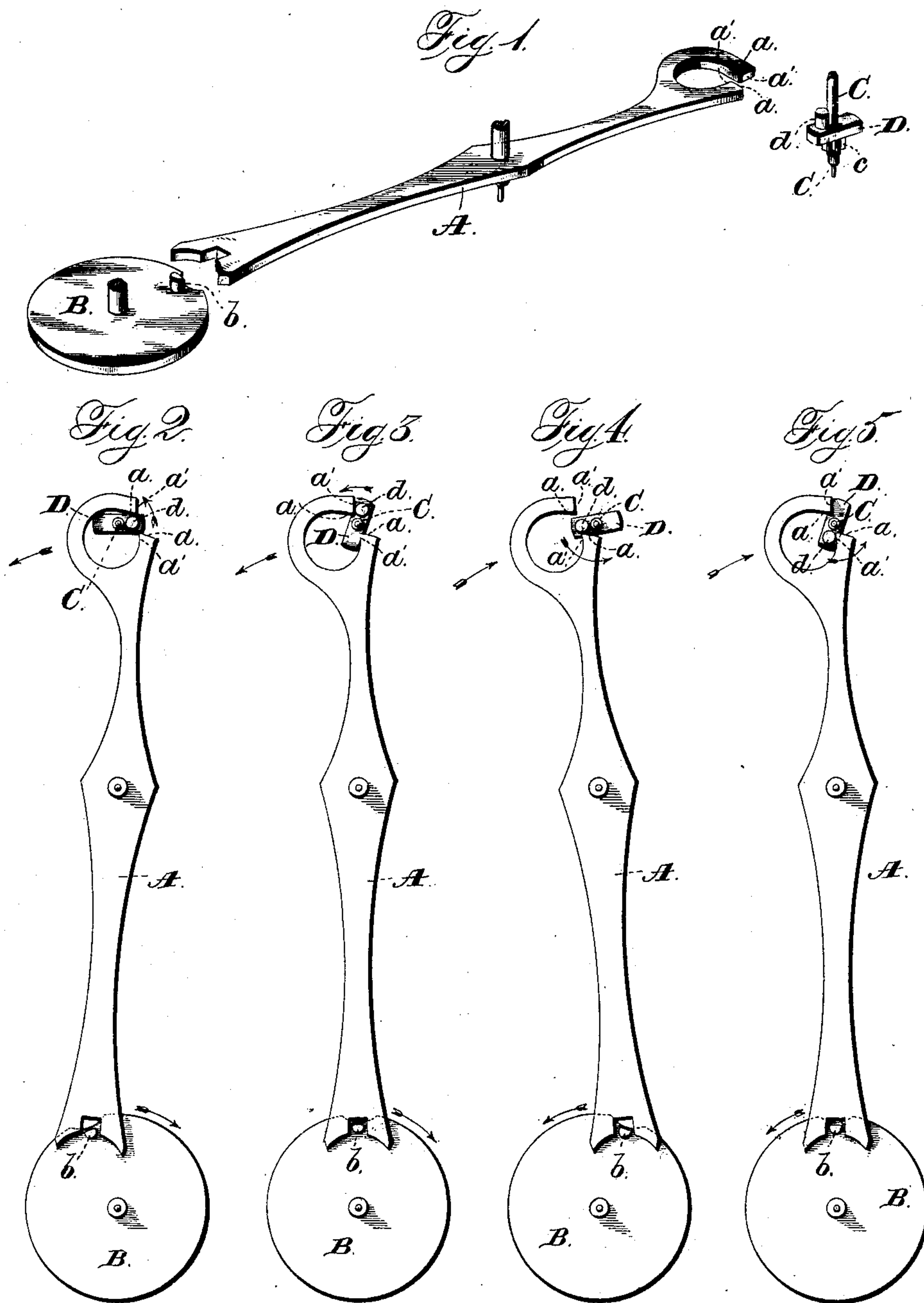


(No Model.)

A. H. POTTER.
WATCH ESCAPEMENT.

No. 360,474.

Patented Apr. 5, 1887.



Witnesses:
Chas. Williamson.
Jas. C. Hutchinson.

Inventor:
Albert H. Potter, by
Grindle & Russell, his Attys

UNITED STATES PATENT OFFICE.

ALBERT H. POTTER, OF GENEVA, SWITZERLAND, ASSIGNOR TO THE NEW HAVEN WATCH COMPANY, OF NEW JERSEY.

WATCH-ESCAPEMENT.

SPECIFICATION forming part of Letters Patent No. 360,474, dated April 5, 1887.

