No. 682,844. Patented Sept. 17, 1901.

J. ELLENBECKER.

REVOLVING CHAIR.

(Application filed Oct. 18, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

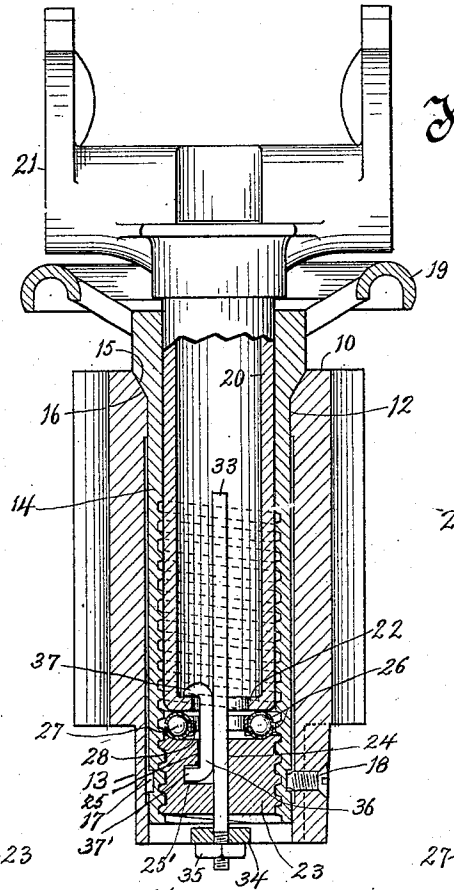


Fig. 3.

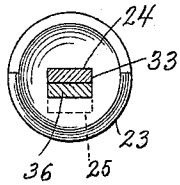


Fig. 5.

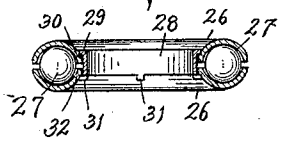


Fig. 4.

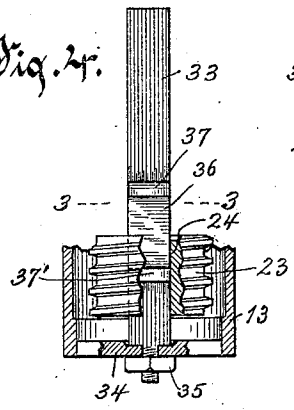


Fig. 6.

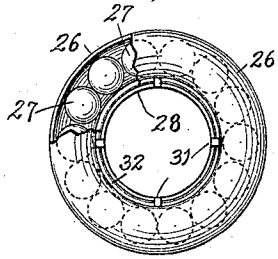
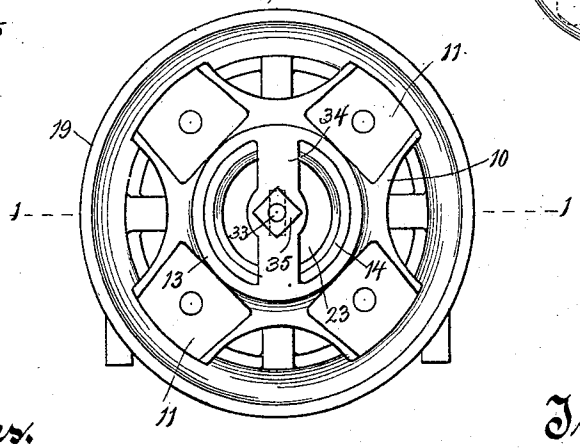


Fig. 2.



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No. 682,844. Patented Sept. 17, 1901.

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REVOLVING CHAIR.

(Application filed Oct. 18, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 7.

