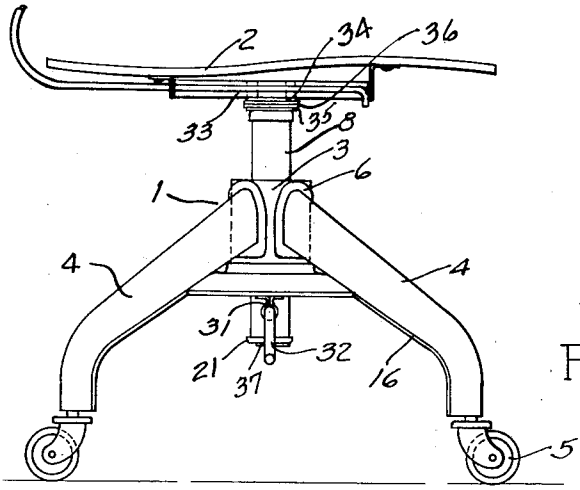
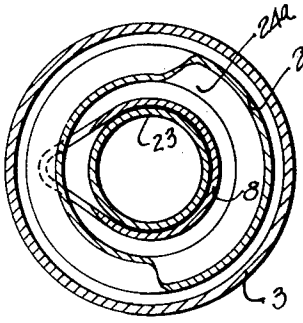
Oct. 3, 1933. C. R. UHL 1,928,801

ARTICLE OF FURNITURE

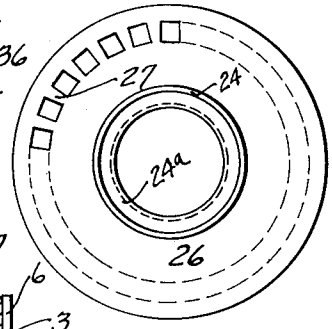
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Fig—1



Fig—3



Fig—4

Fig—2

Fig—5

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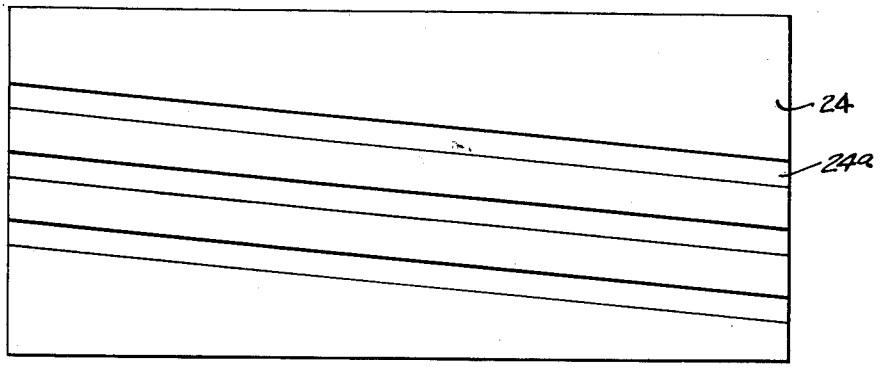


Fig-6

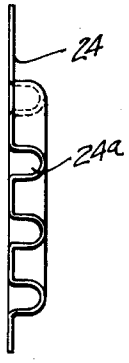


Fig-7

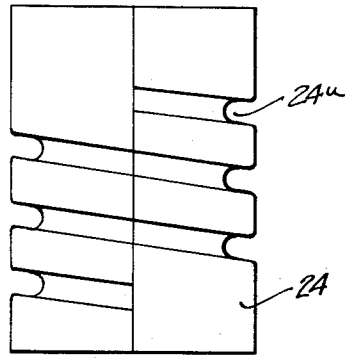


Fig-8

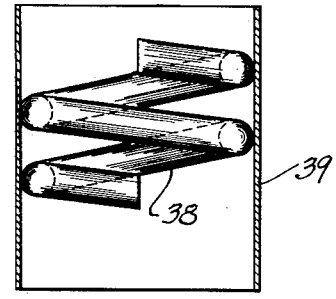


Fig-9

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UNITED STATES PATENT OFFICE

1,928,801

ARTICLE OF FURNITURE

Clement R. Uhl, Toledo, Ohio, assignor to The Toledo Metal Furniture Company, Toledo, Ohio, a corporation of Ohio

Application May 15, 1931. Serial No. 537,511

9 Claims. (Cl. 155—93)

This invention relates to swivel chairs and other articles of the vertically adjustable type, and particularly to the base or pedestal member thereof and the seat adjusting means carried thereby.

