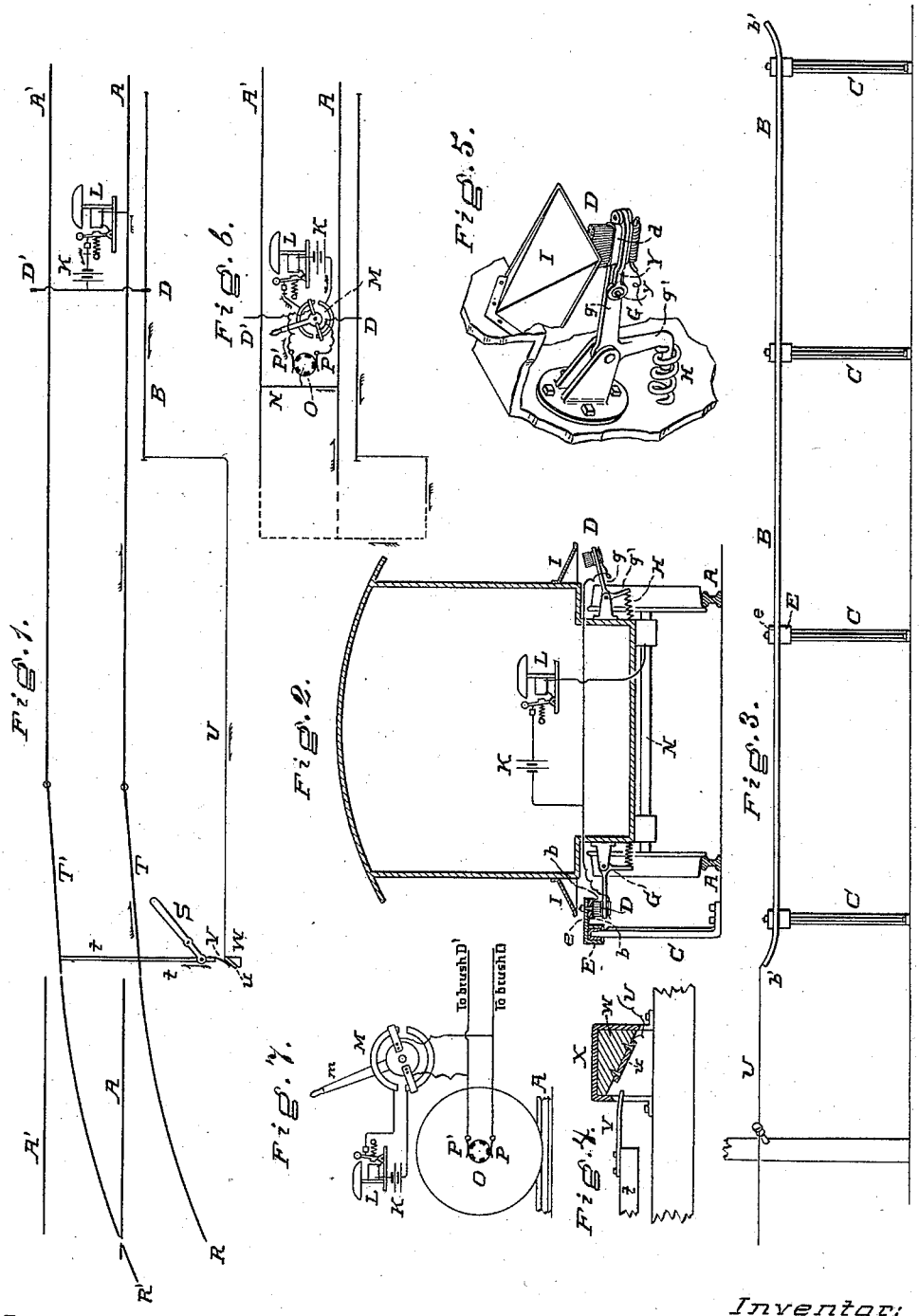
(No Model.)

B. H. GEDGE.

ELECTRIC SIGNAL FOR RAILROAD SWITCHES.

No. 344,100. Patented June 22, 1886.



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BURTON H. GEDGE, OF COVINGTON, KENTUCKY.

ELECTRIC SIGNAL FOR RAILROAD-SWITCHES.

SPECIFICATION forming part of Letters Patent No. 344,100, dated June 22, 1886.

Application filed February 25, 1886. Serial No. 193,198. (No model.)

To all whom it may concern:

Be it known that I, BURTON H. GEDGE, of Covington, Kenton county, Kentucky, have invented a new and useful Improvement in Electric Signals for Railroad-Switches, of which the following is a specification.

My invention relates to an improvement in those devices whereby the engineer of a train approaching a switch is warned if the switch is open.

The object of my invention is to provide a device for this purpose more certain and reliable in its operation than those heretofore in use.

My said device comprises an insulated conductor placed alongside of the track in advance of the switch, and connected to "ground" by opening the same, and a battery and a bell on each locomotive included in an open circuit, one of whose terminals connects with aforesaid conductor in passing the same, the other terminal being, either intermittently or continually, connected to ground.

In the accompanying drawings, Figure 1 is a diagram in plan of a railroad-switch and adjacent portion of the tracks, with my device in operation. Fig. 2 is a transverse section of the track and the insulated conductor and of the locomotive-cab, the latter, with its contained and attached electrical apparatus, being shown diametrically. Fig. 3 is a side elevation of the insulated conductor. Fig. 4 is a section of the contact-making device at the switch. Fig. 5 is a perspective view of one of the brushes for making contact with the insulated conductor aforesaid. Figs. 6 and 7 show by diagrams a modification of the apparatus on the locomotive, Fig. 6 showing its operation, and Fig. 7 the true positions of the parts.

