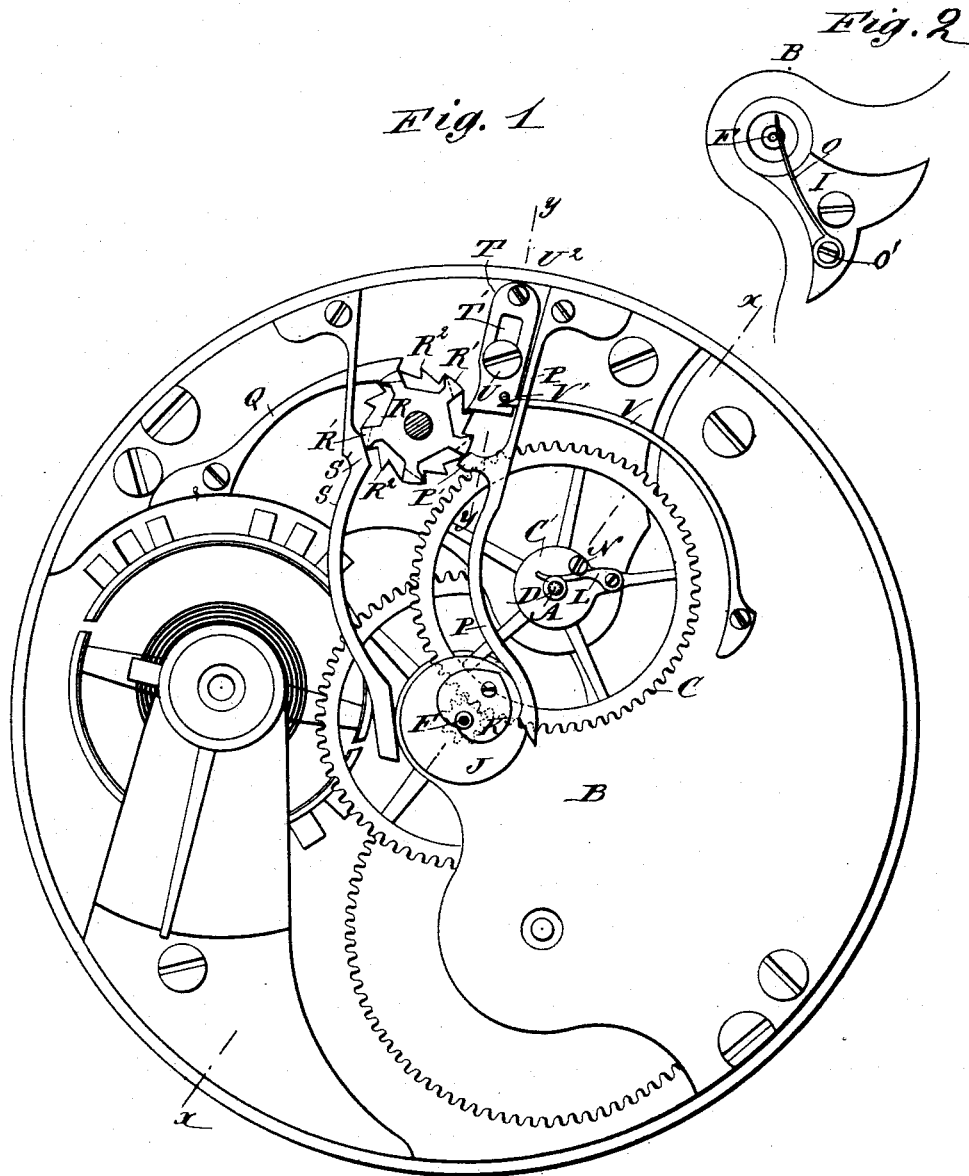


E. J. A. DUPUIS.

STOP WATCH.

No. 343,149.

Patented June 1, 1886.



WITNESSES:

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E. J. A. DUPUIS.

