

(No Model.)

C. BICKFORD.

DEVICE FOR LETTING DOWN MAINSPRINGS.

No. 360,648.

Patented Apr. 5, 1887.

Fig. 1.

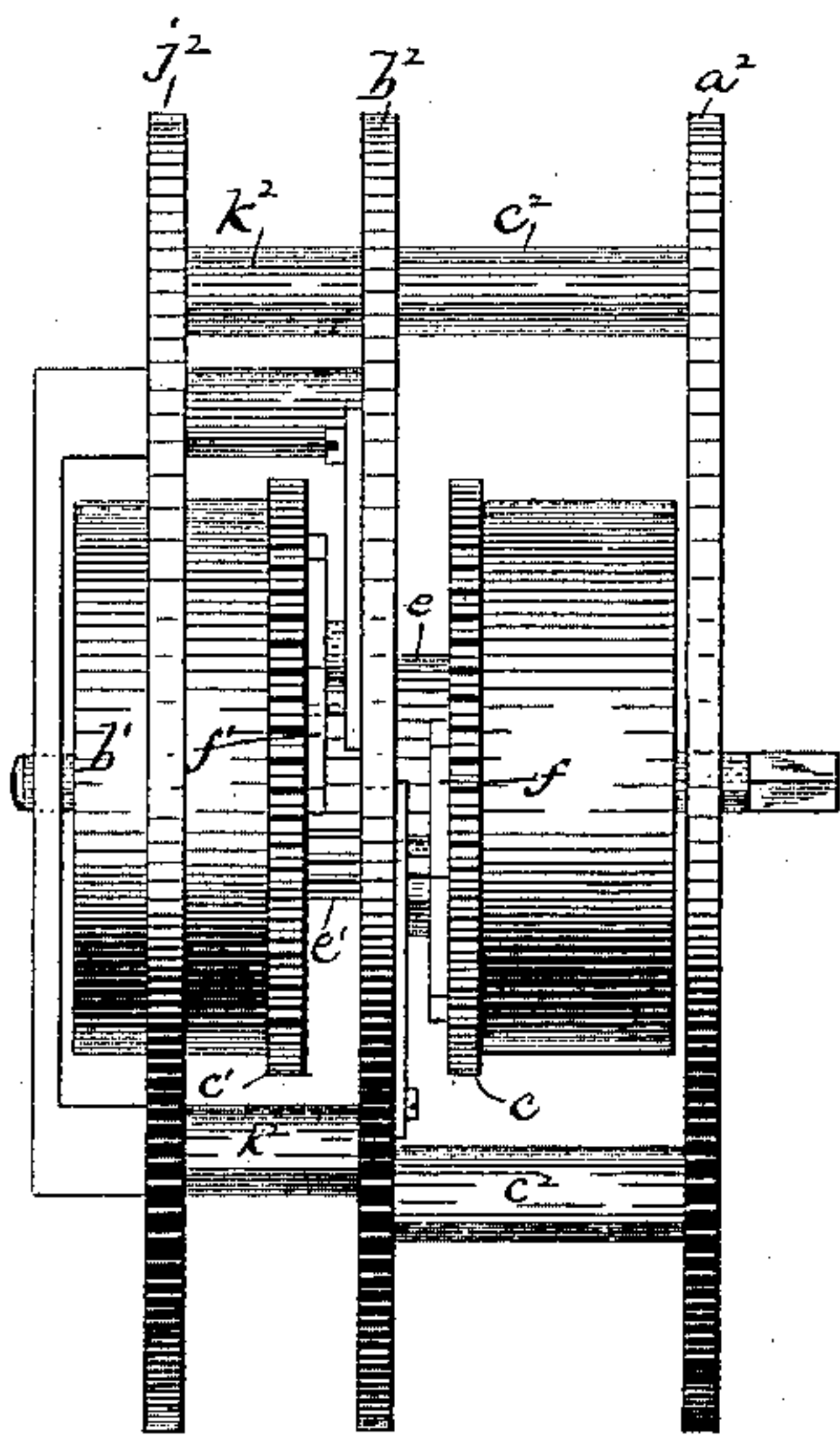


Fig. 2.