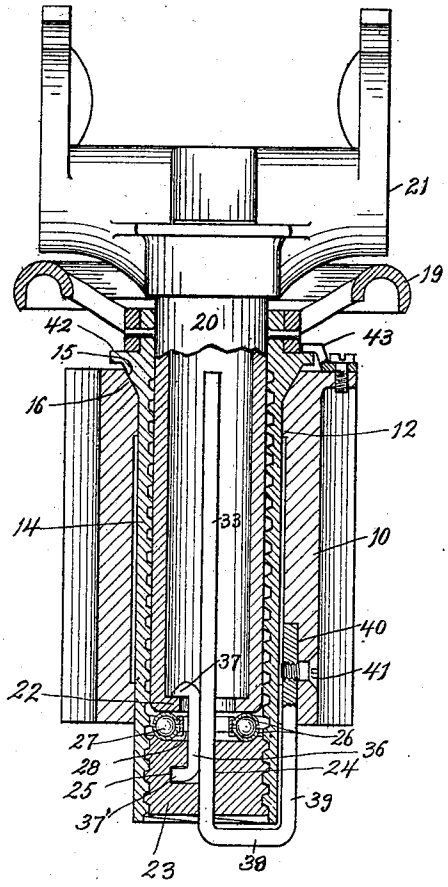


Fig. 9.

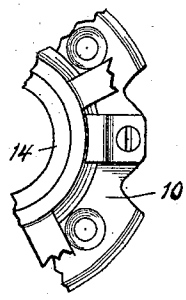
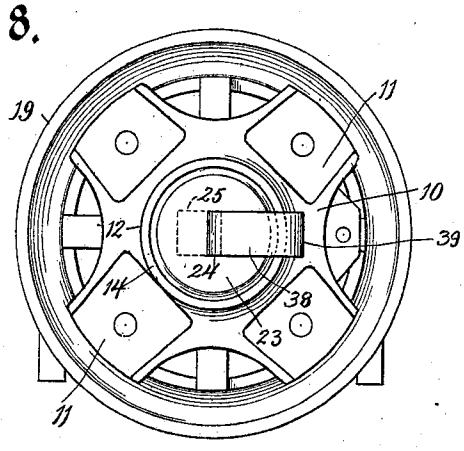


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN ELLENBECKER, OF PORT WASHINGTON, WISCONSIN.

REVOLVING CHAIR.

SPECIFICATION forming part of Letters Patent No. 682,844, dated September 17, 1901.

Application filed October 18, 1900. Serial No. 33,440. (No model.)

To all whom it may concern:

Be it known that I, JOHN ELLENBECKER, of Port Washington, county of Ozaukee, and State of Wisconsin, have invented a new and useful Improvement in Revolving Chairs, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in revolving chairs.

The object is to provide improved means whereby the seat of the chair is not only made revoluble, but at the same time provision is secured for raising and lowering said seat.

With the above primary object and other incidental objects in view the invention consists of the devices and parts or their equivalents, as hereinafter set forth.

In the accompanying drawings, Figure 1 is an elevation of the invention, partly in section, on a plane indicated by the line 1 1 of Fig. 2. Fig. 2 is an inverted plan view of Fig. 1 on an enlarged scale. Fig. 3 is a section on the line 3 3 of Fig. 4. Fig. 4 is a detail of the lower portion of the mechanism at right angles to the position shown in Fig. 1 with parts broken away. Fig. 5 is a central section of the ball-bearing. Fig. 6 is an inverted plan view of Fig. 5 with a part broken away. Fig. 7 is an elevation, partly in vertical section, of a modified form of construction. Fig. 8 is an inverted plan view of Fig. 7 on an enlarged scale, and Fig. 9 is a fragmentary view.

