

(No Model.)

B. R. BAUGHEN.

STEM WINDING AND SETTING WATCH.

No. 359,834.

Patented Mar. 22, 1887.

Fig. 1.

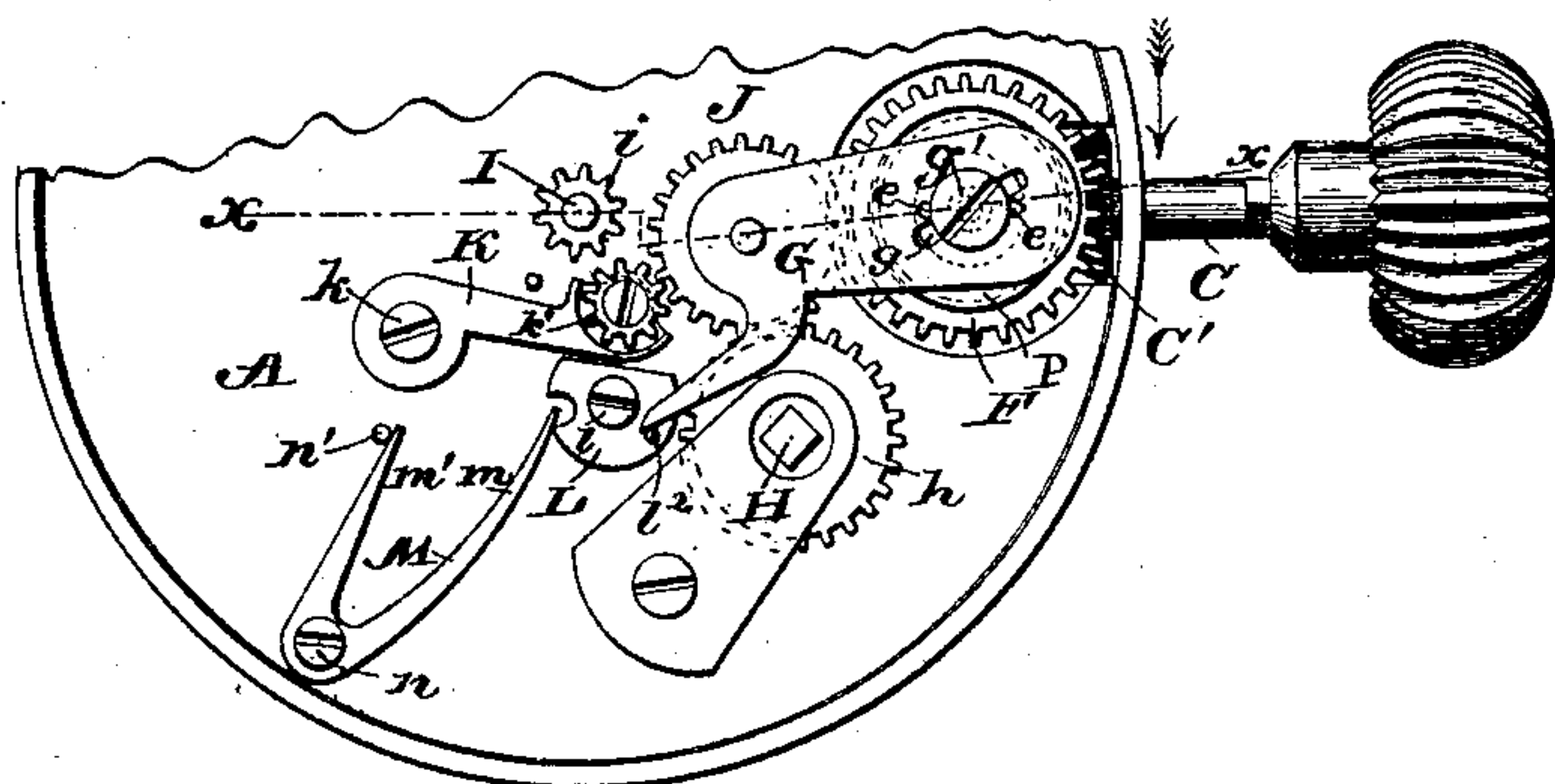


Fig. 2.

