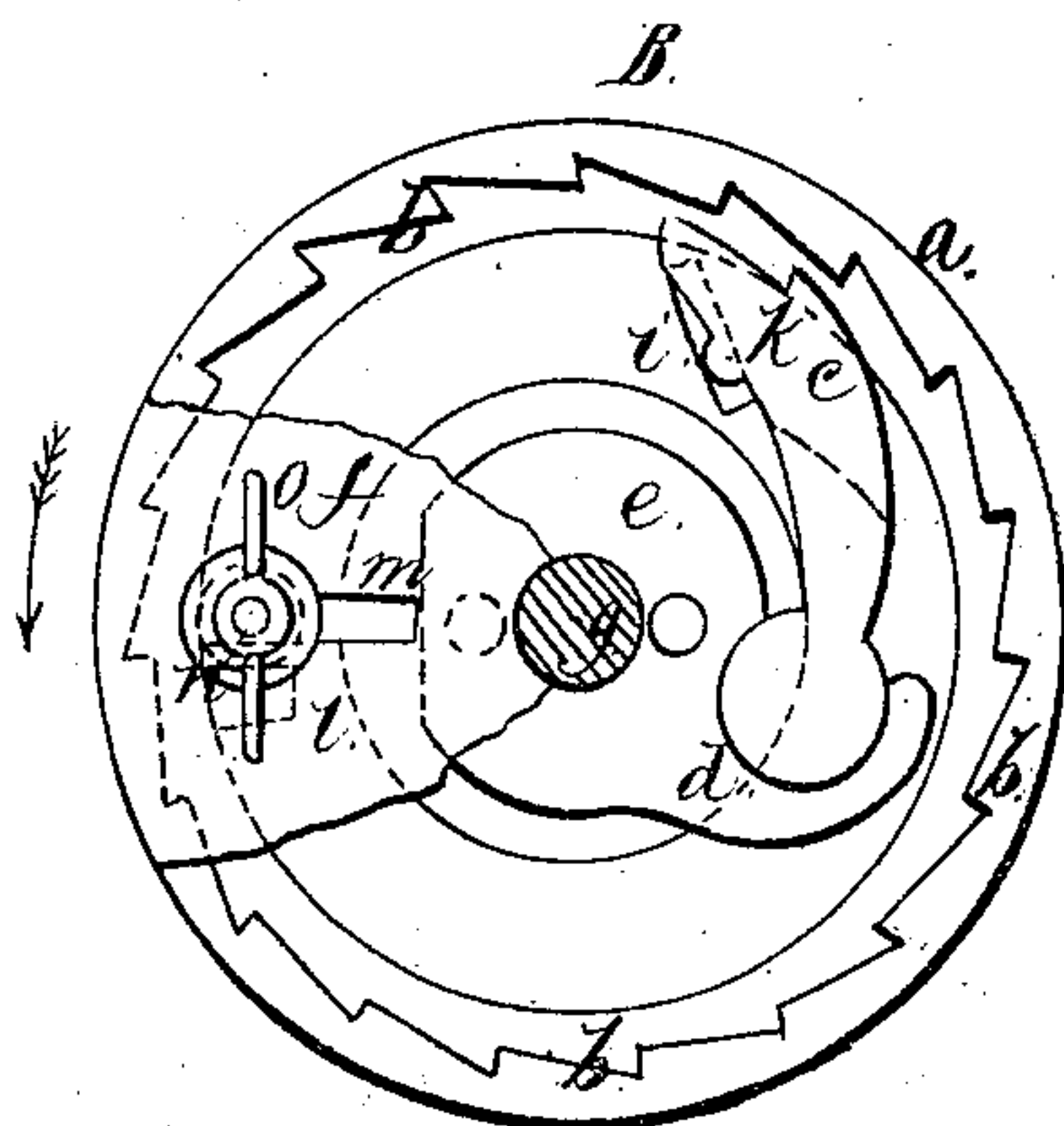
