

(No Model.)

H. A. LUGRIN.

Stop Watch.

No. 232,737.

Patented Sept. 28, 1880.

Fig: 1.

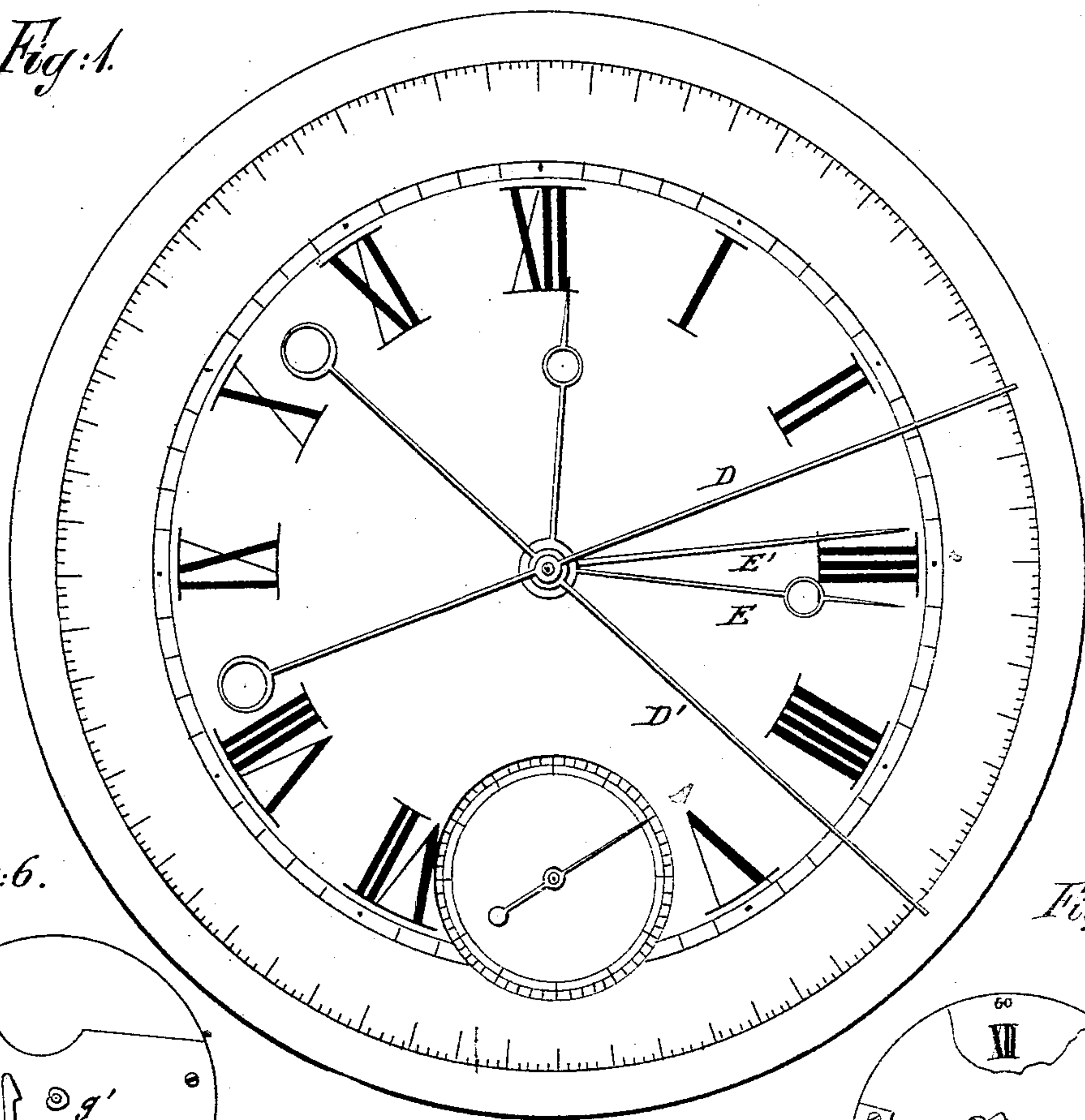


Fig: 6.

