

(No Model.)

4 Sheets—Sheet 1.

G. W. KELLER.
RAILROAD SIGNAL.

No. 573,414

Patented Dec. 15, 1896.

Fig. 8.

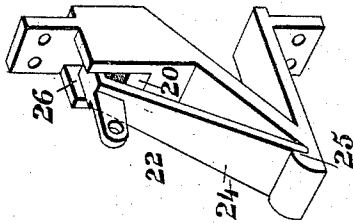
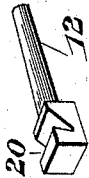
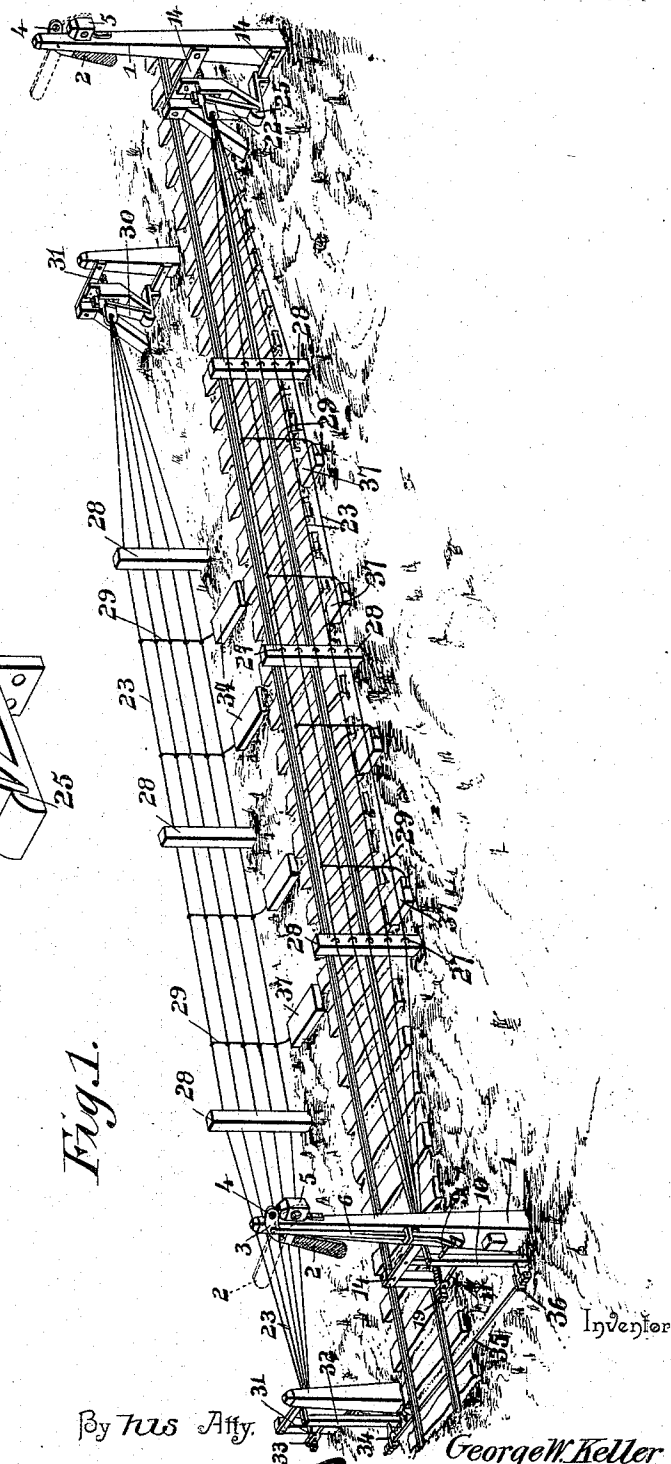


Fig. 3.

Fig. 1.



Witnesses

James McLaughlin
[Signature]

By *his* Atty.

George W. Keller
Attorney

(No Model.)

