

(No Model.)

2 Sheets—Sheet 1.

E. KUHN.
STOP WATCH.

No. 445,064.

Patented Jan. 20, 1891.

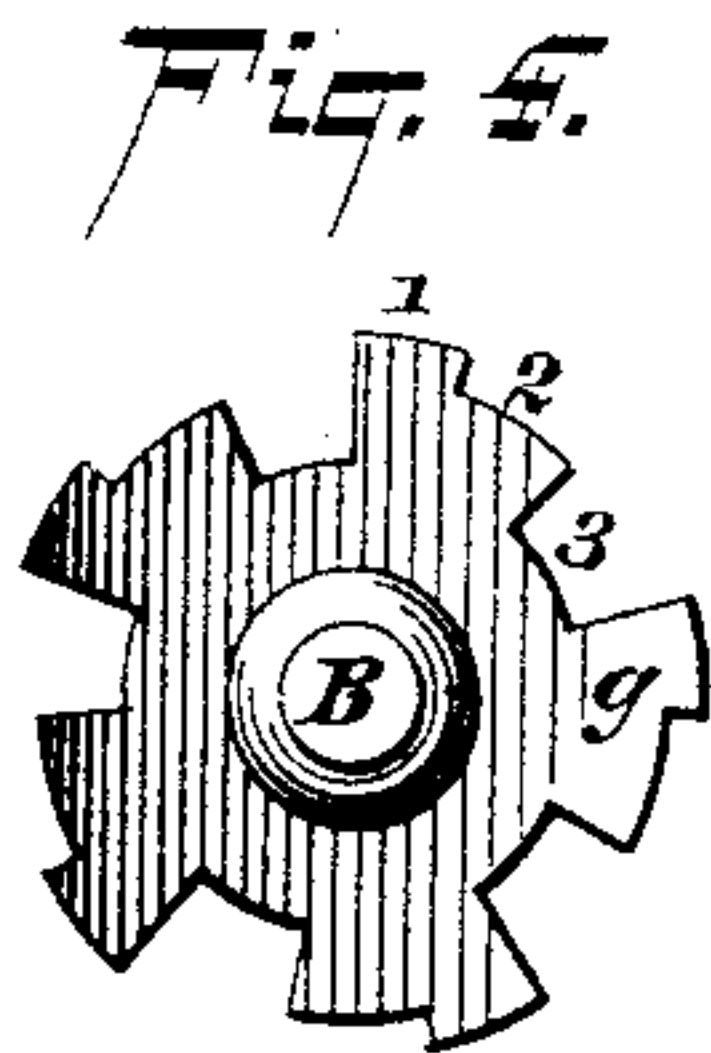
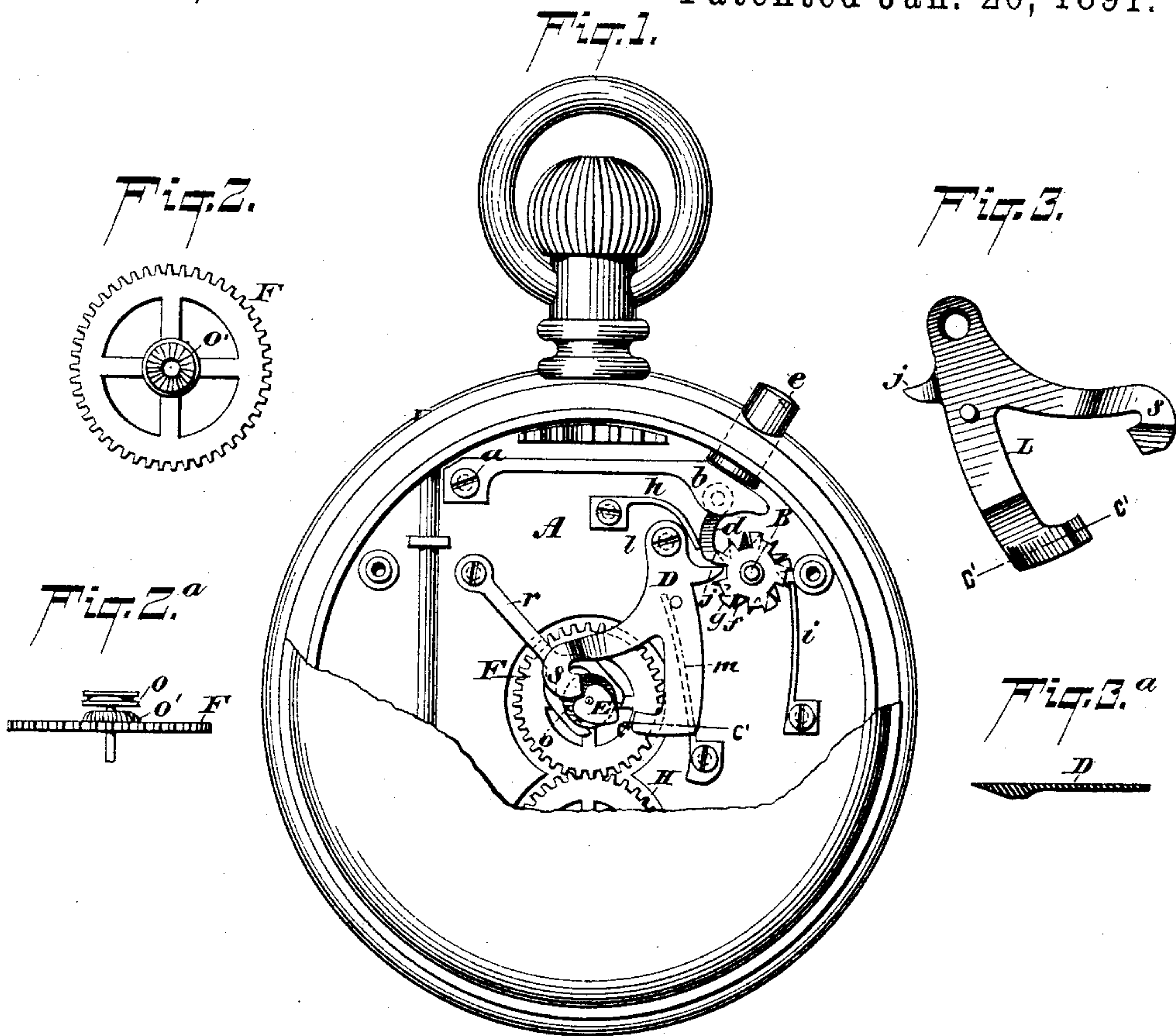


