

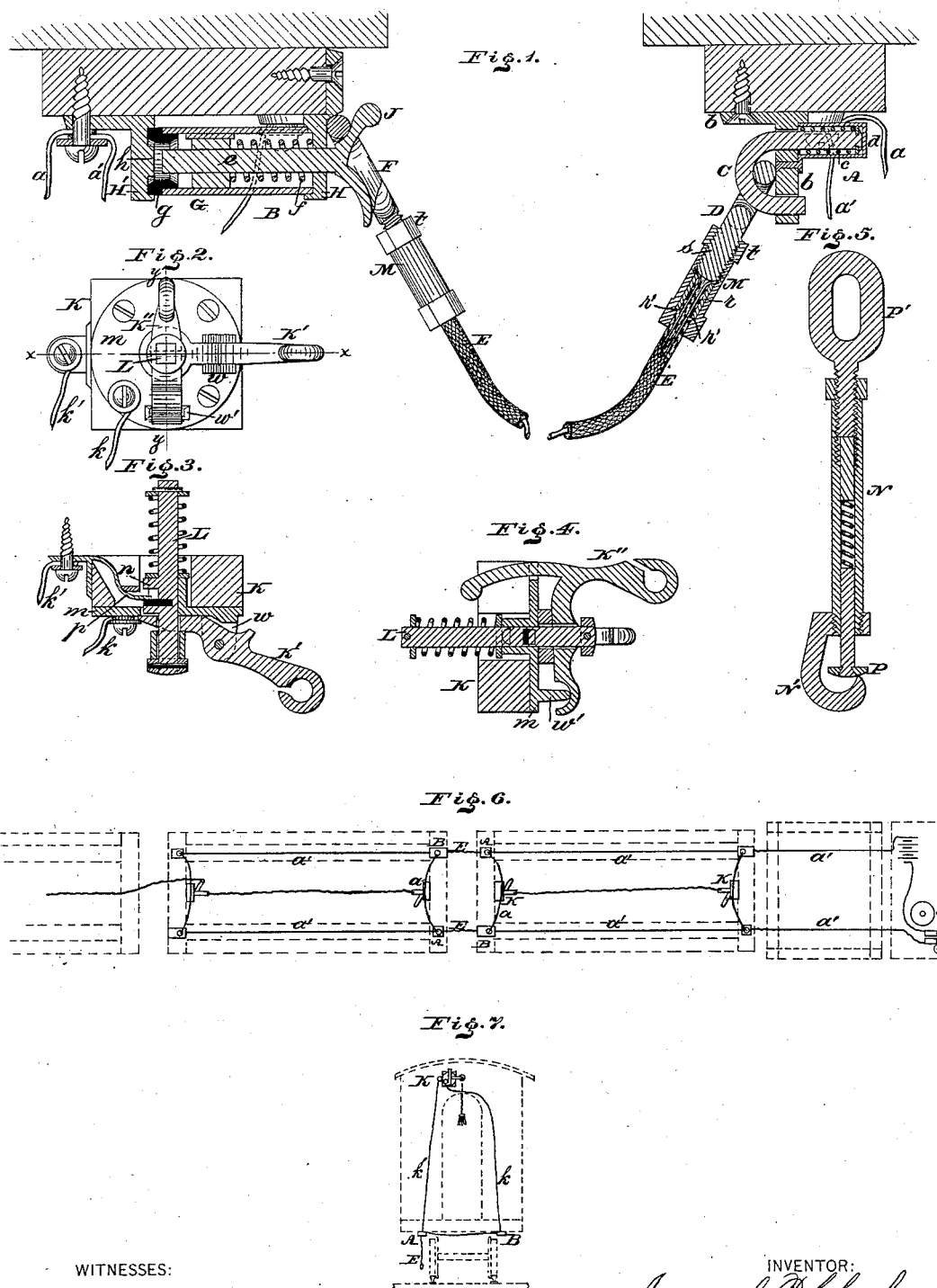
(No Model.)

J. P. CLARK.

ELECTRIC SIGNAL FOR RAILWAY TRAINS.

No. 265,756.

Patented Oct. 10, 1882.



WITNESSES:

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ELECTRIC SIGNAL FOR RAILWAY-TRAINS.

SPECIFICATION forming part of Letters Patent No. 265,756, dated October 10, 1882.

Application filed January 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, JEDEDIAH P. CLARK, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Electric Signals for Railway-Trains, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a longitudinal section of a portion of the electric signal for railway-trains embodying my invention. Fig. 2 is a face view of a duplex key embodying my invention. Fig. 3 is a section thereof in line *xx*, Fig. 2. Fig. 4 is a section in line *yy*, Fig. 2. Fig. 5 is a vertical section of a splice. Fig. 6 is a bottom plan of the invention as applied to the train. Fig. 7 is an end view thereof.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to improvements in electric signals for railway-trains formed of open metallic circuit-wires throughout the train, an interrupting bell magnet and battery on the engine or cab, suitable push knobs or keys, and couplings intermediate of the cars, whereby by operating the push knobs or keys the circuit will be closed and the engineer is signaled, and in the event of the rupture or breakage of the train a similar result is occasioned.