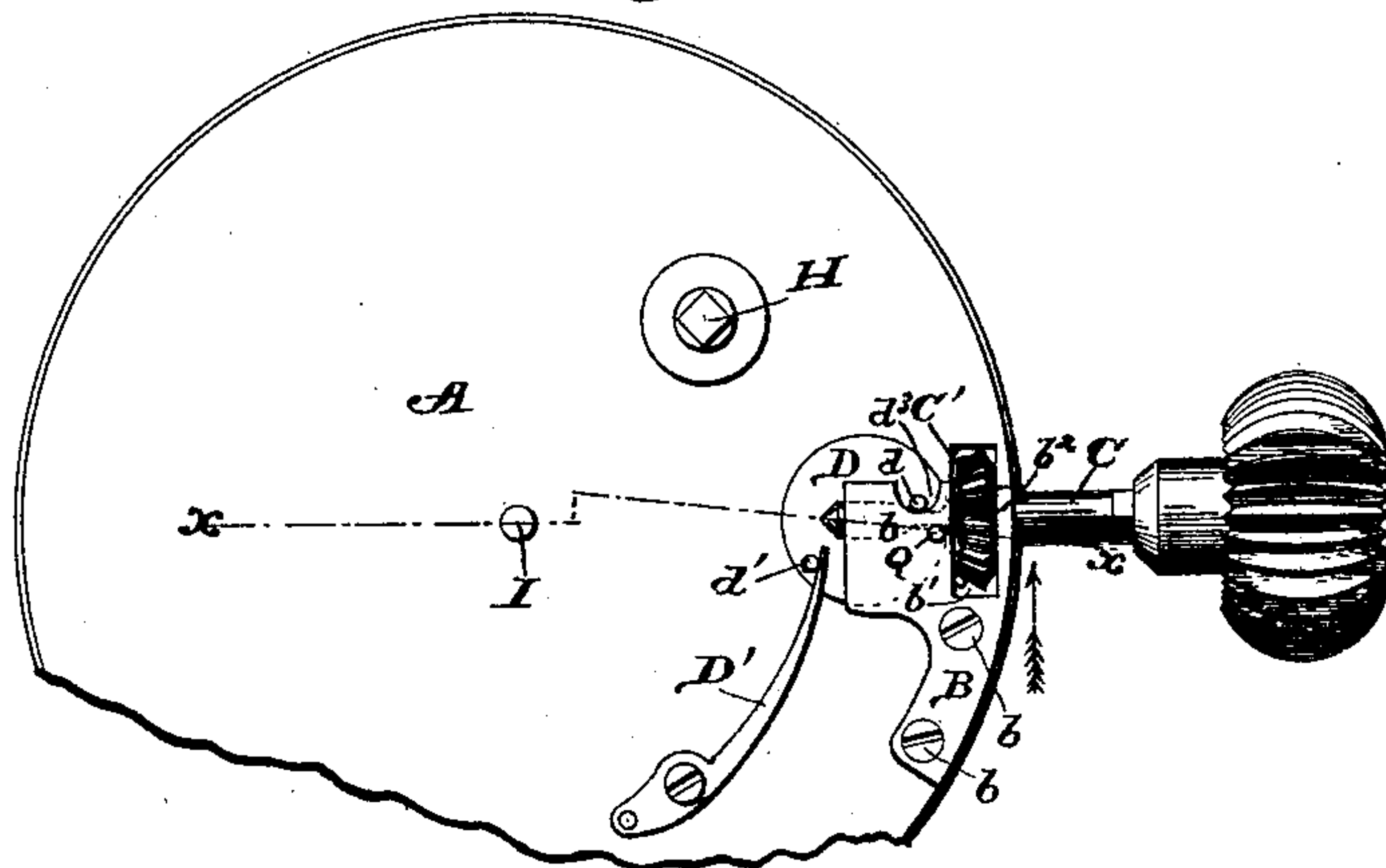


Fig. 3.

