

(No Model.)

W. R. FOWLER.  
SPRING MOTOR.

No. 359,068.

Patented Mar. 8, 1887.

Fig. 1.

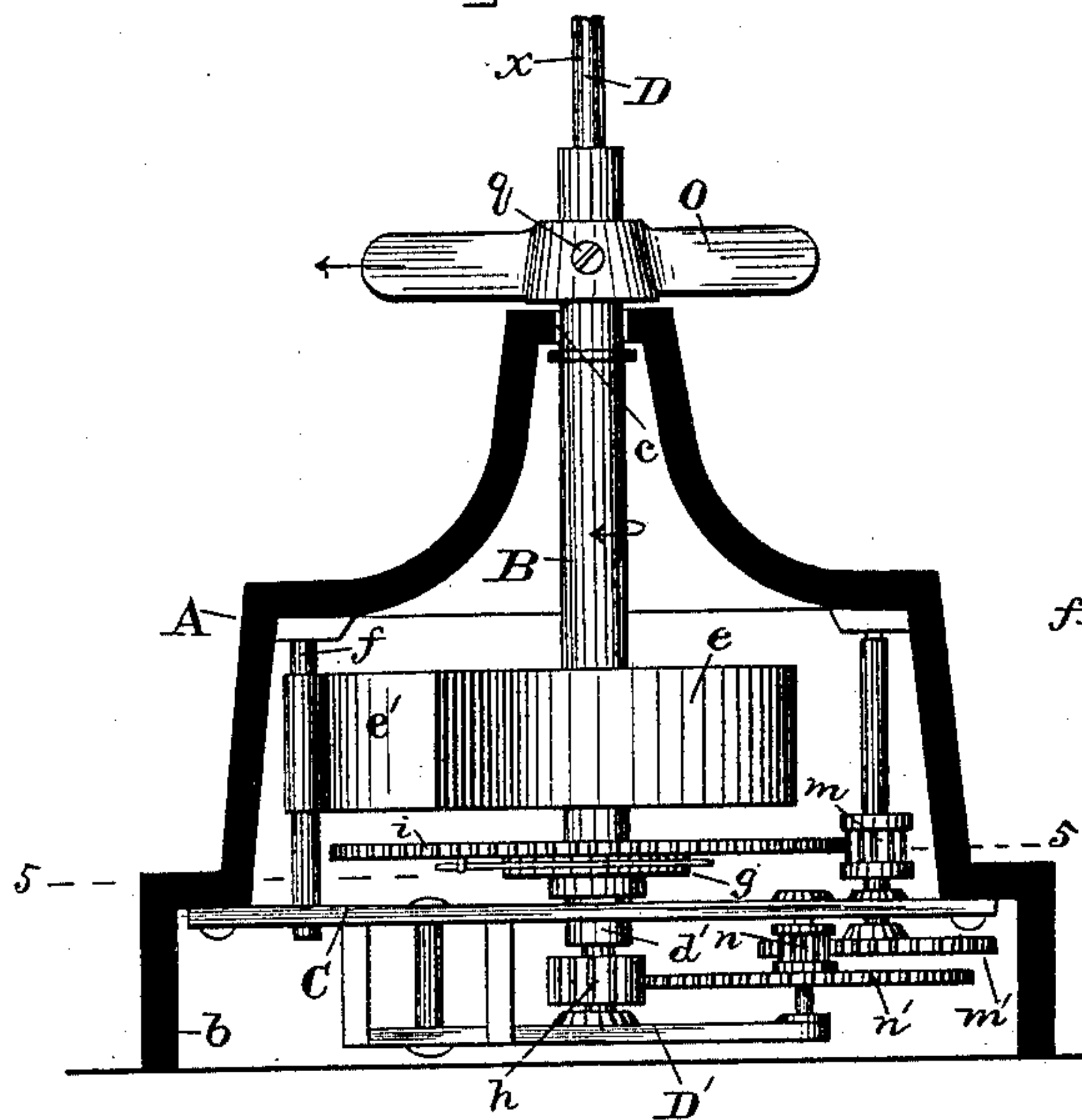


Fig. 2.

