

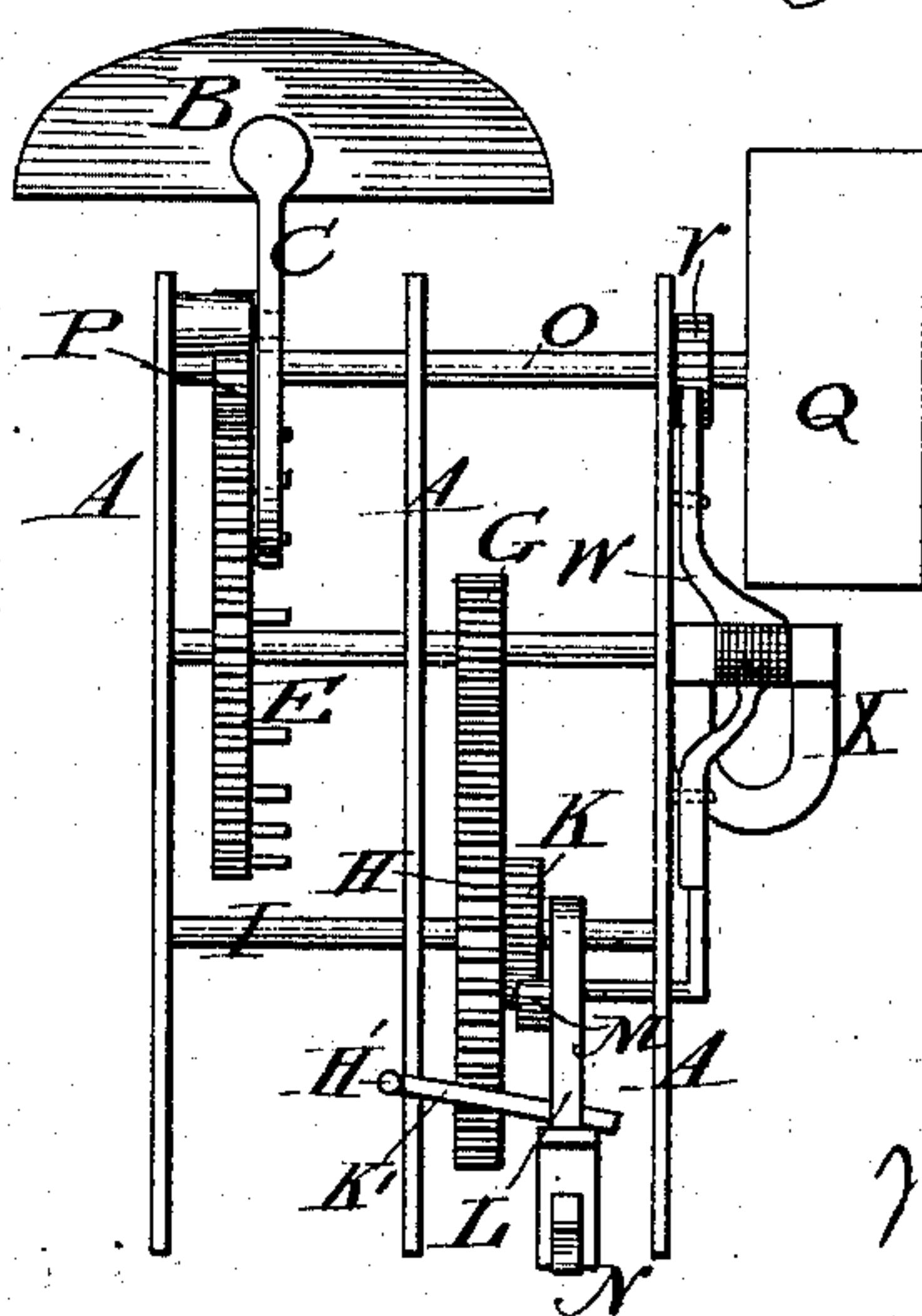
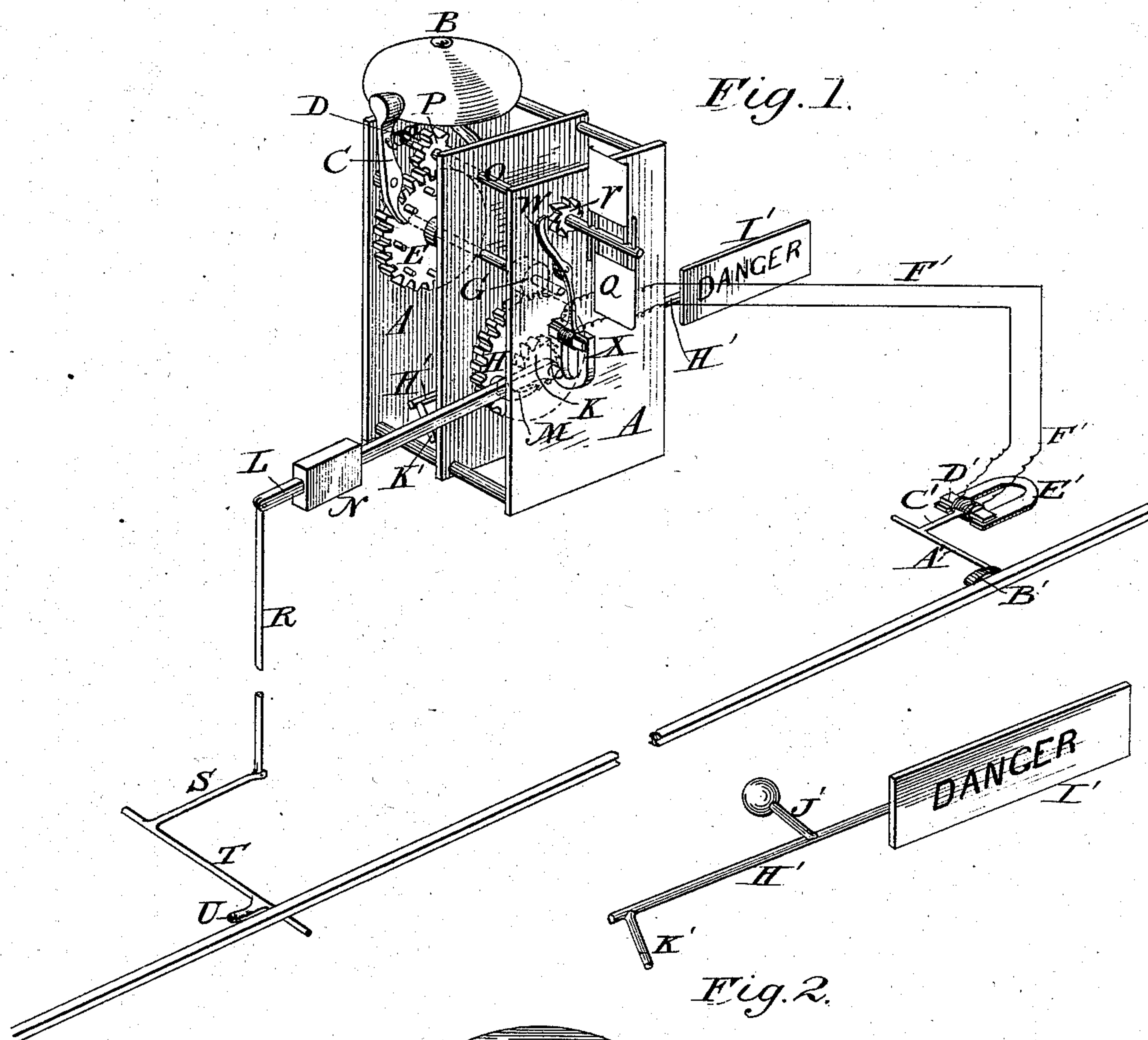
(No Model.)

