

(Model.)

B. F. FLINT.

CLOCK.

No. 354,122.

Patented Dec. 14, 1886.

FIG. 1.

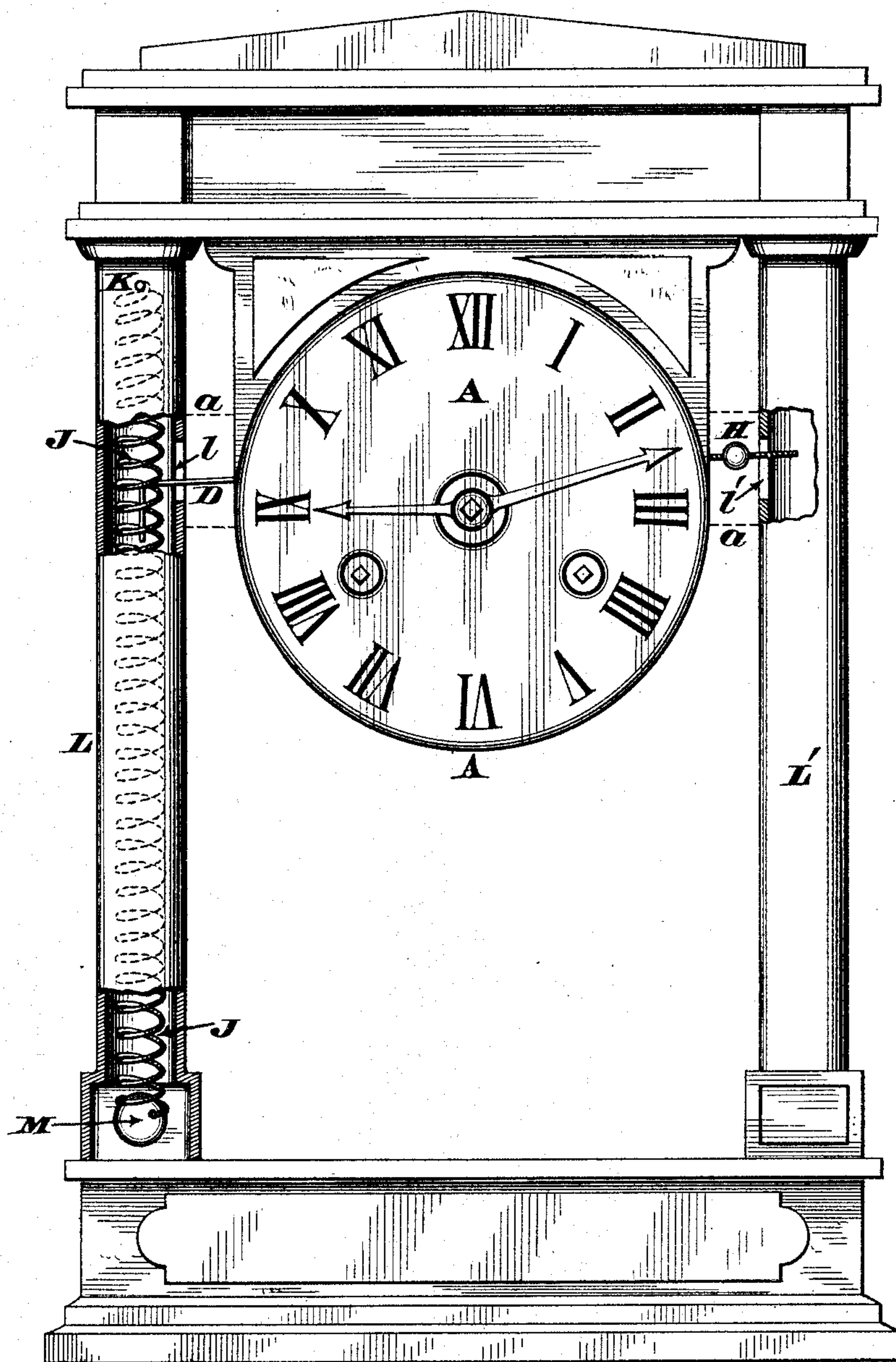
