Aug. 12, 1924. 1,505,002

G. ZINT

RAILWAY SIGNAL SWITCH

Filed March 26, 1923 2 Sheets-Sheet 1

FIG. 1.

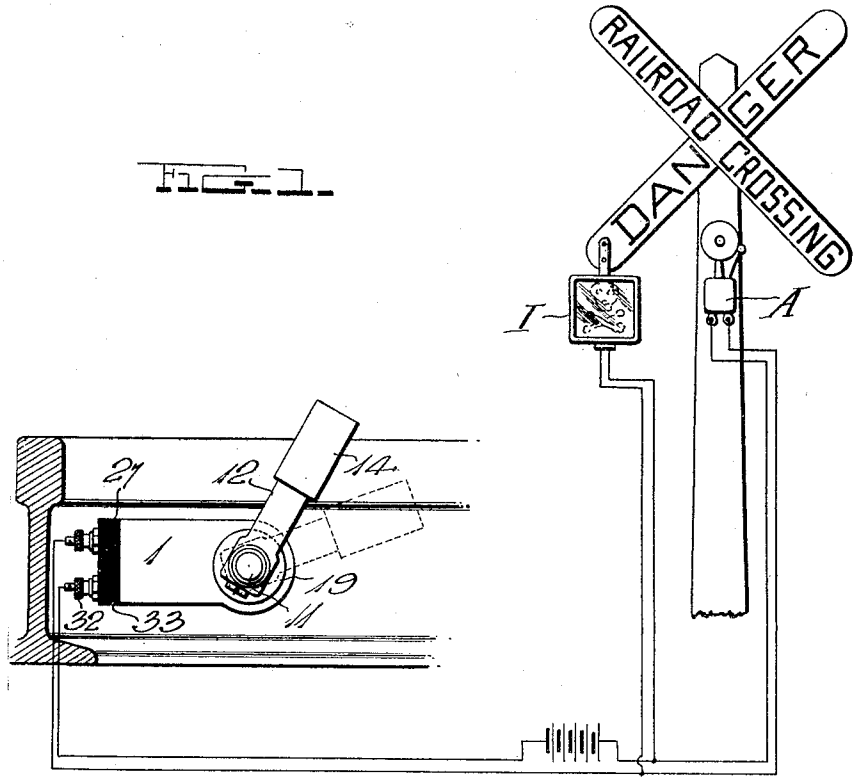


FIG. 2.

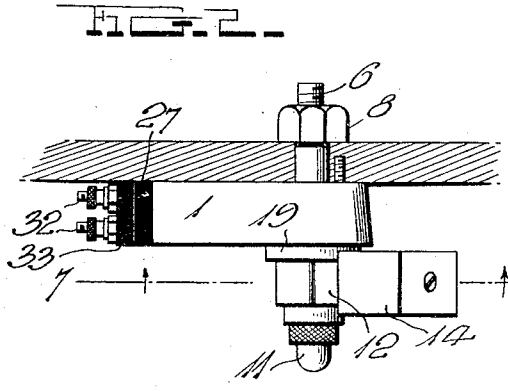
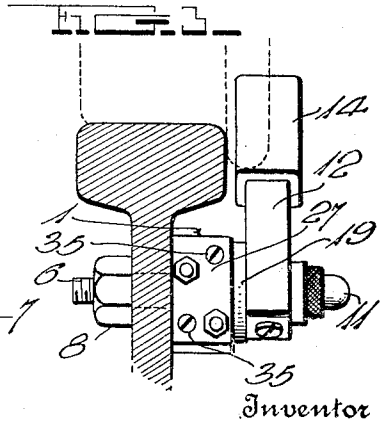


FIG. 3.