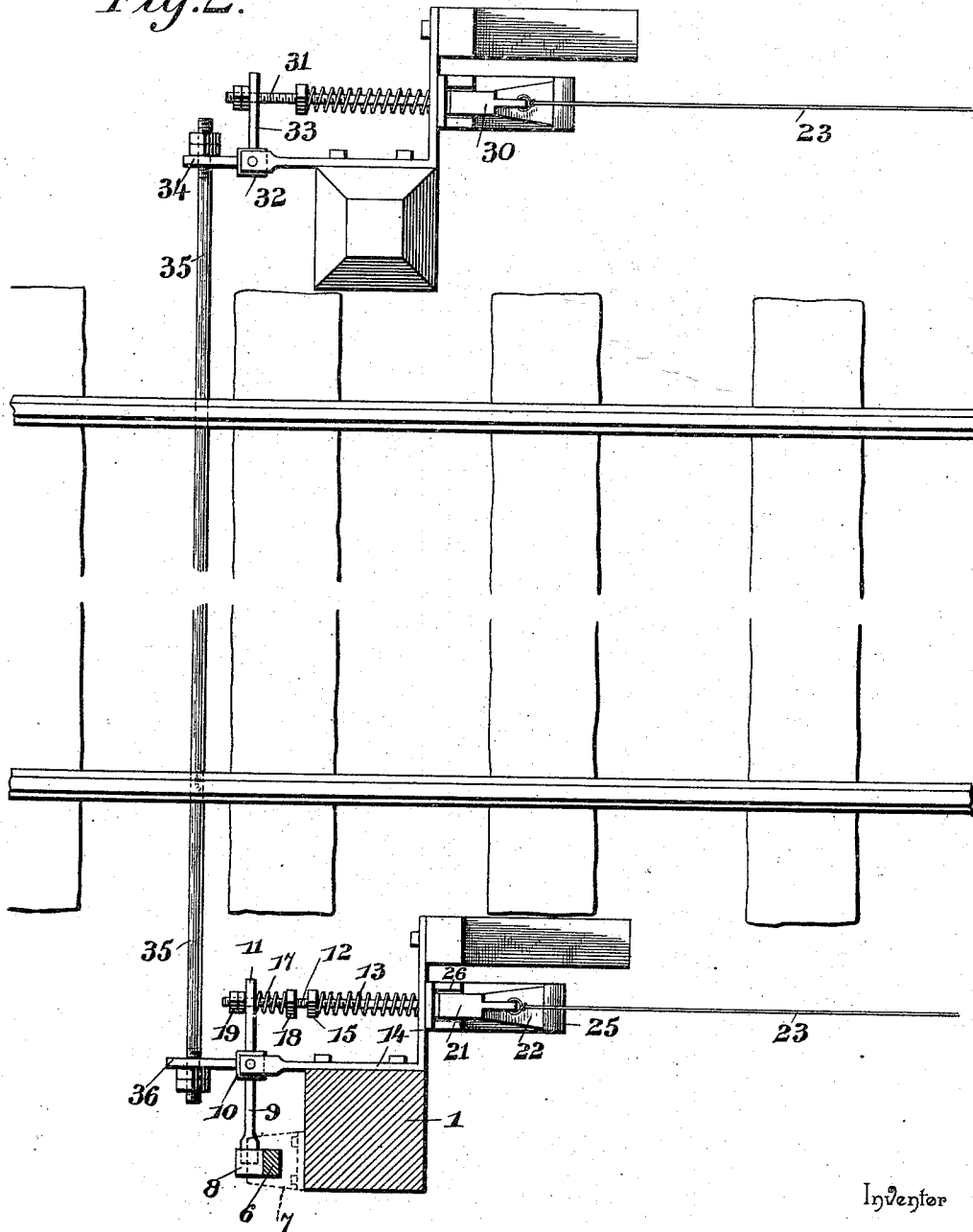
G. W. KELLER.
RAILROAD SIGNAL.

4 Sheets—Sheet 2.

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Patented Dec. 15, 1896.

Fig. 2.



Inventor

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(No Model.)

4 Sheets—Sheet 3.

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Fig. 4.

