P. G. GIROUD.

Escapement for Watches, &c.

No. 133,434. Patented Nov. 26, 1872.

Fig: 1.

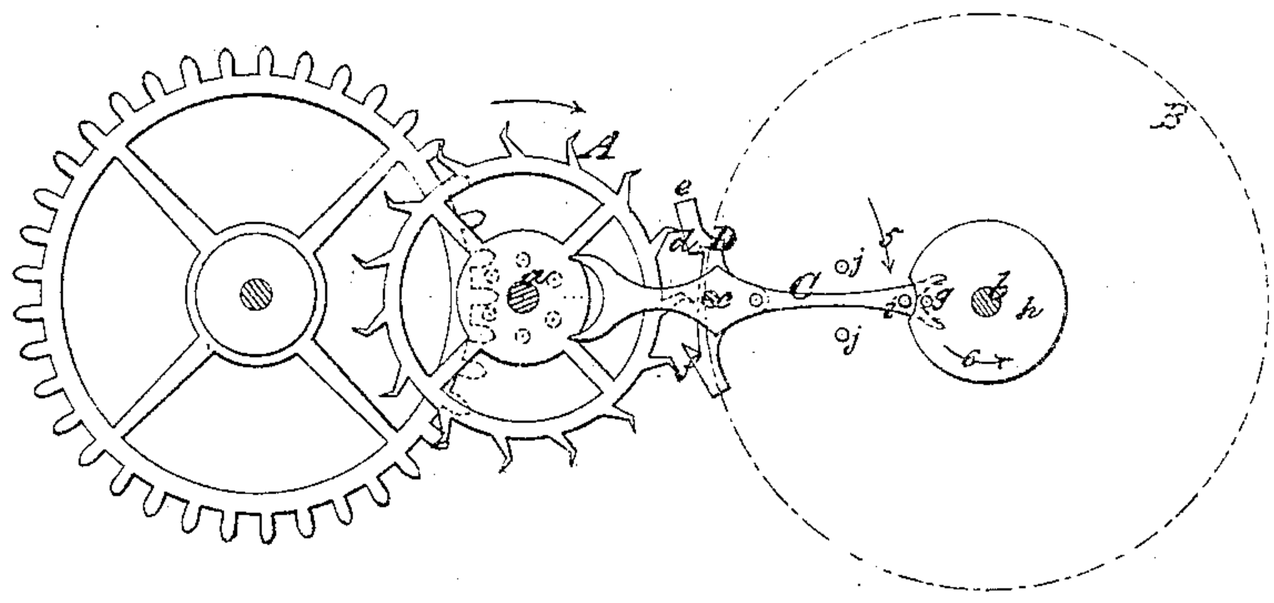


Fig: 2.

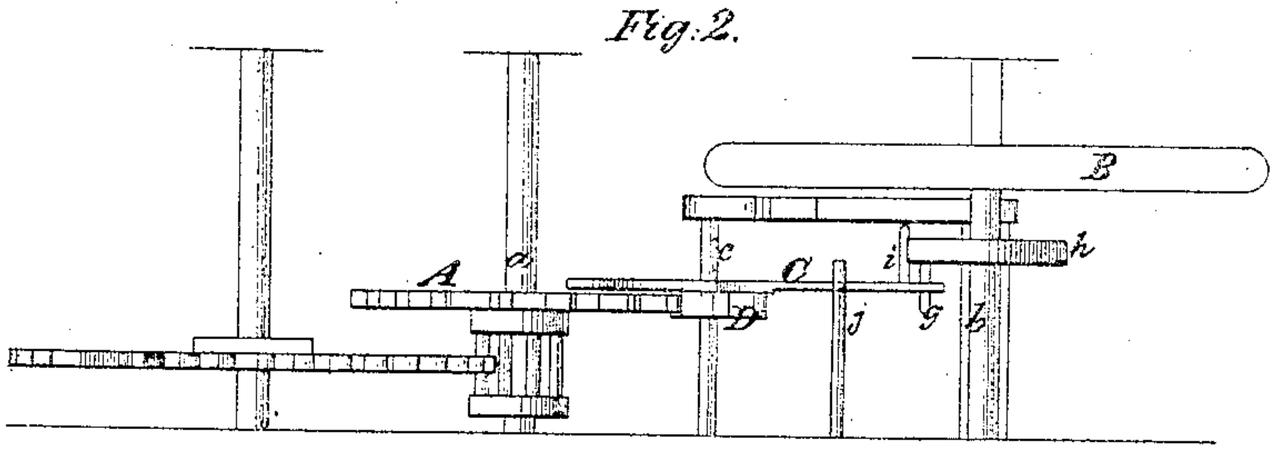


Fig: 3.

