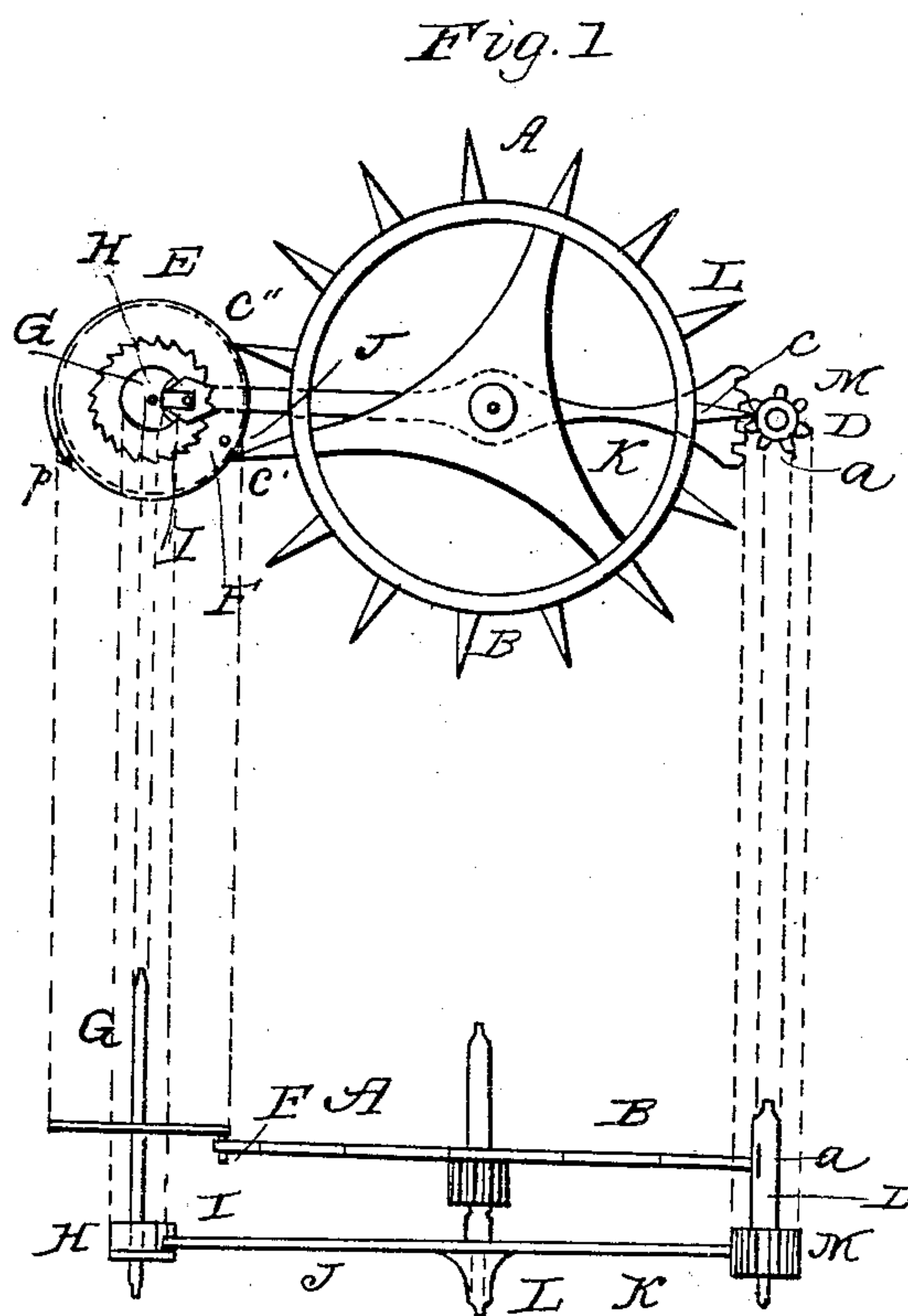


E. PAULUS.
Clock Escapement.

No. 21,146.

Patented Aug. 10, 1858.



INVENTOR
E. Paulus

UNITED STATES PATENT OFFICE.

