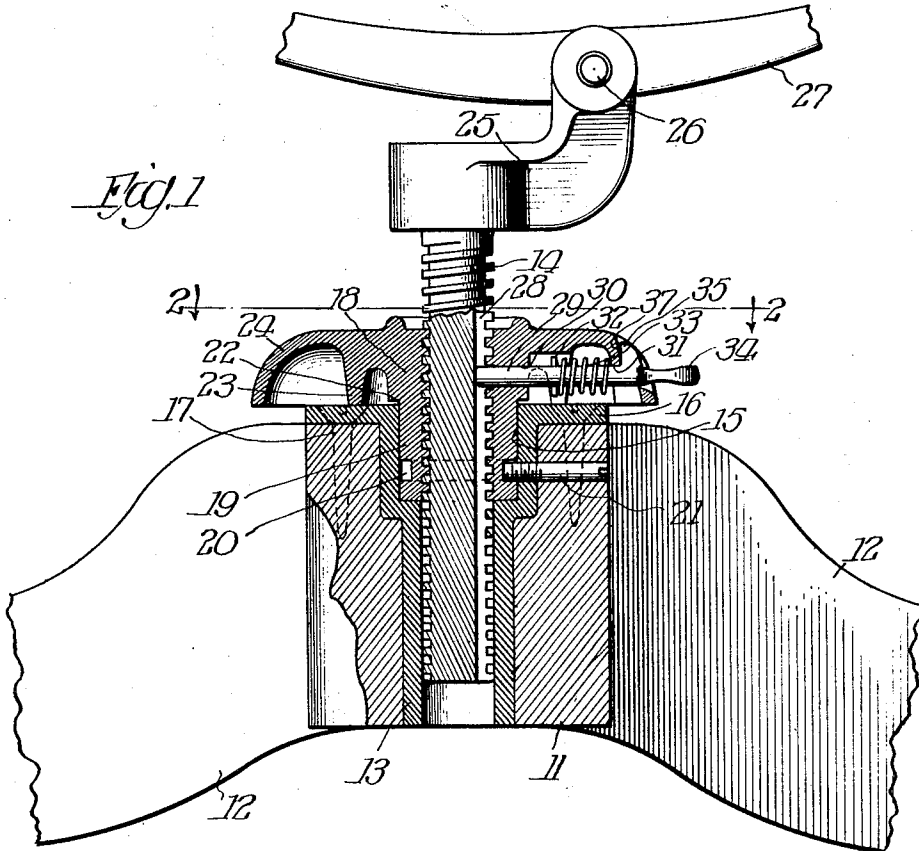
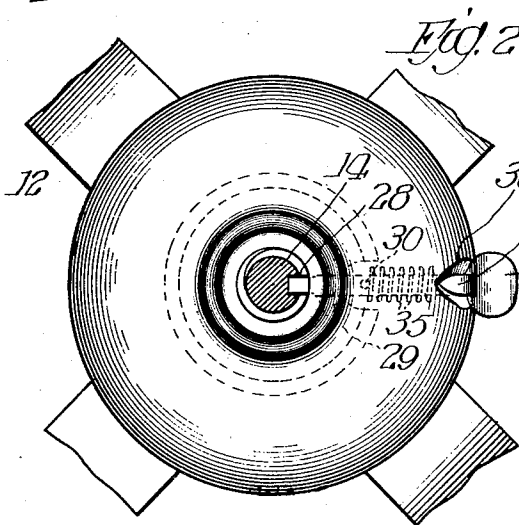
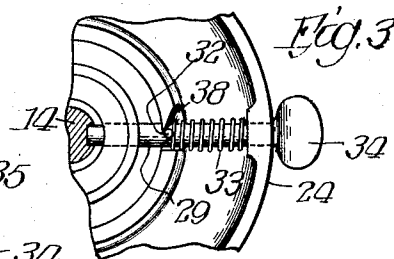
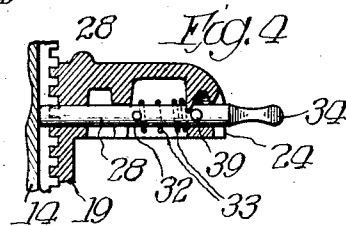


F. H. WESTLAKE, A. HUCK & J. L. ISAACS.
SWIVEL CHAIR IRON.

APPLICATION FILED NOV. 20, 1912.

1,114,418.

Patented Oct. 20, 1914.



Witnesses:

A. B. Barrett

Lewis D. Geist

Inventors
F. H. Westlake
Joel Isaacs
Albert Huck

by *Kirshbaum, Bell & Fuller* Attys

UNITED STATES PATENT OFFICE.

FRANK H. WESTLAKE AND ALBERT HUCK, OF MILWAUKEE, WISCONSIN, AND JOEL L. ISAACS, OF CHICAGO, ILLINOIS, ASSIGNORS TO MILWAUKEE CHAIR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF WISCONSIN.

SWIVEL-CHAIR IRON.