An object of the invention is the provision of a new and improved seat mounting and adjusting means for chairs of the character described, which is simple, strong and durable in its construction and easy and noiseless to operate, whereby to enhance the practicability and commercial value of such chairs.

Further objects and advantages of the invention will be apparent from the following detailed description thereof.

The invention is fully described in the following specification, and while it is capable of embodiment in various forms, one embodiment thereof is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a chair embodying the invention with the back broken away. Fig. 2 is an enlarged fragmentary elevation of the device embodying the invention with parts broken away and parts in central longitudinal section. Fig. 3 is a cross section on the line 3—3 in Fig. 2. Fig. 4 is a top plan view of the spiral member and its pinion by a rotation of which vertical adjustment of the spindle is effected. Fig. 5 is a section on the line 5—5 in Fig. 2, with parts in full. Fig. 6 is a plan of the blank from which the swivel member is formed, and with the spiral thread forming grooves therein. Fig. 7 is an end edge view thereof. Fig. 8 is a side elevation of the blank rolled up into tubular form with the ends of the grooves therein meeting to form the member with a continuous spiral groove, and Fig. 9 is a sectional view of a different form of spiral member with the shell part in section.

Referring to the drawings, 1 designates the base or standard of a chair of the office swivel type, and 2 the seat which is carried for swivel and vertical adjusting movements by the base.

The base 1 includes a hollow tubular metallic body member 3 and a plurality of supporting legs 4 which project outwardly and downwardly therefrom, and preferably carry casters 5 at their lower ends. The legs 4 in the present instance are formed from sheet metal, being of inverted U-form in cross section, and provided at their inner ends with edge flanges 6, which fit against the outer cylindrical surface of the body member 3 to which they are spot-welded or otherwise suitably secured, as is well understood in the art.

The upper end of the body member 3 is preferably formed with a radially inturned flange 7, providing a guiding opening in inwardly spaced relation to the body member 3 for the vertical adjustable rack member 8 of the chair, and the free edge of the flange 7 is turned inwardly lengthwise of the body member to form a broadened bearing surface for the rack member.

An annular plate 9 is sleeved on the lower end of the tubular member 3, being preferably secured thereto by spot-welding, and extends radially therefrom substantially to a point where it engages the lower edges of the legs 4 and then continues outward a distance on a downwardly extending incline in contact with such edges. A second annular plate 10 is sleeved around the rack member 8 below the tubular member 3 to provide a bearing surface for the member 8 in vertical register with the upper bearing which is provided therefor by the flange 7. The plate 10 extends radially from the rack member 8 in spaced, substantially parallel relation to the radial portion of the plate 9 to provide a space 11 therebetween, and then meets the inclined portion of the plate 9 and continues outwardly in flat parallel contact therewith to its outer edge. The plates 9 and 10 have their inclined outer edge portions firmly secured together and to the respective legs 4 by bolts 12, which bolts extend through apertures in the plates and have their nut members 13 firmly held within the hollow of the respective leg. In the present instance the nuts 13 are held within U-shaped clips 14, which are fitted into the hollows of the respective legs 4 with their leg portions spot-welded or otherwise rigidly secured to the side walls of the legs. Tongues 15 project from the side edges of the web portions of the clips 14 and engage over the adjacent edges of the nuts to cooperate with the leg portions of the clips to retain the nuts therein and to hold them against turning.

The plates 9 and 10 provide a very efficient bracing means for the legs 4 and obviate the necessity of using cross braces, which are commonly provided between the lower end portions of the legs. The legs 4 preferably have the open sides of their channels closed outwardly from the edges of the plates 9 and 10, by metal strips 16, both to improve the appearance of the legs and to add strength thereto.

It is apparent that the tubular member 3 and plates 9 and 10 constitute the body member of the base 1 and that the inturned flange 7 and the plate 10 form bearings 17 and 18 for receiving and guiding the longitudinal movements of the rack member 8.

