2 Sheets—Sheet 1.

F. RAYMOND.

RAILROAD-SIGNAL.

No. 169,477. Patented Nov. 2, 1875.

FIG. 1.

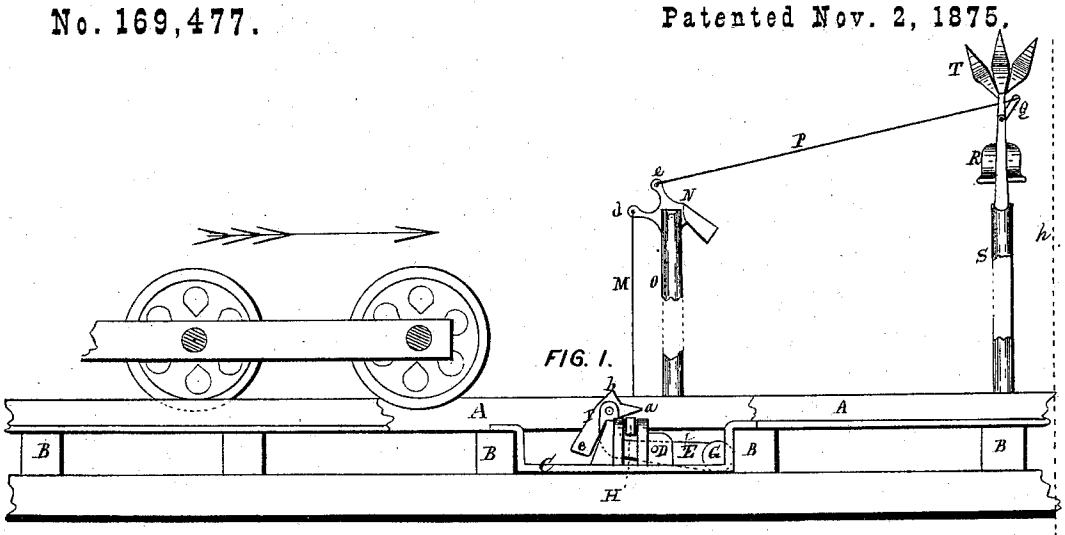
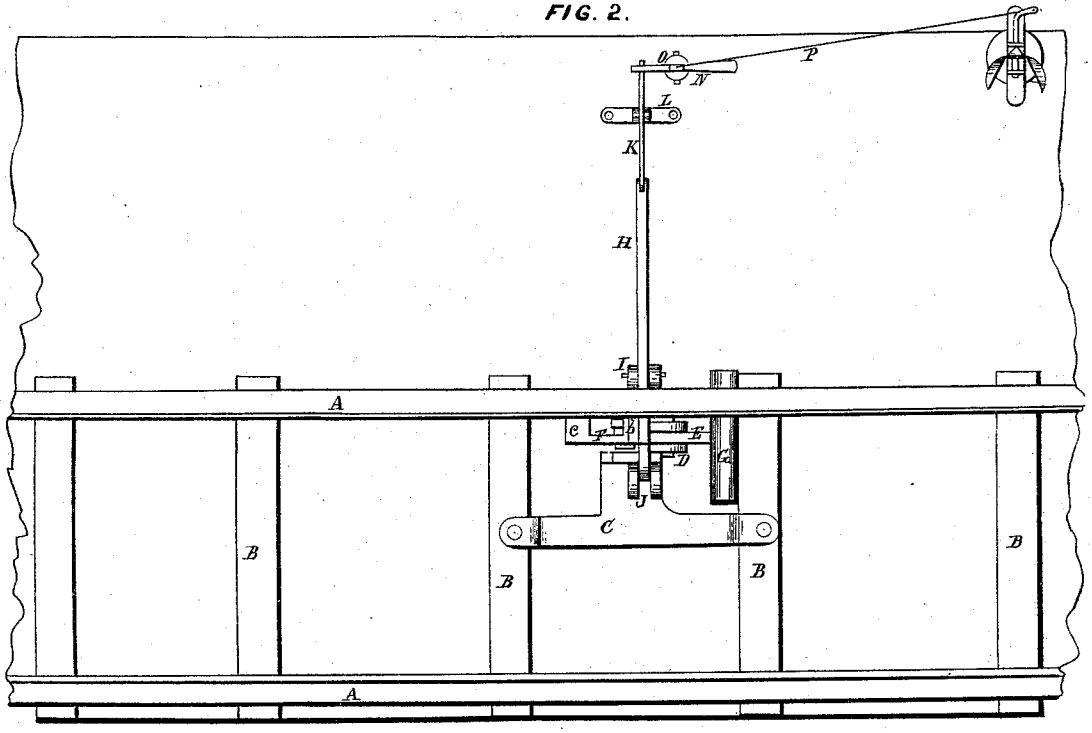


FIG. 2.