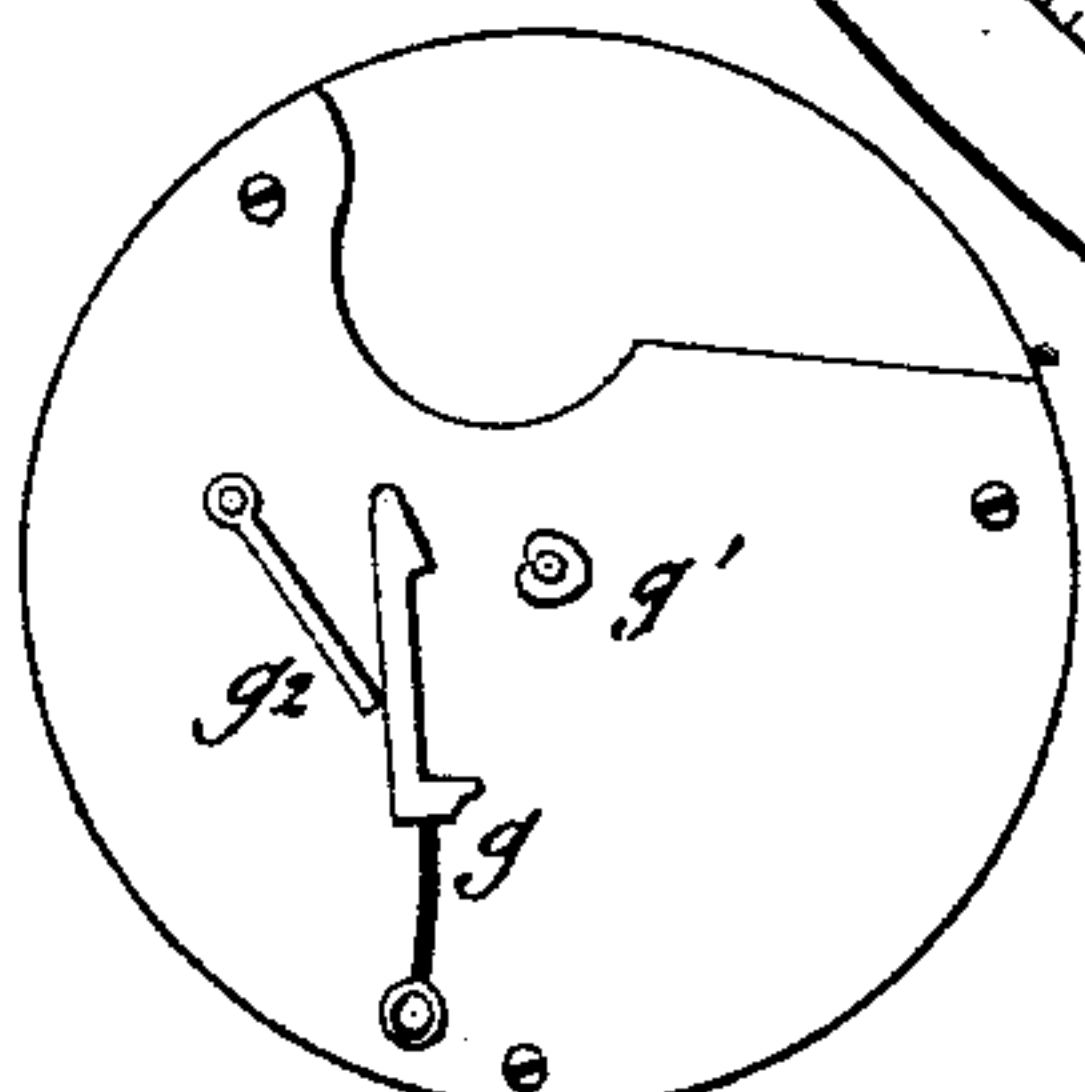


Fig: 5.