Fig. 8.

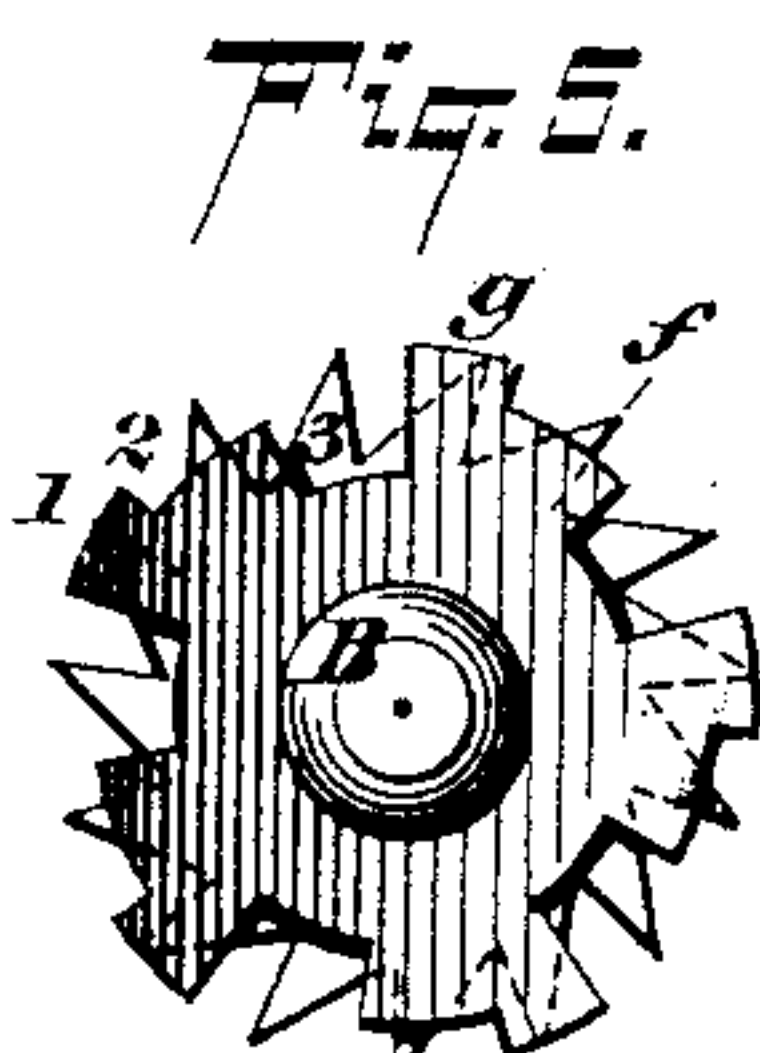
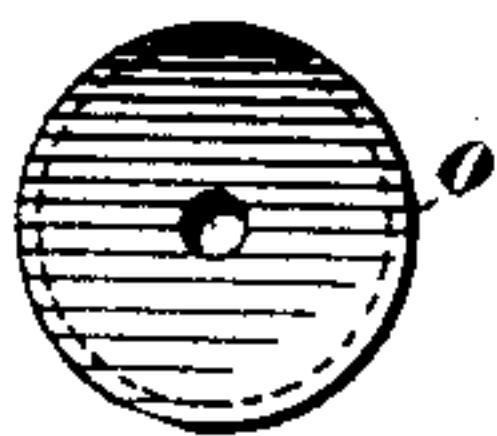


