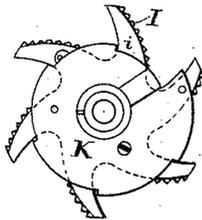
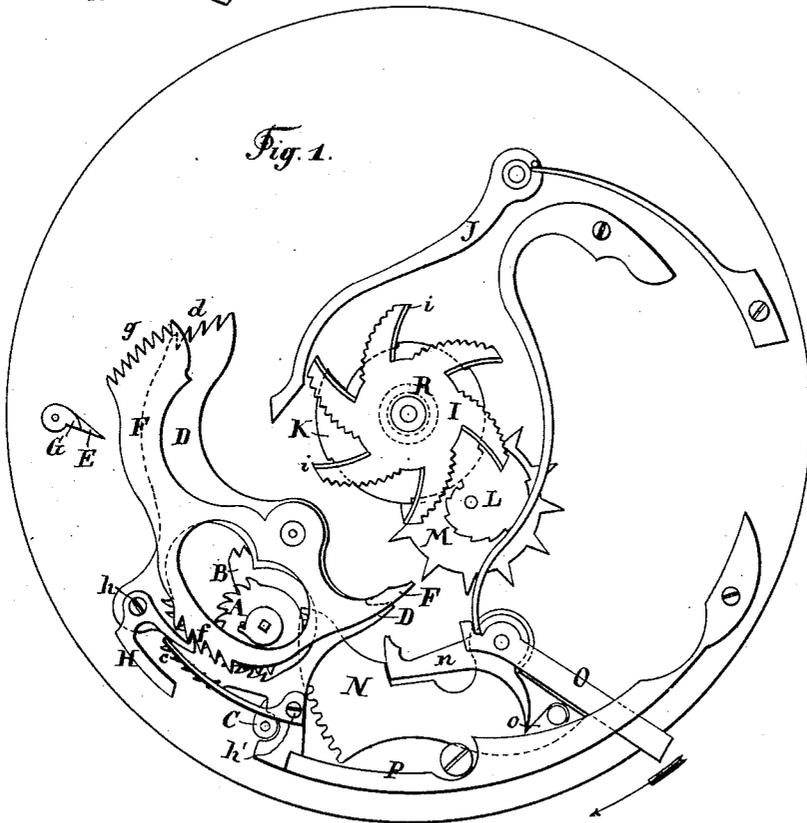
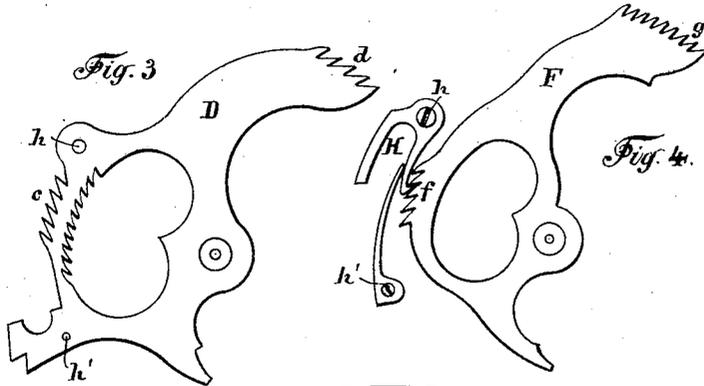


E. PERRIN.
REPEATING WATCH.

No. 454,291.

Patented June 16, 1891.



Witnesses

Chas. N. Smith
J. Strait

Fig. 2.

Inventor

Emile Perrin
per Lemuel W. Serrell
Att'y

(No Model.)

2 Sheets—Sheet 2.

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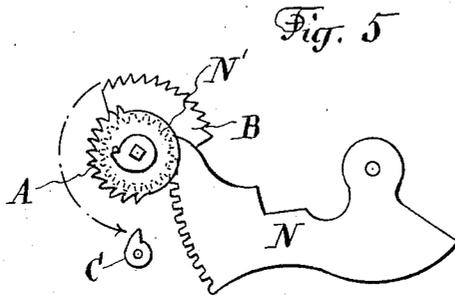
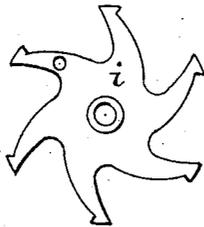


Fig. 6



Witnesses
Harold Terrell
Chas H. Smith

Inventor
Emile Perrin
per Lemuel W. Terrell
att'y.

UNITED STATES PATENT OFFICE.

EMILE PERRIN, OF PONTS-MARTEL, SWITZERLAND.

REPEATING-WATCH.

SPECIFICATION forming part of Letters Patent No. 454,291, dated June 16, 1891.

Application filed September 19, 1890. Serial No. 365,495. (No model.) Patented in Switzerland March 7, 1890, No. 1,919.

To all whom it may concern:

Be it known that I, EMILE PERRIN, manufacturer, of Pons-Martel, Switzerland, have invented a new and useful Improvement in Repeating-Watches, (for which I have obtained Letters Patent in Switzerland, dated March 7, 1890, No. 1,919.) of which the following is a specification.