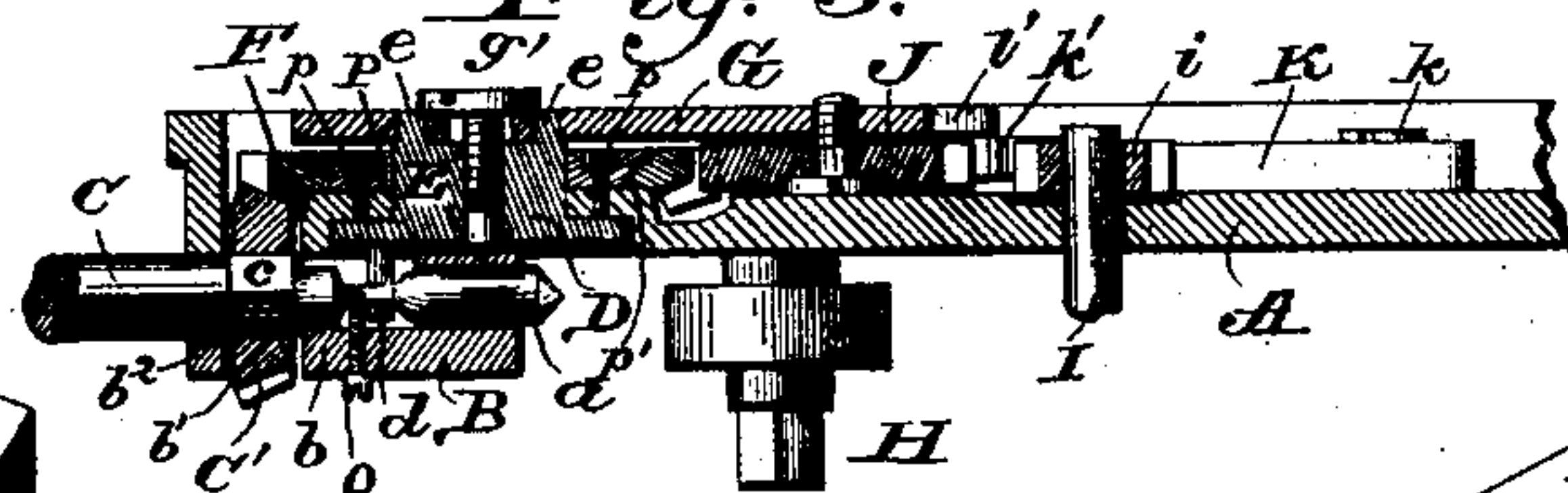


Fig. 5.

