

(No Model.)

3 Sheets—Sheet 1.

L. CAMPICHE.

REGULATOR FOR MOTORS FOR MUSIC BOXES, &c.

No. 442,609.

Patented Dec. 16, 1890.

Fig. 1.

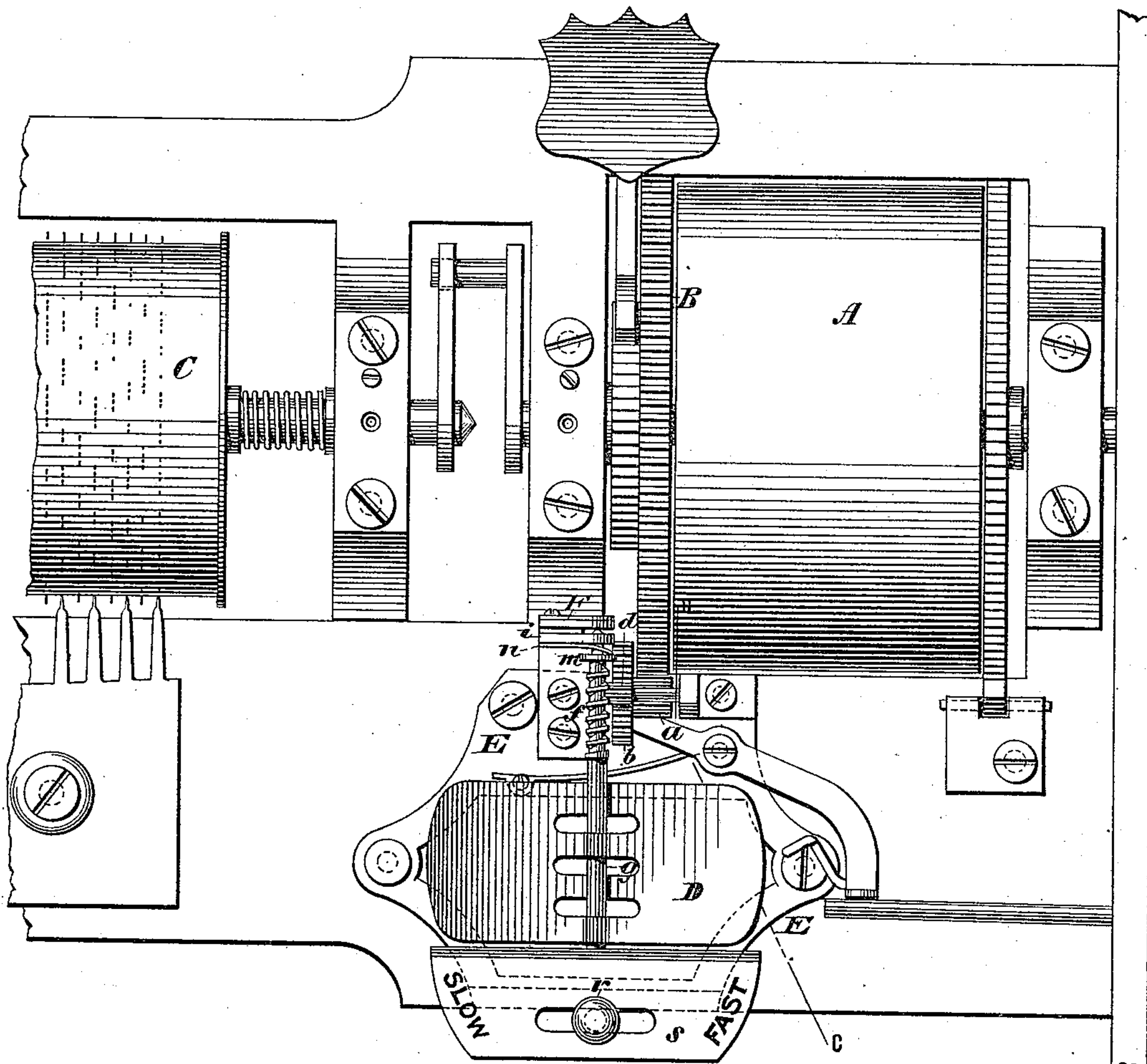
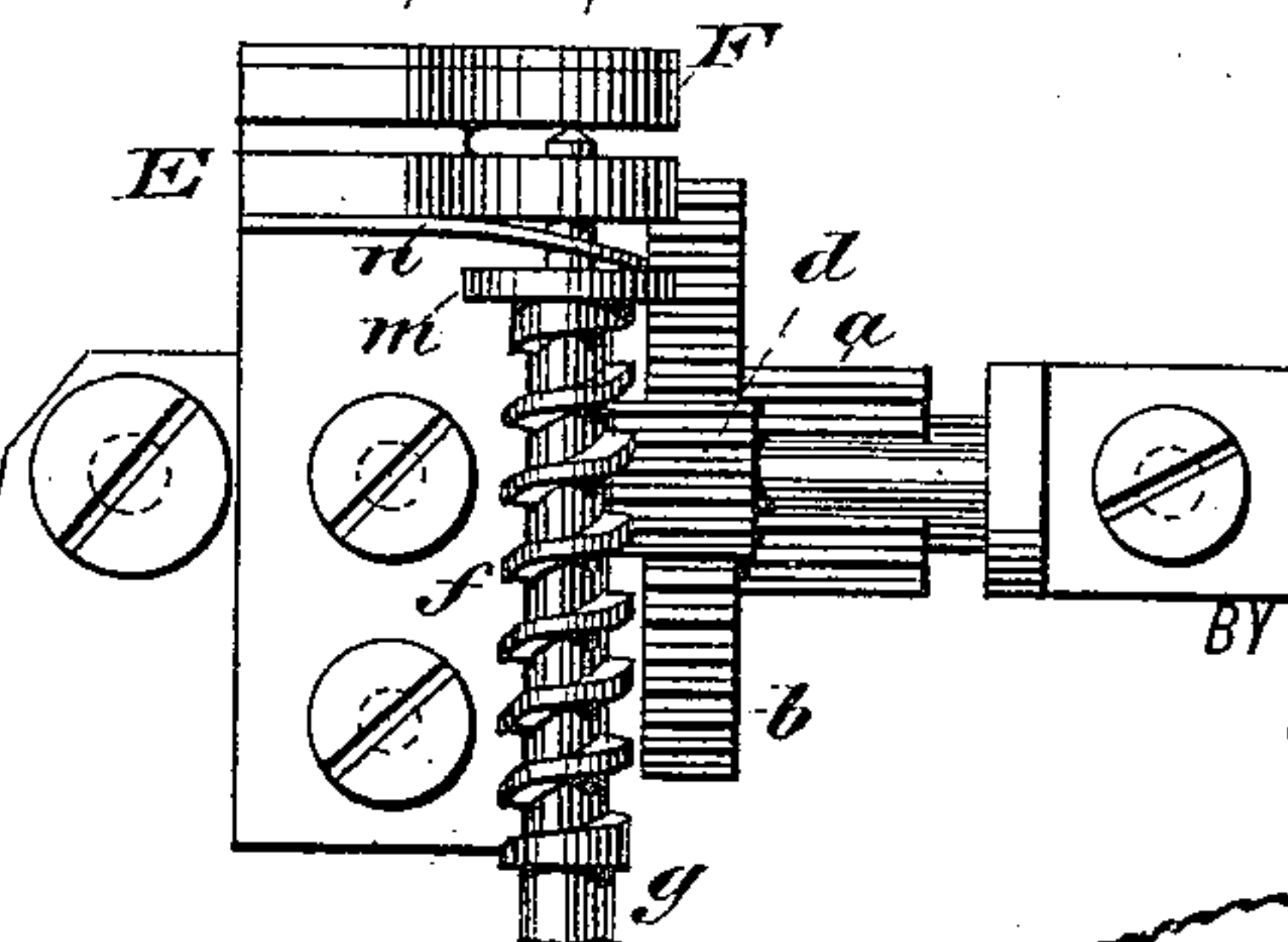


