

(No Model.)

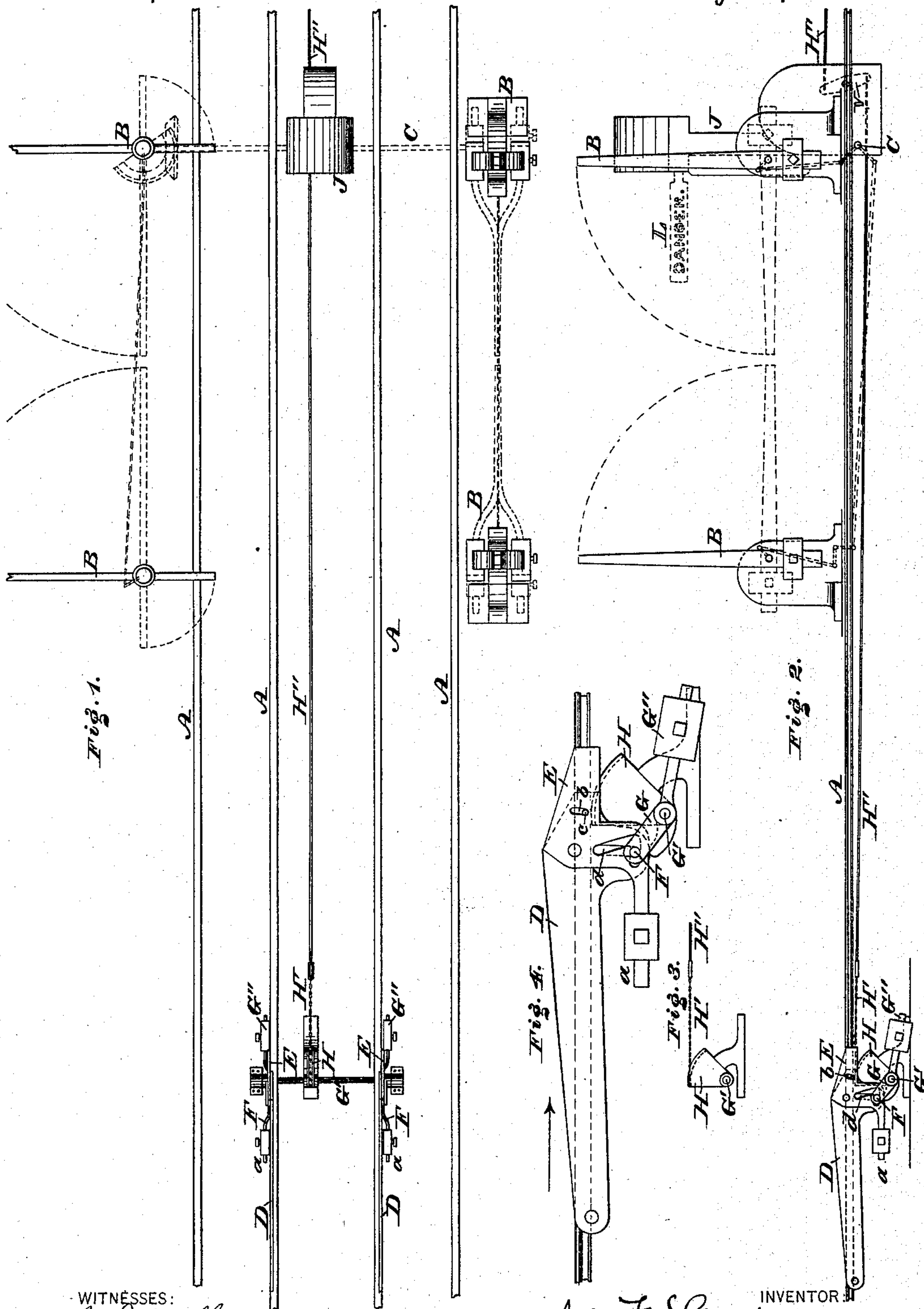
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J. F. SHARP.

AUTOMATICALLY OPERATING GATES AND SIGNALS.

No. 322,327.

Patented July 14, 1885.



WITNESSES:

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2 Sheets—Sheet 2.

