E. L. NICHOLSON.

CURRENT COLLECTING MEANS FOR SIGNAL APPARATUS OR THE LIKE.

APPLICATION FILED JUNE 10, 1909.

1,052,268.

Patented Feb. 4, 1913.

2 SHEETS—SHEET 1.

Fig. 1

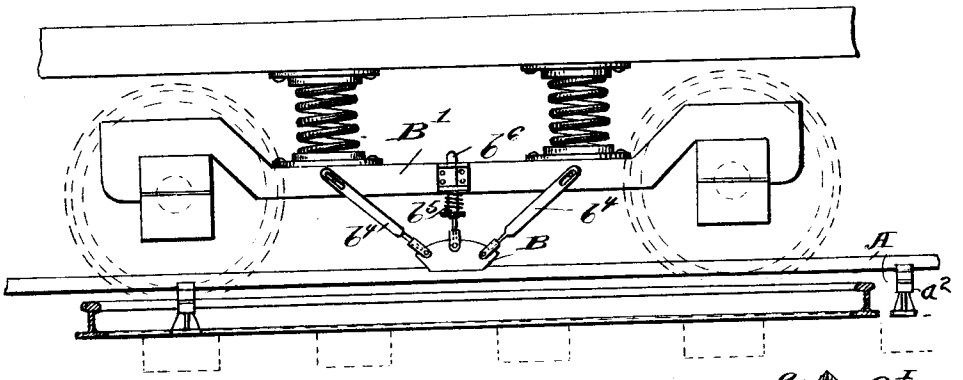


Fig. 2

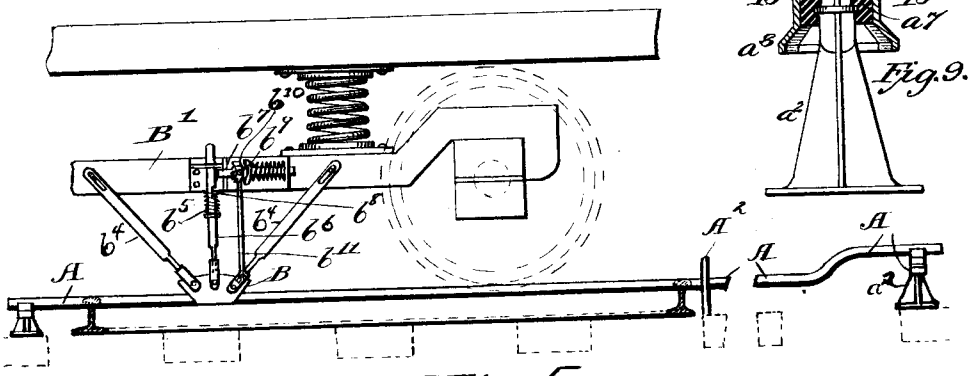
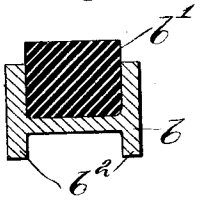


Fig. 9.

Fig. 5

Fig. 6



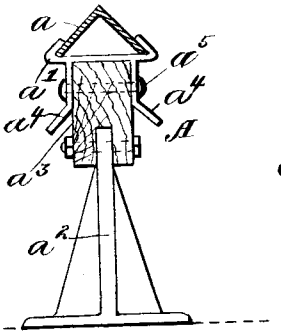
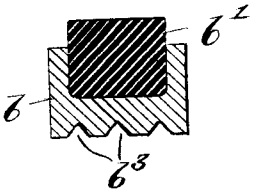


Fig. 7



Witnesses:

J. C. Turner

Robert M. Orr

Fig. 10.

