

J. KARR.
CHRONOGRAPH.

No. 263,183.

Patented Aug. 22, 1882.

Fig. 1.

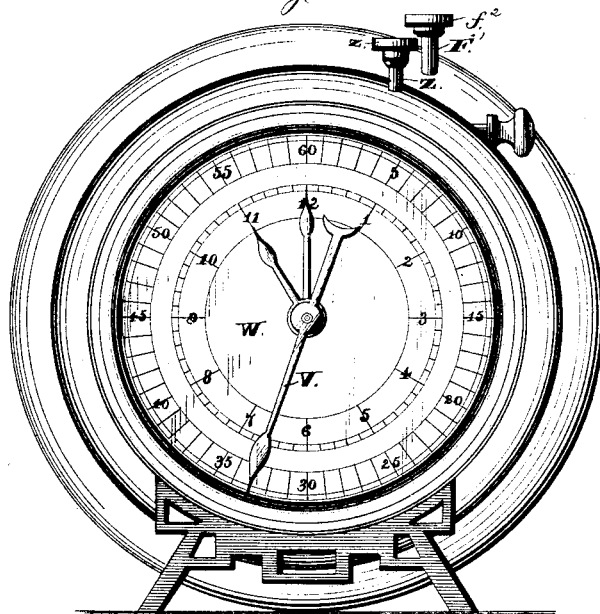
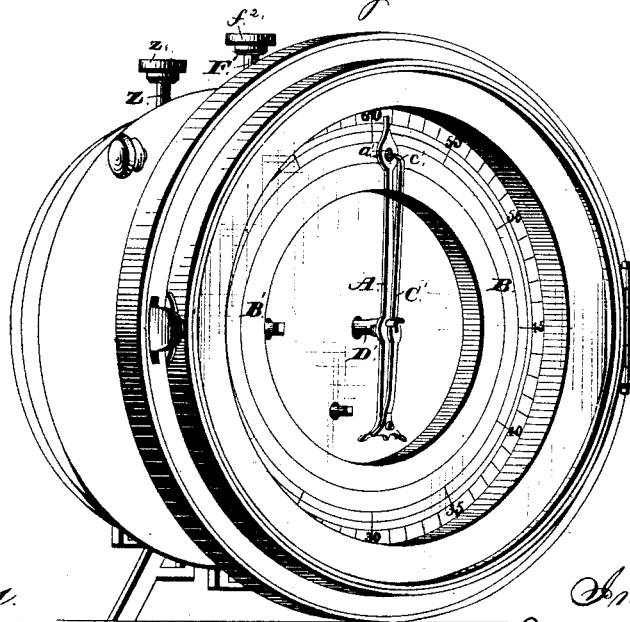


Fig. 2.



Witnesses.

Gas. E. Hutchinson.
Henry C. Hazard.

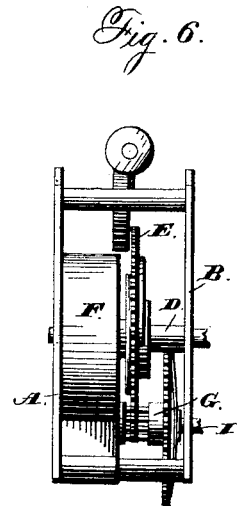
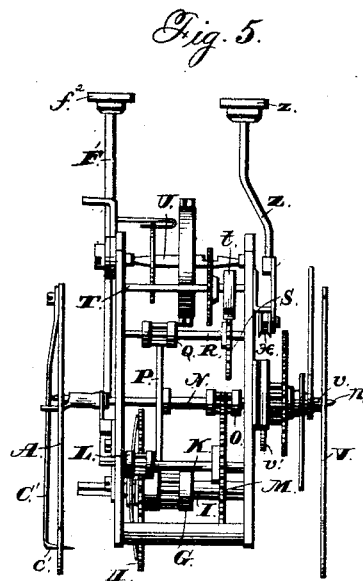
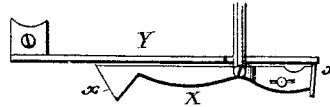
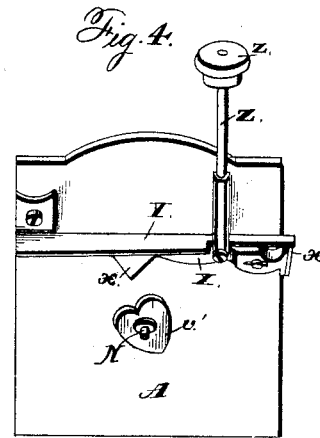
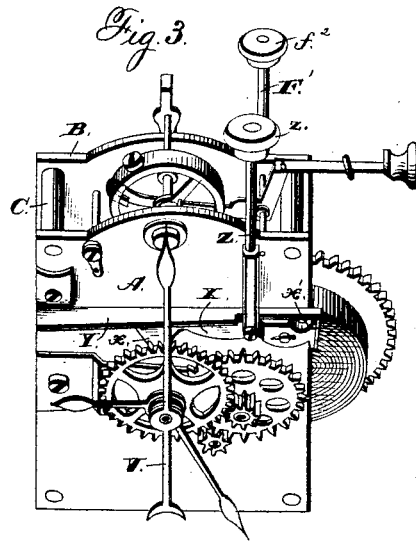
Inventor.

