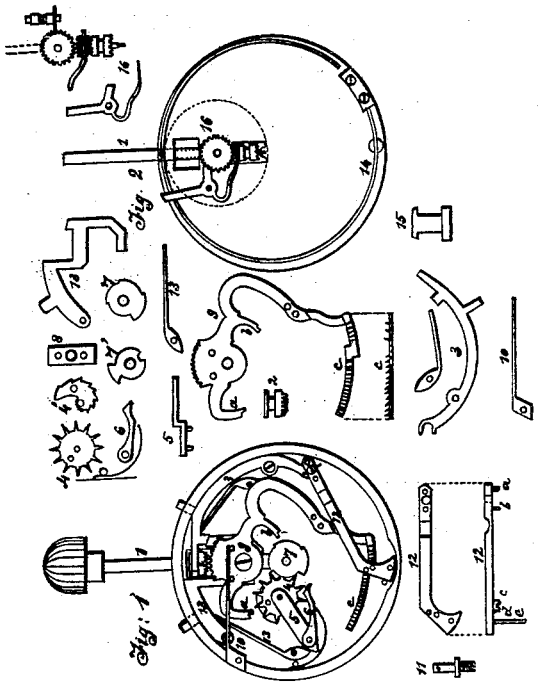
A. L. JUNOD-PATTUS.

REPEATING WATCHES.

No. 187,305. Patented Feb. 13, 1877.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN REPEATING WATCHES.

Specification forming part of Letters Patent No. **187,305**, dated February 13, 1877; application filed August 15, 1876.

To all whom it may concern:

Be it known that I, AMI LOUIS JUNOD-PATTUS, of Sainte Croix, Switzerland, have invented Improvements in Keyless Repeating Watches, called "Repetition St. Croix;" and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheet of drawings, making a part of the same.

This invention relates to a keyless repeater watch, in which the ordinary repeating train and hammers are dispensed with, the repeating mechanism being actuated by turning the keyless winding-knob of the pendant to the right for striking the hours, and to the left for striking the quarters, the ten-minutes, or the half-quarters, as the case may be.

Figure 1 of the annexed drawing shows, in full size, the repeating mechanism; and Fig. 2, a face view of the keyless winding mechanism and spring-gong. The various parts are also shown separately.

The same letters and figures of reference indicate the same parts in all the figures.

1 represents the winding-stem, by which the repetition mechanism is actuated. 2 is a pinion, fitted to stem 1, and connected therewith by a feather and groove.

By pressing on the stud 15 of push-piece 3, the pinion 2 is geared with a quadrant on the hour and quarter rack 9, and oscillates the same as the stem is turned to left or right, according as it is desired to strike the hours or quarters.

The spring push-piece 3 has four functions, three of which are performed in its forward or inward, and one in its backward or outward, movement—that is to say, it gears the pinion 2 with the quadrant of rack 9, as above mentioned; this is one function. A short arm on it, near the pinion 2, presses against the push-piece 13 of the hand-setting mechanism, in order to put the winding-gear out of action; this is the second function. The shorter of two points at its forked tail passes under and presses up against a pin, *a*, that projects from the end of the spring-hammer 12, in order to set or fix said hammer rigidly on its stud in readiness for striking, and also put it in gear with the hour and quarter rack 9; this is the third function. Lastly, when the pusher-stud 15 is released, the longer point at the tail of the push-piece 3 presses against a pin, *b*, of spring-hammer 12, and disengages the hammer from the rack 9, thus allowing the latter to return to its normal position, which is the fourth function of the push-piece 3.

4 and 4′ are star-wheel and hour-snail, as in ordinary repeaters; 5, the cock of star-wheel, in which jumper 6 is also mounted; 7 7′, quarter-hour snail and surprise, the same as in ordinary repeaters; 8, bridge on which the hour and quarter-hour rack 9 is mounted. This hour and quarter-hour rack has three functions, viz: An arm on it falls against the hour-snail to determine the number of hours struck when the winding-knob is turned to the right; another arm falls against the quarter-hour snail 7 to determine the number of quarters struck when the knob is turned to the left; and, finally, two racks on its long arm—one, *c*, of twelve teeth for the hours, and one of three teeth for the quarters—actuate the spring-hammer.

10 is the spring for returning the hour and quarter-hour rack to its position of rest, said spring bearing against two pins that are located above the axis of the said rack. 11 is the stud carrying the spring-hammer 12, which is fulcrumed loosely against the cross-pin fixed in said stud 11, and is only fixed rigidly when one prong of the fork on the push-piece 3 comes beneath its pin *a*, as above mentioned.

The spring-hammer 12 has five pins, viz., the said pin *a*, at the small end; the pin *b*, on the other side of the stud 11, which pin bears against the pillar-plate when the spring-hammer is set or fixed rigidly, as above mentioned, said pin *b* also serving for releasing the hammer by the long point on fork on push-piece 3 pressing against it when the stud 15 is released; the pin *c*, which slips over the teeth of the hour-rack, thus raising and letting fall the spring-hammer and pin *d*, which is similarly acted on by the quarter-hour rack; lastly, the pin *e*, which projects through the pillar-plate, and strikes the gong every time that one or other of the pins *c* or *d* falls into the intervals between the rack-teeth. The pins *c d* may, however, be made in one piece.

13 is the spring push-piece for setting the hands. It has two functions, viz., to put the

hand-setting mechanism in gear when its stud is pressed, and to throw the winding mechanism out of gear (without, however, gearing the hand-setting mechanism,) when the stud 15 is pressed.

14 is the gong, which is made of a bell-spring, and placed under the pin *e* of the hammer. As either the hours or the quarters may be struck first, or one or other only struck, at will, there is but one gong, and therefore but one stroke for each quarter; but it is only necessary to remember that the hours are ascertained by turning the stem to the right, and the quarter-hours by turning it to the left.

The stud 15 is fitted in a socket soldered to the side or cylindrical part of the watch-case. To know the hour, the stud 15 should be pressed at same time that the winding-knob is turned gently until a certain resistance is felt. The stud should be released after striking the hour, in order to allow the hour and quarter rack to return to its normal position before moving the other way for the quarters.

16 is the winding mechanism. Although it forms no part of the present invention, I have shown it on account of its connection with the dial-work. It is simple, strong, and not liable to wear or get out of order; and, placed as it is, between the arbor and the canon-pinion, it leaves ample room for the dial-work.

By increasing the number of steps of the quarter-hour snail 7, and providing corresponding teeth on the rack 9, the watch will repeat the ten-minutes or half-quarters, &c.

The improved repeating mechanism of this invention is simple and inexpensive, dispensing, as it does, with the ordinary costly and complicated repeating-train, usually consisting of a small spring-barrel, fusee, three wheels and anchor and their cocks, the hammer, hammer-tails, and springs. It is perfectly accurate, and easily made, and little more than half the cost of the ordinary repeating mechanism.

I claim as my invention—

1. The combination of the push-piece 3 with the rack 9 and hammer 12, and with the pinion 2, all arranged so that by one motion of the push-piece 3 the rack will be thrown into gear with the pinion and the hammer set, substantially as specified.

2. The spring-hammer 12, made with the projecting pins *a*, *b*, *c*, and *e*, and hung upon the pin 11, having cross-bar, all substantially as herein shown and described.

3. The combination of the spring 10 with the rack 9 of the repeater, said rack having two projecting pins, to be actuated by the said spring, substantially as specified.

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