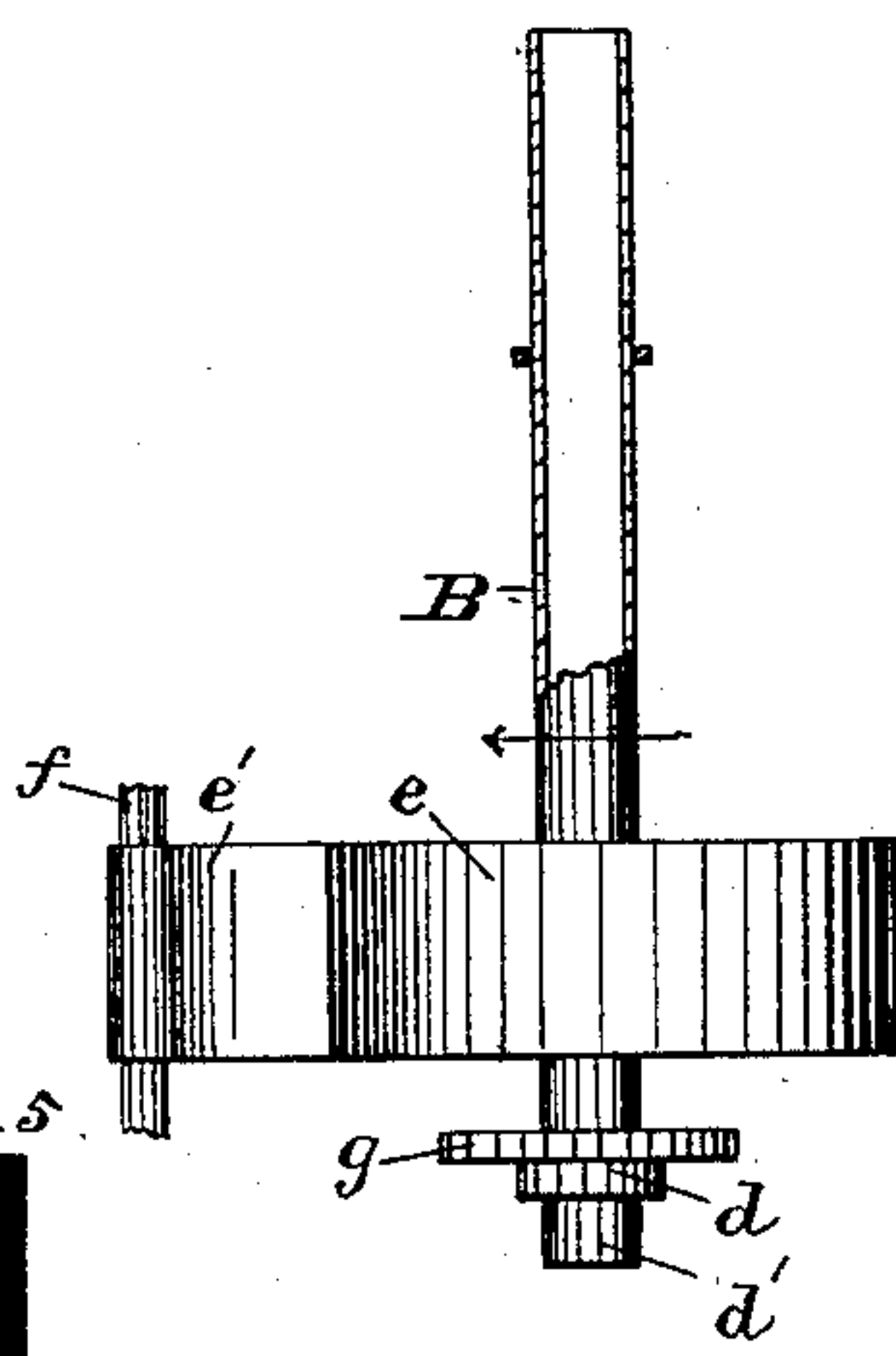


Fig. 3.

