March 18, 1930. E. C. HARTER 1,751,152

SEAT STRUCTURE

Filed March 6, 1929

Fig. 1.

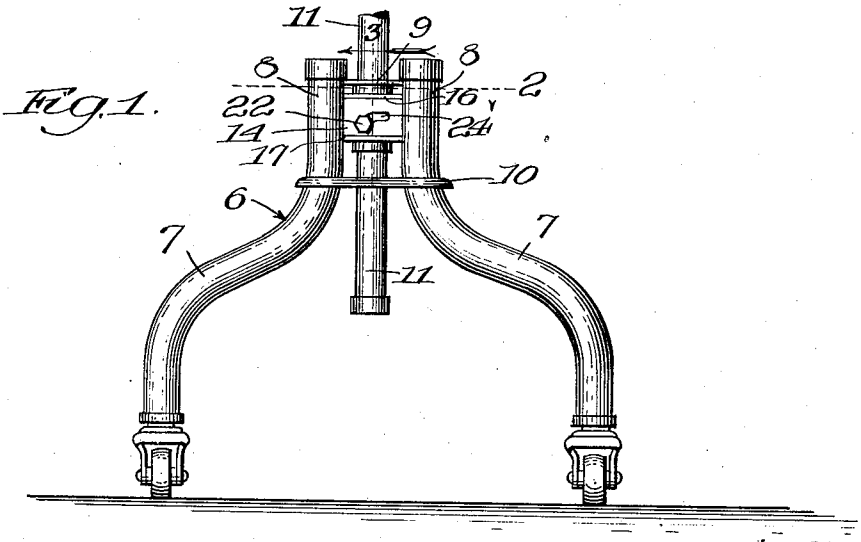


Fig. 2.

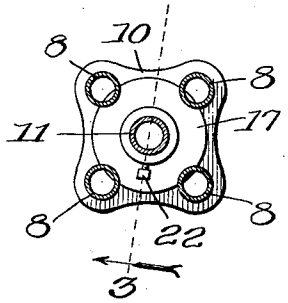


Fig. 3.

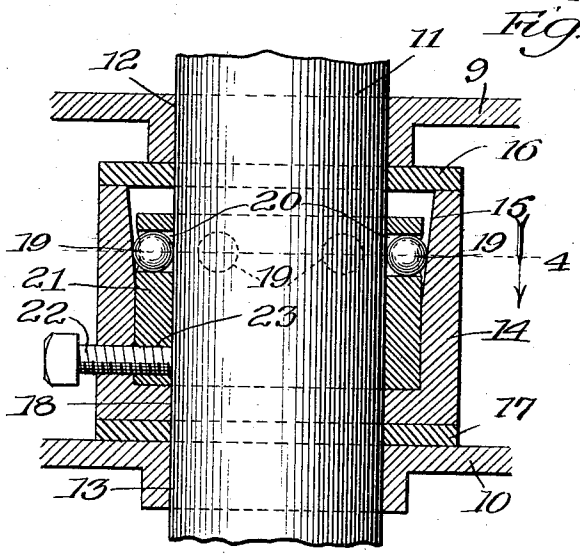


Fig. 5.

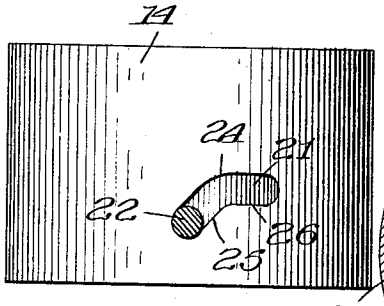
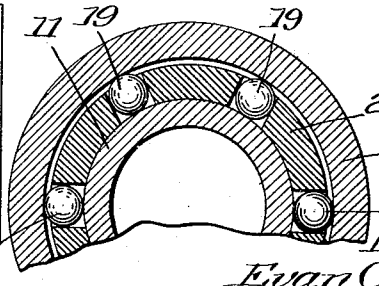


Fig. 4.



Inventor:
Evan C. Harter,
By Dyrenforth, Lee, Chritton & Wiles,
Attys.

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1,751,152

UNITED STATES PATENT OFFICE

EVAN C. HARTER, OF STURGIS, MICHIGAN

SEAT STRUCTURE

Application filed March 6, 1929. Serial No. 344,809.

My invention relates more particularly to seat structures such as chairs, stools, or the like, having a seat portion adjustable vertically on the base of the seat structure.

My primary objects are to provide a novel, simple and inexpensive construction of means whereby the seat portion may be quickly vertically adjusted either up or down and when so adjusted be securely maintained, and to provide such character of means the adjustment of which will not be affected by either inverting the seat-structure or by lifting the chair by its back.

Referring to the accompanying drawing:

Figure 1 is a view in side elevation of the lower portion of a seat structure embodying my invention.

Figure 2 is a plan sectional view taken at the line 2 on Fig. 1 and viewed in the direction of the arrow.

Figure 3 is an enlarged broken sectional view taken at the line 3 on Fig. 1 and viewed in the direction of the arrow.

Figure 4 is a broken plan sectional view taken at the line 4 on Fig. 3 and viewed in the direction of the arrow; and

Figure 5, a view in side elevation of a portion of the means for holding the seat portion in adjusted position and involving a set screw shown in section.