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Fig. 3

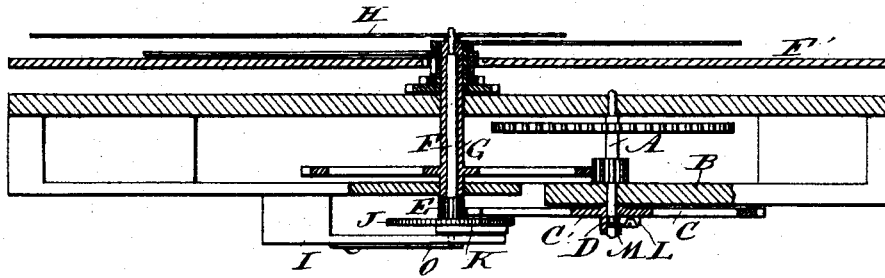


Fig. 4

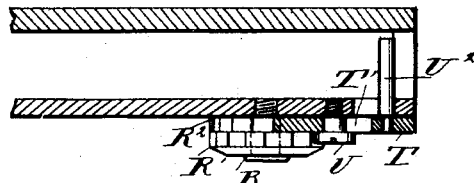


Fig. 6

Fig. 5

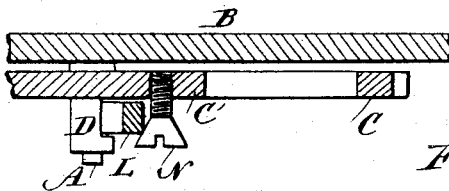
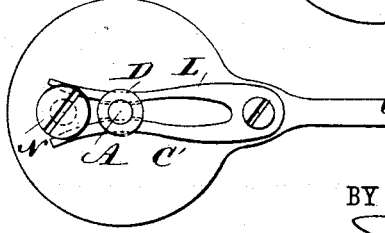
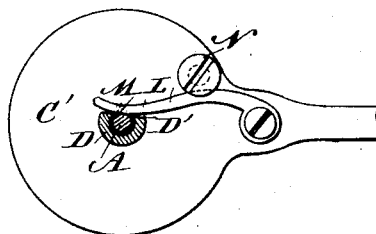


Fig. 7



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UNITED STATES PATENT OFFICE.

EUGÈNE J. A. DUPUIS, OF NEW YORK, N. Y.

STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 343,149, dated June 1, 1886.

Application filed November 21, 1885. Serial No. 153,514. (No model.)

To all whom it may concern:

Be it known that I, EUGÈNE J. A. DUPUIS, of the city, county, and State of New York, have invented a new and useful Improvement in Stop-Watches, of which the following is a full, clear, and exact description.

This invention relates to certain new and useful improvements in that class of watches which are provided with a separate second-hand mounted to revolve over the dial in one minute, and to indicate seconds and fractions thereof.

The object of my invention is to simplify the construction of the watch, and to construct it so that it operates more rapidly and exactly.

The invention consists in the construction and combinations of parts and details, as will be fully described and set forth hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a face view of the works of my improved stop-watch. Fig. 2 is a detail face view of the bridge and spring above the heart-cam. Fig. 3 is a cross-sectional view on the line *x x*, Fig. 1. Fig. 4 is a detail sectional view on the line *y y*, Fig. 1. Fig. 5 is a detail face view of the spring acting on the second-hand arbor, parts being in section. Fig. 6 is a longitudinal sectional view of the same. Fig. 7 is a face view of a modification of the same.

The second-wheel arbor A is revolved in the usual manner by the watch mechanism, and on that end of the said arbor projecting beyond the back plate, B, of the works, the cog-wheel C is mounted loosely, which wheel is provided with central plate, C', from which the neck D projects at the center. The said cog-wheel C engages with the pinion E, mounted rigidly on the arbor F, passed loosely through the hour-hand arbor G, which must be made tubular, and on that end of the arbor F projecting from the dial F' the second-hand H is mounted, which extends to the rim of the dial, as in all stop-watches. The end of the arbor F is mounted to turn in the bridge I on the back plate, B, and below the said bridge the brake-wheel J and the heart-cam

K are rigidly mounted on the arbor F, adjacent to the pinion E.

On the central plate, C', of the wheel C the spring L is fastened, the free end of said spring resting against the arbor A, the neck D being provided with the slot D', through which the spring L passes, so that it can rest against the arbor in the annular groove M, provided in the arbor, to prevent shifting of the arbor in the direction of its length. The screw N, having the under side of its head beveled, is screwed into the top of the plate C, and the bevel of the said head rests against one side edge of the spring L, so that by screwing said screw up or down the spring is adjusted to exert a greater or less pressure against the arbor A. If desired, the spring L may be forked, as shown in Fig. 7, and in this case the adjusting-screw must be between the two shanks or prongs of the said spring, both prongs of the spring resting against the arbor A.

On the bridge I the spring O is secured to rest against the upper projecting end of the arbor F, and is adjusted by means of the screw O' in the said bridge I, which spring serves to prevent the arbor F from revolving too freely.

On the face of the plate B the spring P is secured at one end, the free end of the spring being adjacent to the edge of the heart-cam K, and the said spring is provided with the lug P', on which the teeth R' of the ratchet and cam wheel R can act. The spring S also has one end secured on the face of the plate B, and the free end of the spring is adjacent to the edge of the brake-wheel J, and the said spring is provided with the lug S', on which the teeth R' of the wheel R can also act.

