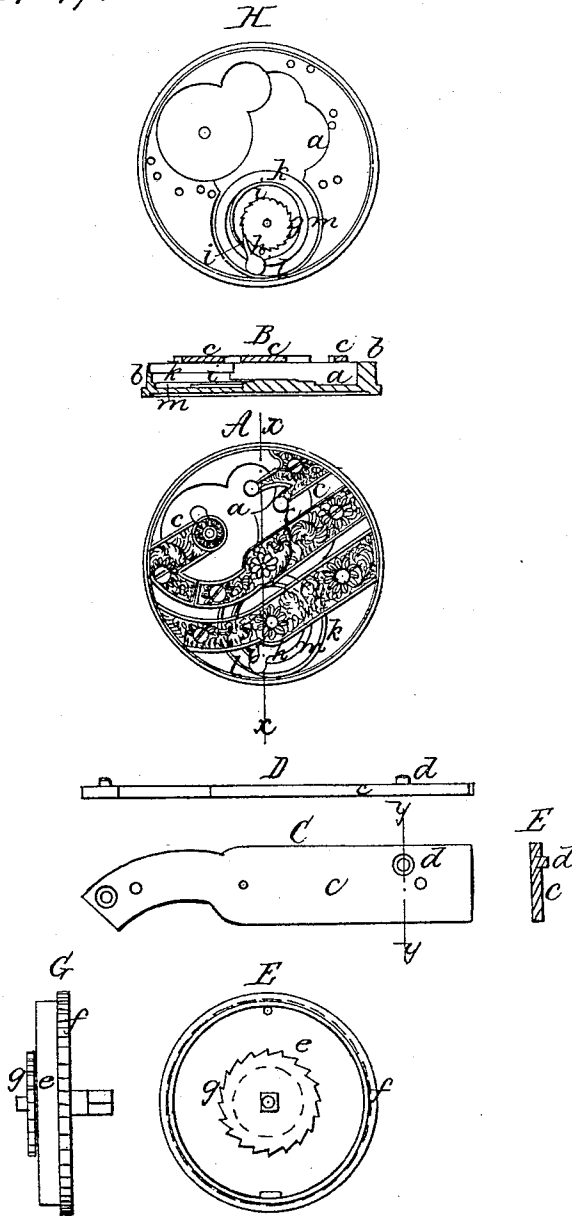


*C. V. Woerd,*

*Watch.*

*No. 95,547.*

*Patented Oct. 5. 1869.*



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Letters Patent No. 95,547, dated October 5, 1869.

## IMPROVEMENT IN WATCHES.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern :*

Be it known that I, CHARLES V. WOERD, of Waltham, in the county of Middlesex, and State of Massachusetts, have invented Improvements in Watches; and I do hereby declare that the following, taken in connection with the drawings, which accompany and form part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practise it.

In the manufacture of American watches, it is customary to enclose the running-movement between two parallel plates, called "pillar-plates," said plates being connected by a series of struts or posts, and being open at the edge thereof, the whole so-called "movement" thus made being enclosed in the outer case of the watch, the caps of which cover the two plates, (or the dial and inner cap,) while the frame to which the caps are hinged covers the open edge between the plates. This construction is objectionable, in that dust and dirt, working through the hinges and joints of the case, penetrate between the plates, and injure the working-parts of the watch. To remedy this, the two pillar-plates have been surrounded at their edges by a peripheral ring, called a "dust-ring," which shuts up the movement, and excludes all entrance of foreign matters, such ring sometimes overlapping the edges of the plates, and sometimes being confined between them. The employment of this ring, though it answers well its purpose in excluding dust, is not free from objection, for, besides adding another main piece to the movement, it requires nice fitting and fastenings, and adds to the cost of the movement.

In my invention, which is designed to cheapen and simplify the construction of common watches, I so construct the frame that directly holds the running-movement as to dispense with this peripheral or dust-ring, and, in fact, with one of the plates; and

My invention consists, primarily, in enclosing the running-movement in a plate made of sufficient thickness to contain the same, the plate having recesses made in it, to receive all the parts known as the "running-movement," (except the hands,) and the plate being left solid, or without any opening at the edge thereof, for entrance of dust or dirt.

In connection with my invention, I make the pivot-bridges without shoulders or bases forming parts thereof. These bridges are usually supported upon, and screwed directly to the front plate; and, as each bridge-bearing is in the plane of the back plate, the bridge has necessarily to be made either with a bend, or with its fastened end of a thickness sufficient to form a base reaching to the bottom plate. But, in my improvement, I make the bridge of a plate of even thickness throughout, and leave the pillar-plate of normal thickness at all those points where the bridges are to be secured. These bridges, being screwed to their

supporting-plate, are generally kept in permanent position, or from swinging or lateral movement, by means of steady-pins, each bridge having such a pin set into a hole bored through the bridge-plate. To dispense with such pin set into the bridge, I raise, upon the inner surface of the bridge, a small spur, (with a suitable hollow punch or die,) the metal displaced in striking the punch into the bridge being forced up within the punch above the surface of the bridge; and this constitutes another part of my invention.