Fig. 7.



Fig. 9.

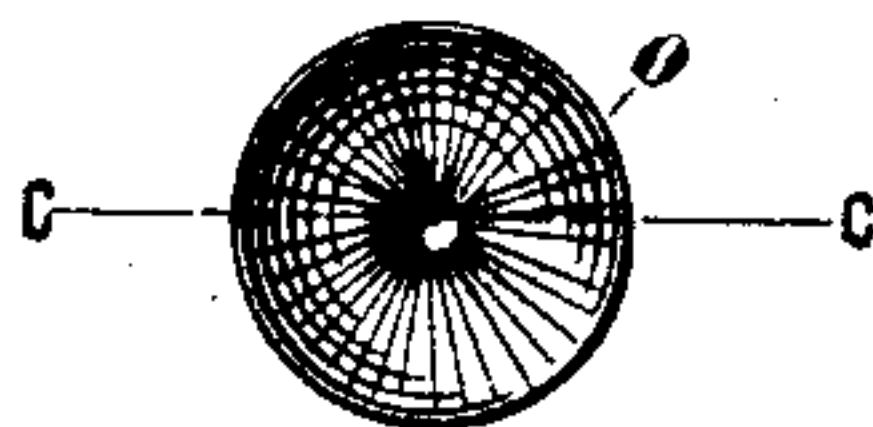


Fig. 10.



Fig. 6.

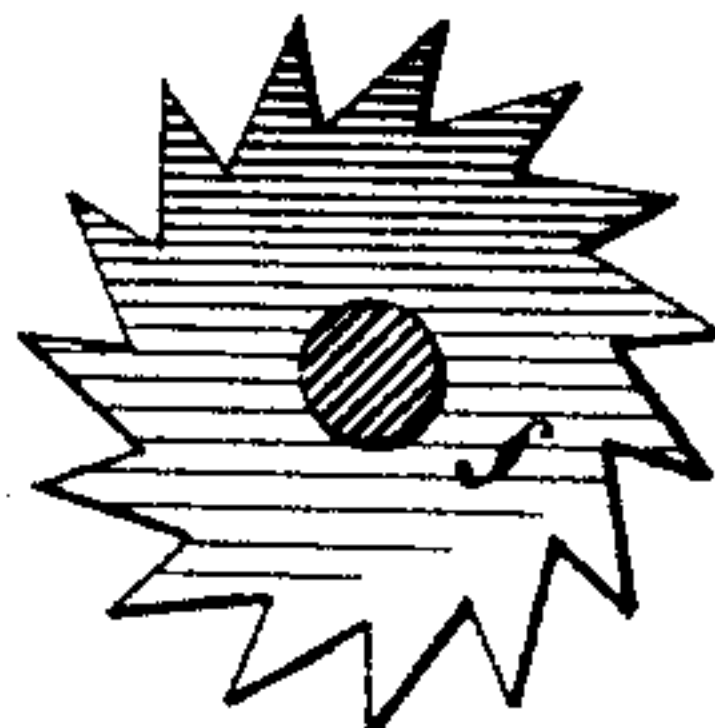
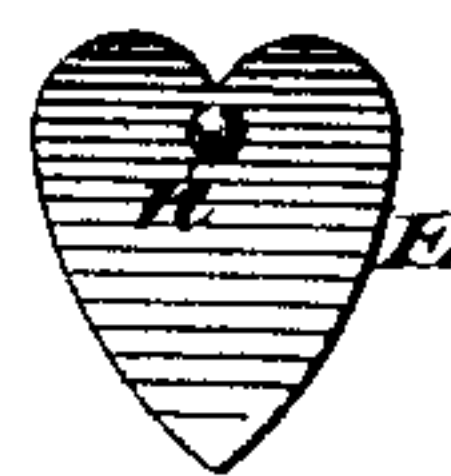


