

(No Model.)

2 Sheets—Sheet 1.

C. FASOLDT.

ESCAPEMENT FOR CLOCKS.

No. 301,873.

Patented July 15, 1884.

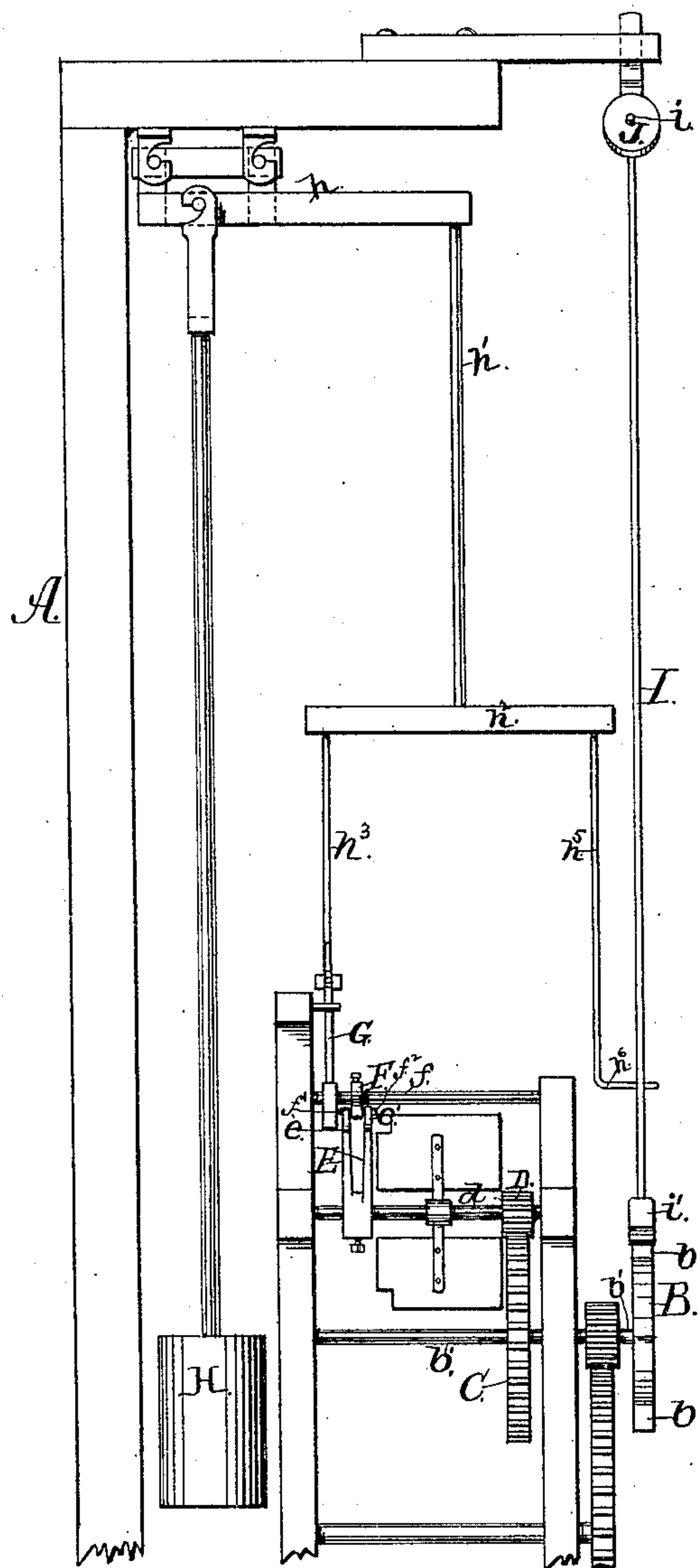


FIG. 1.

