

(No Model.)

F. T. MARCHAND.

MAINTAINING POWER FOR CLOCK SPRINGS.

No. 278,572.

Patented May 29, 1883.

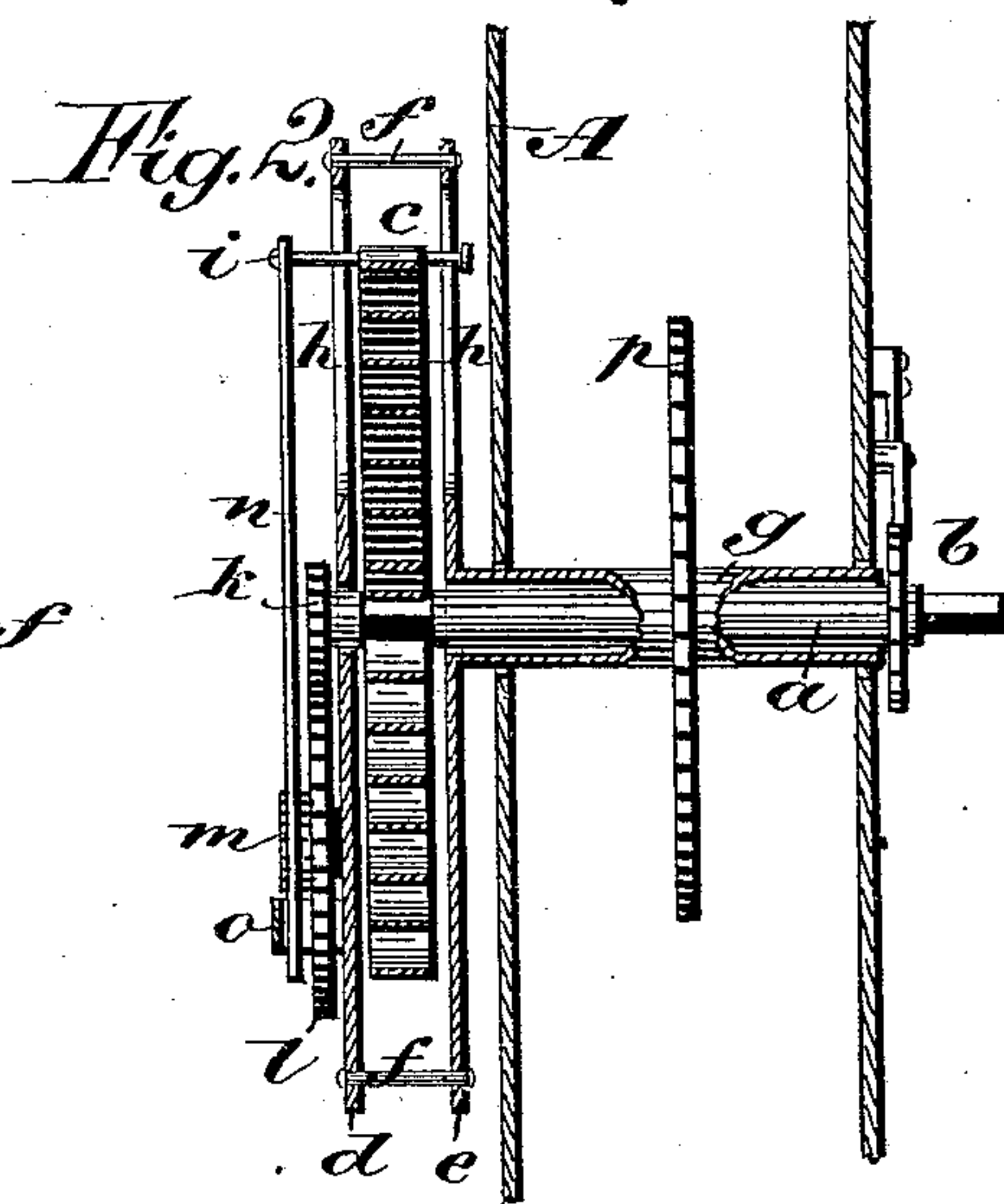
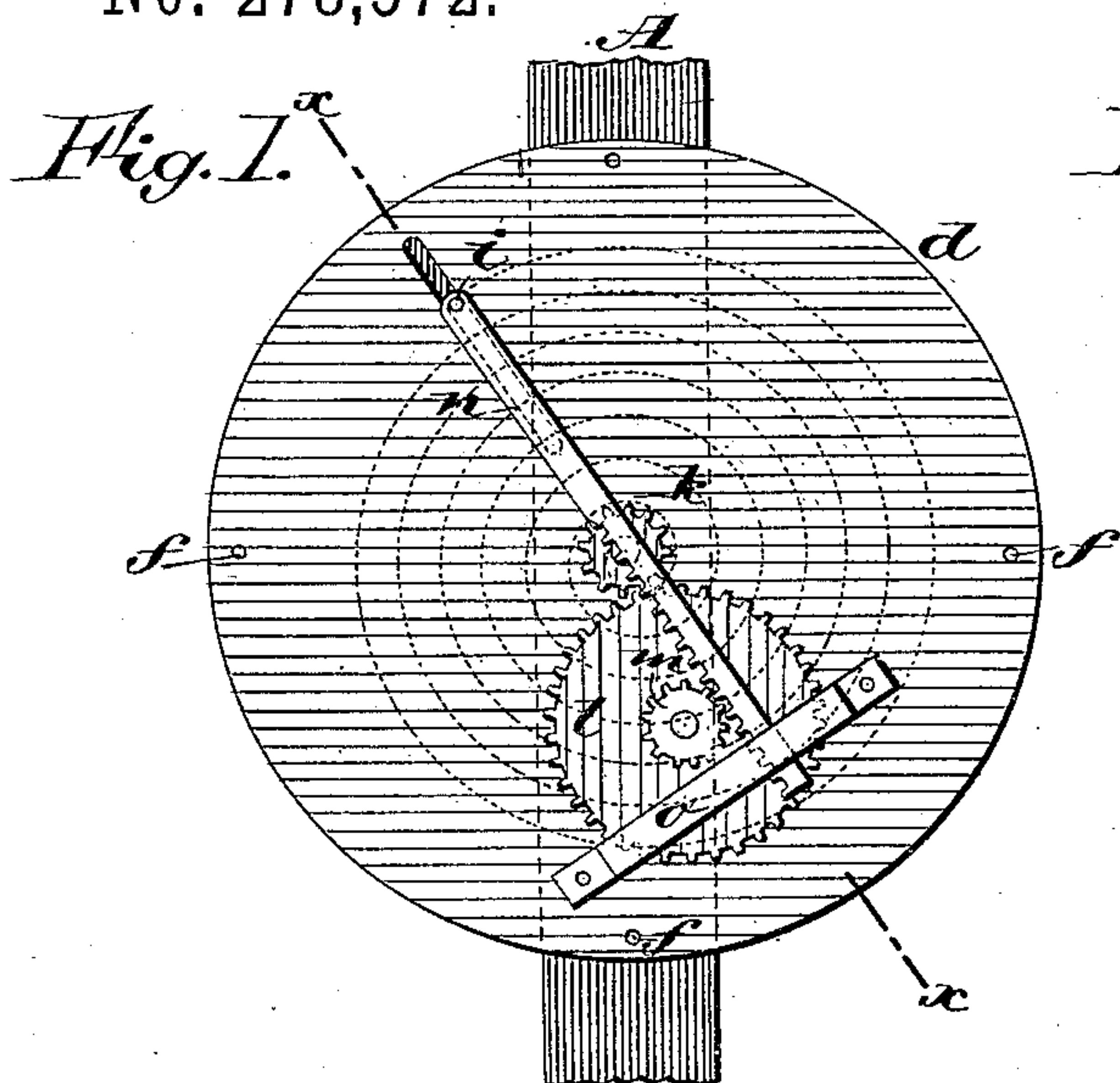


