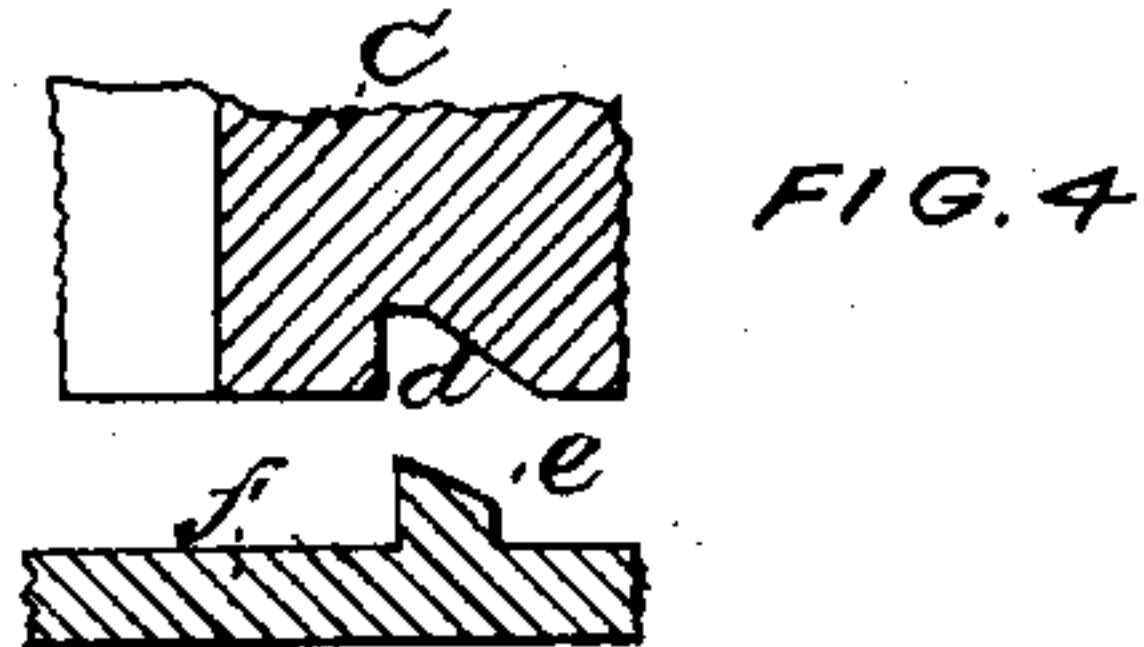
