

(No Model.)

L. B. NORCROSS.
STEM WINDING WATCH.

No. 347,886.

Patented Aug. 24, 1886.

Fig. 1.

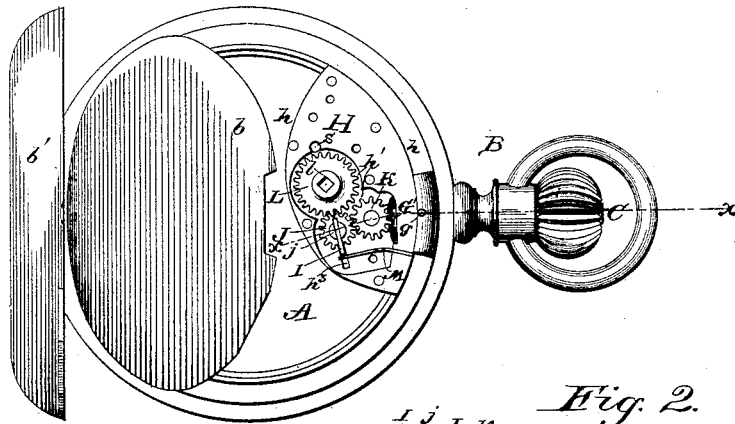


Fig. 2.

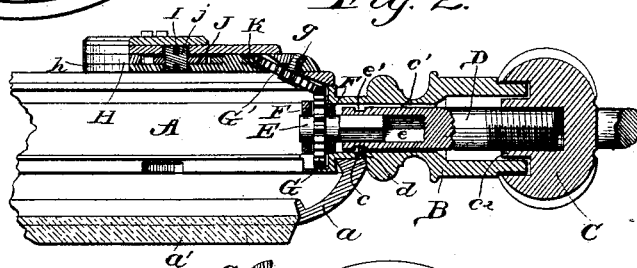


Fig. 4.

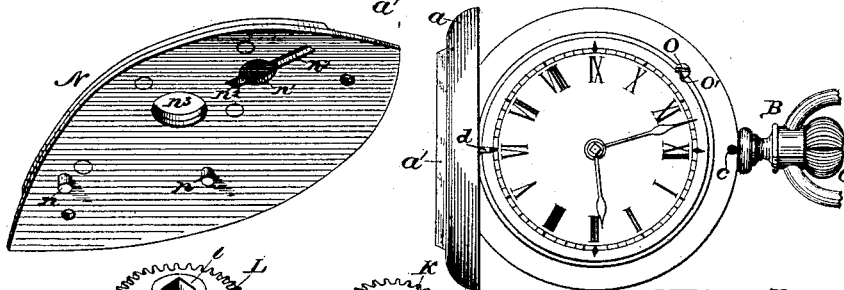
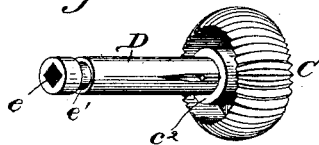


Fig. 3.

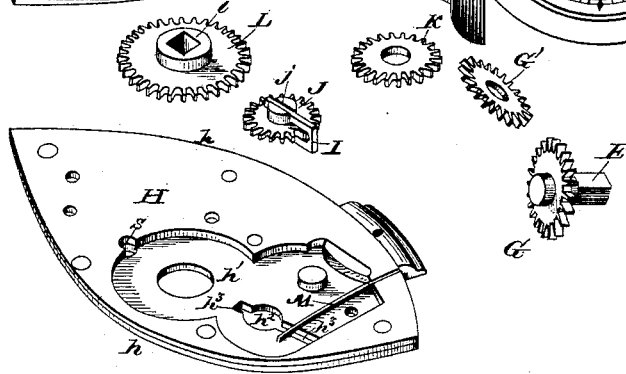


Fig. 5.

Witnesses

Rey C. Bowen
H. F. Beruker

Inventor,

Linnaeus B. Norcross

By his Attorneys

C. A. Shoudler

UNITED STATES PATENT OFFICE.

LINNAEUS BUTLER NORCROSS, OF BIRMINGHAM, IOWA.

STEM-WINDING WATCH.

SPECIFICATION forming part of Letters Patent No. 347,886, dated August 24, 1886.

Application filed April 14, 1886. Serial No. 198,837. (No model.)

To all whom it may concern:

Be it known that I, LINNAEUS BUTLER NORCROSS, a citizen of the United States, residing at Birmingham, in the county of Van Buren and State of Iowa, have invented a new and useful Improvement in Stem-Winding Watches, of which the following is a specification.

