

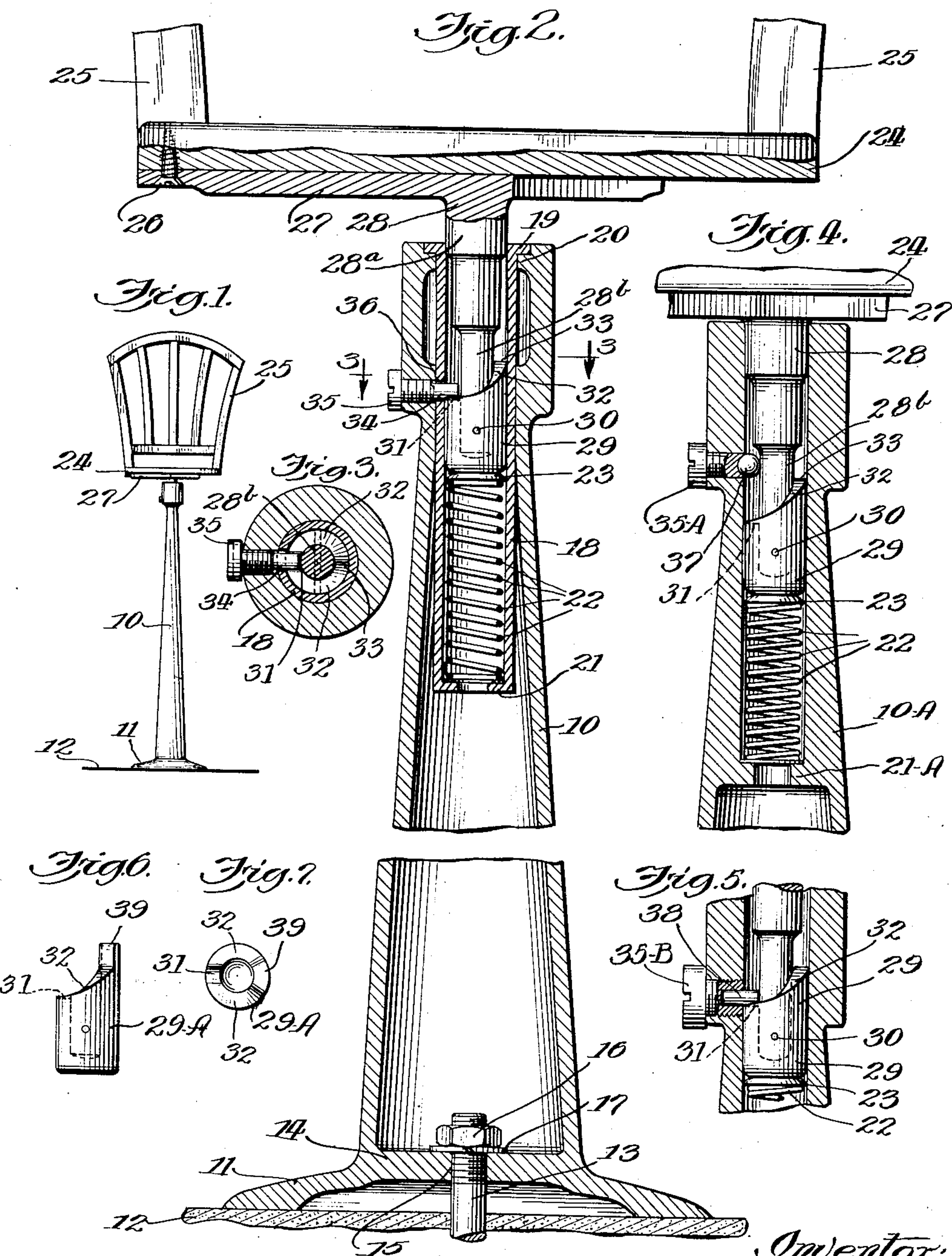
Feb. 14, 1933.

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1,897,676

STOOL

Filed Feb. 11, 1931



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UNITED STATES PATENT OFFICE

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STOOL

Application filed February 11, 1931. Serial No. 514,980.

My invention relates to stools such as are used at lunch counters, soda fountains, etc.; the invention contemplating the provision of a stool including improved, sturdy and simplified mechanism for accomplishing automatic return of the seat to a predetermined position when unoccupied.

