

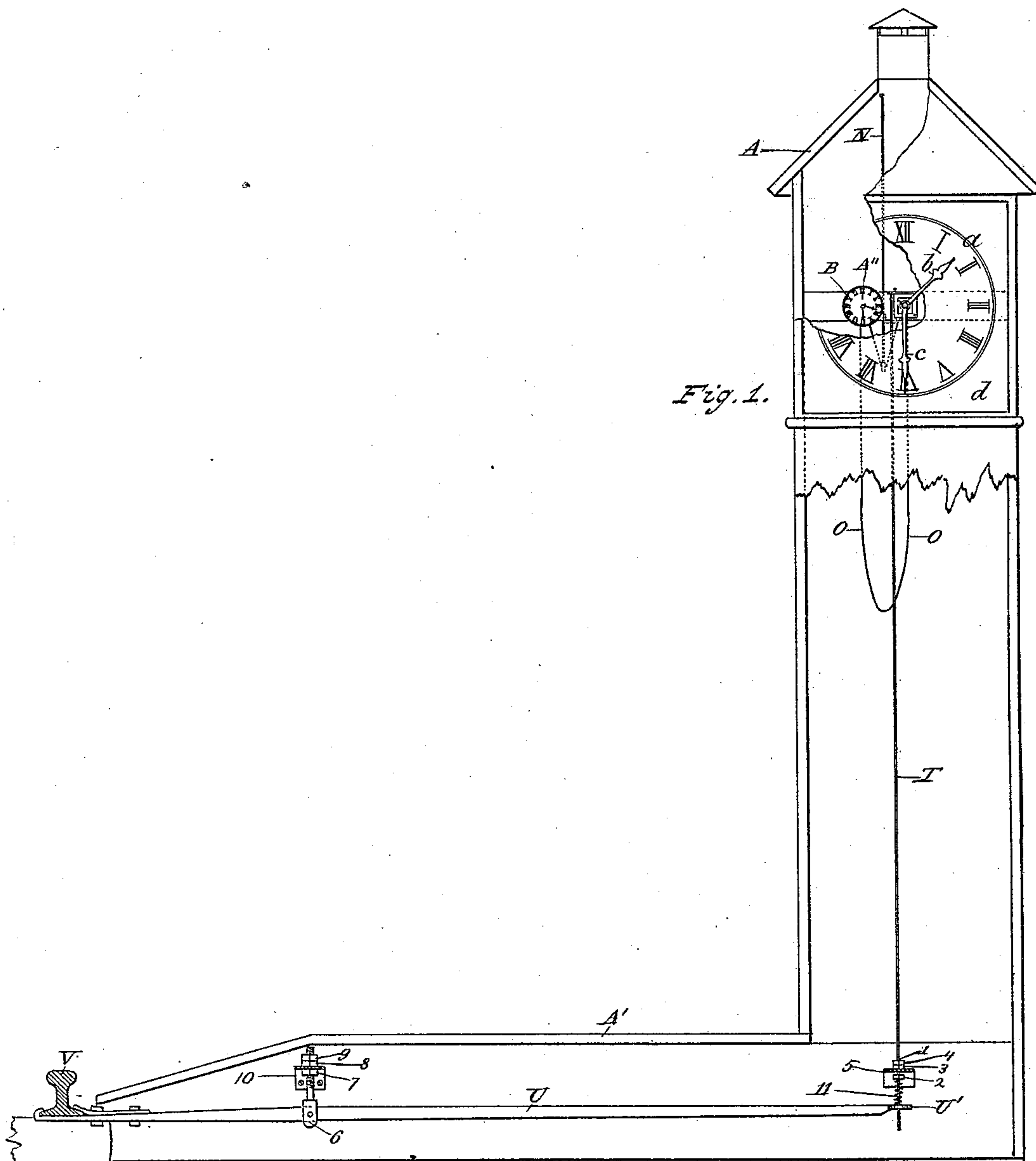
(No Model.)

3 Sheets—Sheet 1.

H. A. WAYNE.
RAILWAY TIME SIGNAL.

No. 355,850.

Patented Jan. 11, 1887.



Witnesses.