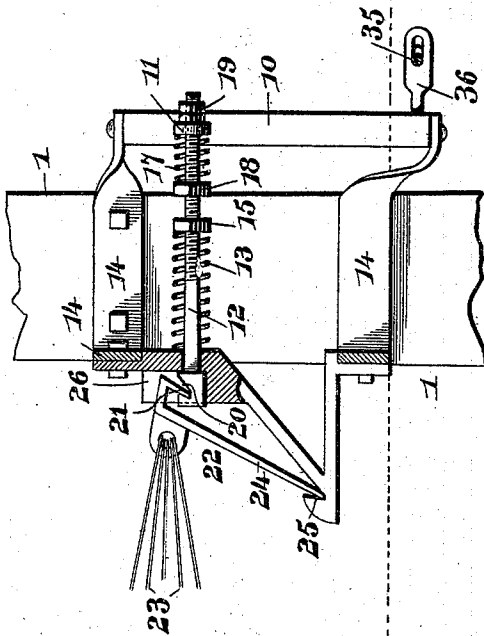
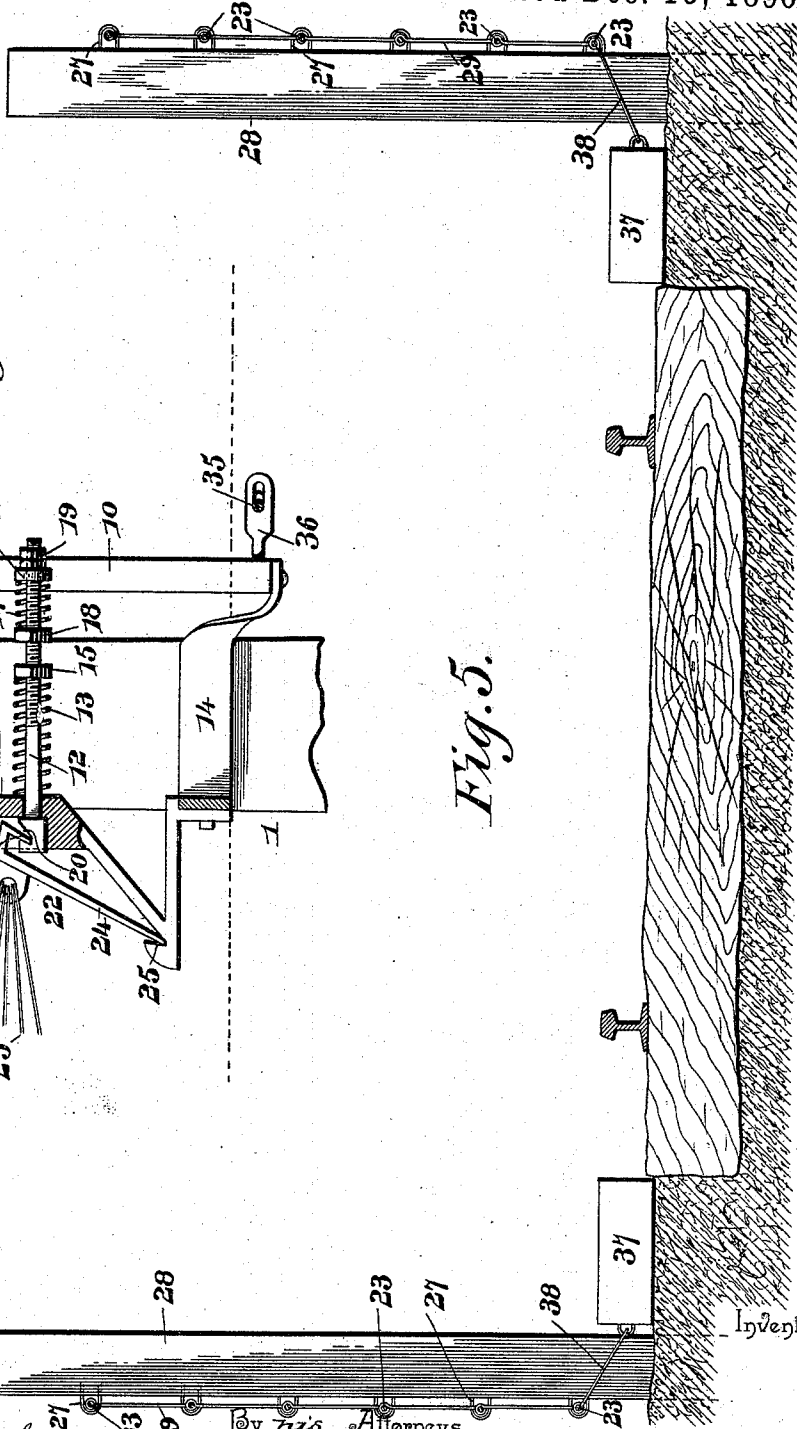


Fig. 5.



Witnesses

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(No Model.)