Application filed July 31, 1886. Serial No. 209,601. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. POTTER, of Geneva, in the Republic of Switzerland, have invented certain new and useful Improvements in Watch-Escapements; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of the parts of my escapement separated from each other. Fig. 2 is a plan view of said parts when combined for use, and shows the lever at one extremity of its motion, with the escape-pin locked in position. Fig. 3 is a like view of the same after said lever has reached a central position and said escape-pin is giving an impulse; and Figs. 4 and 5 are plan views of said escapement, and show, respectively, the parts when occupying positions directly opposite to those seen in Figs. 2 and 3.

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

My invention has for its object an increase in the efficiency, accuracy, and simplicity of watches, and a decrease in the cost of the same; to which end my said invention consists, as an improvement in watch-escapements, in a vibratable lever which at one end is provided with two locking-faces that are formed upon separated lines substantially concentric with its pivotal center and two impulse-faces that are formed upon separated lines which are substantially radial thereto, in combination with an escape-pin that is adapted to revolve around a center and to engage alternately with the locking and impulse faces of said lever as the same vibrates upon its pivotal bearing, substantially as and for the purpose hereinafter specified.

Heretofore an escape-lever was constructed in which two impulse-faces were arranged in a line with each other and with the pivotal center of the lever, and were alternately engaged by a pin that rotated with and around the axis of an arbor, said pin and arbor performing the office of the usual escape-wheel and arbor; but in such construction it has been found that too much motion of the lever was necessary in order to permit the escape-pin to pass into and out of engagement with the im-

pulse-faces, and that the drop of said pin from one of said faces to a locking-face was too long to insure smooth, steady motion to the escapement. To remedy these defects I employ a lever, A, which is pivoted at or near its longitudinal center, and at one end is adapted to engage with a pin, *b*, upon the roller B of balance-wheel, as in the usual form of detached lever-escapements. The opposite end of said lever has the peculiar shape in plan view shown, and is provided with two locking-faces, *a* and *a'*, that are formed upon lines which are substantially concentric with the center of vibration, and has also two impulse-faces, *a'* and *a'*, that are formed upon lines which are substantially radial to said center.

Journaled at the pallet end of the lever A, in a line with the pivotal centers of said lever and the balance-wheel, is an arbor, C, which occupies the same position in the time-train as does an escape-wheel arbor, and is provided with the usual pinion, *c*. Above said pinion is secured a straight bar, D, that is provided within one end with a round escape-pin, *d*, which is adapted to engage with the impulse and locking faces of said lever as the latter vibrates and said arbor is revolved by the train.

The arbor C occupies a position between the locking-faces *a* and *a'*, and the faces of the latter are consequently formed upon lines which are separated a distance slightly greater than the diameter of said arbor, so as to cause said faces to clear the same, while the impulse-faces *a'* and *a'* are formed upon lines that are separated a distance substantially equal to one-half the diameter of the escape-pin *d*.

As shown in Fig. 2, the escape-pin *d* is engaged by the upper locking-face *a* while the upper end of the lever A is being swung to the left. When the latter has reached the substantial center of motion in such direction, said escape-pin slips from said locking-face, and engages with the contiguous impulse-face *a'*, as seen in Fig. 3, where it operates to give to said lever an impulse in the direction of its motion.

When the lever A has nearly reached the limit of its motion in the direction shown by the arrows of Figs. 2 and 3, the escape-pin *d*

slips from the upper impulse-face a' , and engages with the lower locking-face a , as seen in Fig. 4, and remains in such engagement until, upon the opposite movement of said lever, a central position is reached, when said pin passes out of engagement with said locking-face and engages with the lower impulse-face a' , as shown in Fig. 5, the operations described being repeated, and said escape-pin, with its arbor, permitted to make two half-revolutions for each double vibration of said lever.

From the foregoing description it will be seen that each impulse is given at substantially a right angle to a line passing through the pivotal centers of the balance-wheel, lever, and escape-pin arbor, in consequence of which the friction between the escape-pin and impulse-faces is reduced to such a point as to render unnecessary the lubrication of the same, or that any special finish should be given to said parts.

The impulse-faces of the escape-lever are cut back as far as is practicable while leaving a safe lock, by which construction the drop of the escape-pin in passing from one of said faces into engagement with the adjacent locking-face is materially less than it would be were said impulse-faces formed upon the same line.

Another advantage is found in the cheapness with which this escapement may be constructed, as each portion of the work may be done by machinery, while in other forms of escapement the parts must be mainly formed or finished by hand, and for such work only the most skillful and expensive labor is available.

Having thus described my invention, what I claim is—

As an improvement in watch-escapements, a vibratable lever which at one end is provided with two locking-faces that are formed upon separated lines substantially concentric with its pivotal center and two impulse-faces that are formed upon separated lines which are substantially radial thereto, in combination with an escape-pin that is adapted to revolve around a center and to engage alternately with the locking and impulse faces of said lever as the same vibrates upon its pivotal bearing, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of July, A. D. 1886.

ALBERT H. POTTER.

Witnesses:

GEO. S. PRINDLE,
HENRY C. HAZARD.