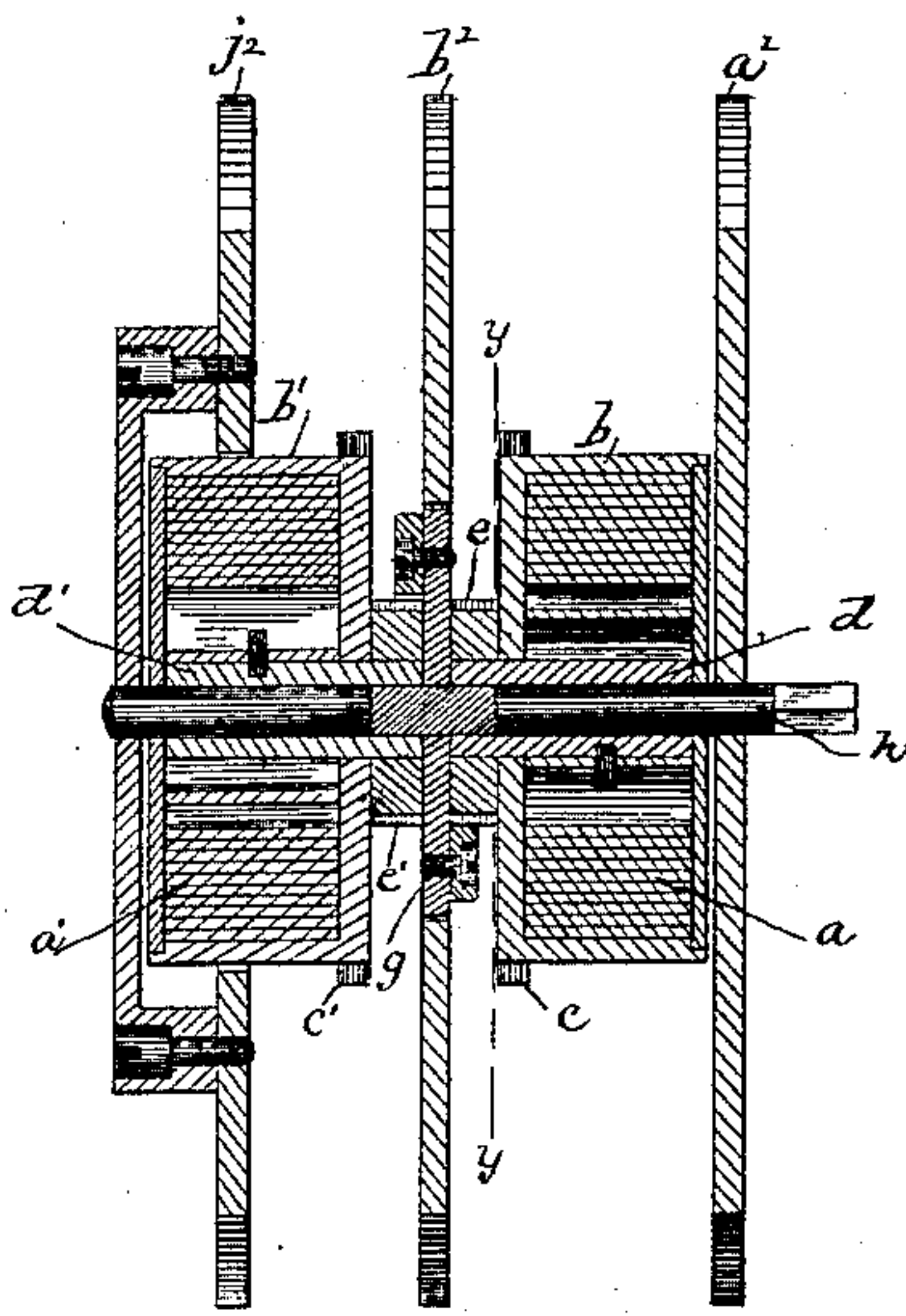


Fig. 3.

