V. DORIOT.

WATCH-PLATE.

No. 169,787. Patented Nov. 9, 1875.

Fig. 1.

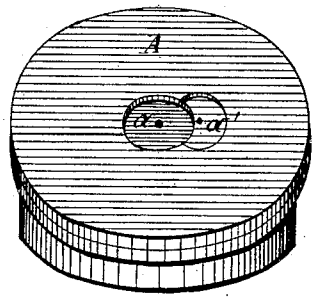


Fig. 4.

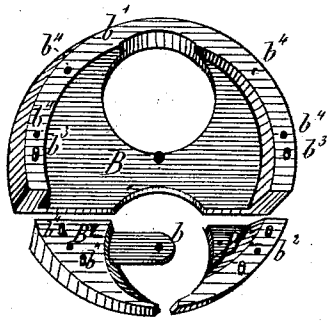


Fig. 3.

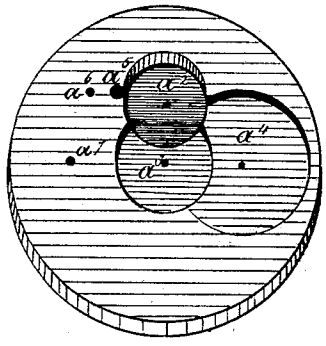


Fig. 2

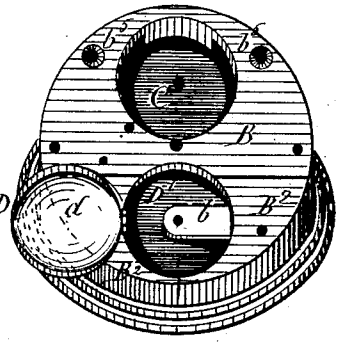


Fig. 7.

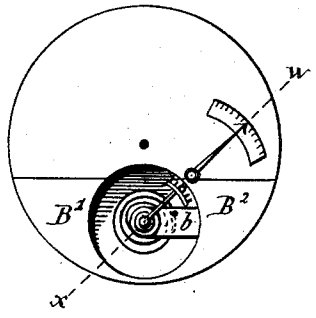


Fig. 5

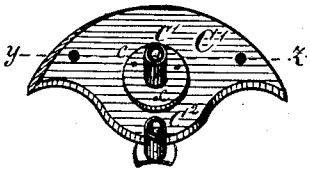


Fig. 8.

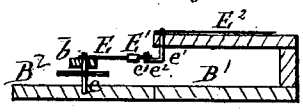
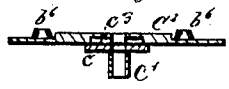


Fig. 6



Witnesses.

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VICTOR DORIOT, OF BRISTOL, TENNESSEE.

IMPROVEMENT IN WATCH-PLATES.

Specification forming part of Letters Patent No. **169,787**, dated November 9, 1875; application filed September 15, 1875.

To all whom it may concern:

Be it known that I, VICTOR DORIOT, of Bristol, in the county of Sullivan and State of Tennessee, have invented certain new and useful Improvements in Watches; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of the shell which incloses the movement, taken from the upper side, the hands having been removed. Fig. 2 is a view of the opposite side of the shell. Fig. 3 represents the inside of the different sections of which the part shown in Fig. 2 is composed. Fig. 4 is an inside view of the face-plate shown in Fig. 1. Figs. 5, 6, 7, and 8 are detached views of parts of the shell and the inclosed movement.

The object of the invention is to effectually prevent the admission of dust to the movement, and also to protect the working parts from injury by accidental blows, concussions, or external pressure; and to this end the invention consists in certain details of construction, which will be fully explained hereinafter.

