

(No Model.)

2 Sheets—Sheet 1.

F. BEATTIE.
ELECTRIC RAILWAY SIGNAL.

No. 519,938.

Patented May 15, 1894.

Fig. 1

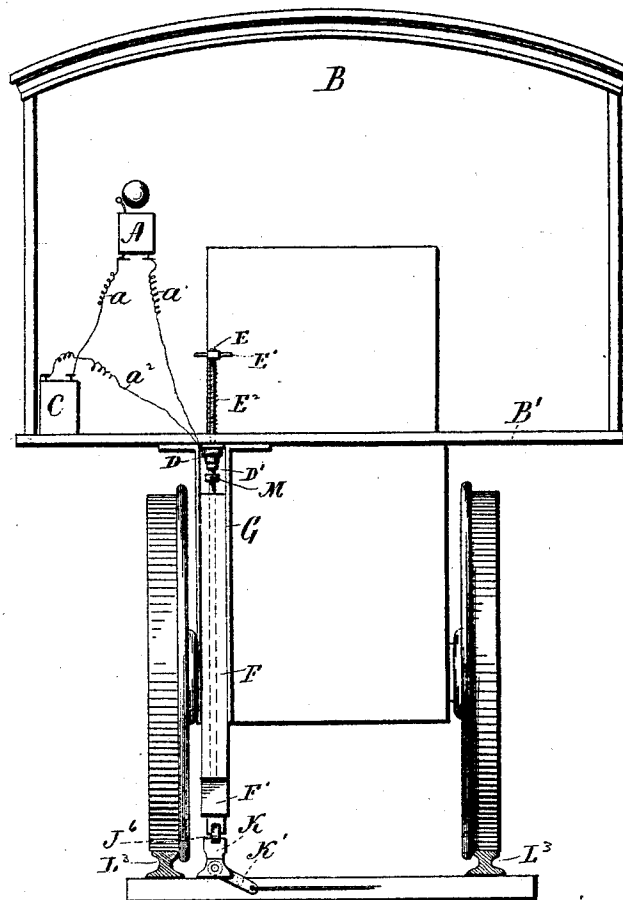
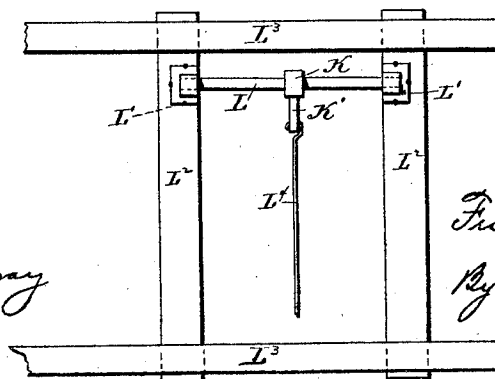


Fig. 2



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2 Sheets—Sheet 2.

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Fig 3

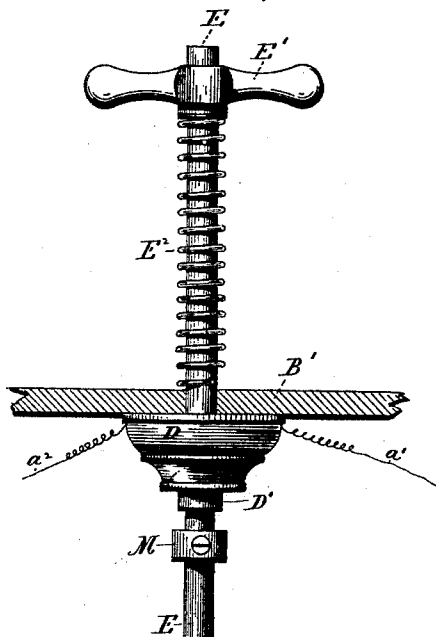


Fig 5

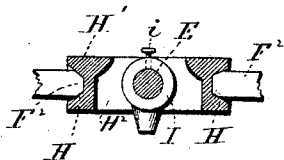


Fig 6

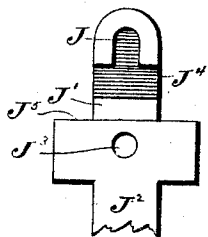
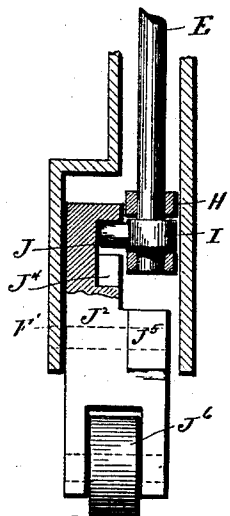


Fig 4



Witnesses
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UNITED STATES PATENT OFFICE.

FRANK BEATTIE, OF LEETE ISLAND, CONNECTICUT.

ELECTRIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 519,938, dated May 15, 1894.

Application filed April 2, 1894. Serial No. 506,019. (No model.)

To all whom it may concern:

Be it known that I, FRANK BEATTIE, of Leete Island, in the county of New Haven and State of Connecticut, have invented a new Improvement in Electric Railway-Signals; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in rear elevation, showing the application of my improved device to the cab of a locomotive engine; Fig. 2, a broken plan view showing a section of railway provided with such a permanent tripping device as may be employed in connection with my signal; Fig. 3, a detached broken view, partly in vertical section, showing the operating-rod, the housing, the chambered plunger and the pivoted trip of my device; Fig. 4, a broken view of the device in vertical section, showing the button of the rod in position in the locking notch in the upper end of the pivotal trip; Fig. 5, a detached view in horizontal section, showing the plunger and the operating button; Fig. 6, a detached view in inside elevation of the pivotal trip.

My invention relates to that class of electric railway signals designed to depend from the cab of a locomotive engine, and to be set in operation by means of a tripping device permanently attached to a railway track adjacent to the rails thereof, and containing a tripping-head, and normally retired, but lifted into position for operation when it is designed to set off the signal in the cab and so warn the engineer.

The object of my present invention is to produce a simple, compact and convenient device, composed of few parts, and not liable to derangement, and operated on the principle of sounding the bell until the engineer himself stops it from ringing by resetting the device.

With these ends in view, my invention consists in an electric railway signal having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claims.

In carrying out my invention, as herein shown, I locate an electric bell A, of any suit-

able construction, in the cab B of a locomotive engine, one wire a leading to the bell from a battery C, and the other wire a' , leading to the bell from a circuit-closer D, which is connected with the other pole of the battery by means of a wire a^2 . The particular construction of the circuit-closer may be varied as desired. As herein shown, it resembles an ordinary push-button, the push D' , whereof instead of being made solid, is tubular for the passage through it of a vertically arranged, reciprocal and rotatable operating-rod E, the upper end of which is furnished with a handle E' , located at a convenient height from the floor B' of the cab for ready operation by the engineer. The said operating-rod extends down through the floor B' of the cab, through the circuit-closer D, and the tubular push D' , thereof, and takes a bearing at its lower end in the upper end of a housing F, which is firmly secured, as herein shown, to the lower ends of two corresponding hangers G G, adapted at their upper ends to be attached to the floor of the cab so as to depend therefrom. The said housing, which has a bell-shaped enlargement F' , at its lower end, is provided at opposite points within it with two vertical guides F^2 F^2 , which take into two corresponding vertical grooves H H, formed in the opposite edges of a substantially rectangular, horizontally arranged plunger H' , held upon the extreme lower end of the rod E, by means of an operating or coupling button I, rigidly secured to it by a screw i . When the rod is rotated, said button I is projected beyond the outer face of the plunger, as shown by full lines in Figs. 4 and 5 of the drawings, or retired as shown by broken lines in Fig. 5 into a horizontal chamber H^2 formed therein. When the said button I is projected as described, it takes into a vertical locking-notch J, formed in an arm J' projecting centrally upward from a pivotal trip J^2 , hung on a horizontal pivot J^3 , journaled at its opposite ends in the lower end of the housing, into which the upper end of the trip extends, while its lower end extends below the same. The locking-notch J, before mentioned, opens at its lower end into a transverse clearance groove J^4 , also formed in the said arm J' , and co-acting with the notch J, as will be set forth later on. The said trip

is provided with a horizontal righting-face J^5 , with which the lower face of the plunger engages, whereby the trip is righted or restored into its normal or set position, from the inclined position into which it is thrown when operated, the bell-shaped enlargement at the lower end of the housing providing room for the swinging movement of the upper end of the trip. The lower end of the trip is furnished with an anti-friction roll J^6 , which engages, for setting off the signal, with a tripping device permanently applied to the track. As herein shown, the said device consists of a tripping-block K, having an operating arm K' rigidly connected with it, and mounted upon a rock-shaft L, journaled at its ends in two bearings L' L'' , secured to adjacent ties L^2 L^3 , upon which the track-rails L^3 L^4 are laid. An operating rod or lever L^4 , connected with the arm K' , is provided for lifting the block K into its operating position, or depressing it into its normal or retired position, in which it is located below the path of the pivotal trip before described. The rod or lever L^4 may lead to a tower or switch, and will have suitable operating connections, which do not need description. A heavy spiral spring E^2 , interposed between the handle E' of the operating-rod E, and the floor B' of the cab, exerts a constant effort to lift the rod, whereby the operating-button I, fixed to its lower end, is maintained in the locking-notch J of the trip, which is thus held in its normally vertical position of readiness to be operated. Furthermore, when the operating-button is entered into the locking-notch of the trip, the same acts through the medium of the button and plunger, to prevent the elevation of the rod by the spring E^2 , so as to cause the collar M, adjustably mounted upon the rod, to engage with the push D' , and lift the same into position for closing the circuit through the bell A.