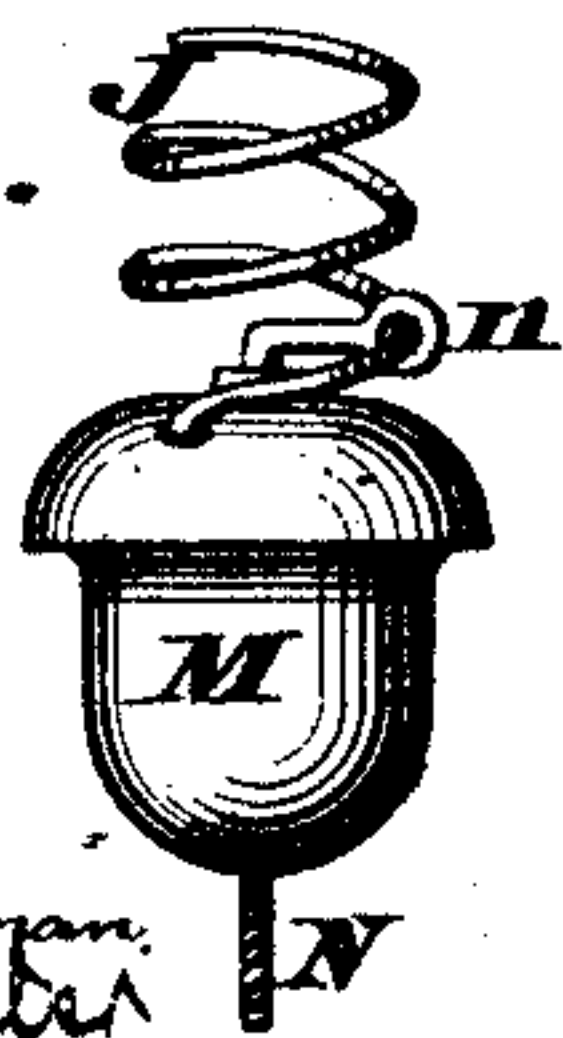
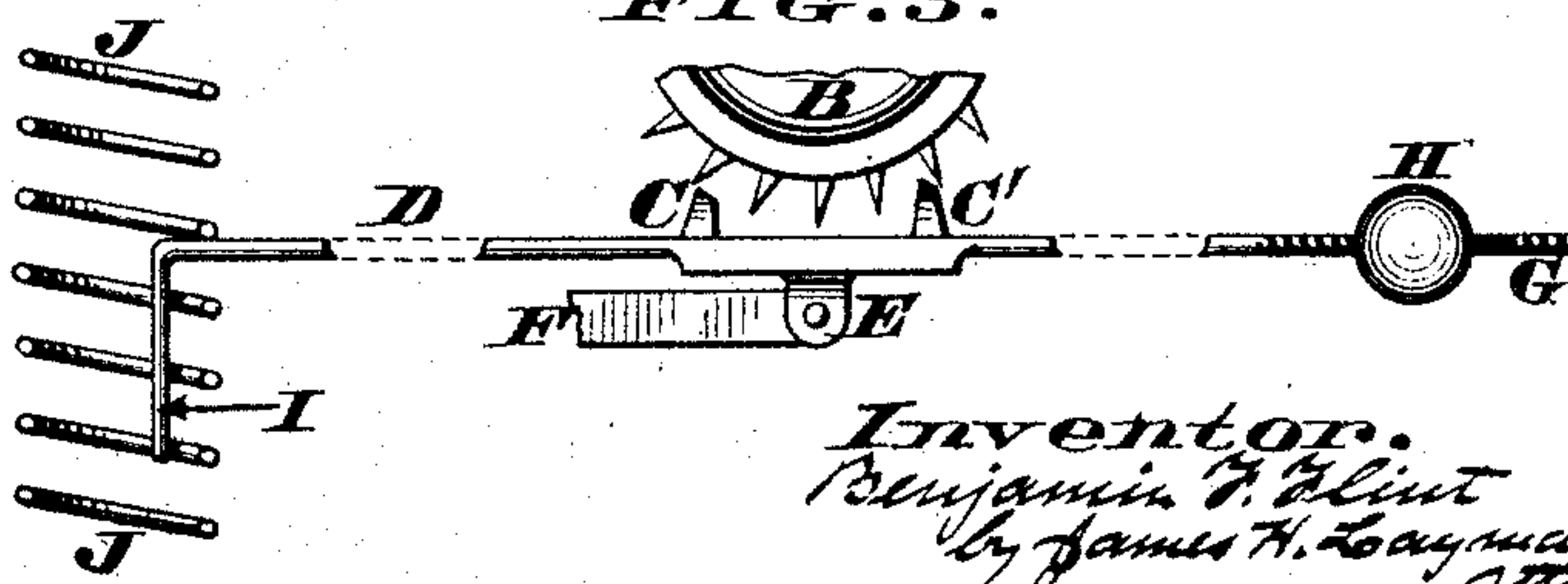