In the drawings, A represents the bottom or face plate, having the usual circular recesses a a^1, to receive the hour and minute wheels, by which the revolution of the hour-hand is timed to that of the minute-hand. The opposite side of this plate (see Fig. 3) is recessed at a^2 a^3 a^4, that at a^2 being cut the deepest, to receive the second-wheel; that at a^3 is more shallow to receive the center-wheel; that at a^4 being still more shallow; or, when preferred, this latter recess may be dispensed with, and the barrel-wheel arranged to run just above the surface of plate A, although I generally form the recess as shown in the drawing. a^5 is the pivot-hole of the third wheel, the wheel being on the end of the pivot opposite to that which rests in hole a^5, the wheel thus being brought above the other, (shown in this figure,) as is also the escapement-wheel, one end of the pivot of which runs in a hole marked a^6. a^7 is the pivot-hole for the lower end of the balance-wheel staff.

In Fig. 2, B B^1 B^2 represent the three sections of the shell, through which are openings C and D^1 for the barrel and balance wheel.

D is a bezel, containing a glass plate, d, hinged to section B^1, and arranged to cover an opening, D^1, formed in the two sections B^1 B^2. The balance-wheel is located immediate-below this opening; thus the balance-wheel and its movement can be inspected through the glass d.

The under side or inside of sections B and B^1 are chambered, as shown in Fig. 4, to receive the various parts of the movement which are arranged therein, and are provided with pivot-holes corresponding to those already described in Fig. 3, except that the pivot-hole for the upper end of the barrel-shaft is formed in or attached to the bridge or barrel cover C^1, and that for the staff of the balance-wheel is formed in an arm, b, projecting from the inner wall of the section B^2.

This cutting out of the chamber leaves a flange, b^1 b^2, upon the section B B^1, of such depth as will accommodate the movement which is arranged in the chamber. Suitable dowel-pins b^3 and screw-holes b^4 are formed in or upon the flanges b^1 b^2, by means of which and the proper screws the sections B B^1 B^2 are firmly secured to the face-plate A.

In Fig. 5, c^1 is a sleeve, projecting upwardly from the barrel-bridge, and surrounding the squared end of the barrel-shaft. This sleeve has a flange at its lower end, and is secured to the bridge by means of screws c. C^2 is a similar sleeve attached to the under side of the bridge by a flange, which is let into the bridge, so as to be flush therewith.

In order to permit the use of thick-headed bolts or screws for securing the barrel-bridge C^1 and the segment B to the face-plate A, I form bosses b^6 upon the under side of the bridge, with corresponding recesses in the upper surface of said bridge, to receive the heads of the screws. b^5 are recesses formed in the upper surface of the section B to receive the bosses b^6 on the bridge.

The ratchet and click of the barrel are arranged in the bridge immediately under the flange of the sleeve c^1.

As an additional protection against the entrance of dust through the aperture C, I form a circular projection on the under side of the bridge, which fits accurately into said aperture. This increased thickness of the bridge furnishes a longer bearing for the upper end of the barrel-shaft.

In order to avoid the necessity of removing either of the sections to move the regulator, I have invented the following construction: In Fig. 6, *b* is the arm in which the upper end of the balance-wheel staff is supported. E is the regulator-arm, arranged upon the upper side of the arm *b*, and vibrating about a center coincident with the balance-wheel staff. *e e* are two pins in the regulator, one pin being arranged upon either side of one of the convolutions of the hair-spring. E^1 is a toothed quadrant attached to the free end of the regulator-arm. E^2 is the indicator-lever, lying upon the face of section B. This lever vibrates about a pivot, e^1, or shank, which is seated in a bearing in the section B, and extends through the same. e^2 is a heel-extension of lever E^2, below the section B, and provided upon the upper side with a spur, e^3, which enters between the teeth of the quadrant E^1. E^3 is the indicator-scale.

From this description it will be seen that if the indicator E^2 be moved in either direction, the regulator-lever will be moved in an opposite direction, and that as the heel-extension e^2 passes below the quadrant, this quadrant and the section B^2 can be removed without first taking out the section B^1. The lever and lever-fork are sunk in the face-plate A, the upper end of the staff of this lever being supported in a bridge attached to the face-plate. Four screws are usually employed to secure the section B to the face-plate, two of these screws passing through the barrel-bridge, as above described. One screw is sufficient for each of the sections B^1 B^2.