Fig. 2.



WITNESSES:

WITNESSES:
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William Goebel.

INVENTOR

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Brienen & Maute
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(No Model.)

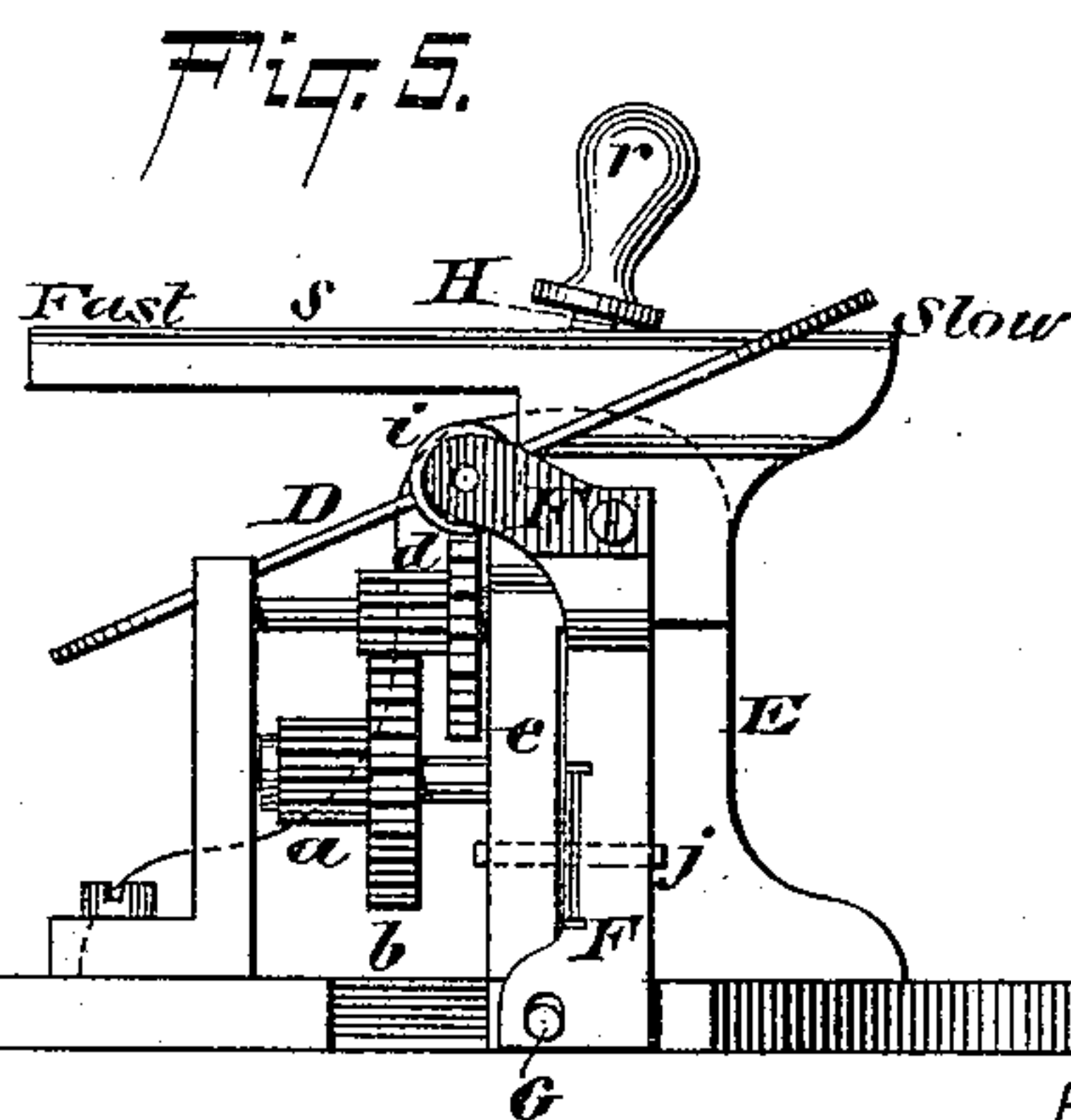
