

P. HUMBERT.
Watch Escapement.

No. 31,022.

Patented Jan. 1, 1861.

Fig. 1

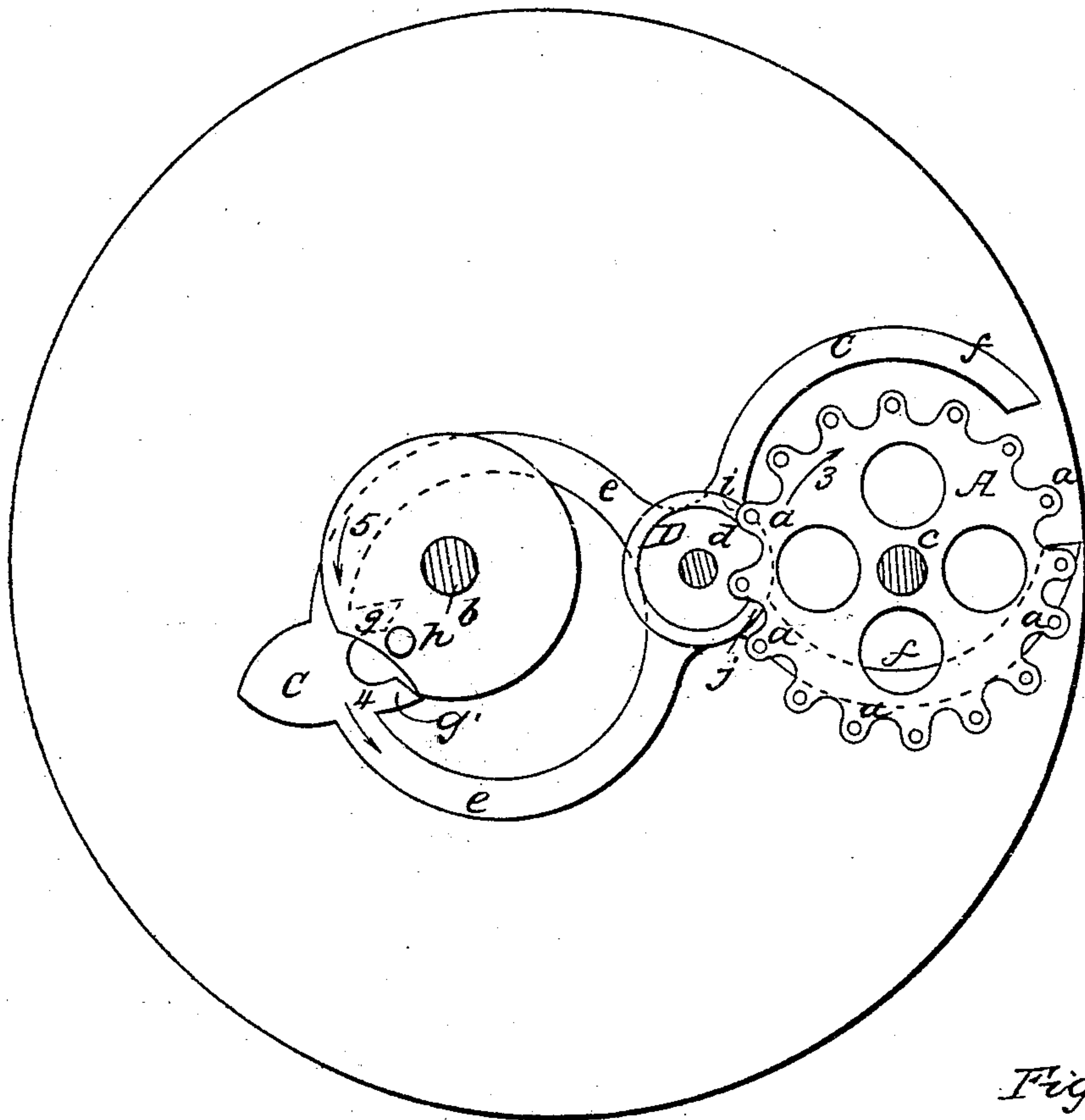


Fig. 2

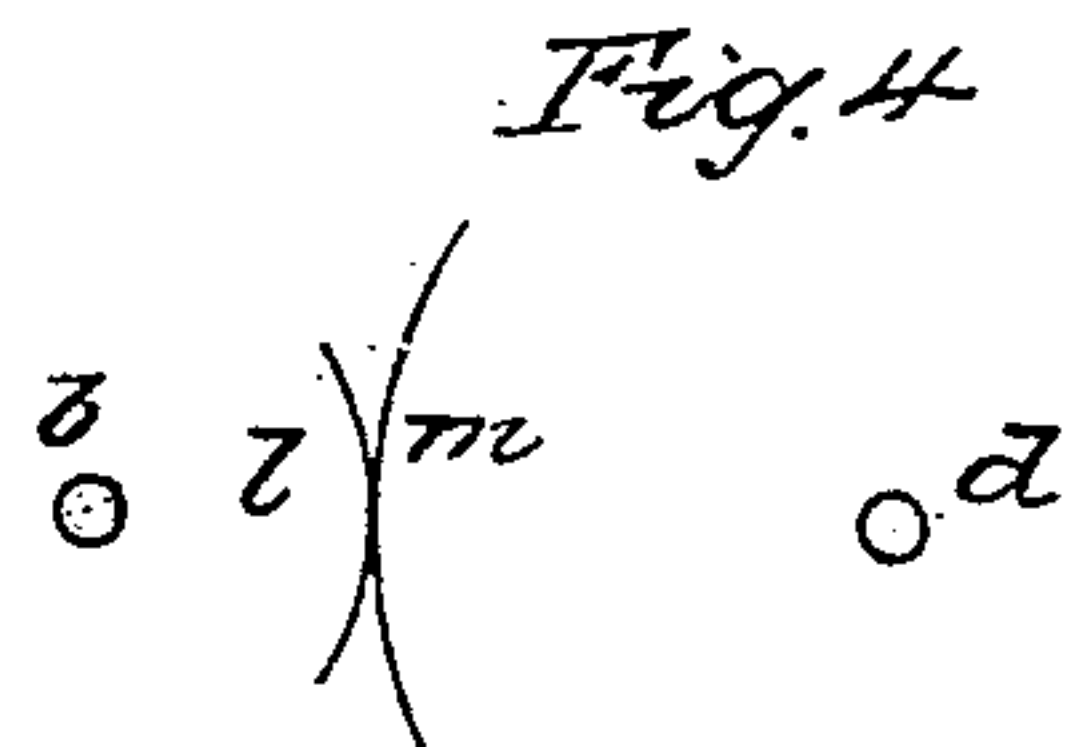