From the above description it will be seen all of the movement which is especially liable to injury is inclosed within a rigid stout metal shell, which cannot be crushed nor materially sprung out of shape, except by very unusual violence, and that such blows, concussions, or pressure as would almost inevitably ruin the movement of an ordinary watch might be inflicted upon one constructed like mine without damage to its most sensitive parts. It will also be observed that the only openings through the shell, except the pivot-bearings, (through which dust cannot enter,) are those at C and D^1, and these are, when the watch is ready to run, closed by dust-tight caps.

In consequence of the flange and the top plate being rigidly attached to each other, that portion of the section or segment B which surrounds the opening C is much strengthened; hence, I can make this opening of such size that the barrel can be lifted directly up out of its working position, for the purpose of replacing the mainspring or making other repairs, first taking off the barrel bridge or cover C′.

I do not claim, broadly, the idea of excluding dust from a watch by means of a dust-ring or a dust-cap; nor of a casing-plate having a ring or flange formed in one piece therewith; but there are many advantages growing out of my particular construction—that is, the upper plate made in segmental sections, each section having a proportionate part of the flange made in one piece therewith. For instance, it is desirable that this upper plate should be made in three or four parts, in order that access may be readily had to the lever or the barrel without disturbing other parts of the mechanism, and it is apparent that each of the sections B B^1 B^2 will support a much greater crushing pressure in consequence of their having each a portion of the circular flange or ring rigidly attached thereto. For this reason the opening for the barrel can be made wholly inside of the flange *b*, as the support which the section B of the plate receives from the flange is such that it (the plate) may be made much narrower at the center, where the shaft which carries the hands is supported, than it could be with safety, were the flange attached to the lower plate.

By sinking a portion, C^2, of the barrel-bridge C^1 into the opening C, I am enabled to put the barrel ratchet and pawl into a recess, C^3, in the outer side of the bridge, and at the same time retain a suitable thickness in that portion of the bridge which forms the bearing for the barrel-shaft. By mounting the upper end of the balance-wheel staff in an arm, *b*, which projects from section B^2, then arranging the regulator E upon the upper side of this arm *b*, and arranging the heel-extension e^2 below the toothed quadrant of the regulator, I can remove the balance-wheel and regulator E by taking out the section B^2 without disturbing any other device.

By taking out one screw from section B^1 or B^2 either the balance-wheel or the escapement-wheel may be removed, and the shape of these sections is such that they may be firmly held in place by one screw each, without the aid of dowels. Thus the arrangement of parts is such that any or all of the devices which are most liable to get out of order can be more easily reached than the corresponding parts in any other watch of which I have any knowledge, while at the same time they are fully protected against dust or breakage by violence.

Another advantage which grows out of my combination and construction is, the dispensing with all pillars or posts to support the upper plate, and with the greater part of the bridges usually employed to furnish bearings for the upper ends of the wheel-staffs.

What I claim is—

1. The herein-described watch-case, consisting of a lower plate, A, and an upper plate, made in sections B B^1 B^2, each of these sections having a portion of the flange rigidly attached thereto, substantially as set forth.

2. The indicator E^2, above section B^1, and provided with the pivot e^1 and the heel-extension e^2 below the plate of section B^2 for operating the regulator, substantially as set forth.

3. The section B^2, having the arm b provided with a bearing for the staff of the balance-wheel, and having the hair-spring attached, and the regulator E arranged upon the upper side, the toothed quadrant E^1 being arranged upon the upper side of the heel-extension e^2 of the indicator, whereby the balance-wheel and regulator can be removed with the section B^2, substantially as set forth.

4. The barrel-bridge C^1, provided with bosses b^6, in combination with the section B, provided with the recesses b^5, substantially as set forth.

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

VICTOR DORIOT.

Witnesses:
H. H. DOUBLEDAY,
HENRY ORTH.