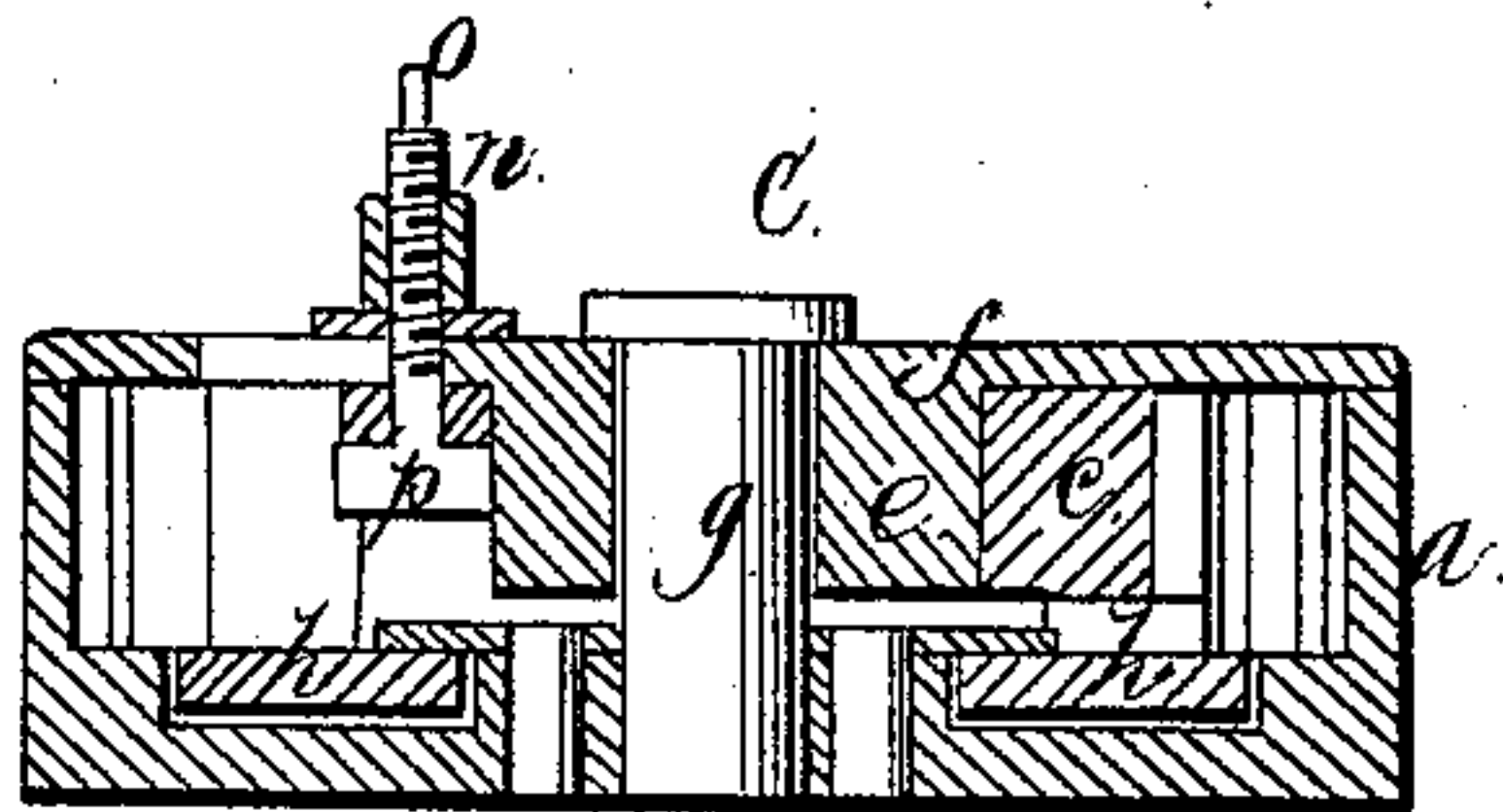