George S. Jones
C. A. Buchanan

Inventor

H. Albert Wayne
By W. Davidson Jones
his Attorney

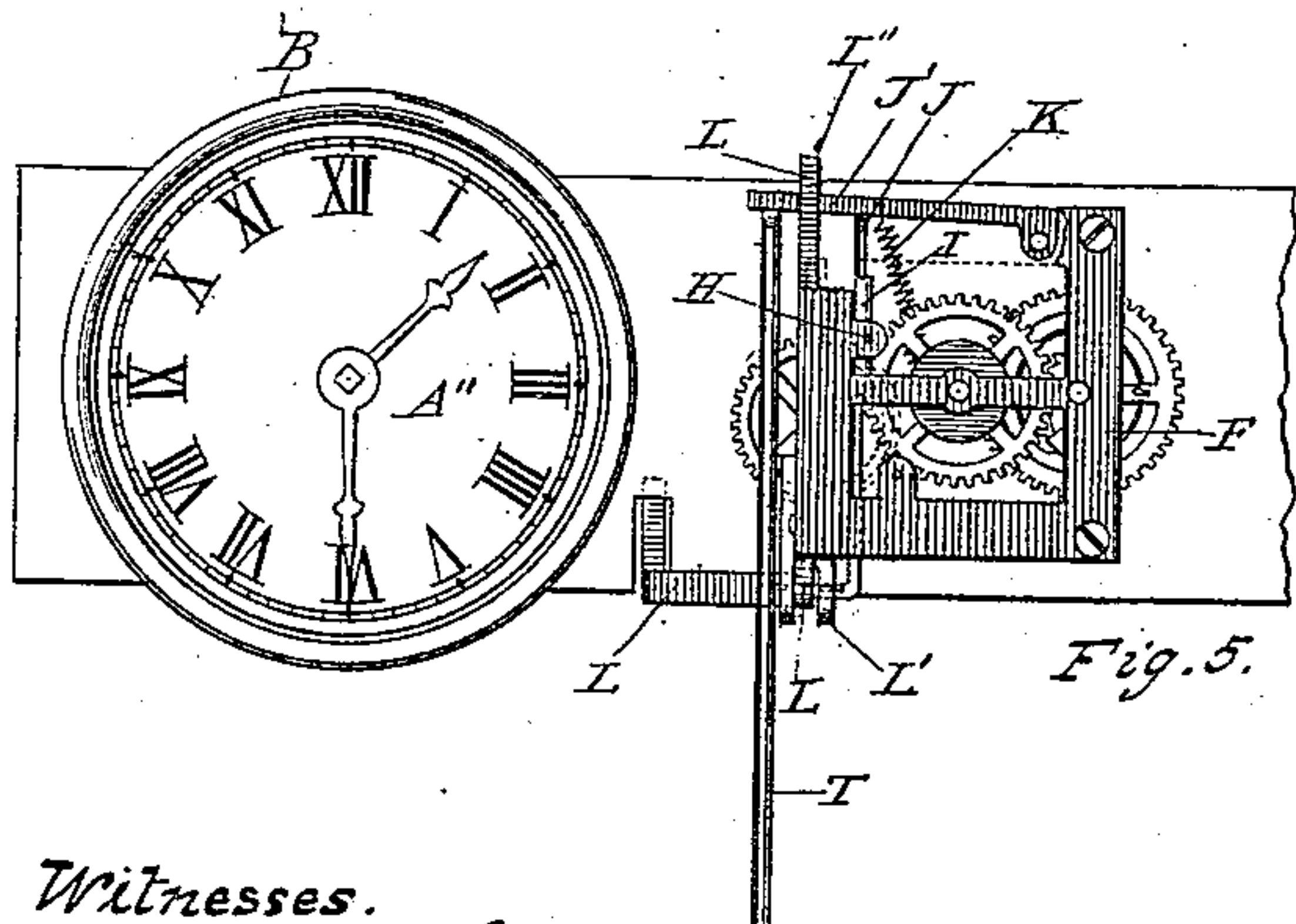
