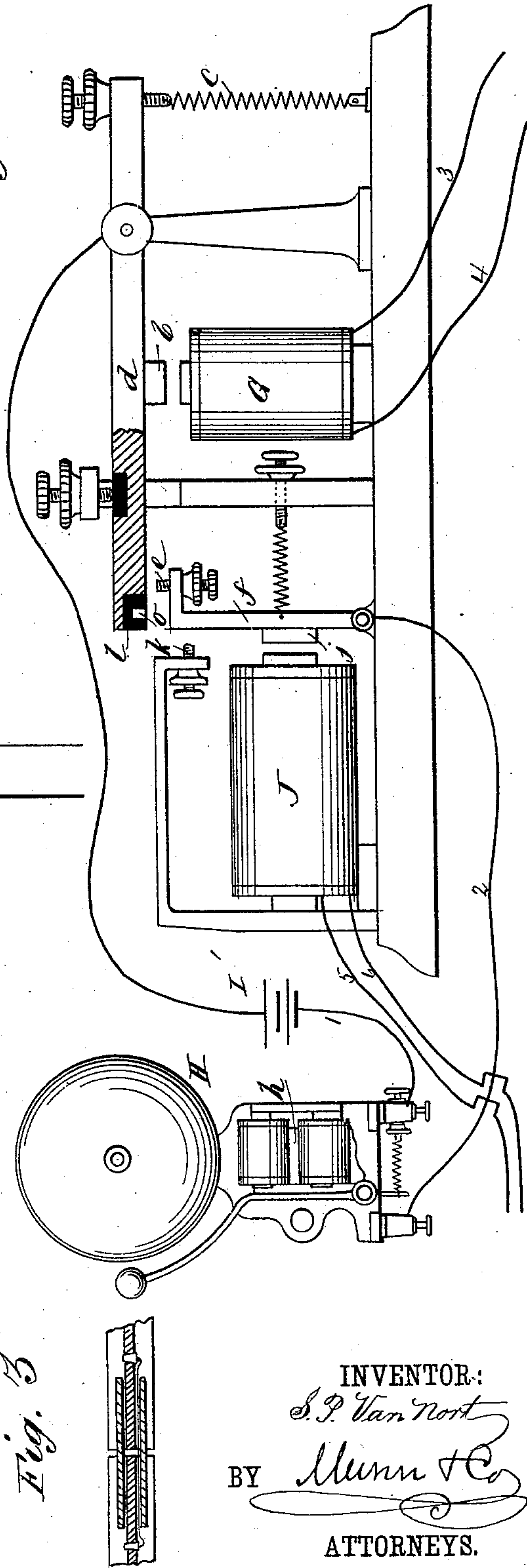
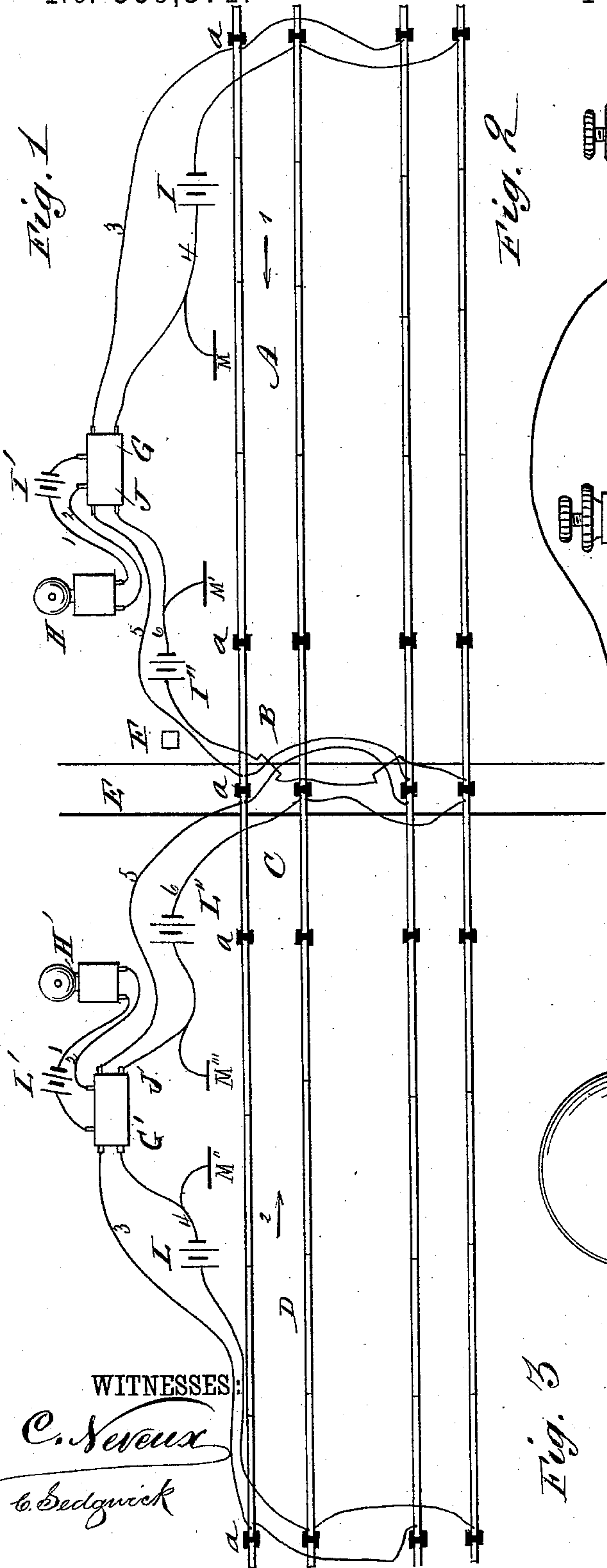


