

J. & J. W. HIETEL & J. L. GEISSLER.

Watch Escapement.

No. 84,060.

Patented Nov. 17, 1868.

Fig. 1.

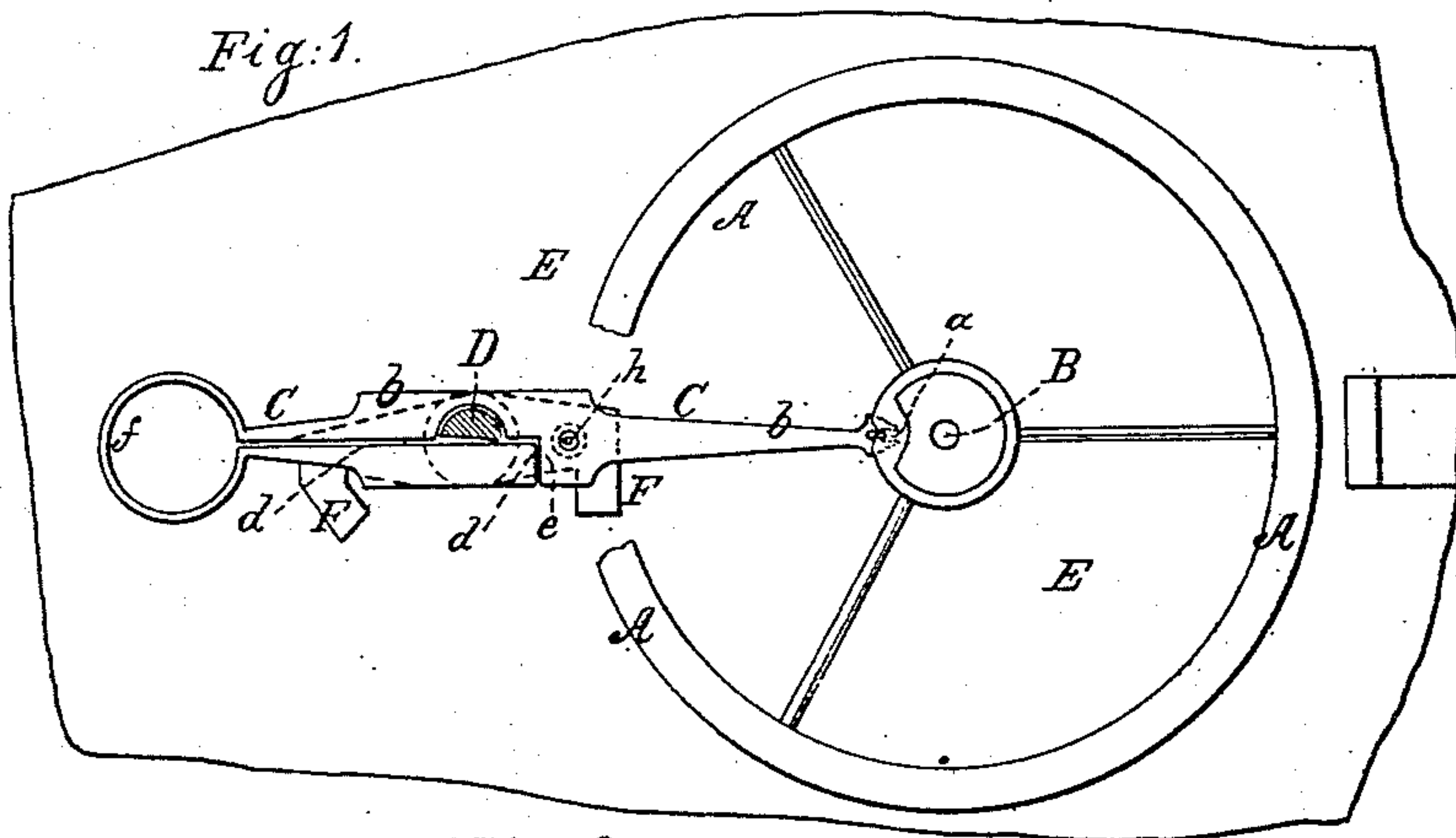


Fig. 2.

