May 19, 1953 A. RESTIVO 2,638,969

ADJUSTABLE STOOL

Filed Dec. 14, 1950 2 Sheets-Sheet 1

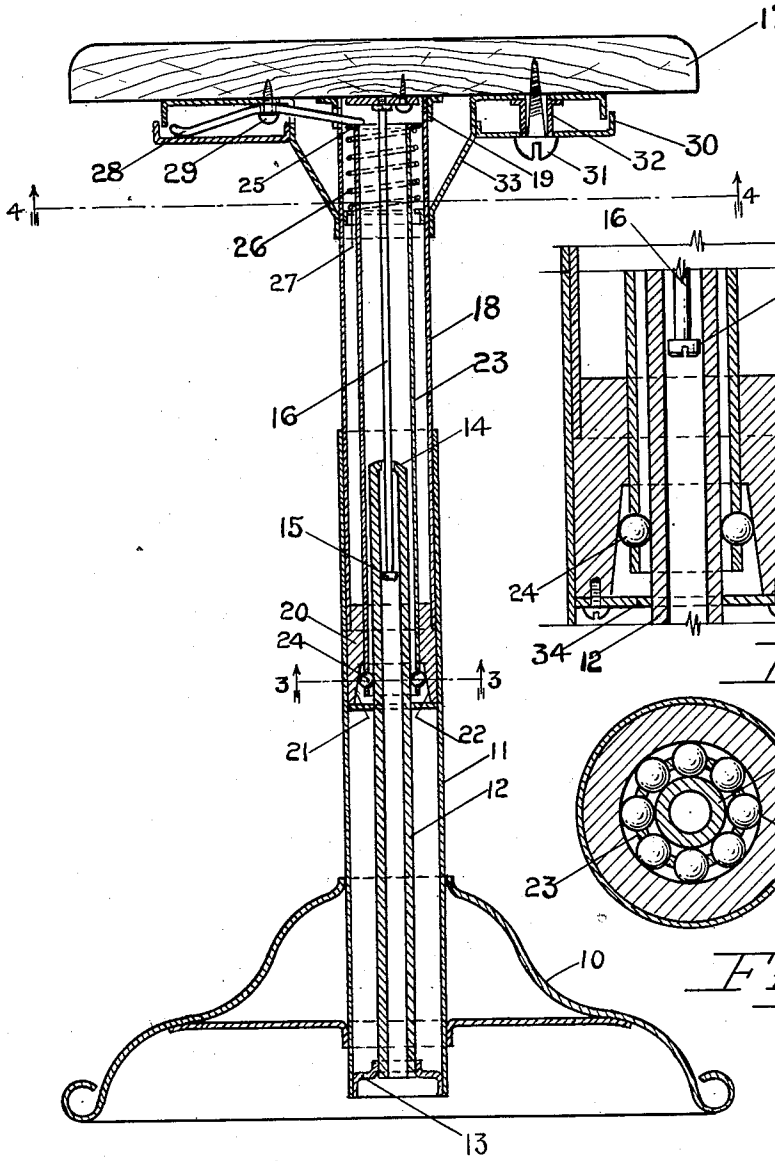


Fig. 1.

Fig. 2.

Fig. 3.

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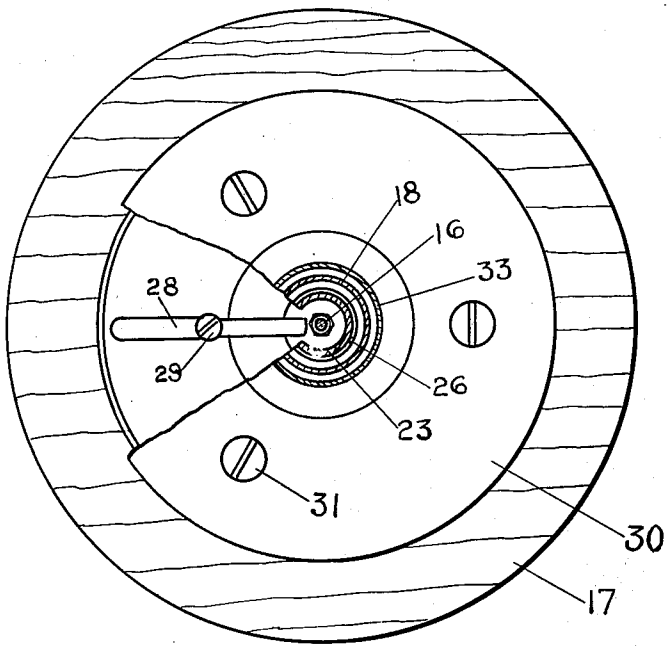


Fig. 4.