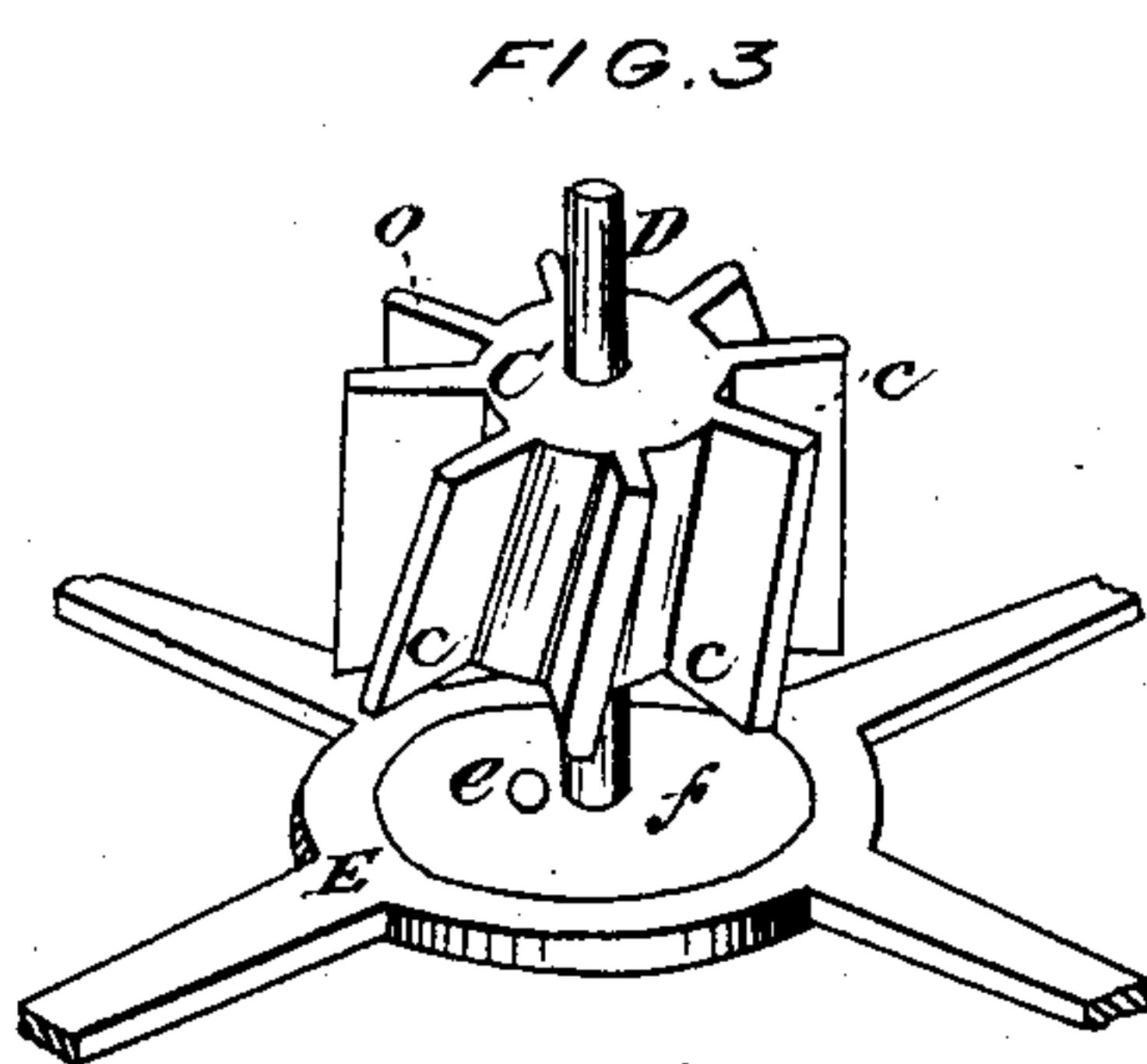
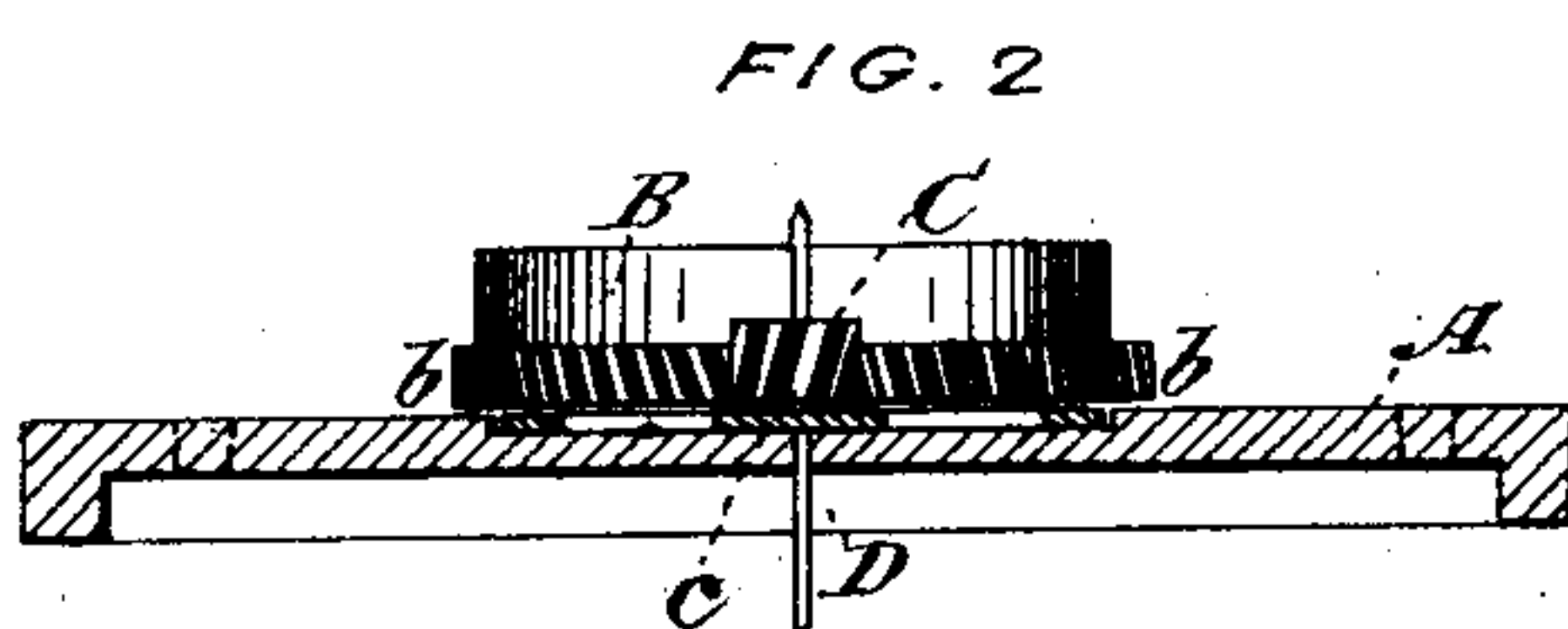