My invention relates to improvements in stem-winding watches; and it consists of the peculiar and novel construction and combination of parts, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

The object of my invention is to provide improved means for winding the mainspring when the crown-wheel is rotated or driven by the hand in one direction, and when it is rotated in the reverse direction it will not actuate the winding-wheel of the mainspring, but will actuate a vibrating yoke against the tension of its spring; to provide improved means for detachably retaining the arbor of the crown-wheel within the pendant of the watch-case when the covers thereof are closed, and when the front cover or lid is opened the crown-wheel arbor can be easily removed and be employed to "set" or actuate the hands, thus dispensing with a watch-key or other mechanism for setting the hands, and to improve the watch-case in minor details of construction.

In the accompanying drawings, Figure 1 is a plan view of my improved stem-winding mechanism for watches, showing the devices in the pillar-plate and the case. Fig. 2 is a sectional view through the crown-wheel arbor on the line *x x* of Fig. 1, the cap to the pillar-plate of the watch-movement being secured in place. Fig. 3 is a detached perspective view of the stem-winding mechanism, showing the train of gear and the pillar and cap plates. Fig. 4 is a perspective view of the crown-wheel and its arbor. Fig. 5 is a front view of a watch with my invention applied thereto.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates a watch-case having an open front covered by the usual bezel, *a*, carrying the watch-glass *a'*, and leav-

ing the hollow pendant B and the inside cap, *b*, and cover or lid *b'*, the latter of which incloses the inside cap, as is usual.

The hollow pendant B has a transverse opening or aperture, *c*, near or at the periphery of the case, that opens into the longitudinal opening *c'* therein, and the bezel *a*, carrying the watch-glass, has a pin or projection, *d*, which is adapted to enter and pass through the transverse opening *c* of the pendant B into the longitudinal opening therein.

C designates the crown, that is to be actuated or rotated by hand, which is provided, as is usual, with an interiorly-threaded socket, *c''*, and to this socket is detachably secured the threaded end of an arbor or shaft, D, that is provided at its free end with an angular or square axial opening, *e*, and an annular groove, *e'*. The arbor is normally inclosed in the hollow pendant, with the crown fitted over the free end of the same, and when the front lid, *a*, of the case A is closed the pin or projection *d* enters the groove and prevents the accidental detachment or withdrawal of the arbor.

E designates a shaft that is fitted in one end of the hollow pendant, and one end of this shaft is squared or angular in cross-section to receive the axial opening of the arbor D, and this shaft E is journaled in supporting-plates F, which are secured within the rim of the case by means of screws, whereby the plates can be readily removed to detach the shaft or the bevel-wheel G, carried thereby at one end. This wheel is suitably secured on the free end of the shaft, and is arranged between the two plates of the movement, and the wheel G meshes with and rotates a similar spur gear-wheel, G', which is arranged at an angle or in an inclined position to the wheel G, and is journaled on a pin or shaft, *g*, that is suitably secured in the plate H, near one edge thereof.

The plate H has the curved side edges, *h*, which meet together at an angle, and one of the side edges is curved concentric with the periphery of the case A, to one of the flanges of which the said plate is suitably secured by solder, screws, or otherwise, and is inclosed and concealed by the inside cap of the case. The plate is provided on one of its faces with

recessed portion h' , as clearly shown in Fig. 3, and near one edge it has an opening, h^2 , and slots h^3 , communicating with the opening and arranged or located on opposite sides thereof, and in line with each other, for a purpose presently described.

I designates a yoke, which is fitted in the slots h^2 of the pillar-plate and is free to move back and forth or vibrate therein, and the free ends of this yoke are secured to the extremities of the shaft j of a spur gear wheel, J, that is free to rotate in the yoke.

K designates a gear-wheel that is journaled on a suitable pin or shaft that is rigidly secured to the plate. This gear-wheel lies intermediate of the inclined wheel or pinion G' and the wheel J, with which said gear meshes, it being rotated or driven by the former wheel to drive the latter wheel.

L designates the spur gear-wheel that actuates the mainspring arbor or shaft, which, however, is not shown herein. This gear-wheel is provided with extended bearing-lugs l on its side faces, which are made hollow and square or other angular form in cross-section, to receive the arbor of the mainspring. The gear-wheel L meshes with and is driven by the wheel J, and said wheel is normally held in place so that its teeth mesh with the gear-wheels K L by means of a spring, M, that bears at one end against the vibrating yoke, and is secured to the plate.

