J. BISHOP.

WATCH AND CLOCK ESCAPEMENT.

No. 21.738. Patented Oct. 12, 1858.

Fig: 1.

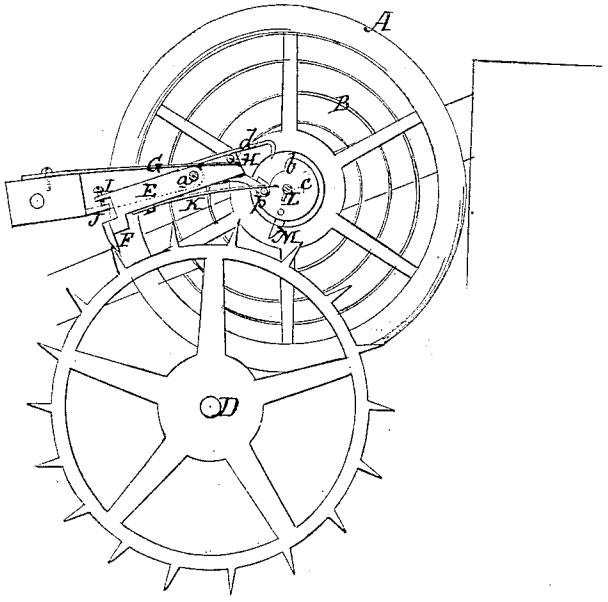
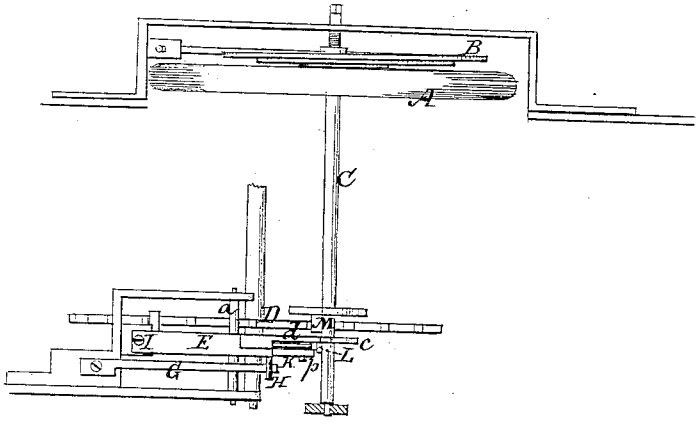


Fig: 2.



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UNITED STATES PATENT OFFICE.

JOSIAH BISHOP, OF AUSTIN, TEXAS.

ESCAPEMENT FOR TIMEKEEPERS.

Specification of Letters Patent No. 21,738, dated October 12, 1858.

To all whom it may concern:

Be it known that I, JOSIAH BISHOP, of Austin, in the county of Travis and State of Texas, have invented a new and useful Improvement in Watch, Clock, and Chronometer Escapements; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a side elevation of the scape wheel, balance wheel, and the parts of a clock in immediate connection therewith. Fig. 2, is a top or bird's eye view of do.

Similar letters in the figures refer to corresponding parts.

The nature of this invention, consists in so forming the detents on the lever and arranging them in relation to the notches of the scape wheel and pallets on the balance arbor, as to render the movements of the clock or watch, to which they are attached, more regular and less liable to get out of order.

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

The balance wheel A, balance spiral or helical spring B, arbor C, scapement wheel and shaft D, and the main driving parts are made in the usual or most approved manner. The detent lever E, is suspended on a shaft *a*, between suitable studs in the frame of the clock in an inclined position, as represented in Fig. 1, and is provided at its lower end with a detent F, which projects downward at right angles from its lower end the required distance to enable it at the proper intervals to be brought within the arc of the notches of the scapement wheel, for the purpose of arresting the motion of the same, one side of said detent being curved to facilitate its detachment from said notches. This detent is pressed within the traversing arc of the scape wheel, by means of a spring G, secured at one end to a portion of the frame in front of the detent, its flexible end extending under a pin H, projecting from the side of said detent, in such a manner as to allow its upward elasticity to be exerted against the pin H, and to force the detent at the opposite end downward, the downward movement being regulated by a set screw I, passing through a projection of the lever E, above the detent, whose end comes in contact with a stud J, secured to the frame. A detent spring K, is secured to the lower edge of the detent lever immediately in advance of the detent F, the flexible portion of which spring extends beyond the end of the lever, diverging somewhat from its course, and resting upon a horizontal pin *p*, projecting from a bar secured to the side of the lever in such a manner as to enable the pallet L, on the balance arbor C, as it rotates to the right, to raise the end of the spring K, and pass by the same without affecting the lever E, and as it oscillates backward to press upon the end of the said spring and to depress it and move the corresponding end of the detent lever, and in this manner detach the stop detent F, from the notches of the scapement wheel. The main pallet M, of the arbor shaft extends from the same, in the rear of the smaller pallet L, but on the same radial line, its outer end extending sufficiently far to enable it to enter the arc of the circle in which the notches of the scapement wheel rotate, in such a manner as to enable the said notches to press against its edge, to give the required degree of oscillation to the balance wheel, its extent being regulated by the tension of the spiral or helical spring B, and the curved edge *b*, of an indentation formed in a wheel *c*, secured to the balance arbor or shaft C, coming in contact with the curved angular end of a strip *d*, secured to the top of the detent lever E, and projecting the required distance beyond the end of the same, to enter the depression, when the lever is vibrated by the pallet L.

The operation of this improved escapement is very simple. The oscillations of the balance arbor shaft C, may be produced by helical or spiral springs as described, or by pendulum as may be desired. The oscillation to the right causes the pallet L, to raise the end of the spring K, without affecting the detent lever E. On its return oscillation however, it strikes on top of the spring K, and depresses the end of the detent lever E, and disengages the detent F, from the end of the notch of the scapement wheel resting against it, which enables the said scapement wheel to rotate, carrying with it the main pallet M, by the action of another notch on its edge; thus giving a fresh impulse to the balance arbor C. During this movement the angular curved end of the lever E, enters the indentation in the

disk *c*. After the main detent M, has been vibrated out of the arc of the circle, in which the points of the notches of the scapement wheel rotate, it becomes detached from the notch, which presses against it and the lever is vibrated, and the detent F, is brought within the arc of circuit, so as to form a stop for the notch next in succession, by the simultaneous action of the spring G, on the pin H, and the curved edge *b*, striking the angular curved end of the strip *d*.

This escapement is not likely to get out of order by wear, or by a sudden jar, and like the chronometer escapement, the vibrations of the balance are nearly performed without pressure from the motive power of the works.

What I claim as new and desire to secure by Letters Patent, is—

The combination of the lever E, springs G, K, and the detents formed on the former, arranged in the relation to the scapement wheel described, with the pallets L, M, and said scapement wheel, so as to enable the balance wheel to perform its oscillations without pressure from the motive power of the clock, or to be retarded by any other resistance except that necessary to be overcome by the vibration of the detent lever E, during the action of the pallet L, on the end of the spring K, as herein set forth.

JOSIAH BISHOP.

Witnesses:

R. M. JOHNSON,

M. W. TOWNSEND.