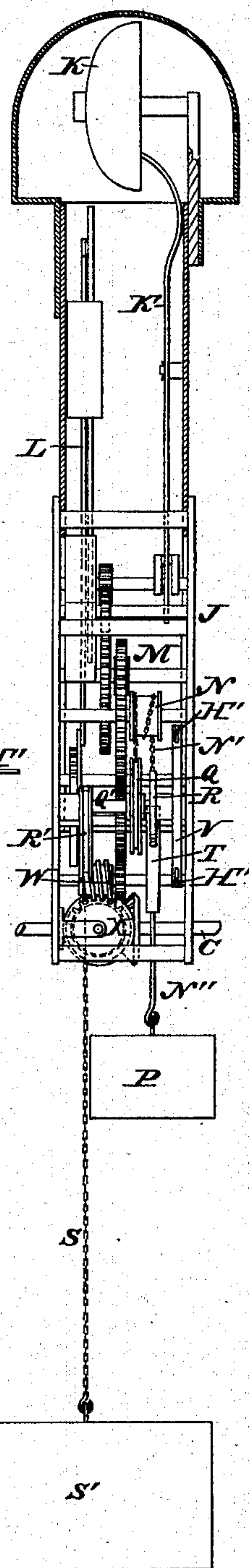
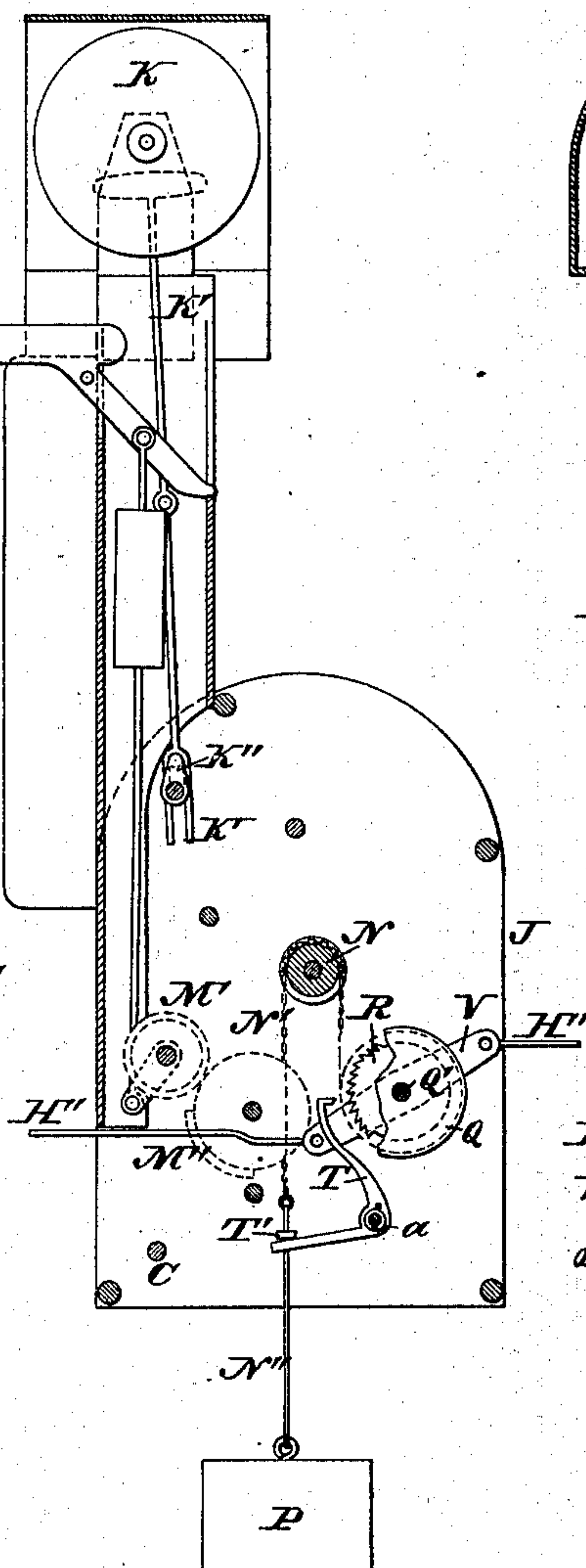
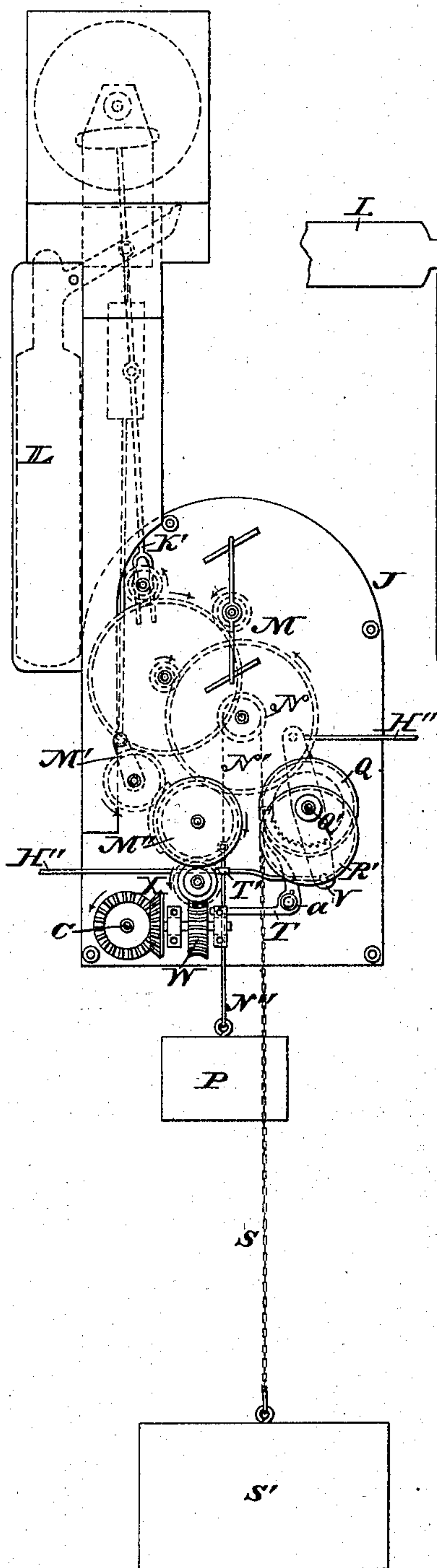
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Fig. 5.

Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

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AUTOMATICALLY OPERATING GATES AND SIGNALS.

SPECIFICATION forming part of Letters Patent No. 322,327, dated July 14, 1885.

Application filed August 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SHARP, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Automatically Operating Railroad Gates and Signals, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a top or plan view of means for automatically operating railroad gates and signals embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a side elevation of a detached portion. Fig. 4 is a side view of a detached portion on an enlarged scale. Figs. 5, 6, and 7 are views of detached parts enlarged.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of means for automatically displaying a danger-signal and ringing a gong or bell adjacent to a railroad-crossing and closing the gates thereof, and automatically restoring the parts, as will be hereinafter fully set forth.

Referring to the drawings, A represents the track of a railroad, and B represents pivoted gates located at one of the crossings of the same, said gates being operated by a rotary shaft, C, and gearing, as will be hereinafter fully set forth.

D represents a lever, which is pivoted at one end to the side of a track or a bearing adjacent thereto, and its opposite end rises above the level of the track, as most clearly shown in Fig. 4.

To the elevated end of the lever D is pivoted another lever, E, of elbow shape, one limb being weighted, as at *a*, and the other limb being slotted, as at *b*, to receive a guide-pin, *c*, which projects from the side of the lever D. In the main portion of the lever E is an angular slot, *d*, one limb whereof extends upwardly and the other limb extends horizontally, and into said slot projects a pin, F, which is formed with or secured to the crank G of a rotary shaft, G', which extends transversely and is properly mounted on the road-bed.

A weighted arm, G'', is connected with the

shaft G' or the crank G, the object whereof is to force the pin F upwardly either against the upper wall of the horizontal limb of the slot *d* or into the upwardly-extending limb of said slot for purposes to be hereinafter explained.

Keyed or otherwise secured to the shaft G' is a segment, H, whose periphery is grooved and to which is attached a chain, H', which bears against the periphery of the segment and is connected with a rod or bar, H'', which leads to the mechanism which operates the signal and the gates, as will be hereinafter described.

The levers D E and connected mechanism are duplicated on opposite sides of the crossing, so as to provide for operation of the signal and gates in both directions of the track. Should the train or cars run in the direction of the arrow, Fig. 4, the wheels strike the lever D, the lever E being also depressed. As the pin F remains in the horizontal limb of the slot *d* the shaft G' is rotated, whereby the rod H'' is operated, and motion is communicated to the rod C of the gates by the mechanism hereinafter set forth. Should the train or cars run in the direction opposite to that of the arrow, Fig. 4—that is, the train may be backing, or having left the lever D on the opposite side of the crossing—the weight of the cars depresses the lever E, so that the pin F registers with the vertical limb of the slot *d*, and the descent of the levers D E fails to rotate the shaft G', so that the signal and the gates are not operated.

J represents a box or tower in which is supported a bell or gong, K, and to which is pivoted a signal-arm, L, said box being located adjacent to the crossing, so that the arm L may be readily seen in the path of the crossing.

The hammer K' of the bell or gong K has one end slotted or forked and engaged by a crank, K'', which receives motion from a train of gearing, M, within the lower part of the box or tower J, and the inner end of the arm L is weighted and is connected with a crank-wheel, M', of the gearing M, the wheel M'' of said gearing being mutilated, so as to rotate the crank-wheel M' at intervals.

In the gearing M is a drum, N, around which

is wound a chain, N', to whose lower end is attached a weight, P.