1,114,418.

Specification of Letters Patent.

Patented Oct. 20, 1914.

Application filed November 20, 1912. Serial No. 732,407.

To all whom it may concern:

Be it known that we, FRANK H. WESTLAKE, ALBERT HUCK, and JOEL L. ISAACS, citizens of the United States, FRANK H. WESTLAKE and ALBERT HUCK residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, and JOEL L. ISAACS residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Swivel-Chair Irons, of which the following is a specification.

Our invention relates to chair construction and more particularly to swivel chair irons, having for its object the provision of an improved form of connection between the hand wheel and screw spindle of the chair, which connection shall be readily releasable to permit of the vertical adjustment of the chair.

It is within our knowledge old in this art to provide a disk or similar member having a slidable non-rotatable connection with the spindle, which disk is adapted to engage at intervals with a collar or hand wheel threaded upon a spindle and rotatable on the chair hub. In the forms of construction of which that just described is a type, it is necessary to tip the chair or to stoop in order that the operator may observe the location and condition of the parts to enable him to properly manipulate them. With such constructions and others heretofore used the disadvantage is also present that as the locking members are disposed above the collar or hand wheel and beneath the spider of the chair the distance between the two is required to be sufficiently greater to accommodate such locking device and consequently the range or possible adjustment of the chair is limited and at best the space for the locking member is so cramped and difficult of access as to render its manipulation almost impracticable when the chair is adjusted to its lowest position.

By our improved construction the locking device is confined within the plane of the hand wheel itself so as to permit the chair spider to be lowered even into contact with the upper face of the wheel; furthermore the locking device is manipulated from a point beyond the periphery of the hand wheel and easily accessible; moreover the operation of the parts is so simple and posi-

tive as not to require visual inspection, the operator being able to adjust the height of his chair while sitting in the same.

In order that the construction of the device and its operation may be readily understood, we have in the accompanying drawing illustrated a preferred and modified embodiment of the invention.

In these drawings, Figure 1 is a partial vertical section through the chair hub and locking device showing the adjacent portions of the chair in elevation; Fig. 2 is a horizontal section on the line 2-2 of Fig. 1; Fig. 3 is a fragmentary horizontal section through a modified form of the locking device; and Fig. 4 is a fragmentary vertical section through a further modification.

Referring to the drawings in detail and having particular reference to Figs. 1 and 2, the numeral 11 designates the hub of the chair, to which are attached in any suitable manner the legs 12, this hub shown as having fixed in its central portion a bushing 13 with a stepped cylindrical bore the interior diameter of which throughout its greater length corresponds to the outer diameter of the chair screw spindle 14, while in its upper portion the interior diameter is slightly larger, the inner walls being spaced from said spindle to form a socket 15. Above, the bushing is advantageously flanged outwardly to form a horizontal bearing plate 16, the bushing being fixed in position within the hub by means of screws 17.

The hand wheel designated generally by the numeral 18 has a lower boss 19 which fits within the socket 16 of the bushing and is provided in its lower portion with an annular groove 20 into which takes a set screw 21 mounted within the chair hub and bushing as shown whereby the hand wheel or collar 18 is permitted to rotate freely within the bushing while axial displacement therein is prevented as will be readily understood. The upper portion of the collar is provided with an offset shoulder at 22 and also with an inner flange 23, both of which bear upon the upper face of the plate 16, the collar also being provided with an exterior housing flange 24. The hand wheel is interiorly threaded throughout its vertical extent to cooperate with the thread of the spindle 14

which, in its upper terminal portion carries a bracket 25 to which is pivotally mounted at 26 the spider 27.

The chair spindle is vertically adjusted within the bushing of the hub by the rotation of the collar 18, the turning of the same in one direction serving to lower the screw spindle and the chair super-structure while the turning of the collar in the other direction serves to elevate the spindle as is usual in this class of devices. In order, however, to retain the screw spindle in adjusted vertical relation to the hub while at the same time permitting the free rotation of the spindle and chair superstructure it is necessary to lock the collar to the spindle so that the two will revolve in unison, travel of one upon the other in a helical path by their threaded engagement being prevented, and for this purpose we have devised a locking device of improved construction and arrangement.

A locking detent 29 is mounted for axial and angular movement within bearings 30 and 31 of the boss and outer flange respectively, said detent being transfixed in its medial portion by a pin 32 between which and the inner face of the flange 24 is arranged about the detent a coil spring 33 which serves to normally press the pin inwardly into engagement within the groove 28 of the spindle. The outer end of the pin is provided with a thumb piece 34 and inwardly thereof with a lateral projection or nose 35 which rests within a recess 36 in the outer face of the flange 24, which flange may advantageously be thickened at this point for the accommodation of such recess. The walls of the recess are inclined so as to present a cam face leading from the bottom of the recess at 37 to the outer face of the flange.