The rack member 8 is of tubular form and provided along one side with a laterally projecting longitudinally extending rib portion, which is provided with a series of equi-distantly spaced cross-notches 19 forming rack teeth 20 therebetween. It is apparent that the bearings 17 and 18 for the rack member 8 are not of true circular form, but conform in shape to the cross sectional form of the member 8, thus holding such member against turning therein while permitting it to have free movements axially thereof. The member 8 is closed at top and bottom by caps 21, which are fitted thereover and secured thereto by spot-welding or in any other suitable manner, and each is provided with an opening 22 therethrough, which openings are coaxial with the circular portion of the rack member 8 and provide bearings for a seat spindle 23 that projects down through the rack member 8 and is intended to have free turning movements therein.

A spiral member 24 is mounted within the tube 3 in encircling relation to the rack member 8 and has an internal spiral rib or portion 24ª meshing with the teeth 20 of the rack member to effect a longitudinal adjustment of said member when the spiral member is turned. The spiral member at its lower end has a radially flanged collar 25 fixed thereto with its flange 26 projecting outwardly under the lower end of the tube 3 and into the space 11 between the plates 9 and 10, said flange being perforated near its outer edge to provide an annular series of teeth 27 so that the flange acts as a pinion. The flange 26 rests on the plate 10, which supports it and the spiral member 24 in position within the tube 3. The teeth 27 of the pinion or flange 26 are engaged by a drive pinion 28, which is carried by a crank-shaft 29 and has its top edge portion projecting through an opening 30 in the plate 10 and in driving engagement with the teeth 27 of the flange 26. The shaft 29 is journaled in a bearing bracket 31 secured to and depending from the under side of the plate 10, and its outer end is provided with a crank 32, which is disposed in convenient position between two of the legs 4 of the standard.

The seat spindle 23, which is of tubular form, is fixedly attached at its upper end to the frame structure 33 of the seat in any suitable manner, as well understood in the art, and projects down through the member 8, being journaled in the openings 22 in the end caps 21 for free turning movements therein. The tube 23 is provided above the member 8 with a fixed thrust-collar or shoulder 34, which has a thrust bearing against a collar 35 on the top cap member 21, and these thrust collars or shoulders preferably have their coacting surfaces faced with fibre bearing members 36. The lower end edge of the tube 23 is notched to provide ears 37, which are turned out under the lower cap 21 to retain the tube 23 and rack member 8 in assembled relation.

The spiral member 24 is preferably formed from sheet metal, which when flat, as shown in Fig. 6, has a plurality of inclined parallel rib portions 24ª formed therein in such manner that when the blank is rolled into cylindrical form with its end edges meeting, a portion of the adjacent ends of the ribs 24ª will register to provide the interior of the cylinder with a continuous spiral rib having, in the present instance, two full convolutions, as shown in Fig. 8.

Another manner of forming the spiral member is to form a heavy length of wire 38 into spiral form and then to insert this in a tubular shell 39, and fixedly secure it therein by spot-welding or in any other suitable manner. It is apparent that the convolutions of the wire 38 form a thread or engagement with the notches 19 in the rack member 8 in the same manner as shown for the member 24 in Fig. 2.

It is apparent that I have provided a swivel adjusting feature for chairs which is strong and durable in its construction, is easy to operate and noiseless in such operation. It is also apparent that the flanged plates 9 and 10 of the body member provide a rigid bracing feature for the legs and eliminate the necessity of using other bracing means therefor.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes without departing from the spirit of the claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In a device of the class described, a standard having a hollow body member with restricted top and bottom bearings, a rack-bar projected through the body member and mounted in said bearings for longitudinal adjusting movements, a member supporting spindle carried by and rotatably mounted in said rack-bar, a spiral member rotatably mounted within the body member in encircling relation to the rack-bar and having engagement with the latter to impart longitudinal movements thereto when the spiral member is rotated, a flange fixed to and projecting from the lower end of the spiral member and having an annular series of teeth, said flange resting on the lower restricted bearing portion of the body member and means operable from without the body member and having teeth in engagement with the teeth of said flange for rotating the flange and spiral member.

2. In a device of the class described, a standard having a hollow body member provided with restricted bearing openings at top and bottom and provided at its bottom with an annular space, a rack-bar extending through the body member and guided for longitudinal movements by the walls of said openings, an article supporting spindle rotatably mounted in and carried by said rack-bar, a spiral member rotatably mounted in the body member and having an internal spiral engaging the rack-bar to impart longitudinal adjustment thereto when the spiral member is rotated, said spiral member having a flange at its lower end projecting into said space and forming a pinion, and means without the body member, including a crank and pinion, for engaging and imparting rotation to said flange.

