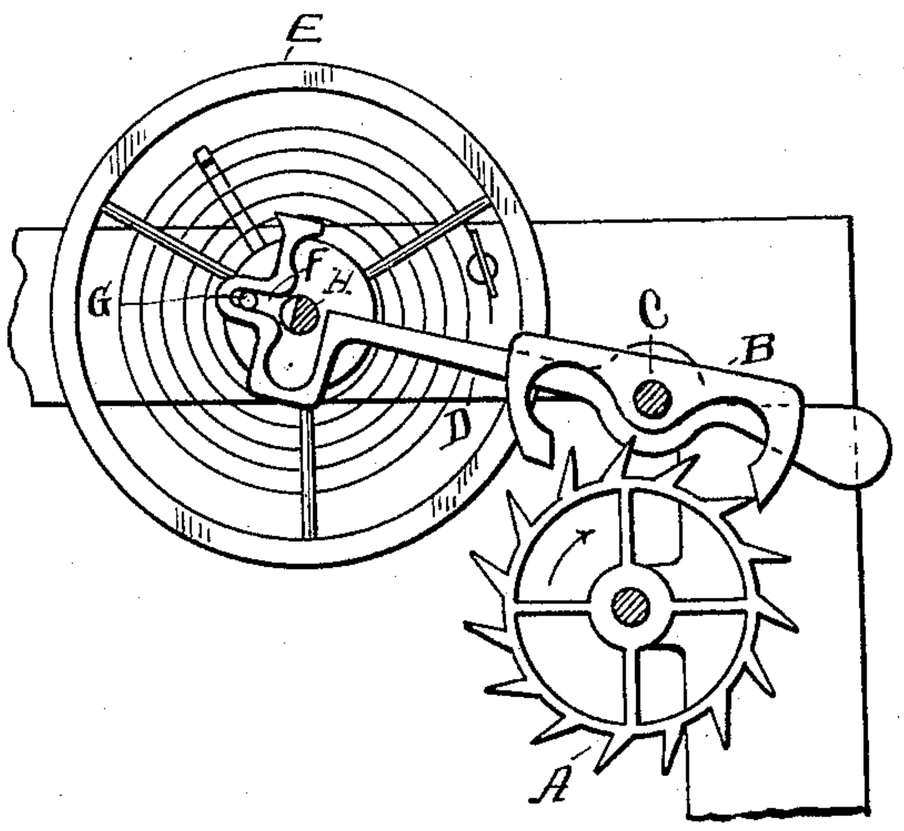
(No Model.)

H. S. BARBER.

BALANCE ESCAPEMENT FOR TIMEPIECES.

No. 569,852. Patented Oct. 20, 1896.



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY S. BARBER, OF HOPKINTON, RHODE ISLAND.

BALANCE-ESCAPEMENT FOR TIMEPIECES.

SPECIFICATION forming part of Letters Patent No. 569,852, dated October 20, 1896.

Application filed January 20, 1896. Serial No. 576,108. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. BARBER, of Hopkinton, in the county of Washington and State of Rhode Island, have made certain new and useful Improvements in Escapement Devices for Clocks and Watches; and I do hereby declare that the following specification, taken in connection with the drawing making a part of the same, is a full, clear, and exact description thereof.

The figure is an elevation of an escapement device, showing my improvements.

My invention relates to the construction of the escapement-lever and its action upon and in connection with the balance-wheel, and is designed to facilitate the free action of the balance-wheel, and at the same time more accurately regulate and control its stroke and operation; and it consists in the construction and arrangement of devices as hereinafter described.

In the drawing, A is the escape-wheel.

B is the escapement lever or pawl, fixed to a rocking shaft C and provided with ordinary pallets which work in the teeth of the escape-wheel.

D is a fixed lever upon the shaft C and is connected with the balance-wheel E and secures the concurrent operation of the balance-wheel and the escapement.

One end of the lever D is formed into a substantially U-shaped extension, the arms of which are at right angles to the body of the lever, and one of the arms is longer than the other and is provided with a loop or recess F at its center and a shallower loop or recess *f* between the center and each end. The lever and the balance-wheel E are so arranged relatively to each other that as the lever is moved back and forth upon its pivotal point C the pin G, which is located on the hub H eccentrically to the shaft of the wheel, will alternately enter and leave the loop F, while the shallower loops in the extension will permit of the movement of the lever without coming in engagement with the axle.

The pin G is located upon the side of the axis of the balance-wheel opposite the pivotal point of the lever, thereby causing the pin and the ends of the lever at the time of engagement to move in the same direction, but in different-sized circles.

In the operation of the devices, motion being imparted to the lever D, such lever, through the pin G, eccentrically located in the hub H, and working in the loop F, communicates motion to the balance-wheel as the lever D alternately rises and falls, and the operation of the escapement will result, as will be readily understood.

The rise and fall of the long arm of the lever D, as described, is limited through the formation of the end thereof which comes in contact with the balance-wheel shaft at each upward and downward stroke. This limitation in the movement of the lever also insures the proper entrance of the pin G into the loop F.

The levers heretofore in use have only extended to the center or near the center of the balance-wheel, and the pin has been eccentrically located in the hub upon the side nearest to the rocking shaft, which pin worked in prongs upon the end of the lever as the latter successively rose and fell. The lever thus constructed is not only deficient in the accurate limitation of its movement by contact with the shaft at the extreme point of its stroke in both directions, but is also deprived of that freedom and facility of movement which follows the location of the eccentric pin G upon the other side of the hub.

With the pin G located upon the farther side of the hub, taking the parts at rest, as shown in the drawing, the movement of the pin as it operates the lever will describe the arc of a circle more nearly parallel therewith.

With the pin G upon the side of the hub nearest to the rocking shaft C the pin and the end of the lever will move in curves opposite or tangent to each other. This opposing or diverse action of the parts necessarily results in some friction and resistance which must be overcome in the continued operation. The overcoming of this increased friction and resistance introduces an element of disturbance to the freedom and regularity of movement of the devices upon which the exactness of the time so much depends.

In my invention the movement of the lever D is accurately defined, and the friction and

resistance between the eccentric pin G and such lever is reduced to a minimum by bringing the operation of the pin G and the lever D more in unison.

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

In an escapement, the combination, with a shaft, of two levers thereon, one of which is provided with pallets, and one end of the other lever is provided with a substantially U-shaped extension, the arms of which are at substantially right angles to the body thereof, and one of the arms is longer than the other, and is provided with a deep loop or recess at its center and two shallower loops between the center and the ends, a balance-wheel, the shaft of which is adapted to enter the shallower loops, and a pin on the hub of the wheel upon the side of the shaft opposite to the pivotal point of the lever, and adapted to enter and pass out of the deeper loop, substantially as set forth.

HENRY S. BARBER.

Witnesses:
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