No. 797,191. PATENTED AUG. 15, 1905.

S. E. FOREMAN.

RAILROAD TRAIN SIGNAL.

APPLICATION FILED MAR. 28, 1905.

2 SHEETS—SHEET 1.

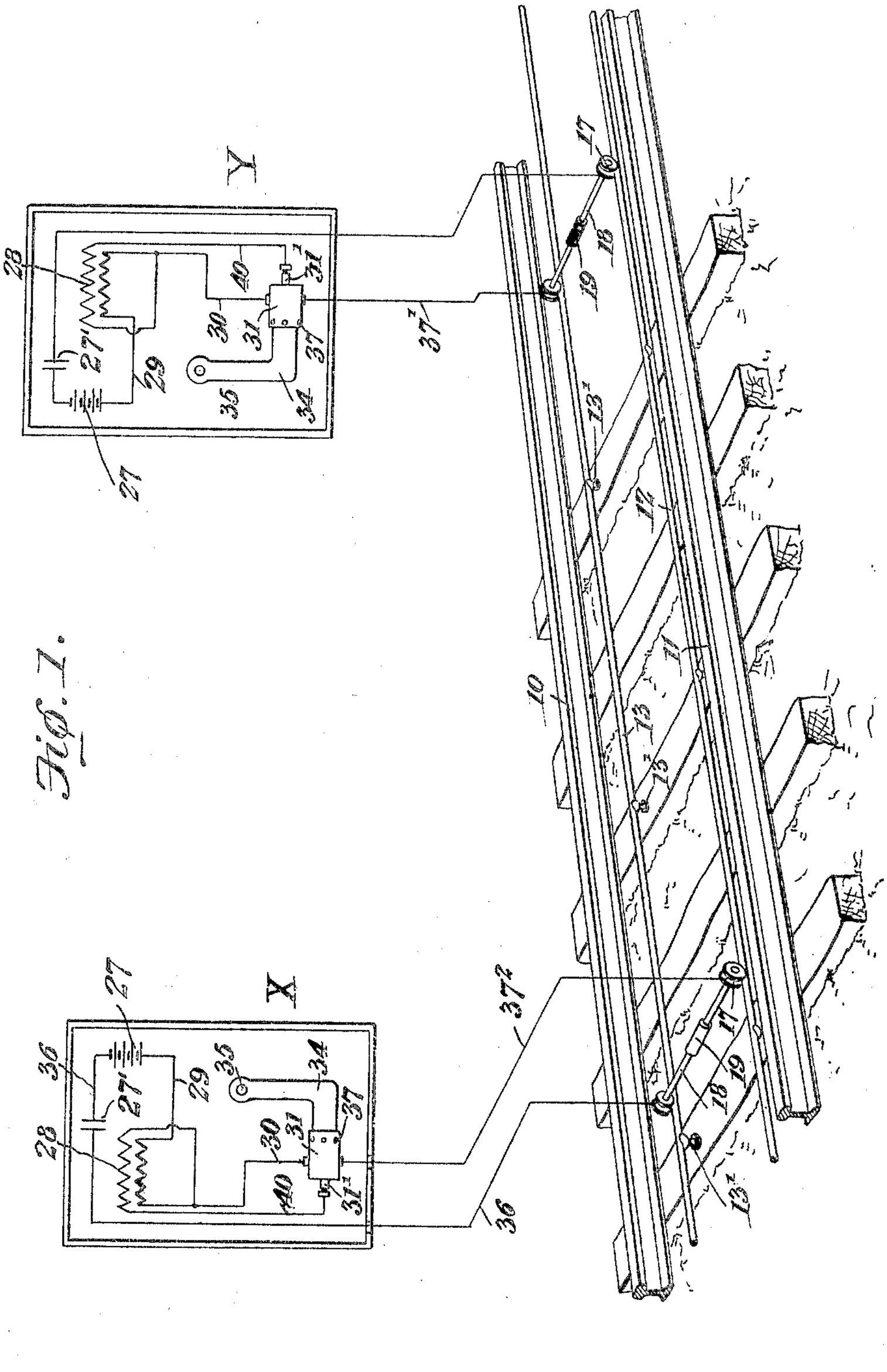

Fig. 1.

