

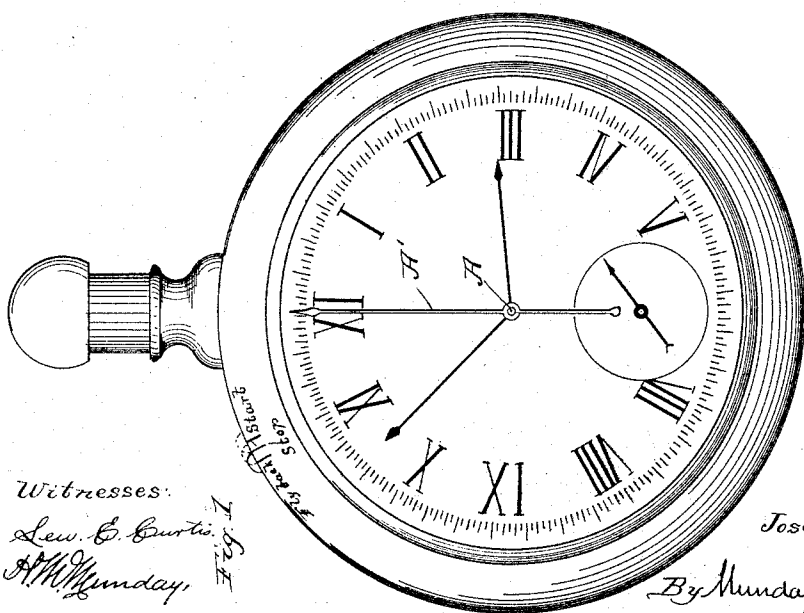
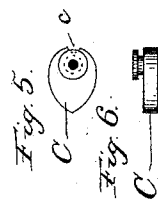
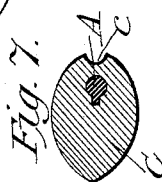
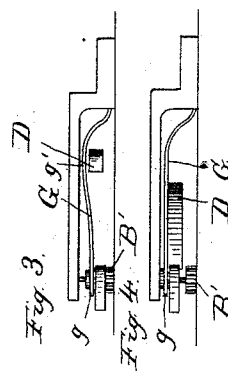
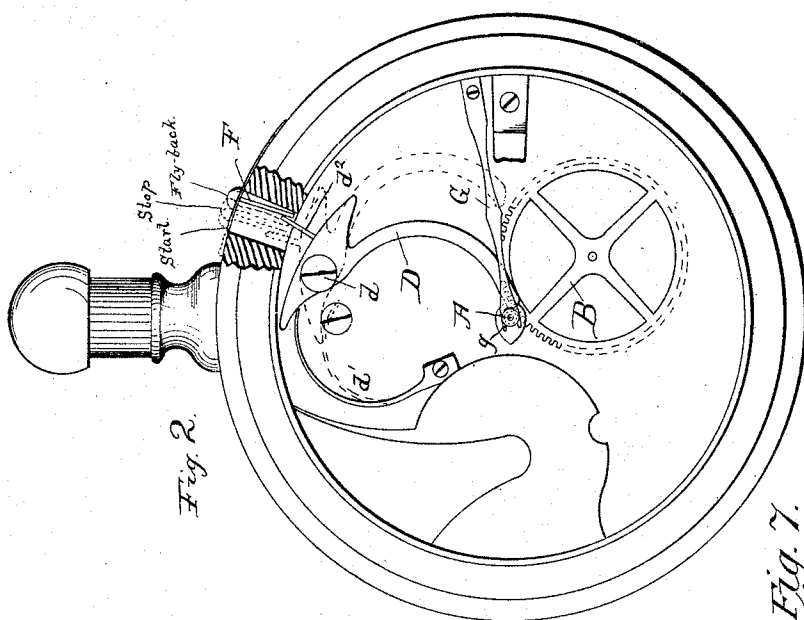
(No Model.)

J. BACHNER.

STOP WATCH.

No. 354,084.

Patented Dec. 14, 1886.



Witnesses:
 Lew. C. Curtis. *Fig. 1*
 A. M. Munday.

Inventor:
Joseph Backner:

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Her Attorneys:

UNITED STATES PATENT OFFICE.

JOSEPH BACHNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND
GEORGE A. HARMOUNT, OF SAME PLACE.

STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 354,084, dated December 14, 1886.

Application filed July 19, 1886. Serial No. 208,408. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BACHNER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Chronographs or Stop-Watches, of which the following is a specification.

The object of the present invention is to simplify and cheapen the construction of the mechanism for starting, stopping, and returning the index or hand of stop-watches.

The nature of the means I employ will be best understood by reference to the drawings, in conjunction with the detailed explanation hereinafter given.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a face view of my improved stop-watch. Fig. 2 is a rear view of the same with the back of the case removed, showing in plan the mechanism which pertains to the stop movement. Fig. 3 is a side elevation of some of the operative parts shown in Fig. 2. Fig. 4 is the same view with the parts in a different position. Figs. 5 and 6 are respectively a top and side view of the heart-cam. Fig. 7 shows the spline-connection between the heart-cam and the seconds-arbor.

