(No Model.)

N. JENSEN.

STOP WATCH.

No. 458,460. Patented Aug. 25, 1891.

Fig. 1.

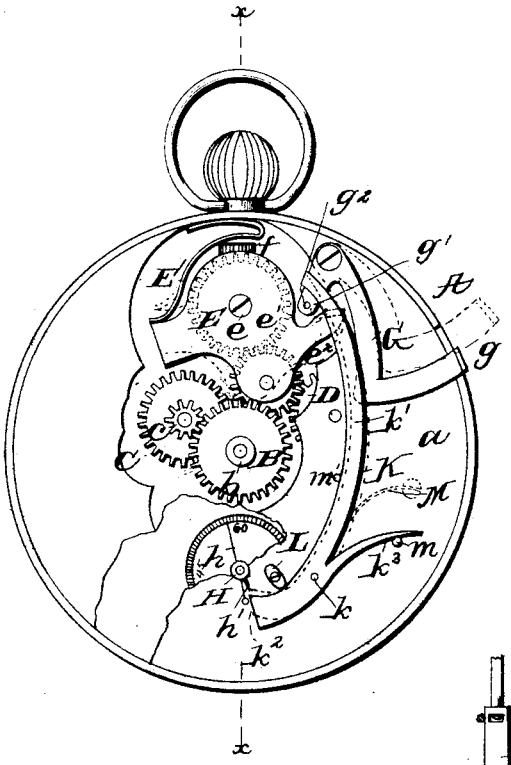


Fig. 3.

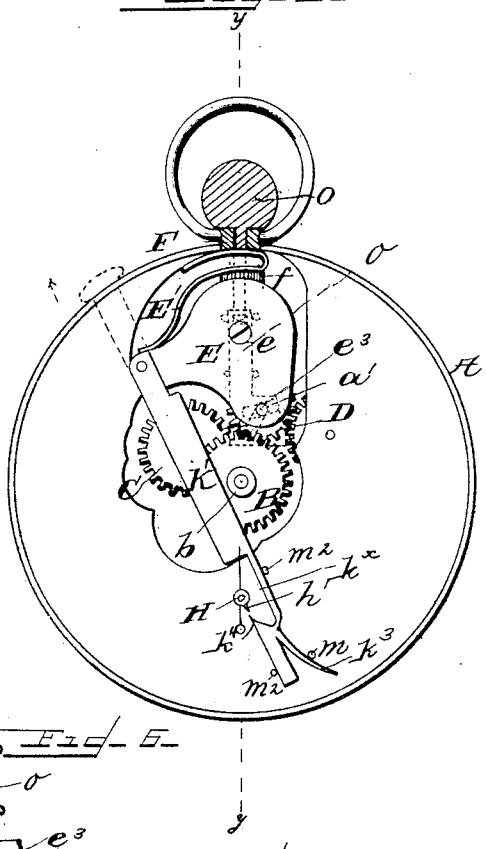


Fig. 6.

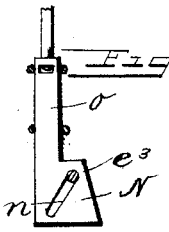


Fig. 2.

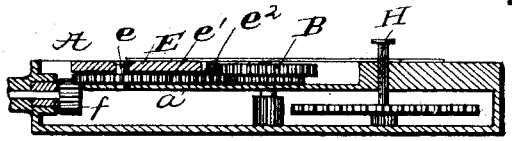


Fig. 4.

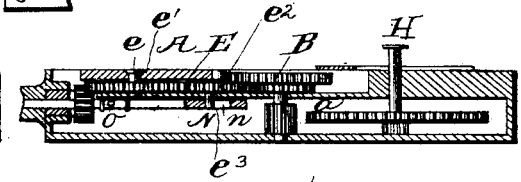
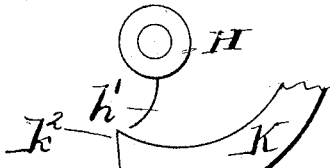


Fig. 5.



Witnesses

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STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 458,460, dated August 25, 1891.

Application filed April 16, 1891. Serial No. 389,183. (No model.)

To all whom it may concern:

Be it known that I, NICHOLAY JENSEN, a citizen of the United States, residing at Washington, in the District of Columbia, 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 is an improvement in watches; and it consists in the novel features of construction and combination of parts hereinafter fully described.

In the accompanying drawings I have illustrated two forms in which I have contemplated embodying my invention, and the same is fully disclosed in the following description and claims.

