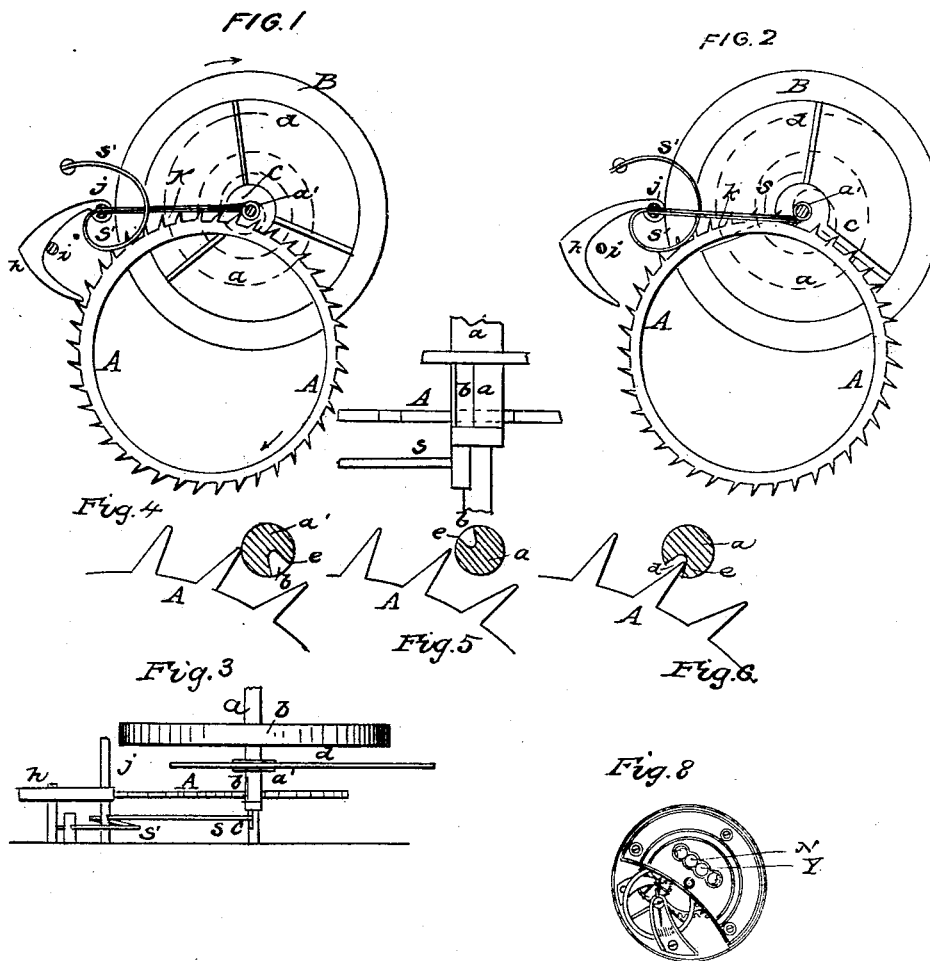


D. J. MOZART.
Clock Escapement.

No. 46,576.

Patented Feb. 28, 1865.



Witnesses
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UNITED STATES PATENT OFFICE.

DON J. MOZART, OF NEW YORK, N. Y.

IMPROVEMENT IN ESCAPEMENTS FOR TIME-PIECES.

Specification forming part of Letters Patent No. 46,576, dated February 28, 1865.

To all whom it may concern:

Be it known that I, DON J. MOZART, of New York City, county and State of New York, have invented a new and useful Improved Clock and Watch Escapement; 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 an enlarged view of my escapement, showing one tooth of the scape-wheel locked upon the circumference of the oscillating pallet. Fig. 2 shows the same parts in position for allowing one tooth of the scape-wheel to escape. Fig. 3 is a top view of Fig. 1. Figs. 4, 5, and 6 show the three positions of the releasing notch in the pallet-staff with relation to the teeth of the scape-wheel. Fig. 7 is a plan view of Fig. 5. Fig. 8 shows the frame of a watch which is adapted for receiving my improved escapement.

Similar letters of reference indicate corresponding parts in the several figures.