In said drawings, A represents the central seconds-arbor, which is concentric in this case with the hour and minute shaft.

A' is the pointer, which is mounted upon the central seconds-arbor and timed to make one revolution in each minute, or to move at that rate. By means of the stop mechanism presently to be described this pointer may be stopped at any instant in its revolution, and also may be returned to the starting-point, stopped there, and started from there, as in all stop-watches.

When in motion, the arbor A takes its power from the watch-movement through the gear-wheel B, which gear-wheel is connected to the train of the watch. The gear-wheel B meshes with the pinion B', that is loose upon the arbor A. Immediately above this pinion B' a heart-cam, C, is secured to the arbor A in such manner, preferably by a spline, that while it may have a longitudinal movement thereon any rotation of the cam will cause the arbor

to revolve. This heart-cam lies adjacent to the pinion, and when pressed down upon the pinion by means of the spring serves, by its friction upon the pinion, to connect the pinion and its arbor, so that the motion is imparted to the arbor, and when the pressure of the spring G is removed from the heart-cam and said cam raised out of contact with the face of the pinion the pinion may move without causing the arbor to revolve. The heart-cam is so constructed that when its periphery is struck by the end of the lever D it will revolve under the impact in one direction or the other until the end of the lever rests in the notch c.

It will now be understood that so long as the heart-cam rests down with a spring-pressure upon the pinion the arbor A will continue to revolve with the motion of the pinion, by reason of the frictional contact between the face of the heart-cam and the face of the pinion; further, that when the heart-cam is raised out of contact with the pinion the pinion will continue to revolve without imparting its motion to the arbor; further, that if the end of the lever D be brought against the periphery of the heart-cam while the latter is disengaged from the pinion the arbor will be thereby rotated in one direction or the other until the end of the lever rests in the notch or part of the cam which is nearest to its center of rotation, and that the arbor will stop at this point. It will be further understood that the hand or pointer is fixed to the arbor A, so that when the arbor is thus stopped by the point of the lever striking the notch in the heart-cam the pointer will stand at the starting-place, as shown in Fig. 1.

The lever D is pivoted at d. A spring, d', acting upon the arbor-arm, tends to throw the lever into the position shown in full lines in Fig. 2. A pin, d², projects into the rim of the watch-case in such position that it may be engaged by a pin or projection, F, which is movable from the exterior of the watch-case.

The operation is as follows: We will suppose that the pointer is standing still in the position shown in Fig. 1, the train of the watch being in motion. In such condition the lever will be in the position shown in Figs. 2 and 4, the point of the lever being in contact with the cam and engaging the notch in said cam.

Now, if it be desired to set the pointer in motion, the pin F is pushed into the position indicated in dotted lines in Fig. 2, throwing the lever D into the position indicated in dotted lines at Fig. 2, and in full lines at Fig. 3. A spring, G, which by its forked end *g* engages the collar of the cam C, is thereby released and exerts its pressure upon the cam, bringing the under face of the latter into contact with the upper face of the moving pinion B', whereby the motion of the pinion is imparted to the arbor A and its pointer A'. Now, when it is desired to stop the pointer, the pin F is moved into a position intermediate between the two positions shown in Fig. 2. In other words, far enough so that the end of the lever D shall come in contact with the spring G and cause the spring G to be lifted and the heart-cam to be raised out of contact with the moving pinion, but not far enough to engage the end of the lever with the periphery of the cam. The arbor A is thus stopped at whatever point it may chance to be in its revolution. To return the pointer to the starting-place, the pin F is pushed a little farther in the same direction, when the spring *d'* will throw the end of the lever with some force against the periphery of the cam and cause the latter, with its attached pointer, to revolve in whichever direction is the nearest to the starting-point.

The spring G, which is connected to the cam, is provided with a depression, *g'*, in which, during the motion of the pointer, the end of the lever D rests. The purpose of the spring

d' is to insure a rapid motion of the lever D toward and into contact with the periphery of the heart-cam.

By this construction I greatly simplify the mechanism ordinarily employed in stop-watches and dispense with a number of pieces, greatly cheapening the structure of such devices.

I claim—

1. The combination, with the arbor A, of the moving pinion mounted loosely thereon, the heart-cam keyed to slide thereon, the spring G, and lever D, substantially as specified.

2. The lever D, spring *d'*, spring G, heart-cam depressed by said spring and located on the arbor A, and the loose moving pinion on said arbor, combined and operating substantially as specified.

3. The combination, with the dial of a watch and its train, of the pointer A', arbor A, the heart-cam and moving pinion mounted on said arbor, the spring G, acting to bring the cam and pinion together, the lever D, its spring *d'*, and means, as a sliding pin, F, for imparting movement to the lever from the exterior of the watch, substantially as specified.

4. In a stop-watch, the lever D, in combination with the heart-cam, upon which it acts, and the pins *f* F, by which it is positioned, substantially as specified.

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Witnesses:

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