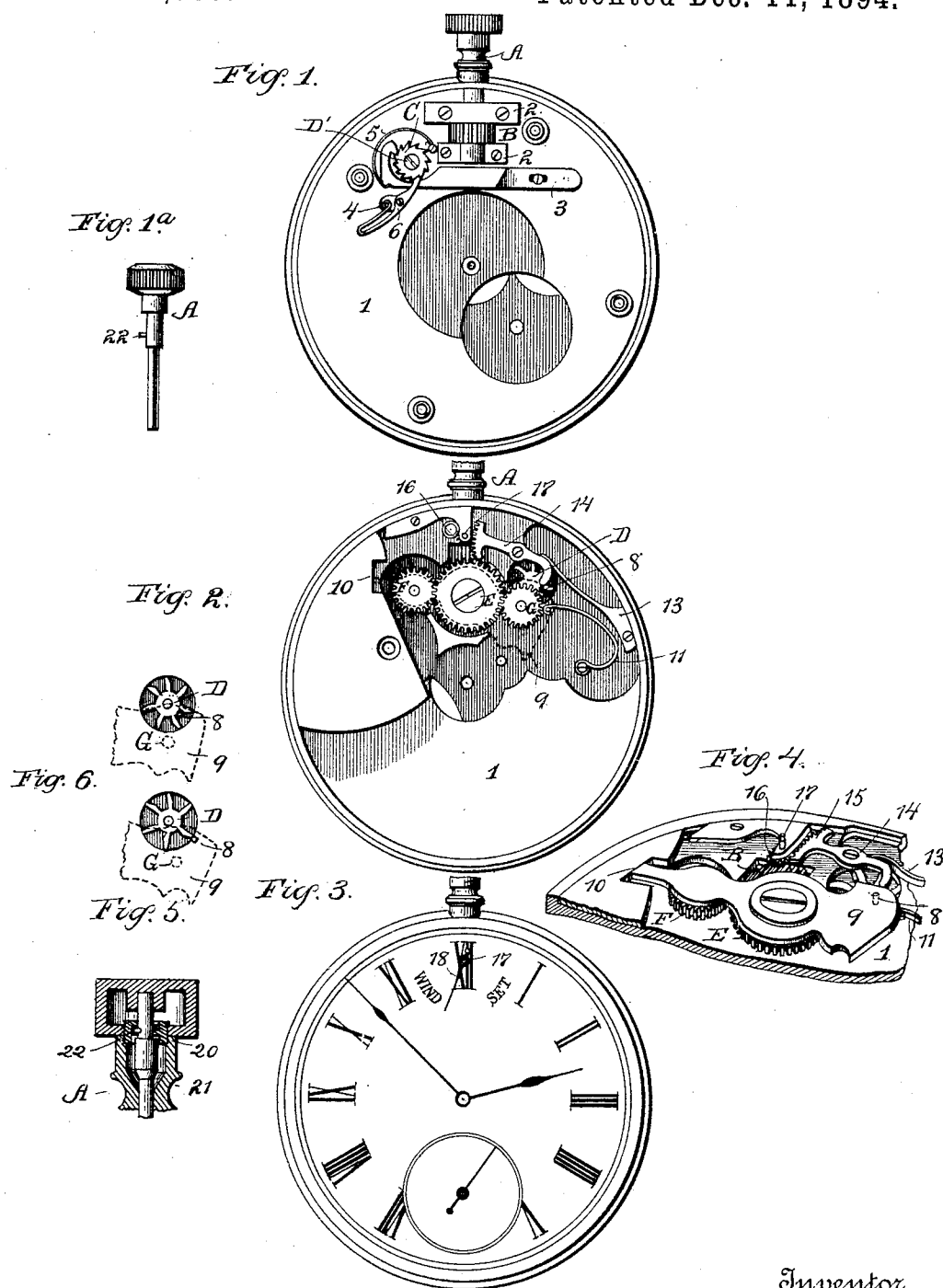


(No Model.)

J. L. HUTCHINSON.  
WATCH.

No. 530,530.

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# UNITED STATES PATENT OFFICE.

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## WATCH.

SPECIFICATION forming part of Letters Patent No. 530,530, dated December 11, 1894.