W. W. GARY.

AUTOMATIC RAILWAY SIGNAL.

No. 257,933.

Patented May 16, 1882.



Attest.

Miller

Newton Wycheoff.

Inventor.

W. W. Gary

By his Atty

Philip T. Dodge

UNITED STATES PATENT OFFICE.

WESLEY W. GARY, OF BOSTON, MASSACHUSETTS.

AUTOMATIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 257,933, dated May 16, 1882.

Application filed September 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, W. W. GARY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Automatic Railway-Signals, of which the following is a specification.

The object of this invention is to produce an automatic railway-signal which shall give audible or visual notice, or both, of the approach of trains, the signal being designed for use at stations, crossings, curves, and other points.

To this end the invention consists in the combination of a signal mechanism which is wound or set for action by passing trains, a detent operated by an electro-magnet for permitting the operation of the signal at the required time, and a magneto-electric generator arranged to be operated by passing trains to produce a current for the purpose of releasing the before-mentioned detent. Under my system a train passing the signal operates by elevating a weight or otherwise to set the signal-instrument for action. The instrument remains in this position until a train passing a magneto-generator causes the same to operate and transmit a current to the magnet of the signal. The signal mechanism which I prefer to employ consists of a gear-train driven by a weight which is raised by the passing cars, the weight operating a train of gear, through which a hammer is caused to strike a bell or gong for a considerable period of time. The details of the apparatus may be modified in many respects, which will suggest themselves to the skilled mechanic, without departing from the limits of my invention.

The accompanying drawings represent an apparatus which I have found in practice to be satisfactory in its operation.

Figure 1 represents a perspective view of my apparatus applied in connection with one of the rails of a railroad. Fig. 2 is a side elevation of the same.