WITNESSES.

A. F. Cornell.

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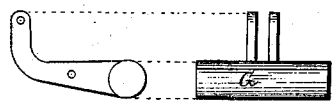
2 Sheets—Sheet 2.

F. RAYMOND.

RAILROAD-SIGNAL.

No. 169,477. Patented Nov. 2, 1875.

FIG. 3.



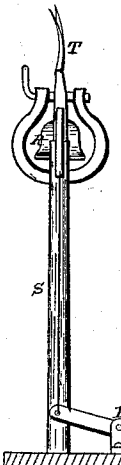


FIG. 4.

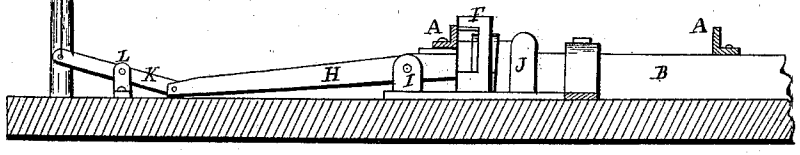
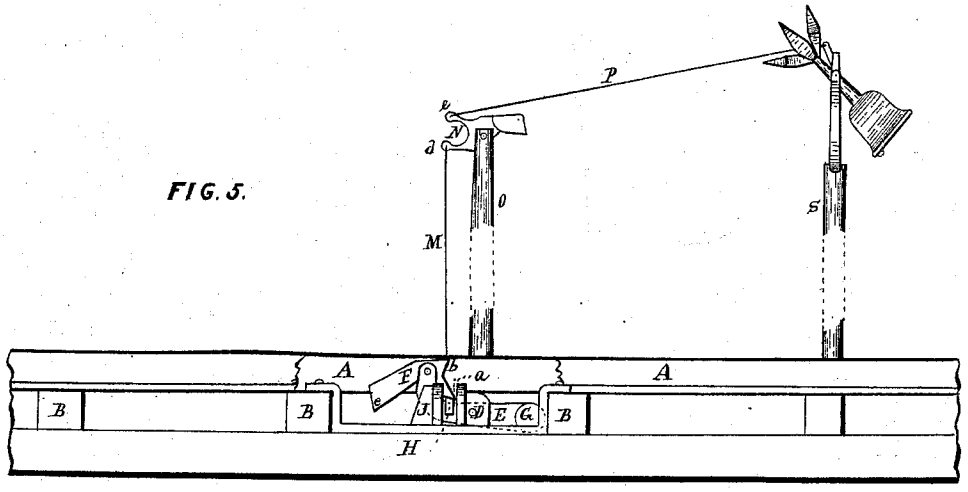


FIG. 5.



WITNESSES

A. F. Cornell.

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UNITED STATES PATENT OFFICE.

FITCH RAYMOND, OF CLEVELAND, OHIO.

IMPROVEMENT IN RAILROAD-SIGNALS.

Specification forming part of Letters Patent No. **169,477**, dated November 2, 1875; application filed August 30, 1875.

To all whom it may concern:

Be it known that I, FITCH RAYMOND, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Automatic Railway-Signal; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings making part of the same.

Figure 1 is a side view of the signal. Fig. 2 is a plan view. Fig. 3 is a detached section. Fig. 4 is a transverse section. Fig. 5 is a side view, showing a changed position of the signaling device.

Like letters of reference refer to like parts in the several views.

The purpose of this invention is to warn those about to cross a railway-track of the approach of a train of cars in time to avoid danger, the warning being given by a signal and by the sound of a bell, both of which are operated by the wheels of the train actuating certain operative devices arranged in connection therewith, substantially in the manner as follows:

In the drawings, A represents the rails of a railway-track, and B the ties. Between said rails, in proximity to one of them, is arranged the following devices: On the frog or plate C is a pair of studs, D, Figs. 1 and 2, between the cheeks of which is pivoted a bell-crank-shaped lever, E, a detached view of which is shown in Fig. 3, wherein it will be seen that one end of the lever is bifurcated. In said bifurcation is pivoted a trip, F, Fig. 1, consisting of a finger, *a*, head *b*, and counter-balance *c*. To the opposite end of the lever is attached a weight, G, to counterbalance the weight of the trip, and hold it up, in its relation to the rail A, as shown in said Fig. 1, wherein the counter-balance *c* retains the finger and head in the position shown in said Fig. 1, wherein it will be seen that the head of the trip is above the tread of the rail. H, Fig. 4, is a lever, having its fulcrum in the stay I. The short arm of the lever passes under the rail to and under the finger *a* of the trip, as will be seen in Figs. 2 and 5, and terminates between the guides J. To the outer or longer arm of the lever H is pivoted one end of a lever, K, having its fulcrum in the stay L. To the outer end of said lever K is attached one end of a cord or wire, M, Figs. 1 and 5. The opposite end of the cord or wire is attached to an arm, *d*, of a bell-crank, N, pivoted in the top of the post O. To the arm *e* of said crank is attached one end of a cord or wire, P, whereas the opposite end of the cord is attached to the crank Q of the bell R, mounted on the top of the post S. To the crown of the bell is secured a signal, T, the purpose of which will presently be shown.

The practical operation of the above-described alarm-signal is as follows: The operative devices alluded to are located at a considerable distance up the track, whereas the bell and signal are stationed directly at the crossing, in plain sight and hearing of those moving along the highway. The signal and operative devices are connected to each other by a cord or wire, P, as above described, and which may be supported by the telegraph-posts along the track, or by other posts set for that purpose. The relative position of the signal and the operative devices in respect to each other is such as shown in Fig. 1, (which, however, for convenience, is greatly contracted as to distance.) For illustration, let it be presumed that the dotted line *h* in Fig. 1 represents the public highway, crossing the railway-track as indicated. Between the rails, a considerable distance up the track, is arranged the operative devices, and at the crossing of the road is stationed the signal-post S. The wheels of a train of cars, moving down in direction of the arrow, will, on passing the post O, impinge upon the head of the trip, and tilt it from the position shown in Fig. 1 to that shown in Fig. 5. This tilting of the trip causes the finger *a* to press down upon the end of the lever H, thereby elevating the outer end thereof; also elevating the end of the lever K in connection therewith. This simultaneous action of the two levers will ring the bell, and vibrate the signal through the intervention of the lever N and the wires or cords M P, whereby the bell and the crank N are connected to the lever K. The ringing of the bell and movement of the signal will be seen and heard by those about to cross the track in time to avoid collision with the approaching train.

The bell continues to ring and the signal to

vibrate during the whole time the train is passing the post O; for the moment one wheel has passed over the trip and tilted it, causing the bell to ring, it immediately resumes the position shown in Fig. 1, by virtue of the counter-balance *c*, but which is at once tilted again, and the finger depressed by the next wheel, thereby operating the levers H K, and ringing the bell; and so on in succession, as each wheel passes, the trip is tilted, and the finger depressed on the lever, actuating the bell and signal. The wheels of the train coming in the opposite direction impinge upon the head of the trip; but, instead of tilting it so that the finger may be depressed upon the lever, it is simply depressed without tilting. Hence, the finger will not touch the lever. This depression of the trip is due to the vibration of the bell-crank-shaped lever E, in one end of which the trip is pivoted, as above described. The pressure of the wheels upon the trip, when coming in the opposite direction from that of the arm, simply pushes down the trip, or that end of the lever E to which it is attached, but which is again elevated when the pressure of the wheel is removed therefrom by the counter-balance G, so that the trip is in position for actuating the lever, when the train is coming in direction of the arrow, for working the bell and signal.

In order to signal a train coming in an opposite direction from that indicated by the arrow, a similar device is arranged down the railway, on the other side of the crossing, which, in like manner, is operated by the wheels of the up-coming train, ringing the bell and working the signal substantially in the same manner as above described.

It will be obvious that, by this means, collisions at railway-crossings cannot happen, as timely notice is given of an approaching train, so that persons can avoid the danger.

The above device is not only applicable to railway-crossings, but it is equally serviceable to notify those at a station of an incoming train, and for signaling a train rounding quick curves.

What I claim as my invention, and desire to secure by Letters Patent, is—

The trip F and bell-crank lever E, having a counter-balance, G, in combination with the lever H, in the manner substantially as described, and for the purpose set forth.

FITCH RAYMOND.

Witnesses:
J. H. BURRIDGE,
A. F. CORNELL.