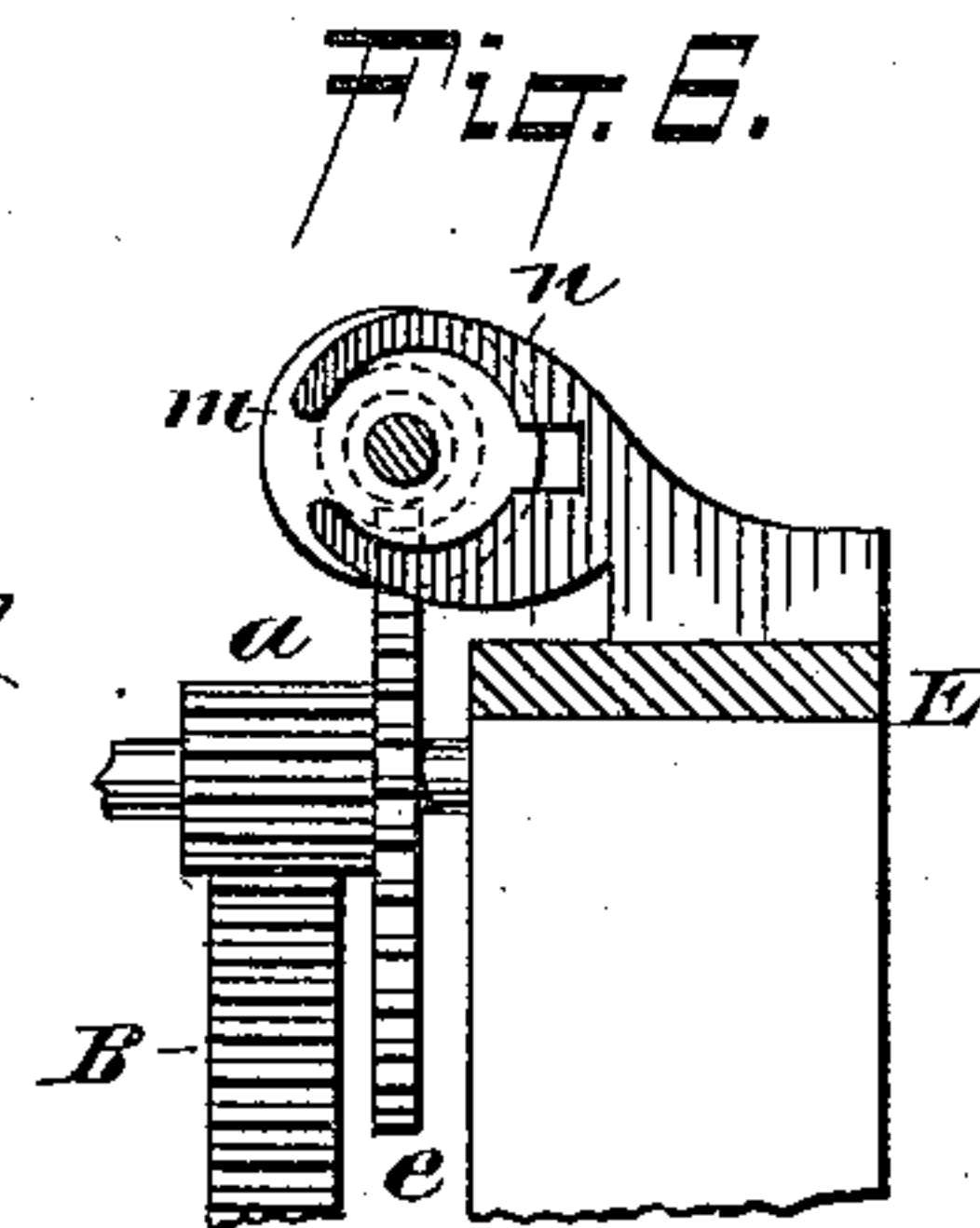
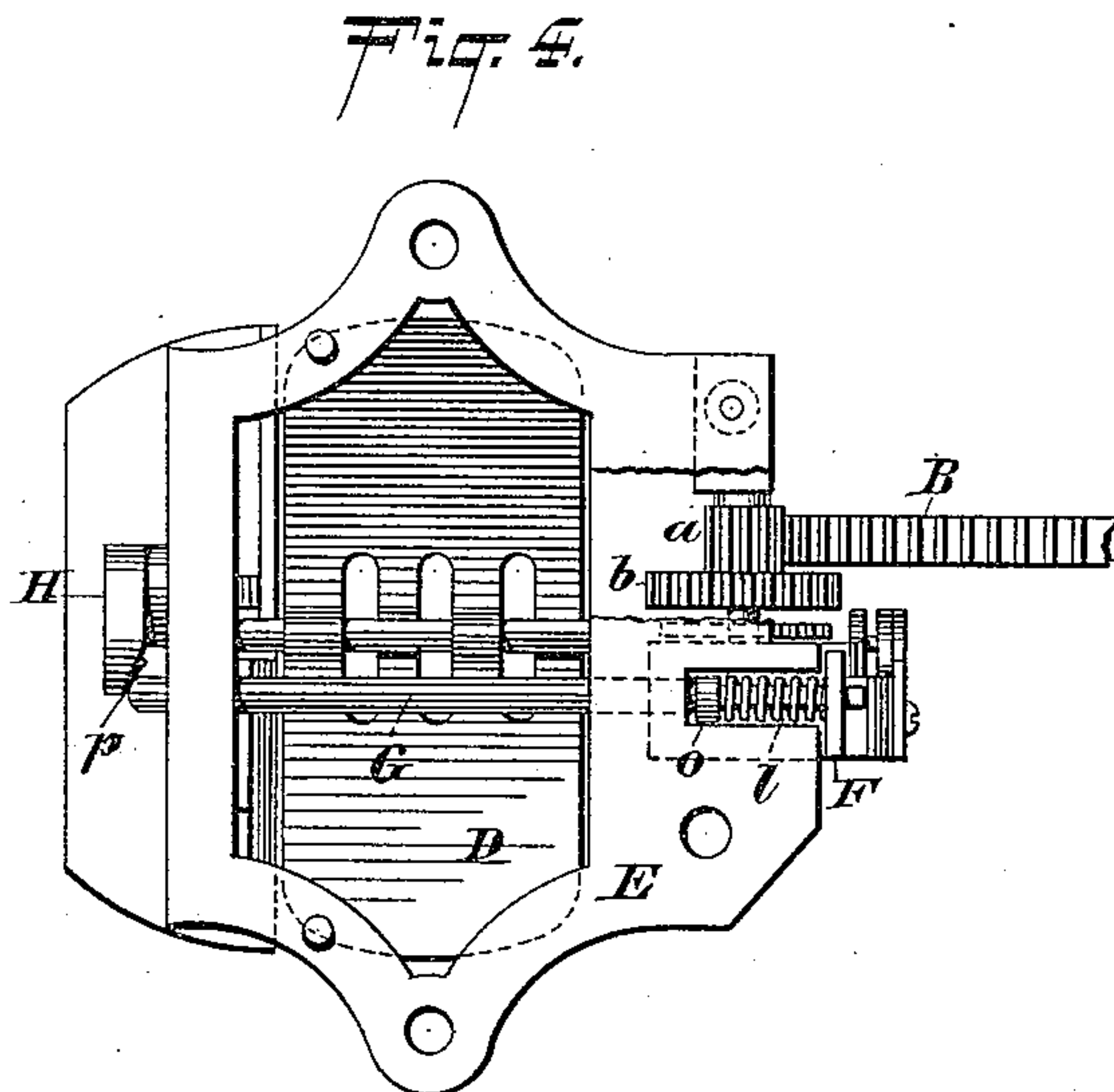
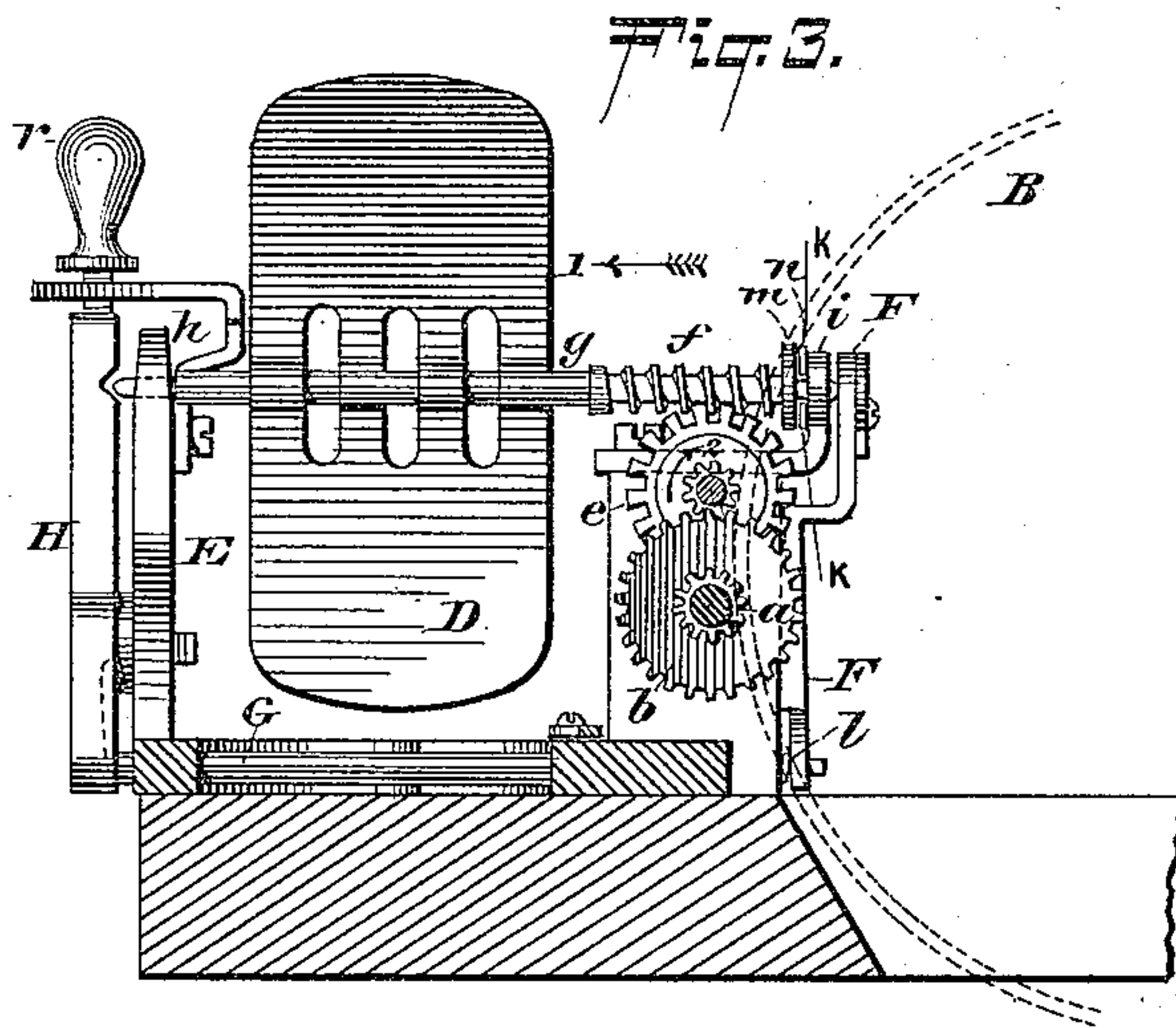
3 Sheets—Sheet 2.