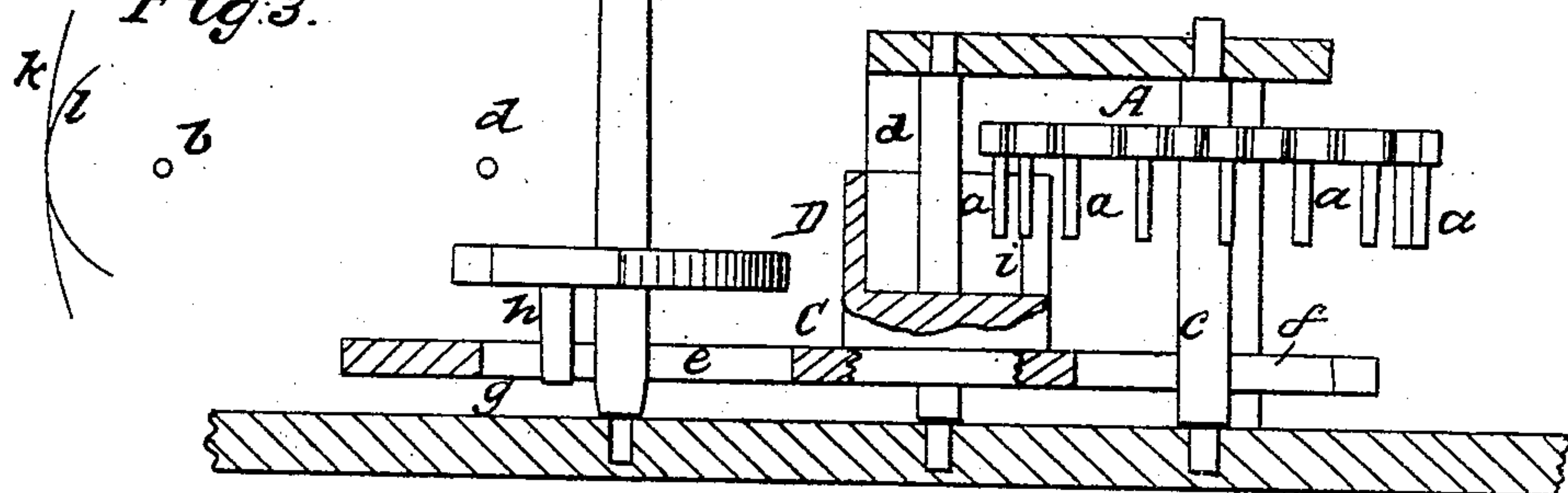


Fig. 3.



witnesses
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UNITED STATES PATENT OFFICE.

