G. P. REED.

Watch Escapement.

No. 35,389.

Patented May 27, 1862.

Fig. 4.

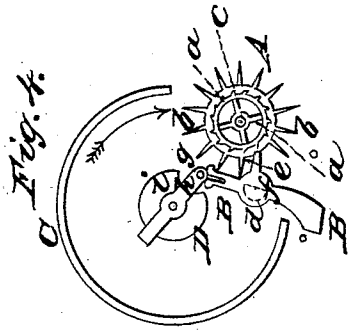


Fig. 6.

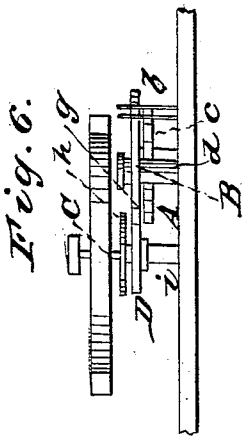


Fig. 3.

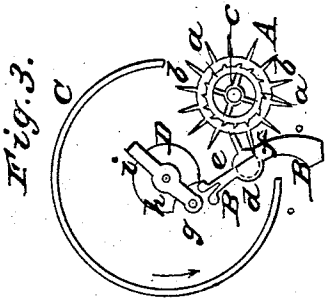


Fig. 5.

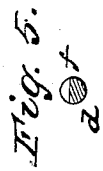


Fig. 7.

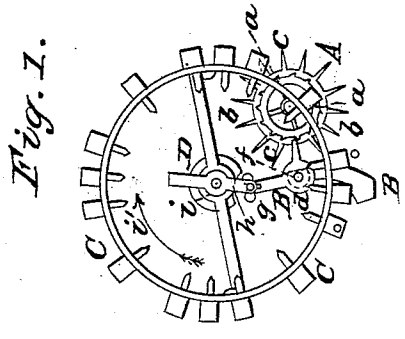
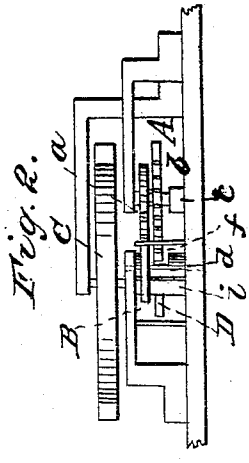


Fig. 8.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

GEORGE P. REED, OF ROXBURY, MASSACHUSETTS.

IMPROVEMENT IN WATCH-ESCAPEMENTS.

Specification forming part of Letters Patent No. **35,389**, dated May 27, 1862.

To all whom it may concern:

Be it known that I, GEORGE P. REED, a citizen of the United States of America, and a resident of Roxbury, in the county of Norfolk and State of Massachusetts, have invented an Improved Watch-Escapement; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 denotes a top view, and Fig. 2 a front elevation, of it. Figs. 3 and 4 are representations of the several parts of the escapement under the two extreme positions of its lever. In Fig. 1 the lever is exhibited as in its mean or medium position.

The nature of my invention or improvement consists in an arrangement and combination, substantially as hereinafter described, of a circular segmental detent and a detaining and impulse pallet with a vibratory lever and either two toothed wheels or one wheel having two sets of teeth, the whole being applied to the balance by means and so as to operate together and with such balance, substantially as hereinafter specified.

The ordinary "lever-escapement," by being stronger and more durable than most other watch-escapements heretofore in use, possesses important advantages. The well-known chronometer-escapement will operate with less friction than the lever-escapement, and will run at even rate for a longer period of time without requiring to be either cleaned or oiled; but owing to its extreme delicacy of construction and consequent liability of derangement it is objectionable for many kinds of watches.

In my improved lever-escapement, as hereinafter explained, I have succeeded in obtaining most, if not all, the good qualities of the lever and chronometer escapements with a very great diminution of friction as regards the operation of the lever. My escapement is one of much simplicity and durability.

Fig. 1 represents the escapement in the act of giving impulse to the balance, the motive power being supposed to be applied so as to clutch or revolve the shaft of the escape or "scape" wheel or wheels. This scape-wheel, made as shown at A in the drawings, consists of two toothed wheels, *a b*, arranged on one upright shaft, *c;* but, instead of being so constructed, it may be one single wheel provided with two sets of teeth like the scape-wheel of the ordinary "duplex-escapement," in which case one set of the teeth would project from the periphery of the wheel, while the other set would extend vertically from the side of the wheel. Near to the scape-wheel is a lever, B, mounted on a vertical shaft, *d*, and being provided with a projecting arm or detaining and impulse pallet, *e*, which is placed on a level and operates with the upper set, *a*, of teeth of the scape-wheel. Below the lever the shaft *d* has a segmental notch cut transversely in it, and of a width a little greater than the thickness of a tooth of the set or wheel *b*. This segmental notch imparts to that part of the shaft which is in the same horizontal plane with it and is marked *f* a form corresponding to that of a circular segment greater than a semi-circle. This part of the shaft, which I have represented in the above-mentioned figures by a red color, is shown separately and in horizontal section in Fig. 5. I term it the "segmental detent," it being arranged in the plane of the teeth *b* and to operate with such teeth or part of the scape-wheel.

The inner end of the lever B is furcated and receives in the notch of the fork a pin, *g*, which projects downward from an arm, *h*, extended from the shaft *i* of the balance-wheel C and above a notched roller or wheel, D, which is formed and is arranged on the shaft *i*, as represented in the drawings, and particularly in Fig. 6, which is a side elevation of the escapement.

The operation of the several parts above explained may be thus described:

In Fig. 1 a tooth of the scape-wheel is shown as in contact with the impulse portion of the pallet *e*. The balance-wheel in moving in the direction of the arrow *i* of Fig. 1 will carry with it the forked arm of the lever B, and will receive an impulse in the direction of the arrow. During the said movement of the balance the tooth of the scape-wheel will be disengaged from and be caused to slip off the pallet. The scape-wheel will continue to move until a tooth of the lower teeth, *b*, may bring up against the curved arc of the segmental detent and the several parts take positions, as shown in Fig. 3. During the counter movement of the balance the lever will be moved around so far as to cause the escape of the tooth from the segmental detent. This will allow another tooth of the scape-wheel to bring up

against the end or detaining portion of the pallet, (the parts now being in the positions as shown in Fig. 4,) where it will remain locked until the balance shall make its pass and shall return in the direction of the arrow, Fig. 4. The pin *g* in the end of the arm *h* will again enter the fork and carry the pallet *e* until the tooth which was detained by the end of the pallet shall pass off the said end, which having taken place the tooth will then pass into the position shown in Fig. 1. In such manner the balance-wheel will, while in vibration from time to time, receive its proper impulsions from the scape-wheel. The wheel D, as in other escapements, serves as a stop for the lever B after each movement of the pin *g* out of the fork thereof.

Having thus described my said escapement, what I claim as my invention is—

The arrangement and combination of the segmental detent *f* and a detaining and impulse pallet, *e*, with the vibratory lever B and a scape-wheel, A, constructed as described, the whole being applied to the balance by means and so as to operate therewith and together, substantially as explained.

GEO. P. REED.

Witnesses:

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F. P. HALE, Jr.