July 15, 1924. 1,501,180

C. H. PETERS ET AL

TILTING CHAIR

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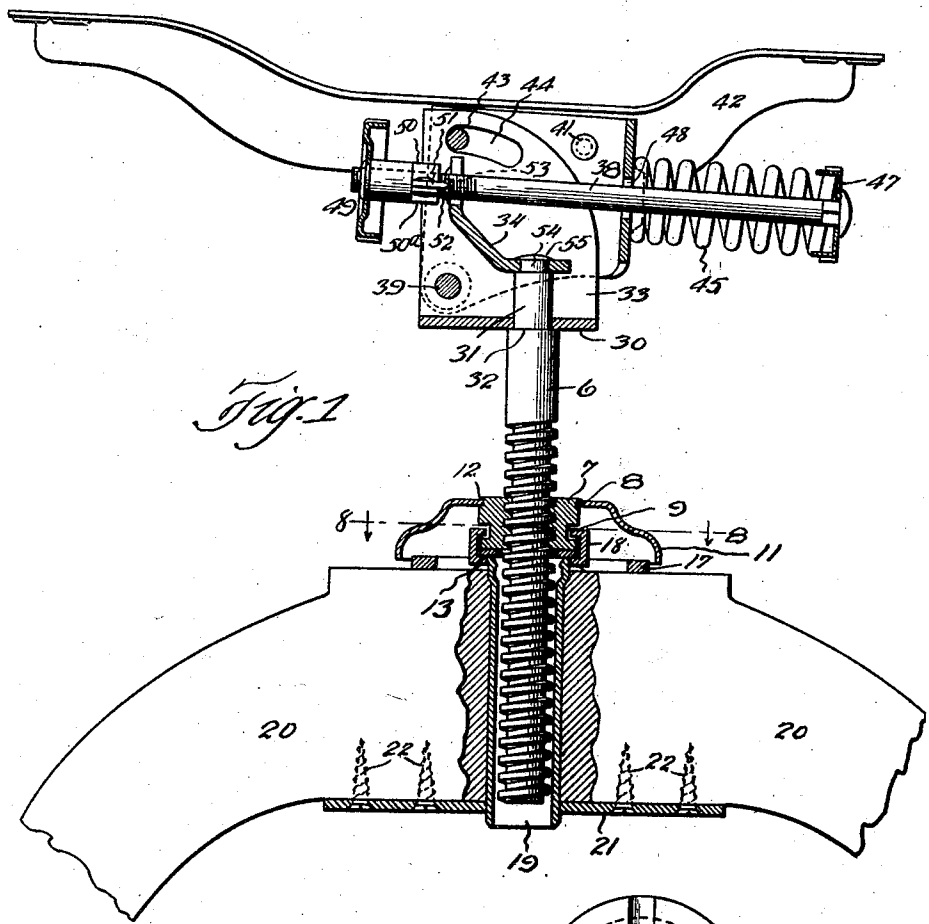


Fig. 1

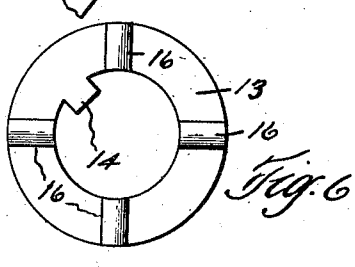


Fig. 6

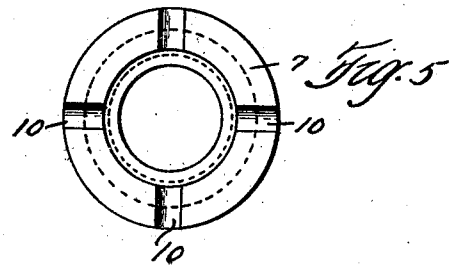
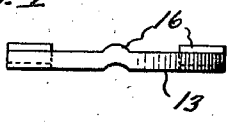