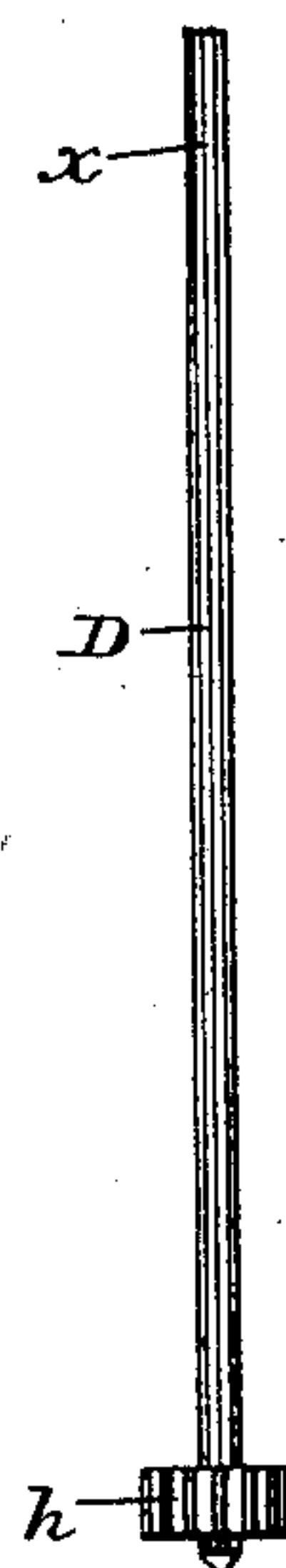


Fig. 4.