This invention consists in an improvement in repeating-watches characterized by the manner of marking the time. This takes place by striking the hours, the ten-minute divisions of the hour, and the nine intermediate minutes, instead of striking the hours, quarters of hours, and fourteen intermediate minutes, as is the case in the repeating-watches heretofore made. A repeating-watch of my improved pattern will strike, for instance, eight strokes, indicating eight o'clock, then two strokes, indicating each ten minutes, and then five strokes, indicating each one minute, while the usual repeating-watch would strike eight strokes, indicating eight o'clock, one stroke, indicating one quarter, and ten strokes, indicating each one minute, when the time is twenty-five minutes past eight o'clock.

The above-stated manner of striking is best carried out by means of the mechanism described below and illustrated in the drawings.

In the accompanying drawings, Figure 1 is a plan view of a repeating mechanism of my system, shown upon an enlarged scale. Fig. 2 is an inverted plan view of the snails K and I, with "surprise" *i*. Fig. 3 shows separately the rack D; and Fig. 4 shows separately the rack F, the click H, and spring *h'*. Fig. 5 shows how toothed striker C is acted upon by rack B; and Fig. 6 shows separately the surprise *i*, which acts, as usual, like a prolongation of the outer steps of the snail I.

A is the usual wheel placed upon the main-spring-axis of the repeating mechanism to move the rack D. Upon the same axis is placed a pinion N', acted upon by a rack N when the lever O is pushed in the direction of the arrow.

B is the hour-rack with twelve teeth fixed to the wheel A and disposed as usual. It acts upon the toothed striker C to operate one hammer upon its return movement in striking the hours. The movement of the rack N turns the rack B in the direction indicated

by the arrow in Fig. 5 until the projecting end of the arm *n* upon the rack N strikes upon the hour-snail L, at which time a certain number of teeth of the rack B have passed the tooth C, according to the position of the hour-snail, and on the backward movement of the rack B its teeth operate the tooth C and cause the striking of the hours.

D is the rack to indicate ten-minute periods, which is provided with five teeth *c*, acting upon the tooth C of one hammer, and with five teeth *d*, acting upon the toothed striker E of the other hammer, and by which the ten-minute periods are marked by double strokes or in double time.

F is the minute-rack provided with nine teeth *g*, which act upon the toothed striker G, acting upon the same hammer as E. The rack F is further provided with five teeth *f*, to which the usual click H hooks itself for determining the number of ten-minute periods to be struck. Said click H is pivoted to the rack D by means of a screw *h* and acted upon by a spring *h'*, also upon the rack D.

I is the minute-snail having six arms, each of which is provided with ten steps. The so-called "surprise" *i*, having also six arms, is acted upon, as usual, by a lever J. The snail I, fixed to the minute-wheel of the watch, limits the stroke of the rack F.

K is the snail controlling the mechanism for denoting the ten-minute periods. It is provided with six steps and fixed to the surprise *i*. Said snail K limits the stroke of the rack D.

The hour-snail L, fixed to the star-wheel M, is quite the same as in the usual repeating-watches. The same is the case of the rack N, acted upon by a pusher O and having an arm *n*, which strikes upon the hour-snail L and raises the locking-lever P by means of the lock *o* to unlock the rack D, which hooks itself to the lever P.

The operation of the mechanism is as follows: The pusher O is moved in the direction of the arrow until the arm *n* strikes upon the hour-snail L, and simultaneous with this movement the arm *n* gradually moves the lock or projection *o* and depresses the lever P until the rack D is released from its engagement with the lever P. The rack D when released falls upon the snail K, and the click H

engages one of the teeth *f* of the rack F, according to the position of the rack F, determined by its contact with the snail I. The rack N has at the same time caused the rack
 5 B to be placed into a position which is determined by the arm *n* coming against the hour-snail L, and the mainspring of the repeating mechanism has been strained or partially wound up. Now when the pusher O is released it returns to its normal position, and
 10 the spring of the repeating mechanism operates the rack B and it acts upon the toothed striker C and causes the hours to be struck upon one hammer, then the teeth *c* and *d* of
 15 the rack D act upon the teeth E and C almost simultaneously, causing the periods of ten minutes to be struck in double time by both hammers, and finally the teeth *g* of the rack F act upon the tooth G, causing the intermediate minutes—that is, those within the ten-

minute periods—to be struck by the hammer acted upon by the toothed striker G, thus completing the time record.

I claim as my invention—

In repeating-watches, the rack D and the
 25 rack F, having five teeth *f* and nine teeth *g*, in combination with a click H, pivoted to the rack D, its spring *h'* for keeping the click H in engagement with the teeth *f*, and a six-armed snail I, each arm of which has ten
 30 steps, against which the rack F in its movement in one direction is arrested, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two
 35 subscribing witnesses.

EMILE PERRIN.

Witnesses:

AUGUSTE LAUDERER,
 PAUL DIAZ.