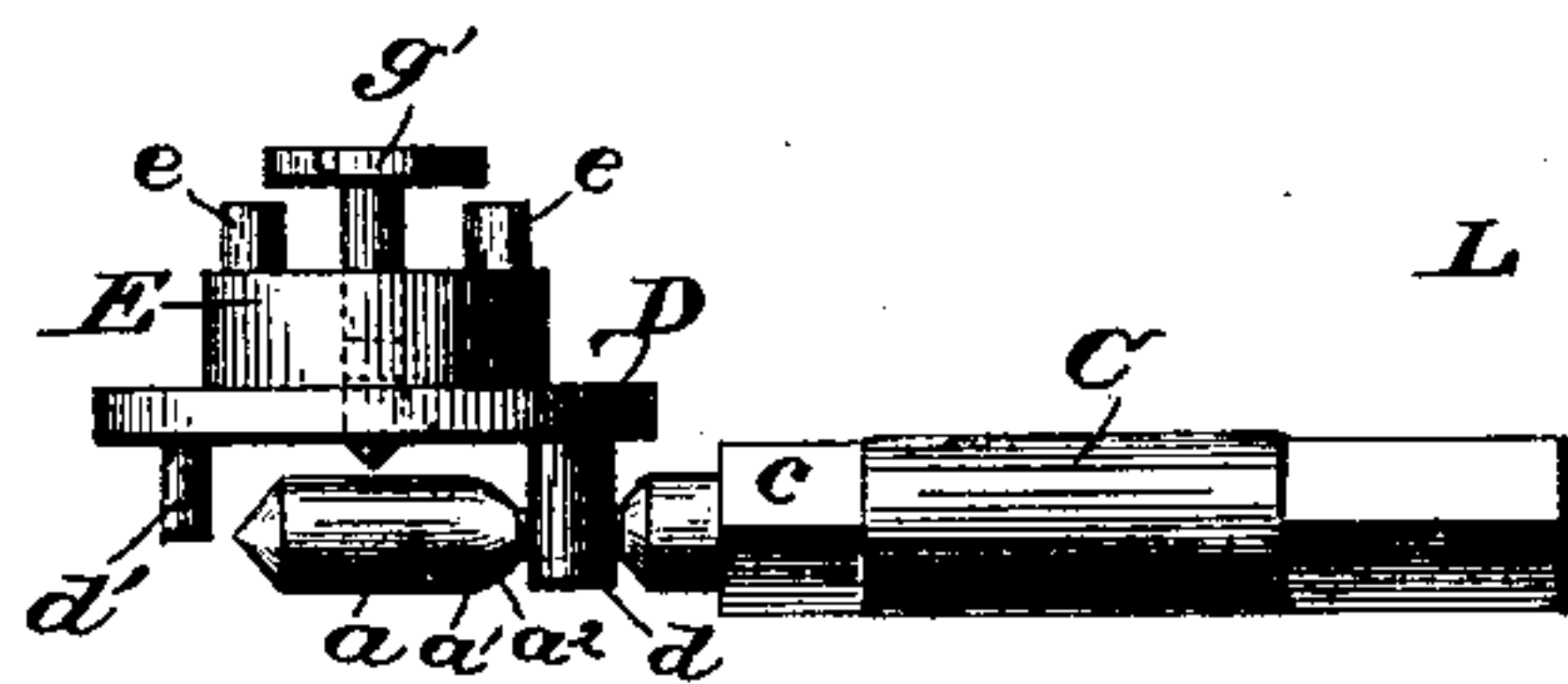
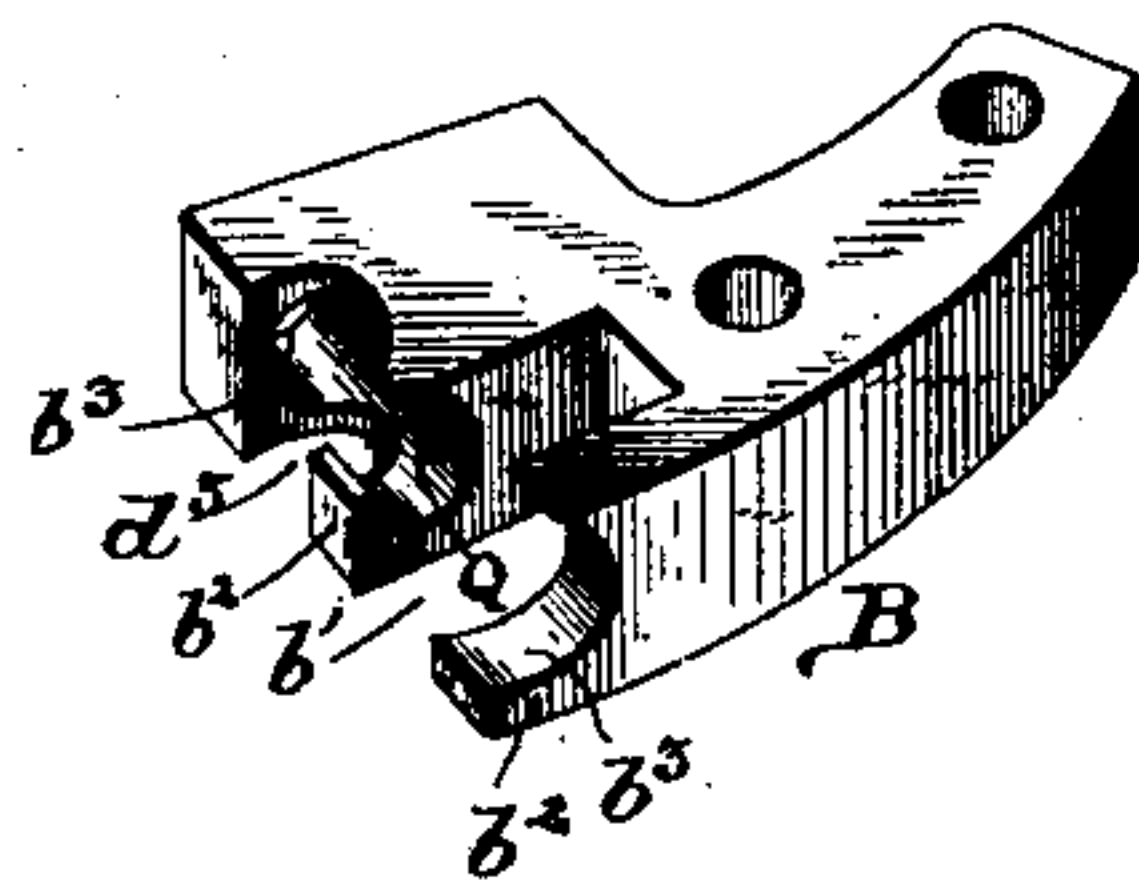