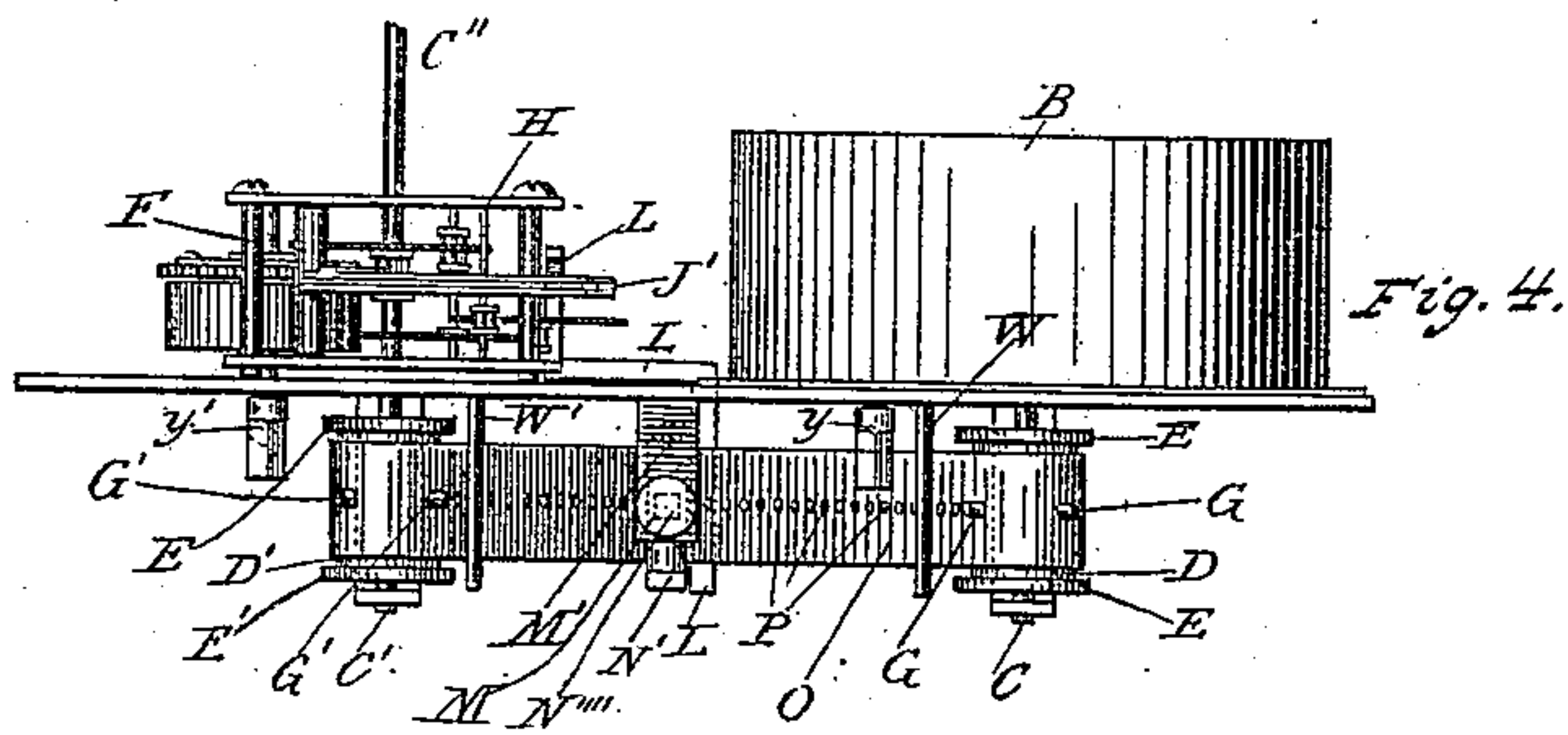
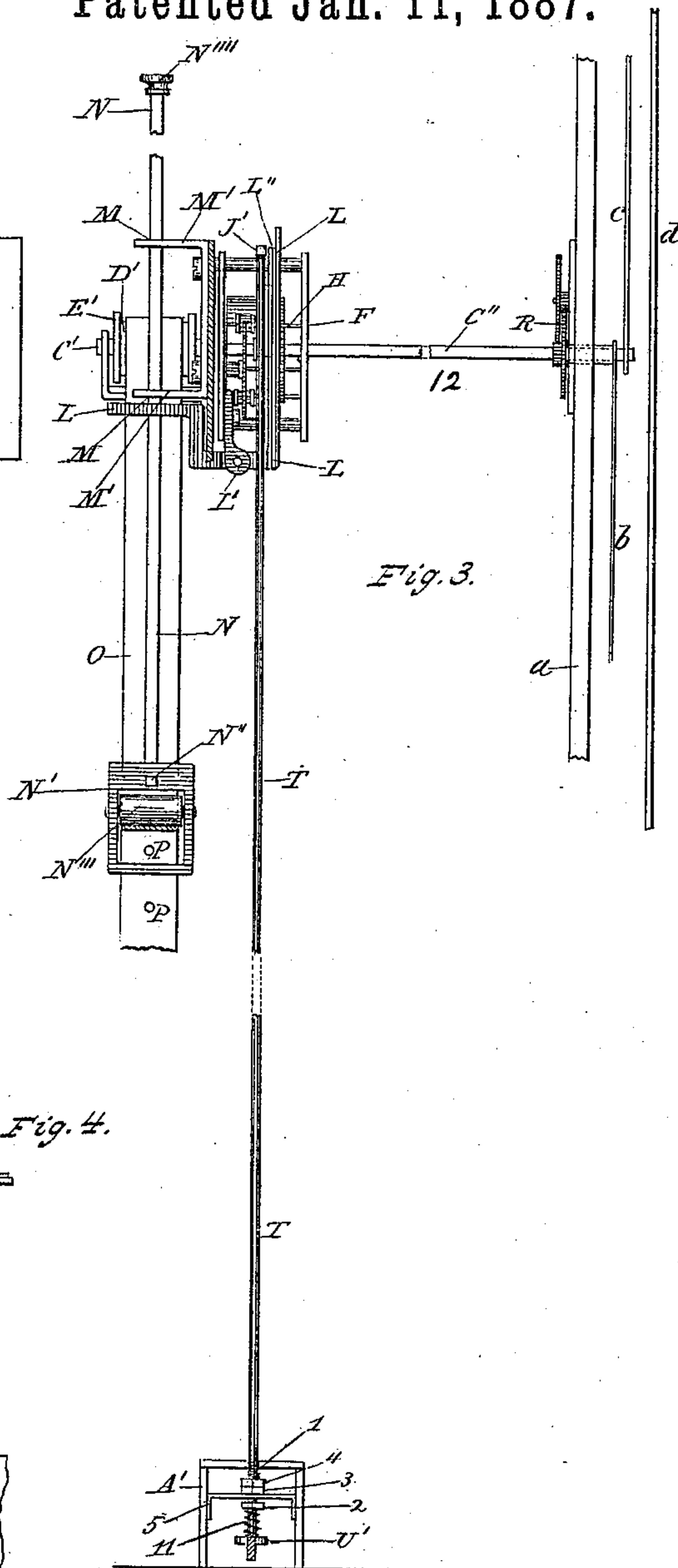
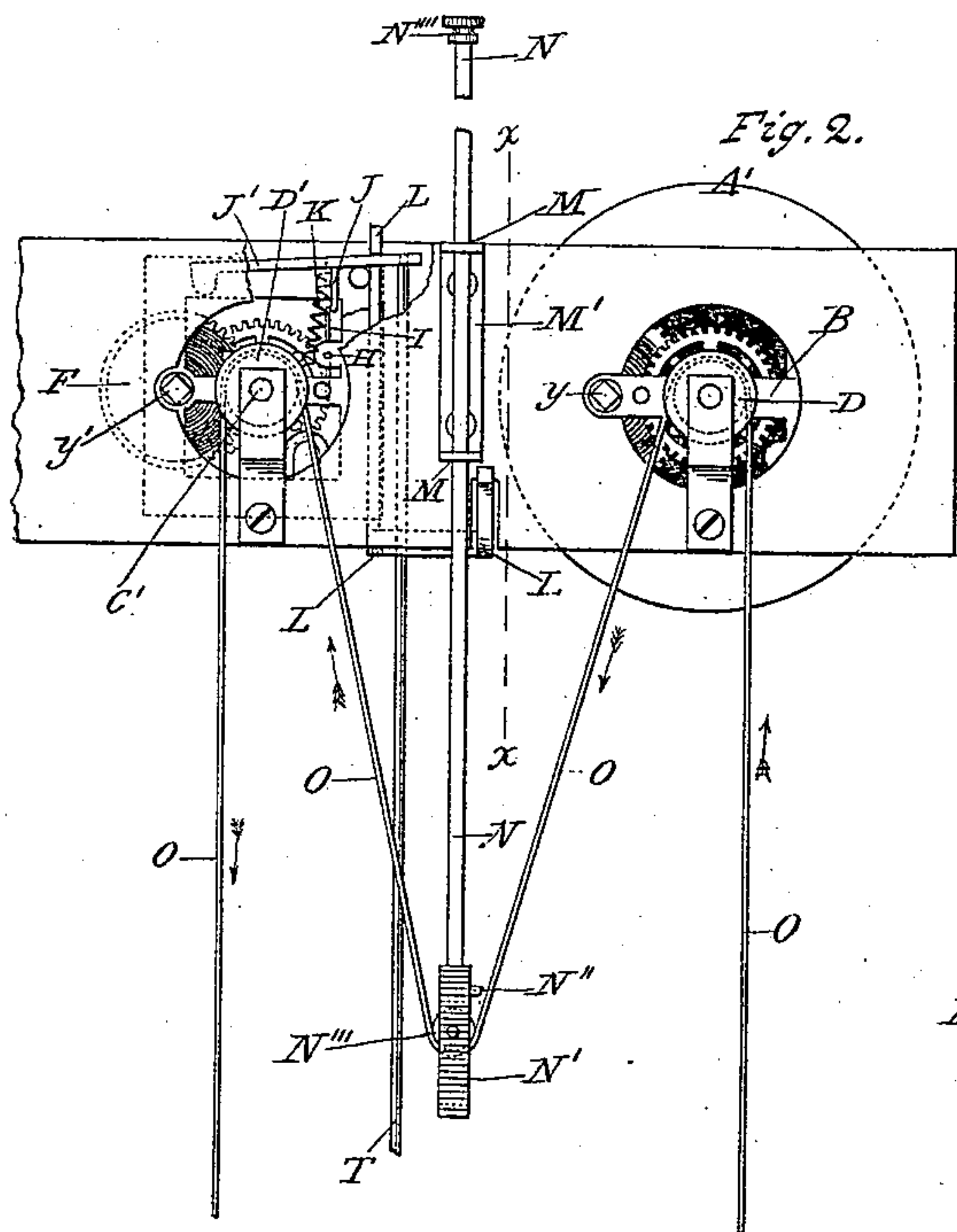
(No Model.)