Referring to the drawings, A represents a frame-work provided with a bell or gong, B, and with a vibratory hammer, C, to strike the same. This hammer is thrown toward the bell by a spring, D, as shown, and is moved in the opposite direction and released by means of a series of successively-acting pins on one side

of the gear-wheel E. This gear-wheel is mounted on a shaft driven through a pinion, G, from a large gear-wheel, H, mounted in the lower part of the frame. The shaft I of the wheel H is also provided with a ratchet-wheel, K, fixed thereon with a loose vertically-vibrating lever, L, the latter provided on its inner end with a pawl, M, to engage in the ratchet-wheel, and at its outer end with a weight, N. As the weight is elevated the pawl passes backward over the ratchet-wheel, permitting the train of gear to remain at rest; but upon releasing the lever the weight depresses the same and through the ratchet imparts motion to the train of gear, whereby the hammer is caused to strike the bell rapidly and for a greater or less length of time, according to the distance at which the lever is moved and the number of wheels which may be employed in the gear-train. It is manifest that the spring applied in place of the weight as a means of depressing the lever will be an equivalent thereof.

The number of gears employed forms no material part of the invention. It may be increased or diminished, according to the length of time which it is desired to have the striker operate upon the bell.

As a means of controlling the speed of the gear-train a shaft, O, is mounted in the top of the frame and provided at one end with a pinion, P, gearing into the wheel E, and at the opposite end with a governing-fan, Q, the resistance of which will limit the speed of the gear.

As a means of setting the gear-train for operation, I connect with the end of the lever L a rod, R, the lower end of which is connected to an arm, S, on one end of a horizontal rock-shaft, T, this shaft lying at right angles to the railway and being provided at its inner end with an arm, U, upon which the flanges of the car-wheels will act as the train passes thereover. The car-wheel, depressing the arm U, serves to operate the rock-shaft, and thereby, through arms S and rod R, to elevate the weight of lever L and set the striking-gear for action.

As a means of holding the gear-train and preventing its operation until the desired mo-

ment, the fan-shaft O is provided with a ratchet-wheel, V, into which a detent lever or pawl, W, engages, as shown in Fig. 1. This lever is provided at its lower end with an armature, 5 coiled with insulated wire, constituting in fact an electro-magnet. The electro-magnet operates in connection with a fixed permanent magnet, X, which serves as an armature therefor. When the electro-magnet is operated by the 10 transmission of an electric current through its coil it serves to operate the detent W, and thereby release the gear-train.

Any suitable magneto-generator operated by a passing train may be used to produce the 15 current for operating the electro-magnet; but I prefer to make use of the generator represented in the drawings, consisting simply of a rock-shaft, A', located at the side of and at right angles to the railway-track, provided at 20 one end with an arm, B', to be depressed with the car-wheels, and at the opposite end with an arm, C', carrying a coiled armature, D'. The armature D' lies across and above the ends of the fixed permanent magnet E', and its coil 25 is connected by electric conductors F' with the coil of the electro-magnet of the signal. The car-wheel, in passing over the arm B', causes the arm C' to elevate the armature away from the magnet E', the effect of which is to depolarize said armature or change its polarity, and 30 thereby induce an electric current through the conductors F' to the electro-magnet of the signaling-instrument and similarly polarize it or change its polarity, thereby releasing the signal and causing the same to operate by the re- 35 lease of the detent W.

It will be understood that the magneto-generator may be located at any suitable distance in advance of the signal-instrument, the latter 40 being located at the station or crossing, so that a train, while still distant from the station or crossing, will cause the signal to commence its action, the action continuing until the train has passed the point at which the signal is lo- 45 cated.

The visual signal employed in the present instance consists of a rock-shaft, H', extending transversely through the gear-frame, and

provided at one end with a board or signal- 50 light, I', which is preferably provided with the word "Danger," or like cautionary word upon its face. The shaft H' is provided at one end with a weighted arm, J', which tends to turn the shaft until the signal-board is in a hori- 55 zontal position, indicating safety, the board being then presented edgewise to the observer. The shaft is also provided at the rear end with an arm, K', upon which the lever L operates in its descent, the effect being to turn the board 60 to a position indicating danger, and retain the same in that position until the signal is again set for action by the passing of the next train.

I do not claim herein the visual signal or its connections as herein represented, the right to 65 make the same the subject-matter of a separate application being hereby reserved.

Having thus described my invention, what I claim is—

1. In an automatic railway-signal, the combination of a bell-striking train, means for set- 70 ting or adjusting the same for action from passing trains, a detent controlled by an electro-magnet to prevent the operation of the striking-train, and a magneto-generator for the purpose of releasing the gear-train, and means, sub- 75 stantially as described, for operating the electro-magnet from passing railway-trains.

2. In a railway-signal, the combination of a bell-striking train of gear, a weighted lever connected therewith by a pawl and ratchet or 80 equivalent clutch, and means, substantially as described, whereby the weight may be raised by passing trains.

3. In an automatic railway-signal, the combination of a geared bell-striking train, and 85 appliances, substantially such as shown, whereby said gear is set for action by a passing train, an electro-magnet for releasing the gear-train, and a magneto-generator connected with said magnet and arranged to be operated by a pass- 90 ing railway-train.

WESLEY WARD GARY.

Witnesses:

JOHN B. TAFT,
STILLMAN B. ALLEN.