Fig. 3.

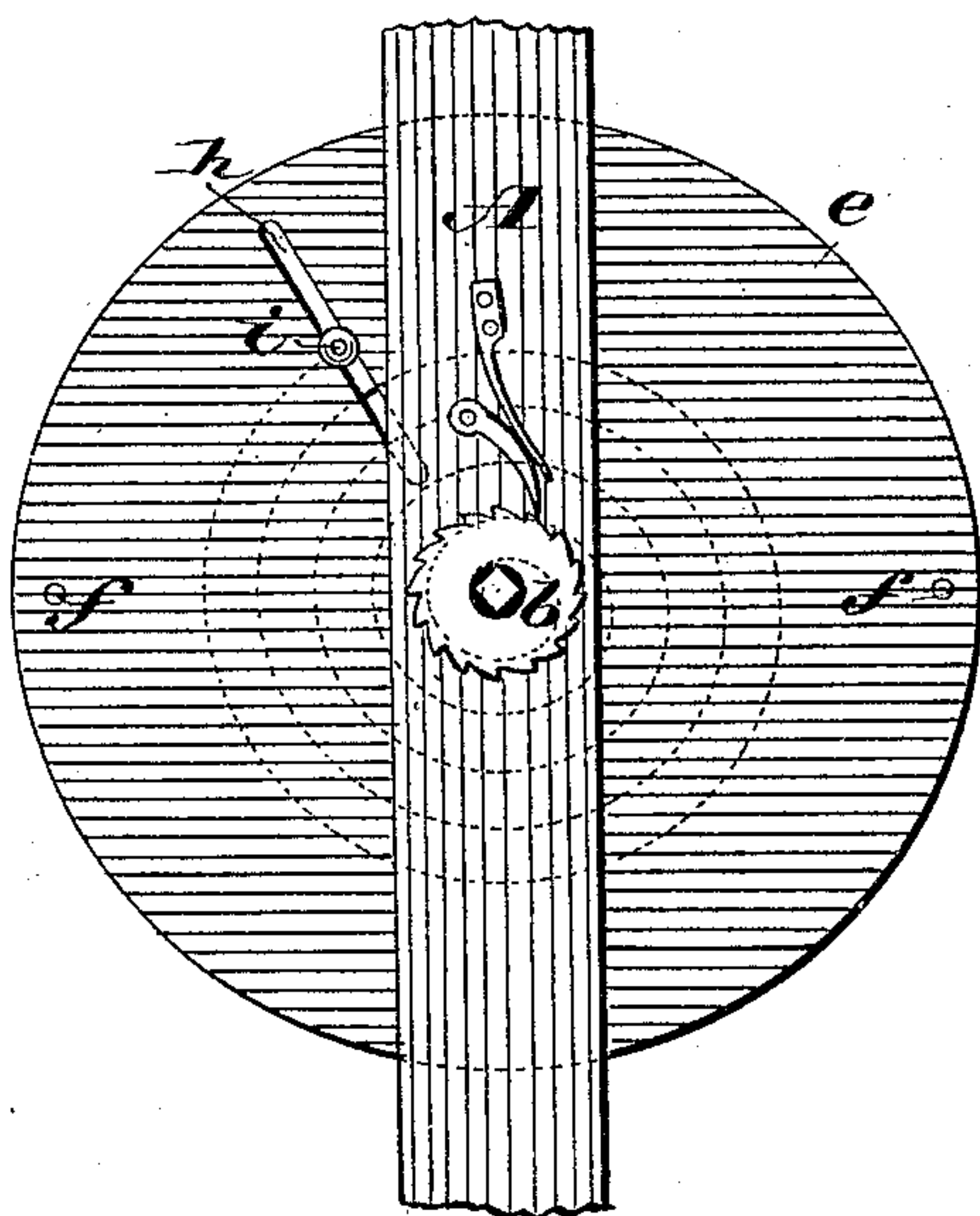
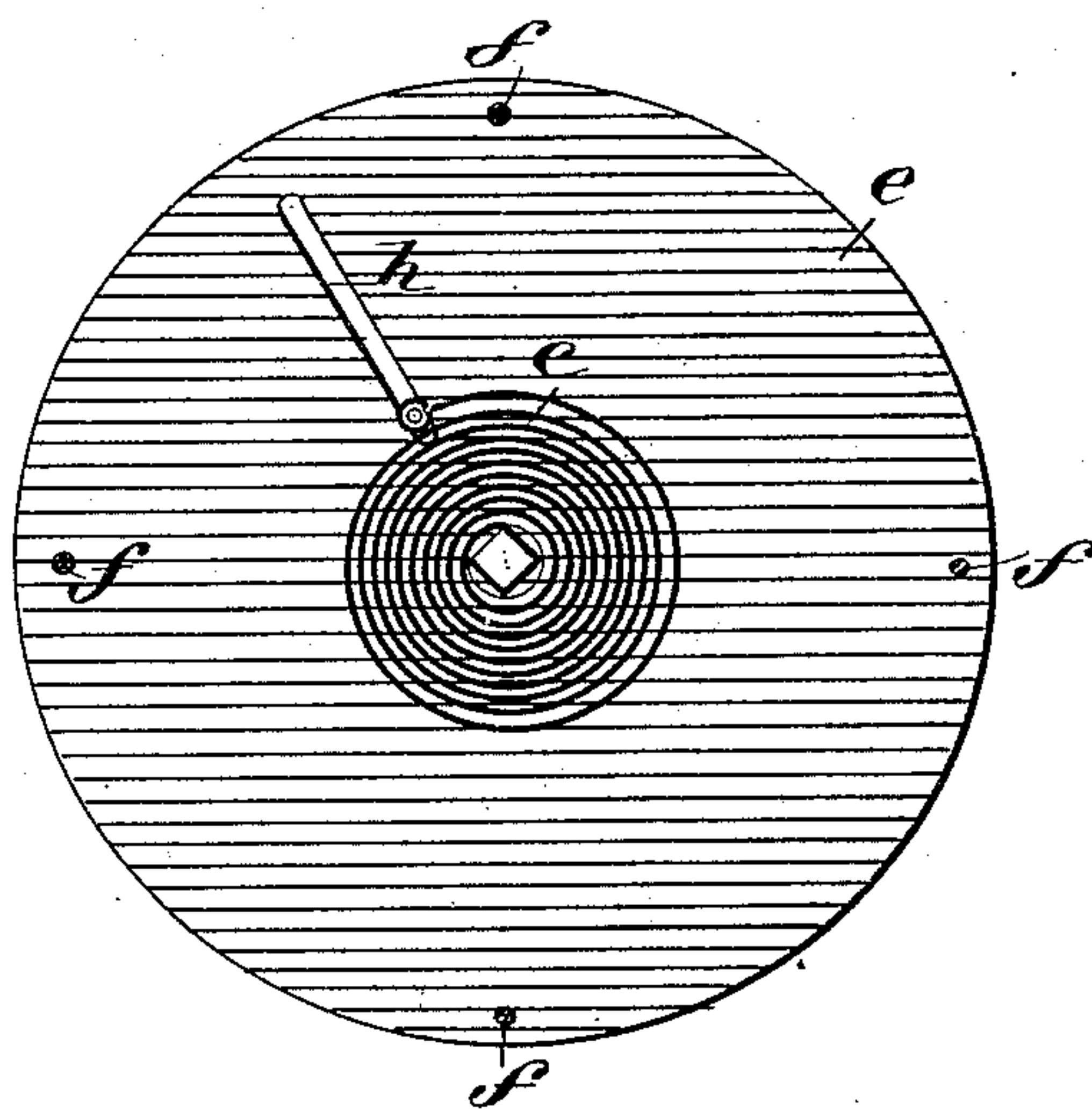