In the drawings the base portion of a stool, chair, or the like, is represented at 6, this base portion being shown as comprising four equidistantly spaced supporting legs 7 rigidly held together at their inwardly deflected vertical leg portions 8 by any suitable means, those shown comprising vertically spaced plates 9 and 10.

The seat portion of the construction comprises a vertically disposed post 11 which in practice would be provided at its upper end with a seat portion (not shown), and which extends at its lower end through the space within the grouped upper ends 8 of the legs, this post extending through, and being vertically adjustable in, openings 12 and 13 in the plates 9 and 10, respectively.

Cooperating with the base portion 6 and the post 11 are means for holding the post in vertically adjusted position on the base, these means comprising a cup-shaped member 14 the upper portion of its inner surface being upwardly flared throughout its inner periphery as represented at 15, the member 14 extending between the plates 9 and 10 with washers 16 and 17 interposed between the member 14 and these plates, the member 14 and the washers being preferably disconnected from each other and from the plates 9 and 10, the seat post 11 extending downwardly through the washers 16 and 17 and through an aperture 18 in the bottom of the member 14.

The means now being described also comprise a circumferential series of rolling bearings preferably in the form of spheres as represented at 19 which are located within the member 14 adjacent the surface 15 of the latter and oppose the side surface of the post 11.

The balls 19 are shown as located in pockets 20 provided in a sleeve member 21 positioned in the cup member 14 and surrounding the post 11, the sleeve 21 being provided with a set screw 22 screwed at its inner end into an opening 23 in the sleeve 21 and extending outwardly through a cam slot 24 in the side wall of the cup member 14, this cam slot being shown as formed of an upwardly inclined portion 25 and a horizontally disposed portion 26.

The parts of the structure described are so proportioned and arranged that in the normal position of the parts the balls 19 are wedged between the tapering surface 15 and the post 11, thereby holding the post against lowering.

The post 11 is released for adjustment either up or down by raising the sleeve 21 for lifting the balls out of clutching position, this being effected by relatively rotating the sleeve 21 and member 14 in a direction to cause the set screw 22 to ride upwardly along the inclined cam surface 25, if necessary, the operator grasping with his two hands the member 14 and the set screw 22, respectively, and relatively rotating these members as stated.

After making the desired vertical adjustment of the post 11, the operator tightens the

set-screw 22 against the post which positively holds the sleeve 21 against displacement in a direction to release the clutching effect of the balls, with the advantage, among others, of preventing accidental movement of the seat post 11 in an outward direction should the entire seat structure be inverted, or the seat structure lifted by its back.

While I have illustrated and described a particular construction embodying my invention, I do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered without departing from the spirit of the invention.

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

1. A seat structure comprising a base, a seat-portion, means operating to clamp said seat portion in vertically adjusted position, and means for releasing said first-named means comprising a rotary member operating to effect such release when raised, and means operating upon rotation of said member to raise the latter.

2. A seat structure comprising a base, a seat-portion, means operating to clamp said seat portion in vertically adjusted position, and means for releasing said first-named means comprising a rotary member operating to effect such release when raised, and cam means operating upon rotation of said member to raise the latter.

3. A seat structure comprising a base, a seat portion, means comprising rolling elements interposed between said base and seat portion and operative to clamp said seat portion in vertically adjusted position, and means for releasing said elements from clamping position comprising a rotary member operating when raised to release said elements, and means operating upon rotation of said member to raise the latter.

4. A seat structure comprising a base, a seat portion, means comprising rolling elements interposed between said base and seat portion and operative to clamp said seat portion in vertically adjusted position, and means for releasing said elements from clamping position comprising a rotary member operating when raised to release said elements, said base having a cam surface, and a member on said rotary member engaging said cam surface to cause said rotary member to rise upon relative movement of said rotary member and the portion of said base containing said cam surface.

5. A seat structure comprising a base, a seat-portion, means operating to clamp said seat portion in vertically adjusted position, and means for releasing said first-named means comprising a rotary member operating to effect such release when raised, and means operating upon rotation of said member to raise the latter, and a device for releasably connecting said base and seat portion together against relative vertical movement.

6. A seat structure comprising a base, a seat portion, means comprising rolling elements interposed between said base and seat portion and operative to clamp said seat portion in vertically adjusted position, and means for releasing said elements from clamping position comprising a member operating when raised to release said seat portion for vertical movement, said base having a cam surface and a clamp device engaging said cam surface for causing said member to rise in the relative movement of said clamp device and cam surface and operative to releasably clamp said seat portion and base against relative vertical movement.

7. A seat structure comprising a base, a seat portion, a member on said base and surrounding said seat portion and presenting an upwardly flaring inner surface, said member having a cam surface, a series of rolling bearings interposed between the upwardly flaring surface of said member and said seat post for wedging the latter in adjusted position, a sleeve surrounding said seat post and interposed between the latter and said member, and an outwardly extending projection on said sleeve engaging said cam portion, for the purpose set forth.

8. A seat structure comprising a base, a seat portion, a member on said base and surrounding said seat portion and presenting an upwardly flaring inner surface, said member having a cam surface, a series of rolling bearings interposed between the upwardly flaring surface of said member and said seat post for wedging the latter in adjusted position, a sleeve surrounding said seat post and interposed between the latter and said member, and a set screw screwing into said sleeve and adapted to co-operate with said cam portion and be tightened against said seat post.

EVAN C. HARTER.