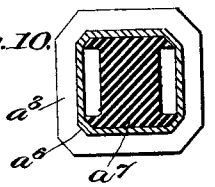


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Fig. 3

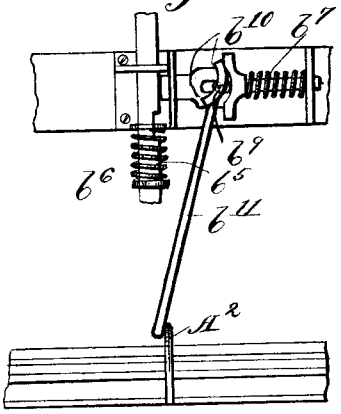


Fig. 4

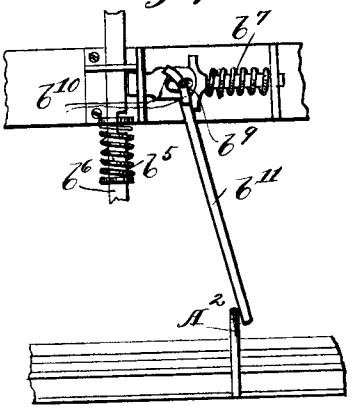
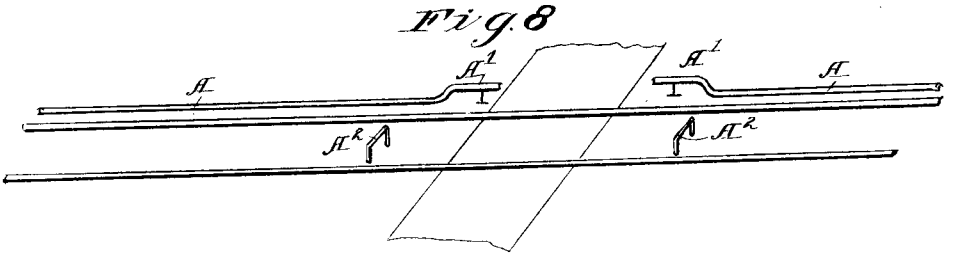


Fig. 8



Witnesses:

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UNITED STATES PATENT OFFICE.

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CURRENT-COLLECTING MEANS FOR SIGNAL APPARATUS OR THE LIKE.

1,052,268. Specification of Letters Patent. Patented Feb. 4, 1913.

Application filed June 10, 1909. Serial No. 501,239.

To all whom it may concern:

Be it known that I, EZRA L. NICHOLSON, a citizen of the United States, and a resident of Lakewood, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Current-Collecting Means for Signal Apparatus or the Like, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My improved signal apparatus relates particularly to a signal system designed primarily for use in connection with electric, or trolley lines, wherein the installation of the more elaborate block systems, that are employed on the larger steam roads, is prohibited by reason of the expense of installation and maintenance.

The apparatus of the present invention is designed to obtain simplicity and relative inexpensiveness in certain features of such a system.

To the accomplishment of the above and related objects, then, said invention consists of the means hereinafter fully described, and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—Figure 1 is a side elevational view of a car truck, and section of track showing the portions of my improved apparatus respectively pertaining to such truck and track in coöperative relation; Fig. 2, similarly illustrates a modified construction of the apparatus; Figs. 3 and 4 respectively show a detail of such modified form of apparatus in two different operative positions; Fig. 5 is a transverse sectional view of the third or signal rail; Figs. 6 and 7 are respectively transverse sectional views of two different forms of shoe for use on said signal rail, Fig. 8 is a diagrammatic perspective view of a section of track equipped for use with my improved apparatus; while Figs. 9 and 10 illustrate an optional construction of support for the third or signal rail, Fig. 10 being a section on the line 10—10 in Fig. 9.