Fig. 4.



WITNESSES:

Hobbes
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UNITED STATES PATENT OFFICE.

FRANCIS T. MARCHAND, OF ANNAPOLIS, MARYLAND.

MAINTAINING POWER FOR CLOCK-SPRINGS.

SPECIFICATION forming part of Letters Patent No. 278,572, dated May 29, 1883.

Application filed March 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS T. MARCHAND, of Annapolis, in the county of Anne Arundel and State of Maryland, have invented a new and Improved Spring Mechanism for Clock-Works, of which the following is a full, clear, and exact description.

My invention consists in an improved gearing for the springs of clock-work and all spring-actuated mechanism, and has the object to prevent the retardation of the mechanism while being wound, and insure uniformity in the action of the spring, whether fully or partially wound.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is an elevation of my improved spring mechanism. Fig. 2 is a sectional side view of the same. Fig. 3 is an elevation in reverse of Fig. 1, and Fig. 4 is a face view with one disk removed.

A represents the clock-work frame. *a* is the winding-arbor, having a ratchet-wheel, *b*, and pawl at one end, and *c* is the spring. *d e* are two disks connected together by pins *f* at their edges, with space between for the spring on arbor *a*, supported by a sleeve, *g*, projecting from disk *e*. The two disks are formed with radial slots *h*, receiving a pin, *i*, to which the outer end of the spring is connected, the other end of the spring being connected to the arbor *a*. On the end of the arbor projecting through disk *d* is a pinion, *k*, that engages a gear-wheel, *l*, mounted on a stud projecting from disk *d*; and *m* is a pinion connected to

wheel *l* and engaging a rack, *n*, which extends across the face of the disk to the pin *i*, which is connected to the rack. *o* is a bridge retaining the rack in place. *p* is a gear-wheel on sleeve *g* for driving the clock-work.

With this gearing, when the arbor is turned to wind the spring, the pinion *k*, acting through the intermediate wheels, *l m*, causes the rack to move in a direction to draw the pin *i* and the end of the spring inward, the pin moving in the slots *h*. As the spring unwinds, the disks *d e* are rotated, and gear-wheel *l*, moving with the disks, is rotated, and the rack being thus moved in the reverse direction, the end of spring is carried outward. In this manner the leverage of the spring on the disks is increased in proportion as the power of the spring diminishes in unwinding, thus insuring uniformity in its action. Further, the work is not retarded by the winding, as the spring continues to exert its power on the disks.

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

1. The spring mechanism for clock-work, consisting of slotted disks *d e*, rack *n*, gearing *k l m*, arbor *a*, and spring connected to the arbor and to the rack, combined and arranged substantially as described.

2. In clock-work, the combination, with the driving-spring and arbor, of slotted disks, and a rack connected to the outer end of the spring and moved by connections from the arbor, substantially as shown and described.

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Witnesses:

ROBERT H. WELCH,
GEORGE MARCHAND.