Fig. 5

Fig. 7



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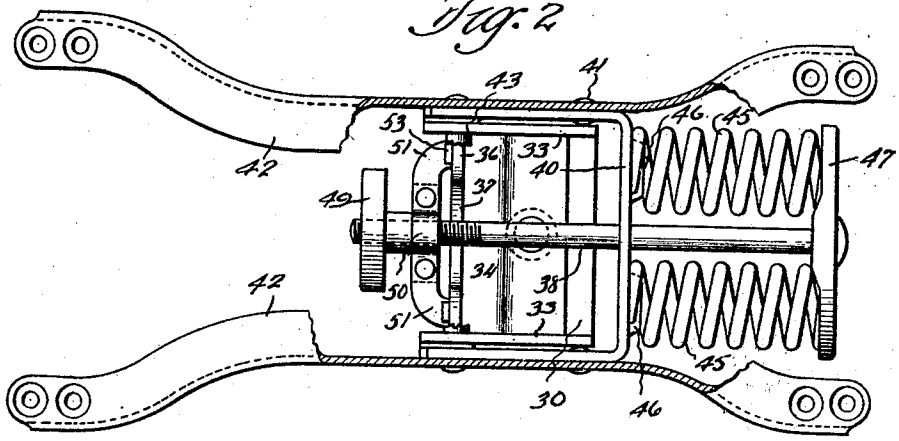
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TILTING CHAIR

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Fig. 2



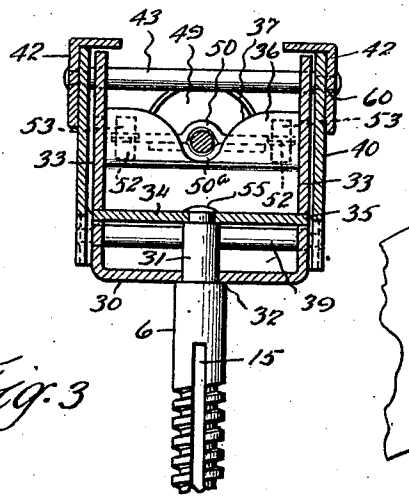


Fig. 3

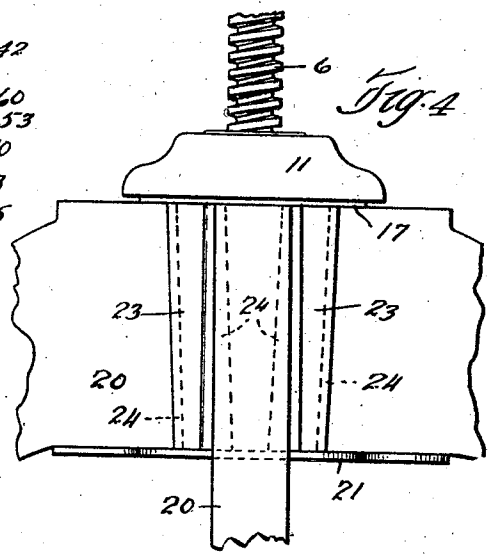


Fig. 4

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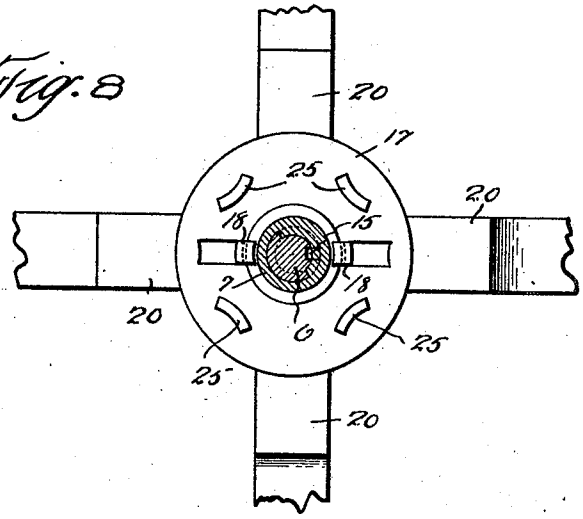
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TILTING CHAIR