Application filed April 19, 1894. Serial No. 508,105. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. HUTCHINSON, a citizen of the United States, residing at La Porte, in the county of La Porte and State of Indiana, have invented certain new and useful Improvements in Watches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in watches, and particularly to improvements in that class thereof known as "pendent set" watches, wherein the yoke bearing the intermediate gears requisite to place either the winding or setting trains in gear with the winding pinion is shifted from the winding to the setting position, and vice versa, by mechanism actuated by the longitudinal movement of the watch stem, and it consists in an improved means for throwing the winding and setting trains into or out of gear with the winding arbor and cannon pinion, and for indicating on the dial of the watch whether the winding or the setting train is in gear with said arbor or pinion, which will be hereinafter fully described and particularly pointed out in the claims.

In pendent set watches, it is customary to support the crown wheel, which is in gear with the winding pinion and transmits the movement of the stem to the winding and setting trains, the setting wheel, and the intermediate winding wheel upon a pivoted yoke, and to move said yoke into the two positions it may assume, *i. e.*, that in which the winding train is in gear with the winding arbor, and that in which the setting train is in position to turn and set the hands, by means of a pin or lever, connected with the longitudinally movable watch stem and engaging with the yoke through a cam shaped slot cut in the pillar plate of the watch. The longitudinal movement of the stem to place the setting train in position for operation has usually been outward, and the position of the yoke bearing the intermediate gear wheels has been determined solely by the position of the stem, no indication of the position of such yoke upon the watch dial having been given.

The object of my invention is to provide means for effecting the change in position of

the yoke bearing the intermediate gear wheels which aid to place either the winding or the setting train in gear for its respective work, in such a manner as to make the position which said yoke occupies entirely independent of the position of the longitudinally movable stem, although moved from one position to the other by means of such stem. I also aim to provide means for indicating on the dial of the watch the position of the yoke bearing the intermediate gear wheels, and thus enable the person using the watch to observe at a glance whether the winding or the setting train is in position. In this manner I provide a movement which, while provided with all safeguards, to prevent mistake, is simple in construction and easy in operation.

In the accomplishment of the objects of my invention, I employ, in common with the general custom, a pivoted yoke bearing the intermediate gears requisite to place the winding and setting trains in gear with the winding arbor or the intermediate wheel in gear with the cannon pinion, but I effect the pivotal movement of said yoke, not by mechanism directly connected to the longitudinally movable stem, but by mechanism which, while actuated by depression of said stem, is entirely independent of the same. A pin, projecting from the yoke bearing the intermediate gears, is made to engage with the teeth of a spur wheel in such a manner as, when lying between two teeth of said spur wheel, to hold the yoke with which it is integral in such a position that the winding train is in gear, but when resting on top of a tooth of said spur wheel to hold said yoke so that the setting train will be in gear. The spur wheel is rotated by the rotation of a ratchet wheel mounted upon the same arbor, and this ratchet wheel is in turn rotated by a pivoted lever, which is moved so as to turn the ratchet wheel by the depression of the watch stem. The ratchet wheel has twice as many teeth as the spur wheel, so that it requires two distinct movements of the ratchet wheel to move the spur wheel one tooth. One depression of the watch stem moves the ratchet sufficiently to place the setting train in gear, and another distinct depression of said stem is required to again place the winding train in gear. The position of said yoke is thus entirely inde-

pendent of the longitudinally movable stem. Through the action of a pivoted lever, one end of which is constantly pressed against the yoke by the action of a suitable spring, and the other end of which is formed with a segmental gear which actuates an indicating hand on the watch dial, the position of the yoke bearing the intermediate gears is indicated on the dial of the watch, and one can tell by a glance at the dial whether the winding or the setting train is in gear.

My invention is fully described in the drawings accompanying and forming a part of this application, in which the same reference letters and numerals refer to the same or corresponding parts, and in which—

Figure 1 is a view of the pillar plate of my watch, looking from the side on which the works are situated, and showing the longitudinally movable stem, the winding pinion, the pivoted lever operated by the depression of the stem, and the ratchet wheel with which the hooked end of the said lever engages, and which is mounted upon the same arbor as the spur wheel which determines the position of the yoke bearing the intermediate gears. Fig. 1<sup>a</sup> is a detail view of the watch stem. Fig. 2 is a view of the pillar plate looking from the dial side, and shows the pivoted yoke (in outline) bearing the crown wheel, the setting wheel, and the intermediate winding wheel, the spur wheel by means of which the movement of the ratchet wheel shown in Fig. 1 is transmitted to the pivoted yoke, the segmental gear by means of which the position of the pivoted yoke is indicated on the watch dial, and various springs which insure the proper action of the parts. Fig. 3 is a view showing the dial plate of a watch, with the indicating hand thereon which indicates the position of the yoke bearing the gears intermediate between the winding and setting train and the winding pinion. Fig. 4 is a detail figure, showing the mechanism by means of which the movement of said hand is insured. Fig. 5 is a detail view of the watch pendant, showing the means adopted for preventing accidental depression of the watch stem. Fig. 6 is a detail view of the spur wheel D, and the pin for operating the same.