The locking-pawl Q, which prevents the reverse movement of the wheel R, also consists of a spring having one end secured on the face of the plate B and the other end engaged with the teeth R' of the wheel R.

The sliding pawl T, for operating the wheel R, is provided with the longitudinal slot T', through which the single screw U passes into the plate B, and serves to hold the sliding pawl on the plate and to guide it. The inner end of the sliding pawl T can engage with the teeth R' of the wheel R, and the outer end is provided with the pin U², which projects through

a slot in the face-plate B, and on which pin U² a push-pin of the usual construction—such as are used in stop-watches—can act. The sliding pawl T is pressed from the wheel R by the spring V, having one end rested against the pin V' on the said pawl T and the other end secured on the face of the plate B.

The operation is as follows: When the second or fly-back hand is at rest, the end of the spring P rests against the edge of the heart-cam K, and the end of the brake-spring S is disengaged from the edge of the brake-wheel J. The second-wheel arbor A revolves without revolving the wheel C, as the heart-cam is held by the spring P, and the wheel C is engaged with the pinion E on the same shaft or arbor with the heart-cam. When the second-hand is to be thrown in gear, the pawl T is pressed inward and revolves the wheel R such a distance that a tooth, R', acting on the lug P' of the lever-spring P, throws the said spring from the heart-cam K, which is thus released. The friction of the spring L on the arbor A is sufficient to cause the said arbor to revolve the cog-wheel C, and from the same the arbor F is revolved, which carries the second-hand H. To stop the second-hand, the pawl T is again pushed inward, and the wheel R is revolved such a distance that the tooth R', which rested on the lug S' of the spring S, slides off the same and permits the free end of said spring to snap against and engage the edge of the brake-wheel J, which is thus locked in place and prevents further movement of the arbor F and the second-hand H on the same. To throw the hand H back to the starting point—that is, back to "XII"—the pawl T is again pushed inward, whereby the wheel R is revolved such a distance that the lug P' of the spring P slides off its tooth R', and the free end of the spring strikes the edge of the heart-cam and throws the said cam back into the original position. At the same time another tooth, R', acts on the lug S' of the lever S and throws the free end of said spring from the edge of the wheel J. The wheel C and the pinion E are engaged at all times; but the friction of the spring L is only great enough to revolve the fly-wheel C when the heart-cam and the brake-wheel J are disengaged.

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

1. A stop-watch having a pinion on the arbor carrying the second-hand, continually engaged with a wheel on one of the arbors of the watch-works, which wheel is provided with a friction device for revolving said wheel from the said arbor, substantially as herein shown and described.

2. A stop-watch having a pinion on the ar-

bor carrying the second-hand, continually engaged with a wheel loosely mounted on one of the arbors of the watch-works, which loose wheel is provided with a spring friction device by which the said wheel can be revolved from the arbor on which it is mounted, substantially as herein shown and described.

3. In a stop-watch, the combination, with an arbor carrying the second-hand, of a pinion on said arbor, a cog-wheel engaging with said pinion and mounted loosely on the second-wheel arbor of the watch, and of a spring on said wheel resting against the second-wheel arbor, substantially as herein shown and described.

4. In a stop-watch, the combination, with an arbor carrying the second-hand, of a pinion on said arbor, a cog-wheel engaged with said pinion and mounted loosely on the second-wheel arbor, of a spring on said wheel resting against the said second-wheel arbor, and of a screw for adjusting the tension of said spring, substantially as herein shown and described.

5. In a stop-watch, the combination, with the arbor carrying the second-hand, of a pinion, a heart-cam, and a brake-wheel, all mounted rigidly on said arbor, a cog-wheel mounted loosely on the second-wheel arbor of the watch, and of a friction device for locking said loose wheel on the second-wheel arbor, substantially as herein shown and described.

6. In a stop-watch, the combination, with an arbor carrying the second-hand, of a pinion, a heart-cam, and a brake-wheel mounted rigidly on the said arbor, a spring acting on the heart-cam, a spring acting on the brake-wheel, a cam-wheel acting on both of said springs, a cog-wheel mounted loosely on the second-wheel arbor of the watch and engaging with the pinion on the arbor carrying the second-hand, and a friction device for locking the said cog-wheel on the second-wheel arbor, substantially as herein shown and described.

7. In a stop-watch, the combination, with an arbor carrying the second-hand, of a pinion, a brake-wheel, and a heart-cam mounted rigidly on the same, a cog-wheel on the second-wheel arbor of the watch, a friction device for locking the said cog-wheel on the second-wheel arbor, a spring acting on the brake-wheel, a spring acting on the heart-cam, a combined cam and ratchet wheel for acting on said springs, and of the sliding pawl T, acting on said wheel, substantially as herein shown and described.

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Witnesses:

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