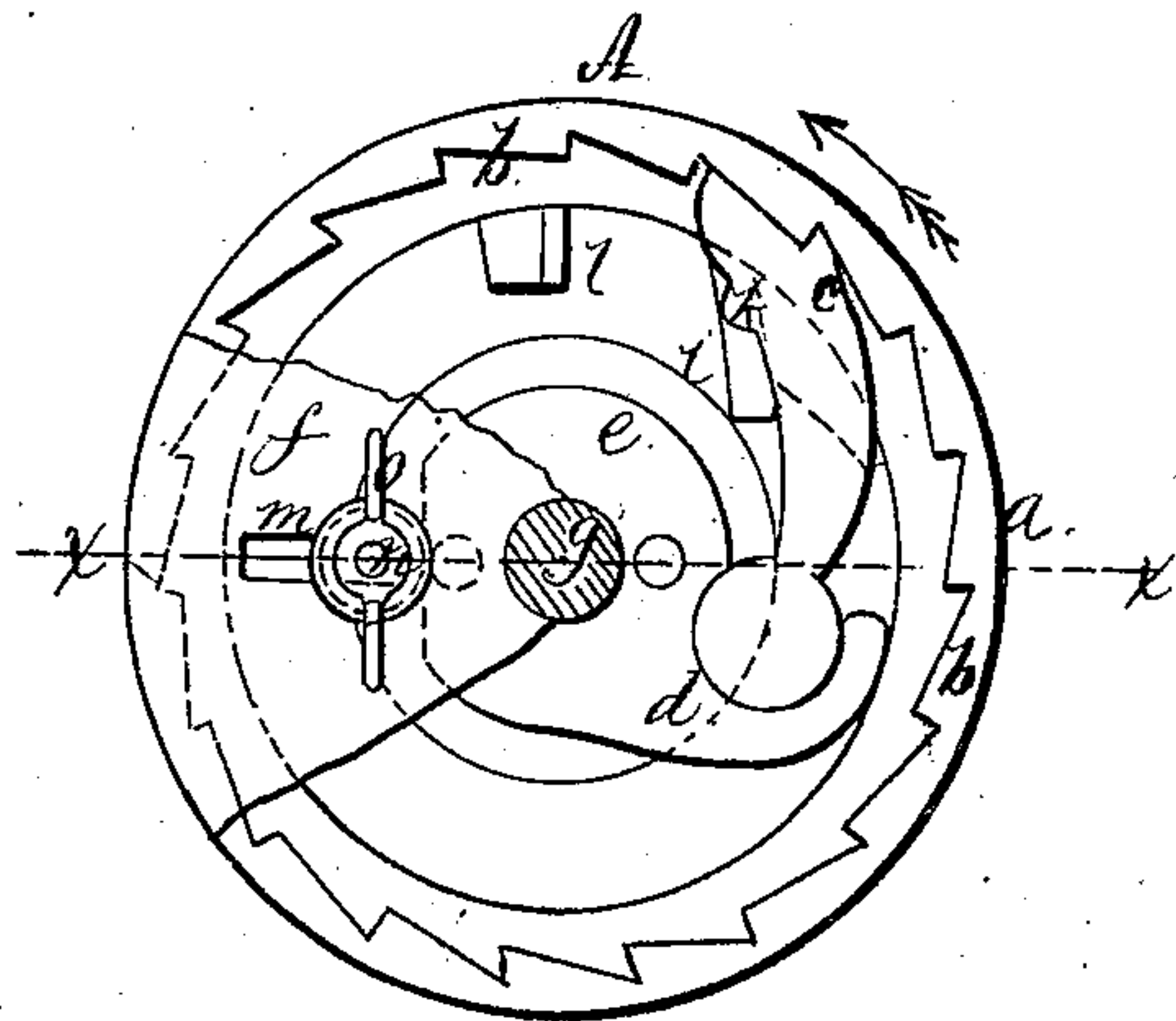


