LOCKING MECHANISM FOR CHAIR PEDESTALS

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ABSTRACT OF THE DISCLOSURE

The present invention discloses a chair having a base, a seat, a pedestal, and means for adjustment of the seat and pedestal vertically with respect to a standard of the chair, and particularly locking mechanism to prevent accidental dislodgment of the locking mechanism from the pedestal during use; also, whereby movement of the pedestal upwardly will automatically loosen a locking pin without manual manipulation thereof.

Heretofore, in locking devices for pedestals of chairs and the like, there has been a danger of the locking pin working loose from the opening or groove in the pedestal in which it is engaged during use of the chair, and the pedestal with the seat thereon dropping suddenly with the user subjected to injury.

The principal object of the present invention is to provide a spindle for a chair seat operable in a hollow standard of the chair wherein a plurality of recesses or pockets are spaced vertically along one side of the pedestal, and a spring urged plunger having an enlarged end engages a selected pocket wherein the pocket will retain the plunger in its engaged or locked position while a person is sitting on the chair.

Further objects of the present invention are to provide a base for the chair having a standard in which the pedestal is slidable vertically; to provide a sleeve member transversely and rigidly mounted on a side of the standard in which a plunger is movable with respect to the standard and pedestal; to provide a lever mechanism operable by the foot of a user having a portion connected to a plunger in the sleeve and having a portion of the lever secured to said standard by a sleeve and pin, so that the lever is pivotally mounted on the standard to release the plunger from a particular pocket in which it is engaged; to provide the pockets with an upwardly extending curved surface at the upper end thereof; to provide a sloping back to the pocket or recess from said curved portion extending to the edge of the pedestal; to provide the end of the plunger engaging its pocket with an enlarged or head portion rounded to fit within the pocket of the pedestal when it engages therewith; to provide the recess or pocket of such shape that upward movement of the seat and pedestal will release the head of the plunger from its pocket and continued upward movement will move the pin entirely from the pocket; and to provide a device of this character simple and economical to manufacture.

A still further object of the invention is to provide a pedestal with a groove on the side thereof opposite to the space longitudinal pockets, and to provide a key member on the standard which engages within the groove to prevent the pedestal from turning in the standard, and to provide a stop for the pedestal when the pedestal is lowered toward the base.

In accomplishing these and other objects of the invention as hereinbefore described, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

FIG. 1 is a perspective view of a chair embodying the features of my invention.

FIG. 2 is an enlarged, partly cross sectional view through the standard, pedestal, and locking member, the parts being broken away to better illustrate the invention.

FIG. 3 is a cross sectional view taken on the line 3—3, FIG. 2, to better illustrate the locking mechanism and the spring urging the plunger into contact with the pedestal.

Referring more in detail to the drawings:

1 designates a chair embodying the features of my invention, including a base 2 having transversely extending legs 3, 4, 5 and 6. The base includes a hub 7 through which a hollow standard 8 extends vertically. The standard is reduced in size by tapering inwardly, as indicated at 8', FIG. 2. The standard 8 is adapted to extend vertically thereof, and movable therein is a pedestal 9 which extends above the standard 8 upon which is mounted a seat 10, including a collar mechanism 11 for attachment of the seat on the pedestal by a pin or the like 12, as is the usual practice.

Rigidly mounted on one side of the standard 8 by welding or other suitable means as indicated at 13, and extending laterally therefrom, is a sleeve member 14 in which is mounted a locking pin 15. The wall of the hollow standard 8 has an opening 15' in alignment with the inside of said sleeve. A collar 16 is secured to the inner end of the pin as shown in FIG. 2, and a nut 17 encircles the other end of the locking member 15 and fits against the end 18 of the sleeve 14. A coil spring 19 surrounds the plunger or pin 15 having one end engaged against the collar 16 and the other against the nut 17 to urge the pin inwardly towards the pedestal as later described.

The side of the pedestal is provided with spaced recesses or pocket members 20, the openings being spaced longitudinally of the spindle 21 and spaced apart a distance suitable to suit the convenience of the user of the chair when adjusting the height thereof. The upper edges of the pockets extend upwardly and inwardly at an angle from the side of the spindle towards the center of the spindle, and then downwardly and outwardly towards the edge of the spindle, the downwardly extending surface 21 forming a cam for the head 22 of the spindle lock 15, as later described. The upwardly and inwardly inclined angle forming a pocket 23 is at a substantially 10° inclination, and the head 22 of the spindle lock 15 also has an angle of substantially the same degree, as indicated at 24 (FIG. 2), so that when the locking pin with the head 22 thereof engages within a pocket or recess in the side of the spindle, the spindle lock will be retained therein and is not subject to accidental displacement while the chair is being used.