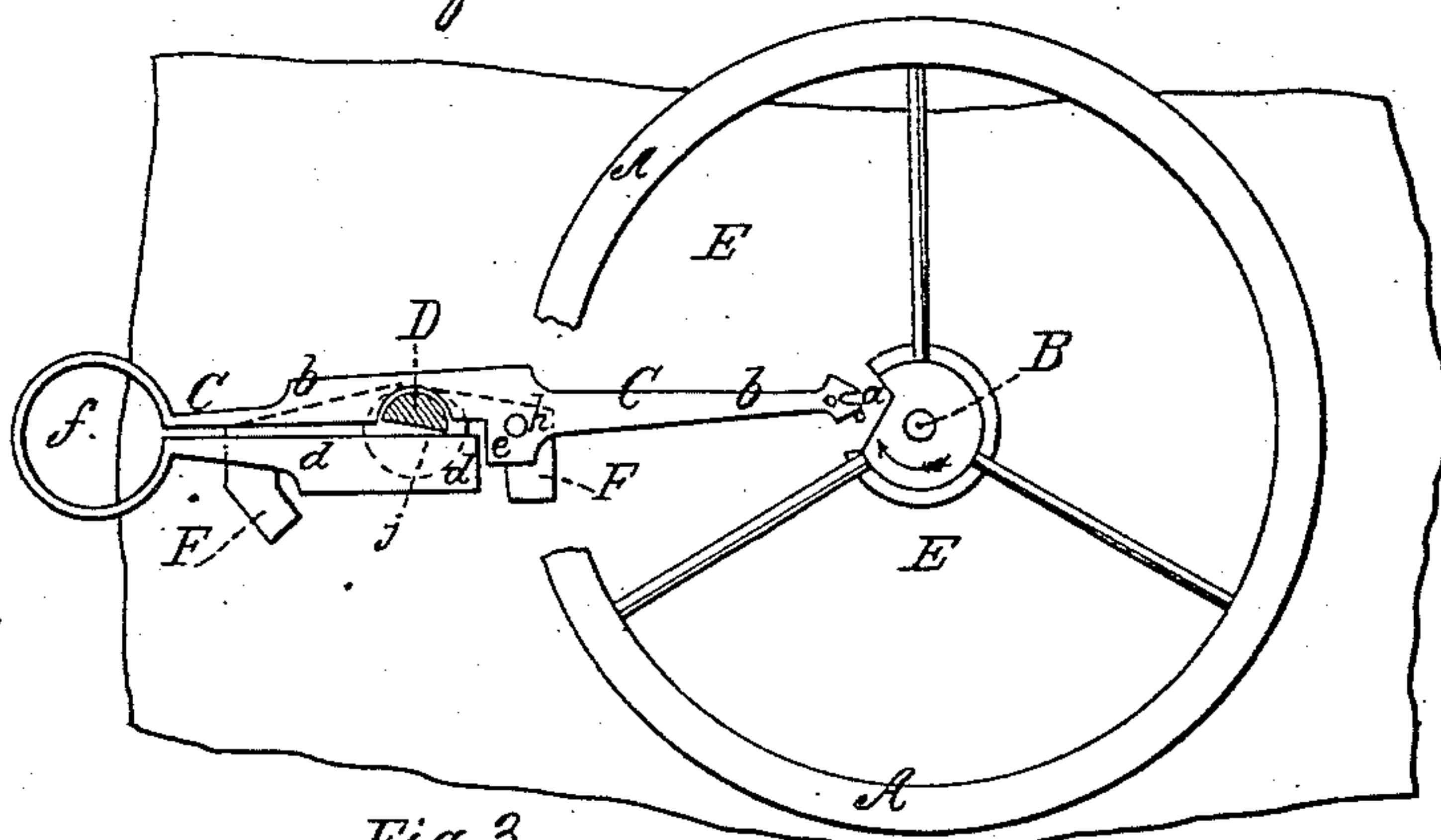
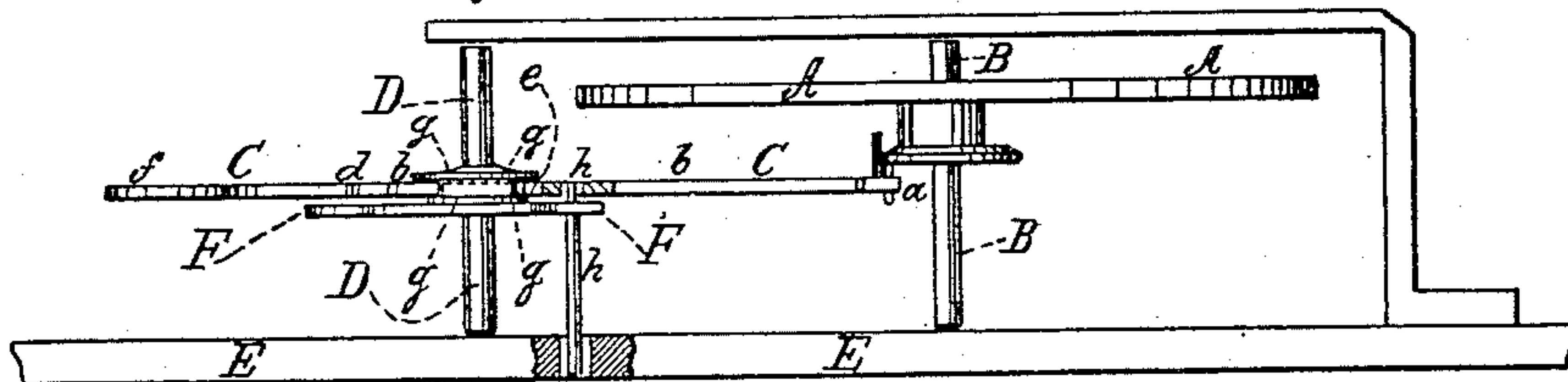