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Patented May 19, 1953 2,638,969

UNITED STATES PATENT OFFICE

2,638,969

ADJUSTABLE STOOL

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Application December 14, 1950, Serial No. 200,771

6 Claims. (Cl. 155—94)

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The present invention relates to a stool, table or the like, and is more particularly directed to a stool which may be readily and securely adjusted to any desired height.

It is, therefore, the primary object of the present invention to provide a stool or the like which can be readily adjusted in either the upward or downward direction from any position that the seat may be at the time of adjustment.

A further object of the present invention is to provide an adjustable stool which is simple but rugged in construction and efficient in operation.

A still further object of the present invention is to provide an adjustable stool which is operated simply by grasping the stool by the hands, using normal pressure on the under portion of the stool seat with one's fingers, and then lifting or lowering the stool to the desired height.

A still further object of the present invention is to provide and adjustable stool with a locking mechanism consisting of roller bearings in engagement with a ruggedly constructed sleeve and a concentrically positioned cylindrical member.

With these and other objects in view, the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings, forming a part of the present specification with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings, but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a sectional view in elevation of an adjustable stool made in accordance with my invention.

Figure 2 is an enlarged view in section of the locking mechanism shown in Figure 1.

Figure 3 is a horizontal sectional view taken through 3—3 of Fig. 1, looking in the direction indicated by the arrows.

Figure 4 is a sectional view taken through 4—4 of Figure 1.

Referring now to the drawings wherein like numerals designate corresponding parts throughout the several figures, the numeral 10 refers to a conventional support or standard for a stool at the central portion of which an upright tubular member 11 is secured. A second tubular member 12 extending within the full length of the tube 11 and axially concentric thereto is

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secured to the tube 11 at the lower portions thereof by the member 13. As is hereinafter explained in detail, the tubular member 12 is subjected to considerable pressure and is consequently constructed with a thick wall structure. The upper portion 14 of the tube 12 is bevelled inwardly to form a stop or arresting means for the enlarged free end 15 (which may be a screw or bolt) of a rod 16 whose other end is secured to a wood or metal seat 17.

Telescopically mounted within the tubular member 11 is a tube 18 whose upper extremity is secured to the wood seat 17 by means of a flanged disk 19. Slidably mounted within the tube 11 and welded or otherwise secured to the lower end of the tube 18, there is an annular sleeve member or housing 20 in the lower portion of which there is a chamber or cavity 21 having a conical wall structure 22. Within the chamber 21 extends the lower end of a tube 23 having a plurality of bores horizontally arranged about the tube in which ball bearings 24 are rotatably positioned. The tube 23 extends upwardly terminating in a flared portion 25 adjacent to but spaced from the lower surface of the seat 17. A spring member 26 encircling the tube 23 extends between the flared end 25 and an annular flanged member 27 secured to the inner wall of the tube 18 and exerting an upward force on the tube 23. Two or more levers 28 symmetrically disposed about the lower surface of the seat 17 are pivoted at 29 with their inwardly extending end portions resting on the flared portion 25 of the tube 23 and their free ends extending outwardly towards the periphery of the seat 17 abutting against an annular flanged disk member 30. The member 30 is held in position by wood screws 31 having an enlarged shank portion 32 along which the annular member 30 is slidably movable.

An ornamental sheet metal housing 33 is secured to the lower surface of the seat 17 and extends downwardly to cover the upward portion of the tubular member 18. In order to prevent the ball bearings 24 from leaving their positions in the bores of the tube 23, the downward movement of the tube 23 is limited by an annular plate 34 which is secured to the lower face of the sleeve 20.

In the normal operation of the device, by grasping the seat with the hands and pressing the annular disk 30 with the fingers, the lever 28 is caused to be pivoted about pivot 29 causing the tube 23 to slide downwardly against the spring pressure 26. In moving downwardly the

ball bearings 24 are removed out of engagement with the conical walls 22 of the sleeve 20 so that they are now free of being wedged against the tube 12. With the ball bearings 24 riding freely within the chamber 21 the stool seat 17 can be either raised or lowered to any desired height within the lower limit determined by the height of the tube 11 and the upper limit of the enlarged head 15 of the rod 16 abutting against the opening 14 of the rod 12. The enlarged head 15 also serves to prevent the various telescoping tubes from leaving each other when the upper limit has been reached.

