A. E. HOTCHKISS.
Clock Movements.

No. 200,534. Patented Feb. 19, 1878.

fig 1.

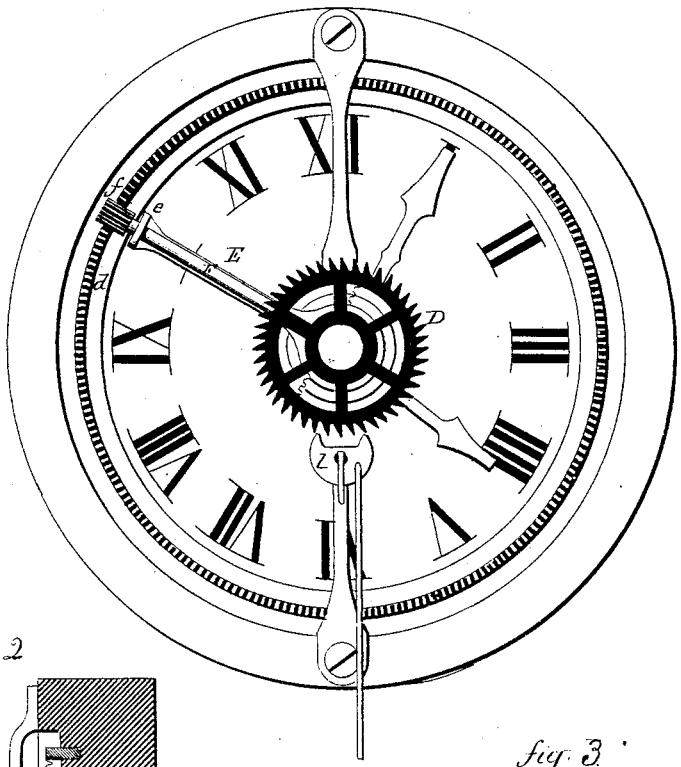


fig 2

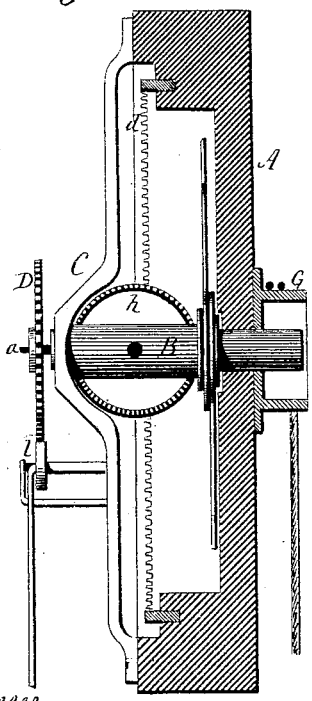
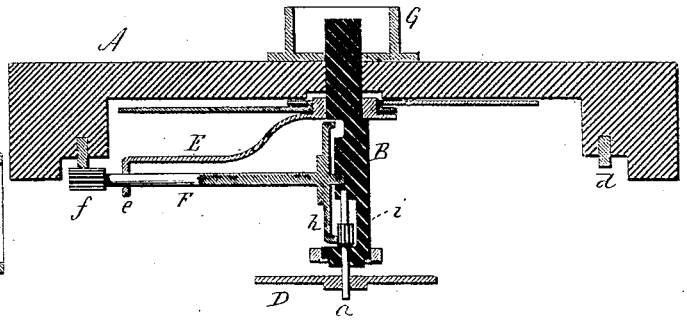


fig 3.



Witnesses
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ARTHUR E. HOTCHKISS, OF CHESHIRE, CONNECTICUT.

IMPROVEMENT IN CLOCK-MOVEMENTS.

Specification forming part of Letters Patent No. **200,534,** dated February 19, 1878; application filed July 27, 1877.