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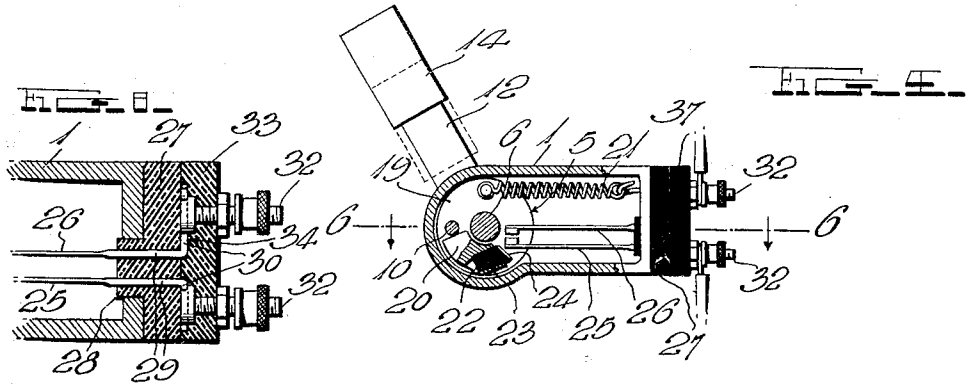
By H. B. Williamson & Co
Attorneys

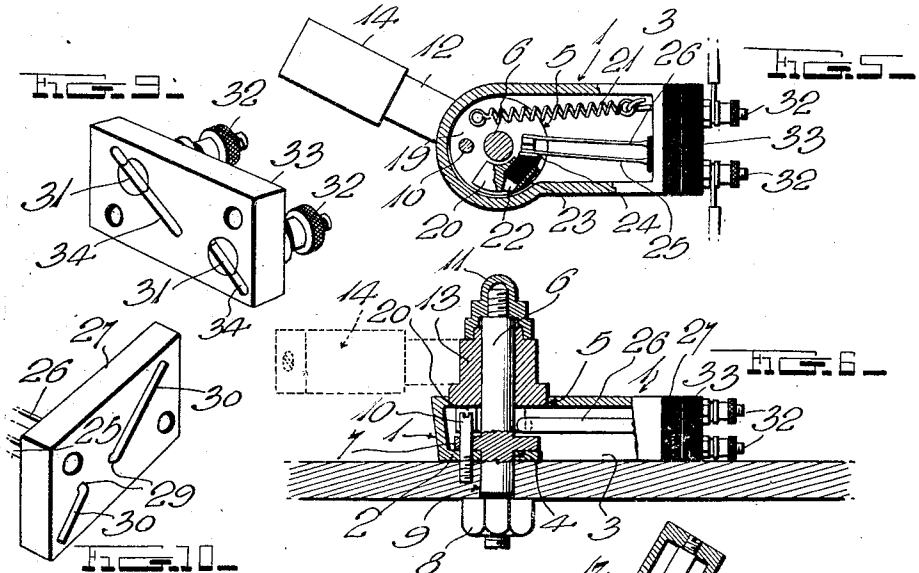
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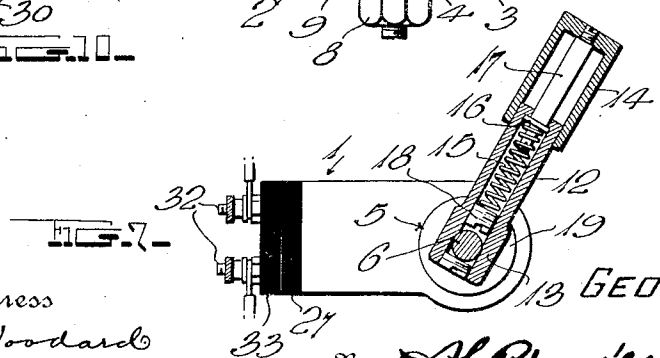
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RAILWAY SIGNAL SWITCH

Filed March 26, 1923 2 Sheets-Sheet 2







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UNITED STATES PATENT OFFICE.

GEORGE ZINT, OF WAPAKONETA, OHIO.

RAILWAY SIGNAL SWITCH.

Application filed March 26, 1923. Serial No. 627,773.

To all whom it may concern:

Be it known that I, GEORGE ZINT, a citizen of the United States, residing at Wapakoneta, in the county of Auglaize and State of Ohio, have invented certain new and useful Improvements in Railway Signal Switches; and I do 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.

My invention relates to improvements in circuit makers and breakers and more particularly to those which are designed primarily for operating either a visual or an audible alarm, or both, to give warning at railroad crossings, when a car or train is approaching.

One object of the invention is to provide a simple form of switch provided with improved means whereby it will be operated by a car moving in one direction but will not be actuated by one moving in the opposite direction.

Another object is to provide a simple arrangement for securing the switch casing to one of the rails and for pivotally mounting the switch operating arm which is actuated by the car wheels.

