Dec. 9, 1947. C. E. E. LUNDQUIST 2,432,245

LOCKING DEVICE FOR THE SEAT POSTS OF CHAIRS

Filed May 17, 1945

Fig. 1.

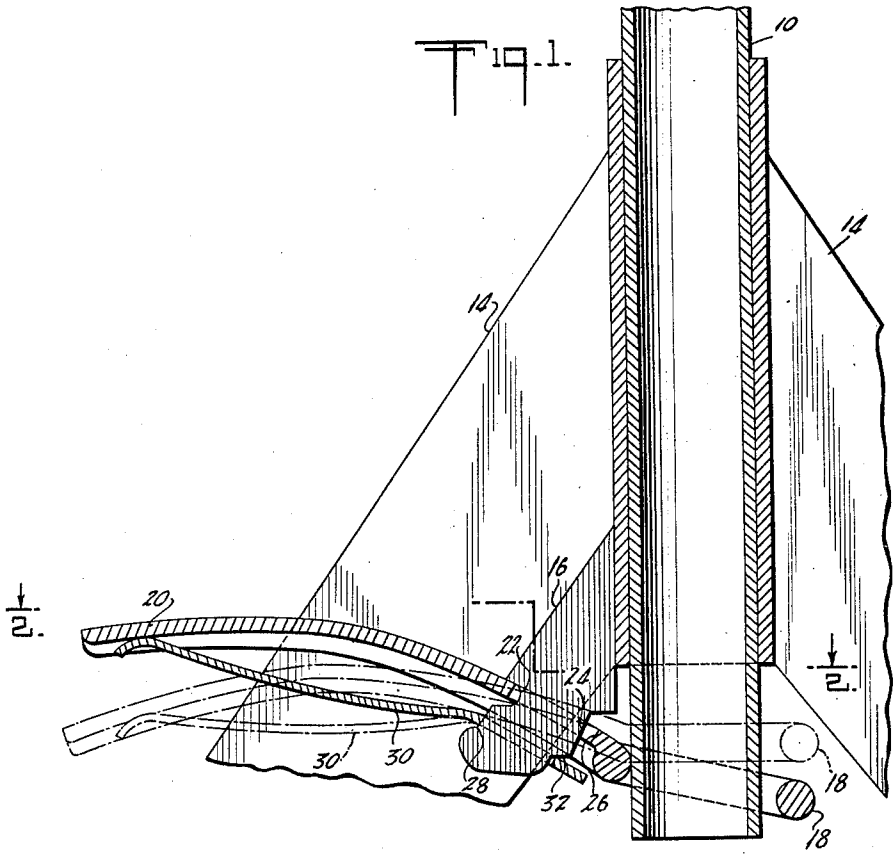


Fig. 2.

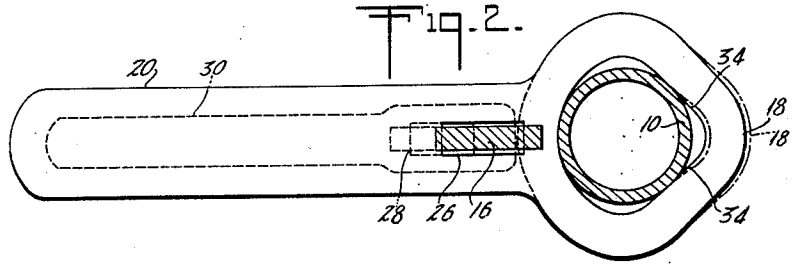
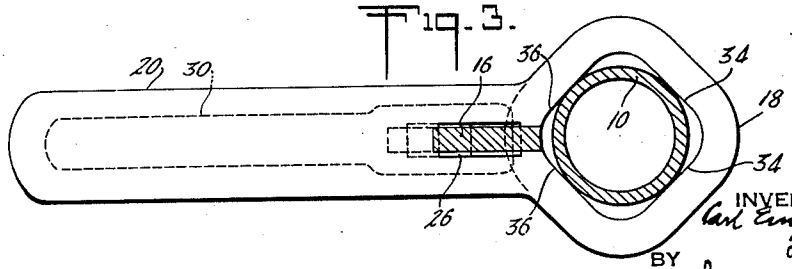


Fig. 3.



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Patented Dec. 9, 1947 2,432,245

UNITED STATES PATENT OFFICE

2,432,245

LOCKING DEVICE FOR THE SEAT POSTS OF CHAIRS

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Application May 17, 1945, Serial No. 594,196
In Sweden June 5, 1944

5 Claims. (Cl. 188—67)

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The invention relates to a device for locking a shaft adapted to be displaced in its longitudinal direction relatively to an element. More particularly, the invention relates to a locking device for the seat post of a chair having a seat to be raised and lowered.

Devices of this kind are known, which consist of a ring provided with a handle and thrust over the seat post, said ring being rotatably mounted in the frame of the chair and being adapted under the influence of a force, such as from a spring, to take an oblique position about the seat post in order to secure the latter to the frame of the chair by a clamping effect. If the chair seat is loaded, it may occur that the chair post rotates relatively to the clamping ring in spite of the clamping effect thereof, and that an axial displacement of the chair post thereby takes place. In order to prevent such unintentional rotation it is known to form the cylindrical chair post with a flat surface, while the clamping ring is given a corresponding internal shape. It is the object of the invention to improve such a device, so that the locking effect becomes satisfactory, without it being necessary to give the shaft or the chair post a shape other than cylindrical.

