

(No Model.)

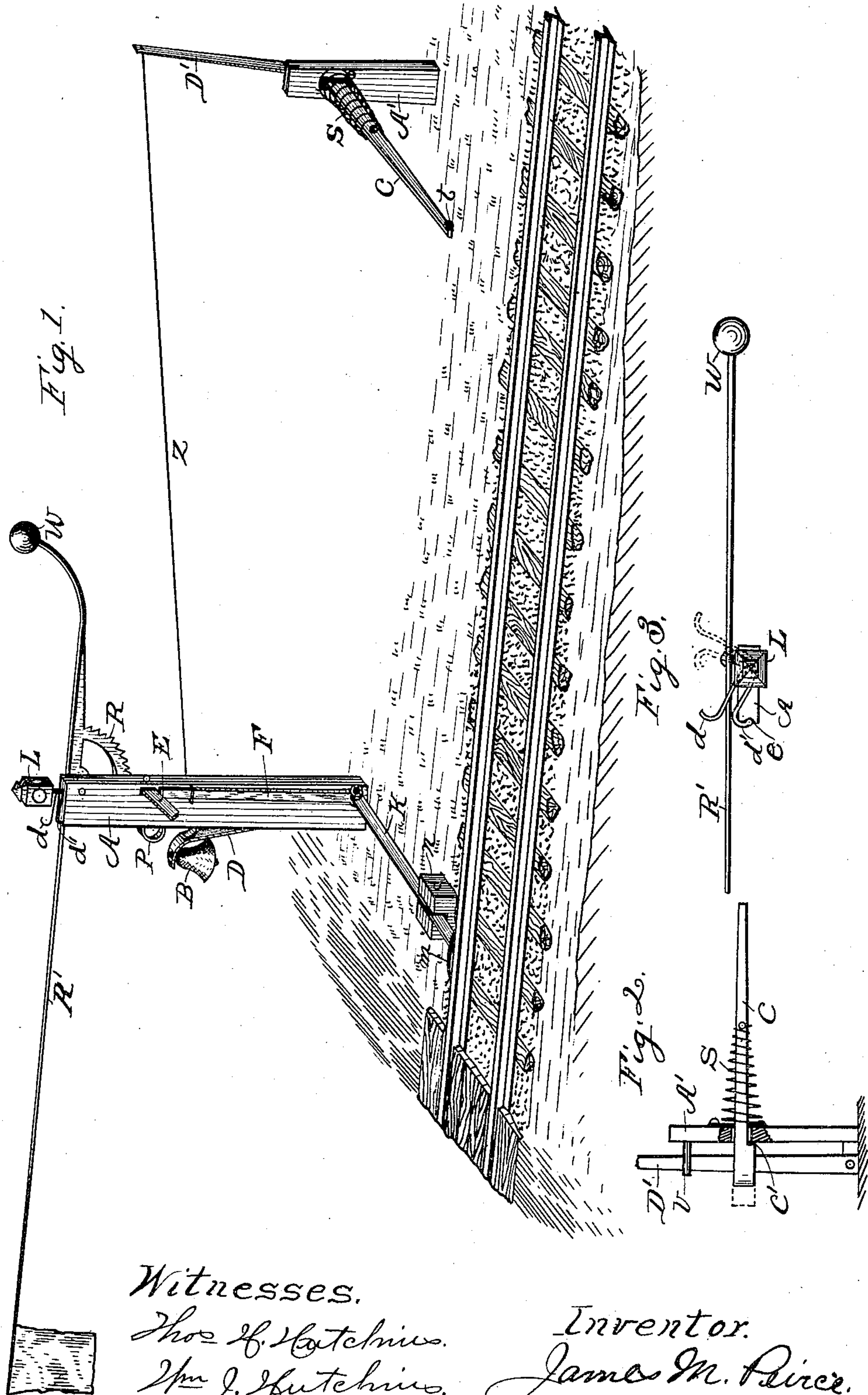
2 Sheets—Sheet 1.

J. M. PEIRCE.

AUTOMATIC RAILWAY SIGNAL.

No. 323,958.

Patented Aug. 11, 1885.



Witnesses.

Thos H. Hutchins.

Wm J. Hutchins.

Inventor.

James M. Peirce.

(No Model.)