3 Sheets—Sheet 2.

H. A. WAYNE.
RAILWAY TIME SIGNAL.

No. 355,850.

Patented Jan. 11, 1887.



Witnesses.

George S. Jones
C. A. Buchanan

Inventor

H. Albert Wayne
By W. Davidson Jones
his attorney

(No Model.)

3 Sheets—Sheet 3.

H. A. WAYNE.
RAILWAY TIME SIGNAL.

No. 355,850.

Patented Jan. 11, 1887.

Fig. 6.

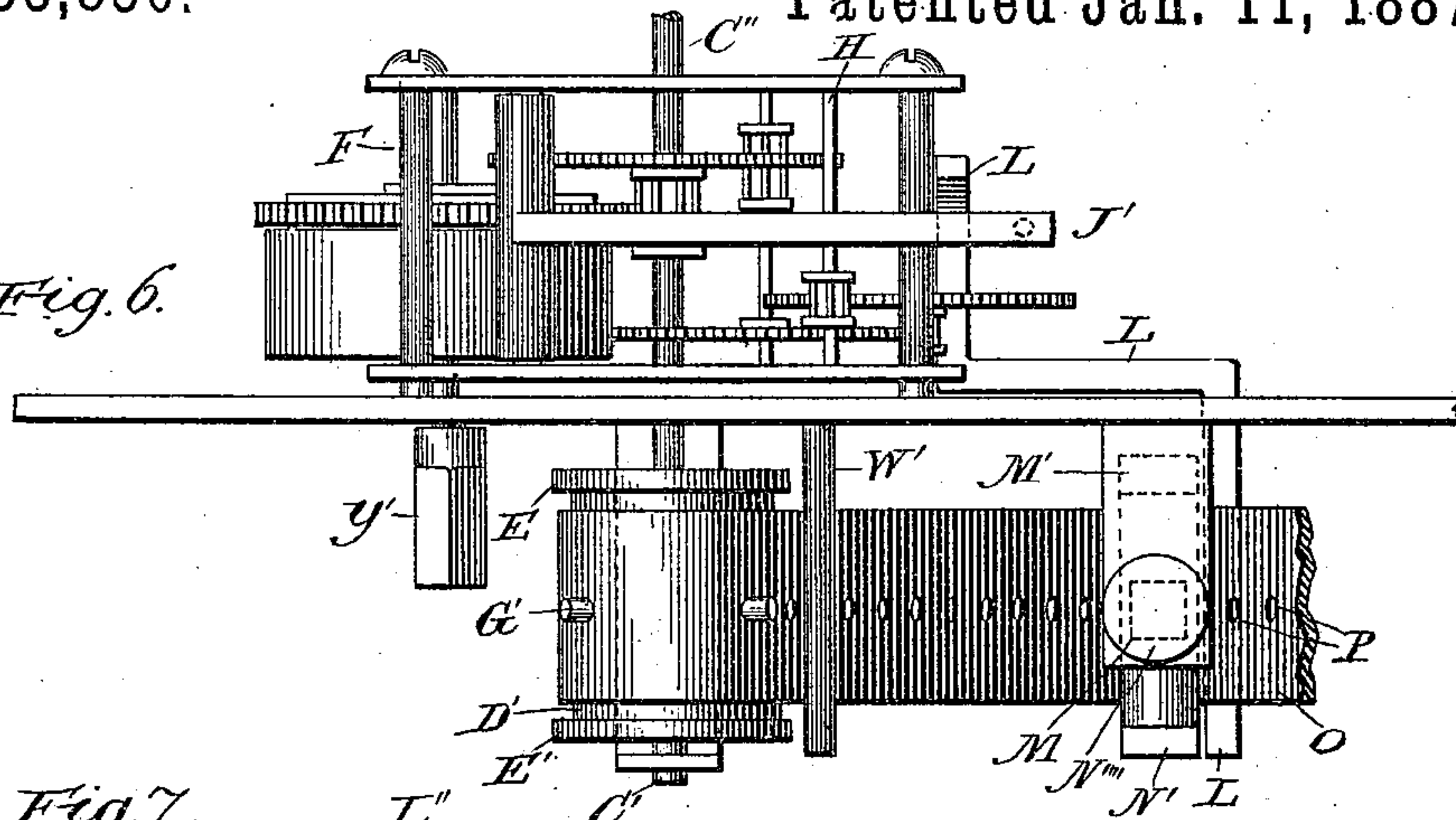


Fig. 7.

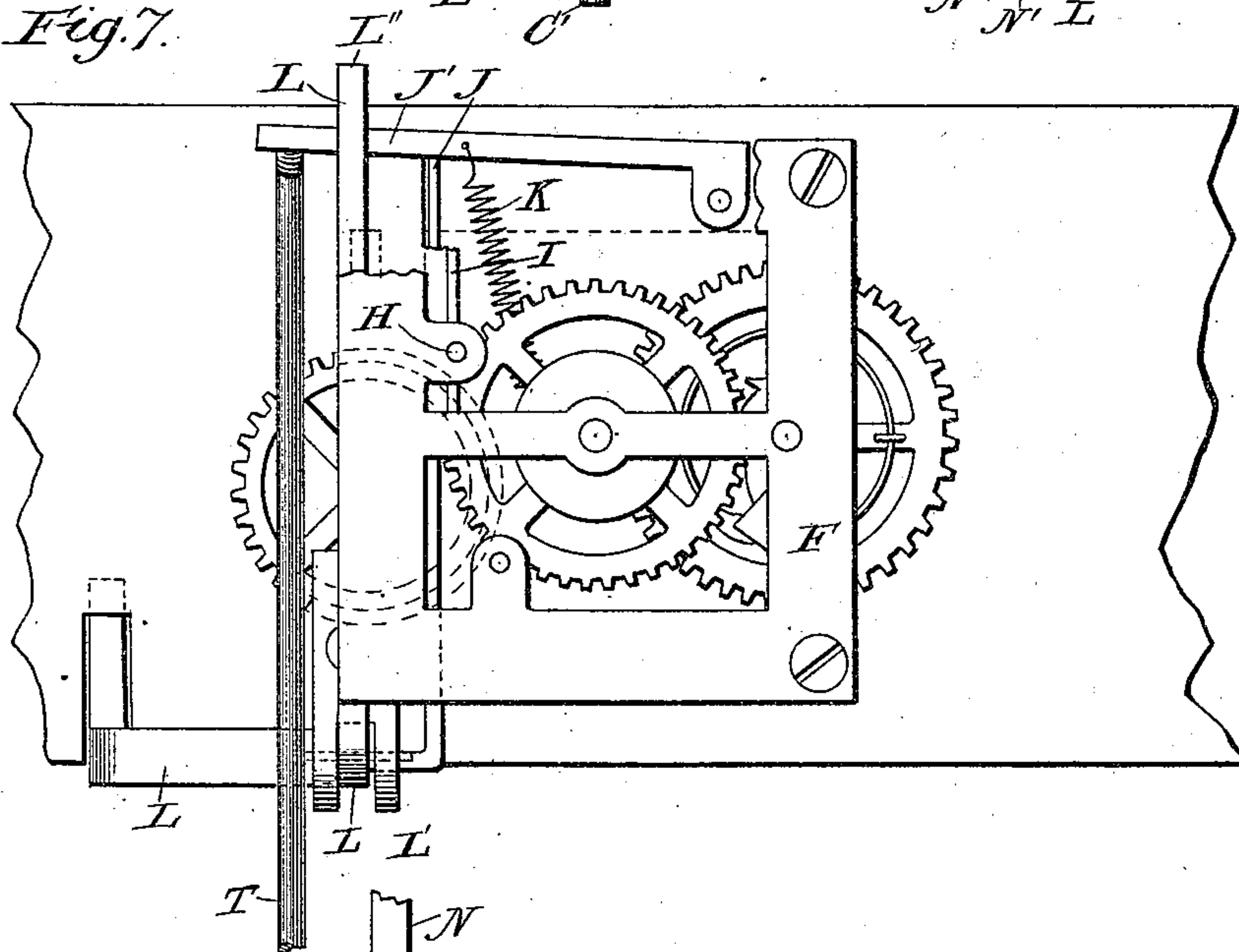
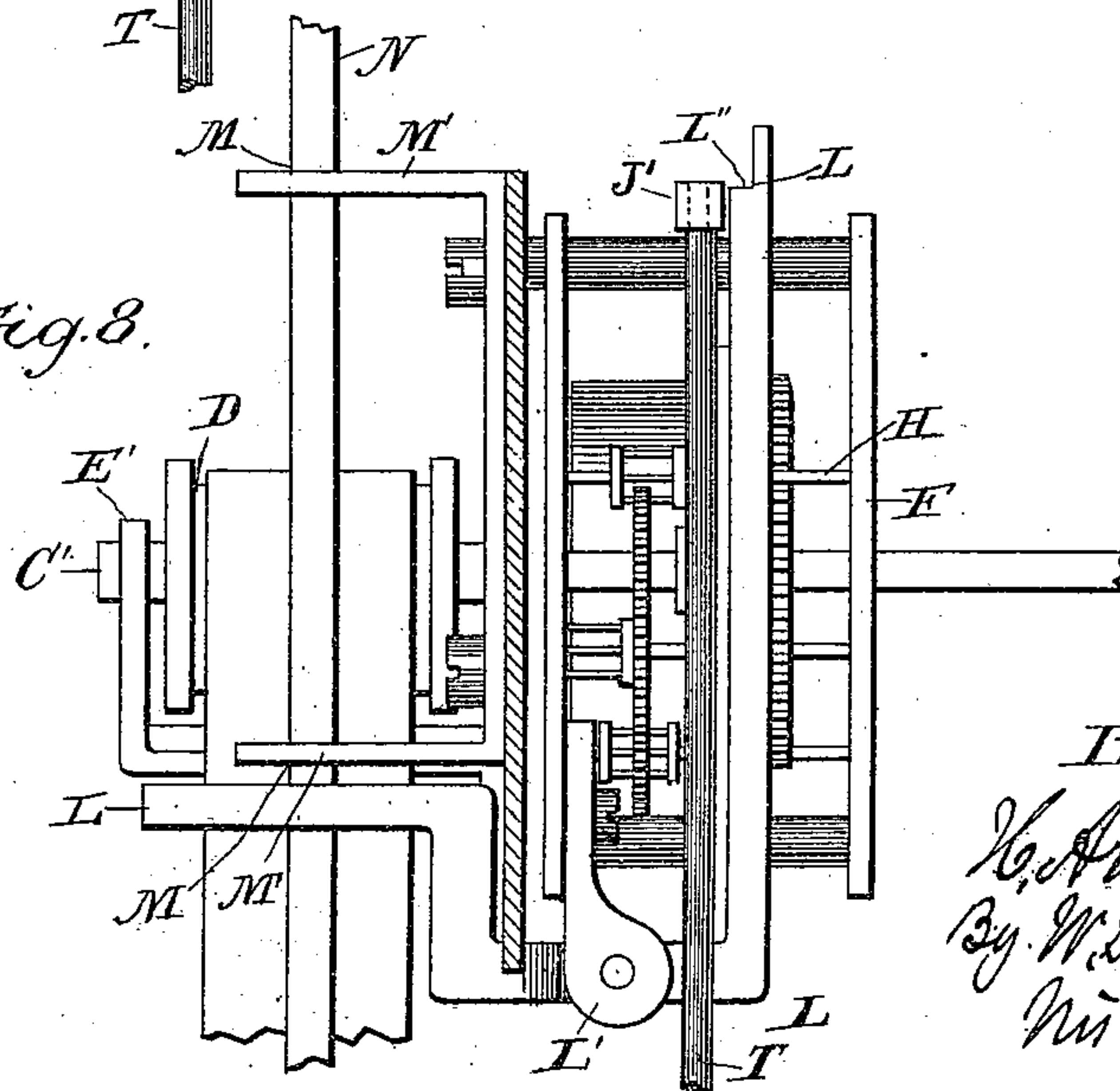