Referring to the drawings, 1 indicates the pillar plate of a watch.

B is the winding pinion, it being held in position by the bridges 2.

A is the watch stem, and, as is shown in Fig. 1<sup>a</sup>, its lower end is squared to fit the square aperture formed in the winding pinion, and is of sufficient length to permit the stem to be depressed, so that its lower end will operate the pivoted lever 3, one end of which is extended upward to partially encircle the ratchet wheel C. The lever 3 is of considerable length, it being pivoted on one side of the winding pinion, being struck by the stem A at about the middle portion of its length, and engaging with its other end, as aforesaid, with the ratchet C. The downward move-

ment of said lever is sufficient to cause the ratchet wheel to move one tooth, the downward movement being checked by the stop 4, and the lever being drawn upward as soon as the stem is drawn upward by the spring 5. Click 6 prevents the ratchet from being turned by such upward movement of the lever.

On the dial side of the pillar plate, integral with the arbor D' upon the squared end of which the ratchet C is mounted, and thus moving with the movement of the said ratchet, is the spur wheel D, the teeth of which have one side curved and the other straight, as shown in Fig. 2. This spur wheel has but half as many teeth as the ratchet C, so that it requires two movements of the ratchet to move the spur wheel one tooth. Upon the surfaces of the teeth of the spur wheel D rides the pin 8, which is integral with the pivoted yoke 9. Upon this yoke are mounted the crown wheel E, the intermediate winding wheel F, and the setting wheel G, and the yoke is so placed on the pillar plate that when in one position the winding train will be in gear with the winding arbor, and when in its other position the setting train will be in gear with the intermediate wheel in gear with the cannon pinion, the yoke having but two positions, and the extent of its pivotal movement being limited by the slot 10 cut in the pillar plate, in which moves an extension of said yoke. When the pin 8 is between the teeth of the spur wheel D, the yoke is in the position shown in Fig. 2, with the winding train in gear; but when the wheel is turned half a tooth, so that the pin 8 rides up on the face of one of such teeth and rests on the top of the same, which is the position into which it is forced by turning ratchet wheel C one tooth, the winding train is thrown out of gear and the setting train in gear. Thus the position of the yoke 9 is determined by the movement of the spur wheel D. A spring 11 bears upon said yoke and tends to force it upward, so that after the pin 8 passes the top of the teeth of the spur wheel D, the yoke will be quickly drawn into its normal position with the winding train in gear.

From the description of the movement as thus far given, it is apparent that upon pressing the stem A, the pivoted lever 3 is depressed, the ratchet C rotated one tooth, and the spur wheel D rotated half a tooth, thus throwing the winding train out of gear, and placing the setting train in gear, the said train being locked in the position it then assumes until a further movement of the ratchet C, which can only take place by the depression of the stem A. In order that a person setting his watch may not neglect to replace the winding train in position after he has set the hands of the watch, it is necessary to provide means for indicating the position of the yoke bearing the gears intermediate of the winding and setting trains upon the dial of the watch, and this I provide in the pivoted lever 14 and the parts operated in connection therewith. This lever is pivoted just above the yoke 9,

and one of its ends is forced into continual contact with the upper surface of said yoke by the spring 13, the fixed end of which is secured to the pillar plate. The other end of the lever 14 is enlarged, and upon it is formed a segmental gear 15, which meshes with the pinion 16. This pinion is mounted upon the pin 17, which extends through to the other side of the dial plate and forms the arbor for the indicating hand 18. Upon the dial of the watch, as shown in Fig. 3, are marked the positions which the indicating hand assumes when the winding train is in gear and when the setting train is in gear; and as the position of the hand must correspond to the position of the yoke 9, it is apparent that the indication afforded thereby is precise and accurate.