4 Sheets—Sheet 4.

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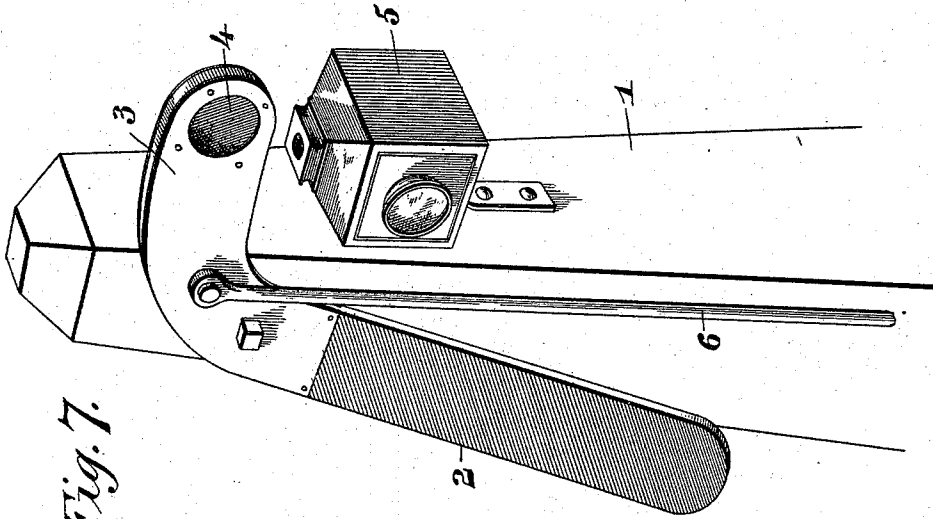


Fig. 7.

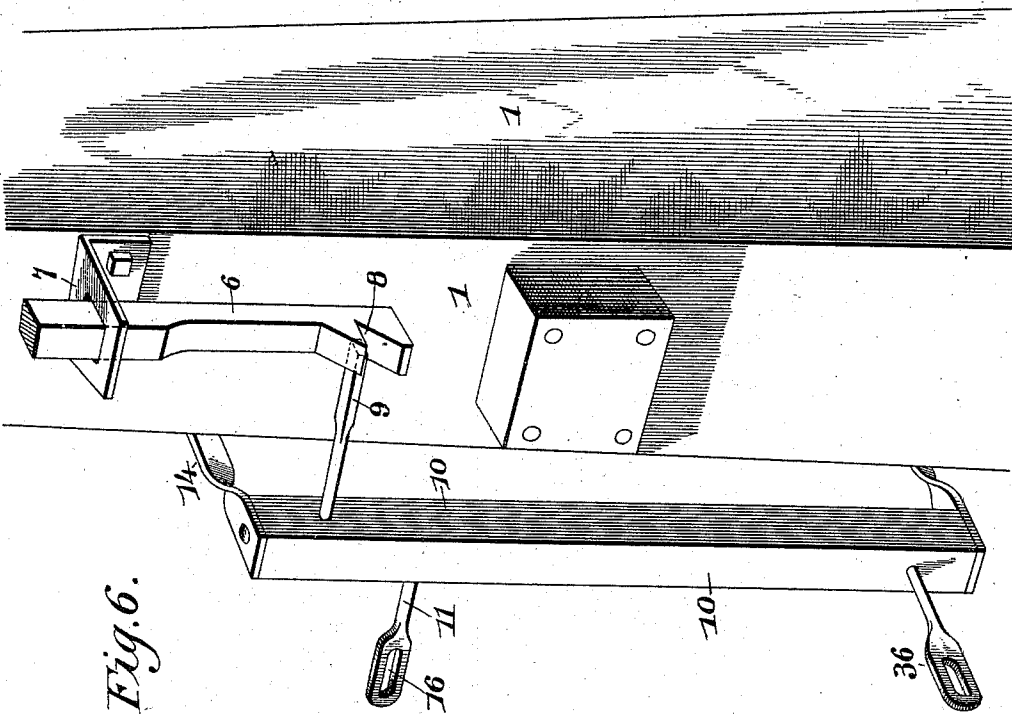


Fig. 6.

Inventor

Witnesses

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E. J. [Signature]

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UNITED STATES PATENT OFFICE.

GEORGE W. KELLER, OF SHENANDOAH, VIRGINIA.

RAILROAD-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 573,414, dated December 15, 1896.

Application filed June 2, 1896. Serial No. 593,994. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. KELLER, a citizen of the United States, residing at Shenandoah, in the county of Page and State of Virginia, have invented a new and useful Railroad-Signal, of which the following is a specification.