Fig. 8.



Witnesses:

W. Evans
Harmon

Inventor.

H. Albert Wayne
By *W. Davidson Jones*
his attorney

UNITED STATES PATENT OFFICE.

H. ALBERT WAYNE, OF FORT PLAIN, NEW YORK.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 355,850, dated January 11, 1887.

Application filed June 18, 1886. Serial No. 205,522. (No model.)

To all whom it may concern:

Be it known that I, H. ALBERT WAYNE, a citizen of the United States, residing at Fort Plain, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Railway Time-Signals, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to furnish an apparatus fitted for automatic operation by passing trains, to indicate the time of passage, for the information of the engineer and trainmen of a following train.

The invention consists of certain new and useful improvements upon those secured to me by Letters Patent dated November 16, 1880, and numbered 234,634, for time-signals for railways, and embodies the combination of a usual and ordinary clock with hands and a dial and a clock-movement without an escapement, that moves the hands of the indicating-dial, and having a stop-lever that is released by the passing train, the two clock-movements being so connected together by suitable mechanism that the indicator-clock remains immovable until a train passes, when it is released by an actuating-lever and moves until its indicating-hands catch up with and indicate the clock-time, when it is stopped, thereby indicating to the engineer and trainmen of the succeeding train the time its predecessor has passed.

The construction and operation will be described in reference to the accompanying drawings, wherein—

Figure 1 is a general front elevation of my apparatus and the connections with one of the rails of the track. Fig. 2 is a rear elevation of the clock-movements and a portion of their connecting mechanism. Fig. 3 is a cross-section on the broken line *x* in Fig. 2, showing the indicating-clock movement and details of its general construction. Fig. 4 is a plan of the clock-movements and a part of the connecting mechanism. Fig. 5 is a front or face elevation of the time-clock and indicating-clock movement with the hands and dial removed.

Similar letters and figures of reference indicate corresponding parts in each figure and the arrows the direction of motion; and Figs. 6, 7, and 8 are enlarged views of portions of Figs. 3, 4, and 5, respectively.

Referring to the drawings, A is the housing containing the mechanism, and A' is the boxing or casing to protect the lever connecting with the rail V. The upper front portion of the housing A is fitted with a semi-transparent clock-dial, *a*, over which the hour-hand *b* and minute-hand *c* traverse. The hands *b* and *c* may be protected from injury by a glass, *d*, contained in a suitable frame.

The figures and graduations on the semi-transparent clock-dial *a*, I preferably make or color black, and the interior of the case I illuminate at night by placing a lamp between the dial *a* and the clock-movement F, substantially as indicated by 12 in Fig. 3.