The operation of the movement is as follows: Normally the winding train is in gear, and the yoke 9 is in the position shown in Fig. 2. When it is desired to set the hands of the watch, the stem is depressed, and thereby the pivoted lever 3 is depressed to the limit of the movement allowed by the stop 4, and its hooked end, engaging with the teeth of the ratchet C, moves said ratchet one tooth, the pivoted lever rising and engaging with another tooth of the ratchet as soon as the stem is moved upward. By the rotation of the ratchet C, the spur wheel is moved half a tooth, so that the pin 8 moves up the inclined surface of the same and causes the pivoted yoke 9 to turn and place the setting train in gear. The movement of the yoke is indicated on the dial of the watch through the medium of the segmental gear 15 and the pinion 17, by the indicating hand 18, which moves in the position marked "set" on the dial. The hands may now be set. To replace the winding train in gear, the stem needs to be again depressed, thereby causing the rotation of the ratchet C, and the further movement of the spur wheel D, which allows the pin to fall between two teeth of the same and the yoke 9 to turn so that the winding train may be in gear.

In order that the stem may not be moved downward through accident, a locking device is provided which consists of the disk 20, externally screw threaded to permit it being screwed into the top of the pendant 21, and internally screw threaded or an angular slot cut to allow for the engagement of the lug 22 formed on the watch stem. It is only after the stem has been turned by partial turn of the crown that said lug passes inside the locking disk, when for the first time the longitudinal movement of the stem arbor requisite to operate the ratchet wheel is permitted.

It is obvious that minor changes in construction can be made without departing from the spirit and scope of my invention. Thus spur wheel D may be placed upon the same side of the pillar plate as the ratchet C, this necessitating merely lengthening pin 8, and different forms of locking devices for prevent-

ing the accidental operation of the movement may be made. These changes, however, are merely in details of construction, and do not affect the merits of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a watch movement, the combination with the winding and the setting trains, and a pivoted yoke having mounted thereon a crown wheel, adapted to be revolved by the winding pinion, and in gear therewith a setting wheel and an intermediate winding wheel adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, of means operated by the longitudinal movement of the watch stem in one direction, but independent of the movement of the same in the opposite direction, for effecting both the movements of the pivoted yoke, substantially as described.

2. In a watch movement, the combination with the winding and setting trains, of a pivoted yoke having mounted thereon a crown wheel, adapted to be revolved by the winding pinion, and in gear therewith a setting wheel and an intermediate winding wheel, adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, a pin projecting from said yoke, a spur wheel engaged by said pin, whereby the position of the pivoted yoke and gears borne thereon is determined by whether the pin lies between the teeth of the spur gear or is riding upon said teeth, and means, operated by the longitudinal movement of the stem, but independent of the position of the same, for actuating said spur wheel, substantially as described.

3. In a watch movement, the combination with the winding and setting trains, of a pivoted yoke having mounted thereon a crown wheel, adapted to be revolved by the winding pinion, and in gear therewith a setting wheel and an intermediate winding wheel, adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, a pin projecting from said yoke, a spur wheel engaged by said pin, whereby the position of the pivoted yoke and gears borne thereon is determined by whether the pin lies between the teeth of the spur wheel or whether it is riding upon said teeth, a ratchet wheel mounted upon the same arbor as the spur wheel, and having twice as many teeth as said spur wheel, and a pivoted lever adapted to be depressed by the downward movement of the watch stem, and by such depression to move the ratchet wheel one tooth, and thereby the spur wheel one half a tooth, thereby changing the position of the pivoted yoke, substantially as described.

4. In a watch movement, the combination with the winding and setting trains, of intermediate gear wheels in gear with the winding pinion, and adapted to be thrown into or out of gear with said trains, and means for indi-

cating on the dial of the watch which train is in gear with the winding pinion, substantially as described.

5 5. In a watch movement, the combination with the winding and setting trains, and a pivoted yoke having mounted thereon a crown wheel, adapted to be revolved by the winding pinion, and in gear therewith a setting wheel  
10 and an intermediate winding wheel, adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, of means for indicating on the dial of the watch the position of said yoke, substantially as described.

15 6. In a watch movement, the combination with the winding and setting trains, and a pivoted yoke having mounted thereon a crown

wheel adapted to be revolved by the winding pinion, and in gear therewith a setting wheel and an intermediate winding wheel, adapted 20 to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, of a pivoted lever having one end held continuously pressed against said yoke, and formed at its other end and with a seg- 25 mental gear which meshes with a pinion mounted upon a pin bearing an indicating hand, substantially as described.

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

JOHN L. HUTCHINSON.

Witnesses:

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J. C. NORTHWAY.