C. L. BOPP.

TRACK INSTRUMENT.

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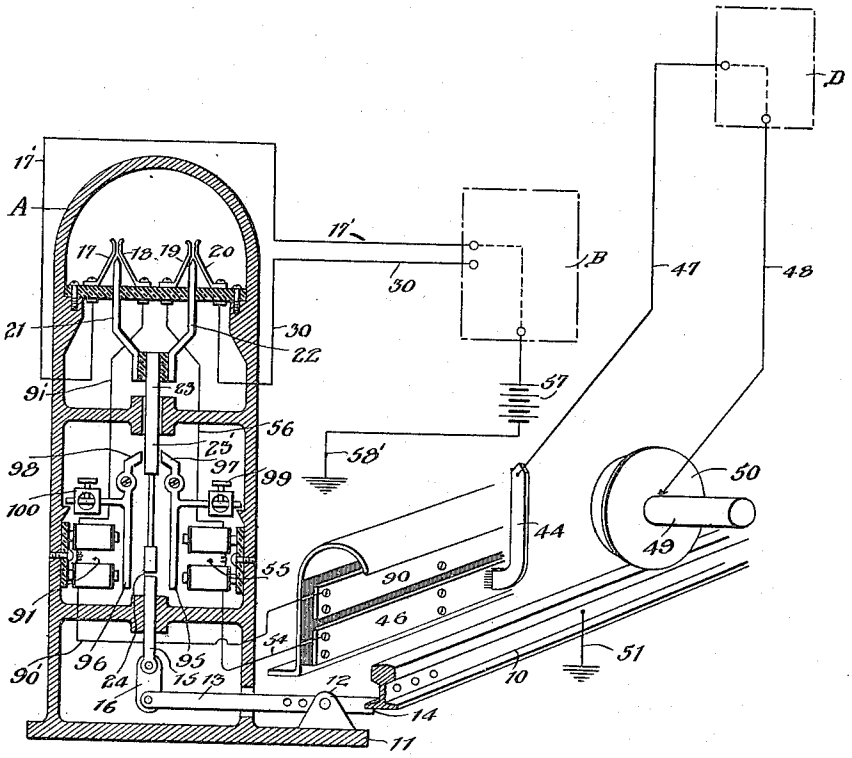

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TRACK INSTRUMENT.

1,221,663. Specification of Letters Patent. Patented Apr. 3, 1917.

Application filed March 14, 1914. Serial No. 824,730.

To all whom it may concern:

Be it known that I, CLINTON L. BOPP, a citizen of the United States, residing at Hawkeye, in the county of Fayette and State of Iowa, have invented certain new and useful Improvements in Track Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to track instruments for train signaling devices, and it consists in certain novel means for closing an electric switch or switches in a circuit or circuits to be connected with signal apparatus not shown, said switches being operated by means of a plunger and a lever, which lever is in turn operated by the vibration of a rail.

In the drawings, the view is a vertical section through a casing which incloses the apparatus located adjacent to the track.

As shown in the drawing, a rail 10 of the usual and ordinary type is employed which is deflected to a certain limited extent by the passage of a train thereover. Adjacent the rail a base 11 is disposed having a fulcrum block 12 carrying a lever 13 fulcrumed thereon having a bifurcated end 14 engaging the flange of the rail so that at the passage of a train over such point the deflection of the rail will cause the bifurcated end of the lever 13 to be depressed and the opposite end to be raised. The last named end projects into the housing A which is erected also upon the base 11 and connected with the plunger 15 in any approved manner as by the link 16.

Also within the housing A are spaced contacts 17, 18, 19 and 20 insulated from each other and adapted to be electrically connected by plugs 21 and 22 which are carried by but insulated from a second plunger 23 which is positioned to be lifted by the plunger 15 but separated therefrom as at 24 so that when the plunger 23 is once lifted the jarring occasioned by the passage of wheels over the rail will have no effect upon the plugs 21 and 22 which are serving to connect the contacts above mentioned.

Simultaneously with the raising of plunger 23 contact is made with the third or ramp rail and current energizes the magnet 55 or 91, which attracts the depending armatures 95 and 96 pivoted to the frame A. This action forces one of the points 97 or 98 under the shoulder 23′ formed at the bottom of plunger 23 which holds the same until the magnets are deënergized when weight 99 or 100 throws the armature out to normal position.

