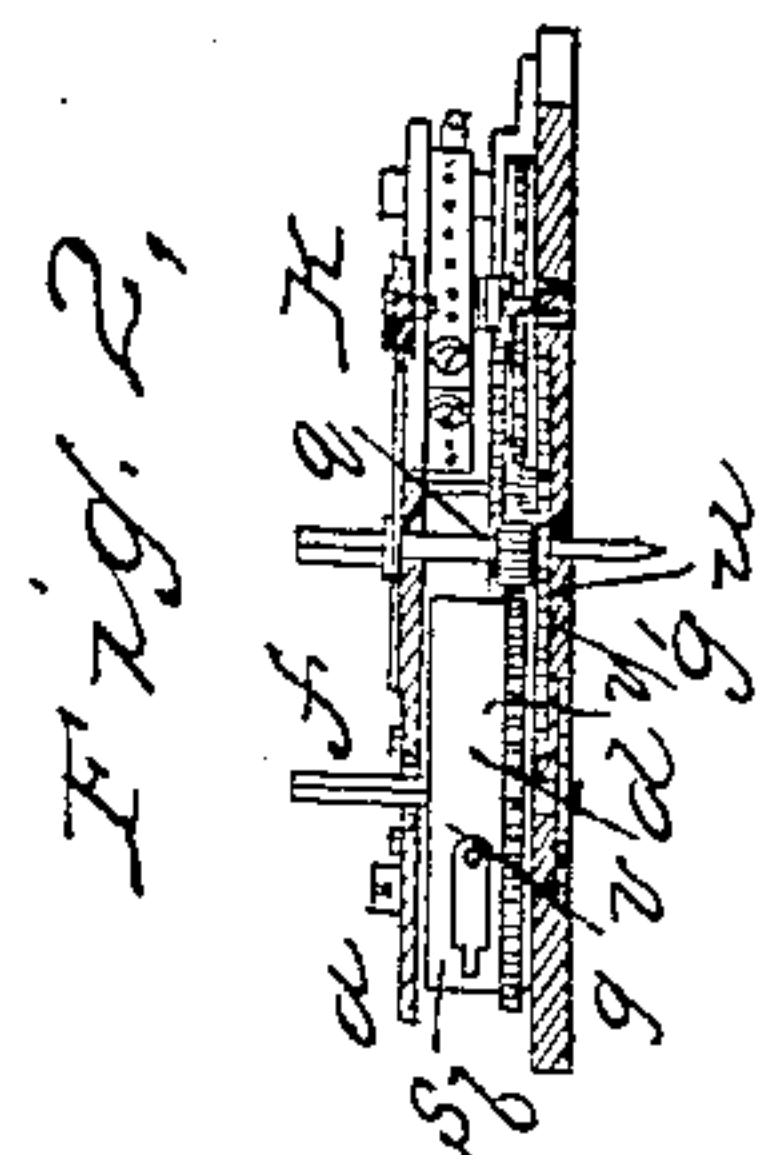
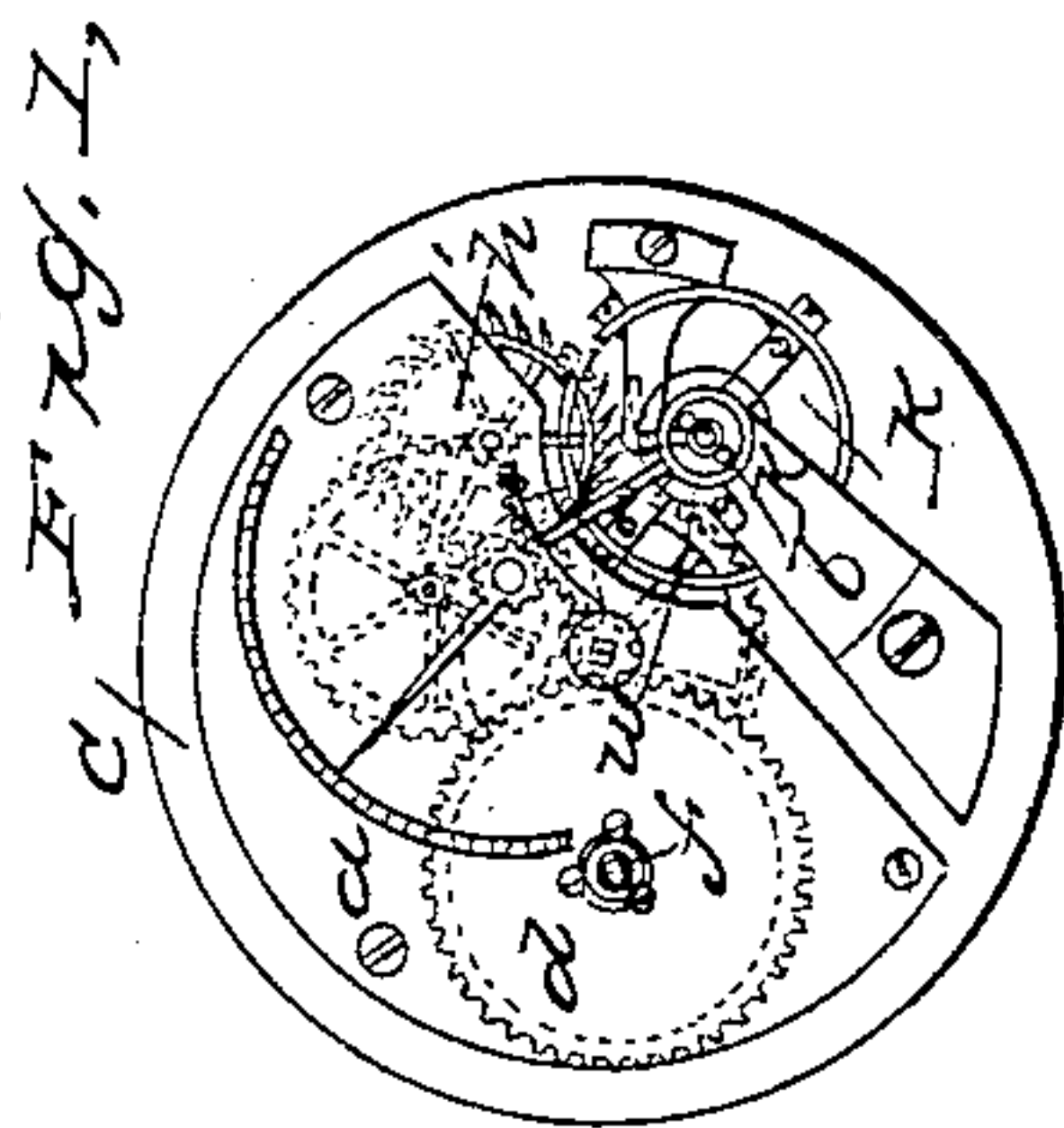