The object of my invention is to so construct an escapement, which is adapted for balance-wheel or pendulum, that I am enabled to employ a very large scape-wheel, having a great number of teeth, and thus diminish the train of wheels in a clock or a watch; and while this is the case, I also diminish the friction at the points of repose and lock the scape-wheel free from the pallet-staff after every impulse given to said staff, as will be hereinafter described.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

The staff *a* of the balance-wheel B is constructed with a cylindrical portion, *a'*, having a longitudinal groove or notch, *b*, formed in it, and also with a tooth, *c*, which is located in a line with the length of said slot, as shown in Figs. 3 and 7. To this staff *a*, I attach a hair-spring, *d*, which will by its recoil give the backward oscillations to the staff *a*. The forward impulses or oscillations of this staff *a* are produced by the teeth of the scape-wheel A, acting successively upon the radial face or pallet *e* of the groove *b*, as shown in Fig. 6. This scape-wheel A is located in such relation to the staff *a* that it receives this staff between its teeth, which latter are made suffi-

ciently acute to pass into and escape from the slot *b* at every oscillation of the staff *a*. At the termination of the backward stroke of the staff *a* the tooth *c* trips a detent, *h*, and releases the scape-wheel A, a tooth of which instantly acts upon the staff *a*, as above described, and produces a forward stroke or oscillation of this staff. Simultaneously with the escape of a tooth of wheel A from the pallet *e* the detent *h* is released from the tooth *c* and catches the scape-wheel, so as to retain it free from the staff *a* during the backward oscillation thereof. The detent *h* is in the form of a hook, the outer surface of which, or that against which the teeth of wheel A impinge, being concentric with the axis of a staff, *j*, this detent will rise and release the scape-wheel without meeting with any resistance or forcing said wheel backward. The staff *j* is applied to the frame of the clock or watch so as to rock freely in its bearings, and to this staff an arm, *k*, is applied, which projects toward the axis of the pallet-staff *a* and nearly touches the tooth *c* on this staff. Directly above and lying upon the arm *k* is a very fine spring, *s*, which passes through the staff *j*, and is curved in such manner as to form a detent-spring, *s'*, for holding the detent *h* down in position to lock the scape-wheel. The spring *s* projects beyond the end of the arm or rest *k* sufficiently far to be struck by the tooth *c* both in its rising and falling movements. When the staff *a* makes its backward stroke and the tooth *c* is depressed, the latter presses down the spring *s* and the arm *k*, thus lifting the detent *h* and releasing the scape-wheel; but when the staff *a* receives an impulse from the scape-wheel and makes its forward stroke, the tooth *c* lifts only the light spring *s*, and allows it to drop back again upon its arm or rest *k* by its own recoil. The tooth *c*, which actuates the detent *h*, is located in such relation to the groove *b* in the staff *a* that the instant this tooth lifts the detent *h* and releases the scape-wheel, the latter will give another impulse to said staff, and be again caught and arrested by the detent.

In practice I shall employ a rest, *i*, for the detent to prevent it from striking the scape-wheel when it is allowed to fall into position for arresting this wheel.

From the above description of my invention

it will be seen that the bearings of the several parts which actuate the staff *a* and reverse its oscillation are so slight that the friction at the points of repose is almost inappreciable, and that while this is the case the oscillations of the staff *a* are isochronous, as the balance-wheel or staff thereof must receive the same impulse at every movement of the scape-wheel *A*.

The points of the teeth of the scape-wheel are not allowed to impinge upon the cylindrical portion *a'* of the staff *a*, but are arrested and held back therefrom until the pallet *e* is in a position to receive a tooth of the scape-wheel, when the impulse is given to said staff and this wheel instantly checked again until the staff *a* completes another oscillation unrestrained, except by the balance-wheel and hair-spring.

The detent-spring *s'*, which forms a part of the tripping-spring *s* of the detent *h*, is made very delicate, but sufficiently strong to de-

press the latter when it is released from the tooth on the pallet-staff.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The hooked detent *h*, applied to the scape-wheel *A* for arresting the same, in conjunction with a tripping-tooth, *c*, and pallet *e*, arranged and operating substantially as described.

2. The detent-rest *i*, when applied to a detent which is constructed and operated substantially as described.

3. Forming the detent-spring *s'* and the tripping-spring *s* in one piece and applying the same to the detent-staff *j*, substantially as described.

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Witnesses:

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