PROSPER HUMBERT, OF BOSTON, MASSACHUSETTS.

LEVER-ESCAPEMENT FOR WATCHES AND OTHER TIMEKEEPERS.

Specification of Letters Patent No. 31,022, dated January 1, 1861.

To all whom it may concern:

Be it known that I, PROSPER HUMBERT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in the Lever-Escape-ment for Watches and other Timekeepers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a plan of an escapement, constructed according to my invention. Fig. 2 is a side view of the same, partly in section. Figs. 3 and 4, are diagrams illustrative of the action of the lever as compared with that of the ordinary escapement.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in a certain construction of the lever, and mode of applying its pallets, and mode of applying the lever relatively to the balance and escape wheel, whereby the fork of the lever is made to act upon the pin through which it imparts the impulse to the balance, on the opposite side of the balance staff to that on which the escape wheel is situated, and the fork is made to act upon the said pin, with a more nearly accompanying movement and thereby to operate with much less friction.

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

A is the scape wheel having its teeth a, a , projecting from one side of the rim parallel with its axis, and having its spindle c parallel with the staff v of the balance B. The hair spring is omitted in both figures, and the balance is omitted in Fig. 1, to prevent confusion of parts.

C is the lever having its staff d parallel with the scape wheel spindle and balance staff, and arranged between and in the same plane with the said staff and spindle. The construction of the lever is best represented in Fig. 1. It is made with a hoop e , encircling the balance staff, and with a fork f , encircling the scape wheel spindle, the hook e carrying the fork g, g' , which projects into its interior for the reception of the pin h , carried by the balance, and the fork f , being merely to counterbalance the weight of

the hoop e , and fork g, g' . It has secured to it, concentric with its axis a cylinder D, in which is cut a wide notch i, j , the faces i and j of which are beveled to constitute the pallets. The fork g, g' is situated on the opposite side of the balance staff v , to that on which the staff d on the lever is situated, which is the reverse of the arrangement heretofore adopted in the lever escapements.

The operation of the escapements is as follows: The scape wheel rotates in the direction of the arrow 3, marked upon it in Fig. 1. The action of its teeth upon the pallet i gives motion to the lever in the direction of the arrow 4, and causes the action of the prong g , its fork g, g' , on the pin h , to produce the impulse of the balance in the direction of the arrow 5, and their action on the pallet j gives motion to the lever, and produces the impulse of the balance in the opposite directions, by the action of the prong g' , of the fork g, g' on the pin h .

After the action of a tooth a , of the scape wheel on the pallet i , the next pin but one behind it falls against the outside of the cylinder D, and there it remains during the completion of the vibration of the lever and balance in the direction of the arrows 4, 5, and during the first portion of the return vibration of the lever produced by the action of the pin h , on the pin g , as the hair spring reacts. As soon as the pallet j is brought by the reaction of the hair spring to the last-mentioned tooth of the scape wheel, the said tooth acts upon the said pallet to produce the impulse in the opposite directions to the arrows 4, 5, and as the said tooth escapes from the said pallet, the next tooth in advance of it falls against the interior of the cylinder D, and there remains while that vibration is completed, and during the first portion of the return vibration in the direction of the arrows 4, 5, produced by the reaction of the hair spring, and as soon as the pallet i arrives at the last mentioned tooth, the said tooth acts upon the said pallet again, to produce the impulse in the direction of the arrows. Fig. 1, represents a tooth of the scape wheel acting on the pallet i , and the prong g , of the lever fork, acting upon the pin h . In the above operation the fork g, g' , moves as illustrated by Fig. 5 in an arc k , the direction of whose curvature coin-

cides with that of the arc of vibration l , of the pin h , but in the operation of the ordinary lever, escapement, in which the fork is between the balance staff v , and lever staff d , the direction of the arcs of vibration m of the fork, and l of the pin are reversed. The result of this difference of action is, that in the latter case, the fork and pin produce a much greater amount of friction, than in the former case, in which they have more nearly parallel movements, or more nearly accompany each other.

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

The lever C , having its cylindro pallets i, j , on a cylinder D , and its fork g, g' , and staff d , arranged substantially as described relatively to the staff v , of the balance and spindle c , of the escape wheel to operate as set forth.

PROSPER HUMBERT.

Witnesses:

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