A lower ramp rail or third rail 46 is connected by wire 54 with magnets 55 and the latter are connected with contact 19 by wire 56. Adjacent contact 20 is connected with wire 30 leading to apparatus B connected with the signal mechanism. Upper ramp or third rail 90 is insulated from the lower ramp rail and is connected by wire 90′ with magnets 91, and wire 91′ connects with contact 18 located opposite contact 17, which latter is connected by wire 17′ with apparatus belonging to the signal mechanism.

The signal mechanism located at a given station is illustrated conventionally by B, and the apparatus to be carried by the train is designated D. For the purpose of showing the operation of the track instrument, simple circuits are shown connecting said instrument with the ramp rail and with B and D. If lower ramp rail 46 is engaged by brush 44 carried by the train, the circuit from battery 57 (grounded at 58′) would run through apparatus B, wire 30, members 20, 22, 19, wire 56, magnets 55, wire 54, ramp rail 46, brush 44, wire 47, cab apparatus D, wire 48, axle 49, wheel 50, rail 10, wire 51 to ground (the other end of this circuit being grounded at 58′, as stated).

If brush 44 engages upper ramp rail 90, the path of the current from apparatus B, through casing A, will be over wire 17′, and its direct connections already described, thence to rail 90 and brush 44, the current passing to cab apparatus D and through the car axle to the ground, as in the case above described.

It is intended that one particular type of train, as passenger trains, will carry their brushes to engage the lower third rail or ramp rail sections while freight trains may carry their brushes to engage the upper third rail sections. On double track railroad systems, the engineer of the second train would know better how to regulate the speed of his train if he were certain as to what kind of train was ahead of him. A passenger express would have to slow up considerably when entering a block already occupied by a freight while a freight engine entering the block after the express would not need to fear any danger of overtaking

the fast express and the engineer could regulate the speed of his engine accordingly.

What I claim is:

1. In a signaling device, a switch, a circuit connected therewith, means for retaining the switch closed, a deflectable rail, and means for operating the switch by the vibration of the rail and preventing subsequent vibration from being communicated to the switch until the latter has been opened, said means last mentioned including a plurality of abutting members movable together, one of said members being also movable independently of the other and out of contact therewith.

2. In a signaling device, a housing, a plunger reciprocably mounted within the housing, means to reciprocate the plunger, a switch located within the housing, a second plunger in alinement with the first named plunger adapted to engage the first plunger and having a reduced portion to form a shoulder, a plug carried by the second named plunger adapted to close the switch as the first named plunger is raised, an electro-magnet mounted within the housing, a pivoted catch normally held away from said shoulder, a circuit including the switch and electro-magnet, means to close said circuit as the first named plunger is raised to close the said switch, said electro-magnet adapted when the circuit is closed to move the catch under the shoulder to hold the second named plunger in raised position, said shoulder and catch being positioned to hold the second plunger out of contact with the plunger first mentioned.

3. In a signaling device a housing, a plunger, means to reciprocate said plunger vertically, a second plunger adapted to engage the first plunger and having a reduced portion defining a shoulder, a pivoted catch adapted to engage said shoulder and move from said shoulder, a switch located within the housing, a plug carried by the second plunger adapted to close the switch when the first named plunger engages and raises the second plunger, an electro-magnet located adjacent said catch, a circuit including the switch and electro-magnet, means to close said circuit when the switch is closed, said electro-magnet adapted to move the catch to engage the shoulder when the circuit is closed, said shoulder and catch being positioned to hold the second plunger out of contact with the plunger first mentioned, and gravity controlled means adapted to move said catch away from the shoulder when said circuit is broken.

4. In a device of the class described, a switch and a circuit connected therewith, a rail and mechanism for operating the switch by the vibration of the rail including a plunger and a reciprocable member for actuating the plunger by impact, retaining means for the plunger and switch, said plunger being thrown out of engagement with said member at times and held out of engagement by said retaining means.

In testimony whereof I affix my signature in presence of two witnesses.

CLINTON L. BOPP.

Witnesses:
SAM L. SHALES,
CLYDE A. MUNSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."