Stools of the type to which my invention relates commonly are provided with rotary seats having back rests. For the sake of appearance, and also for the convenience of the users of the stools, it is desirable that the seat of each stool, when unoccupied, automatically return to a position wherein its back rest has a certain predetermined angular relationship to the counter or soda fountain with which the stool is associated.

One of the objects of my invention is to provide a stool wherein the mechanism for accomplishing automatic seat return comprises a minimum number of moving parts, all of which are located within, concealed and protected by the stool standard.

Another object of the invention is to provide a stool having its seat return mechanism constructed and arranged automatically to compensate for wear between those of its parts which are subjected to wear in normal use.

Another object of the invention is to provide a stool seat return mechanism wherein those parts which are subjected to wear readily may be removed from the assembly for inspection, replacement or repair.

Another object of the invention is to provide a stool having automatic seat return mechanism which does not in any way interfere with the free rotation of the seat when the stool is occupied.

Another object of the invention is to provide a stool wherein the weight of the occupant is carried on a spring forming part of the seat return mechanism.

Another object of the invention is to provide a seat return mechanism which readily may be applied to stools now in use.

A further object of the invention is to provide a stool, having a hollow standard, which is so constructed and arranged that the standard may be fastened in position by a bolt ex-

tending freely through an aperture in its base portion, said bolt cooperating with a nut which may be applied by a long handled wrench inserted through the top of the hollow standard.

Other objects, features and advantages of the present invention will appear during the progress of the following detailed description, wherein reference is made to the accompanying drawing, in which

Figure 1 is a front elevational view of a stool which may embody the improvements of the present invention;

Figure 2 is a vertical axial sectional view of the same, certain parts of the standard and the back rest of the seat being broken away to conserve space in illustration;

Figure 3 is a horizontal sectional view which may be regarded as taken on the line 3—3 of Figure 2 and looking in the direction indicated by the arrows;

Figure 4 is a view somewhat similar to Figure 2 illustrating a modified embodiment of the present invention, the seat in this figure being shown in the depressed position which it assumes when occupied;

Figure 5 is a fragmentary sectional view illustrating another modification of the arrangement shown in Figure 4;

Figure 6 is an isolated elevational view of a style of seat post cam which may be employed, in the combinations of Figures 2, 4 or 5, whenever it is desired to limit the rotary movement of the stool seat to less than 360 degrees; and

Figure 7 is a top plan view of the cam shown in Figure 6.

Similar characters of reference refer to similar parts throughout the several views.

Referring first to Figures 1 to 3 inclusive, the stool there illustrated includes a standard consisting of a hollow vertically disposed casting 10, provided with a base flange or foot portion 11 adapted to rest upon the floor 12, which usually will be formed wholly or partially of concrete or some other initially plastic composition, in which an upwardly extending stud bolt 13 may be embedded. As illustrated in the drawing, the hollow standard 10 is provided with a bottom web or end

closure 14 through an opening 15 of which the stud bolt 13 freely extends, the base flange of the standard being clamped tightly to the floor by a nut 16 with which may be associated a lock washer 17, if desired.

One of the features of the stool construction illustrated in Figures 1 to 3 is that it permits the use of a stud bolt and nut as the means for attaching the standard to the floor. At the time the nut 16 is applied to the stud bolt, as shown in Figure 2, the hereinafter mentioned sleeve and parts carried thereby are missing from the upper part of the standard, thus affording an unobstructed passage from the top of the standard down to the stud bolt 13, through which passage a long handled wrench may be applied for the purpose of threading the nut 16 upon the stud bolt. This is a decided improvement over those stools now in use which are held to the floor by twisting the base web of the standard into threaded engagement with a stud bolt. In these last mentioned constructions it frequently happens that the base flange of the standard tightens down on the floor when the standard is in such position that its seat return mechanism will not function normally to hold the seat at the desired position with respect to an associated counter or the like. In such cases it has been necessary to unscrew the standard from the stud bolt, readjust the stud bolt in the floor and then again thread the standard on the stud bolt, this operation being repeated until the stud bolt functions to hold the standard in precisely the position required.

Located within the upper part of the standard 10 is a removable cylindrical sleeve 18 provided at its upper end with an external annular flange 19 lying flush with the upper end of the standard and resting upon an internal annular shoulder formed on the standard. The sleeve 18 is provided at its lower end with an internal annular shoulder 21 against which bears the lower end of a coil spring 22, the upper end of which may engage in a concavo-convex washer 23 having its convex surface upwardly presented.