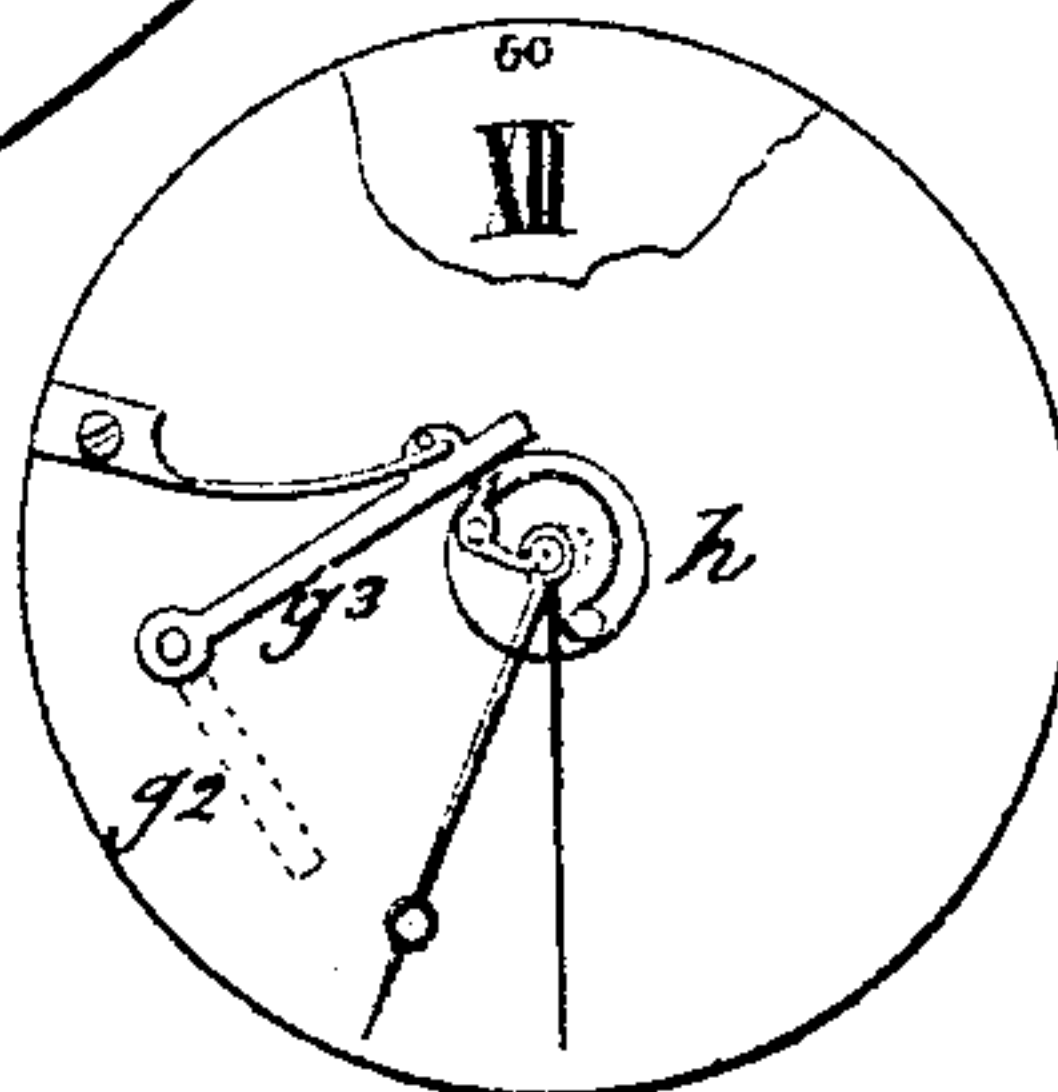


Fig: 2.