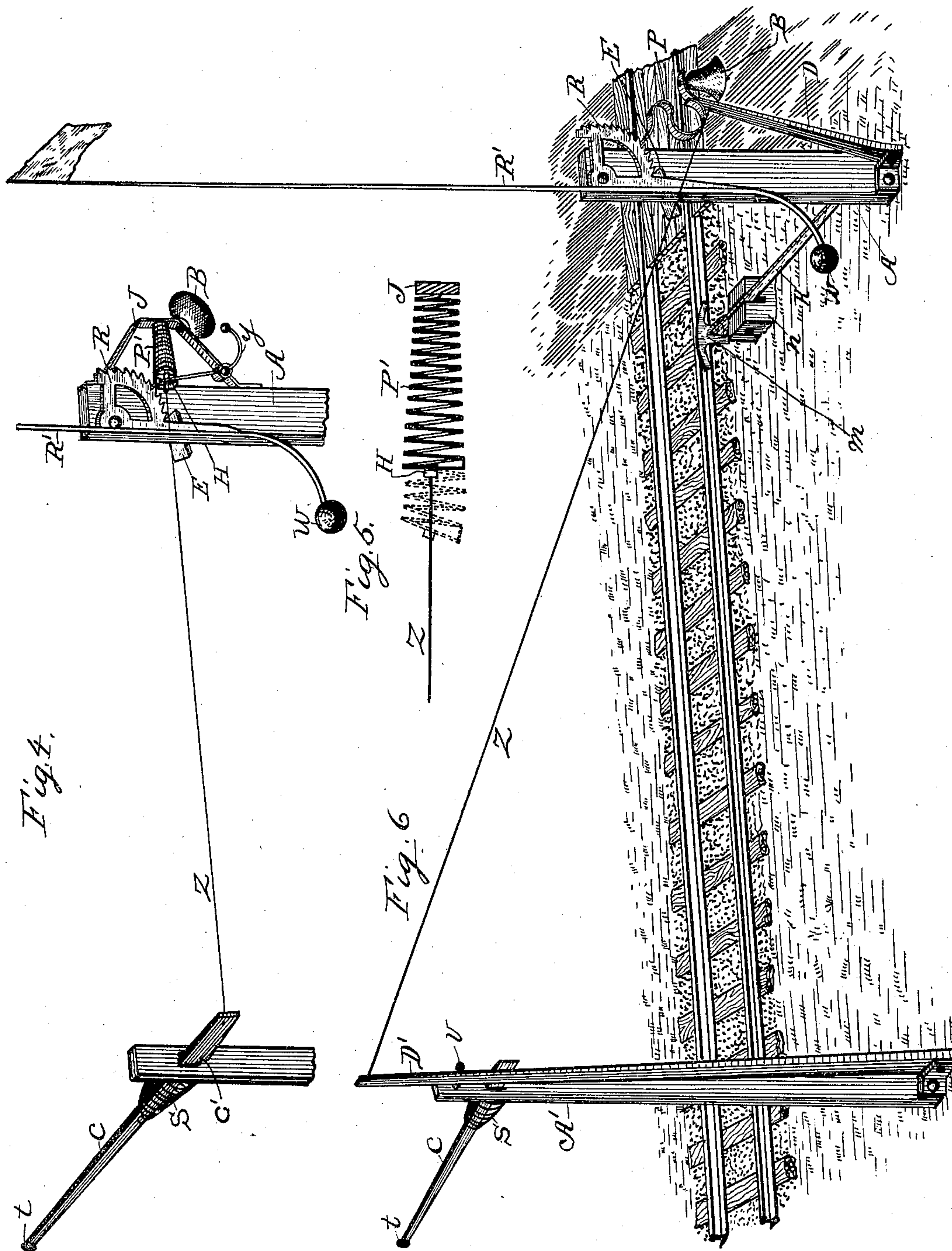
2 Sheets Sheet 2.

J. M. PEIRCE.

AUTOMATIC RAILWAY SIGNAL.

No. 323,958.

Patented Aug. 11, 1885.



Witnesses.

Thos. H. Hutchins.
Jm. J. Hutchins

Inventor.

James M. Peirce.

UNITED STATES PATENT OFFICE.

JAMES M. PEIRCE, OF JOLIET, ILLINOIS.

AUTOMATIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 323,953, dated August 11, 1885.

Application filed July 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. PEIRCE, a citizen of the United States of America, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Automatic Railroad-Signals, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a perspective view; Fig. 2, a side elevation of one of the posts, having a portion broken away, showing how its parts are attached; Fig. 3, a top plan view of one of the posts, showing the manner of turning the lamp; Fig. 4, a perspective view of a broken off portion of the upper part, showing its mechanism; Fig. 5, a side view of a coil-spring used as a pawl and Fig. 6 a perspective view on the opposite side of Fig. 1.