The side of the spindle opposite of the openings 20 is provided with a groove 25, and the standard is provided with a portion extending inwardly as indicated at 26 forming a key 27 engaging in the groove to prevent turning of the pedestal in the standard, and the key 27 also acting as a stop for the pedestal when it is lowered towards the base due to the key engaging the end of the groove (not shown) in the pedestal near the top thereof. In order to manually release the spindle, I have provided a lever 28 having a bifurcated end consisting of spaced arms or bracket members 29 and 30. A sleeve 31 is rigidly secured transversely of the standard 8 by welding or other suitable means, as indicated at 32, and is adapted to receive a pin 33 extending therethrough and through the bifurcated ends 29 and 30 of the lever 28 as illustrated in FIG. 3. The bifurcated end 34 of the lever member is closed and provided with an opening 35 for receiving the end 36 of the locking member 15, and is held thereon by a transverse pin 37.
The bifurcated members opposite the closed end have straight flat edges 38 which engage against the standard 8. A spring member 39 is called around the sleeve 31 and has a longer end 40 engaging against the inside of the closed front face 41 of the lever 28, and its other end turned and engaging transversely against the concave surface 42 of the standard, as indicated at 43 (FIG. 2), so that the lever 28 normally is urged outwardly from the standard. The lower end 44 of the lever 28 is provided with a foot piece 45 for engagement of the foot therewith to operate the chair.

In operation of a chair constructed and assembled as described, when the user is sitting on the seat of the chair force will be downwardly on the pedestal and the locking member 15 in the locking position as shown in FIG. 2, the enlarged head 22 will be engaged in the upwardly curved portion of the socket 23, so as to prevent dislodgement accidentally of the locking pin during use of the chair. When it is desired to change the height of the chair, the person will remove from the seat of the chair and to facilitate raising and lowering thereof, slight upward pressure on the seat will disengage the head 22 from the socket 20, and by foot pressure on the foot pedal 45 the locking pin will move outwardly in the sleeve 14, and then the seat may be lowered or raised, as desired.

It will be obvious that when the person is removed from the chair, upward movement on the seat will dislodge the head 22 of the plunger from the curved portion of the socket 20, and continued movement upwardly of the pedestal will cause the rounded portion 46 of the head, as indicated in FIG. 2, to move downwardly along the inclined cam surface 21 of the socket 20, to automatically move the plunger in the sleeve and remove the head 22 from the socket.

When the pedestal is desired to be lowered, it is necessary to move the locking pin 15 outwardly of the pockets to lower the pedestal from one pocket to the next above pocket.

It will be obvious from the foregoing that I have provided an improved locking means for the spindle of a chair, wherein the locking pin will not be accidentally displaced from the spindle during use, and which may automatically be disengaged from the pedestal by merely raising the seat by hand or by manually releasing the pin from the pedestal.

It is to be understood that while I have illustrated and described a certain form of my invention, it is not to be limited to the specific form or arrangement of parts herein described and shown, except insofar as such limitations are included in the claims.

What I claim and desire to secure by Letters Patent is:

1. A chair of the character described, comprising:
   (a) a base,
   (b) a hollow standard extending upwardly from said base,
   (c) a pedestal for said seat slideable vertically in said standard, said pedestal having recessed pockets spaced longitudinally along one side thereof,
   (d) a seat secured to the upper end of said pedestal,
   (e) a laterally extending sleeve member secured to said standard spaced above said base, and
   (f) locking means including a pin member slideable in said sleeve and having a head engageable with one of said pockets, including means for urging said portion toward said pocket, said pockets having upper ends extending at an angle upwardly and inwardly from the surface of the pedestal and then downwardly and forwardly to the surface of said pedestal forming a cam surface at the back of said pockets

and forming a rounded upper portion to said pockets, and said head on said pin is of a contour to fit in said rounded upper portion of the pockets, whereby the head will be retained in said pocket during use of the chair, whereby initial raising of said seat will release the head on the pin from a pocket and continued raising of the seat will cause said cam surface to move said pin laterally to release said head from the pockets.

2. A chair of the character described including a base, a hollow standard having side walls secured in said base, and a seat, comprising:
   (a) a pedestal slideable vertically in said standard, said pedestal having recessed pockets spaced longitudinally along one side thereof,
   (b) means securing said seat on the upper end of said pedestal,
   (c) a laterally extending sleeve member secured to said standard spaced above said base, said standard having an opening in its side wall in alignment with the inside of said sleeve,
   (d) a locking pin slideable in said sleeve,
   (e) a head on said pin extendable through said opening in said standard and engageable with one of said pockets, the other end of said pin extending outwardly of the outer end of said sleeve, said pockets being elongated and of a length greater than the diameter of said head and said pockets having upper ends extending at an angle upwardly and inwardly from the surface of the pedestal and then downwardly forming a rounded upper portion to said pockets and said head conforming to the contour of said pockets,
   (f) a sliding sleeve secured to said standard spaced below said first named sleeve and transversely of said standard,
   (g) a lever member having a portion pivotally mounted in said second sleeve and having a bifurcated end portion embracing said first named sleeve, said bifurcated portion having an opening through which the outer end of the locking pin extends, and
   (h) means retaining said bifurcated end of said lever on said pin, said lever member including an arm portion extending downwardly toward said base whereby upon release of downward pressure on said seat and initial upward movement of said seat movement of said arm portion toward said standard will cause disengagement of said pin from said pockets for raising and lowering said pedestal.

3. The combination of claim 2, including means normally urging said pin toward said pedestal.

4. The combination of claim 3, including means normally urging the arm portion of said lever outwardly from said standard.

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