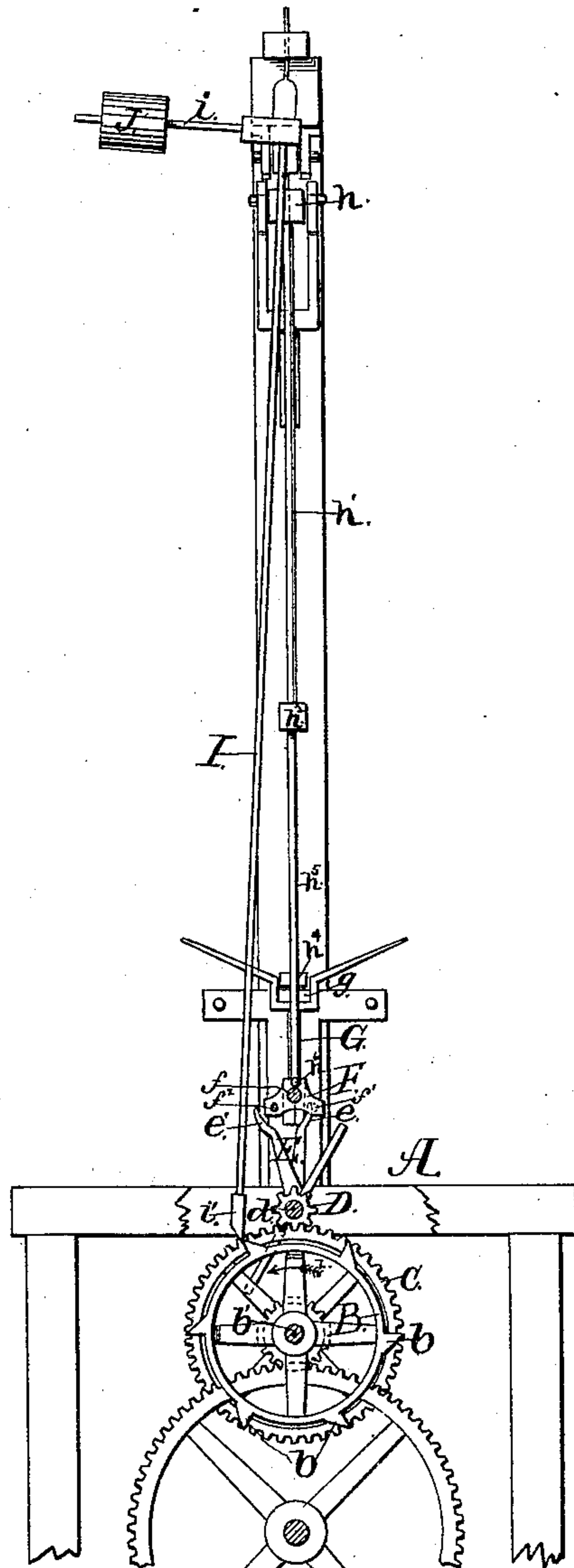


FIG. 2.

Witnesses,

E. J. Benham,

S. B. Brewer.

Inventor,

CHARLES FASOLDT,

~by~

William H. Low

Attorney

(No Model.)

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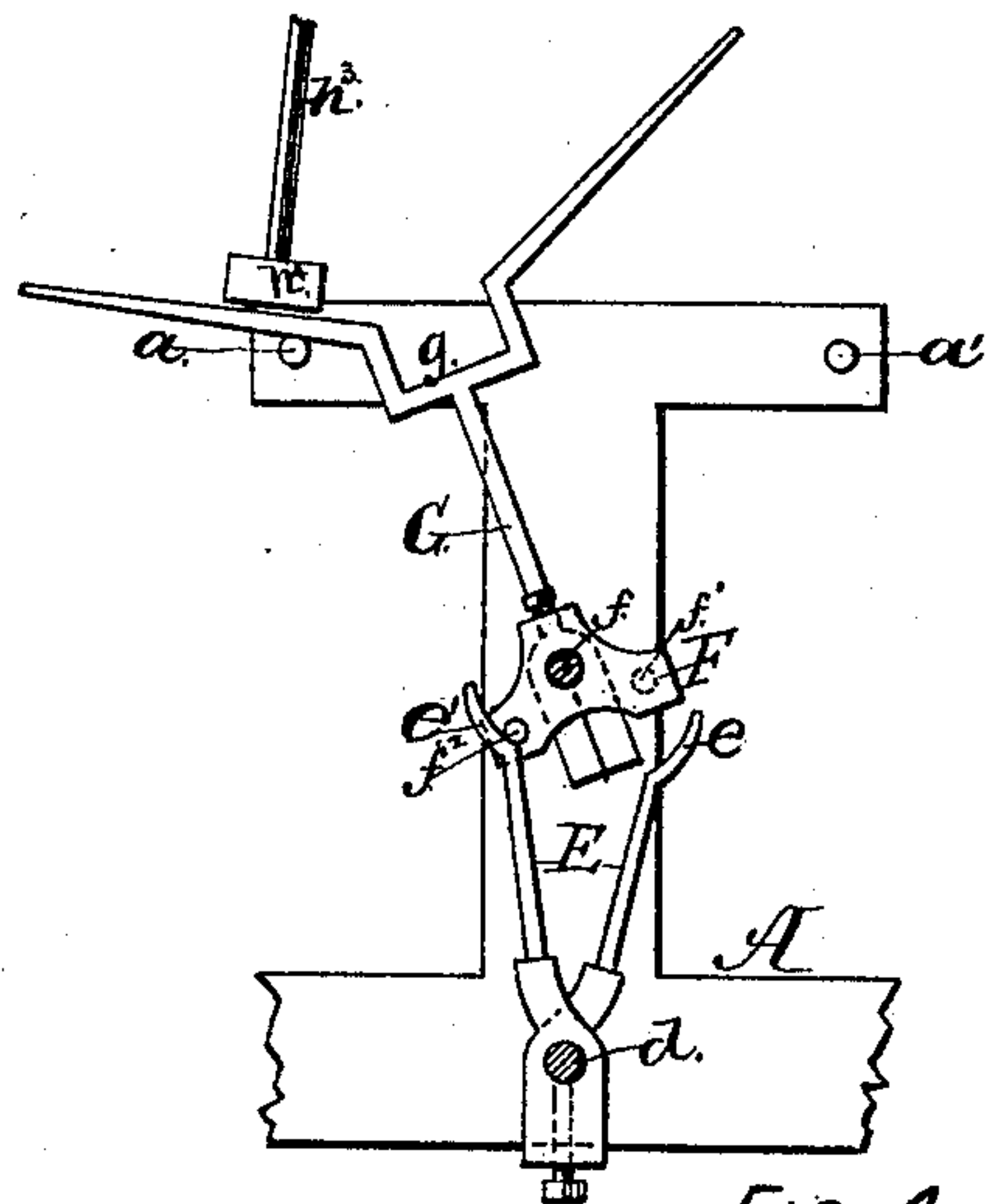