There is a door at the rear or back of the housing A, to allow access to the mechanism contained therein, and I also provide a small door at one side of the upper portion of the housing, (which is not shown,) to insert a lamp to illuminate the dial *a* at night.

Within the housing A is a clock-movement, B, of which A'' is the dial. This clock is of the ordinary and usual make—as an illustration, one of Seth Thomas' manufacture—with the central shaft, C', which operates the hands, lengthened out through the back, (see Fig. 4,) so as to receive the barrel D. (See Figs. 2 and 4.) This barrel D, I provide with flanges E and short pins G, set at equal distances apart. I also place within the housing A, and upon the same plane with the clock-movement B, a clock-movement, F. (See Figs. 1, 2, 3, 4, and 5.) This clock-movement F has no escapement; but in lieu thereof it is provided with (and upon the shaft H, that carries the escapement) a fly-wheel, I. This fly-wheel I (see Figs. 2 and 5) is held in position and prevented from revolving, when the clock-movement is wound up, by the pawl J on the trip-lever J'. The lever J' and pawl J are held in position so as to engage the fly-wheel I, by the spiral spring K, all substantially as shown.

L is an angular lever pivoted upon the bracket L', (see Figs. 2, 3, 4, and 5,) to support and hold in position in the rabbet L'' of the lever L the outward end of the retaining-lever J', thereby allowing the clock-movement to move forward by the elevation of the said lever J', and consequent disengagement of the pawl J from the arm I, which will hereinafter be more fully described.

The central shaft, C', of the clock-movement

F, I extend to the rear a sufficient distance, substantially as shown, (see Figs. 3 and 4,) to receive the barrel D', provided with the flanges E' and the pins G'. It will be well here to observe that the barrels D and D' are of the same diameter, and the short pins G and G' are of the same size and are placed the same distance apart in each barrel. I usually place four of these pins G and G' at quarters in the barrels; but this number may be increased or decreased without changing the nature of my invention.

The central shaft, C', of the clock-movement F, I extend or lengthen out forward of the movement, substantially as shown in Fig. 3, and secure it to the rear of the semi-transparent dial-plate *a*, with the hour and minute gear-wheels R to operate the indicating-hands *b* and *c*. The shaft C' may be of any desired length, to give ample room between the semi-transparent dial *a* and the movement F, to insert a lamp and to obtain access to the operating parts.

Within square perforations M in the bracket M', I place the guide-rod N, provided at its lower end with a suitable box, N', (see Figs. 2 and 3,) to carry and hold the friction-roller N'''. (See Figs. 2 and 3.) The upper end of the guide-rod N is provided with a nut, N'', to prevent the rod N from passing through the perforations M when not supported in its place by the endless belt O. The endless belt O, I make of ordinary light rubber belting, or any other suitable material, having perforations to exactly correspond with and to receive the pins G and G' on the barrels D and D'; or the belt O may be constructed of a linked metal chain having links of uniform length to correspond with and engage the pins G and G' on the barrels D and D'. This endless belt (to illustrate, commencing at the right in Fig. 2) extends up over the barrel D, then extending diagonally down to and through the box N' and under the friction-roller N''', and then diagonally upward and over the barrel D', and then extending down in a loop-like form (see Fig. 1) and up to the place of beginning, thereby forming an endless belt, as above described, all substantially as shown in Figs. 1, 2, 3, and 4.

I construct the tripping-stem F from a light ordinary rod of iron, and provide its lower end with a thread, 1, and nuts 2, 3, and 4, (see Figs. 1 and 2,) and place it in position, as shown, with the upper end supported in a suitable bearing, so located that the upper end of the rod or stem T will come in contact with the under side of the extreme outer end of the lever J', and with the lower end passing through the bracket 5, secured to the casing A', which forms a bearing or guide for the stem T, and with the extreme lower end of the stem T passing through the eye U' of the lever U. (See Figs. 1 and 3.) I secure this lever U to the rail V by clamping or bolting, substantially as shown, and adjust it upon the bearing or fulcrum 6 with the nuts 7, 8, and 9. The bracket

10, that supports the fulcrum 6, I secure to the casing A' with bolts, all substantially as shown.

The stem T is adjusted with the nuts 2, 3, and 4, to give the stem T sufficient end or longitudinal movement to elevate the lever J' into the rabbet L' of the angular lever L. Between the eye U' of lever U and the nut 2 I interpose a spiral spring 11. This spring 11 relieves the stem T from violent concussions, and consequent injury to the clock-movement by the passing of trains at high speed.

The stumps W and W' prevent the endless belt O from becoming disengaged from the barrels D and D', and the clock-movements B and F are wound up with a key applied to the stumps *y* and *y'*.