Fig. 11.



WITNESSES:
Gustave Dietrich.
William Goebel.

INVENTOR
Edmond Kuhn
BY *Briesen & Knauth*
his ATTORNEYS.

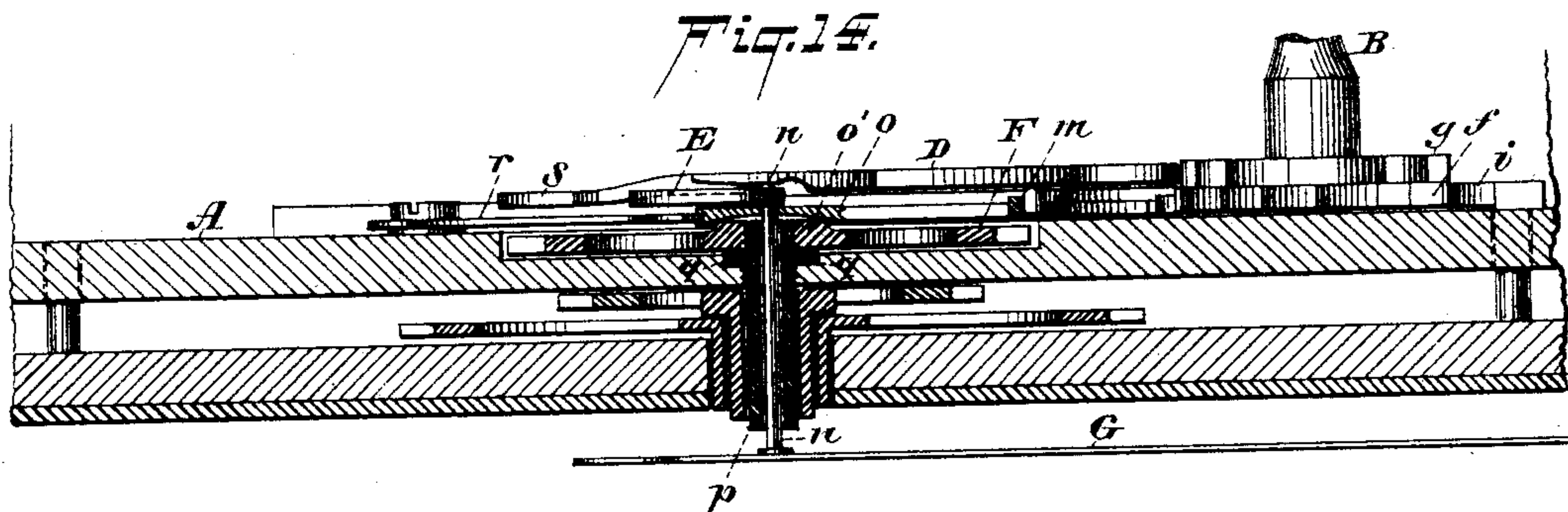
