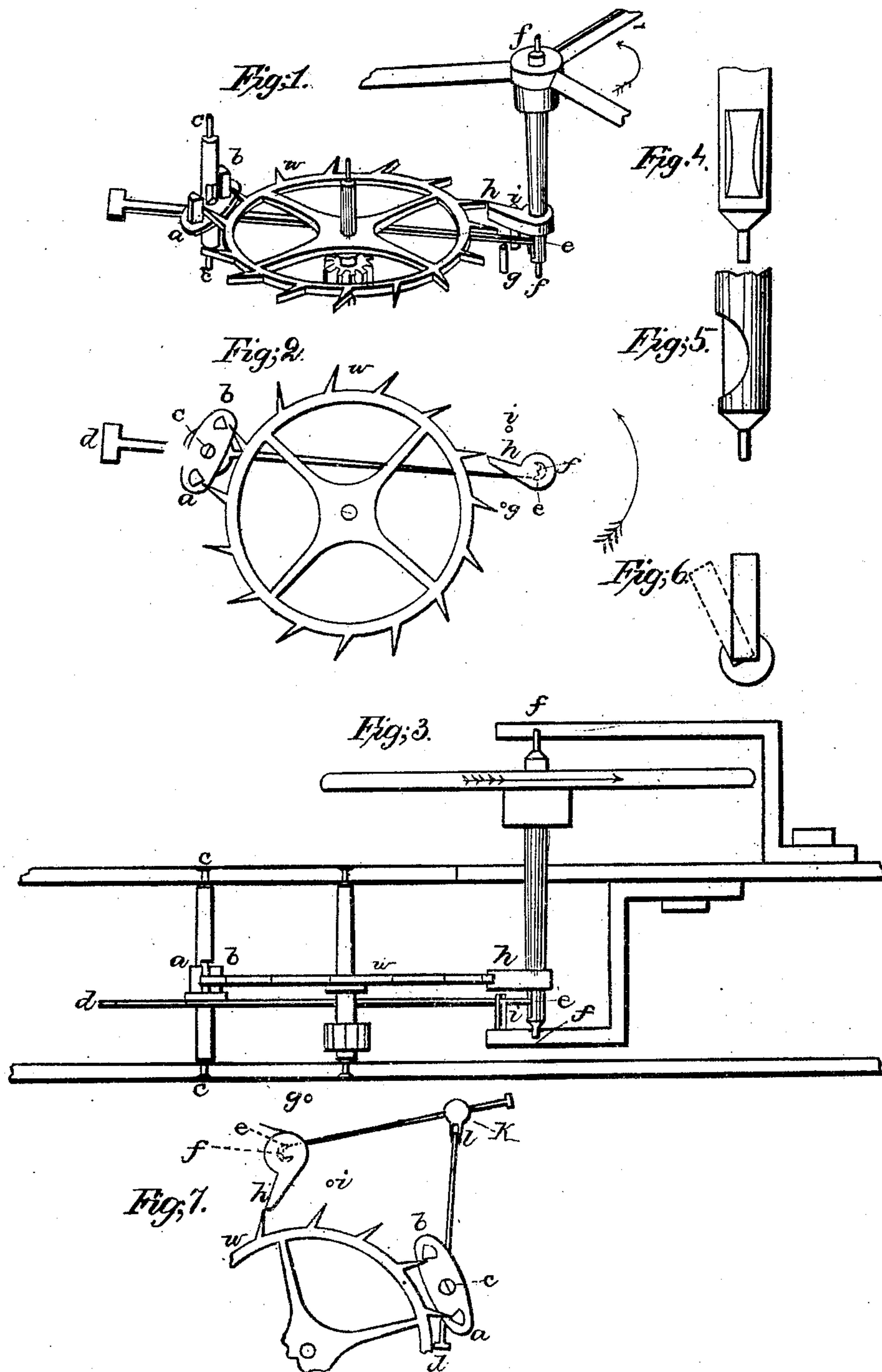


J. FULTON.
Clock Escapement.

No. 8,409.

Patented Oct. 7, 1851.



UNITED STATES PATENT OFFICE.

JAMES FULTON, OF LOUISVILLE, KENTUCKY.

ESCAPEMENT FOR TIMEPIECES.

Specification of Letters Patent No. 8,409, dated October 7, 1851.