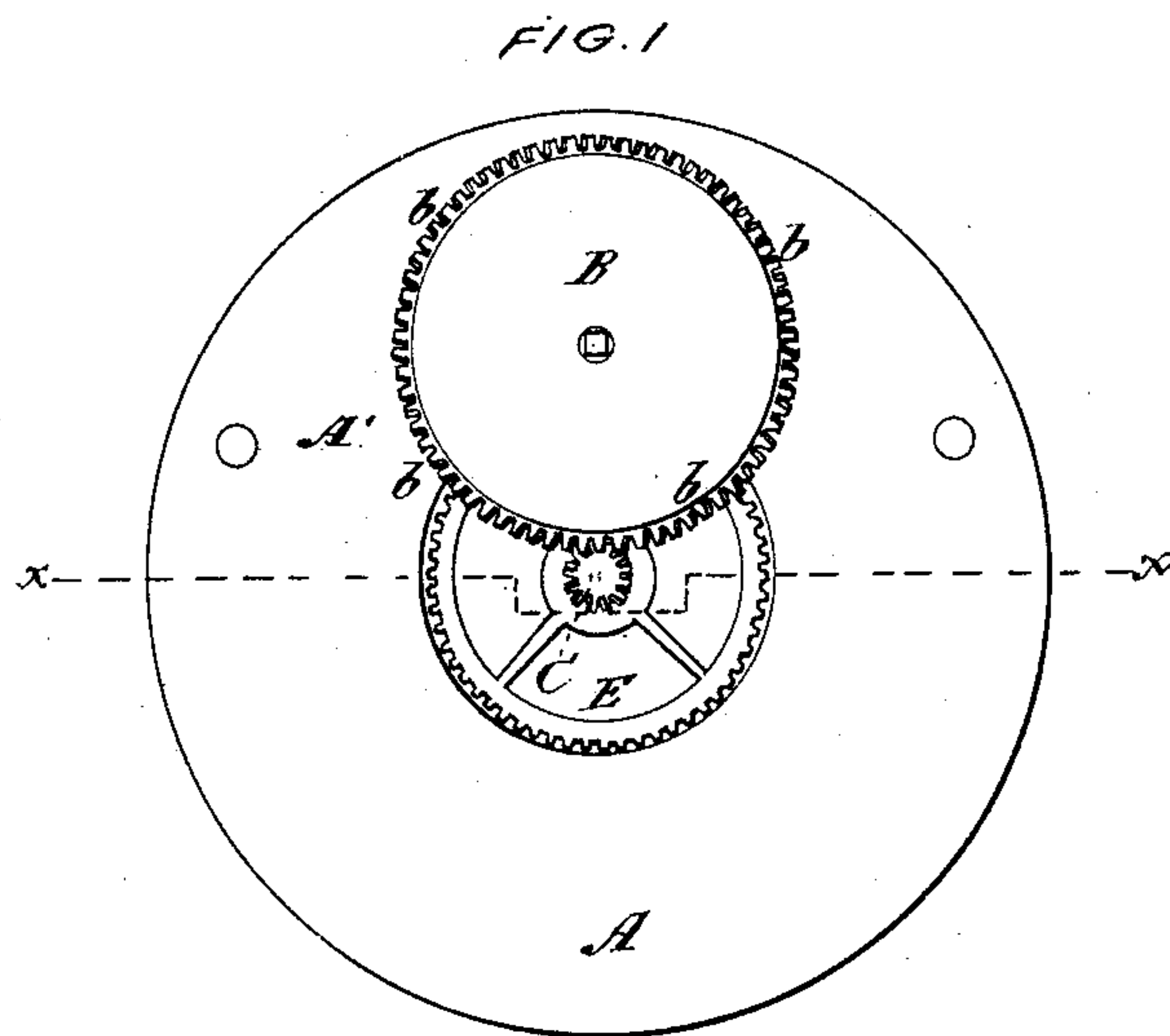