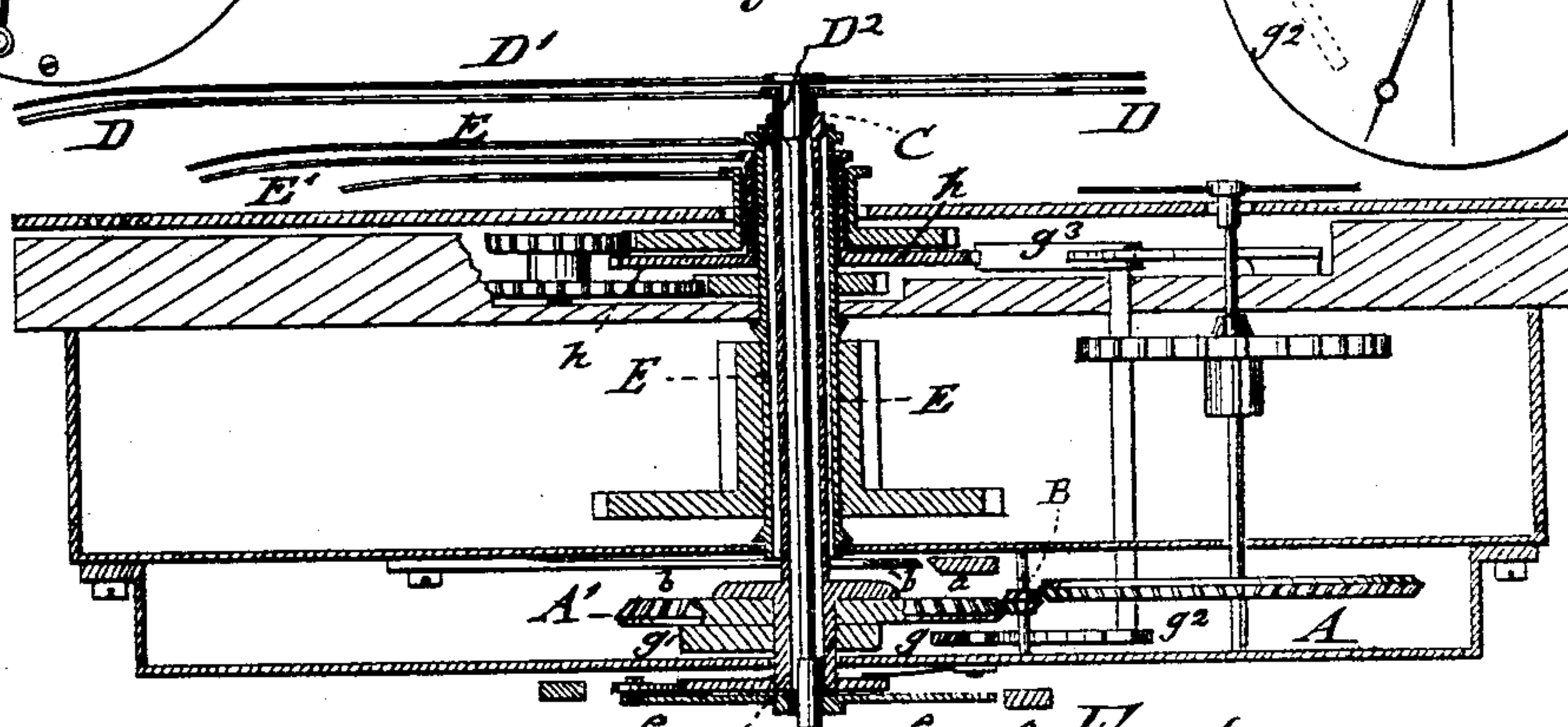
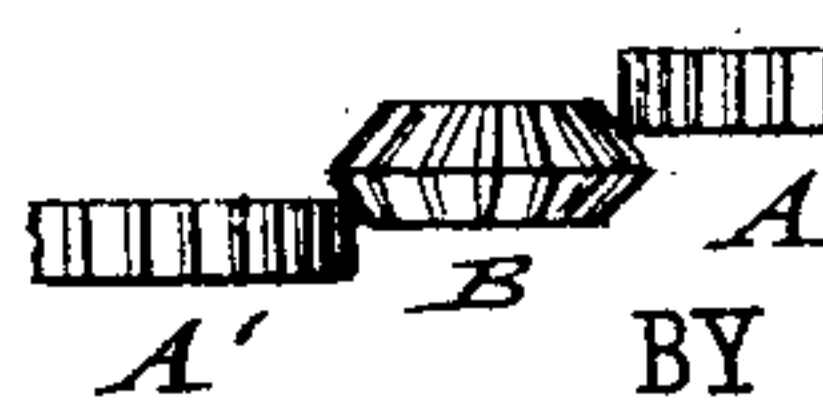
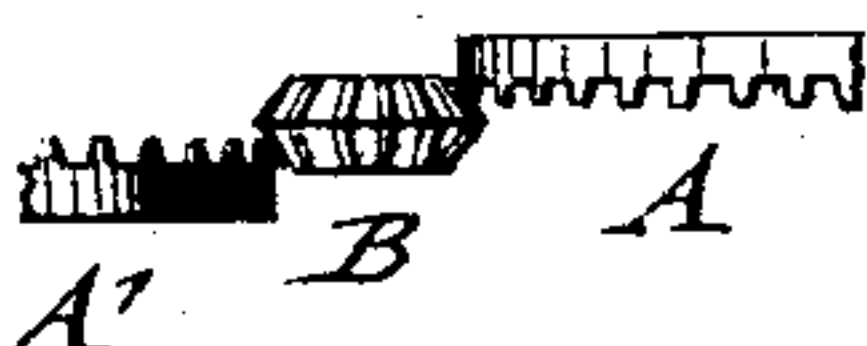


Fig: 3.

Fig: 4.

WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY A. LUGRIN, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
PROSPER NORDMANN, OF SAME PLACE.

STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 232,737, dated September 28, 1880.

Application filed June 21, 1880. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. LUGRIN, of the city, county, and State of New York, have invented certain new and useful Improvements in Stop-Watches, of which the following is a specification.