J. Karr, by
Geo. S. Prindle, his Atty

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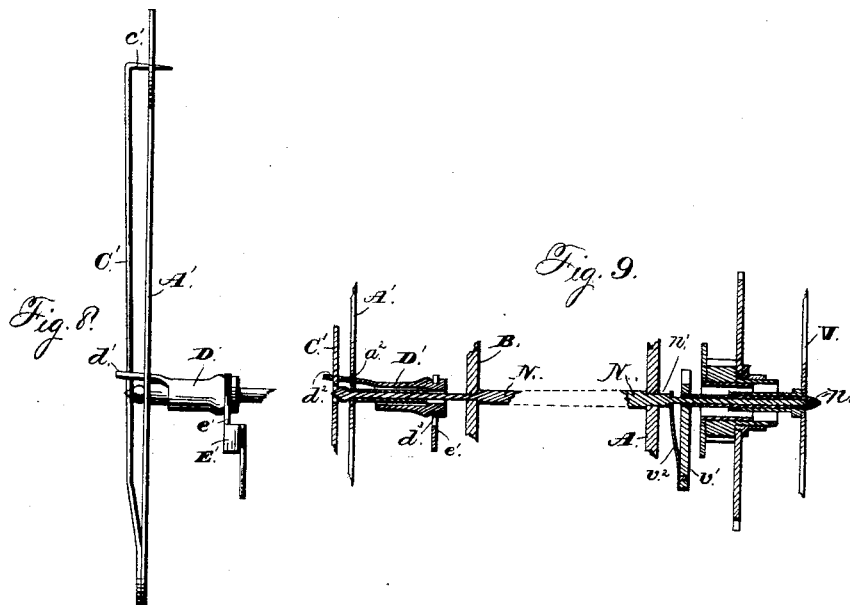
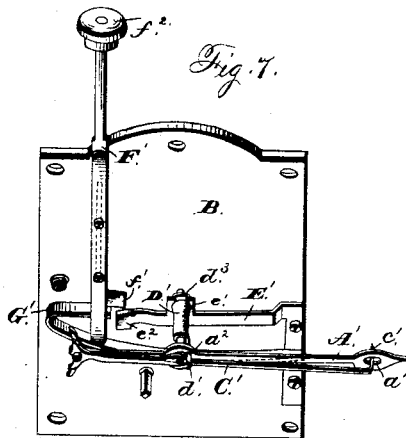
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UNITED STATES PATENT OFFICE.

JACOB KARR, OF WASHINGTON, DISTRICT OF COLUMBIA.

CHRONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 263,183, dated August 22, 1882.

Application filed May 25, 1882. (Model.)

To all whom it may concern:

Be it known that I, JACOB KARR, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Time Mechanism; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of my improved clock as in use. Fig. 2 is a perspective view of the rear side of the same. Fig. 3 is a perspective view of the front side of the movement detached from its case. Fig. 4 is a like view of the front plate, with the mechanism employed for returning the sweep seconds-hand to zero, the full lines showing the normal position of parts and the dotted lines their position when in use. Figs. 5 and 6 are elevations from opposite sides of the time-train. Fig. 7 is a perspective view of the rear side of said movement. Fig. 8 is a side elevation of the sweep seconds-hand and marker and of the sleeve and spring employed for moving the latter, and Fig. 9 is a section upon line *xx* of Fig. 8.

Letters of like name and kind refer to like parts in all of the figures.

The design of my invention is to provide means whereby seconds and fractions of seconds may be accurately noted and recorded; and it consists principally in the means employed for connecting the seconds-hand with its arbor, substantially as and for the purpose hereinafter specified.

It consists, further, in the means employed for turning the seconds-hand to zero when desired, substantially as and for the purpose hereinafter shown.

It consists, further, in the means employed for operating the marker, substantially as and for the purpose hereinafter set forth.