To all whom it may concern:

Be it known that I, JAMES FULTON, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement on that Part of the Machinery of Watches and other Timepieces termed the "Escapement;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification; in which—

Figure 1 is a perspective view, Fig. 2 is a longitudinal elevation, and Fig. 3 is a transverse section.

(The movement up to the scape wheel may be as in other time pieces, and likewise the balance and balance spring may be in the usual form.)

Figs. 1, 2, and 3. The scape wheel; *a b*, pair pallets, with pivots at *c*, and lever *d e* on the same arbor; *f* the axis of the balance; *h* a hook attached to the staff of the balance; *g* and *i*, pins to limit the motion of the lever.

As the scape wheel is urged forward in the direction *a b*, and the balance moves in the direction indicated by the arrow, the point of the lever will escape from the staff at *e*, when the pressure of the tooth against the inclined plane of the pallet *a* will cause the lever to strike the pin at *g*, at which time the tooth will escape from the pallet *a*, a tooth will come in contact with the hook *h* and by its pressure communicate impulse to the balance till it passes off, when a tooth will come against the inclined plane of the pallet *b* and cause the point of the lever to stop against the staff, where it will remain till the balance completes its vibration, and when by the force of the balance spring it is made to return in the direction opposite that indicated by the arrow, the pressure of the tooth against the pallet *b* will cause the point of the lever to pass through the cut in the staff and strike the pin *i*, when another tooth will immediately take effect on the pallet *a* and bring the lever against the staff, where it will remain till the balance completes its vibration and by force of the spring is again made to move in the direction shown by the arrow, when the pressure of the tooth against the pallet *a* will cause the lever to pass through the cut in

the staff and the same movements will be repeated.

The pallets *a* and *b* may be made of metal or stone in the form represented in the drawings and one end inserted in a piece of metal as there shown; or the metal may be made thick enough to have a groove cut through it in the direction of the plane of the scape wheel and the jewels may be inserted in that groove in a manner somewhat similar to that in which the pallets of the lever escapement are usually jeweled. It will be readily seen that the pallets should be placed on nearly opposite sides of their axis. I presume every thing else in regard to their construction will be sufficiently evident from the drawings.

The point of the lever may be made to pass through a cut in the balance staff as shown in the drawings, or there may be a stone or metal roller placed on the staff similar to the roller of the duplex escapement with the cut wider than is usual in the duplex. In such case the staff should be cut away so as to allow the point of the lever to pass near its center.

If the cut in the staff shown in the drawings is to be used it may be conveniently made by making two cuts with a rotary cutter with the plane of its motion lengthwise of the staff. Fig. 4 shows a front view of the cut on an enlarged scale, Fig. 5 a side view of a section, Fig. 6 shows a cross section. After one cut is made as shown in Fig. 6 the cutter is taken out and the staff turned around till the next cut will come in the direction of the dotted lines. If in this escapement the wheel has 15 teeth and the pallets are placed on the side of the wheel farthest from the staff of the balance, the pressure of the point of the lever against the staff will be about $\frac{1}{11}$ of the pressure of the teeth of the scape wheel against the pallets and will only give about $\frac{1}{11}$ as much resistance to the motion of the balance as if the teeth stopped against the staff, but for chronometers and other large movements it might be desirable to diminish the pressure against the staff still more; which may be done by using two levers as shown in Fig. 7 where *k* represents the axis of the second lever with a small fork *l* attached to it in which a pin or cylindrical jewel attached to the point of the first lever acts. The rest of

the letters apply as in the other figures. In this arrangement the pallets may be placed at any part of the scape wheel, and the levers may extend in any direction to suit the other parts of the movement.

I invented a remontoir escapement for an astronomical clock which has pallets and lever similar to those used in this escapement and sent a description of it to the *American Journal of Science and Arts* in January last and it was published in the May No. of that journal. I therefore do not claim a patent for the pallets and lever separately though they are my own invention.

The impulse is given by the scape wheel to the balance in a manner very similar to

that in which the impulse is given in the chronometer and duplex escapements. I therefore do not claim a patent for that part separately.

What I claim and that for which I respectfully pray that a patent may be granted is—

The combination of the pallets and lever or levers here set forth with the above described mode of communicating impulse to the balance in time pieces which keep time by means of a balance.

JAMES FULTON.

Witnesses:

T. P. CRAGG,
D. C. STOR.