The system, for use in which the present apparatus is primarily designed, involves the use of a discontinuous conductor extending along the railway, the sections of such conductor being of any desired length. The vehicles movable upon the railway are provided with signal devices, and with magnetos adapted to be driven by movement of the vehicle, and connected in series with the corresponding signal device and with said conductors. The circuit through said conductors, magnetos and signal devices, is normally broken, but will obviously be closed whenever two vehicles come in contact with the same section of the discontinuous conductor. The present apparatus relates to details of construction of the third or signal rail A forming said discontinuous conductor, and to the shoe B which forms the contact member carried by the vehicle through which electrical connection is had with said rail. Such rail A will be seen to comprise an angle iron a held with its apex directed upward by a clip a' supported by a bracket a^2 that in turn is mounted on the ties or equivalent track foundation. In the form of construction illustrated in Fig. 5, clip a' is insulated from the lower part of the bracket by the interposition of a block a^3 of suitable insulating material, as for example, wood. Depending laterally from the clip, so as to inclose the opposite sides of the insulating block, are shields a^4 that turn outwardly, so as to protect the bolts whereby said block is secured to the bracket proper, from becoming electrically connected with the clip by the collection of water or other conducting material therebetween. At the same time such shields afford a convenient means for attaching clip a' to the block by the passing of a bolt a^5 therethrough. The angle iron a forming the rail proper, it will be observed, is only slidably held in the clips of the several brackets, so that the latter may be mounted in place and the iron introduced subsequently. By reason of its particular form and disposition, such angle iron obviously affords a rail of maximum strength and current carrying capacity with a minimum weight.

Instead of utilizing wood as the insulating material in the construction of the rail supporting bracket a^2, I may employ a cementitious insulating material, in which event the arrangement of parts illustrated in Figs. 9 and 10 is preferably employed. As there shown clip a' is carried by a cap

a^6 mounted upon but spaced from bracket a^2 by the interposed insulation a^7. Cap a^6 being formed with a flange a^8 extending entirely around the same, and no bolts being employed, this construction offers several advantages over that of Fig. 5.

Preferably the rail A, the details of the construction of which have just been described, is disposed alongside the main or traction rail upon which the car runs. The only difference in such disposition as illustrated in Figs. 1 and 2 is in the relative elevation of the signal rail with respect to the traction rail. As shown in Fig. 1, such signal rail is raised throughout its length a sufficient height above the traction rail to permit the shoe B to be held at a corresponding elevation so that high-ways and the like may be crossed, without special provision being made to avoid having the shoe strike an obstruction. The signal rail itself, it will of course, be understood, is discontinued across such high-way. As shown in Fig. 2, the signal rail on the contrary lies throughout the major portion of its length on or below the level of the traction rail, and when a highway or the like is reached, is elevated to raise the shoe which is then held in such raised position by mechanism that will be presently described, until the highway is passed, whereupon it is again lowered into contact with the rail. Such shoe B comprises (Figs. 6 and 7) a metallic contact body b within which is secured a block b' of insulation to which are attached the holding devices that support the same from the truck. The under face of such metallic body may be bounded simply by flanges b^2 as in Fig. 6, to prevent the shoe from jumping the rail, or it may be formed with a series of parallel grooves b^3 that similarly tend to retain the shoe in proper position upon the rail, the shoe in either event being of sufficient width to compensate for the side sway of the car. Referring, then, more particularly to the supporting means, as illustrated in Fig. 1 where it will be recalled the shoe is always maintained at a relatively constant elevation, the weight of the shoe it will be seen, is supported by two oppositely disposed pull rods b^4 having slotted connection with the truck frame B'. In action the shoe is drawn by one of the pull rods, the opposite one being allowed to move up and down on the pin that secures its slotted end to the truck frame to compensate for inequalities in the track. The shoe is maintained in contact with the latter under the pressure of a compression spring b^5 that surrounds a vertically reciprocable rod b^6, connected with the shoe at its lower end.

In the modified construction of Fig. 2, (see also Figs. 3 and 4) means are provided for retaining the shoe temporarily in elevated position above the normal track level, and for again lowering the same. These means comprise simply a horizontally disposed spring-pressed plunger b^7 adapted when the shoe is raised by riding over the raised end A' of the rail A adjacent to a crossing to engage a slot b^8 in the vertically reciprocable rod b^6. In order to withdraw said plunger, a rock shaft b^9 provided with oppositely extending arms b^{10} is adapted, upon oscillation in either direction, to withdraw the plunger and thereby permit the shoe again to resume its normal lower position under the impulse of the compression spring associated with the rod. Such oscillation of the rock-shaft is effected by the striking of an arm b^{11}, depending therefrom against a suitably disposed obstruction A^2 along the track, one such obstruction being located just before each raised signal rail terminus A'. The relative arrangement of such obstructions and rail is illustrated in the perspective diagram of Fig. 8.