Referring to the drawings, the numeral 10 indicates the hub of the chair-iron of an ordinary form of construction and provided with the usual vertical recesses 11, in which the upper ends of the chair-legs fit. The hub is provided with a smooth bore 12, and in the Sheet 1 form of construction is also provided with a downwardly-projecting extension 13. Fitting in the smooth bore of the hub is a sleeve 14, provided with interior threads and having its upper portion provided with a shoulder 15, preferably beveled, which shoulder rests upon a beveled seat 16 at the upper end of the hub. By the provision of this shoulder and seat the sleeve is properly supported in the hub. In order to prevent withdrawal of the sleeve upwardly out of the hub, in the Sheet 1 form of construction I provide the exterior of said sleeve, near the lower end thereof, with an annular recess 17, which is engaged by the inner end of a screw 18, passing through the downward extension 13 of the hub. The upper extremity of the sleeve, above the upper end of the hub, is formed or provided with a hand-wheel 19, by which the sleeve is conveniently turned in the hub. Fitting in the sleeve revolubly is the chair-seat spindle 20, which depends from the spindle-head 21. The spindle is tubular, and its lower end terminates short of the lower end of the sleeve. Said lower end of the spindle is turned inwardly slightly to form an annular flange 22. Below the lower end of the spindle is a nut 23, the exterior threads of said nut being engaged by the interior threads of the sleeve. This nut is provided centrally therethrough with an opening 24, preferably slightly elongated and of rectangular shape. This nut 23 is also provided with a recess 25, extending downwardly from the upper portion of said nut for a desired distance, and the lower end of this recess communicates with a laterally-extending recess 25′. If desired, ball-bearings may be interposed between the top of the nut and the lower end of the chair-seat spindle. I prefer that the ball-bearings be arranged in the improved form of ball-bearing case shown in detail in Figs. 5 and 6 of the drawings. This case consists of two grooved rings 26 26, which are arranged with the grooves facing, and bearing-balls 27 are placed in the registering grooves. The rings 26 are held together by means of an inner annular band 28, provided at its upper edge with an outstanding flange 29, which rests and is seated upon a shoulder 30 of the upper ring member 26. The lower edge of the band is provided with outwardly-bent fingers 31, which extend beneath a shoulder 32, formed on the lower ring member. It is obvious that by this arrangement not only are the two ring members 26 at liberty to revolve freely, but also the antifriction-balls 27 are free to revolve between the rings. Again, by reason of the fact that the bearing-surfaces of the rings 26 are convex friction between the rings and the spindle and the nut is reduced to the minimum.

In the Sheet 1 form of construction in order to prevent the nut 23 from turning I pass through the rectangular opening 24 thereof a similarly-shaped rod 33, which may extend upwardly into the spindle for a desired distance. It also extends downwardly below the nut through a cross-piece 34, extending across the lower end of the downwardly-projecting extension 13 of the hub. The lower extremity of the rod is threaded to receive a nut 35, which is turned up tightly against the under side of the cross-piece, and thereby serves to securely hold the rod in place.

In order to connect the spindle 20 with the nut, so as to prevent the withdrawal of the spindle out of the sleeve in moving the chair from one place to another, I provide a short bar 36, which is fitted in the recess 25. This bar extends upwardly above the nut and into the lower end of the spindle for a short distance. Its opposite ends are provided with outwardly-extending hooks 37 37′, the former hook overlapping the flange 22 of the spindle and the latter hook engaging the recess 25′ of the nut.

From the foregoing description it will be seen that when a person is occupying the chair the seat is free to turn by reason of the fact that the spindle 20, depending from the spindle-head 21, (which head is secured to the chair-seat,) is revoluble in the sleeve 14. If now it is desired to either raise or lower the seat, said raising or lowering may be accomplished by turning the hand-wheel 19 in the proper direction. This will necessarily rotate the sleeve 14, and consequently cause the threads of said sleeve to engage the threads of the nut 23. As the nut is held fast against turning by the rod 33, said nut is necessarily caused to move vertically either up or down in accordance with the direction of turning of the hand-wheel, and consequently thereby adjust the vertical height of the chair-seat by raising or lowering the spindle 20.

While I prefer to use the antifriction-bearings hereinbefore described, inasmuch as the spindle is thereby permitted to turn with the least possible friction, yet, if desired, the said bearings may be entirely omitted and the nut made to bear directly against the lower end of the spindle and successful results obtained.

By my invention I provide a construction which is strong and enduring in character and capable of withstanding a long period of wear and usage.