This invention relates to certain improvements in automatic railroad-signals, to be used at railroad-crossings or street-crossings, and so arranged as to be operated to lower a flag-bar and ring a bell or gong by an approaching train, and while the train is a considerable distance from the crossing, and to raise the flag-bar to its former position as the train passes the crossing. A colored lamp is used at night as a signal, and is so arranged as to be properly turned by the flag-bar as it is raised or lowered. It is intended that the flag-bar and its operating mechanism shall be placed high enough so a train or carriage may pass under it without striking it while it is down.

This invention consists of two posts set into the ground, one at the side of a crossing and the other at a considerable distance from the crossing, the one at the crossing having a flag-bar pivoted to it near the top, and arranged to be lowered by means of a pawl-and-ratchet mechanism, and raised by a weight on the inner end of the flag-bar when released by pressure of a car-wheel on the foot of a ground-lever. A bell is attached to an arm, to which the pawl which operates the ratchet is also attached, and when caused to vibrate will ring as a warning. The other post has a lever passed loosely through a mortise therein and attached by means of a conical spring, and so arranged that the outer end of said lever may engage with a train at the oil-boxes, or may

be high enough to engage with projections placed on the top of the cars, which causes said levers to vibrate. The opposite end of this lever bears against a vertical arm, and as it vibrates it causes said arm to vibrate also, and by means of a wire connecting said arm, with the arm to which the pawl is attached, to the post at the crossing, said arm is in turn vibrated in like manner, which will cause the pawl to operate on the ratchet-segment and lower the flag-bar, and at the same time ring the bell, as stated.

Referring to the drawings, A represents a post set into the ground at one side of a crossing. To the side and near the top of this post is pivoted a segment-ratchet, R, having a flag-bar, R', firmly secured to it, as shown in Figs. 1, 4, and 6. The outer end of this flag-bar has a flag attached, to be used as a signal in the day-time. A weight, W, at the inner end of said bar is for the purpose of lowering and holding that end lowered and the flag-bar upright after a train has passed. The weight end of the flag-bar is curved, as shown in Figs. 1, 4, and 6, so the weight W will be at one side of the line perpendicular with the bar when at rest, for the purpose of leverage, and be out of the way of post A.

At or near the bottom of post A is firmly secured a spring-arm, D, as shown in Fig. 6. To the upper end of said arm is attached a spring-pawl, P, and also a bell, B. The pawl P is set so that when the arm D is pulled forward the pawl will engage with the ratchet-segment R, which will turn said ratchet a short distance each time said pawl so engages, and when the said ratchet is so turned it is held from turning back at each stroke or movement of the pawl by a latch, E, pivoted in the post A in such manner that one end will engage with the ratchet-teeth, while the other end projects far enough from the opposite side of the post to form a weight to hold it engaged with the ratchet-teeth, as shown in Figs. 1, 4, and 6.

K is a ground-lever pivoted to a short post or block, n, near the track and between the track and post A. This lever K has a foot, m, formed on its end next to the track, and arranged so it will project a short distance above the tread of the rail, close to one side of the rail, as shown in Figs. 1 and 6,

while the end of said lever next to post A is pivoted to the lower end of a finger, F, supported by a proper guide so its upper end will come under the latch E.

5 When the foot *m* is depressed by the wheels of a passing train, it will raise the finger F, which will in turn raise the outer end of latch E and lower its inner end from the ratchet-teeth, thus disengaging said latch from the
10 segment-ratchet R, permitting the bar R' to be raised by the weight W on its inner end as said weight descends.

A' is a post set into the ground a considerable distance from the crossing, and has pivotally connected to it near its base an arm, D', which is connected to the spring-arm D at the crossing by a wire, Z, and prevented from being pulled too far that way by a pin, V, set into post A' near the top, as shown in Figs.
20 2 and 6.

Through a mortise in post A' is loosely placed a lever, *c*, connected with and held in proper position in said post by a conical spring, S, (shown more particularly in Fig. 2),
25 and so arranged that its short end will bear against the arm D' and its long end will extend out to one side of the track, as shown in Figs. 1 and 6. A shoulder, *c'*, on its short end prevents it from being drawn farther
30 through the post. The outer end of said lever *c* is padded at *t*, for the purpose of protection to the parts when engaging. By thus connecting the lever *c* with post A' by said conical spring the said lever may be moved
35 about in any or all directions, or pushed back, as shown by dotted lines in Fig. 2, and the spring will return it to its proper position.