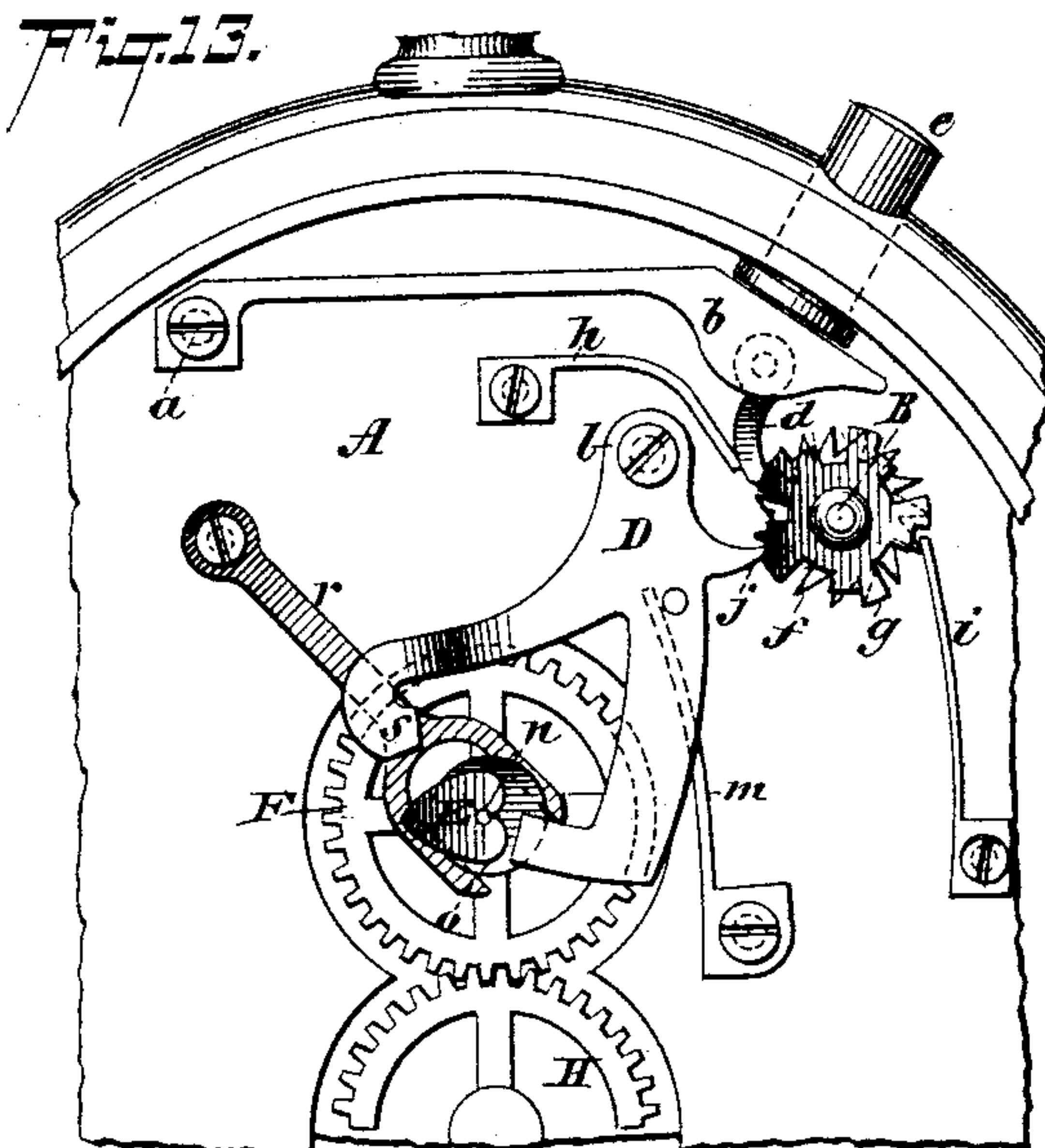
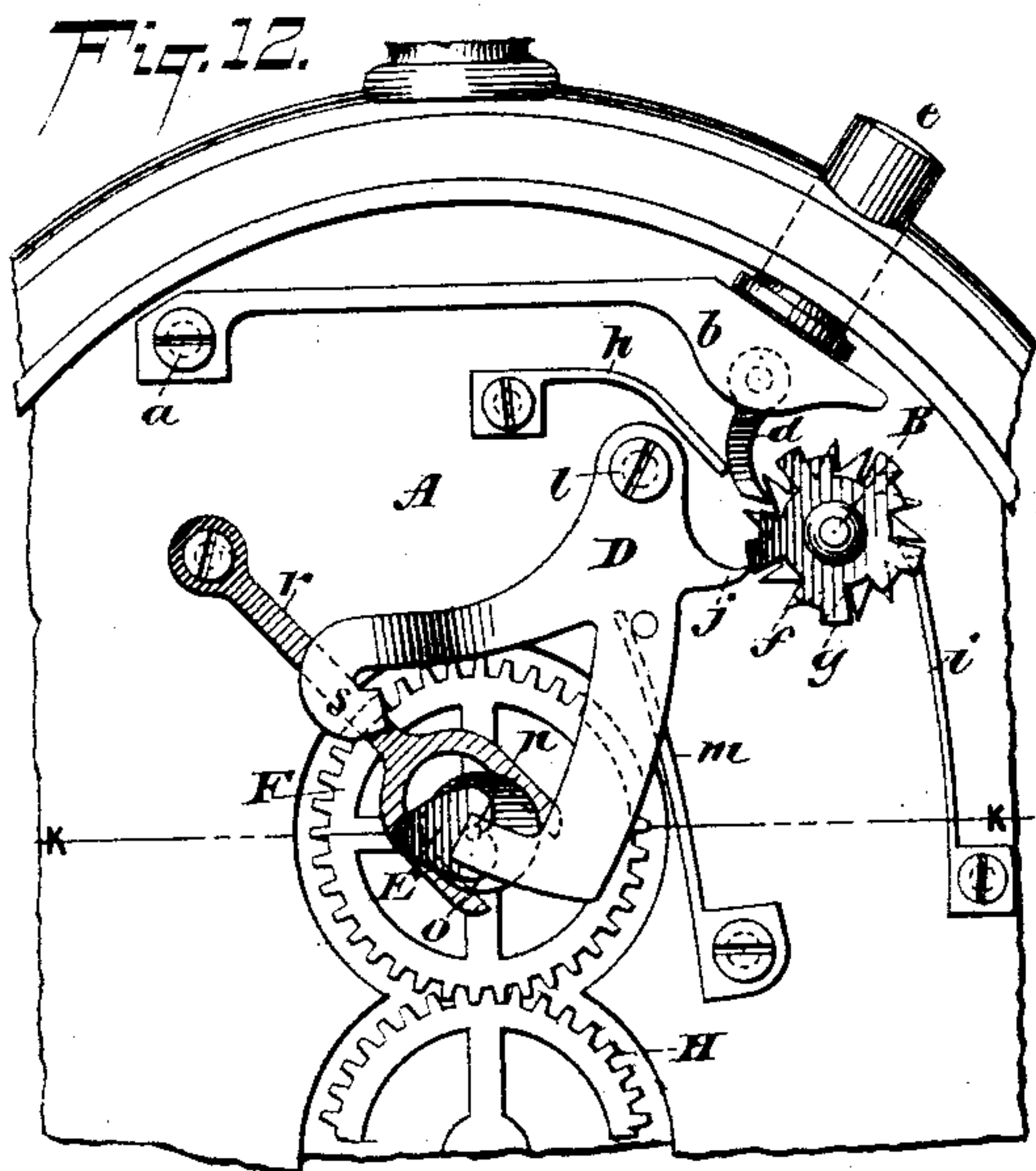
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UNITED STATES PATENT OFFICE.