The stool seat indicated at 24 is provided with a back rest 25. The present invention, of course, is primarily concerned with devices for turning the seat, when unoccupied, to such a position that the back rest 25 will lie with a predetermined degree of angularity with respect to a counter or the like with which the stool is associated.

The seat 24 is suitably secured, as for instance by screws, one of which is shown at 26, to a seat spider 27 which carries as an integral part thereof a seat post 28 which extends into the upper end of the sleeve 18 of the standard. The seat post preferably is graduated in diameter from top to bottom, its upper portion 28—*a* being snugly fitted in the upper end of the sleeve 18 for both rotary

and axial movement therein. The lowermost portion of the seat post, indicated at 28—*b*, is considerably less in diameter than the inside of the sleeve 18, so that it may receive and carry a cylindrical cam element 29, which is snugly fitted within the sleeve 18 for rotary and axial movement therein.

The cam element 29, which is conveniently secured to the seat post portion 28—*b* by a pin 30, is provided with an upwardly presented cam surface comprising the lowermost portion 31 which may be a flat portion, or preferably slightly recessed portion as shown, and the portions 32—32 which curve upwardly and away from the flat or depressed portion 31 to a point 33, which preferably lies 180 degrees away from the said flat or depressed portion 31.

The standard carries an abutment for the upwardly presented cam surface comprising the portions 31, 32—32 and the point 33 aforesaid, this abutment being in the form of a cylindrical inner end 34 of a screw 35 which is threaded into the standard as shown, and which has its cylindrical end 34 extended through an aperture 36 in the sleeve 18. The screw 35, or more exactly, the inner cylindrical end thereof, therefore not only constitutes a follower or abutment for the cam 29, but also constitutes a means for preventing withdrawal of the sleeve 18 from the standard.

Normally with the stool seat unoccupied, the several parts will occupy the respective positions shown in Figure 2, the end 34 of the screw 35 in this instance occupying the portion 31 of the upper surface of the cam, and the seat back 25 having that angularity with respect to the counter or the like which is desired. When the stool seat is occupied, the seat is depressed against the pressure of spring 22 until the seat spider 27 lies closely adjacent the upper end of the standard, the distance between these parts when the seat is occupied of course depending upon the weight of the user of the stool and/or that part of his weight which may be thrown upon the stool seat.

The spring 22, however, is preferably so constructed that in ordinary use the cam 29 will be depressed so that its point 33 falls below the pin 34. Under these circumstances, the stool post and the seat carried thereby may be freely rotated to accommodate the user. However, when the seat becomes unoccupied, assuming that in use the seat has been rotated from the position shown in Figure 2, one or the other of the portions 32 of the upper surface of the cam engages the pin 34 as the cam, seat post and seat move upwardly under the pressure of the spring 22. As a result of this engagement between the cam and the pin, the cam and consequently the seat post and the seat are promptly rotated to the position shown in Figure 2, that is, to the position where the cylindrical end

of the screw 35 occupies the lowermost point on the upper surface of the cam.

The point 33 presented by the convergence of the portions 32—32 of the upper surface of the cam preferably is quite sharp, so that there will be no likelihood of the stool seat remaining in a position 180 degrees from its normal position as shown, if perchance the occupant of the stool should leave it after rotating it precisely 180 degrees from the normal position.

It will be understood, of course, that the degree of swiftness with which the seat is returned to its normal position as herein explained will be determined by energy stored in the spring 22, and will depend upon the configuration of the upper surface of the cam 29. I prefer to so shape the portions 32—32 of the cam that the return movement of the seat is quite gentle, but nevertheless positive.

In the modified form of my invention illustrated in Figure 4, I dispense with the sleeve 18 of the preceding figures and locate the spring 22, the cam 29 and the seat post within a bore of the standard casting indicated at 10—A. When this construction is employed, the standard is provided with an annular shoulder 21—A to serve as an abutment for the lower end of the spring.

That form of the invention shown in Figure 4 also comprises a modified form of abutment or a follower for cooperation with the upper surface of the cam. In this instance, the follower is in the form of a metal ball 37 partially embraced by a semi-spherical depression in the inner end of screw 35—A which is threaded into the standard casting as shown. The ball 37 is prevented from escaping from the embrace of the screw due to its rolling engagement with the portion 33 of the seat post.