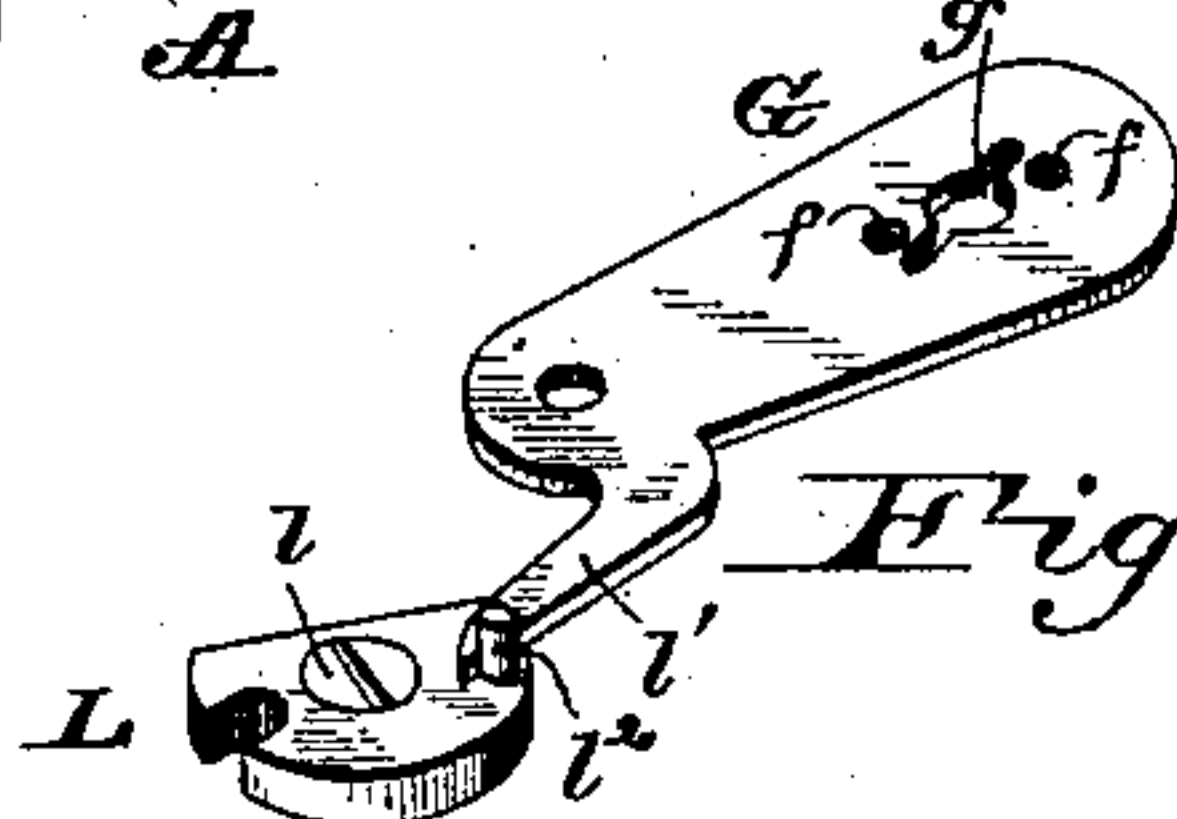