EDMOND KUHN, OF BROOKLYN, ASSIGNOR TO THE MANHATTAN WATCH COMPANY, OF NEW YORK, N. Y.

STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 445,064, dated January 20, 1891.

Application filed March 21, 1890. Serial No. 344,743. (No model.)

To all whom it may concern:

Be it known that I, EDMOND KUHN, a resident of the city of Brooklyn, Kings county, and State of New York, have invented an Improvement in Stop-Watches, of which the following is a specification.

My invention relates to that class of watches known as "stop-watches;" and it consists in a novel arrangement of parts whereby the sweep-second-hand can be thrown in and out of gear with the main train of the watch, a full description of which will appear in the subsequent part of this specification, reference being had to the accompanying drawings, forming a part of the same, wherein—

Figure 1 represents a plan view of my improved arrangement of parts when the sweep-second-hand is held at the starting-point. Figs. 2, 2^a, 3, 3^a, 4, 5, 6, 7, 8, 9, 10, and 11 are views of the various parts used. Fig. 12 shows a plan view when the sweep-second-hand is rotating, and Fig. 13 a plan view when the sweep-second-hand is at rest after having marked a certain desired space of time. Fig. 14 is a cross-section on the lines *k k* of Fig. 12.

In the drawings, A represents the bed-plate of my watch, on which the main train, as well as my improvement, is supported.