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Fig. 8



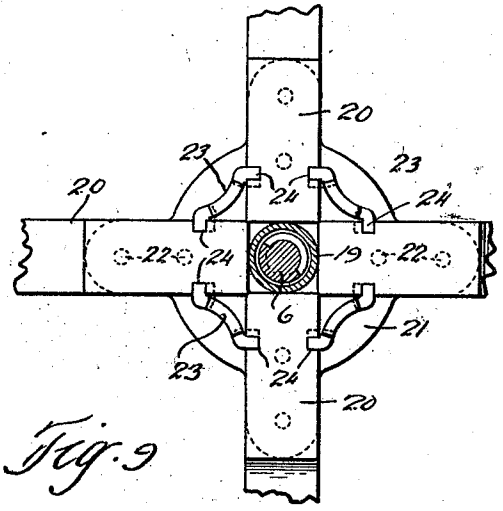
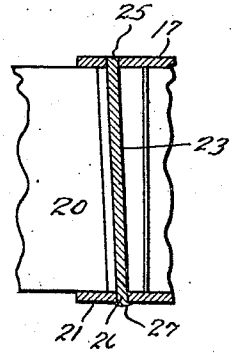


Fig. 9

Fig. 10



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Patented July 15, 1924. 1,501,180

UNITED STATES PATENT OFFICE.

CLIFFORD H. PETERS, OF LAKEWOOD, AND EDWARD D. BUMP, OF CLEVELAND, OHIO, ASSIGNORS TO THE BETTCHER STAMPING & MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

TILTING CHAIR.

Application filed March 27, 1922. Serial No. 547,112.

To all whom it may concern:

Be it known that we, CLIFFORD H. PETERS and EDWARD D. BUMP, citizens of the United States, residing at Lakewood and Cleveland, respectively, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Tilting Chairs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to pedestal chairs of the swiveling type, and particularly to chairs of this type which may be inclined, or rocked backwardly, against the tension of springs serving normally to hold the chairs in upright position.

The improvements constituting the invention, and hereinafter more particularly described, relate particularly to the elevating and swiveling mechanism, the stop devices for limiting the backward swing of the chair, and the hub connections for supporting or carrying the chair legs.

It may be noted that most of the parts hereinafter described as embodying the invention are capable of production in sheet metal, whereby the cost of manufacture is cheapened without, however, sacrificing the strength and stability of the structure. Also the leg connections are such that a wedge lock is produced, which tends to tighten itself; and accordingly the tendency of the legs to work loose is counteracted.

Various improvements and advantages in the details of the construction will be apparent from the following description and the accompanying drawings, in which Fig. 1 is a sectional elevation of parts of the chair frame, showing especially the hub and head assembly; Fig. 2 is a plan, partly broken away, of the head supports or structure on which the chair seat is mounted; Fig. 3 is a section on the line 3—3 of Fig. 2; Fig. 4 is a detail in elevation of the hub structure; Fig. 5 is a detail of nut and Figs. 6 and 7 are details of a washer forming part of the hub assembly; Fig. 8 is a section on the line 8—8 of Fig. 1, the hood being omitted; Fig. 9 is an inverted plan view of the under side of the hub; and Fig. 10 is a detail in section of the hub.

Describing the various parts by reference characters, 6 indicates the post or pedestal which is threaded throughout the greater part of its length, the lower end being mounted in the hub, to swivel therein. Mounted upon the screw is a nut 7 which has a neck 8 at its upper end and an annular groove 9 in its outer side, between the upper and the lower end. The bottom of the nut has a plurality of radial recesses or grooves 10, four such recesses or grooves being shown, preferably 90° apart. For the purpose of turning the nut and covering the parts thereunder, a sheet metal hood 11 is employed, said hood having a central hole which receives the neck 8 and to which the upper end of the neck is secured by an upsetting or spinning operation, producing a riveting effect, as illustrated at 12.