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REGULATOR FOR MOTORS FOR MUSIC BOXES, &c.

No. 442,609.

Patented Dec. 16, 1890.



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(No Model.)

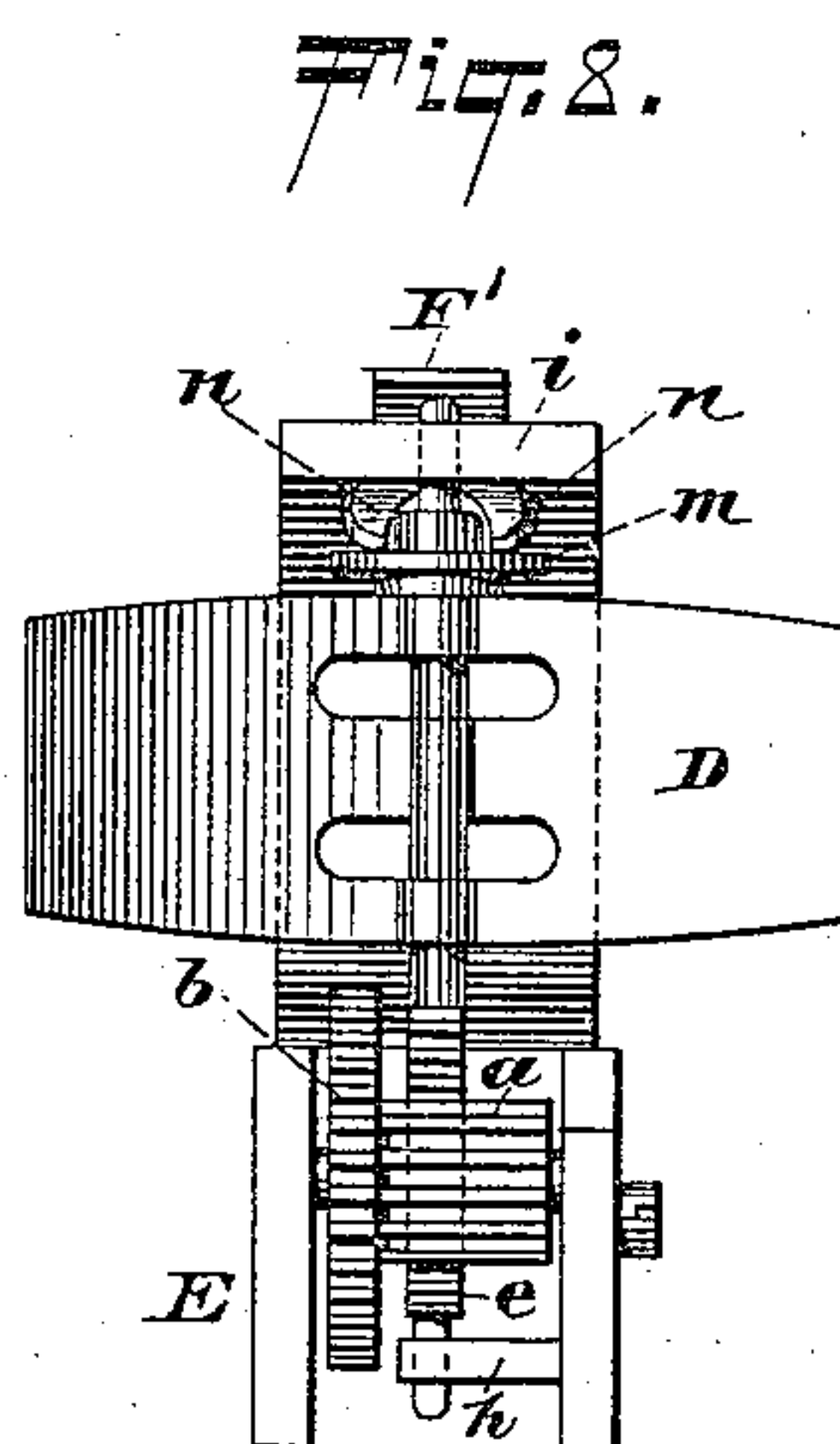
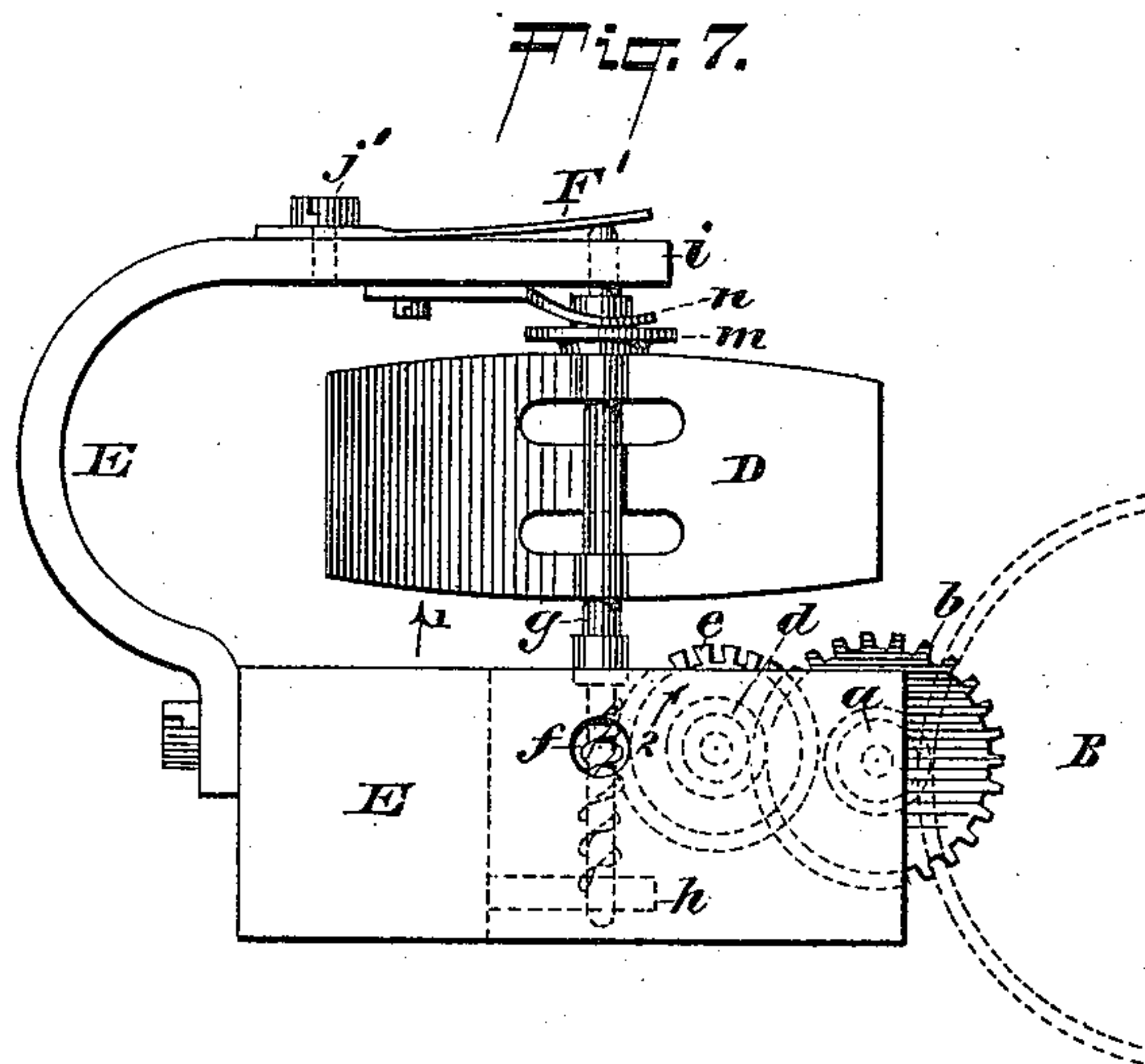
3 Sheets—Sheet 3.