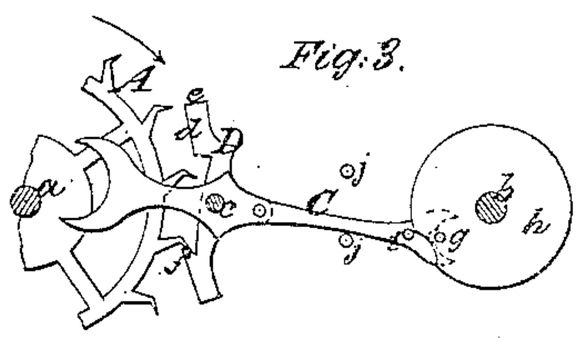
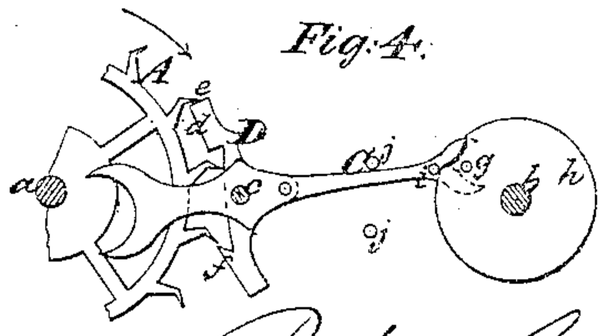


Fig: 4.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN ESCAPEMENTS FOR WATCHES, &c.

Specification forming part of Letters Patent No. **133,434**, dated November 26, 1872.

To all whom it may concern:

Be it known that I, PETER G. GIROUD, of the city, county, and State of New York, have invented an Improved Escapement for Watches, of which the following is a specification:

This invention, which is more especially designed for a watch-escapement, consists in a novel construction and arrangement of pallets operating in combination with a hook-toothed escape-wheel, whereby a very effective locking of the wheel by both pallets is produced, and the impulse, which is produced on one pallet only, is continued on the said pallet during a longer proportion of the vibration of the balance than is usual in other dead-beat escapements. Sufficient draft is obtained on the locking-face of the locking-pallet to pull the pallet down to clear the guard-pin from the roller, and the escapement is rendered less liable to be tripped than any other dead-beat escapements.

The invention is illustrated in the accompanying drawing, which forms part of this specification, and in which Figure 1 is a plan of the escapement; Fig. 2, a side view corresponding with Fig. 1; and Figs. 3 and 4 are plan views, illustrating different stages of the operation of the pallets.

A is the escape-wheel, having teeth of hook shape, and *a* is the arbor which carries it. B is the balance, and *b* its staff. C is the lever, and *c* its arbor, arranged with its axis between and in the same plane with the axes of the balance-staff and escape-wheel arbor. This lever is forked at the end to receive the pin *g* on the roller *h* on the balance-staff, by which the impulse is transmitted to the balance, and is furnished with the usual guard-pin *i*, and the usual stationary banking-pins *j j* are provided for it. D is the anchor, upon which the pallets *d e* and *f* are formed, or into which they are inserted. This anchor is arranged transversely to the lever. The pallet *d e* is both an impulse and a locking pallet. Its long straight face *d*, which faces directly toward the axis of the escape-wheel, is the one upon which the impulse is received; and its face *e*, which is further from the arbor and concentric with the axis of the arbor *c*, is the locking-pallet. The other pallet, *f*, which is of hook form, is only a locking-pallet, and has but one operating-face—namely, that which forms the inside of the hook which is concentric to the axis of the arbor *c*.

The impulse is given while each tooth of the escape-wheel moves along the long face *d* of the impulse-pallet *d e*, as shown in Fig. 1, and, owing to the length and position of the pallet, is continued during a very considerable portion of the vibration of the levers, which it produces in the direction of the arrow 5 shown in the above-mentioned figure, producing the vibration of the balance in the direction of the arrow 6. After one tooth of the escape-wheel has passed across this face *d* the next tooth in front of it is arrested by coming in contact with the pallet *f*, and the escape-wheel is locked by the latter tooth hooking into the hook of the pallet *f* until, as the return movement of the lever is produced by the action of the balance-spring, the pallet *f* unlocks and allows the escape-wheel to rotate far enough for another tooth to come in contact with the face *e* of the pallet *d e*, when the wheel is again locked until after the movements of the balance-wheel and lever in the direction of the arrows 6 and 5 have again commenced, and have been continued far enough to liberate the tooth, which then moves across the face *d* and produces another impulse.

The escapement with hook-teeth, operating with the system of pallets herein described, is superior to one with straight teeth, inasmuch as with straight teeth there would be so much drop on the inside of the impulse-pallet that the watch would be liable to stop running when in position with the planes of oscillation vertical; and hook-teeth can be made to produce more draft on the locking-pallet to make a safer lock.

This escapement is applicable to all kinds of watches—English, American, or Swiss.

Claim.

The construction and arrangement of the impulse and stop pallet *d e* and the stop-pallet *f*, in combination with the hook-toothed escape-wheel, substantially as herein described.

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Witnesses:

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