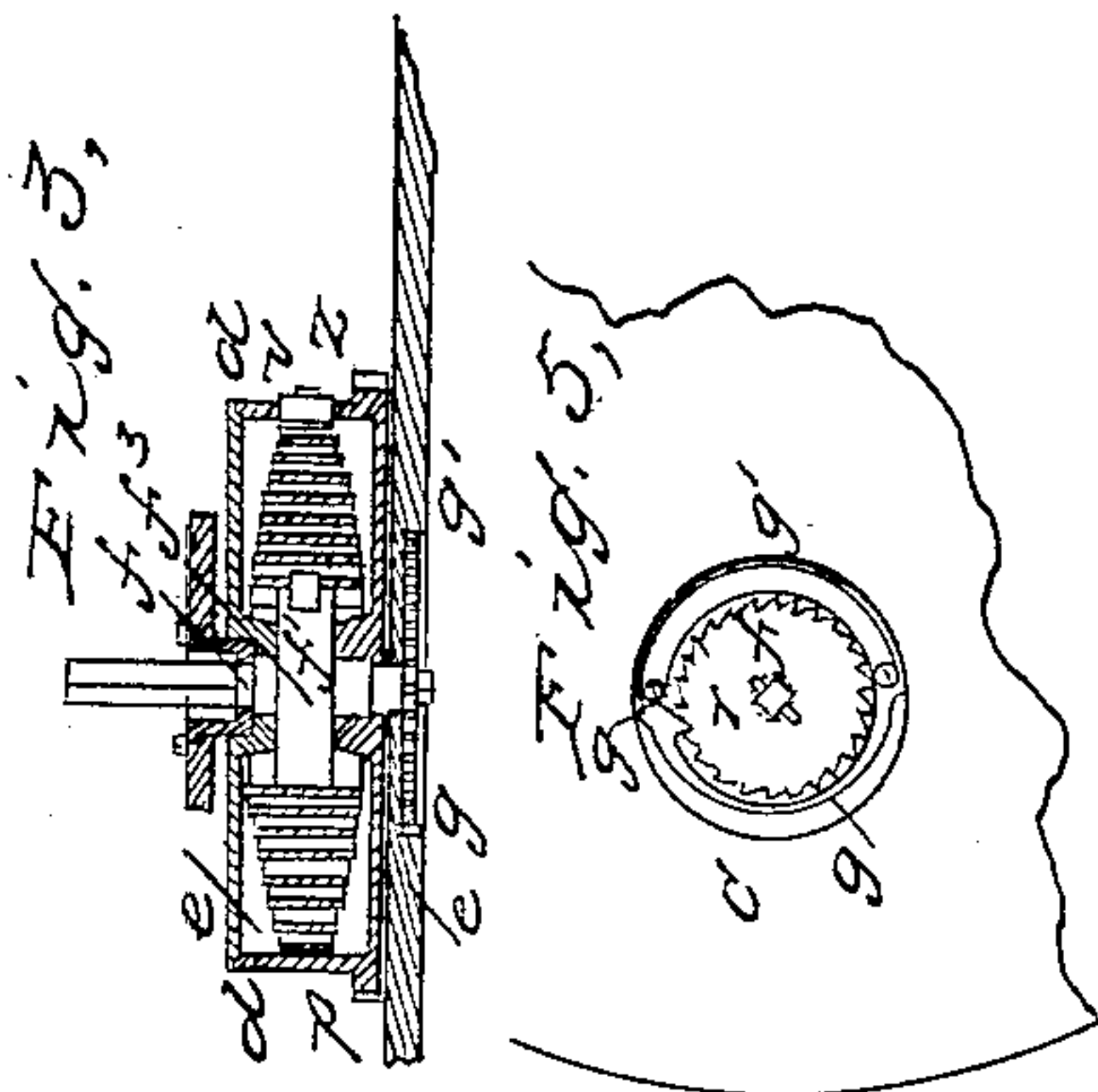