The bottom of the nut rests upon a washer 13 which has an integral key 14 engaging the vertical key-way 15 in the post. The upper surface of the washer is provided with four radial ribs 16 pressed upwardly therefrom, said ribs cooperating with the grooves 10 in the nut. The nut and washer rest upon a plate 17 which has a pair of hooked tongues 18 struck up therefrom, these tongues projecting into the groove 9 in the nut, so that, when the seat of the chair is lifted, the base will also be lifted and will not drop off the post.

The operation of the parts thus far described is as follows:

To elevate the seat of the chair, the hood 11 may be grasped to turn the nut therewith and the nut is thereby screwed down on the post to raise the latter; or the nut may be held and the seat turned. During this turning operation, the ribs 16 slip into and out of the grooves 10. When the nut is released, these ribs and grooves engage and will maintain the connection between the post and the nut so that both will turn together as the chair is rotated, the nut and washer rotating on the plate 17, which thus forms the supporting bearing for the ordinary swiveling action of the chair, the nut and washer turning with the post. To effect the adjustment of the chair and to permit its swiveling action, it is therefore unnecessary to use any tools or to release any screws or the like.

The leg-and-hub assembly includes a hollow hub or tube 19 which receives the post

and is of sufficient internal diameter to clear the threads thereon. This tube is expanded at the top into tight engagement with the top plate 17 and extends through a central hole at the meeting point of the four legs 20 and also through a central hole in a bottom plate 21 which has four arms, corresponding to the legs, and secured thereto by screws 22.

The legs are further secured to the hub by four wedge-shaped pressed or channeled members 23 the sides of which converge downwardly and which members also converge downwardly toward the tube 19, as shown in Figs. 4 and 10, said members being inserted from above, the flanges 24 of the members engaging in inclined grooves in the sides of the legs 20, to lock therewith. At their tops, the wedge members have lugs 25 which extend into and form a snug fit with openings in the top plate 17. As shown in Fig. 10, these members 23 incline inwardly and downwardly in the grooves in the legs and so tend to draw the legs inwardly and to bind the same against the hub tube 19. At their lower ends, the members 23 are provided with lugs 26 which fit through corresponding openings in the bottom plate 21 to which they are secured by up-setting or riveting, as indicated at 27. This binds the top and bottom plates together against the legs and confines the same to the central hub or tube and if, in consequence of weight or shrinkage, the parts tend to become loose, the wedge members will tend to work downwardly and thus correct any such looseness.

The head construction includes a yoke 30 the bottom plate or member of which is provided with a hole which fits over a reduced part 31 at the upper end of the post and rests on a shoulder 32 thereby produced. The side flanges 33 of the yoke are connected and braced by a cross plate 34 the ends of which are fitted in slots in the side flanges 33, as indicated at 35. This cross plate is angular in section, the upper flange 36 of the same being notched or depressed, as indicated at 37, to clear the bolt 38.

Pivoted to the lower front corner of the yoke, by means of a cross pin 39, is a cradle or channel-shaped connecting member 40 the side flanges of which project forwardly and are riveted, as shown at 41, to the lower or vertical branches of the seat brackets 42 to which the seat frame is secured in the usual manner. In consequence of the pivotal connection between the lower front corners of the side flanges and the bolt 39, the seat is free to tilt forwardly and backwardly with respect to the yoke. This tilting movement is limited by means of a cross bolt 43 which is carried by the cradle and the seat brackets and which extends through arcuate slots 44 in the side flanges 33 of the yoke. The front ends of the slots form a stop to limit the forwardly tilting movement and the rear ends of the slots a stop to limit the rearwardly tilting movement.