It has not been deemed necessary to indicate the wiring connections of the vehicle, nor of the signal rail, whereby the latter is carried across highways in spite of the interruption in the rail proper.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In apparatus of the class described, the combination with the car frame, of a contact shoe, oppositely inclined pull rods slidably connected with said frame and attached at their lower ends to said shoe, means tending to depress said shoe, and means adapted to retain the same in elevated position.

2. In apparatus of the class described, the combination with the car frame, of a contact shoe, oppositely inclined pull rods slidably connected with said frame and attached at their lower ends to said shoe, a substantially vertically disposed rod attached to said shoe and similarly connected with said frame, a spring tending to depress said last-named rod and attached shoe, and means adapted to engage said last-named rod to retain said shoe in elevated position.

3. In apparatus of the class described, the combination with the car frame, of a contact shoe, oppositely inclined pull rods slidably connected with said frame and attached at their lower ends to said shoe, a substantially vertically disposed rod attached to said shoe and similarly connected with said frame, a spring tending to depress said

last-named rod and attached shoe, and a transversely reciprocable, spring-pressed plunger adapted to engage said last-named rod to retain said shoe in elevated position.

4. In apparatus of the class described, the combination with the car frame, of a contact shoe, oppositely inclined pull rods slidably connected with said frame and attached at their lower ends to said shoe. a substantially vertically disposed rod attached to said shoe and similarly connected with said frame, a spring tending to depress said last-named rod and attached shoe, means adapted to retain the same in elevated position, and means for releasing the rod from said retaining means.

5. In apparatus of the class described, the combination with the car frame, of a contact shoe, oppositely inclined pull rods having slotted engagement with said frame and attached at their lower ends to said shoe, a substantially vertically disposed rod attached to said shoe and slidably held in said frame, a spring tending to depress said last-named rod and attached shoe, means for retaining said rod in elevated position, and means for releasing said rod from said retaining means.

6. In apparatus of the class described, the combination with the car frame, of a contact shoe, oppositely inclined pull rods slidably connected with said frame and attached at their lower ends to said shoe, a substantially vertically disposed rod attached to said shoe and similarly connected with said frame, a spring tending to depress said last-named rod and attached shoe, a transversely reciprocable, spring-pressed plunger adapted to engage said last-named rod to retain said shoe in elevated position, and means controlling the operation of said plunger.

7. In apparatus of the class described, the combination with the car frame, of a contact shoe, oppositely inclined pull rods slidably connected with said frame and attached at their lower ends to said shoe, a substantially vertically disposed rod attached to said shoe and similarly connected with said frame, a spring tending to depress said last-named rod and attached shoe, a transversely reciprocable, spring-pressed plunger adapted to engage said last-named rod to retain said shoe in elevated position, and means controlling the operation of said plunger, said means comprising a rock-shaft adapted to withdraw said plunger from such engagement upon oscillation in either direction, and an arm borne by said shaft and adapted to be engaged and swung by a suitably placed obstruction.

8. In apparatus of the class described, the combination of a discontinuous signal rail, the adjacent ends of the rail sections being raised relatively to the remainder of the rail, a car movable along the line of said rail, a contact shoe borne by said car and normally depressed into contact with said rail, means adapted to retain said shoe in the elevated position assumed thereby in passing over the raised end of one of said rail sections, and means adapted to automatically release said shoe again after passing over a second raised end.

9. In apparatus of the class described, the combination of a discontinuous signal rail, the adjacent ends of the rail sections being raised relatively to the remainder of the rail, a car movable along the line of said rail, a contact shoe borne by said car and normally depressed into contact with said rail, means adapted to retain said shoe in the elevated position assumed thereby in passing over the raised end of one of said rail sections, an oscillatory member adapted, upon being swung in either direction, to release said shoe from said retaining means, and obstructions in connection with said rail disposed to engage said oscillatory member to thus swing the same.

Signed by me this 2nd day of June, 1909.

E. LOUIS NICHOLSON.

Attested by—
ANNA L. GILL,
JNO. F. OBERLIN.