The switch, in the present disclosure of the invention, includes a pair of co-operable contacts and binding posts in electrical connection therewith, a further object being to provide an effective solderless connection between the contacts and binding posts which, in addition to establishing the necessary electrical conductivity, will prevent relative turning of the contacts.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawings.

Figure 1 is a diagrammatic view showing the application of my invention to visual and audible danger signals for a railroad crossing.

Figure 2 is a top plan view of the invention attached to a rail, the latter being shown in horizontal section.

Figure 3 is a transverse sectional view through the rail and an end elevation of the invention secured thereto.

Figures 4 and 5 are vertical longitudinal sectional views showing the switch in open and closed positions, respectively.

Figure 6 is a horizontal sectional view on line 6—6 of Fig. 4.

Figure 7 is a vertical sectional view on line 7—7 of Fig. 2.

Figure 8 is a detail longitudinal sectional view disclosing the contact mounting means.

Figures 9 and 10 are perspective views of the two insulators and associated parts which are disclosed in section in Fig. 8.

In the drawings above briefly described, the numeral 1 designates a horizontally elongated casing having a vertical side 2 adapted to contact with one side of a rail web and if desired, a portion of the length of the side 2 may be cut away as indicated at 3. The side 2 is formed with a relatively small opening 4 while the opposite vertical wall of the casing has formed therein a comparatively large circular opening 5. A horizontal stub-shaft 6 passes through both of the openings 4 and 5 and is snugly received in the former, said shaft having between its ends an outstanding integral flange 7 which contacts with the inner surface of the side wall 2 and the adjacent end of this shaft is provided with a clamping nut 8, so that when said end is passed through an opening 9 in the rail and the nut threaded in place, the flange 7 and nut 8 will co-act in tightly clamping the casing 1 in place, while at the same time, securing the stub-shaft 6 rigidly in position.

I have shown a screw 10 passing outwardly through the flange 7 and the casing wall 2 and extending into the rail for the purpose of holding the casing 1 against possible tilting and the inner end of this screw forms a stop for a pivoted arm described below.

An operating arm is pivotally mounted on the end of the shaft 6 which projects through the opening 5, being held against removal from said shaft by means of the shouldered nut 11 shown most clearly in Fig. 6. This arm consists of an inner tubular section 12 having a hub 13 pivotally mounted on the shaft 6, and an outer cap-like section 14 which is slidably engaged with the inner section 12 and is normally extended under the influence of a coiled spring 15. In the construction shown, this spring is positioned within the inner arm section 12 and acts against an external shoulder 16 on a stem 17 which extends from the outer end of the section 14 through

an opening in the outer end of said section 12, a threaded plug 18 or other desired thrust shoulder being provided for said spring 15. The arm 12—14 is normally in an inclined position such as that shown in Fig. 1 and when a car wheel strikes this arm on its upper side, the arm will be rocked downwardly and will close the switch described below. A car wheel approaching in the other direction however will merely force downwardly on the outer arm section 14 and it will yield against the spring 15, but the inner arm section 12 is not then moved and consequently the switch is undisturbed.

The hub 13 is provided with a disk-like portion 19 which closes the opening 5 and this portion is formed with an arcuate lug 20 received in the casing 1 and normally contacting with the screw 10 to limit the upward swing of the operating arm, under the influence of a coiled spring 21 which is positioned within the casing and is connected to the portion 19. The lug 20 is provided with a recess or socket 22 receiving an insulating shoe 23 which preferably has its outer end metal covered as indicated at 24, for the purpose of engaging a relatively movable spring contact 25 in the casing and forcing it into engagement with a relatively stationary contact 26. While I have referred to these contacts as being relatively movable and stationary, they are both yieldable spring arms as shown and may bodily move after the initial movement of the arm 25 to complete the circuit.