My invention relates to railroad-signals, and particularly to a device adapted to be arranged in cuts and tunnels and contiguous to embankments and mountain sides for indicating the existence of land-slides, washouts, and the like; and the object in view is to simplify and improve the construction of devices of this class, whereby the least obstruction of the track or the removal of earth from beneath the ties, even though the ties and superposed rails retain their normal positions by reason of being supported by the contiguous portions of the rails, is indicated by the signal to warn the engineers of approaching trains.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a signal apparatus constructed in accordance with my invention, the parts being arranged for use in a cut in which it is necessary to protect both sides of the track. Fig. 2 is a plan view of one end of the apparatus to show the means for communicating motion from the trips to the stem of the signal-arm. Fig. 3 is a detail view in perspective of one of the trips and the contiguous parts of the apparatus. Fig. 4 is a vertical sectional view of the same. Fig. 5 is a transverse section of the apparatus to show the application of the means for indicating washouts. Fig. 6 is a detail view in perspective of the means for supporting the signal-arm and the contiguous portion of the stem by which motion is communicated to said arm. Fig. 7 is a detail view in perspective of the signal-arm, lantern, and contiguous parts. Fig. 8 is a detail view of a portion of the draw-rod.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The apparatus embodying my invention

consists, essentially, of a movable signaling device adapted by its position to indicate "safety" or "danger" and a flexible guard arranged contiguous to and parallel with the track to be protected and operatively connected with said signaling device, whereby when the guard is encountered by an object it will be strained sufficiently to move the signaling device to a position indicating "danger."

In the construction illustrated in the drawings the apparatus is designed for the protection of both sides of a track, as when used in a cut or when both sides of the track are exposed to land-slides or obstructions rolling upon the track; but as the device may frequently be used where it is necessary to protect only one side I will first describe the means employed under those conditions.

The signal-posts 1 are disposed at the ends of the dangerous section or locality, and preferably at such distances from the protected point as to allow time for an approaching train to be brought to a standstill, and the signal employed may differ in construction, as preferred. In the construction illustrated an ordinary pivotal arm 2 is mounted upon the signal-post and is adapted to be held in the folded or pendent position indicated in full lines in Fig. 1 or the extended or horizontal position indicated in dotted lines in the same figure. Said pivotal arm is extended in rear of its pivotal point, as shown at 3, and is provided with an opening fitted with a colored medium 4, which, in connection with a lantern 5, constitutes a night signal. When the arm occupies its folded position, the white light of the lantern is exposed, whereas when the arm is extended the colored medium is brought in front of the lantern, and this displays a danger-signal. The signaling device is normally held in its folded or safety position by means of a vertically-disposed weighted stem 6, fitted near its lower end in a stationary guide 7 and provided at its lower end with a shoulder 8, engaged by a supporting-arm 9. This supporting-arm is carried by a rock-shaft 10, provided with an operating-arm 11, with which is connected a draw-rod 12, and said draw-rod is provided with an actuating-spring 13, arranged between a stationary bracket 14 and an adjustable collar

or tension device 15, which is threaded upon the rod. This spring is designed to yieldingly resist movement of the rod in the direction necessary to disengage the supporting-arm from the shoulder of the stem. The operating-arm, by which motion is communicated from the draw-rod to the rock-shaft, is preferably longitudinally slotted, as shown at 16, to receive the rod, and a cushion-spring 17 is interposed between said arm and an adjustable collar 18 to hold the arm in contact with a second adjustable collar 19, and by adjusting said collars the tension of the cushion-spring and the position of the operating-arm with relation to the draw-rod may be adjusted to secure an accurate coöperation of the parts.

The draw-rod is provided with a notched head 20, in engagement with which is arranged a hook 21 on the trip 22, said trip being permanently connected to the extremities of the wires or cables 23, constituting the contiguous inflexible guard. The trip is provided with a depending extension 24, which is stepped at its lower extremity in a seat 25, formed on the bracket in which the headed extremity of the draw-head operates, and the hook 21 of the trip fits in a cavity 26 in said bracket to engage the notched head of the draw-rod, whereby lateral displacement of the trip is prevented. The depending extension or shank of the trip is normally arranged in an inclined position, whereby when the wires or cables comprising the guard are strained sufficient motion will be communicated to the draw-rod to release the signaling device, but further strain, in excess of that necessary for releasing the signaling device, will cause the hook of the trip to be elevated out of engagement with the notch of the draw-rod, and therefore the guard will be free to yield and prevent breakage. Hence when the guard has accomplished its function of disengaging the signaling device it may be entirely covered by the land-slide without injury, and hence may be immediately returned to its operative position after the obstructions have been removed from the track. Furthermore, it will be seen that the movement of the trip which is necessary to release the signaling device draws the hooked extremity of the trip out of the cavity in the bracket, and hence provides for the disengagement of the hook from the head of the draw-rod by lateral movement.