The gear-wheels J K L, the yoke, and the spring are all arranged in the recessed portion of the plate, and a cap-plate, N, is secured over the plate to wholly conceal and protect the gears, &c. This cap-plate corresponds in size and shape to the shape of the pillar-plate, to which it is secured by screws, so that it can be readily detached, and the inner face of the cap-plate is provided with pins n , that fit in corresponding openings in the pillar-plate, a rounded recess, and straight grooves $n^1 n^2$, that correspond to the opening, and slots $h^2 h^3$, to receive the vibrating yoke I and the wheel carried thereby, and an opening, n^3 , for one of the lugs of the winding-wheel L.

The operation of my invention is obvious. When the mainspring is to be wound, the crown-arbor is rotated by the hand, which actuates the shaft E and the gear-wheels G, G', J, K, and L, the said arbor being rotated in one direction; but should the said shaft or arbor be rotated in the reverse direction, through carelessness or ignorance, the wheel K will be rotated in the reverse direction, and will actuate the vibrating yoke, together with its wheel, back and forth, and thus be drawn out of engagement with the wheel L, the pressure-spring M yielding to the pressure of the yoke, and reasserting its power when the pressure or strain on the wheel and yoke is released to force the wheel J into gear with the wheels K and L. When it is desired to set or adjust the hands of the watch, the cover or lid a is opened and the pin or projection d withdrawn

from the annular groove of the arbor D, which can then be readily and easily removed from the hollow pendant and adjusted for use upon the arbor of the hands to actuate the latter and turn them to any desired point on the dial of the watch.

It will thus be seen that I provide a very simple and effective means for preventing the mainspring-arbor from being rotated should the arbor D be turned in the wrong direction, and that the said arbor D is securely retained in the pendant to prevent the loss thereof when the lid or cover a is closed, while at the same time it can be readily detached for the purpose of adjusting the hands, thus entirely dispensing with the use of a watch-key and other devices or mechanisms for "setting" the hands.

As is well known to those skilled in the art to which this invention appertains, all of the movements of watches have to be put into their respective cases by dropping them easily into place in the case, and to facilitate the method of securing the movement in the case I provide the usual securing-screws, O, with slots o in their peripheries, so that the pins that lie at the outer edge of the movement can readily pass through the slots, after which the screws can be turned to secure the movement in the case.

The inside cap, b , of the case A is provided at one edge with a notch, as shown, to admit the block that is secured to the case-center, which, however, is not shown herein.

My invention is especially designed for use in that class of watches known as the "open-face" watch, or having a glass plate covering the dial, and the improved stem-winding mechanism is to be built in the case during the process of manufacturing the same.

The winding arbors or posts of the great majority of American and imitation American movements are placed or adjusted in their cases in the same relative positions, so that the winding-arbor will enter the wheel L, as I have shown herein; and the only change that is necessary to fit a movement of the class above described to the case shown and described herein is to remove the ornamental ring that is usually placed around the winding-arbor near one end.

I do not desire to limit myself to the exact details of construction and form and proportion of parts herein shown and described, as an embodiment of my invention, as I am aware that changes therein can be made without departing from the principle of my invention.

The plate H is further provided near its outer edge, and adjacent the opening therein for the winding-arbor, with another opening, s , for the free passage of the "let-down pin" of the watch-movement.

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

1. The combination of the plates having the

aligned guide slots or recesses, a vibrating yoke fitted in the slots and free to move back and forth therein, a gear-wheel, J, loosely mounted in and carried by the yoke, a wheel, 5 L, connected with the mainspring-arbor, and with which the wheel J meshes to actuate the same, a spring for normally pressing the yoke and its wheel toward the wheel L, and means, substantially as described, for rotating the 10 wheel J, as and for the purpose set forth.

2. The combination of the plate having the slots and openings, a vibrating yoke fitted in the slots and carrying a wheel, J, a spring bearing against the yoke, the gearing for actuating the wheel J, a wheel, L, rotated by the 15 wheel, and a cap-plate detachably secured to the plate, substantially as described.

3. The combination of the case having the

hollow pendant, the bearing-plates F, secured to the case and the pendant, a shaft, E, journaled in the bearing-plates and carrying a 20 gear-wheel, an inclined wheel, G', meshing with the gear-wheel of the shaft E to rotate the winding-gearing of the watch-movement, and an arbor, D, connected with the shaft to 25 rotate the latter and its wheel, substantially as described, for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

LINNAEUS BUTLER NORCROSS.

Witnesses:

JOSEPH GRAHAM,
O. N. JOHNS.