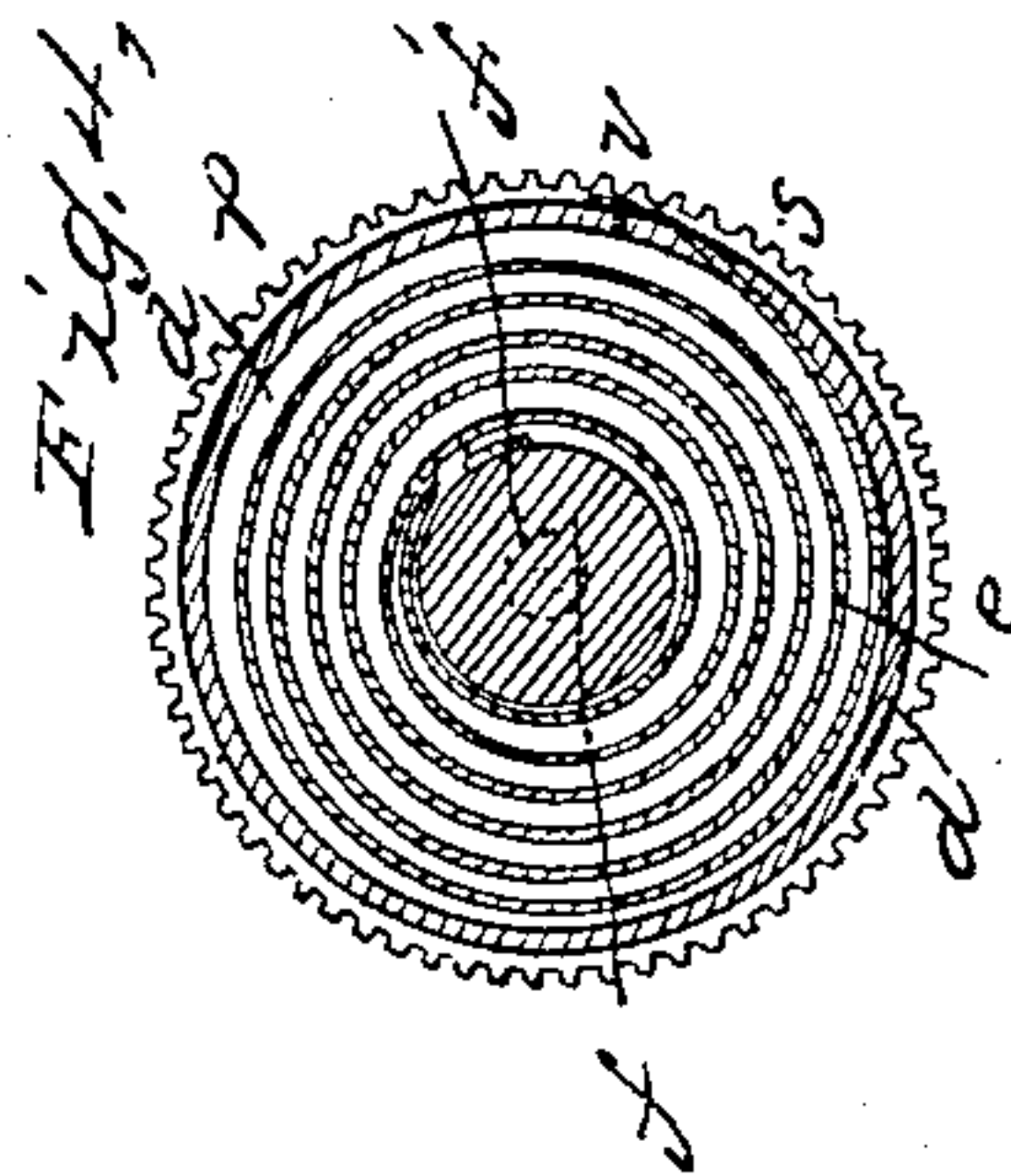
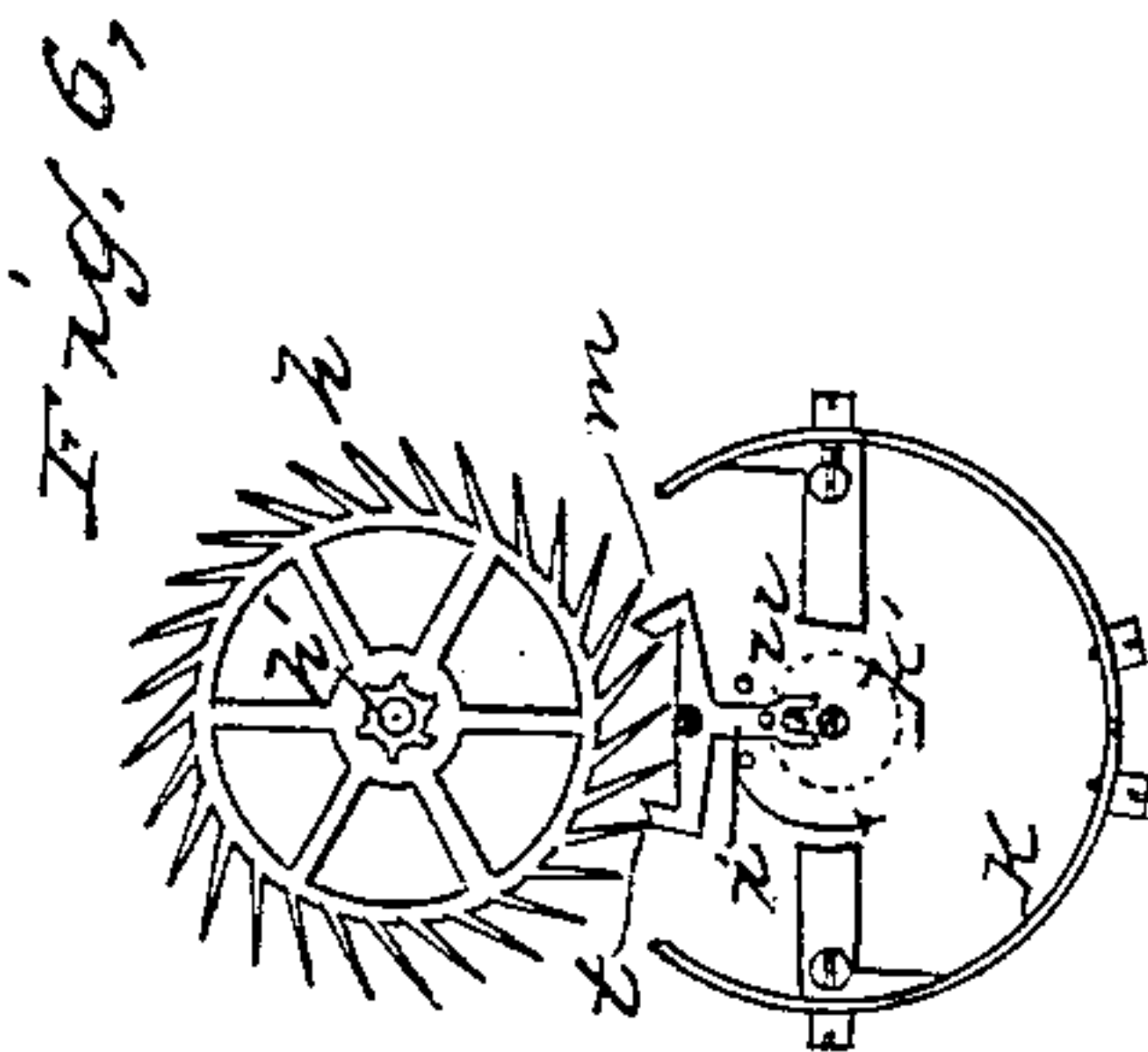
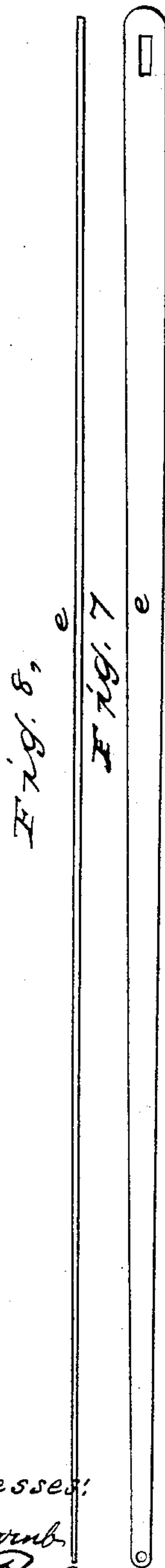