FIG. 2.



Attest.
James H. Layman,
S. & Carpenter

FIG. 3.



Inventor.
Benjamin F. Flint
By James H. Layman
Att'y.

UNITED STATES PATENT OFFICE.

BENJAMIN FRANKLIN FLINT, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-
HALF TO ALGERNON D. SMITH, OF SAME PLACE.

CLOCK.

SPECIFICATION forming part of Letters Patent No. 354,122, dated December 14, 1886.

Application filed November 17, 1885. Serial No. 183,063. (Model.)

To all whom it may concern:

Be it known that I, BENJAMIN FRANKLIN FLINT, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Clocks, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to produce a clock or similar time-piece that will be free from all the annoyances and defects incidental to the use of ordinary pendulums, balance-wheels, &c. To accomplish this result my instrument is furnished with a coiled, convoluted, or other spring capable of longitudinal extensibility; or, in other words, said spring is elastic or yielding in the direction of its axis. The upper or fixed end of the spring is properly secured; but its other or lower end is free, and usually carries a "bob" or similar weight, which may be adjustable, if desired. Adapted to engage with this vertically or longitudinally extensible spring, and near the upper end thereof, is a vibrating rod that communicates either directly or indirectly with the pallets or equivalent devices, in order that the teeth of the escapement-wheel may rock said rod on its bearing, and thereby impart a pulsative movement to said spring, which latter accordingly acts as the "time-measurer" of the clock, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a front elevation, showing the preferred method of applying my improvement to an ordinary clock, the columns of the latter being broken away in places and sectioned. Fig. 2 shows one form of adjusting device that may be applied to the lower end of the vertically or longitudinally extensible spring. Fig. 3 shows the verge-rod and a portion of the escapement and spring, said rod being broken away at intervals and the spring being sectioned.

A represents a case or box containing a clock-movement, the train of which may be driven either by weights, springs, or other instrumentalities, as the clock proper constitutes no part of my invention.

B represents any approved escapement, the teeth of which actuate the pallets C C' of a verge-rod, D, the latter being pivoted at E to

a suitable bearing, F. One end of this rod is screw-threaded at G and carries an adjustable poise or regulator, H, while the opposite end of said rod is preferably bent down at I and engages with the vertically or longitudinally extensible spring J. This spring, which is preferably coiled or helical, is made of any suitable material or composition of materials, and has its upper end secured to a proper fixture of the clock. In the present case this point of attachment of said spring is suggested by a rod, K, inserted across the upper portion of a hollow column, L, said column being supplemented by a similar support, L', on the opposite side of the clock-case. Furthermore, said spring is of any convenient length, and carries at its lower end a weight or bob, M, that distends the spring, as seen in Fig. 1. The columns L L', just referred to, are slotted respectively at L'', to permit the opposite ends of the verge-rod D to vibrate therein, which latter is so arranged as to bear at all times directly against the under side of the proper coil of spring J, as more clearly seen in Fig. 3.

From the above description it is apparent that the contact of the escapement-wheel teeth with the pallets C C' causes the verge-rod D to oscillate or rock on its pivot E, thereby operating the spring J in such a manner as to cause the latter to play vertically within the column L or other housing or part of the clock-case. The upward swing of the bent end I of the rod causes a slight contraction of the various coils of the spring J, thereby elevating the bob M, while the downward swing of this end of the rod allows the bob to descend and open or distend said coils. Consequently the bob alternately ascends and descends with every vibration of the verge-rod, and thus serves as the time-measurer of the clock, the action of said measurer being regulated by shifting the poise H either toward or away from the escapement-wheel B.

It is apparent at a glance that any expansion or contraction of the spring J by changes in the temperature will not in the least affect the vertical play of my time-measurer, and for this reason the difficulties attending the use of an ordinary pendulum are obviated.

If at any time it should be desired to arrange the parts in such a manner as to allow

the spring to be shortened when the clock is first regulated, it can be done by engaging a screw-threaded rod, N, with the bob M, and then bending the upper end of said rod and furnishing it with an eye, *n*, as seen in Fig. 2. Now, as the lower end of the spring is passed through this eye and then fastened to said bob, it will be readily understood that the proper turning of the rod N will draw the coils together, and thus shorten the spring to a limited extent.

The dotted lines *a a* (seen in Fig. 1) indicate side boxes that may connect the case A with the columns LL' when it is desired to conceal all the operative parts of the clock; but in some cases the escapement-wheel, pallets, verge-rod, spring, and bob may be arranged in such a manner as to render them visible at all times.

I claim as my invention—

1. A clock provided with a longitudinally-extensible spring having a rod communicating therewith, the vibrations of the latter being produced by the escapement-wheel, in order that said spring may serve as the time-meas-

urer of the instrument, substantially as described.

2. A clock provided with a vertically or longitudinally extensible spring that is connected with the escapement by a verge-rod carrying an adjustable poise, for the purpose herein described.

3. The combination, in a clock, of the escapement B, verge-rod C C' D E G, adjustable poise H, and vertically or longitudinally acting coiled spring J, the latter being provided with a bob, M, for the purpose described.

4. The combination, in a clock, of the escapement B, verge-rod C C' D E G, adjustable poise H, vertically or longitudinally acting coiled spring J, and bob M, the latter being provided with a screw-threaded rod, N *n*, for the purpose described.

Intestimony whereof I affix my signature in presence of two witnesses.

BENJAMIN FRANKLIN FLINT.

Witnesses:

JAMES H. LAYMAN,
SAML. S. CARPENTER.