Referring to said drawings, Figure 1 represents a top plan view of a watch provided with my improvement, part of the dial being removed to show parts located beneath. Fig. 2 is a section on line x x, Fig. 1. Fig. 3 is a top plan view of a watch with the dial removed, showing a slightly-modified construction. Fig. 4 is a section on line y y, Fig. 3. Figs. 5 and 6 are details of parts of the mechanism.

The object of my invention is to provide means for arresting the movement of the seconds-hand of a watch at a predetermined point in the course of its movement around the dial and stopping the watch-movement, thus permitting the hands of the watch to be set without injury to the movement and enabling the minute-hand and seconds-hand to be readily set in proper relation to each other. This mechanism can be operated by means of an operating lever or rod extending to the outside of the casing; but I have shown my invention applied to stem-winding lever or pendent-set watches, and I attach my improved device in such a manner that the simple drawing out of the lever or crown, as the case may be, will throw into operation the means for arresting the seconds-hand and stop the watch, while at the same time throwing the setting mechanism into gear. The seconds-hand will then continue to traverse its dial until it reaches the predetermined point, which is preferably 60, and will then be arrested and the watch stopped while the watch is set. As soon as the watch has been set the lever or crown is restored to its normal position, and this releases the device for arresting the seconds-hand and permits the watch to resume its movement.

In the drawings, A represents the movement of a watch, to which the operating parts are secured, a being the plate or platen lying beneath the dial.

B is the hour-hand wheel, having the sleeve b to receive the hour-hand.

c is a small pinion in gear with the pinion B, and a larger wheel C is secured to rotate with the pinion c and is in position to be engaged by the operating devices for setting the watch. I term the pinions B, C, and c the "dial-train."

D is a wheel forming a part of the winding devices, which constitute no part of my invention and may be of any desired form.

E is the yoke, pivoted at e and provided with gears e' and e^2 for transmitting motion from a pinion f on a revolving sleeve F, which is engaged by the winding-stem attached to the crown to either the setting or winding gears, according to the position of said pivoted yoke. The yoke is held in normal position by a spring E′ with the gear e^2 in engagement with the winding-gear D, as shown in the drawings. A pivoted lever G, which I term the "setting-lever," is provided with an arm g, which extends without the watch-casing, and a short arm g', which extends into a position to engage a projection from the yoke E and move it against the force of its spring when the setting-lever is drawn out, so as to move the gear e^2 into engagement with the dial-train and out of engagement with the winding devices.

H is the seconds-hand staff, and h the seconds-hand of any usual or preferred construction.

The parts just described do not form part of my invention, but are described in order to show the application of my device to and their co-operation with the parts of an ordinary watch, and it will be obvious that by slightly varying the details of construction my devices can be applied to watches of different styles and having a different arrangement of parts.

On the plate a is secured a pivoted stopping-lever K, pivoted at k and having a long operating-arm k' extending to a point adjacent to the setting-lever G and operatively connected therewith. In this instance I have shown the short arm g' of the setting-lever provided with a pin, stud, or projection g^2, which is adapted to engage the lever-arm k' and operate the same when the lever g is drawn out, as indicated in dotted lines.

The seconds-hand staff H has a short projection h' extending from the same, one side at least of which has a face extending at an angle to the curved surface of the arbor or staff. This projection I prefer to form of elastic material, and the end k^2 of the lever K extends into close proximity of the path of the projection, so that when the arm g of the setting-lever is drawn out the end k^2 of the lever K will be moved inward to engage with the angular face of the projection when the arbor shall have revolved far enough to bring the same into engagement with the end of the lever.

In order to prevent the lever K from being moved too far toward the staff H, I provide an adjustable stop L, located in the path of lever K, which consists in this instance of a screw provided with a head having unequal diameters. This head may be eccentric or elliptical, as shown in the drawings, and by turning the screw the lever may be permitted a greater or less movement toward the staff H.

The lever K is preferably provided with a spring k^3, which is formed integrally therewith and engages a pin m in the plate a, a suitable pin or stop m' being provided to limit the movement of the lever under the influence of the spring. This construction enables me to form the lever K with spring and arm k' out of a single piece of metal, and it can thus be made very cheaply. If I desire, however, I may provide a separate spring, as indicated at M in dotted lines. The spring will restore the lever K to its normal position, when the arm g of the setting-lever is pressed in and thus release the seconds-hand staff.