FIG. 4.

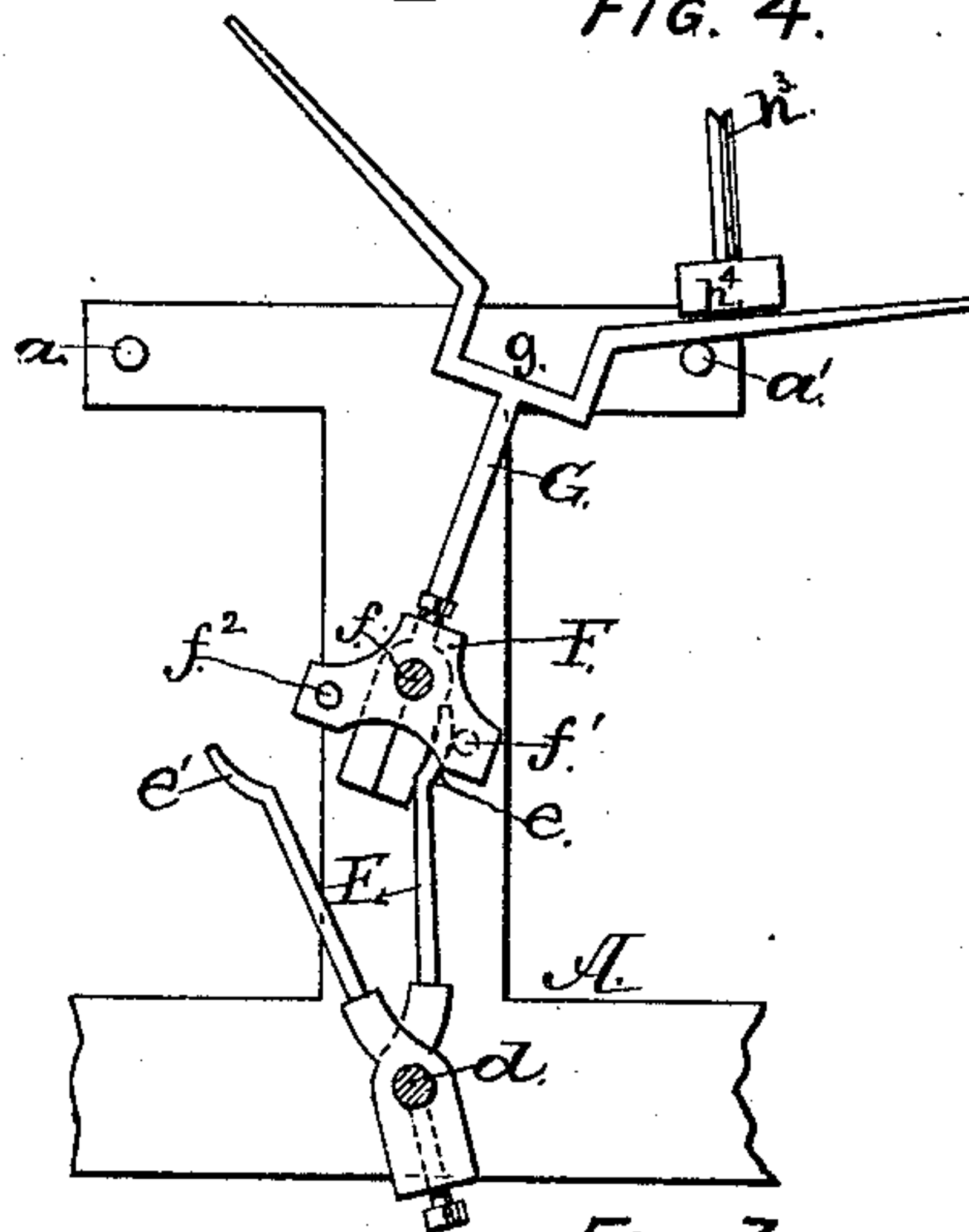


FIG. 3.

Witnesses,

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UNITED STATES PATENT OFFICE.

CHARLES FASOLDT, OF ALBANY, NEW YORK.

ESCAPEMENT FOR CLOCKS.

SPECIFICATION forming part of Letters Patent No. 301,873, dated July 15, 1884.

Application filed October 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FASOLDT, of the city and county of Albany, in the State of New York, have invented certain new and useful Improvements in Escapements for Clocks, &c., of which the following is a specification.

My invention relates to improvements on the escapement for which Letters Patent of the United States, No. 137,603, were granted to me on the 8th day of April, 1873; and the object of my improvements is to provide for the pendulous gravity-lever a point of suspension from an immovable part of the structure, and to effect the liberation of said lever from the teeth of the escapement-wheel by the action of the latter. I effect this object by means of the mechanism illustrated in the accompanying drawings, which form part of this specification, and in which—

Figure 1 is a side elevation of my improved escapement; Fig. 2, a front elevation of same, with part of the frame-work broken away to expose part of the mechanism; and Figs. 3 and 4 are enlarged and detached views of the locking and unlocking mechanism for the escapement-arms.

As represented in the drawings, A is the frame-work of the clock.

B is the impulse-escapement wheel, provided with a series of angular teeth, *b*. Said wheel is secured to a shaft, *b'*, to which a rotatory motion is given in the direction indicated by the arrow 1 on Fig. 2, by means of a train of gearing driven in the usual manner by means of a weight, spring, or other appliance. There is also secured to the shaft *b'* a gear-wheel, C, which gears into a pinion, D, secured to the shaft *d*, and to the latter is fixed a hub for containing a pair of arms, E, which are so arranged that they will stand on