Fig. 4.

Fig. 6.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## STEM WINDING AND SETTING WATCH.

SPECIFICATION forming part of Letters Patent No. 359,834, dated March 22, 1887.

Application filed September 24, 1886. Serial No. 214,452. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN REUBEN BAUGHEN, a citizen of the United States, residing at Burlington, in the county of Des Moines and State of Iowa, have invented new and useful Improvements in Stem Winding and Setting Mechanism for Watches, of which the following is a specification.

My invention relates to improvements in stem winding and setting mechanism for watches; and it consists of the peculiar combination and novel construction and arrangement of the various parts for service, substantially as hereinafter fully described, and particularly pointed out in the claims.

The primary object of my invention is to provide an improved mechanism for stem-winding watches which can be readily adapted for setting the minutes-hand or for winding the mainspring by a single movement or adjustment of the winding stem or arbor, and which shall possess superior advantages in points of simplicity and durability of construction, effectiveness of operation, and cheapness of manufacture.

In the accompanying drawings, which illustrate a stem winding and setting mechanism for watches embodying my invention, Figure 1 is a plan view taken from one side of the device, showing only so much of the pillar-plate as is necessary for a proper understanding of the invention. Fig. 2 is a like view, looking from the reverse side of the pillar-plate. Fig. 3 is a vertical sectional view on the line  $x x$  of Figs. 1 and 2, looking in the direction of the arrows. Fig. 4 is a detached view of the endwise-moving pendant or winding stem or arbor and the disk actuated thereby. Figs. 5 and 6 are detached detail views of parts of the device.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the pillar-plate of a watch of any approved or preferred pattern, and B a bearing-plate, which is affixed by means of screws  $b$ , or any other suitable means, to the pillar-plate at one edge of the same, one edge of the bearing-plate being curved or rounded to conform to the shape of the pillar-plate. The bearing-plate is thus detachably secured to the pillar-plate, so that it can be readily removed in order to remove

the movement from the case; and said bearing-plate has a longitudinal slot,  $b'$ , at one side and near its outer curved edge, said slot opening through one of the side edges of the bearing-plate. The open slot  $b'$  provides two lugs,  $b^2$ , in the bearing, which have transverse aligned openings  $b^3$  formed therein, through which are passed the endwise-moving rotary winding stem or arbor C. Said arbor is capable of a rotary motion, in order to actuate the pinion C' thereon, and this pinion works in the open slot  $b'$  of the bearing-plate and is loosely fitted on a squared portion,  $c$ , of the arbor, so that the pinion will rotate or turn with the arbor, and at the same time the latter is capable of longitudinal movement independently of and freely through the said pinion.