Witnesses

E. C. Hazard

Jno. E. Parker

Samuel E. Foreman Inventor

by Cushman & Co

Attorneys

ANDREW. B GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON D. C.

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2 SHEETS—SHEET 2.

Fig. 2.

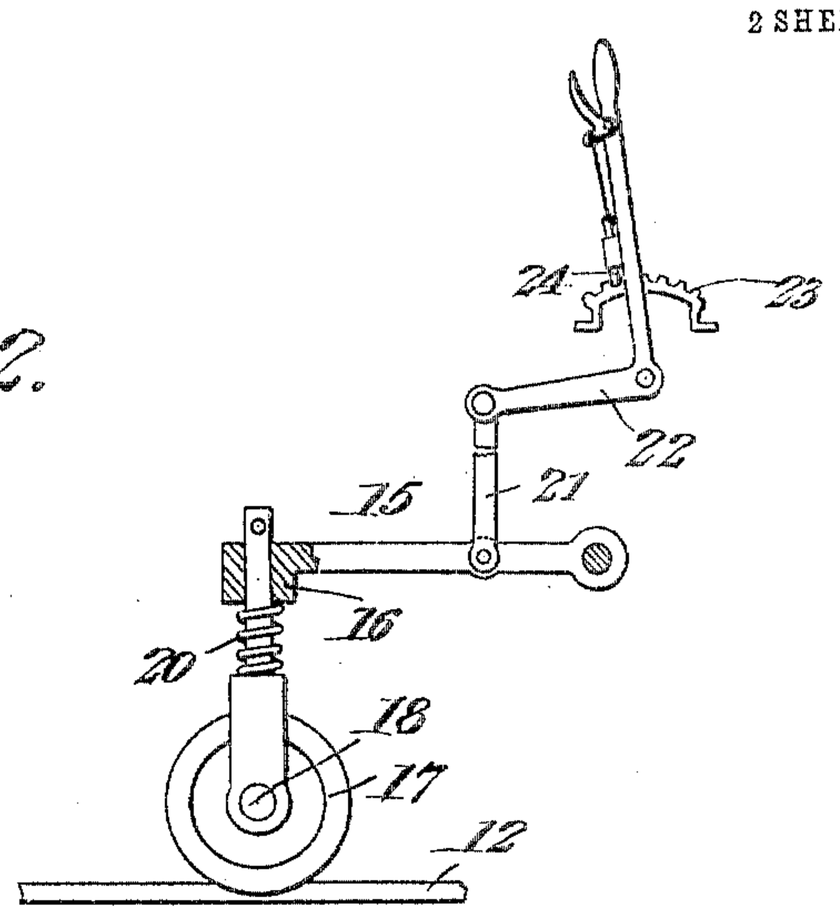


Fig. 3.

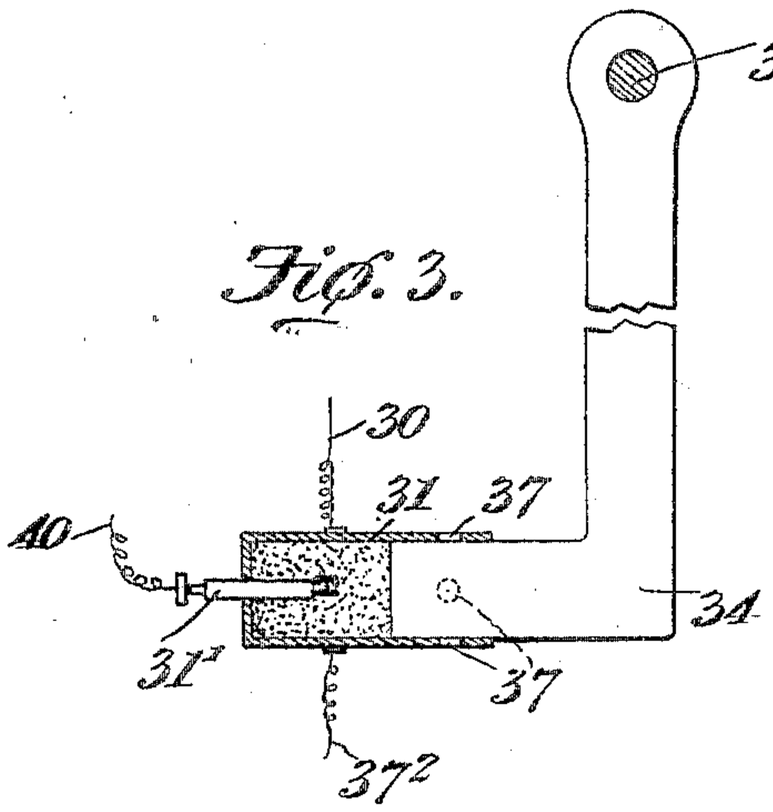


Fig. 4.