opposite sides of the detent F. Said arms are provided with curved terminals *e* and *e'*, having their curvatures arranged in opposite directions, as more clearly shown in Fig. 4. As shown in the drawings, each arm has only one curved terminal; but, when preferred, the number of terminals on each may be increased, all the terminals on each arm having their curvatures arranged to conform to the direction shown in the drawings for the single terminals.

F is a detent secured to an oscillating shaft, *f*, so as to lie between the terminals *e* and *e'*. Said detent is provided with pallets *f'* and *f''* projecting from its opposite faces, and so arranged that the first will engage with the terminal *e* and the other with the terminal *e'*.

G is an arm provided with a V-shaped fork, having in its middle a depression, *g*, for a purpose hereinafter explained. The arm G is secured to the shaft *f*, and imparts to said shaft its oscillatory motion.

H is a pendulum connected to a swinging head, *h*, which latter has a pendent arm, *h'*, fixed to its outer end. A bar, *h''*, is fixed upon the lower end of the arm *h'* so as to range in a line parallel with the head *h*, and to the inner end of said bar is attached a pendent arm, *h'''*, having on its lower end a head, *h''''*, that is adapted to engage in the depression *g*, so as to impart an oscillatory movement to the arm G at each vibration of the pendulum. A pendent arm, *h'''''*, whose lower end has an outwardly-projecting arm, *h''''''*, is attached to the outer end of the bar *h''*; and it must be understood that the pendulum H, arms *h'''* and *h''''*, and the intermediary parts move as one piece.

When preferred, the positions shown in Fig. 1 for the gear-wheels C and D and the arms E, detent F, and forked arm G may be exchanged, so as to bring the last-named three parts closer to the escapement-wheel B, and by so doing the arms *h'*, *h'''*, and *h''''* may be consolidated into a single arm and the bar *h''* entirely dispensed with.