The guard, as above indicated, consists of a plurality of flexible wires or cables extending through guiding devices, such as eyes 27 on posts 28, in a series parallel with the railroad-track to be protected, said wires or cables thus being arranged in the path of boulders or other obstructions approaching the track from that side upon which the guard is arranged, and in order to prevent deflection of the members of the guard without straining them sufficiently to disengage the supporting-arm from the stem of the signaling device I employ vertical cross wires or stays

29, arranged at intervals and connected to the wires or cables at their points of intersection therewith.

When it is desired, as in a cut or tunnel, to protect both sides of a track from falling objects, the guard is duplicated and is connected with an auxiliary trip 30 for engagement with the notched head of a spring-actuated draw-rod 31, which is connected with the rock-shaft 32 by means of a slotted arm 33. Said rock-shaft is provided with an additional slotted arm 34, connected by means of a rod 35 with a corresponding arm 36 upon the rock-shaft 10, said rod extending transversely across the track beneath the plane of the rails and preferably between contiguous ties.

In addition to the above-described mechanism, which is designed to indicate the existence of a land-slide or of boulders or other obstructions which have been dislodged and have fallen upon the track, I employ means for indicating the existence of washouts, the particular advantage of this portion of the apparatus residing in the fact that a washout under or contiguous to a track is indicated even when the track retains its proper position by reason of the washout extending only a short distance and the portion of the track from which the support has been removed being upheld by the contiguous portions of the track. The means which I have found efficient for this purpose consist of weights 37, connected by flexible wires or cables 38 with the guards and arranged upon the surface of the soil contiguous to the ties. Hence when the soil is washed from beneath the ties the weights are allowed to settle, and in so doing strain the guard and release the signaling device.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a railroad-signal, the combination with a signaling device, of a flexible guard arranged contiguous to the track to be protected, weights connected with the guard and normally supported by the soil contiguous to the tracks, whereby in case of a washout the weights are allowed to settle and increase the tension of the guard, and connections between the guard and signaling device, substantially as specified.

2. In a railroad-signal, the combination with a signaling device, of a flexible guard arranged contiguous to the track to be protected, a draw-rod operatively connected with the signaling device, and detachable connections between the guard and the draw-rod, substantially as specified.

3. In a railroad-signal, the combination with a signaling device, of a flexible guard arranged contiguous to the track to be protected, a

draw-rod operatively connected with the signaling device and provided with a notched head, and a trip connected with the extremity of the guard and normally engaged with the notched head of the draw-rod, said trip having a depending extension or shank engaged with a fixed seat and normally occupying an inclined position, whereby when the guard is strained the trip is elevated out of engagement with the head of the draw-rod, substantially as specified.

4. In a railroad-signal, the combination with a signaling device adapted when released to be moved to its operative position, of a rock-shaft having a supporting-arm to normally hold the signaling device in its inoperative position, a spring-actuated draw-rod loosely connected at one end with an operating-arm on said rock-shaft, a trip normally engaged with a notch in the draw-rod, and a flexible guard connected to the trip, substantially as specified.

5. In a railroad-signal, the combination with a signaling device, of a rock-shaft operatively connected with the signaling device and having a slotted operating-arm, a draw-rod extending through the slot of the operating-arm and having an adjustable collar to bear against one side thereof, a cushion-spring engaging the opposite side of said operating-arm, adjusting devices for the cushion-spring, an actuating-spring for the draw-rod, and a flexible guard connected with a trip in engagement with said draw-rod, substantially as specified.

6. In a railroad-signal, the combination with a signaling device, of a draw-rod operatively connected with the signaling device and having a notched head, a guide-bracket for the draw-rod provided with a cavity in which the head of said rod is fitted, a trip having a hook in engagement with a notch in said head of the draw-rod and normally held in engagement therewith by the sides of the cavity, and a flexible guard connected with the trip and adapted when strained to draw the hook of the trip beyond the walls of the cavity to allow lateral disengagement of the trip from the draw-rod, substantially as specified.

7. In a railroad-signal, the combination with a signaling device, of rock-shafts mounted upon opposite sides of a track to be protected, one of said rock-shafts being operatively connected with the signaling device, a transverse connecting-rod between said rock-shafts, spring-actuated draw-rods connected, respectively, to the rock-shafts, and flexible guards arranged respectively upon opposite sides of the track and connected with the draw-rods, whereby the signaling device may be operated by an obstruction approaching the track from either side, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE W. KELLER.

Witnesses:

H. F. STALEY,
E. E. LONG.