(No Model.)

S. P. VAN NORT.  
RAILWAY CROSSING ALARM.

No. 359,371.

Patented Mar. 15, 1887.



*Fig. 3*



WITNESSES:

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# UNITED STATES PATENT OFFICE

STERLING P. VAN NORT, OF MANCHESTER, MISSOURI.

## RAILWAY-CROSSING ALARM.

SPECIFICATION forming part of Letters Patent No. 359,371, dated March 15, 1887.

Application filed March 12, 1886. Serial No. 195,054. (No model.)

*To all whom it may concern:*

Be it known that I, STERLING PRICE VAN NORT, of Manchester, in the county of St. Louis and State of Missouri, have invented a new and Improved Railroad-Crossing Alarm, of which the following is a full, clear, and exact description.

The object of my invention is to provide an apparatus whereby pedestrians, teamsters, &c., will be notified at the crossing of a highway and railroad of the approach of a train, engine, or railway-carriage that would be liable to cause them injury, the apparatus being so constructed that after the train has passed the highway the alarm will be automatically stopped, to be, however, sounded again at the approach of a second train, no matter how close said second train is to the first one.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a diagram illustrating the general arrangement of the alarm and its connections. Fig. 2 is a side view of the relay employed in connection with the alarm-gong, a portion of one of the armature-levers being broken away and shown in section to disclose its construction. Fig. 3 is a detail view illustrating the construction of the rail-connecting device.

In Fig. 1 the track is represented as divided into a number of sections, A B C D, the rails constituting each section being insulated from the rails of the adjoining sections by insulating-blocks *a a*.

E represents a highway or turnpike, near which there is arranged a small house or box, F, in which the batteries, the gong, and the relay are located; but in the drawings, Fig. 1, the apparatus is shown as arranged outside the box or house, in order to facilitate the general explanation of the arrangement of the several parts and circuits of the apparatus.

All the rails upon either side of each section of the track in connection with which my alarm is arranged are placed in electric communication by means of a connection to be hereinafter described, such connection being illustrated in Fig. 3. The section A is in electric communication with the magnet G by wires 3 4, and when a train approaching in the

direction of arrow No. 1 strikes this section A a metallic circuit will be established, and the armature *b* of the magnet G will be drawn down against the tension of a spring, *c*. As the armature *b* is drawn down its supporting lever-arm *d* is brought against an adjustable contact-point, *e*, carried by a lever, *f*, and the circuit in which the magnet *h* of the gong H is located is closed, thus causing an alarm to be sounded by the gong H, as will be readily understood. As the train advances and passes off from the section A the magnet G is discharged, and consequently the circuit in which the magnet of the gong H is located is broken.