A lamp, L, is placed on the top of post A by means of a standard on the bottom of the
40 lamp, resting in a socket in said post. To this standard is firmly attached a pair of arms, *d* and *d'*, (shown in Fig. 3,) and so arranged as to be one on either side of the flag-bar R' when said bar is in an upright position. The
45 arm *d'* is bent on its outer end to form a hook. When the flag bar is lowered, it will, as it descends, bear against said arm and force its hooked end around the post A, so it will catch in a notch, *e*, in said post, as shown in Fig. 3,
50 thus holding the lamp in a position to expose its danger-light up and down the track or street, and hold it there so a jar or shock to the post or bar will not misplace it until the bar rises, when it engages with arm *d*, the end
55 of which is curved out so the bar will not miss it, and force it back, together with arm *d'*, as shown by dotted lines in Fig. 3, to turn the lamp and remove the danger-light from view on the track or street.

60 The spring pawl P is crooked, as shown in Fig. 6, so it will not be rigid in its engagement with the ratchet-segment R, as its movement may at times be very rapid, and a rigid pawl would in such case be disastrous to the parts.
65 This spring-pawl may be substituted by a coil-spring, P', attached to a frame, J, as shown in Figs. 4 and 5, and having the wire Z con-

nected direct with the spring by means of the cross-bar H on the face end of said spring, and so arranged that the upper part of the
70 spring will engage with the segment-ratchet and operate as a pawl.

When the lever *c* is moved to pull on the wire Z, it will in this instance stretch spring P', as shown by dotted lines in Fig. 5, and partially turn said ratchet each time the spring
75 is so stretched. The part of said spring which so engages is flexible, and will resist a sudden jerk and permit said ratchet to be moved easily without any jerking.
80

A knocker-arm, *y*, is pivoted to frame J at one side, and has an upwardly-extending arm which rests against cross-bar H, and when the spring P' is stretched it will cause said
85 knocker-arm to move so its knocker will strike a gong-bell, B, which is rigidly attached to frame J, and thus ring as a warning.

The post A' may be short, so lever *c* may engage with a train at the oil-boxes, as shown in Fig. 1, or high enough so lever *c* may en-
90 gage with projections placed on or near the top of the cars, as shown in Fig. 6, and wire Z may be connected direct with lever *c*. (See Fig. 4.)

The operation of this device is as follows:
95 When a train is nearing a crossing, it will engage with lever *c*, and as it passes said lever each car or projection on the cars will move said lever forward, and spring S will as often return it, and thus keep moving arm
100 D', pulling on wire Z, which will in turn and as often pull on arm D, causing the pawl P to engage with segment-ratchet R, to turn it, as shown in Fig. 6 to a position shown in Fig. 1
105 shown, and at the same time keep ringing the bell B at each such pull or stroke, thus ringing the bell and lowering its signal-flag, or, if at night, exposing its danger-light to trains or
110 carriages approaching the track before the train has reached the crossing, and as the train passes the crossing the wheels will depress the foot *m*, as stated, and permit the weight W to raise the flag-bar and turn the
115 lamp to indicate a clear crossing.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is as follows, to wit:

1. In the railroad-signal described, the combination of post A, having the ratchet-segment
120 R pivoted thereto, flag-bar R', spring-arm D', bell B, pawl P, and latch E, with post A', having the lever *c* and arm D', connected with arm D by the wire Z, and adapted to operate to lower the flag-bar and ring the bell,
125 in the manner and for the purpose set forth.

2. In the railroad-signal described, the post A, having the segment-ratchet R pivoted thereto, flag-bar R', having the weight W, and the latch E, in combination with the ground-
130 lever K, pivoted to the block *n*, and having the foot *m* and finger F, and adapted to disengage latch E from the teeth of segment-ratchet R to permit the flag-bar R' to rise, in

the manner specified, and for the purpose set forth.

5 3. In the railroad-signal described, the segment-ratchet R, having the flag-bar R' attached thereto, in combination with the pawl, as described, and adapted to operate the flag-bar by means of lever *c* and wire Z, substantially as and for the purpose set forth.

10 4. In the railroad-signal described, the lever K, pivoted to the block *n* and finger F, and having the foot *m* adapted to be depressed by the wheels of a passing train to raise the finger F to disengage latch E from ratchet R, in the manner and for the purpose set forth.

15 5. In the railroad-signal described, the lever *c*, connected with post A' by means of the conical spring S, and adapted to have universal

movement, as specified, and for the purpose set forth.

6. In the railroad-signal described, the combination of the lamp L, having the hooked arms *d d'*, post A, and tilting flag-bar R', as and for the purpose set forth. 20

7. In the railroad-signal described, the post A', having the arm D', lever *c*, and spring S 25 attached thereto, in combination with post A, having the pawl-and-ratchet mechanism, as shown, connected with arm D' by the wire Z, and adapted to lower the bar R' and ring the bell B, in the manner and for the purpose 30 specified.

Witnesses: JAMES M. PEIRCE.

WM. J. HUTCHINS,

THOS. H. HUTCHINS.