Fig. 3.



Witnesses:
Wm. A. Morgan
L. C. Cotton

Inventor:
per Munnell & Co. J. Hietel
Attorneys J. W. Hietel
J. L. Geissler

United States Patent Office.

JULIUS HIETEL, JOHN WENZEL HIETEL, AND JOHN LOOMIS GEISSLER, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 84,060, dated November 17, 1868.

IMPROVEMENT IN WATCH-ESCAPEMENTS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JULIUS HIETEL, JOHN WENZEL HIETEL, and JOHN LOOMIS GEISSLER, of Philadelphia, in the county of Philadelphia, and State of Pennsylvania, have invented a new and improved Watch-Escapement; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 represent a plan or top view, partly in section, of our improved watch-escapement.

Figure 3 is a side view, partly in section, of the same.

Similar letters of reference indicate corresponding parts.

This invention relates to a new manner of constructing the lever of an escapement, and consists in the application and arrangement of a self-regulating spring-lever, which will, when the watch is shaken or violently agitated, allow the ruby-pin to pass, and which will, therefore, permit the balance to turn freely under the influence of such shock or motion.

The object of the invention is to prevent the breaking of the ruby-pin or pivots, which, in ordinary lever-escapements, is frequently the case, and to still, at the same time, avoid the complication of the chronometer-escapement, in which the same freedom of the balance is provided.

The anchor-escapement of watches has, besides the refined, so-called, lock-spring or chronometer-escapement, found the most general approbation, and experience has shown that a well-constructed anchor or lever-escapement, even in the keeping of time, is but little inferior to the free escapement, and that even, as to durability, frequently excels the too complicated lock-spring escapement; and that it furthermore possesses certain mechanical advantages over it in its construction and manufacture.

Although in these two important points the free escapement is inferior to the anchor-escapement, it has still the decided advantage of allowing unrestricted freedom to the motion of the balance, which is not the case with the lever-escapement, as the latter causes a frequent striking, and even occasional breaking of the ruby-pin or pivots.

The advantage of a free motion of the balance is, however, in watches, of much importance, as the same are frequently exposed to considerable and violent motion, which affects the balance in such manner that the play allowed to the balance of the lever-escapement has proved to be insufficient.

A removal of these drawbacks to the lever is, in consideration of its acknowledged advantages, of the utmost advantage, which would soon find universal

adoption and favor, the more so as a good but injured lever-watch cannot be easily repaired by ordinary watch-makers.