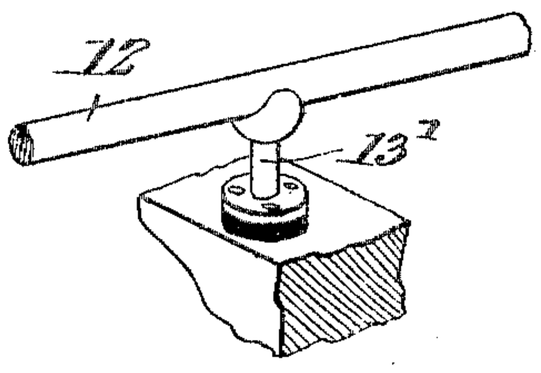
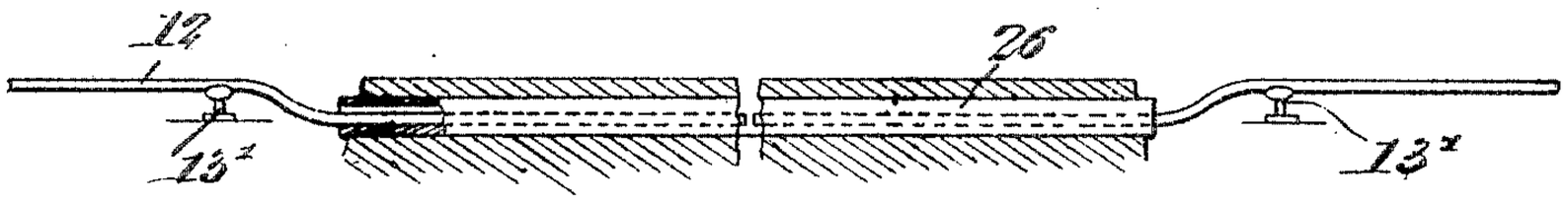


Fig. 5.



Witnesses
E. J. Stewart
Jno. C. Parker

Samuel E. Foreman Inventor
by Church & Co
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL E. FOREMAN, OF PADUCAH, KENTUCKY.

RAILROAD-TRAIN SIGNAL.

No. 797,191. Specification of Letters Patent. Patented Aug. 15, 1905.

Application filed March 28, 1905. Serial No. 252,558.

To all whom it may concern:

Be it known that I, SAMUEL E. FOREMAN, a citizen of the United States, residing at Paducah, in the county of McCracken and State of Kentucky, have invented a new and useful Railroad-Train Signal, of which the following is a specification.

This invention relates to electrical signaling and safety appliances for use in connection with railway systems, and has for its principal object to provide a novel means for sounding an alarm in the cabs of engines which approach each other in the same track.

A further object of the invention is to provide a novel means for simultaneously sounding an alarm and operating a train-controlling means—such, for instance, as the throttle-valve or the air-brakes.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a general diagram of a railway signaling and safety system arranged in accordance with the invention. Fig. 2 is a sectional elevation illustrating the mounting of the trolley-wheels on the locomotive or tender. Fig. 3 is a detail sectional view of the cylinder in which the explosive charge is placed for operating the train-controlling mechanism. Fig. 4 is a detail perspective view of one of the trolley-wire-supporting standards. Fig. 5 is a detail view illustrating the manner in which the trolley-wire is depressed at points where the railroad crosses highways.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

In the drawings, 10 and 11 designate the traffic-rails, and 12 and 13 are bare electrical conductors extending parallel with the traffic-rails and preferably supported by small standards 13′, carried by and insulated from the railroad-ties or other supports.