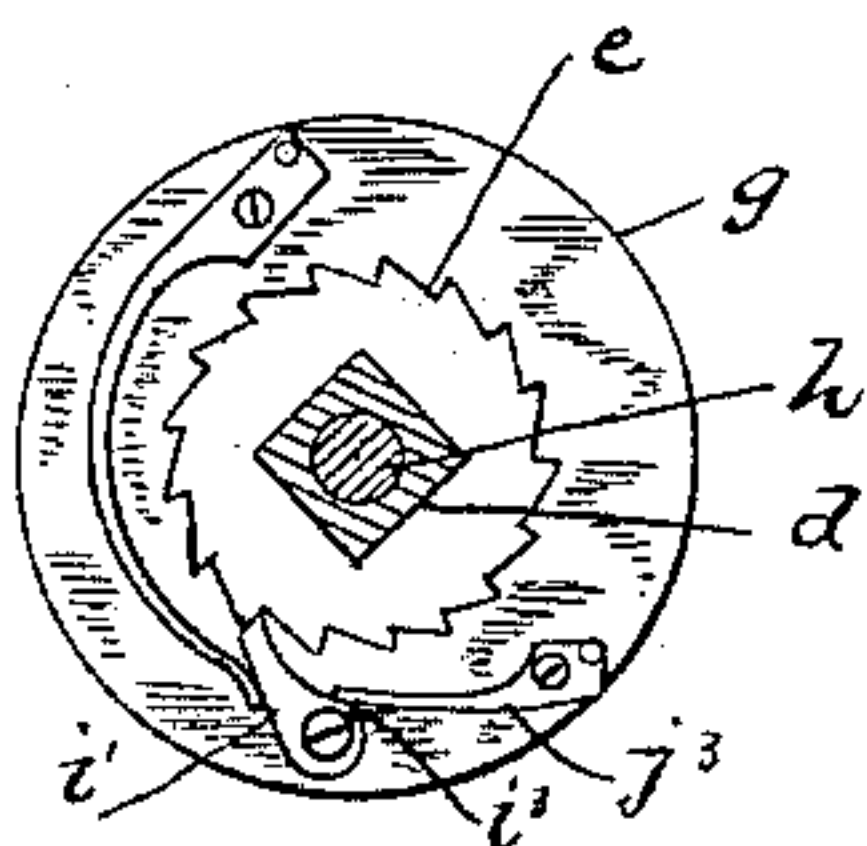
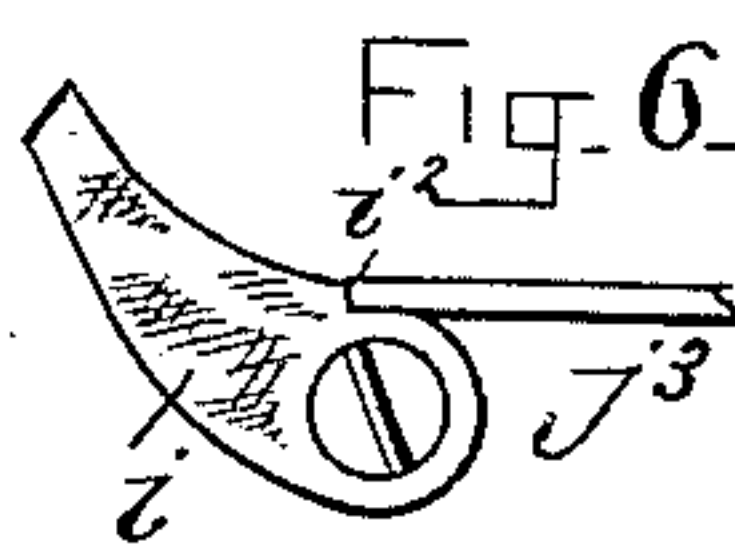