In the modified form (shown on Sheet 2 of the drawings) I dispense entirely with the downwardly-projecting extension 13 from the hub and also omit the cross-bar 34, against which the nut 35 turns and thereby holds the rod. In lieu of said construction I bend outwardly the lower end of the rod 33, as indicated by the numeral 38, and then bend said rod upwardly, as indicated by the numeral 39, the upper extremity being seated in a recess 40 in the hub. A screw 41 is passed through the hub and engages this upwardly-bent portion 39. By this provision it is obvious that the rod 33 is held fast and accomplishes the same function as the construction shown on Sheet 1 of the drawings. In the modified form I also show the hand-wheel 19 as separate from the sleeve 14 and secured to the upper projecting end of said sleeve by means of rivets. In order to prevent the withdrawal of the sleeve from the hub instead of providing the annular recess 17 in the lower end of the sleeve and the screw 18 fitting in said recess, as in the Sheet 1 form of construction, I provide the upper end of the sleeve with an annular shoulder 42, and secured to the top of the hub by means of a screw or otherwise an angularly-bent finger 43, which overlaps said annular shoulder.

What I claim as my invention is—

1. In a revolving chair, the combination of a hub, an interiorly-threaded sleeve revoluble in the hub, means for turning the sleeve, means for preventing vertical movement of the sleeve in the hub, a spindle revoluble in the sleeve, a nut in the sleeve and adapted to act against the spindle, said nut having its threads engaged by the threads of the sleeve, and means for preventing rotary movement of the nut, whereby when the sleeve is rotated the nut is moved vertically and the spindle thereby caused to be moved therewith.

2. In a revolving chair, the combination of a hub, an interiorly-threaded sleeve revoluble in the hub, said sleeve extended above the hub and formed or provided with a hand-wheel for turning the same, means for preventing vertical movement of the sleeve in the hub, a spindle revoluble in the sleeve, a nut in the sleeve and adapted to act against the spindle and having the threads thereof engaged by the threads of the sleeve, and means for preventing rotary movement of the nut, whereby when the sleeve is rotated the nut is moved vertically and the spindle thereby caused to be moved therewith.

3. In a revolving chair, the combination of a hub, an interiorly-threaded sleeve revoluble in the hub, means for turning the sleeve, means for preventing vertical movement of the sleeve in the hub, a spindle revoluble in the sleeve, a nut in the sleeve and adapted to act against the spindle, said nut having its threads engaged by the threads of the sleeve, and a rod fast to a fixed part and engaging the nut, and adapted to prevent rotation of said nut.

4. In a revolving chair, the combination of a hub provided with a downward extension, said extension having its lower end intersected by a cross-piece, an interiorly-threaded sleeve revoluble in the hub, means for turning the sleeve, means for preventing vertical movement of the sleeve in the hub, a spindle revoluble in the sleeve, a nut in the sleeve and adapted to act against the spindle, said nut having its threads engaged by the threads of the sleeve, and said nut also having a rec-

tangular opening, a rod passing through the cross-piece of the downward extension of the hub and engaging the rectangular opening of the nut, and a nut engaging the threaded extremity of the rod and turned against the cross-piece.

5. In a revolving chair, the combination of a hub, an interiorly-threaded sleeve revoluble in the hub, means for turning the sleeve, means for preventing vertical movement of the sleeve in the hub, a tubular spindle revoluble in the sleeve, the lower end of said spindle provided with an inwardly-turned flange, a nut in the sleeve and adapted to act against the spindle, and having its threads engaged by the threads of the sleeve, a bar having hooked ends, one of said hooks engaging a recess in the nut, and the other hook engaging over the flange of the spindle, and means for preventing rotary movement of the nut, whereby when the sleeve is rotated the nut is moved vertically and the spindle thereby caused to move therewith.

6. In a revolving chair, the combination of a hub, an interiorly-threaded sleeve revoluble in the hub, said sleeve provided with an annular recess, a screw passing through the hub and engaging the recess, means for turning the sleeve, a spindle revoluble in the sleeve, a nut in the sleeve and adapted to act against the spindle, said nut having its threads engaged by the threads of the sleeve, and means for preventing rotary movement of the nut, whereby when the sleeve is rotated the nut is moved vertically and the spindle thereby caused to move therewith.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN ELLENBECKER.

Witnesses:

WM. AHLHAUSER,

BERNHARD FRANZEN.