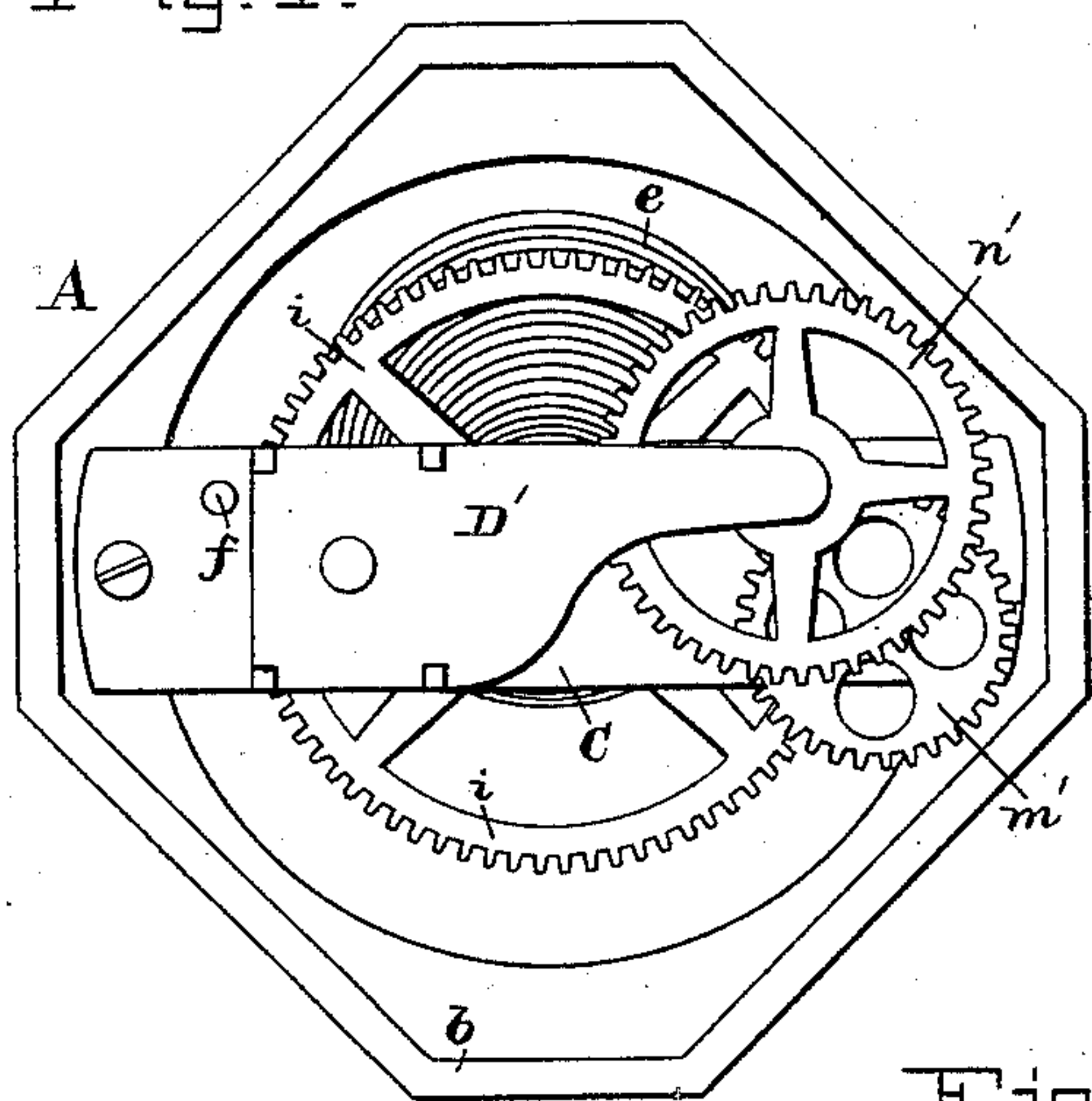


Fig. 5.