J. Garfield,

Ratchet and Pawl Mechanism.

N^o 82,935.

Patented Oct. 13, 1868.



Witnesses.

*W. B. Crosby
Francis Gould*

Inventor:

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United States Patent Office.

JOEL GARFIELD, OF GROTON, MASSACHUSETTS.

Letters Patent No. 82,935, dated October 13, 1868.

IMPROVED RATCHET-AND-PAWL MECHANISM.

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, JOEL GARFIELD, of Groton, in the county of Middlesex, and State of Massachusetts, have invented an Improved Ratchet-and-Pawl Mechanism; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

My improvement relates to the arrangement of a ratchet-driving pawl, with reference to provision for throwing such pawl out of engagement with the ratchet-teeth at will, so that the pawl may be rotated without imparting movement to the ratchet, or *vice versa*, and also so that, in back movement of the pawl, its point shall be drawn in, so as to rotate in a circle within the circle of ratchet-teeth or without contact with said teeth; and the invention consists in combining with the ratchet-wheel and pawl a collar, so constructed and arranged that by movement in one direction the pawl is thrown into engagement with the ratchet, and out of engagement therewith by opposite movement, and also in provision, in connection with such combination, for fixing the pawl out of engagement with the ratchet-teeth.

The drawings represent a ratchet-wheel and pawl-mechanism, embodying my invention.

A shows the interior of the pawl-and-ratchet case, the outer or pawl-plate being so broken away as to clearly show the arrangement of the parts, the pawl being in engagement with the ratchet-teeth.

B is a similar view, with the parts so adjusted as to prevent the engagement of the pawl and ratchet-teeth in either direction of rotation of the pawl.

C is a cross-section on the line *x x*.

a denotes the ratchet-wheel, the teeth *b* of which are on the inner surface of the flange, making an internal ratchet.

c denotes the impelling-pawl hung upon an arm, *d*, projecting from a boss, *e*, fixed to or forming part of the rotary cap or pawl-plate *f*, as seen in the drawings, this pawl-plate being mounted and turning on the shaft *g* which carries the ratchet-wheel *a*. On this shaft *g*, within the ratchet-case or cylinder, is a loose disk or collar, *h*, near the perimeter of which is a slot, *i*, into which a pin, *k*, projects from the pawl *c*, said slot being inclined so that, by turning the collar in one direction, the pin is forced outwardly, pressing the impelling-face of the pawl up into the ratchet-teeth, as seen at A, while by turning the collar in the opposite direction the pin is forced inwardly, carrying the end of the pawl into the position seen at B, in which position the pawl will rotate without engaging with the ratchet-teeth.

On the opposite side of the shaft the collar carries a stud or projection, *l*, as seen at A and B.

Through the pawl-plate *f*, I make a slot, *m*, through which slot passes the shank of a screw, *n*, having a thumb-nut, *o*, on its outer or screw-threaded end, and on its inner end or head *p*, which head, when the screw-shank is moved up to the inner end of the slot *m*, (as seen at A,) will rotate in a path within the stud

l, or without striking said stud, while, when the screw-shank is moved to the other end of the slot, (as seen at B,) said head in its rotation strikes the stud *l*, and rotates the collar *h* with it, as will be readily understood.

Now, when the head *p* and the stud *l* are thus in contact as seen at B, and the pawl-plate is rotating in the direction denoted by the arrow, (the pawl-pin *k* being at the inner end of slot *i*,) the pawl and collar will rotate together, the rotation of the collar being caused by contact of the stud *l* with the head *p*, and no relative rotative movement can take place between the pawl-plate and the collar. Consequently the pawl-pin *k* will be kept at the bottom of its slot, and the pawl will be kept from engagement with the ratchet-teeth, while, if the pawl-plate rotates in the opposite direction, the inclination of the slot itself will hold the pawl away from the ratchet-teeth, the pawl being under all circumstances thus held out of contact with the ratchet-teeth by the incline in back movement of the pawl-plate. If the screw-shank be pushed to the inner end of its slot, as seen at A, and the ratchet-plate rotates as denoted by the arrow at A, the head *p* will pass inside of the stud *l* without touching it, and the rotation of the pawl-plate relatively to the collar will cause the pin *k* to run up the incline *i*, thereby forcing the pawl up into engagement with the ratchet-teeth, as seen at A.

It will thus be seen that the use of a spring to hold the pawl against the ratchet-teeth is dispensed with; that the pawl must always and positively be carried into engagement with the teeth in the forward rotative movement of the pawl, (when the parts are adjusted for such engagement;) that the pawl will always be drawn out of engagement when the pawl is moving in the opposite direction, and that by simple adjustment of the screw-pin *n* the pawl may be disengaged from the ratchet-wheel whenever it is desirable for the pawl to rotate without effecting corresponding movement of the ratchet. All wear upon the pawl by its slipping over the ratchet-teeth is thus prevented, as well as the clatter resulting from such slipping movement. There is no spring to break, as in other ratchet-and-pawl mechanisms, and the arrangement is simple, reliable, and inexpensive.

I claim, in combination with a ratchet-wheel and pawl arranged substantially as shown and described, the loose collar or disk *h*, having an inclined slot, into which the pawl-pin projects; rotation of the pawl-plate in one direction forcing the pawl up into engagement with the ratchet-teeth, and its rotation in the opposite direction carrying it out of engagement therewith, substantially as set forth.

I also claim, in combination with the ratchet-wheel and pawl and the loose collar, the stud *l*, and adjustable screw or pin *n*, operating substantially as shown and described.

JOEL GARFIELD.

Witnesses:

J. B. CROSBY,
FRANCIS GOULD.