting forwardly therefrom, said support arm means having a plurality of catch members mounted therebetween in spaced relation one above the other with the uppermost catch member being closer to the rear of said housing than the lowermost catch member, a seat support frame assembly mounted upon said support arm means adjacent the forward end thereof for tilting movement about a horizontal axis, said frame assembly including a pair of seat support frame members adapted to have said chair seat mounted thereon with the front edge of said seat located adjacent and parallel to said horizontal axis and locking means comprising a movable catch mounted for movement with one of said frame members and engageable with one of said plurality of catch members on said support arm means to lock said seat in a selected position of tilted adjustment.

2. A tilting chair as defined in claim 1 wherein said seat support frame members are laterally spaced apart on opposite sides of said housing and extend rearwardly from said horizontal axis in parallel relationship.

3. A tilting chair as defined in claim 1 wherein the improvement further comprises an adjustment member for said locking means with the member extending to the side of the chair adjacent one of said side members.

4. A tilting chair as defined in claim 1 wherein the improvement further comprises a torsion bar base positioned in said support means along said horizontal axis.

5. A tilting chair as defined in claim 1 wherein the improvement further comprises stop means carried by
said seat support assembly for engagement with said housing to limit the tilting movement of said seat.

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