A. WATKINS.

Watch.

No. 39,085.

Patented June 30, 1863.



Witnesses:
Robt. B. Reel

Inventor:
A. Watkins
per Munn & Co.
attorney.

UNITED STATES PATENT OFFICE.

ALEXANDER WATKINS, OF LONDON, ENGLAND.

IMPROVEMENT IN WATCHES.

Specification forming part of Letters Patent No. 39,085, dated June 30, 1863.

To all whom it may concern:

Be it known that I, ALEXANDER WATKINS, of 67 Strand, London, in the United Kingdom of Great Britain and Ireland, have invented certain new and useful Improvements in Watches and other Time-Keepers; 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 view of a watch-movement with my improvements, representing it larger than natural size. Fig. 2 is a section of the same parallel with the axes of the several moving parts. Fig. 3 is an axial section of the spring-box and mainspring. Fig. 4 is a section of the same perpendicular to the axis. Fig. 5 is a plan of what I call the "safety-click" for locking the arbor of the mainspring when the latter is wound. Fig. 6 is a plan of the escapement. Fig. 7 is a face view of the mainspring in an uncoiled condition. Fig. 8 is an edge view of the same. Figs. 3, 4, 5, 6, 7, and 8 are on a larger scale than Figs. 1 and 2.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in so arranging the escapement-wheel, with its axis in the same plane with the staff of the balance and pivot of the escapement-lever, that the leverage exerted by the escapement-wheel on the two pallets is equal, and the distance from the pivot of the escapement-lever to the notch of the fork is equal, or nearly so, to the distance from the faces of the pallets.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