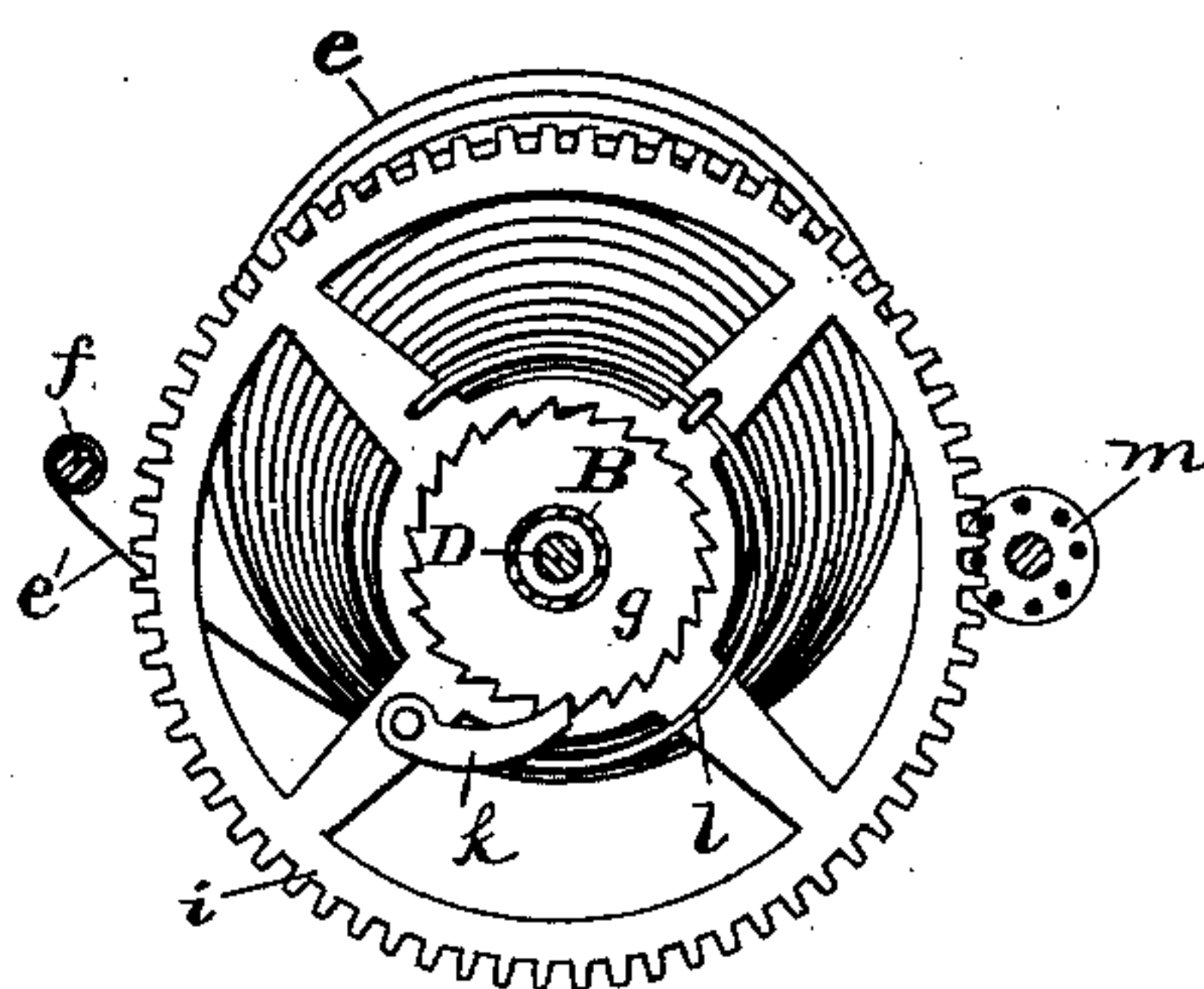
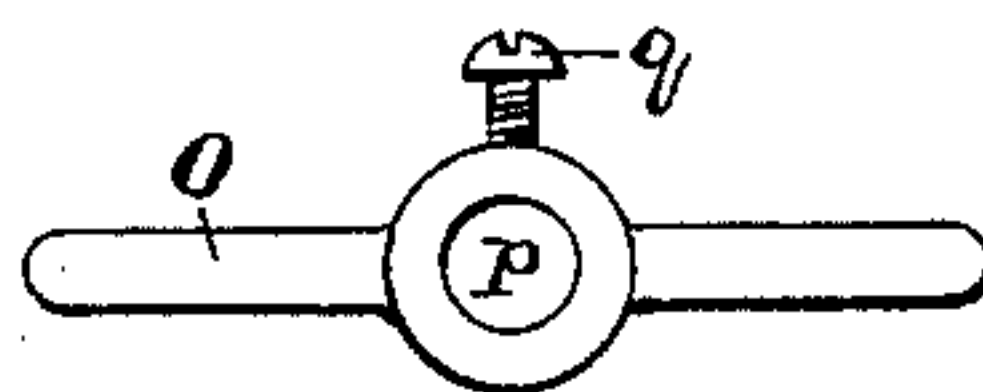


Fig. 6.



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# UNITED STATES PATENT OFFICE.

WILLIAM R. FOWLER, OF BALTIMORE, MARYLAND, ASSIGNOR TO MATTHAI, INGRAM & CO., OF SAME PLACE.

## SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 359,068, dated March 8, 1887.

Application filed October 28, 1886. Serial No. 217,423. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. FOWLER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Spring-Motors for Driving Small Machines, of which the following is a specification.

My invention relates to improvements in spring-motors for driving small machines or for any purpose where a light power is required.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the motor-casing and a side view of the working parts.

Fig. 2 is a view of the hollow spring-driven shaft and ratchet-wheel firmly secured to it.

Fig. 3 is a view of the drive-shaft and the pinion secured to it. Fig. 4 is an inverted plan or bottom view of the casing and working parts.