The operation of my device is as follows: When it is desired to set the watch, the arm g of the setting-lever is drawn out, as shown in dotted lines, thus operating lever K and moving the part k^2 into position to engage the projection on the staff H. When the seconds-hand reaches 60, the arm h' will engage the stopping-lever and stop the hand and the movement of the watch, and the seconds-hand will be so adjusted on its staff that when the arm h' and lever K are in engagement the said hand will be at 60. The watch is then set and the minute-hand set on an even minute. When the setting-lever is pushed in, the arm h' will be released and the watch will resume its movement. By making the arm h' of elastic or spring material the said arm will form a cushion and thus avoid a jar in stopping, which will prevent straining the parts, and by this means also the balance-wheel will continue to vibrate for a considerable time after the watch has been stopped, as the parts yield slightly, and when the staff H is released the balance-wheel will resume its movements more quickly and readily than if it had been brought to complete rest.

It is obvious that I might provide the stopping-lever with a yielding part to engage a rigid arm on the staff, if desired, and I have indicated this construction in Fig. 3 of the drawings in connection with a slightly-modified form of apparatus.

In Figs. 3 and 4 I have shown a slightly-different form of stopping-lever applied to a watch in which the yoke is shifted by drawing out the crown and winding-stem. In these figures I have shown a stopping-lever which has a sliding movement instead of a pivoted lever, as in the other figures. The lever or rod K′ is secured in this instance to the yoke E at a point at a distance from its pivot, and a portion k^4 of said stopping rod or lever extends into the range of the arm h' on the seconds-hand staff H. In this instance I have shown the rod K′ as provided with a yielding or spring portion k^4 for engaging a rigid arm h'; but the spring may be dispensed with or rigid parts may be employed, if desired. Suitable pins m^2 m^2 retain the rod K′ in position and permit its longitudinal movement. The rod K′ will preferably be cut away, as at $k^\times$, to allow the arm h' to move freely around until it comes into contact with the part k^4. In this instance when the yoke is shifted to throw the setting mechanism into operation the rod K′ will be moved longitudinally and the projection k^4 brought into the path of the arm h', so as to stop the minute-hand on 60.

In order to operate the yoke by pulling out the crown O and winding-stem o, any preferred mechanism may be used. I have shown a sliding plate N, having a cam-slot n engaged by a pin e^3, extending down from the yoke E through a slot a' in the plate a. The winding-rod is made polygonal or square, as is customary, and is capable of sliding longitudinally through the pendent sleeve F and pinion f, and is connected to the plate N by a swivel-joint, as shown in Fig. 6, so that it may be turned to rotate the pinion f and also drawn out to move the plate longitudinally. When said plate N is moved by drawing out the crown and winding-stem, the cam-slot engaging the pin e^3 will force the yoke to move laterally and throw wheel e^2 into engagement with the setting-train and out of engagement with the winding mechanism. When the crown and stem are pressed in, the arm h' of the seconds-hand staff will be released. I may provide a catch to hold the crown and winding-rod on their outward position, if desired.

It is obvious that by slight variations this stopping mechanism can be attached to any

form of watch, and I therefore do not desire to be limited to the exact constructions herein shown and described.

It is also obvious that my invention can be applied to watches which do not have a stem-winding attachment and may be connected with a part extending through the casing for operating the stopping mechanism, as indicated in dotted lines, Fig. 3.

What I claim, and desire to secure by Letters Patent, is—

1. In a watch, the combination of the seconds-hand and its staff or arbor, said arbor having formed upon it a face extending at an angle to the surface of the staff or arbor, and a stop movable toward and from said arbor, whereby it may be made to engage said angular face and arrest the arbor and staff at one point, and one point only, in its revolution, substantially as described.

2. In a watch, the combination, with the seconds-hand, of an arbor or staff provided with a projection or lug, and a stop movable toward and from the arbor, whereby said stop can be moved inward into the path of said lug to arrest the movement of the arbor and seconds-hand when they shall be revolved far enough to bring said lug into contact with said stop, substantially as described.

3. In a watch, the combination of the seconds-hand and its arbor or staff provided with a projection extending outward from the same and a stop movable toward the arbor to engage said lug, one of said engaging parts being elastic, whereby the said seconds-hand and its arbor can be stopped at one point, and one point only, of their revolution, substantially as described.

4. In a watch, in combination with the seconds-hand, a staff or arbor having an elastic projection extending beyond the surface of the shaft and a stop movable into and out of the path of the said projection to arrest the movement of the arbor and hand at one point, and at one point only, of their revolution, substantially as described.

5. In a watch, the combination, with the seconds-hand staff and means for moving it continuously, of a movable stopping-lever adapted to engage a part connected with said staff to arrest the movement of said staff and an adjustable stop for said lever, substantially as described.

6. In a watch, the combination, with the seconds-hand staff provided with an elastic projection, of a movable stopping-lever having a part adapted to engage said projection and a rotatable stop for said lever having unequal diameters, substantially as described.

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

NICHOLAY JENSEN.

Witnesses:
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J. D. KINGSBERY.