L. CAMPICHE.

REGULATOR FOR MOTORS FOR MUSIC BOXES, &c.

No. 442,609.

Patented Dec. 16, 1890.



WITNESSES:

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UNITED STATES PATENT OFFICE.

LOUIS CAMPICHE, OF STE. CROIX, SWITZERLAND, ASSIGNOR TO MERMOD
FRÈRES, OF SAME PLACE:

REGULATOR FOR MOTORS FOR MUSIC-BOXES, &c.

SPECIFICATION forming part of Letters Patent No. 442,609, dated December 16, 1890.

Application filed July 19, 1890. Serial No. 359,273. (No model.)

To all whom it may concern:

Be it known that I, LOUIS CAMPICHE, a resident of Ste. Croix, Switzerland, have invented an Improved Regulator for Motors for Music-Boxes, &c., of which the following is a specification, reference being had to the accompanying drawings, forming part of the same, wherein—

Figure 1 represents a plan or top view of my improved regulator, showing it applied in connection with the driving mechanism of a music-box. Fig. 2 is an enlarged top view of part of said regulator. Fig. 3 is a side view, partly in section, of said regulator, the line *c c*, Fig. 1, indicating the plane of section. Fig. 4 is a bottom view of the same; Fig. 5, an end elevation of the same, showing the inner end; Fig. 6, a detail vertical section on the line *k k*, Fig. 3. Fig. 7 is a side view of a modification of my invention, and Fig. 8 an end elevation of the same.

The object of this invention is to supply a music-box and analogous mechanism with an automatic regulator, which shall serve to equalize the speed of the thing rotated or moved by spring-power, (in the case of a music-box the speed of the studded cylinder,) so that when the spring is most powerful and fully wound it shall not drive said mechanism (or cylinder) faster than when the spring is about unwound. One of the difficulties with such mechanism and one which has made itself felt most particularly in the matter of music-boxes is that the cylinder revolves too fast when the spring is fully wound and too slow when the spring is nearly unwound, the proper speed being ordinarily obtained only between the extremes of spring-power just stated. My attachment seeks to oppose to the spring a resisting force proportional to the excess of spring-power, so that the speed obtained throughout will be equal to that of the spring when nearly unwound.

My invention consists, mainly, in combining with the arbor of the fly certain spring resistance-pieces, which will be strained by longitudinal or vertical motion of said arbor when the same is exposed to a greater power than necessary for the desired speed, thus obtaining a brake action upon the fly-arbor which is proportional in force to the spring-

power and which ceases to act as the spring is totally unwound.

The invention also consists in other details of improvement, that will be hereinafter more fully described.

In the accompanying drawings, the letter A represents the mainspring-drum of a suitable music-box, and the letter B indicates the main toothed wheel, which is connected with the mainspring and rotated thereby.

The letter C represents the studded cylinder of a music-box, which is connected with the mainspring in such a manner as to be revolved thereby; but, as already stated, this invention is not intended to be limited to a music-box, as it is applicable to all mechanism of an analogous character—that is, where a mainspring enters into combination with a worm to produce a desired motion. The toothed wheel B meshes into a pinion *a*, on the arbor of which is a toothed wheel *b*, which meshes into a pinion *d*, on the arbor of which there is a worm-wheel *e*. This worm-wheel engages a worm *f* on an arbor *g*, which arbor carries a fly D.