A. TWING.  
Watch Pinion.

No. 106,432.

Patented Aug. 16, 1870.



WITNESSES:  
Chas H. Poole,  
J. K. Anderson

INVENTOR:  
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# United States Patent Office

ALMON TWING, OF WALTHAM, MASSACHUSETTS.

Letters Patent No. 106,432, dated August 16, 1870.

## IMPROVEMENT IN REVERSIBLE CENTER PINION FOR WATCHES.

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

To all whom it may concern:

Be it known that I, ALMON TWING, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Watch Mechanism for preventing the train of gear-wheels and parts from injury by the breaking of the mainspring, &c.; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 represents a top view or plan of a watch-plate, showing the barrel or mainspring cylinder, with spiral cog-wheel, pinion, and center time-wheel.

Figure 2 shows a side or edge view of the same, with the center shaft and collar, on which the spiral center pinion is placed to operate, or a section through at *x x*.

Figure 3 shows an isometrical enlarged view of the center wheel, with the collar, center shaft, pin or hub, and the spiral-leaved pinion.

Figure 4 is a greatly-magnified view of the central portion of the center pinion and the face of the collar on the shaft, showing the hub or pin projecting from the collar, and the notch or recess in the hub or central portion of the pinion.

The object of my invention is to prevent injury to the train of the watch by the breaking of the mainspring, or imperfect action of the click and ratchet.

My invention consists in the oblique-cut gear on the barrel for holding the mainspring, and the corresponding oblique-cut pinion on the arbor or center shaft, to work loosely, the pinion being provided with a notch or recess in the under side of its hub, to form a clutch when in contact with a pin or projection, on the shoulder-plate of the arbor, to which the center wheel is attached, so that, when the power of the mainspring is exerted on the movement, the peculiar form of the inclined teeth and the oblique leaves of the pinion will keep the pinion down, resting firmly on the shoulder of the arbor, locked to the pin in the plate, and drive the wheel-trains of the mechanism of the watch. But, when the sudden reverse or backward motion is given, as from the breaking of the mainspring, or the slip of the click or the ratchet, the pinion will instantly be raised off the pin or projection, and relieve the whole, so that no damage by the bending or breaking of the cogs or pivots can take place.

To enable others to make my improvement in watch mechanism, I will describe it more in detail.

Referring to the drawing—

The plates *A* and *A'* are constructed in the usual manner. The mainspring barrel *B* is provided with in-

clined teeth or cogs, *b b b*, and also the center pinion *C* has spiral leaves, *c c c*, to correspond with the cogs *b b b* on the barrel-wheel.

In the under side of the hub of the pinion *C* there is a notch or recess, *d*. One side is made at a right angle, and the other is beveled off, for the purpose of forming a clutch when in contact with a pin or projection, *e*, on the shoulder *f* of the center shaft or arbor *D*, so as to drive the center wheel *E* in the proper direction, so as to move the whole train of mechanism when the power of the mainspring is applied.

The inclined side of the notch *d* will allow the pinion *C* to slide on the arbor or center shaft *D* when the motion of the barrel *B* is reversed, and liberate the clutch and relieve the train of gear-wheel and the escapement from any jar or damage by the breaking of the mainspring, or the imperfect action of the pawl and ratchet.

The oblique gear or inclined cogs *b b b*, and the position of their bearing on the reverse inclined leaves *c c c* of the pinion *C*, will securely hold the pinion on the clutch-pin *e* as long as the power of the mainspring is bearing upon it. But as soon as the pressure is relieved, and the motion of the barrel is reversed, the angle of the cogs will throw the pinion off the clutch, it sliding sufficiently on the arbor *D* for that purpose, without throwing the cogs *c c c* out of gear with the cogs *b b b* in the barrel-wheel *B*, but at the same time be instantly and entirely freed from the train of mechanism.

It is a well-known fact that watches are often much injured, and sometimes nearly or quite ruined, by the breaking of a mainspring or the imperfect action of the click and ratchet, a defect which is perfectly remedied by my invention, as above described.

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

The loose reversible center pinion *C*, with recess *d*, for engaging with the clutch-pin *e* on the center wheel, and provided with oblique leaves or teeth *c c*, engaging with similarly-cut teeth on the barrel-wheel, for the purpose of automatically releasing the said pinion on the recoil from the rupture of the mainspring, as shown and described.

In testimony whereof I hereunto subscribe my name in the presence of—

ALMON TWING.

Witnesses:

DANL. F. VILES,  
H. SMITH.