Adjacent to the drum N is a drum, Q, to which the chain N' is secured, the shaft Q' of said drum Q also carrying a mutilated ratchet, R, and an eccentric disk, R', the latter having attached to its periphery a chain or rope, S, to whose lower end is secured a weight, S', which is superior to the weight P.

T represents the pawl or dog of the ratchet R, the same being pivoted to the box J and made of angular form, its lower or outer limb being perforated or slotted for the passage of the rod N'', which depends from the chain N', and has the weight P directly attached to it, the pawl T being controlled or held in engaging contact with the mutilated ratchet-wheel R by means of a spring, a'.

To said rod N'' is secured a nut or stop, T', which is so located above the lower limb of the pawl T that when the weight P descends the stop T' bears against the pawl T and forces its nose from the ratchet R.

To the shaft Q' is secured a double crank-arm, V, each end of the same having pivoted to it the rods H'', so that said arm is operated by the trains approaching the crossing on the different tracks.

In the gearing M are the worm and worm-wheels W and bevel-wheels X, one of the wheels X being mounted on the shaft C, which operates the gates B B.

The normal position of parts or the parts at rest is shown in Fig. 5, it being seen that the signal-arm L is not displayed, it being controlled by the engagement of the teeth of the mutilated wheel M'' with the crank-wheel M', and the weight S' holds the train or gearing M immovable.

When the engine or car approaches the crossing and reaches the lever D, it depresses the latter, as has been stated, whereby the arm V is operated and the shaft Q', with connected parts, is rotated. This causes the winding of the chain of the weight S' and the elevation of the same, it being remembered that the lever D is depressed by the weight of the engine or car or train generally. The gearing M is also operated by the weight P, which is forced to act by reason of the slack left in the chain N' between the drums N and Q, thereby permitting the weight on the arm L to become operative, so as to raise the said arm displaying the danger signal. As the crank-wheel K'' is rotated the gong or bell is struck and sounded, thus directing attention to the approaching engine, car, or train, and as the wheels X and the shaft C are rotated the gates are lowered, the crossing thus being guarded. As soon as the engine, car, or train has passed the crossing the rod H'' is released. The weight P slowly descends after the elevation of the weight S, and when the stop or nut T' strikes the outer end of the pawl T it releases the mutilated ratchet-wheel R until the teeth are cleared, when the action of the heavy weight S' reverses the mechanism, raising the weight

P, restoring the same and all other parts to their normal position, ready for the approach of the next train, car, or engine. I prefer the use of the worm and worm-wheel mechanism (shown in the drawings) in the box J, as the gates are thus always locked and cannot be tampered with.

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

1. The rails, in combination with two pivoted levers, one of which is weighted and slotted, the other having a pin operating in a slot of the first, a crank having a pin operating in a slot of the weighted lever, an oscillating shaft to which said crank is fastened, a reciprocating rod, and means for converting the oscillating motion of the shaft to the reciprocating motion of the rod, substantially as described.

2. The rails, in combination with pivoted lever D, having pin c, the pivoted lever having slots b and d, crank G, having pin F, oscillating shaft G', to which said crank G is fastened, rod H'', and means connecting said rod and shaft whereby the oscillating motion of the shaft is converted into the reciprocating motion of the rod, substantially as described.

3. The pivoted levers D E, crank G, with pin F, the shaft G', and connection H'', in combination with the weighted arm G'', substantially as and for the purpose set forth.

4. The lever D, in combination with the lever E, crank G, and shaft G', and weighted arm G'', said lever E having an angular slot in which is fitted a pin on the crank G, substantially as and for the purpose set forth.

5. The bell-hammer, in combination with a slotted arm, K', crank K'', the connection H'', and intermediate gearing, substantially as and for the purpose set forth.

6. The weighted arm, in combination with the crank-wheel M', mutilated crank-wheel M'', the connection H'', and intermediate gearing, substantially as and for the purpose set forth.

7. The drum N of the gearing M, chain N', weight P, and drum Q, in combination with the ratchet R, pawl T, and stop T', substantially as and for the purpose set forth.

8. The drum N of the gearing M, chain N', weight P, drum Q, mutilated ratchet R, eccentric R', chain S, weight S', pawl T, and stop T', combined and operating substantially as and for the purpose set forth.

9. The drum N, eccentric R', and ratchet R, and pawl, gearing M, the bell, and the signal arm, in combination with the crank-arm V and connection H'', substantially as and for the purpose set forth.

10. The drum N, eccentric R', ratchet R, and pawl, crank-arm V, connection H'', gearing W and X, and intermediate gearing, in combination with the gate-operating shaft, substantially as and for the purpose set forth.

Witnesses: JOHN F. SHARP.

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