The operation of the arrangement shown in Figure 4 is practically the same as the operation of the arrangement shown in the preceding figures, except that in the arrangement of Figure 4 the abutment or follower for the cam is in the form of a ball which is free to rotate with respect to each of the elements which it engages, to-wit: the screw 35—A, the upper surface of the cam 29 and the portion 33 of the seat post.

In the further modified construction illustrated in Figure 5, the abutment or follower for the cam 29 is in the form of a cylindrical pin or roller 38 which is supported in a blind bore in the standard carried screw 35—B. The pin or roller 38 of course has rolling engagement with the screw 35—B and the upper surface of the cam, but does not have rolling engagement with the seat post portion 33, as is the case when the spherical type of cam follower, as shown in Figure 4, is employed.

In Figures 6 and 7 I have shown a modified form of cam, indicated at 29—A, which may

be substituted for the cam 29 of Figures 2, 4 and 5 whenever it is desired to limit the rotary movement of the seat to less than 360 degrees. In this type of cam the surfaces 32—32 do not meet to form a point, but turn upwardly in lines parallel with but spaced from each other to provide a stop lug 39, which preferably is extended upwardly an amount sufficient to insure that it will not fall below the plane of the abutment or cam follower, even when the seat is depressed to its lowermost position under the weight of an occupant. Of course, the number of degrees to which the seat may be rotated in either direction from normal will be determined by the width of the stop lug 39.

It will be observed that in each of the herein described embodiments of my invention, all of the elements of the seat return mechanism are readily accessible for inspection, replacement or repair simply by the removal of the screws 35, 35—A or 35—B, as the case may be. Practically the only parts of the mechanism which are subjected to any wear in the use of the stool are the cam and its abutment. Any ordinary amount of wear between these parts automatically will be taken up by the spring 22.

Having thus illustrated and described a preferred form and several modified forms of my invention, I wish to have it understood that I do not limit myself to the precise arrangement and construction of parts herein shown and described.

What I claim is new and desire to secure by Letters Patent of the United States, is:

1. In a stool of the class described, a standard provided at its upper end with a cylindrical passage to receive a seat post, a seat provided with a seat post extending into said standard, said seat post being provided with an upper cylindrical portion fitting the standard for rotary and axial movement therein, said seat post being provided with a lower portion of reduced diameter, a cam element fixed upon the reduced lower end of the seat post, said cam element fitting the cylindrical passage in the standard for axial and rotary movement therein and provided with an upwardly presented cam surface, an abutment for said cam carried by the standard, spring means located within the standard and adapted to be compressed by movement of said seat post into the standard when the seat is occupied, and effective when the seat is unoccupied to force said cam surface into engagement with said abutment to return said seat to a predetermined position.

2. In a stool of the class described, a hollow standard provided with a top opening; a seat support and return mechanism insertable as a unit into said standard, said unit comprising a cylindrical sleeve formed at its lower end with an internal shoulder constituting a spring support, a spring within said

sleeve abutting said internal shoulder, a seat post extending into said sleeve in contact with said spring, the said seat post provided with an upper cylindrical bearing surface capable of rotary and axial movement in said sleeve, said seat post having a portion of reduced diameter to define an annular cam surface therearound, means for retaining said cylindrical sleeve within the hollow standard, said means comprising a detent extending through said standard and sleeve into engagement with the aforesaid cam surface whereby the force exerted by said spring upon the seat post will tend to rotate said seat post to a position in which the detent engages the lower-most point of the cam surface.

3. In a stool of the class described, a hollow standard provided with a top opening; a seat support and return mechanism insertable as a unit into said standard, said unit comprising a cylindrical sleeve provided at its upper end with an external shoulder adapted to engage the top of the standard and at its lower end with an internal shoulder constituting a spring support, a seat post extending into said sleeve and provided with an upper cylindrical bearing surface capable of rotary and axial movement in said sleeve, said seat post having a lower end of reduced diameter, a hollow cylindrical cam member receiving and fastened to the reduced lower end of the seat post, said cylindrical cam member fitting the sleeve for axial and rotary movements therein, said cam being provided with camming surfaces at its upper end, a compression spring acting between the cam member and the internal shoulder of said sleeve; registering openings in the standard and sleeve, and means for holding the aforesaid unit in the standard comprising a screw threaded into the said standard opening and projecting through the said sleeve opening to constitute an abutment for the camming surfaces of the said cylindrical cam member.

In witness whereof, I hereunto subscribe my name this 9th day of February, 1931.

EARLE R. RIES.

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