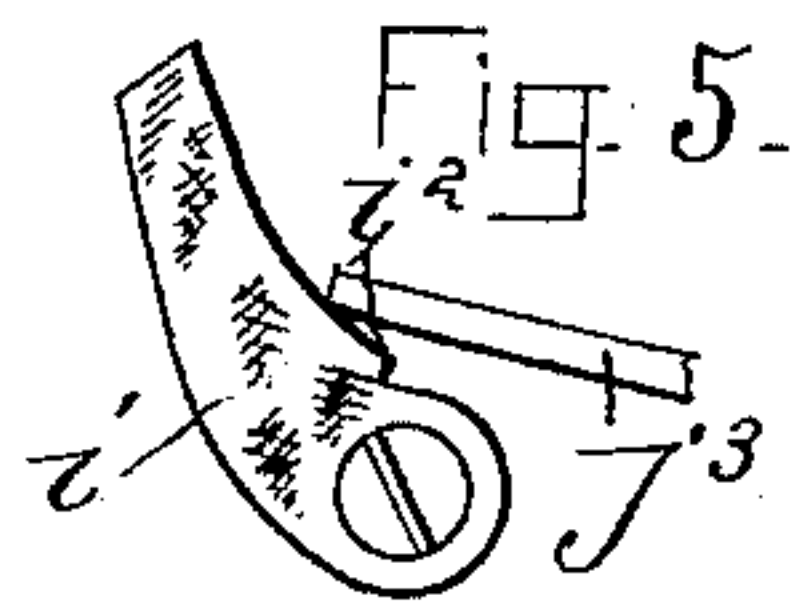
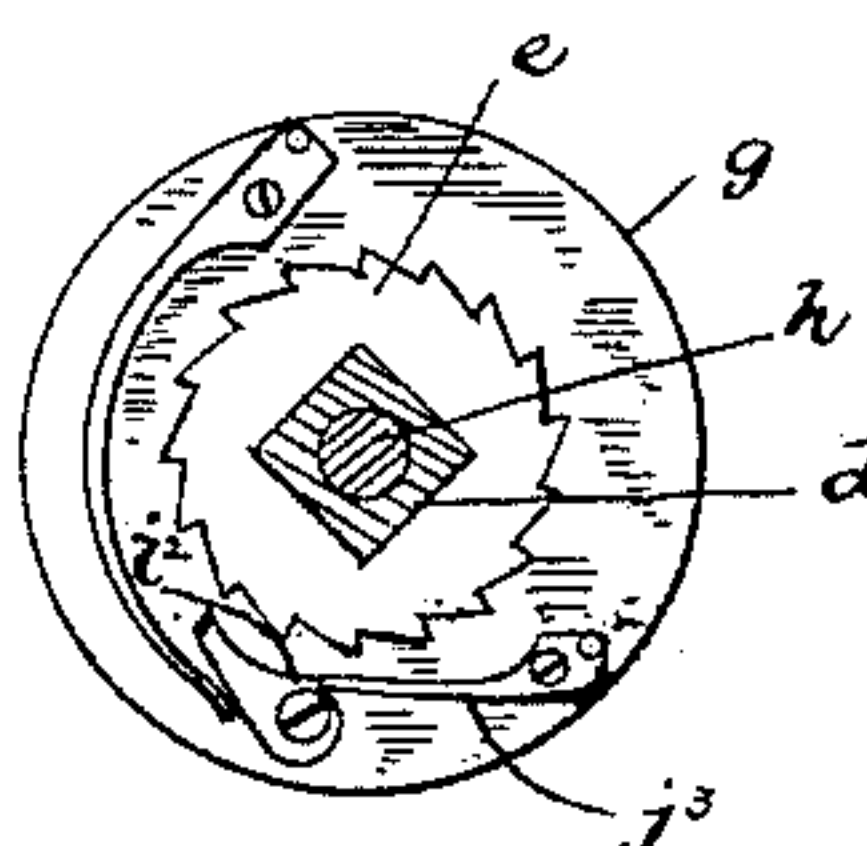