These bridges or bridge-plates are generally chased or engraved on their outer surfaces; and, as this engraving is expensive, I configure the outer surface of each bridge in a die, one surface of which has the desired figure in relief or intaglio, so that by striking the plate in the die, the figure shall be formed on its surface, thus dispensing with the engraving-process, this figure being preferably impressed by the same die that forms the projecting spur on the opposite surface of the bridge.

In all watches, so far as I know, the ratchet which holds the main-spring in winding is set on the outer end of the barrel—that is to say, on the end which is exposed in opening the back of the watch; and, for want of available space at this point, the ratchet has to be made very small in diameter; and the leverage upon the teeth is such that they soon strip, or are worn away, this being, in fact, the point in watches at which any mechanism first gives way. Moreover, the ratchet-pawl or click and its spring have also to be made quite small, and, by reason of their position, have to be highly finished, and each has to be kept in place by a screw.

To remedy these objections, I place the ratchet at the inner end of the barrel, where it and the click and spring are concealed from view, and where there is sufficient space to enlarge the ratchet-wheel, dropping it into a recess formed in the plate beyond the barrel; and in this same recess we place the pawl and the spring, the pawl having a circular head, which drops into a circular side recess opening out of the main recess, the side recess forming a bearing, in which the click swings, and also detaining it in position, so that it needs no fastening-screw, while the spring bears against and is held by the boundary wall of the recess, it being kept from dropping out by making the wall slightly under-cut, so that the spring presses under the edge. These details of construction constitute the other features of this invention.

The drawings represent part of a watch embodying my improvements.

A shows a plan of the same.

B is a section on the line  $x\ x$ .

C shows one of the pivot-bridges enlarged.

D, an edge view thereof.

E, a section of the same on the line  $y\ y$ .

F is a view of the inner end of the barrel enlarged.  
G is an edge view of the same.

*a* denotes the main plate for holding the running-movement, by the construction of which plate the ordinary back plate is dispensed with, the plate *a* being made of a thickness equal to the space between and including the ordinary front and back plate, and being recessed from one side, as seen at B and at H, (which shows the open side of the plate,) these recesses being so made as to contain the running-movement, and leaving a wall, *b*, entirely around the edge of the plate, as seen at B and F.

*c* denotes the pivot-bridges. Each of these bridges as seen (enlarged) at C, D, and E, is formed of a plate of uniform thickness throughout, each being supported directly upon and screwed to the plate *a*, which is left of normal thickness, or without being recessed at each point where the bridge is to be secured.

*d* denotes the steady-pin, projecting from the inner face of the bridge, and extending into a hole made in the plate, (when the bridge is applied to the plate,) to keep the bridge from any lateral movement. This pin (as seen at E) is not driven into the plate, but is made therefrom, by means of a hollow punch or die, the metal displaced by which, as seen at E, is forced up above the plate, so as to form the projecting steady-pin or point. Each bridge has its outer surface configured (as seen at A) by a suitable die, upon the surface of which the figure is formed, as before described, thus making the figure at one blow or operation, instead of by the slow and expensive use of a graver or chasing-tool.

*e* denotes the barrel.

*f*, the barrel-wheel.

*g*, the ratchet.

*h*, the click or pawl.

*i*, the click-spring.

The barrel sets in a recess, *k*, and the ratchet is placed on the barrel-shaft, at the inner end of the barrel, as seen at G, while the head of the pawl, which is made circular, is dropped into a side recess, *l*, (so that the pawl may turn, but cannot slip out,) and the spring is sprung into a recess, *m*, against the wall of which its stress holds it, the wall being under-cut, to retain the spring, as seen at B, requiring no screw to retain either the pawl or the spring.

These improvements tend not only greatly to simplify and cheapen low-cost watches, but also to render them more enduring, and less liable to get out of order, there being not many, if any, more than half the number of pieces in one of these improved watches that exist in the cheapest watches now made.

I claim—

1. A watch-plate or movement-frame made of a single solid plate, recessed, to contain the running-mechanism, and having a wall formed from such plate, and surrounding such mechanism, substantially as described.

2. Also, a pivot-bridge having a steady-pin struck up from its under surface, substantially as described.

3. Also, the described arrangement of the barrel, ratchet-pawl or click, and click-spring, all within the same cavity in the bed-plate, the click and spring lying in recesses in the bottom of the cavity, and the barrel covering them, substantially as set forth.

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