At *a* I securely attach a spring *b*, having a pawl *d* pivoted at one end thereof and operated by a push-button *e*. The plate A carries an arbor B, on which turns a ratchet-wheel *f* and a step-wheel *g*, both securely attached together. The pawl *d* engages with the ratchet *f*, and is held in contact therewith by means of the spring *h*, said ratchet being held from revolving in an opposite direction by the spring *i*. As the ratchet and step wheel are securely attached together, they revolve simultaneously. The construction of the step-wheel is shown in Fig. 4 and when connected with the ratchet in Figs. 5 and 7. The step-wheel *g* has three sets of steps 1, 2, and 3, one of which the lug *j* of a claw-shaped lever D is able to engage at a time, the said lever being pivoted to the bed-plate A at a suitable point *l* and the lug *j* held in contact with the step of step-wheel by the spring *m*. One arm of the claw-shaped lever D is constructed on the under side, as shown in the bottom view, Fig.

3, and in section (on the lines *c' c'* of Fig. 1) in Fig. 3^a, and is adapted by the beveled end and short flat surface behind said bevel to ride upon the spindle *n* or any projection thereon and to depress the same. The other arm *s* of said lever D is adapted to hold the heart-cam in its normal position, as in Fig. 1, and to bring it back to said position. The arm *s* is on a lower plane than the other arm of the lever, as in Fig. 14, so that it can strike the edge of the heart-cam. The spindle *n* can be united by a clutch *o o'* to a driving-wheel F. The outer end of the spindle *n* carries the sweep-second-hand G. The driving-wheel F rotates on a tube *p*, surrounding the sweep-second-hand spindle *n*, the said tube *p* being adapted to screw into the bed-plate A and bearing a projecting flange *q*, above which the wheel F revolves freely. The wheel F is held in position by the upper end of the tube *p* being turned outward. This wheel F is always in gear with the main train H of the watch and bears the part *o'* of the clutch *o o'*, into which the other part *o* of said clutch, which is carried by the spindle *n*, can engage when the spindle *n* is depressed. The wheel F and clutch *o o'* are shown in Figs. 2 and 2^a and views of the half-clutch *o* in Figs. 8, 9, and 10.

Fig. 11 shows the heart-cam E and the spindle *n*.

The part *o* of the clutch and heart-cam E are held elevated—that is, in their normal position—by a spring *r*, which operates in a circumferential groove in the half-clutch *o*, as in Fig. 14.

The operation of my improvement is as follows: When the hand G is in its zero position, the claw-shaped lever D enters the deepest step 3 of wheel *g*, all as in Fig. 1, the arm *s* bearing on in the recess of the heart-cam E and the spring *r* holding the spindle *n* raised and the clutch *o o'* open. Now, in order to set the hand G in motion, the button *e* is pressed once, thus causing the ratchet-wheel *f* to advance one tooth and the wheel *g* one step, thereby throwing the lug *j* upon the farthest protruding step 1, as in Fig. 12. This forces the said lever D upon the heart-cam E and spindle *n*, depressing both and closing the clutch *o o'*. The clutch now acts to bring

the spindle n into gear with the wheel F and puts the sweep-second-hand into motion. When the desired time has elapsed and the hand G is to be stopped, the button e is again
5 pressed down and the ratchet-wheel f advanced another tooth, thereby bringing the receding step 2 of the wheel g in line with the lug j , as in Fig. 13. This causes the lever D to spring backward away from the heart-cam
10 and allows the spring r to raise the spindle n and to open the clutch, thus releasing the sweep-second-hand from the impulse of the train and consequently stopping it, all as shown in Fig. 13. The third operation, which
15 is to return the hand G to zero, is also accomplished by pressing the button e and forcing the lug j into the deepest step 3 of the step-wheel g , thus allowing the arm s of the said lever D to come in contact with and force the
20 heart-cam E back to its normal position, all as in Fig. 1.

The advantages of this invention are its

simple operation, its compactness, and the cheapness with which it can be manufactured and placed on inexpensive watches. 25

Therefore, having described my invention, what I claim is—

The longitudinally-movable spindle n , carrying the sweep-second-hand G , the clutch-section o , and heart-cam E , combined with the 30 spring r , driving-wheel F , having clutch-section o' , and with the claw-shaped lever D , one arm of said lever being adapted to depress the spindle n and the other arm s bent out of plane with the first arm and adapted to bear 35 against the edge of the heart-cam, and with means, substantially as described, for actuating the said lever D , substantially as herein shown and described.

EDMOND KUHN.

Witnesses:

HENRY E. EVERDING,
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