It consists, finally, in a clock provided with the usual front dial and hands and a sweep seconds-hand, and having within its rear side a second dial divided into seconds and fractions of seconds and provided with a hand and marker, which are secured to and moved by the same arbor with said sweep seconds-hand and pass over said dial, and are adapted to indicate and record upon the same seconds and

fractions of seconds, substantially as and for the purpose hereinafter shown and described.

In the annexed drawings, A represents the front plate, and B the back plate, of the movement, connected together at their corners in the usual manner by means of four posts, C. Journaled at one side of the frame thus constructed is the main arbor D, which carries a wheel, E, and is driven by means of a spring, F. The wheel E meshes with and imparts motion to a pinion, G, which, with a wheel, H, is journaled upon an arbor, I, and by spring-friction or any usual means causes the same to rotate therewith for the purpose of driving the hands, while permitting said arbor to be turned within and independent of said pinion and wheel whenever necessary for the purpose of setting the hands, as will be hereinafter explained. The arbor I is journaled below and toward the transverse center of the frame, while at a point above and toward the opposite side of the latter is journaled an arbor, K, upon which is secured a pinion, L, and a wheel, M. Motion is imparted to said arbor by means of the wheel H, which meshes with said pinion L.

At the axial center of the frame is journaled an arbor, N, upon which is secured a pinion, O, and a wheel, P. Motion is imparted to said arbor by means of the wheel M, which meshes with said pinion O, while said wheel P meshes with and drives a pinion, Q, that is secured upon an arbor, R, which is journaled at a higher point and carries an escape-wheel, S. A pallet-arbor, T, having pallets *t*, and a balance-wheel arbor, U, completes the time-train, which, aside from the transposition of the minutes-arbor I and the seconds-arbor N, is of ordinary construction and arrangement.

The center arbor, N, carries upon its projecting end a sweep seconds-hand, V, that has such length as to cause its end to pass over the outer portion of the dial W, at which point said dial is divided into sixty parts, representing seconds of time, and each of said parts is subdivided into four parts that represent quarter-seconds. The seconds-hand V is intended for timing purposes; and in order that it may be readily and quickly set at zero, the following-described means are employed, viz: the hand V is secured upon one end of a sleeve, *v*, which is loosely journaled upon the arbor N,

and is held in place by a nut, *n*, upon the end of the latter. Upon the inner end of said sleeve is secured a heart-shaped cam, *v'*, and upon the rear face of the same is attached one end of a flat spring, *v*², that has its opposite free end within an annular groove, *n'*, or against a collar which is provided upon said arbor, the arrangement being such that the outward pressure of said spring, forcing the outer end of said sleeve *v* against said nut *n*, produces sufficient friction to cause said hand *V* to rotate with its arbor under ordinary circumstances, while permitting of the independent movement of said hand when desired.

15 Pivoted at one end to or upon the plate *A* above the arbor *N* is a bar, *X*, which at its inner end, at its lower edge, has a V-shaped lug, *x*, that by a downward movement of said bar may be caused to engage with the cam *v'*.
20 Said bar is held in a horizontal position by means of a flat spring, *Y*, which is secured at one end to the plate *A*, and thence, extending over said bar, has its free end in engagement with a A-shaped lug, *x'*, that is provided upon and extends upward from the outer end of the latter. The downward pressure of said spring upon the lug *x'* causes the inner end of said bar to be raised to and held with a yielding pressure against the lower face of the former, which thus performs the double office of a spring and stop. The point of the lug *x* is directly over the center of the arbor *N* and the notch of the cam *v'* exactly in line radially with the point of the hand *V*, so that
35 by depressing the inner end of the bar *X* until said lug impinges upon said cam the latter will be turned until its said notch is uppermost and said lug is in engagement therewith, the result being the turning of said hand from whatever position it occupies to a vertical position with its point directly over the zero-mark.

The bar *X* is operated by means of a rod, *Z*, which has one end pivoted to the same between its pivotal bearing and the lug *x'*, and from thence extends upward through the case, and is provided upon its projecting end with a button, *z*. If, now, said button be sharply depressed and then released, said bar will be caused to return the hand *V* from whatever position it occupies to zero, as before described.

In order that, if desired, fractions of a second may be recorded, a second seconds-hand, *A'*, is secured upon the rear projecting end of the arbor *N*, and is adapted to move around and over a dial, *B'*, that is provided within the rear side of the case. As said hand moves in the reverse direction from the hand *V* with reference to its dial *B'*, said dial has its graduations numbered from right to left, as shown in Fig. 2.