Fig. 4.



WITNESSES:

Horace Brown.  
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INVENTOR:

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# UNITED STATES PATENT OFFICE.

CHARLES BICKFORD, OF BOSTON, MASSACHUSETTS.

## DEVICE FOR LETTING DOWN MAINSPRINGS.

SPECIFICATION forming part of Letters Patent No. 360,648, dated April 5, 1887.

Application filed April 29, 1886. Serial No. 200,506. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES BICKFORD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Devices for Letting Down Winding-Springs, of which the following is a specification.

This invention has for its object to enable the winding spring or springs of a clock or watch to be conveniently unwound or let down; and to this end it consists in the combination, with a winding-arbor and the usual ratchet thereon, of a pawl which is normally engaged with said ratchet and prevents the backward or letting-down movement of the spring, as usual, and a detent whereby said pawl may be held out of engagement with the ratchet, and thereby permit the letting down of the spring engaged with said arbor, as I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a clock-winding mechanism to which my improvement is applicable. Fig. 2 represents a sectional view of the same. Fig. 3 represents a section on line *y y*, Fig. 2, looking toward the right, the ratchet of the winding-arbor being in engagement with its pawl. Fig. 4 represents a similar section, the pawl being held out of engagement with the ratchet by its detent. Figs. 5 and 6 represent, respectively, portions of Figs. 3 and 4 on an enlarged scale.

The same letters of reference indicate the same parts in all the figures.

In the drawings I have shown my improvement in connection with a winding mechanism (not of my invention) in which two mainsprings, *a* and *a'*, are employed, attached at their inner ends to arbors *d d'* in line with each other, and at their outer ends to drums *b b'*, having gears *c c'*, actuating separate trains of wheel-work, one of said gears actuating the time-movement and the other the striking-movement of a clock.

On the arbors *d d'* are ratchets *e e'*, connected to said arbors, so as to rotate therewith, the teeth of said ratchets being inclined in opposite directions. The ratchets *e e'* have between them a pawl-carrier, *g*, (shown as a disk,) attached to a key-shaft, *h*, which extends through and is free to rotate in the arbors *d d'*, said arbors being made tubular for the purpose.

The pawl-carrier *g*, on the side adjacent to

the ratchet *e*, is provided with a winding-pawl, *i*, adapted to engage the teeth of the ratchet *e* when the pawl-carrier is turned in one direction, and the said pawl-carrier is provided at its other end with a similar winding-pawl, which engages the teeth of the ratchet *e'* when the pawl-carrier is turned in the opposite direction. This mechanism, which is not of my invention, enables the two springs to be wound alternately by a key applied to the shaft *h*, the shaft being oscillated or turned first in one direction and then in the opposite direction.

In carrying out my invention I provide each of the pawls *i i'* with a tooth or shoulder, *i''*, and secure to the pawl-carrier latches or detents *j''*, adapted to automatically engage the said shoulders when the pawls are turned away from the ratchets, and hold the pawls in inoperative positions, as shown in Fig. 4. Provision is thus made for conveniently letting down either of the springs, either pawl being automatically retained when disengaged from its ratchet-holding position.

This improvement is not limited to the special winding mechanism herein described, but may be used in connection with any kind of winding mechanism.

The pawl *i* may be disengaged from the ratchet-wheel by any suitable tool adapted to be pressed against the ratchet. A special tool having a hook or offset at one end may be used for this purpose.

I claim—

1. The combination, with a winding-spring, its arbor, and the ratchet thereon, of a shouldered pawl normally engaged with said ratchet and a spring-detent which automatically engages with the pawl and holds it in an inoperative position when it (the said pawl) is separated from the ratchet, as set forth.

2. The combination, with the two independent springs, their arbors, and the ratchets thereon, of the pawl-carrier having the two pawls normally engaged with said ratchets and the detents whereby said pawls may be held out of engagement with the ratchets, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of April, 1886.

CHARLES BICKFORD.

Witnesses:

ARTHUR W. CROSSLEY,  
A. D. HARRISON.