The lever which has all the advantages of the free escapement, without sharing the complication and difficulties of its construction, is the subject of the present invention—the self-correcting spring-lever. The same allows the balance to turn freely in either direction, the lever yielding to it, and resuming its original position by the action of the spring of which it is formed, so that, under no circumstances, a striking or breaking of the ruby-pin or pivots will be possible.

The lever is thus brought to the desired perfection in a simple manner, without any complicated mechanism, its appearance being but little, scarcely perceptibly, different from that of the ordinary lever.

The additional time required in its construction is of but little account, in view of the decided advantages which it possesses.

The self-correcting spring-lever can be applied without difficulty to all kinds of American and foreign lever-watches.

We shall now proceed to describe the construction and arrangement of our self-correcting spring-lever, with reference to the accompanying drawings, in which—

A represents the balance-wheel, mounted on its staff, B; C, the lever, turning on its staff, D; and E, the plate or base.

On the balance is arranged the ruby-pin *a*, in the usual manner, and the front end of the lever is forked, and shaped in the ordinary or suitable manner.

The lever C is made of a spring-bar, which is doubled at its outer portion, as shown in figs. 1 and 2, thus forming two arms, *b* and *d*.

The long arm, *b*, has the fork at its inner end, and fits around, or rather rests against one-half of the staff D, it having a semicircular recess cut into it for that purpose.

The short arm, *d*, rests against the opposite flattened side of the staff D, and, when undisturbed, also against the edge of the long arm *b*, its end being near to but not in contact with a shoulder, *e*, formed on the long arm. This shoulder may, however, be omitted.

The whole lever C is, in reality, not elastic, but only that bent portion, *f*, of it which on its outer ends connects the two arms *b* and *d*. This spring-portion *f* may either form part of or may be secured to the arms.

By means of this spring *f* the arms of the lever can be drawn somewhat apart, as in fig. 2, but then the spring will at once draw them together again, as in fig. 1, as soon as they are released.

The flattened portion of the staff D, against which the arm *d* rests, is somewhat hollowed, so that the said arm rests only against the two extreme ends of that portion, as shown.

The lever is prevented from playing up and down by being held between two shoulders, *g g*, that are formed on the staff *D*, as shown in fig. 3.

F are the pallets, mounted on the staff *D*.

h is the banking-pin, secured to and projecting from the upper and lower sides of the pallet. The upper part of the banking-pin fits through a slot in the long arm *b* of the lever *C*, while the lower end fits into and plays in a slot or groove formed in the plate *E*.

The lever and pallets work, under ordinary circumstances, exactly like the ordinary lever, that is, the ruby-pin causes the lever to oscillate around its staff *D*, and to thereby oscillate also the staff, whereby the pallets are moved in the ordinary manner.

When, however, the watch should be vehemently shaken or moved, so that the balance has a more than usual tendency to swing in either direction, the ruby-pin will, when it has brought the lever to one side, so that the banking-pin is at the end of its slot in the plate *E*, push the long arm *b* still further in such direction, the spring *f* allowing the arm to yield, as in fig. 2, thereby permitting the ruby-pin to pass the lever.

When the ruby-pin has passed, the lever resumes at once its original position. Thus free, unrestricted mo-

tion is allowed to the balance, without doing away with the ordinary advantages of the lever-escapement.

It will be noticed that while the lever is thus moved aside, *i. e.*, while the arms *b d* are somewhat drawn apart, neither the staff *D* nor the pallets change their position.

Having thus described our invention,

We claim as new, and desire to secure by Letters Patent—

1. The described construction of the self-regulating lever *C*, for watch-escapements, consisting of the arm *b*, fitting around the staff *D*, and provided with a shoulder, *e*, against which rests the end of the shorter arm *d*, said arms being connected by the spring *f*, as herein set forth.

2. The combination and arrangement, in a watch-escapement, of the balance-wheel *A*, spring-lever *C*, partly flattened or grooved staff *D*, pallets *F*, banking-pin *h*, and ruby-pin *a*, all made and operating substantially as herein shown and described.

JULIUS HIETEL.

JOHN WENZEL HIETEL.

JOHN L. GEISLER.

Witnesses:

A. PICORD,

J. WM. POMMER.