I is the pendulous gravity-lever, having its point of suspension fixed to any suitable immovable part of the frame A. The said lever is provided near its upper end with a lateral arm, *i*, which projects from the side of said lever in the direction that the latter is moved by the action of the escapement-wheel B. A weight, J, is adjustably attached to the arm *i*, for the purpose of increasing or diminishing the effective action of said weight on the lever I. On the lower end of said lever a head, *i'*, is formed, which head is adapted to engage with the teeth *b* on the escapement-wheel B.

The operation of my improved escapement is as follows: Taking as an initial point the position of the several parts as shown in Fig. 2, wherein the pendulum H is in the midway of its vibration, then as the pendulum swings

to the left the forked arm G will be tilted to the left, where it will rest on the stop *a*, as shown in Fig. 4. In accomplishing this the arm *h*⁶ is brought in contact with the gravity-lever I, and by this movement of the forked lever the pallet *f*⁷ will be carried clear from the terminal *e*, so as to permit the shaft *d* to make a partial revolution, whereby the escapement-wheel B will be rotated far enough to move its engaging-tooth out of the path of the vibration of the gravity-lever I. The weighted gravity-lever I, now freed from the escapement-wheel B, and engaged with the arm *h*⁶, imparts an impulse to said pendulum at the instant the latter commences to vibrate toward the right. In making this latter movement the head *h*⁴ engages in the depression *g* and tilts the forked arm G to the right, where it will rest on the stop *a'*, as shown in Fig. 3. In accomplishing the latter the pallet *f*² is carried clear from the terminal *e'*, thereby unlocking the arms E from the detent F, and permitting the shaft *d* to complete the revolution that was begun when the pallet *f*⁷ was cleared from the terminal *e*. By this complementary part of the revolution of the shaft *d* the escapement-wheel B is partially rotated, so as to bring a new tooth *b* around in time to receive the end of the gravity-lever and carry it back to the position in Fig. 2, where it will be ready to impart a fresh impulse to the pendulum.

As represented in the drawings, each of the arms E is provided with a single curved terminal, and when so constructed the pendulum H will receive, in the manner described, a single impulse from the gravity-lever I with every double vibration of said pendulum. When each of the arms is provided with two of the curved terminals, arranged as hereinbefore described, a single impulse from the gravity-lever will be imparted in like manner at every second double vibration of the pendulum, and in like manner this relative proportion of double vibrations of the pendulum to the number of curved terminals on each of the arms E may be continued to effect a single impulse from the gravity-lever I.

It will be seen that the gravity-lever I is entirely disconnected from the pendulum H and the parts attached to the latter, excepting when said lever is imparting its impulse to the pendulum, and it will also be seen that when the gravity-lever is in motion its vibrations and those of the pendulum are made in the

same directions. In these respects this construction differs from the one shown in my Patent No. 137,603, wherein the gravity-lever, through the lever to which it is pivoted, is constantly connected to the pendulum, and its vibrations are always made in directions contrary to those of the pendulum.

Another difference between this invention and the one as shown in my former patent above referred to will be observed in the mode of liberating the head of the gravity-lever from the teeth of the escapement-wheel. In my former invention the liberation of the head is effected by the oscillation of a lever connected to and operated by the pendulum, whereby the gravity-lever is raised upward, so that its head will clear the point of the tooth; but in this present construction each partial revolution of the escapement-wheel B causes the engaged tooth on said wheel to move clear of the path of the vibration of the gravity-lever.

I claim as my invention—

1. The combination, with a gravity-lever, I, having a vibratory movement that is independent of the pendulum, and a pendulum, H, having a head, *h*⁴, connected thereto, so as to move with and in the same direction of said pendulum, as herein set forth, of the escapement-wheel B, escapement-arms E, provided with one or more terminals, as herein described, detent F, and forked arm G, all being constructed and arranged to operate substantially as herein specified.

2. The combination of the escapement-wheel B, escapement-arms E, detent F, forked arm G, and gravity-lever I, as herein described, the said parts being so arranged that by the movement of the pendulum in one direction the escapement-wheel B will be freed to make a partial revolution, whereby its recently-engaged tooth *b* will be carried clear from the path of the gravity-lever I, and by the succeeding movement of the pendulum in the opposite direction the said escapement-wheel will be freed to make a second partial revolution, whereby its next succeeding tooth *b* will be carried into position to engage with and arrest the movement of the gravity-lever I, in the manner and for the purpose specified.

CHARLES FASOLDT.

Witnesses:

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