One of the transverse openings  $d^3$  of the bearing B opens through the lower under side of the said bearing, and in this opening or slot  $d^3$  works the lower bulged extremity,  $a$ , of the winding stem or arbor. This bulge  $a$  of the arbor is cone-shaped at its inner extremity from a point,  $a'$ , thereon, and from said point the bulge gradually reduces in curved lines toward the axis of the arbor, as shown at  $a^2$ , a pin,  $d$ , on an oscillating plate or disk, D, impinging upon one of the said curved sides  $a^2$  of the arbor, so that when the arbor is pulled outwardly the pin will be caused to ride upon the curved side and be thereby moved laterally of the arbor for a short limited distance, and when the arbor is forced inwardly the pin  $d$  and the disk return to their former normal positions, as will be very readily understood.

The oscillating disk or plate is located immediately beneath the bearing, and near its outer edges it has two pins,  $d d'$ , which are located at different points in its periphery, one of the pins,  $d'$ , receiving the free end of a pressure-spring, D', which is affixed at its opposite end to the pillar-plate of the watch, and the other pin,  $d$ , being adapted to enter a notch,  $d^3$ , in the bearing B, and thereby impinge against the latter to limit the movement of the oscillating disk in one direction.

The oscillating disk is loosely fitted in an opening of the pillar-plate, so as to be free to move or oscillate therein, and the disk is provided on the side opposite to the pins  $d d'$  with a smaller disk or projection, E, which extends through and fits snugly in the central opening



of a gear-wheel, F, which is made skeleton-shaped—that is to say, it consists merely of a rim with gear-teeth on its outer periphery.

The smaller disk or projection E is provided at diametrically-opposite points in its edge with projecting pins *e e*, which enter apertures or recesses *f* in one end of a swinging carrying-plate, G, which is thereby moved or swung at its free end from one side to the other when the disk D is oscillated by the endwise-moving winding stem or arbor.

The swinging carrying-plate G is provided with a longitudinal slot, *g*, that is arranged between the apertures *f* therein, and through this slot passes a pin or screw, *g'*, that is secured to the smaller disk or projection of the oscillating disk, so that the latter and the plate are more securely connected together.

H designates the mainspring-arbor, which carries a gear-wheel, *h*, and I designates the arbor of the minutes-hand, which likewise has a gear-wheel or pinion, *i*.

J designates an intermediate wheel, which is journaled on a suitable pin at the outer end of the swinging carrying-plate.

K is a swinging arm, which is pivoted or secured to the pillar-plate at one end by means of a pin or screw, *k*, and the free end of this arm carries a small pinion or gear-wheel, *k'*, which normally meshes with the intermediate wheel, J, and is adapted to mesh with the pinion on the minutes hand shaft, and is arranged in close proximity to the intermediate wheel on the swinging plate.

L designates an oscillating detent, which is connected by a pin or screw, *l*, with the pillar-plate, so that it is free to turn or move with the swinging plate G, with which it is connected by means of a tooth or spur, *l'*, on the swinging plate that bears against a pin, *l''*, in one edge of the detent. This detent is held in a position so that the intermediate wheel on the swinging carrying-plate meshes with the gear-wheel on the mainspring-arbor by means of a spring, M, which consists of two diverging arms, *m m'*, which are secured to the pillar-plate at the point of juncture of the same by means of a pin or screw, *n*, or *n'* of the arms fitting at its free end in a notch in the detent L, and the other arm impinging upon a pin or stop, *n'*, fixed to the pillar-plate.