When the stool seat 17 has been positioned at the desired height, pressure on the annular disk 30 is released, thereby causing the spring pressure 26 to force the tubular member 23 upwardly carrying the ball bearings 24 upwardly and become wedged tightly between the cam wall surfaces 22 and the tube 12. When a person sits on the stool 17 the added weight tends to cause the sleeve carrying tube 18 which is secured to the stool 17 at its upper end to force the sleeve 20 to move downwardly and to wedge the ball bearings 24 more securely in position, thereby preventing any slipping of the stool seat 17 to a lower position. It is to be noted that the arrangement of parts in the instant invention is such that all the stresses are borne by the small diametered heavy tube 12 and the sleeve 20. Both of these parts can be made of great strength without affecting the cost or increasing the overall weight of the device appreciably. Also, the stool 17 can be rotated after being locked in position at the desired height since the ball bearings 24 and the telescoping tubular members 11, and 18 are always free to revolve with relation to each other.

Having now disclosed my invention and realizing that, in view of my disclosure many modifications in details of construction or design will readily occur to those skilled in the art, I do not choose to limit myself except as in the appended claims.

Having described the invention, what I claim as new is:

1. A device of the class described comprising a support, an upwardly extending tubular member secured at its lower end to said support, a second tubular member concentrically mounted within said first tubular member and secured thereto at its lower portion, said second tubular member having its opening at the upper end reduced in diameter, a third tubular member slidably mounted within said first tubular member, a stool seat secured to the upper end of said third tubular member, an annular housing secured to the lower end of said last named tubular member, a chamber having a conical wall structure contained at the lower portion of said housing, a fourth tubular member slidably engaging said second tubular member and extending from said conical chamber to a position adjacent said seat, said fourth tubular member having a flanged upper end portion, horizontally disposed bores mounted on said tubular member within said chamber, a plurality of ball bearings mounted in said bores engaging said conical wall and said second tubular member, a spring encircling said fourth tubular member and extending between said flanged end portion and a stop means mounted on the inside wall of said third tubular member, a rod secured at one end to said stool seat and slidably mounted in said second tubular member, said rod having an enlarged portion at its free end, and lever means pivotally mounted on the lower surface of said seat having its free end engaging said flanged end of said fourth tubular member.

2. A device of the class described comprising a tubular member, an elongated member concentrically mounted in said tubular member, a second tubular member telescopically engaging said first tubular member, a sleeve having an inner conical shape secured to the lower end of said second tubular member, a third tubular member telescopically engaging said elongated member, a plurality of ball bearings mounted on said third tubular and engaging said conical wall of said sleeve, and operating means cooperatively connected to said third tubular member for disengaging said ball bearings from said conical wall.

3. A device of the class described comprising a tubular member, a cylindrical member mounted within said tubular member, a seat, a second tubular member secured to said seat and slidably mounted within said first tubular member, an annular housing secured at the free end of said second tubular member, said housing having an inner conical wall structure, a third tubular member concentrically mounted about said cylindrical member, a plurality of ball bearings mounted on said third tubular member adjacent said conical wall structure in contact relation with said cylindrical member, and lever means operatively connected to said third tubular member adapted to slide said member relative to said housing for disengaging said ball bearings.

4. The structure as recited in claim 3 and restraining means associated with said cylindrical member adapted to limit the extended position of said tubular members.

5. A device of the class described comprising a support, a tubular member secured to said support, a cylindrical member mounted within said tubular member, a seat, a second tubular member secured to said seat and slidably engaging said first tubular member, a sleeve mounted on the free end of said second tubular member, said sleeve having an inner conical wall structure, a third tubular member concentrically mounted about said cylindrical member in spaced relation thereto, a plurality of ball bearings mounted on said third tubular member in frictional engagement with said cylindrical member and engaging said conical wall structure, spring means yieldingly forcing said third tubular member in a direction away from said sleeve, lever means secured to said seat and engaging said third tubular member for sliding said member against said spring pressure, and stop means mounted on said seat and connected to said cylindrical member adapted to limit the upward movement of said seat.

6. The structure as recited by claim 5 and further means operatively connected to said sleeve adapted to limit the movement of said third tubular member.

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