E is a stationary frame, in which the arbors of the toothed wheels *a b* and *d e* have their bearings, and in which the arbor *g* of the fly D is likewise supported; but the arbor *g* is longitudinally movable, as shown in Fig. 3, or vertically movable, as shown in Figs. 7 and 8, in its bearings *h* and *i*, that project from and are part of the frame E. In fact, the arbor *g* passes through the bearing *i* and its end is in contact with a yielding resistance-piece, which may be a lever F or spring F', which lever at *j* is pivoted or attached to the frame E, and which at its lower part is in contact with a spring *l*. This spring *l* tends to press the lower part of the lever F outward and the upper part of the same lever inward, tending, therefore, to crowd the fly-arbor *g* in the direction of the arrow 1 in Fig. 3—that is, inward. The yielding resistance-piece where the end of the arbor *g* bears against it may have a crystal or jewel to ease the friction between the end of the arbor and said yielding resistance-piece. The arbor *g* also bears a collar *m* in close proximity to a spring *n*, (see Figs. 2, 7, and 8,) which extends inward from the frame E near the lever F,

and which may take the place of the spring *l*, as shown in Figs. 7 and 8. The spring *l*, which causes the lever *F* to be a yielding lever, is shown to be in form of a coiled spring surrounding a sliding bar *G* and to be confined between a collar *o* on said bar and the lower end of the lever *F*. The bar *G* may be pushed outward by a hand-lever *H*, which is provided with a bevel at *p* for this purpose, so as to compress the spring *l* to a greater or less extent, the hand-lever *H* having its handle portion *r* passing through a slot of a plate *s*, that is stationarily secured to the frame *E*.

Having now described the mechanism of my invention, I will briefly state how it operates. The spring *A*, being wound, rotates the wheel *B*, and this by suitable intermediate gearing (in the illustration by the wheels *a b d*) revolves the worm-wheel *e*, which in turn revolves the fly-arbor *g*. The direction in which the wheel *e* is thus turned is indicated on said wheel by arrow 2 in Figs. 3 and 7—that is to say, the worm *f* on the arbor *g* is revolved by the application of pressure tending to crowd the arbor *g* toward the lever *F*. Whenever this pressure is normal—that is to say, not in excess of the desired speed—it will have no noticeable effect upon the longitudinal position of the arbor *g*; but when the power of the spring *A* is abnormally great the worm-wheel *e* will move the arbor *g* lengthwise or vertically and crowd it against the spring *F'* or lever *F*, thus exposing it to the yielding resistance of said lever, and this resistance of the spring *F'* or lever *F* produced by the motion of the arbor *g* against it causes a correspondingly greater friction on said arbor and a resulting retardation of the movement of the fly, which in turn retards the speed of the wheel *B*. Right here I desire it to be distinctly understood that I do not limit myself to the specific lever *F* and its actuating-spring *l* in a manner shown, as any spring applied against the end of the arbor *g* will suffice to produce the same effect—as, for instance, the spring *F'*, (shown in Figs. 7 and 8,) which spring is held by screw *j'*. At the same time that the arbor *g* is thus moved outward under excessive speed or power of the spring its collar *m* is also crowded against the spring *n*, and a brake action retarding the speed thereby obtained. Hence a double resistance has been prepared; but either one may be used in many instances without the other. In fact I have noticed that when my device is applied to a music-box it operates with such extreme nicety that even the action of a greater or less number of studs on the cylinder *C* and its action upon the comb will give rise to an automatic adjustment of speed. When it is desired to practically neutralize

the effect of the yielding of the spring *F'* or lever *F* upon the arbor *g* and to partially restrain the action of the brake *m n*, I move the lever *H* so as to push the rod *G* outward and compress more tightly the spring *l* as far as possible, thereby increasing the resistance of the lever *F*. This will cause the fly-arbor *g* to move faster than if it is allowed free play with the yielding lever *F* when the spring *l* is relaxed, for when the spring *l* is compressed, as stated, the upper end of the lever *F* is held with greater rigidity and the action of the brake *m n* is partially prevented. Hence by moving the handle *r* in the slotted plate *s* toward "fast", which means compressing the spring *l*, greater speed is obtained, whereas by moving the same handle in the opposite direction the speed of the instrument is reduced.

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

1. The combination of the longitudinally-movable fly-arbor *g*, having a worm thereon, with the worm-wheel *e*, arranged for driving it, and with a yielding resistance-piece placed against one end of said arbor, substantially as herein shown and described.

2. The longitudinally-movable fly-arbor *g*, having a worm thereon, combined with the worm-wheel *e* for driving it, with a yielding resistance-piece bearing against one end of said arbor, the collar *m*, mounted upon said arbor, and the spring *n*, adapted to bear against said collar, substantially as herein shown and described.

3. The combination of the longitudinally-movable fly-arbor *g*, having a worm thereon, and the worm-wheel *e*, adapted to drive it, with the pivoted lever *F*, bearing against one end of said arbor, and with the spring *l*, bearing against said lever *F*, substantially as herein shown and described.

4. The combination of the longitudinally-movable fly-arbor *g*, having a worm thereon, and worm-wheel *e*, adapted to drive it, with the collar *m* on said arbor, spring *n*, adapted to bear against said collar, and with the lever *F*, bearing against one end of said arbor *g*, and spring *l* bearing against said lever, substantially as herein shown and described.

5. The combination of the longitudinally-movable fly-arbor *g*, having a worm thereon, and the worm-wheel *e*, adapted to drive it, with the lever *F*, bearing against one end of said arbor, spring *l*, bearing against said lever, rod *G*, having collar *o* bearing against said spring, and adjusting-lever *H*, having incline *p* bearing against said rod *G*, all substantially as herein shown and described.

LOUIS CAMPICHE. [L. S.]

Witnesses:

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PH. MERMO.