Further objects and advantages of the invention will be apparent from the following description considered in connection with the accompanying drawing which forms a part of this specification, and of which:

Fig. 1 shows a portion of a chair having a locking device according to the invention, the figure being partly represented in vertical section.

Fig. 2 shows a section on the line II—II of Fig. 1.

Fig. 3 shows a somewhat modified construction according to the invention in a section corresponding to that of Fig. 2.

In the drawing, 10 designates a post or spindle in the form of a tube, the upper end of the spindle carrying a chair seat (not shown). The spindle 10 is axially displaceable within a sleeve 12 which, together with legs 14, forms the chair frame resting on a carrying surface. Secured to the frame, preferably the sleeve 12 thereof, as at the lower portion thereof, is a projection 16 having the locking device according to the invention mounted thereon, said locking device consisting of a ring 18 arranged about the spindle 10 and of a handle 20 connected to the ring. The projection 16, which is preferably of an elongated cross section in the horizontal plane, is for this purpose provided with a recess 22 on the one side and with a shoulder 24 on the other side thereof, which enters an elongated aperture 26 in the

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handle 20. The elongated aperture 26 is of a length greater than the distance between the bottom of the recess 22 and the shoulder 24, in order to ensure a certain freedom of movement between the ring and the handle on the one hand and the projection on the other hand, in a direction toward and from the spindle, while the ring 18 and the handle 20 are pivotable in the vertical direction (in a plane through the longitudinal axis of the spindle). The projection 16 is of greater width below the recess 22 and the shoulder 24, and forms an abutment 28 for the retention of a plate spring 30 bearing with an initial tension on the handle 20 adjacent to the free end thereof. The spring 30 causes the ring 18 to take an oblique position relative to the spindle 10, that is to say, at a relatively small angle to the horizontal plane. The handle 20 as well as the spring 30 loosely engage the projection 16, that is to say, they have no special securing members.

According to the invention, the ring 18 is formed in such manner as to bear on the spindle 10 in three places at least. In the embodiment according to Figs. 1 and 2, the ring 18 is formed on the inside thereof with two surfaces 34 forming an angle between them, said surfaces then lying each on one side of a line extending through the centre of the spindle and the centre of the projection 16. Furthermore, the surfaces 34 are disposed on that side of the spindle 10 which is opposed to the handle 20. When the locking device is in the locking position indicated by full lines in Figs. 1 and 2, the surfaces 34 have a wedge action ensuring the above-mentioned effect, that is so that the axial position of the spindle is fixed while a turning movement between the spindle 10 and the frame is safely prevented at the same time, even when the spindle carries load. It has been proved in practice that the locking effect becomes particularly pronounced where the spindle is tubular, and particularly good results are obtained with tubular spindles made from resilient material, such as steel.

By moving the hindle 20 downwardly according to Fig. 1 about the projection 16, the ring 18 is caused to move upwardly into a position where it is at least approximately in a plane at right angles to the axis of the spindle, as indicated by the dash and dot lines in the figures. The locking engagement between the ring 18 and the spindle 10 is thus discontinued, and the spindle may be displaced in its longitudinal direction. Preferably, the projection 16 prevents the handle from swinging down lower than this substantially

horizontal position. In the embodiment shown, the handle 20 and the ring 18 are brought into contact with the shoulder 24 in the position in question. Consequently, the handle 20 cannot be swung down so far that the ring 18 adjusts itself into the corresponding upper clamping position.

While in the embodiment according to Fig. 2 the ring 18 is of a curved or circular shape at the contact surface against the spindle 10 on the side opposed to the surfaces 34, the embodiment according to Fig. 3 also has a two-point bearing on this side. The ring 18 is thus formed with surfaces 36 symmetrical with respect to the above-mentioned line through the centre of the projection 16 and the axis of the spindle. Oherwise, the locking device according to Fig. 3 may be constructed in the same manner as in the preceding embodiment, the same reference characters being used for corresponding parts.

While two more or less specific embodiments of the invention have been shown, it is to be understood that the same is for purpose of illustration only, and that the invention is not to be limited thereby, but its scope is to be determined by the appended claims.

What I claim is:

1. In a device of the class described, a supporting structure having a cylindrical sleeve, a cylindrical rod axially displaceable in said sleeve, a member secured to said structure and extending to one side of said rod, a ring encircling said rod, a handle secured to said ring and extending therefrom, said handle being formed with an opening therethrough, said member extending loosely through said opening and having a shoulder for pivotally supporting said handle, a spring

stressed between said member and said handle for pivoting the latter to tilt said ring with respect to a plane normal to the axis of said rod, and the interior configuration of said ring being non-circular so as to provide at least three separate points of contact with said cylindrical rod when the ring is tilted.

2. A device as defined in claim 1 in which the rod comprises a hollow tube of resilient material.

3. A device as defined in claim 1 in which the interior of said ring includes two surfaces arranged at an angle with respect to each other and disposed on the side of the ring opposite said handle.

4. A device as defined in claim 1 in which the interior of said ring includes at least four surfaces, each surface being arranged at an angle with respect to adjacent surfaces, two of said surfaces being disposed on the side of the ring adjacent to said handle and another two of said surfaces being disposed on the opposite side of said ring.

5. A device as claimed in claim 1 in which said member is provided with an abutment limiting pivoting of said ring to a plane substantially normal to the axis of said rod.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
836,303	Christensen	Nov. 20, 1906