3. In a device of the class described, a standard including a tubular body member having an inturned flange at its upper end forming a bearing opening, legs projecting outwardly and downwardly from the body member, means secured to the lower end of the body member and having bracing connection with the under sides of the legs and forming an annular radial space without the lower edge of the body member and also forming a bearing at the lower end of said member, a rack-bar projected through the body member and guided for longitudinal movements by said bearings, a member supporting spindle carried by said bearings, a member supporting spindle carried by and rotatably journaled in said rack-bar, spiral means rotatably mounted in the body member in surrounding relation to

the rack-bar and operable when rotated to effect longitudinal adjustment of the rack-bar, said spiral member having a flange projecting into said space and forming a pinion, and means without said body member having a pinion in engagement with said flange and operable to rotate the flange and spiral member.

4. In a device of the class described, a standard having a tubular body member, supporting legs projecting from said body member, flange means secured to the lower end of the body member and projecting outwardly therefrom in bracing relation to the legs, said flange means having an annular space therein, a tubular rack-bar mounted for longitudinal adjusting movements in said body member, a spiral member mounted in the body member in engagement with the rack bar and rotatable to longitudinally adjust the latter, said spiral member having a flange at its lower end projecting into said space and forming a pinion, crank means, including a pinion, in engagement with said pinion flange and operable to rotate it and the spiral member, and a member supporting spindle rotatably mounted in said rack-bar.

5. In a device of the class described, a standard having a hollow body member, legs fixed to and projecting from said member, a tubular rack bar mounted for longitudinal movements in the body member, a member supporting spindle rotatably mounted in said rack bar, a spiral member rotatably mounted in the body member in encircling relation to the rack-bar with its thread in adjusting engagement with the latter and having a projecting flange at its lower end forming a pinion, a plate on which said flange rests and which has bracing connection with the legs and rack-bar, and means engaging said flange and operable to rotate the spiral member.

6. In a device of the class described, a standard having a hollow body member, legs fixed to and projecting from said member, a rack bar projecting through and guided for longitudinal movements by said body member, a member supporting spindle rotatably mounted in the rack-bar, a plate fixed to and projecting radially from the lower end of the body member, a second plate disposed below said first plate and forming a bearing for the lower end portion of the rack-bar, said plates having their outer edge portions in coaction, means for securing the outer edge portions of the plates together and to the respective legs, a spiral member rotatably mounted in the body member in adjusting engagement with the rack-bar and having a foot portion resting on said second plate, and means in engagement with said foot portion and operable from without the body member for imparting rotation to the spiral member.

7. In a device of the class described, a standard having a hollow body portion forming an internal chamber with restricted upper and lower ends providing bearings, a hollow rack-bar member projecting through said body for non-rotative lengthwise adjusting movements in the upper and lower bearing portions of said body and cooperating with the body to form an annular chamber between said bearings, an article-supporting spindle rotatably mounted in said member with spaced bearings therein and enclosed by the member intermediate said bearings, a spiral member mounted around said rack-bar member within said chamber and having engagement with the rack-bar to effect longitudinal adjustment thereof when the spiral member is turned, and means without the body for rotating the spiral member.

8. In a device of the class described, a standard having a hollow body portion with longitudinally spaced restricted portions forming bearings, a rack-bar member of tubular form projected through said body and being nonrotatably mounted for longitudinal adjustment in the bearing portions thereof, said member having a longitudinally extending toothed portion at one side, a spiral member rotatably mounted in said body and having engagement with the toothed portion of said member, an article-supporting spindle projecting longitudinally through the rack-bar member and having longitudinally spaced bearings therein, and means operable to rotate said spiral member.

9. In a device of the class described, a standard having a tubular body with longitudinally spaced restricted ends forming bearings, said body provided internally at its lower end with an annular radial recess, a tubular rack-bar projected through said body and non-rotatably mounted for longitudinal adjustment in the bearing portions of the body and having an integral notched portion along one side, an article-supporting spindle projecting through and journaled in said rack-bar, a spiral member mounted in said body in engagement with the notched portion of said rack-bar to impart longitudinal movements to the rack-bar when the spiral member is rotated, said member having a radially disposed flange projecting into said recess and resting on the bottom thereof, and means cooperating with said flange and operable to impart rotation to it and the spiral member.

CLEMENT R. UHL.