To all whom it may concern:

Be it known that I, ARTHUR E. HOTCHKISS, of Cheshire, in the county of New Haven and State of Connecticut, have invented a new Improvement in Clock-Movements; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a front view; Fig. 2, a vertical central section. Fig. 3 is a section through the radial shaft.

This invention relates to an improvement in clock-movements; the object being to dispense with the usual train of gearing between the power and the escapement-wheel.

It consists in a central shaft supporting the escapement-wheel, or so that the axis of the central shaft and the axis of the escapement-wheel are in the same line, combined with a stationary toothed circular rack, concentric with the said central shaft and the axis of the escapement-wheel, and a radial shaft from said central shaft, and supported on said central shaft, to be revolved in a horizontal plane, the said radial shaft having a pinion on its outer end, working in the said concentric stationary rack, and a gear in the other end, working in the gear of the escapement-wheel, and means for applying power to said central shaft to impart a rotation thereto, and, through the said traveling radial shaft and stationary rack, to communicate said power to the escapement-wheel, as more fully hereinafter described.

For convenience of illustration, the mechanism of the clock is here represented as in front of the dial. A represents the body, frame, or case of the clock; B, the central shaft, supported at one end in the clock-case, and at the other end in a yoke, C, so as to revolve freely in its bearings. Axially in the center of this shaft is the shaft *a* of the escapement-wheel D, as seen in Fig. 3, and so that this escapement-wheel will rotate independent of the revolution of the shaft B. Concentric with the central shaft is arranged a circular toothed rack, *d*, which is made stationary, and, practically, as a part of the clock-case.

Attached to the central shaft B is an arm, E, extending radially outward, and forming a bearing, *e*, at its outer end for a radial shaft, F, the inner end of the shaft F taking a bearing in the central shaft B, as seen in Fig. 3, so that as the central shaft B revolves, it will carry with it the arm E and shaft F. On the outer end of the shaft F is a pinion, *f*, working in the stationary rack, *d*, and so that as the shaft F is carried around by the revolution of the shaft E, the pinion *f*, working in the stationary rack *d*, will cause the shaft F to revolve on its own axis. On the inner end of the shaft F is a toothed gear, *h*, working into a pinion, *i*, on the escapement-wheel shaft *a*, which will cause the revolution of the shaft F to be communicated to the escapement-wheel.

Power is applied to the central shaft B by means of a weight on a drum, G, or by a spring, in either case substantially in the usual manner of communicating power to the driving-shaft of clock-movements.

Combined with the escapement-wheel is a verge, *l*, to which a pendulum is applied, in the usual manner.

The operation of this movement is as follows: The power having been applied, the pendulum is given a vibration, the power causing the escapement-wheel to rotate, as before described. The verge escapes at each beat, the escapement-wheel turning one tooth, in the usual manner of clock-escapements. As the escapement-wheel is permitted thus to rotate, the shaft F travels around in its horizontal plane, imparting to the escapement-wheel the revolution it receives from the stationary rack; and, in practice, the time of a full revolution of the shaft F around the rack *f* is one hour. This allows the attachment of the minute-hand directly to the shaft B. The hour-hand, concentrically arranged, may be geared in the usual manner, and thus the movement will continue until the power is exhausted.

The dial may be arranged as shown, or upon the opposite side of the case, the particular location of the dial not in any sense qualifying the mechanism of the clock.

Instead of the pendulum, the usual balance-wheel and lever may be applied.

By this construction the clock-movement is

very materially simplified, lessening the number of parts and bearings, and thereby cheapening the construction and increasing the durability, and insuring greater accuracy than can be attained in more complicated mechanism, because not liable to the derangements incident to such complications.

I claim—

In a clock-movement, the combination of a central revolving shaft, a concentric stationary gear, a radial shaft caused to revolve in a horizontal plane by connection with said central shaft, and caused to revolve on its own axis by connection with said stationary gear, and an escapement-wheel in connection with said radial shaft, substantially as described.

ARTHUR E. HOTCHKISS.

Witnesses:

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