a is the ordinary top plate of the watch; *b*, the balance-cock, and *c* the pillar-plate. The latter plate I make solid throughout, so that it contains the holes or bearings for several of the pivots or arbors of the movement which have hitherto been contained in separate cocks or pieces of metal. I, however, provide cavities in said plate for such parts of the movement as may be desirable.

d, Figs. 1, 2, 3, and 4, is the box or barrel which contains the tapered mainspring *e*, whose inner end, which is also its wider and thicker end, is secured in the usual manner to the collar *f'* on the winding-arbor *f*, and whose

outer or narrower and thinner end is secured to the box or barrel, in the periphery of which is provided a suitable opening, *s*, through which the end of the spring is passed to be secured by a screw, *v*, screwing into the barrel from its exterior. The degree of taper of the spring may be varied; but I prefer to reduce its width and thickness about one-half in its whole length, such reduction being gradual from the larger to the smaller end.

In order to obtain the greatest possible length of square on the winding-arbor *f* for the reception of the key, without making the said arbor of greater than usual length, I provide in the top plate, *a*, and in the boss of the box or barrel *d*, concave bearings for the said arbor, as shown at *f*² and *f*³ in Fig. 3.

p is the toothed rim of the spring box or barrel, gearing with the pinion *q* of the center wheel, *w*, from which motion is imparted to the other parts of the movement in the usual manner.

h, Figs. 1 and 6, is the escapement-wheel, and *i* the escapement-lever. On reference to Fig. 6 it will be seen that the axis of the pivot *i'* of the lever *i* of axis of the arbor *h'* of the balance *h* and the axis of the staff *k'* of the balance *k* are all in the same plane, the pivot *i* being between the arbor *h'* and the staff *k'*. By this means the leverage with which the pallets *l* and *m* are acted upon by the escapement-wheel is made equal, and the distance from the roller-pin, or from the notch of the fork *w* at the end of the third arm of the lever *i*, is made equal to the distance from the said pivot to the face of each pallet.

The escapement-lever thus constructed and arranged may be made in one piece, and admits of the watch being made flatter and more compact, because the axis of the balance-wheel may be brought nearer to the axis of the escapement-wheel. This arrangement also renders the running of the watch more accurate, because the escapement-lever, being much shortened in length, is not so much affected in its proper motions by the jarring and concussions to which watches carried in the pocket are always subjected.

g, Fig. 5, is the safety-click, composed of a slight spring of arc form, continued in the form of a stronger segment, *g'*, in such manner that the said spring and segment encircle the ratchet-wheel *r* on the winding-arbor. The

segment is screwed to the pillar-plate *c*, and terminates, as shown, at g^2 , in a fixed stop, against which the head of the click would rest without any strain on its spring if the ratchet-wheel *r* were out of the way, and hence when the ratchet-wheel and click are in place, and the mainspring is wound, the pressure of the teeth of the ratchet-wheel upon the teeth of the click, produced by the action of the mainspring, is transmitted to the stop g^2 , and the spring of the click kept entirely relieved of strain, to which it would be otherwise subject by the action of the mainspring. The spring of the click is therefore not required to be stronger than is sufficient to carry it into the spaces of the ratchet-wheel after it has been pushed outward by the teeth thereof in winding. The form of the click may be varied from

that shown, provided it be so arranged that its head may rest against a fixed stop, and thus relieve its spring.

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

Having the axis of the escapement-lever placed equidistant between the pallet-faces and the notch of the fork *w*, in combination with the arrangement of the three axes *h' i' k'* on the same plane, as and for the purpose herein shown and described.

ALEXANDER WATKINS.

Witnesses:

FREDERIC YOUNG, *C. S.*

THOS. BROWN,

GEORGE F. WARREN,

*Both of No. 2 George Yard, Lombard Street,
London.*