The operation of my invention is as follows: The time-clock B and indicating-clock F are wound up, and the time-clock is set at correct time. The hands of the dial *a* (see Figs. 1 and 3) are set to correspond with the hands of the time clock B. The pawl J on the lever J' engages and retains the fly-wheel I on the shaft H of the clock-movement F, thereby causing the clock-movement F to remain stationary or at rest. The endless belt O is adjusted on the barrels D and D', so as to cause the rod N, with the box N', roller N''', and lug N'' to be elevated sufficiently to cause the lug N'' to engage or contact with the angular lever L when the lever L is in the position shown in Figs. 2 and 3. The lever U is adjusted with the nuts 7, 8, and 9 upon the bracket 10, so as to cause the stem T to remain at the lowest position, with the nut 3 resting on the bracket 5. The clock-movement F is thereby held at rest while the time-clock runs, thereby gradually running over, with the barrel D, the endless belt O; and consequently, as the inner loop of the belt increases in length, thereby allowing the rod N, with box N' and roller N''', to gradually descend by their specific gravity, the lug N'' recedes away from the lever L. As a train passes the indicator the rail V is depressed at the point where the lever U is connected, thereby elevating the opposite or long end of the lever U, which, through the medium of the spiral spring 11 and nut 2, the stem T is elevated, so that the nut 2 engages the bracket 5 and the extreme upper end of the stem T presses up the lever J, and consequently carries with it the pawl J', and is held in this position by the rabbet L', of the lever L moving under the end of the lever J by the specific gravity of the opposite end of the angular lever L. This movement of the lever J' and pawl J releases the fly-wheel I on the shaft H, and thereby permits the clock-movement F to revolve the hands *b* and *c* of the dial *a*, which will continue until the slack of the endless belt O between the barrels D and D' is taken up by the barrel D' and the rod N is elevated sufficiently to cause the lug N'' to engage and elevate the lever L, thereby throwing back the rabbet L' from under the end of the lever J, thereby allowing the said lever, through the medium of the spiral spring K, to

fall and cause the pawl J' on said lever to engage the fly-wheel I and thereby stop the movement F, with the hands *b* and *c* indicating the same time on the dial *a* as the true time or the time indicated by the time-clock on the dial A"; or, to be more specific, as the slack of the endless belt O between the barrels D and D' is run over the barrel D' and taken up to the same extent as it was run over by the barrel D, the hands *b* and *c* of the indicating-clock dial *a* will correspond with the hands of the time-clock B, so that at a subsequent time, when another train passes, the hands *b* and *c* will indicate on the dial *a* the time of the passage of the previous train, and is again brought into operation to indicate the time the second train passes. By these operations the time of passage of the last train is always shown on the dial *a*, and may be seen by the engineer and trainmen of an approaching train, and the apparatus requires no attention, except to wind up the clock-movements from time to time, as may be necessary.

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

1. In railway-indicators, the combination, with the indicating-clock movement F, with its central shaft, C', extending to the rear and provided with a barrel, D', and extending forward from the said movement a suitable distance to and through the illuminated dial *a*, and having connected thereto and adapted to be operated thereby the indicating-hands *b* and *c*, of the time-clock B, having its central shaft, C, extending rearward and provided with a barrel, D, the rod N, the lug N'', friction-roller N''', the lever J', having attached thereto the pawl J, the retaining angular lever L, and the perforated endless belt O, all adapted to be operated by the stem T and the lever U by passing trains, all substantially as described, shown, and set forth.

2. In railway-indicators, the combination, with the time-clock B, with its central shaft, C', extending rearward and provided with a barrel, D, having retaining-pins G, of the indicating-clock movement F, with its central shaft, C', extending rearward to receive the barrel D', provided with the retaining-pins G', and forward through the semi-transparent dial *a*, and provided with the indicating-hands *b* and *c*, the arm I, the lever J', with the pawl J attached, the angular lever L, containing the rabbit L'', the box N', having permanently attached the lug N'', the friction-roller N''', the guide-rod N, the endless perforated belt O, engaging the pins G and G' in passing over the barrels D and D', and supporting the friction-roller N''', the stem T, provided with the thread 1 and the adjustable nuts 2, 3, and 4 and spiral spring 11, and the lever U, connected to the rail V, all adapted to be operated substantially as shown and described.

3. The time-clock B, with its central shaft, C, extended to the rear, and the indicating-

clock movement F, with its central shaft, C', extending to the front and rear, combined with the dial *a*, hands *b* and *c*, barrels D and D', retaining-pins G and G', endless perforated belt O, fly-wheel I, pawl J, lever J', angular lever L, friction-roller N''', lug N'', guide-rod N, stem T, and lever U, connected to the rail V, and adjustable support 6, all constructed and operating substantially as and for the purposes described and set forth.

4. The bracket 5, combined with the stem T, provided with the thread 1, nuts 2, 3, and 4, spiral spring 11, and lever U, pivoted upon the fulcrum 6, and provided with an eye, U', to receive the lower end of the stem T, with the opposite end of the lever connected to the rail V, all substantially as described and shown.

5. The bracket 10, secured to the casing A', combined with the adjustable fulcrum 6, rail V, lever U, provided with the eye U', spring 11, nuts 2 and 3, bracket 5, and the stem T, provided with the screw-thread 1, all substantially as and for the purposes shown, described, and set forth.

6. The time-clock B, provided with the barrel D, containing retaining-pins G, on the central shaft, C, in combination with the indicating-clock movement F, constructed and operating as described, and provided with a barrel, D', on the central shaft, C', containing the retaining-pins G', and the endless belt O, provided with perforations P, to engage and receive the retaining-pins G and G', and the friction-roller N''', all constructed and operating so as to indicate to the engineer of an approaching train the time of passage of the preceding train, all substantially as specified and described.

7. The time-clock B, provided with the barrel D, and the indicating-clock movement F, constructed as described, and provided with the barrel D', and the pins G and G', in combination with the endless belt O, having the perforations P, the rod N, box N', friction-roller N''', and lug N'', all constructed to operate as set forth, and for the purposes described.

8. The time-clock B, provided with the barrel D, and the indicating-clock movement F, constructed as described, and provided with the barrel D', the retaining-pins G and G', in combination with the endless belt O, having the perforations P, the rod N, box N', lug N'', friction-roller N''', the lever J', pawl J, fly-wheel I, and angular lever L, all constructed to operate as described, and for the purposes set forth.

In testimony whereof I have hereunto subscribed my name, this the 22d day of May, in the year 1886.

H. ALBERT WAYNE.

In presence of—

W. DAVIDSON JONES,

I. G. MEECH,

S. B. DUNNING.