E. PAULUS, OF PHILADELPHIA, PENNSYLVANIA.

ESCAPEMENT FOR TIMEKEEPERS.

Specification of Letters Patent No. 21,146, dated August 10, 1858.

To all whom it may concern:

Be it known that I, EUGÈNE PAULUS, of Philadelphia, in the county of Philadelphia, in the State of Pennsylvania, have invented a new Escapement for Marine and Pocket Chronometers and Every Description of Watches; 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, represents a horizontal plan of the escapement which is shown at rest, and the Fig. 2 is a vertical projection of it.

The escape-wheel A B, rests by the tooth C, on the resting cylinder D. On the balance axis is a large roller E, with a pin jewel F, to receive the impulse, and which I call the impulse or main roller. There is a hole broken through it to show another small roller H, with a pin jewel I, also attached on the balance axis, and which I call the lifting roller, because when acting in the fork and pushing alternately the detent J K, from side to side it allows the resting cylinder to operate by its gearing with the pinion M. Then if the balance is moved through a small arc to allow the notch *a*, of the resting cylinder to pass on the left side of the tooth C the balance can pursue its movement, when returning, and with the main and lifting roller rotates in the direction indicated by the arrow O P. It will be seen that the pin jewel I, by acting in the fork, will communicate such a movement to the detent J K, rotating on the escape-wheel axis L, that its motion, and the motion of the resting cylinder, will be in the same direction with that of the escape-wheel, urged forward by the motive power and when the tooth C will meet the notch *a* it will pass into it. By the time the wheel is free from the resting cylinder the main roller E, with its pin jewel F, has advanced so far as to be ready to receive an impulse, another tooth C', will take effect on the pin jewel F, till it arrives at the position of the tooth C''. Then the tooth L, will take the place of the tooth C, and rest on the resting cylinder. The balance having performed this vibration by the impulse given to the pin jewel F, is caused by the hair spring to return in the contrary direction P O, the lifting pin jewel acting again in the fork by the movement of the detent connected with

the resting cylinder pinion, the notch *a* will pass again on the left side of the tooth which is at rest, without disturbing the escape-wheel, the motion of the resting cylinder being in a contrary direction of its pressure. Then when the balance has completed the present vibration and returning for the next again moves the detent the act of escaping takes place, and so repeated by the teeth of the escape-wheel in their succession, the balance making two vibrations for every impulse, as it is for the locket or chronometer escapement.

Though some parts of this new escapement have some similarity with some others, nevertheless they have generally different forms required by their new effect. Though there is a roller as in the duplex escapement it is not on the balance axis. The escape wheel is different, having not two sets of teeth on its rim, and this new escapement is superior because it is detached. Though there is a fork as in the anchor escapement it is employed only as a lifting detent, and does not give the impulse, which is given directly by the escape wheel, which is a comparative superiority. Though its effects are similar with the locket escapement, being as much detached and requiring no oil, it may be appreciated as superior, because it has a banking. It is not so fragile, and much more easily executed. From these slight similarities with these three well known principal escapements this new one can be considered as an improvement of each of them.

I arrange the hair spring on the top by a small and peculiar stud, playing in a groove, on the edge of which it is pressed by a kind of a small bridge, worked out of the same solid piece of steel as that of the cap jewel. This is done for the purpose of preserving the isochronism of the hair spring, being set in a natural position according to its own elasticity.

Therefore, what I claim, is—

The modification of the duplex escape wheel, in suppressing the upright row of cogs, the manner of giving the impulse directly by it with a pin jewel, set on the main roller mounted on the balance axis; the detent with its fork, toothed for gearing with the pinion of the resting cylinder, and its particular arrangement on the escape-wheel axis.

The arrangement of the resting cylinder with its pinion, the particular disposi-

tion of the lifting roller acting in the fork,
the new and more solid arrangement to hold
the escapement without bridges, but with
simple pillars, supporting two small plates,
5 secured with pins or screws, the whole con-
structed and operating as herein described,
constitute a new escapement, which I intro-

duce under the name of "Paulus-escape-
ment."

E. PAULUS.

Witnesses:

A. ROTHWELL,
EDWIN CLARK.