This invention relates to improvements in stop-watches in which the timing attachment is thrown in or out of gear with the watch-movement by means of two toothed wheels and an intermediate double-beveled pinion; and the invention consists of a timing attachment consisting of a toothed wheel on the arbor of the fourth wheel, of an intermediate double-beveled transmitting-pinion, and of a second toothed wheel which is applied to a hollow tubular arbor that passes through the hollow tubular arbor of the minute-hand and carries the quarter-second hand at its opposite end. The arbor of the split quarter-second hand passes through the hollow arbor of the quarter-second hand, the latter being provided with a shifting mechanism, lifting-lever, and spring to throw its toothed wheel in or out of gear with the pinion, while the arbor of the split quarter-second hand has a stop-disk at the top of the movement. The arbor of the minute-hand is provided with a stop-disk and with a sleeve-shaped arbor which carries a split minute-hand. A spring-arm bears on the disk and stops the split minute-hand when it is desired to use the split quarter-second and minute hands. The split minute-hand is carried up to the minute-hand when the stop-disk is released by the usual shifting mechanism.

In the accompanying drawings, Figure 1 represents a face view of my improved stop-watch on an enlarged scale. Fig. 2 is a vertical central section of the same. Figs. 3 and 4 are detail side views of different forms of the motion-transmitting wheels and double-beveled pinion; and Figs. 5 and 6 are, respectively, a bottom and a top view of the movement, showing the mechanism for stopping the split minute-hand and shifting it to the minute-hand.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a toothed wheel, which is keyed to the arbor of the second-hand, and which is made either with

straight or beveled teeth or in the nature of a crown-wheel, as shown, respectively, in Figs. 4, 2, and 3. The toothed wheel meshes, by a small intermediate double-beveled pinion, B, with a second gear-wheel, A', which is keyed to a hollow arbor, C, that passes through the hollow arbor of the minute-hand and to the other side of the movement, and carries at its opposite end the quarter-second hand D, which moves along a suitably-graduated auxiliary dial that encircles the face-dial of the watch. The split quarter-second hand D' is arranged on the same side of the movement, its arbor D² being passed through the hollow arbor of the quarter-second hand.

The quarter-second hand D is set into motion by throwing the toothed wheel A' into gear with the intermediate double-beveled pinion, B, which is accomplished by the withdrawing of the beveled lever *a* from a lifting-spring, *b*, and the action of a spring, *d*, interposed between the toothed wheel and frame of the movement.

By throwing the lever *a* under the spring *b* the spring *b* lifts the hollow arbor C and gear-wheel A', so that the connection with the double-beveled pinion is interrupted and the motion of the quarter-second hand stopped.

The split quarter-second hand is stopped in the customary manner in stop-watches by a friction-disk, *e*, and lever *f* at the top of the movement and sent after the quarter-second hand by the usual spring and cam. Both hands D and D' are then returned jointly to the starting-point by the usual return-lever *g* and heart-shaped cam *g'* on the arbor of the quarter-second hand employed in stop-watches.

The arbor of the minute-hand E carries a disk, *h*, to which the split minute-hand E' is connected by a sleeve.

The split minute-hand works in connection with the quarter-second hand, as follows: When the quarter-second hand is set in motion the return-lever *g* is carried away from the heart-shaped cam, and, pushing against a lever-arm, *g*², throws a lever-arm, *g*³, at the opposite end of its shaft against the disk *h* of the split minute-hand, so as to stop it. The minute-hand then goes on, while the split minute-hand is stopped. When the return-lever *g*, at the end

of the observation, falls back to its first position on its cam the lever-arm g^3 releases the disk h , which, by means of its spring, sends the split minute-hand into line with the minute-hand and returns simultaneously therewith the quarter-second and split quarter-second hands to the starting-point.

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

1. In a stop-watch, the combination of a toothed wheel on the arbor of the second-hand and of an intermediate double-beveled transmitting-pinion with a toothed wheel on the arbor of the quarter-second hand and with a lever and spring devices for throwing the toothed wheel of the quarter-second hand in or out of gear with the transmitting-pinion, as set forth.

2. In a stop-watch, the combination of the hollow arbor of the quarter-second hand, pass-

ing through the hollow arbor of the minute-hand, and being connected thereto at the top of the movement, with transmitting-gearing and mechanism for throwing the hollow arbor in or out of gear therewith, as set forth.

3. In a stop-watch, the combination of the hollow arbor of the minute-hand, carrying a disk and split minute-hand, with a stop-lever and shifting mechanism working jointly with the shifting mechanism of the quarter-second hand, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 16th day of June, 1880.

HENRY A. LUGRIN.

Witnesses:

PAUL GOEPEL,
CARL KARP.