Having now described the construction of my improved device, I will proceed to set forth the mode of its operation.

The tripping-block K, having been raised into its elevated position through the medium of its operating-arm K' , and the operating-rod or lever L^4 , is engaged, as shown in Fig. 1, by the anti-friction roll J^6 , located in the lower end of the pivotal trip J^2 , as the engine passes over that portion of the track in which the tripping device is permanently located. When the friction-roll strikes the block, the lower end of the trip will be temporarily arrested, and the trip swung on its pivot J^3 , into the position indicated by broken lines in Fig. 3, in which position its lower end is sufficiently elevated to pass over the block. The deflection of the trip from the vertical, causes the engagement of one of the side walls of its locking-notch J with the projecting end of the button I, whereby the button, and hence the operating-rod is rotated, the button being entirely retired within the chamber H^2 in the plunger H' . The plunger having thus been

uncoupled from the trip, the rod is immediately lifted by the spring E^2 , whereby the collar M mounted upon it, is impinged against the push D' , with the effect of lifting the same, and bringing the contact-springs, which are not shown but which form terminals of the wires $a' a^2$, into contact, thus closing the circuit through the battery C, and the bell A, which is sounded. The bell will then ring until the engineer or the fireman grasps the handle E' , and depresses the rod against the force of the spring E^2 . The first effect of depressing the rod as described, will be to move the collar M down away from the push D' , which will move back to its normal position, and thus allow the contact springs mentioned to separate, and break the electric circuit. The downward movement of the rod also engages the lower edge of the plunger H' with the now inclined righting face J^5 of the pivotal trip. Then as the rod moves farther downward, it operates, through the medium of the plunger to restore the pivotal trip to its normal or vertical position, while the trip when it reaches that position, limits the downward movement of the rod. The rod is then rotated by its handle, whereby the button is swung out into the clearance groove J^4 in the trip, and brought into line with the open lower end of the locking notch J. Downward pressure upon the handle is then relieved to permit the spring E^2 , to act to lift the rod, and hence enter the button into the locking notch J again, whereby the rod will be maintained in its depressed position and coupled to the trip, and whereby also the trip will be maintained in its vertical or normal position. I wish to particularly call attention to the fact that the bell does not stop ringing until the engineer manipulates the operating-rod of the device.

My improved device is reliable and effective in operation, and being composed of comparatively few parts, is not liable to derangement.

It is apparent that in carrying out my invention, I may resort to some changes from the construction herein shown and described. For instance, I may considerably alter the construction of the housing, and may employ other means than those shown for depending it from the cab. I would therefore have it understood that I do not limit myself to the exact construction herein shown, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric railway signal, the combination with a bell located in an electric circuit, of a reciprocal and rotatable operating-rod controlling the making and breaking of the said circuit, a plunger, a button secured to the lower end of the rod, and connecting the plunger thereto, and a pivotal trip adapted at its lower end to be operated upon by a trip-

ping device applied to the railway, and constructed at its upper end to be coupled with the rod through the medium of the said button, substantially as described.

5 2. In an electric railway signal, the combination with a bell located in an electric circuit, of a reciprocal and rotatable operating-rod adapted to make and break said circuit, a spring exerting its force to lift the rod and
10 close the circuit, a chambered plunger, a button fixed to the lower end of the rod, connecting the plunger therewith and entering the chamber of the plunger when the rod is rotated, a pivotal trip adapted at its lower end
15 to engage a tripping device permanently applied to the railway, and constructed at its upper end with a bearing face which co-operates with the lower edge of the plunger to restore it to its vertical position, and with a
20 vertical locking-notch and a clearance groove for the reception of the said button, substantially as set forth.

3. In an electric railway-signal, the combination with a bell located in an electric circuit, of a reciprocal and rotatable operating-

rod adapted to make and break the said circuit, a spring exerting its force to lift the rod and close the circuit, a chambered plunger located at the lower end of the rod, an operating-button secured to the lower end of the rod, 30 connecting the plunger therewith, and entering the chamber of the plunger when the rod is rotated, a housing containing the plunger and guiding the same in its vertical movement with the rod, and a trip pivoted in 35 the said housing, adapted at its lower end to engage a tripping device permanently applied to the railway, and constructed at its upper end with a righting face which co-operates with the plunger and with a locking-notch 40 and a clearance groove to receive the said button, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANK BEATTIE.

Witnesses:

MIRIAM C. BEATTIE,
CARRIE I. BEATTIE.