The tilting movements referred to are yieldingly controlled by a pair of coiled springs 45 which are seated at their front ends around bosses 46 on the back wall or web of the cradle and at their rear ends in seats in a cross plate 47 through which extends the head end of the bolt 38, located between the springs and extending through an opening 48 in the rear wall or web of the cradle. The front end of the bolt is provided with a hand nut 49 which bears against a collar 50, 50^a, formed at the central portions of two connected arms 51, 51^a, providing a yoke which terminates in a pair of rearwardly presented knife edges 52 which bear each in a groove between lugs 53 on the front upright flange 36 of the cross connecting member 34, the lower flange of which has a hole which receives a reduced neck 54 at the top of the post 6, to which it is fastened by riveting the upper reduced end of the post thereover, as indicated at 55.

In consequence of the construction described, the yoke connection for the head is exceptionally strong and rigid, since the post extends through the lower member 30 of the yoke and also through the lower flange of the cross member 34. This member 34 is also strongly supported and will thus sustain the strain or shock incidental to the tilting of the chair without requiring the use of exceptionally heavy parts or castings.

It is obvious that the tension of the springs 45 may be adjusted by the nut 49 and, when the chair is tilted back, the springs are compressed in consequence of the rearward movement or tilting of the cradle 40, the knife edges at 52 accommodating the slight swinging movement of the bolt 38, without squeaking. It will be noted that all of the head members except the bolt, cross pins and springs may be made of pressed or sheet metal and that the parts can be readily assembled. It will be noted also that the ends of the bolt 43, where it passes through the cradle and the seat brackets, are reduced, as indicated at 60, and riveted over, to assist in holding said parts together. Likewise the pin or bolt 39 is similarly riveted where its ends pass through the yoke and the cradle flanges.

Having thus described our invention, what we claim is:

1. In a tilting chair, the combination of a post, a yoke secured to the upper portion thereof, a cross member located within the arms of the yoke, said cross member being fastened to said arms and to the top of the

post, a seat-frame cradle pivoted to the arms of the yoke, a bolt extending lengthwise between the arms of the yoke and having a rocking bearing against the cross member, and a spring in compression between the bolt and the cradle.

2. In a tilting chair, the combination of a post, a yoke secured to the upper portion thereof and having a pair of upstanding side flanges, a cross member located within said flanges, said cross member being fastened to said side flanges and to the top of the post, a seat-frame cradle comprising a horizontally disposed U-shaped member having a rear cross piece and forwardly extending flanges, pivotal connections between the lower front ends of said flanges and the yoke flanges, the cradle flanges being located at the outer sides of the yoke flanges, a spring bearing against the rear side of the said cross member, and a bolt in tension between said spring and the said cross member.

3. In a tilting chair, the combination of a post, a yoke secured to the upper portion thereof and having upright side flanges, a cross member interposed between said flanges, said cross member being secured to said upright side flanges and to the top of the post, a seat-frame cradle having side flanges and a back piece extending across behind the yoke, the flanges of the cradle being pivoted to the flanges of the yoke below said cross member, a bolt having a rocking bearing against the front side of the cross member and extending rearwardly between the flanges of the yoke and through the back piece of the cradle, and a spring in compression between the said back piece and the rear end of the bolt.

4. In a tilting chair, the combination of a post, a substantially U-shaped yoke having a bottom member secured adjacent to but spaced from the top of said post and upwardly extending side members, a cross member located between and connecting the upwardly extending arms of the yoke and secured to the top of the post, a seat-frame cradle pivoted to said yoke, a bolt extending lengthwise between the arms of the yoke and having a rocking bearing therewith, and a spring in compression between the bolt and the cradle.

5. In a tilting chair, the combination of a post having a pair of vertically spaced seats near its upper end, a yoke secured thereto and having a bottom member resting on the lower of said seats, a cross member interposed between and connecting the arms of the yoke and resting upon and secured to the upper of said seats, a seat-frame cradle pivoted to said yoke, stops for limiting the tilting or rocking movement of said cradle, and a spring yieldingly controlling the rocking or tilting movement of said cradle.

In testimony whereof, we hereunto affix our signatures.

CLIFFORD H. PETERS.
EDWARD D. BUMP.