65 Secured at one end to or upon the outer face, at the short end of the hand *A'*, is a marker, *C'*, which has the form shown in Figs. 7 and 8, and is constructed of or from spring metal. The free end of said marker, which extends nearly to the point of said hand *A'*, is provided

with an arm, *c'*, that passes toward the front of the clock through an opening, *a'*, which is formed in said hand near its point. The normal position of the marker *C'* is, as seen in Figs. 7 and 8, with its outer end or point, *c'*, standing away from the dial *B'*, and by a pressure upon its outer face its said point may be caused to impinge upon said dial or upon a recording-surface placed thereon. By providing said point with ink or other like means for making a mark, or by making it sufficiently sharp to puncture or indent the surface prepared, an accurate record of the position of said hand at the instant such contact is caused may be secured.

The manipulation of the marker *C'* is effected by means of the following - described mechanism, viz: Journaled loosely upon the arbor *N* is a sleeve, *D'*, which, at its outer end, is provided with an arm, *d'*, that extends outward through an opening, *a*², near the center of the hand *A'*, and at its end has a transverse opening, *d*², through which passes said marker. Said sleeve being capable of a longitudinal movement upon said arbor, it will be seen that if it is moved inward said marker will be carried in the same direction, and that upon being released said sleeve and marker will return to their normal positions. The sleeve *D'* is provided at its inner end with a circumferential groove, *d*³, which is engaged by a forked lug, *e'*, that projects from the edge, near the longitudinal center of a flat spring, *E'*, which has one end secured upon the plate *B*, and at its opposite free end *e*² is twisted so as to give its outer face at such point an inclination upward and toward said back plate. A bar, *F'*, secured vertically upon said plate *B*, so as to be capable of vertical motion, is provided at its lower end with a flat lug, *f'*, which extends over the twisted end *e*² of said spring *E'*, and has the same inclination of its faces. If, now, the bar *F'* is moved downward, its lug *f'* will engage with the free end *e*² of the spring *E* and will press the same toward the plate *B*, by which movement the sleeve *D'* and marker *C'* will be carried in a like direction until said lug *f'* passes below said bar, when the latter will spring outward again to its normal position. When said operating-bar is moved upward its lug *f'* will engage with and move the end *e*² of said spring outward until it has passed the same, when said parts will occupy their normal positions and be ready for a repetition of the operation before described. The upper end of the bar *F'* projects through the case, and is furnished with a button, *f*², by which it may be pushed downward, while the lower end of said bar is engaged by a spring, *G'*, which is adjusted to hold the same with a yielding pressure at the upper limit of its motion.

If desired, the movement of the operative mechanism may be reversed and the depression of the bar *F'* caused to move outward and then release the marker *C'*, so as to allow the latter to spring inward and impinge upon the recording-surface, in which event it would be

impossible to cause said marker to maintain contact with the latter a sufficient time to produce an elongated mark.

While my improvements are shown in connection with clocks, they are equally applicable to pocket time-pieces, and will be applied to the same.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. As a means for connecting the seconds-hand V with the arbor N, the sleeve *v*, secured at one end within said hand and journaled upon said arbor, and the flat spring *v*², secured upon the inner end of said sleeve through the cam *v'*, and having its free end contained within an annular groove or against a shoulder, *n'*, which is provided within or upon the periphery of said arbor, and adapted to press said sleeve against a fixed bearing attached to the latter, substantially as and for the purpose specified.

2. In combination with the seconds-hand V, journaled by means of the sleeve *v* upon the arbor N, the heart-cam *v'*, secured upon the inner end of said sleeve, the bar X, pivoted upon the plate A and provided with the V-shaped lug *x* and A-shaped lug *x'*, the spring Y, adapted to hold said bar in a horizontal position, and the rod Z, pivoted upon said bar X, and adapted to move the same downward to cause said lug *x* to engage with said cam *v'*, substantially as and for the purpose shown.

3. In combination with the marker C', the sleeve D', adapted to move longitudinally upon the arbor N, and provided at its inner end with the circumferential groove *d*³ and at its outer end with the arm *d'*, which loosely embraces said marker, the spring E', having the forked lug *e'* and twisted free end *e*², the vertically-movable bar F', provided with the inclined lug *f'*, and the spring G', adapted to hold said bar at the upper limit of its motion, all arranged to operate substantially as and for the purpose set forth.

4. A clock provided with the usual front dial and hands and a sweep seconds-hand, and having within its rear side a second dial divided into seconds and fractions of seconds and provided with a hand and marker, which are secured to and moved by the same arbor with said sweep seconds-hand and pass in reverse direction over said rear dial, and are adapted to indicate and record upon the same seconds and fractions of seconds, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of May, 1882.

JACOB KARR.

Witnesses:

HENRY C. HAZARD,
JAS. E. HUTCHINSON.