Fig. 5 is an inverted plan view of the working parts, taken on the horizontal line 5 5, and shows the hollow shaft, drive-shaft, ratchet, gearing, and coiled spring. Fig. 6 is a view of the winder.

The casing A is a single piece of metal, preferably a casting, made with a broad base, *b*, open at the bottom to receive the working parts, and having at the top a small opening, *c*, which serves as a bearing for the vertical hollow shaft B. The casing may have any desired shape or configuration. Its function is to inclose and serve as a base for supporting the working parts of the motor.

A vertical hollow shaft, B, is centrally mounted within the casing and projects up through the top bearing, *c*. Near the lower end the hollow shaft has a shoulder, *d*, and the extremity *d'* of the said shaft below this shoulder fits in a cross-bar bearing, C, which is screwed to the case. This hollow shaft revolves. The coiled spring *e* drives the mechanism, and is wound on the hollow shaft B. The inner end of the coil is secured to this shaft, and the outer end, *e'*, is secured in some suitable way to the case. In the present instance it is fixed to a stud-pin, *f*. The coiled spring occupies the top part of the case. The hollow shaft also has a ratchet-wheel, *g*, fixed to it at a point below the coiled spring.

A driving-shaft, D, occupies the hollow shaft

B and projects upward through it and turns independently of it. The driving-shaft may have at any point above the hollow shaft—say at *x*—a pulley, gear-wheel, or any other suitable device to which it is desired to impart motion. All the gearing mechanism which connects the spring-driven hollow shaft B with the driving-shaft D is so arranged and constructed as to be wholly below the coiled spring.

The driving-shaft D is provided near its lower end with a pinion, *h*, and the lower end is stepped in a bearing, D', attached to the cross-bar C.

Gearing mechanism connects the ratchet-wheel *g* on the hollow shaft with the pinion *h* on the driving-shaft. As here shown, this mechanism comprises a large gear-wheel, *i*, on the hollow shaft, close to the ratchet-wheel *g*, and turning one way loosely. This gear-wheel carries a pawl, *k*, which is kept in engagement with the ratchet-wheel by means of a spring, *l*. The large wheel *i* gears with a pinion or lantern wheel, *m*, whose shaft carries a wheel, *m'*, which gears with a pinion, *n*, on a shaft which carries a gear-wheel, *n'*, which latter engages with the said pinion *h* on the driving-shaft D. The pawl and ratchet permits the hollow shaft to be turned one way, as indicated by the darts, to wind up the coiled spring. The winding is effected without a special or separate key. In lieu of a key, a winder or hand-grip device, O, is rigidly secured to the hollow shaft above the case A. This winder or hand-grip is seen in Figs. 1 and 6. It consists of a hub with a hole, *p*, to fit the hollow shaft, and a screw, *q*, in the side of the hub to impinge against said shaft and make it fast thereto. In the present instance the hand-grip part is in the shape of two arms, O, which project from the hub, one at an opposite side from the other. By grasping these arms the hollow shaft may be turned and the coiled spring wound. It is obvious the hand-grip part of the winder may have any other suitable or convenient shape.

The working parts of this motor are compact, easy of access at the bottom without hindrance from the spring, may be wound up by turning the hollow shaft B, a separate winding-key being unnecessary, and in the matter of cost is cheap of production. It may be used

for a variety of purposes, such as driving a fly-fan, the flexible shaft used by dentists for effecting operations on the teeth, and for imparting motion to a rotary show-stand or display-rack.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

In a spring-motor, the combination of the casing A, a vertical hollow shaft, B, projecting up through the top of the casing, a coiled spring, e, wound on the said hollow shaft and occupying the top part of the case, a ratchet-

wheel, g, fixed to the hollow shaft below the coiled spring, a driving-shaft, D, projecting up through the said hollow shaft and provided near its lower end with a pinion, h, and gearing mechanism wholly below the coiled spring and connecting the said ratchet-wheel with the pinion on the driving-shaft, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM R. FOWLER.

Witnesses:

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