It will be readily seen that by grasping the thumb piece 34 the operator may pull the detent radially of the collar, removing its inner end from engagement with the groove and likewise the nose 35 out of the recess 36, and by then giving the detent a quarter turn the nose 35 will rest upon the outer face of the flange 24 thus preventing the return of the detent by means of its spring 33 to its inner engaging position; or by grasping the thumb piece 34 and giving the same a quarter turn the nose 31 will be caused to ride upon the cam face of the recess outwardly until it engages over the outer face of the flange, releasing in either case the engagement between the screw spindle and the collar so that one may be turned independently of the other to elevate or lower the screw spindle in the well known manner. When the proper adjustment is attained a reverse angular movement imparted to the detent through the thumb piece 34 sufficient to bring the nose 35 off the outer face of the

flange onto the cam face of the recess will cause the detent to be snapped back into engaging position by means of the spring 33 drawing the detent inwardly and completing the angular movement of the same by engagement between the nose 35 and the cam face of the recess.

In the form of construction shown in Fig. 3 the principle of operation is the same but here the inner flange 23 is provided with a cam face 38 upon which the pin 32 is adapted to co-act serving a double function as it not only forms the inner abutment for the spring 33, but also performs the function of the nose 35 of the former construction.

In that form of construction shown in Fig. 4 the bearing of the detent 29 within the outer flange 24 is interiorly screw threaded to provide a helical groove within which travels a stud 39 fixed in the detent 29 whereby as the detent is angularly turned by means of the thumb piece 34 said detent is screwed into and out of the flange 24 by the engagement between the stud 39 and the interior thread which merges into the outer face of the flange 24.

In each of the embodiments shown the operation is substantially the same, it being only necessary in order to adjust the height of the chair that the operator reach beneath the chair seat and give a quarter turn to the thumb piece 34 in a clock-wise direction causing the radial retraction of the detent whereupon the chair may be revolved in one or the other direction to raise or lower the same, or the chair remaining stationary it may be raised or lowered by rotating the collar until the desired adjustment is reached. Thereupon the locking detent having been given a slight reverse angular movement so as to bring the nose 31, the pin 32 or the stud 39, as the case may be, into engagement with the cam face a further slight rotation of the collar or of the chair will cause the inner end of the detent to snap into the groove of the spindle locking the parts in adjusted relation.

A further advantage of the invention is found in the form of the hand wheel itself. The engagement of the boss 19 within the socket 15 and the lateral engagement of the inner flange 23 with the face plate 16 gives an extended bearing surface of the said wheel within and upon the bushing of the hub so that the mounting of the spindle and chair superstructure is a stable one and is not, as in most other constructions, dependent upon the close fit of the lower portion of the spindle within the lower portion of the bushing, wherefore it will be found that the chair is substantially as rigid when adjusted to an elevated position as when in its lower position.

While we have herein shown and de-

scribed three embodiments of the invention the same is capable of further modification and the illustration of these embodiments and the description based thereon is not to be taken in a limiting sense.

Furthermore, while we have illustrated the invention as embodied in a chair iron of which the hub is provided with a bushing, it will be understood that where the hub is itself of iron, as is common practice, the bushing may well be omitted and the inner bore of the hub serve directly as the bearing for the spindle, the boss of the hand wheel, and for the lower face of the bearing flange of the latter.

We claim:

1. In a device of the character described, the combination of a chair hub, a longitudinally-grooved rotatable screw spindle carrying the chair, a hand-wheel rotatably mounted on the hub and internally screw threaded receiving said spindle, a detent slidingly and oscillatingly mounted within the plane of the hand wheel for radial and angular movement and adapted to lock the wheel and screw together by engagement with the groove of the latter, a spring pressing the detent inwardly toward locking position, and cam means between the detent and hand-wheel, whereby to convert angular movement of the detent into longitudinal movement to retract the detent from the groove, substantially as described.

2. In a device of the character described, the combination with a chair hub, and a longitudinally grooved rotatable screw spindle

carrying the chair, of a hand wheel comprising a collar rotatably mounted on the hub, a spring locking detent radially mounted within the collar for angular and axial reciprocating movement, the collar provided with a cam face and the detent with a lateral projection coacting therewith, and means to rotate the detent to cause the same to be retracted by the engagement of its projection with the cam face, substantially as described.

3. In a device of the character described, the combination with a chair hub, and a longitudinally grooved rotatable screw spindle carrying the chair, of a hand wheel comprising a collar rotatably mounted on the hub, a locking detent mounted radially within the collar for axial and angular movement, a spring normally pressing the detent inwardly into engagement with the groove, the collar provided with a flange having a cam face, the detent having a nose projecting laterally adjacent the cam face, and the detent provided with means to rotate the same to cause the nose to ride up the cam face on to the flange whereby to convert the angular movement of the detent into a longitudinal movement to retract the same from the groove, substantially as described.

F. H. WESTLAKE.
ALBERT HUCK.
JOEL L. ISAACS.

Witnesses:

CHAS. KIRCHHAHN,
GEORGE BAUER.