For mounting the contacts 25 and 26 and insulating them from each other as well as from the casing 1, I prefer to provide the construction shown most clearly in Figs. 8, 9 and 10. In these figures, the numeral 27 designates an inner insulator contracting with the end of the casing 1 remote from the shaft 6, said insulator having an inwardly extending boss 28 passing through an opening in the casing and being formed with openings passing through this boss, through which openings the stationary ends 29 of the contacts 25 and 26 pass, said ends being preferably of circular section. The extremities of the contact ends 29 are bent laterally upon the outer face of the insulator 27 as indicated at 30 and are received frictionally in grooves 31 formed in the heads of binding posts 32 which pass through openings in an outer insulator 33, the binding post openings being out of line with the openings through which the contact ends 29 pass. The inner surface of the insulator 33 is also preferably grooved as indicated at 34 to receive the terminals 30. Screws or the like 35 (see Fig. 3) are passed through openings in the outer and inner insulators 33 and 27 respectively and are threaded into the casing 1, said screws serving to clamp the two insulators against opposite sides of the contact extremities 30 as well as to hold said insulators securely upon the casing. Suitable wiring is connected with the binding posts 32 and may lead to any desired electrical signal or signals, such as an illuminated visual signal I and a bell or other audible signal A. When tightening or loosening the nuts of the binding posts, it will be obvious that these posts are held against rotation by their engagement with the contact extremities 30 and similarly the contacts cannot rotate on account of having the lateral extremities thereof received in the grooves 31 of the binding posts.

From the foregoing, it will be seen that a simple and inexpensive device has been provided for carrying out the objects of my invention in an expeditious manner. As excellent results may be obtained from the details disclosed, they are preferably followed, but within the scope of the invention as claimed, numerous minor changes may be made. Furthermore, while I have illustrated the arm 12—14 in position to be struck by the flanges of car wheels, it will be obvious that this arm might if desired be disposed at the outer side of the rail instead of at the inner side, to be engaged by the outer edges of the wheels, if the latter are wide enough. If not, it will be understood that the ball of the rail might be notched out to receive the arm, permitting it to be set inwardly toward the web of the rail to a greater extent. Also, it will be understood that the invention may be used at numerous locations and in fact wherever the use of such a device is necessary or advisable.

I claim:

1. A circuit controlling device comprising a casing adapted to be stationarily mounted at one side of a railway rail, a pivoted vertically swinging arm at the outer side of said casing consisting of a relatively stationary lower section and a normally raised downwardly yieldable upper section, means for swinging said arm normally upward to an inclined position in the path of a car wheel, whereby a wheel traveling in one direction will swing the entire arm downwardly whereas a wheel moving in the other direction will merely depress said upper section of the arm, and a circuit controlling means in the casing operated by said arm.

2. A circuit controlling device comprising a casing adapted to be mounted at one side of a railway rail, said casing having an opening in one vertical side, a stub-shaft extending horizontally through said opening from the opposite side of the casing in spaced relation with the wall of the opening, a vertically swinging wheel operated arm mounted on said stub-shaft at the ex-

terior of the casing and having a portion at its inner end closing said opening, a switch in said casing, including a movable contact member, said arm having a lug extending into the casing through said opening, said lug having a socket, and an insulating shoe held in said socket for engagement with said movable contact member.

3. A circuit controlling device comprising a casing having a vertical side adapted to contact with one side of a railway rail, said side having a relatively small opening, the opposite side or said casing having a comparatively large opening, a stub-shaft passing through both openings and having an outstanding flange between its ends contacting with the inner surface of the first named casing side and of less diameter than said comparatively large opening, whereby the shaft may be inserted, the end of said shaft received in the smaller opening having a nut and being adapted for passage through the rail to secure both the casing and shaft in place, a vertically swinging wheel operated arm mounted on the other end of said shaft and closing said comparatively large opening, and a switch in the casing controlled by said arm.

4. A circuit controlling device comprising a casing having a vertical side adapted to contact with one side of a railway rail, said side having a relatively small opening, the opposite side of said casing having a comparatively large opening, a stub-shaft passing through both openings and having an outstanding flange between its ends contacting with the inner surface of the first named casing side and of less diameter than said comparatively large opening, whereby the shaft may be inserted, the end of said shaft received in the smaller opening having a nut and being adapted for passage through the rail to secure both the casing and shaft in place, a vertically swinging wheel operated arm mounted on the other end of said shaft and closing said comparatively large opening, a switch in the casing controlled by said arm, and a screw passing outwardly through said flange and the contacting side of the casing for engagement with the rail to prevent tilting of the casing upon said stub-shaft, said arm having a shoulder cooperable with the inner end of said screw to limit the movement of the arm in one direction.

In testimony whereof I have hereunto affixed my signature.

GEORGE ZINT.