The circuit in which the magnet G is located is operated by a battery, I, and the circuit in which the gong H is located is operated through wires 1 2 by a battery, I', while a third battery, I'', is employed in connection with a magnet, J, (shown in Fig. 2,) the idea being to prevent the ringing of the gong H by a train passing from the section B to the section A, the magnet J being connected with the section B by wires 5 6, as indicated. Now when a train is passing in the direction of arrow No. 2 and strikes the section B the circuit in which the magnet J is located will be closed and the armature *j* drawn forward against an adjustable stop, *k*.

Upon the end of the lever *d* there is a block, *l*, of any suitable insulating material, and in this block *l* there is a recess, *o*, so located as to be directly above the contact *e*, when the armature *j*, which is carried by the lever *f*, is drawn forward against the poles of the magnet J, so that when the train strikes the section A and charges the magnet G, so that the lever-arm *d* is thrown down, the point *e* will enter the recess *o*, thus preventing the closing of the circuit in which the magnet *h* of the gong H is located. A similar system of connections is arranged, in connection with the sections D and C, upon the opposite side of the highway E, so that trains approaching from either direction will sound an alarm. In this second system the batteries L L' L'' correspond with the batteries I I' I'', while the gong H' corresponds with the gong H, and the wires 1, 2, 3, 4, 5, and 6 correspond to those similarly designated in the first system.

M'' M''' are the ground-plates of the second system.



It will be noticed that I have grounded each of the relay-batteries by wires and ground-plates M M' between its pole and the electro-magnet located in its circuit, so that each battery is worked on a short ground-circuit until the wheels of a train form a complete metallic circuit, after which the current will leave the ground-circuit and flow through the metallic circuit to operate the relay as required.

The ground wire and plate on one side of the batteries is to short-circuit a current which is assumed to flow from one pole of battery through one rail to the earth, and from the earth through the other rail to opposite pole of battery.

It is obvious that in an open circuit connected to rails, as in the specification, such a current will be established, especially in wet weather. If this current were allowed to flow through the magnets, it would at times be powerful enough to operate the machinery, interfering with its proper action. Therefore I have grounded all the track circuit-batteries on that side next to the magnets merely to guard against and short-circuit a ground-current, which will be unavoidably established in case there is a connection between the rails and the earth. If the rails were not lying on the ground, as in many instances, there would be no use for this ground-wire, because the batteries could not ground at all; but railroad-rails often lie on the ground, and even through mud and water.

When the alarm is employed in connection with a double track, the connections are made by simply extending the wires leading from the relay-batteries, as clearly indicated in Fig. 1.

In Fig. 3 I illustrate my preferred form of connection between the rails of each section, wherein the connecting-wire is represented as arranged behind the fish-plate, each end of the wire being made fast to a plug that is driven into a recess formed in the web of the rail.

Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a magnet, G, and its armature carried by a lever, *d*, provided with a recessed insulating-block, *l*, of a contact, *e*, carried by a lever, *f*, an armature, *j*, carried by the lever *f*, and a magnet, J, arranged in connection with the armature *j*, substantially as described.

2. The combination of two normally-grounded track-circuits on one side of a point to be protected, as A B, in connection with batteries I and I', magnets G and J, and levers *d* and *f*, constructed and combined to close an alarm-circuit when train is approaching said point on that side, locking itself out when train is going in opposite direction, the same being independent of similar circuits and mechanism on the opposite side of said point, thereby allowing operation of gong for a closely-following train on the same or another track, all parts being arranged substantially as and for the purpose described.

3. The combination of a gong, H, wires 1 and 2, battery I', with levers *d* and *f*, contact *e*, and recessed insulating-block *o*, section of track A, wires 3 and 4, battery I, ground-plate M, and magnet G, operating armature *b* and lever *d*, section of track B, wires 5 and 6, battery I', ground-plate M', magnet J, operating armature *j* and lever *f* to sound an alarm from one or more tracks, according to direction of moving trains, as set forth.

4. The combination of ground-wires, as M M', with and in the four track-circuits between batteries I I', and magnets G J, to short-circuit to the earth, currents (which may be produced by rails lying on ground and forming a connection thereto) which would otherwise untimely operate mechanism in said circuits, said ground-wires being arranged as shown.

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Witnesses:

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