This being the construction of my invention, the operation thereof is as follows: The winding stem or arbor is normally forced inwardly, so that the stop-pin *d* on the oscillating disk normally bears against the bearing, and the swinging plate is carried over toward the mainspring-arbor and the intermediate wheel meshes with the gear-wheel on said arbor. In this position of the parts the intermediate wheel is thrown out of gear with the pinion *k'* and into gear with the wheel *h*, so that when the winding stem or arbor is rotated the pinion thereon actuates the gear-wheel F, the intermediate wheel, and the wheel *h* to wind the mainspring. To set the hands of the watch without actuating the mainspring, the

winding stem or arbor is drawn outwardly to throw or actuate the oscillating disk, which in turn swings the carrying-plate away from the mainspring-arbor and causes the intermediate wheel to mesh with the pinion *k'*, whereby, when the winding stem or arbor is revolved, the gear-wheel thereon, the wheels F J *k'*, and the pinion on the hands-arbor will be revolved to turn the said hands in either direction.

My improvements are simple and durable in construction, and reliable and effective in operation.

A wear ring or annulus, P, is interposed between the smaller disk E and the skeleton wheel F, and this ring is secured in place by screws *p* to a raised flange, *p'*, of the pillar-plate, so that the wear-plate is held from movement.

A stop pin or screw, Q, is fixed in the bearing B and extends into the path of the shoulders on the winding stem or arbor to limit the play of the latter.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the pinions of the mainspring and hands arbors, of an endwise-moving winding stem or arbor, an oscillating disk actuated thereby, a swinging plate connected with the said disk, and an intermediate wheel carried by the plate, and a pinion, *k'*, with which the intermediate wheel engages, which pinion is adapted to mesh with the pinions on either the mainspring-arbor or the hands-arbor, substantially as described.

2. The combination, with the pinions of the mainspring and hands arbors, of an endwise-moving winding stem or arbor, an oscillating disk actuated thereby, a swinging plate connected to the disk and carrying an intermediate wheel, and a spring connected to the disk, and a detent against which the swinging plate acts, substantially as described, for the purpose set forth.

3. The combination of an endwise-moving arbor, the oscillating disk actuated thereby, a swinging plate carrying an intermediate wheel, an oscillating detent connected with the swinging plate, and a spring connected with the said detent, substantially as described.

4. In combination with the pinions of the mainspring and hands arbors, the endwise-moving winding stem or arbor C, having the gear C', the oscillating disk D, actuated thereby, a skeleton gear, F, mounted on the same shaft or pivot as the disk D, said gears C' F meshing with each other, the swinging plate G, connected to the disk D, and an intermediate wheel, J, carried by the plate G, for the purpose set forth.

5. In combination with the pinions of the mainspring and hands arbors, the endwise-moving winding stem or arbor having a bulged inner end, *a*, and a squared portion, *c*, the inner portion of the bulge *a* being tapering or cone-shaped, as at *a'*, a gear-wheel, C', fitted loosely on the squared portion, an oscillating



disk, D, arranged above the enlarged end *a*, and having a depending stud, *d*, which is arranged in the path of the cone-shaped or tapering extremity *a'* of the bulge *a* on the winding-arbor, a gear-wheel, F, meshing with the gear C', and a swinging plate, G, connecting with the disk D, and carrying the intermediate wheel to mesh with either of the pinions of the hands-arbor or the mainspring-arbor, as set forth.

6. In combination with the pinions of the mainspring and hands arbors, the endwise-moving winding stem or arbor, an oscillating disk, D, actuated thereby, a smaller disk, E, on the oscillating disk, the skeleton gear F, fitted around the smaller disk E, the gear C' on the winding stem or arbor, the swinging plate G, connected to the disk E beyond the

gear F, and the wheel J, carried by the plate G, as set forth.

7. The combination of an endwise-moving arbor, an oscillating disk actuated thereby and having a smaller disk on one side and the projecting pins, a skeleton gear-wheel, in which the smaller disk of the oscillating disk is fitted, and a swinging plate having the apertures in which the projecting pins are fitted, and a screw which secures the said plate and disk together, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

BENJAMIN REUBEN BAUGHEN.

Witnesses:

C. C. SMITH,

E. L. CLARK.