Under the locomotive or the tender is arranged a pivotally-mounted frame 15, carrying a pair of boxes 16, in which are journaled grooved rollers 17, which may be connected by a common spindle 18, preferably formed in sections insulated from each other by a block 19. These rollers are pressed down into engagement with the conductors 12 and 13 by means of springs 20; but their downward movement is limited, so that when they leave the conductors, as at crossings, they will not be forced down into contact with the ties or road-bed. The pivoted frame on each locomotive is connected by a suitable rod 21 to a lever 22, movable over a notched locking-segment 23 and provided with the usual locking-latch 24 in order that the trolley-wheels may be raised from engagement with the conductors when the engine is working at shifting in a yard or is approaching a terminal station where large numbers of trains are running on the same track. The conductors 12 and 13 are depressed at points where they cross highways and are protected by insulated sleeves 26.

In the cab of the locomotive is a source of electrical energy, represented in the present instance in the form of a battery or batteries 27, and one pole of the battery is connected to the primary of an induction-coil 28 by means of a wire 29, the circuit being thence continued by a wire 30 through a metallic cylinder 31. In the primary circuit is also arranged an interrupter 27′ of any suitable construction.

The cylinder 31 is open at one end and is adapted to receive a charge of gunpowder or any other explosive compound, and through the closed end of the cylinder is inserted a sparking plug 31′ or electrical fuse of the type ordinarily employed in gas-engines or the primers of blasting charges. The open end of the cylinder receives an operating member 34, fitting snugly thereinto, said member being connected to a post 35, and this in turn may be connected to the throttle-valve or to the air-brake mechanism or any other train-controlling device, so that if the explosion occurs the train will be slowed down or stopped. The cylinder 31 is provided with one or more openings 37 to permit the escape of the gases and to some extent lessen the effect of the explosive force on the operating member 34.

The batteries or other source of electrical energy are of a predetermined strength in order that the circuits may become operative when two trains approach within a predetermined distance of each other, and the batteries are connected in series. For ordinary pur-

poses enough batteries are employed to operate the device when the trains approach within a limit of one mile, but beyond that the current will not be strong enough to operate the interrupter 27′.

Should two trains approach each other within the danger limit—one mile, for instance—a circuit may be traced from a battery 27 of train X through wire 36 to one of the trolleys, conductor 13, wire 37′ to cylinder 31 on the train Y, and thence through a wire 30, the primary of the induction-coil 28, wire 29, interrupter 27′, battery 27, wire 36′ of train Y, trolley-wheel, conductor 12, the trolley-wheel of train X, wire 37², cylinder 31 and through the primary of the induction-coil to return to the battery of train X, thus completing a primary circuit, and if, as before stated, the current is of sufficient strength the interrupter will operate and the sparking circuit may be traced from the secondary to the induction-coil through wire 30, cylinder 31, to one of the members of the sparking plug, across the sparking gap to the second member of the sparking plug, and wire 40 to the secondary, this occurring on each train, and the explosive charge being detonated with the result that the attention of the engineer is instantly attracted and the controlling member is operated for the purpose of shutting off the steam or setting the air-brakes.

It has been found in practice that it is perfectly feasible to so regulate the current strength that the charges will not be detonated unless the trains approach within a predetermined distance of each other.

While the apparatus has been shown as intended principally for sounding warning-signals in the cabs of trains approaching each other, it is obvious that by employing suitable pole-changers the system may be used to prevent rear-end collisions.

Having thus described the invention, what is claimed is—

1. In apparatus of the class described, a casing arranged for the reception of an explosive compound, a train-controlling member extending partially within the casing, and an electrically-operated firing device operable on the approach of trains within a danger limit for detonating the compound.

2. In a system of the class described, roadbed conductors, trolley-wheels carried by the trains and engaging said conductors, a source of electrical energy, and an induction-coil on each train, the sources of energy being continuously connected in series, and the strength of the current being so regulated as to be inoperative until the trains approach within the danger limit, an open-ended casing arranged on each train and adapted to contain an explosive compound, a train-operating member having a portion projecting within the open end of the casing, a sparking plug, and means connecting the sparking plug to the secondary of the induction-coil.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

SAMUEL E. FOREMAN.

Witnesses:
C. E. GRIDLEY,
H. W. WALTERS.