A and A′ are the rails of the main track. R R′ are the rails of a track leading across to another parallel track, or onto a siding, or onto a divergent road. T T′ are the movable switch-rails, establishing, when open, connection between said tracks. *t* is the connecting-bar of said switch-rails, and S the lever for operating the same.

In advance of the switch, speaking as for a train about to run onto the switch, there is placed parallel to and alongside of the main track a conductor, B, insulated from the ground, and supported on posts or standards C, so as to be out of reach of snow. Said conductor is hung from arms *e*, extending toward the track from said posts, so as to leave its under side free for the engagement and contact therewith of brushes D D′, secured to opposite sides of the locomotive, and both connected to one terminal of an open circuit, which includes a battery, K, and bell L in the locomotive-cab, and whose other terminal is connected to a box of the axle N, and thus, through the axle and its wheels, to the ground.

The conductor B is connected by a wire, U′, insulated from the ground, with a contact-plate, *u*, in the vicinity of the switch, and also insulated from the ground, preferably by being attached to a wooden block, W, inclosed in a box, X, so as to be protected from the weather. A metal plate, V, preferably resilient, is attached to the connecting-bar *t*, or other moving part of the switch-shifting mechanism in such manner as, when the switch is opened, as shown, to make contact with the plate *u*, thus connecting the conductor B to the track or ground, but, when the switch is closed, to be separated from said plate, leaving the conductor B insulated from the ground.

The conductor B may consist of a flat iron wire or band having downturned flanges *b* at its edges for shedding water, and thus preventing wetting and consequent rusting or coating with ice of its under side, which would prevent contact therewith of the brushes D D′. Each of the brushes D D′ is secured to the arm *g* of a lever, G, pivoted to the locomotive-frame, and is forced upward by the pressure of a spiral spring, H, against the tail *g′* of said lever, and is protected from the weather by a hood, I.

The ends of the conductor B are turned up to form guides *b′*. When the locomotive, in approaching the switch, reaches the advance end of said conductor, the guide *b′* at that end engages with one or other of the brushes D D′, (according to whether the locomotive is heading forward or backward,) and leads it beneath the conductor, against which it is firmly held by the pressure of spring H. If the switch is open, the contact of said brush and conductor completes the circuit, and the bell L is rung, the current passing (in the direction of the arrows) as follows, if the parts are

arranged as in Fig. 1: from positive pole of battery K to brush D and conductor B, thence through wire U to contact-plate *u*, and from there through spring V to ground, from ground through wheels of axle N, the axle and its box, to bell L, through the bell, and thence to negative pole of battery.

The conductor B, with its grounding device U *u* V, may be used in connection with apparatus on the locomotive, such as is used in the device invented by me (and for which application for patent has been made of even date herewith, Serial No. 193,197) for warning the engineers of two approaching trains when the latter come into dangerous proximity. Said apparatus is shown in Figs. 6 and 7, and comprises a battery, K, and bell L, in an open circuit, with the brushes D D′, connected to opposite terminals of said circuit through a four-way switch, M, which is operated by the reversing-lever, *m*, of the engine, and whose reversal exchanges the brush-connections of the battery and bell. On the axle N is a commutator, O, which establishes alternate connection through the axle and wheels to the ground from brushes P and P′, connected to opposite terminals of the aforesaid open circuit. When the locomotive reaches the conductor B, one or other of the brushes D D′ makes contact therewith, and thus, if the railroad-switch is open, connects that terminal of the battery and bell circuit to ground, and the other terminal being intermittently connected to ground by the commutator, the bell L is rung intermittently, the current passing as shown by arrows. For an explanation of the operation of this device, in connection with the danger-signal for approaching trains above referred to, reference may be made to aforesaid application.

The guide *b′* at the switchward end of the conductor B serves to lead the corresponding brush D or D′ beneath the conductor when the train is moving onto the main track A A′ from the siding or other track. The object of this is to prevent injury to the brush, and the signal which is given, although of no use as a warning, constitutes a test of the working condition of the apparatus.

Each of the brushes D D′ may consist of a bundle of wires, which is bent double, the terminal wire of the battery and bell circuit being inserted in the loop thus formed. The said bundle is then wrapped with some insulating material, *d*, and clamped between the arm *g* and an arm, Y, pivoted at one end to the arm *g*, and capable of being drawn toward said arm at its other end by means of a set-screw, *y*.

The conductor B may be insulated from the ground in any suitable manner. For example, each of the arms *e* may constitute a rigid projection from a cap-piece, E, shaped like an inverted cup, which, having been filled with a wooden block, F, is driven down onto the top of standard C.

I claim as new and of my invention—

In an electric signal for railroad-switches, the combination, with brushes D D′, secured to opposite sides of the locomotive and connected, through a four way switch, M, operated by the reversing-lever of the engine, with the opposite terminals of an open circuit including a battery, K, and bell L, and with a commutator, O, establishing intermittent and alternating connection with the ground from said terminals, of an insulated conductor, B, placed alongside of the track in advance of the switch and connected to the ground by opening the same, and adapted to make contact with one or other of said brushes on the passage of the latter, substantially as and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

BURTON H. GEDGE.

Witnesses:

A. P. KNIGHT,

N. ROCKHOLD.