The invention consists of weather and dirt proof fixtures, as will be hereinafter set forth.

It also consists of the coupling-cord formed of wires with collars encircling the ends thereof, inclosing sleeves with internal shoulders, nuts, and eyes, as will be hereinafter set forth.

It also consists of a duplex key for signaling from different parts of the car or train.

It also consists of the construction of the key whereby it may be pulled in the line of direction of the stem with which it is connected, or downwardly at an angle therewith.

Referring to the drawings, A B represent two fixtures with which both ends of a car are provided, secured thereto preferably underneath the body and connected by electric wires *a a'*. The fixture A consists of a metallic bracket, *b*, having two openings for the passage of the limbs of a bent piece or link, C, to

which is connected the eye D of the insulated coupling-cord E. In order to keep the eye D closely in contact with the bracket *b*, and thus insure a bright metallic connection between the parts, I employ a spring, *c*, which draws in the link C and holds the eye D firmly in contact with the bracket *b*, said spring being inclosed in a box, *d*, and encircling the long limb of the link and bearing against the box and link, said box being secured to the inner face of the bracket *b*, and serving by its closed construction to guard the spring from the weather and dirt. The end of the coupling-cord E opposite to the eye D has connected to it an eye, F, for attachment to the fixture B, which latter is secured to the opposite car, said fixture consisting of a cylinder, G, which is supported on brackets H H', attached to the car.

Passing through the cylinder and the bracket H is a sliding stem, *e*, whose outer end is formed with a hook, J, on which the eye F of the coupling-cord is to be hung. A coiled spring, *f*, bears against the bracket H and a shoulder on the stem, and serves to force in said stem and consequently the hook J, and hold the eye F against the said bracket H. The cylinder G is separated from the bracket H' by an insulating-piece, *g*, and the inner face of said bracket H' has a contact-point, *h*, for the abutment of the stem *e* when the eye F is removed from the hook J. The cylinder G completely incloses the part between the two brackets H H' without interfering with the operation of either, thus forming a weather and dirt proof fixture.

It will now be seen that the fixture A of one car is coupled with the fixture B of the adjacent car, and the two fixtures are in electrical communication by means of the cord E, whose ends are provided with the eyes D F, as has been stated, the eye F being held in contact with the bracket H by means of the hook J. The fixtures A and B at each end of a car are also in electric communication by means of the wires *a*, and the fixtures at one end of the car are in communication with the fixtures of the other end of the car by means of the wires *a'*. The fixtures A B are also in electrical communication with fixtures or keys K by means of

wires $k k'$, said keys being secured to the ends of the body of the car and having attached to their levers the bell-cord of the train. The lever of each key is pivoted to a metallic plate, m , with which the wires k are connected, and engages with a sliding spring-pressed stem L , which is passed through said plate m and carries a contact-point, n . When the stem is drawn out by the operation of the key it is adapted to touch or strike a contact point or finger, p , to which the wire k' is attached, the plate m and point p being secured to a block attached to the car or directly to the car. The finger p is elastic and adapted to form a bright sliding contact with the point n and decrease the wearing action on said finger as well as avoid severe strain thereon.

Whenever the bell-cord is pulled the levers or keys K are drawn out. This brings the points $n p$ in contact and forms an electric connection of the wires $k k'$, and consequently of the wires $a' a'$, by means of the fixtures $A B$, thus closing the circuit through the interrupting bell-magnet and battery on the engine and causing the ringing of the bell, whereby the engineer is signaled. Should the train separate, the eye F will be wrenched from the hook J of the stem e , and the stem, no longer controlled by said eye, springs home, thus forming a contact with the point h of the bracket H' , and making a connection of the wires a and closing the circuit, whereby by means of the bell-magnet and battery the continuous ringing of the bell is occasioned, indicating the breaking or separation of the train.

In order to secure the ends of the coupling-cord E to the eyes $D F$, each end is encircled by a metallic collar, r , and fitted in a sleeve, M , having on the inner face of one end a shoulder, r' , against which the collar r abuts. The other end of the sleeve receives the threaded shank s of the eye, which is screwed into the sleeve until it abuts against the wires of the cord, thus forming a metallic connection. A nut, t , on the shank s is then tightened against the sleeve, and thus the eye and cord are firmly connected.

Should the distance between the ends of cars be greater than the length of the coupling-cords E , I employ a splice-piece, N , consisting of a tube or partly tubular piece, having at one end a hook, N' , which is closed by a movable spring-pressed tongue, P , and at the other end an eye, P' , similar to the eye F ; but the eye P' may be dispensed with and the tube directly attached to the cable or cord E ; or the tube may be formed in sections, which are connected to the cable or cord. The hook N' is attached to the eye F of the cord E ; and the eye P' connected to the hook J of the fixture B , thus elongating the cord and preserving the electric communication of the fixtures. This feature of the splice-piece may, however, form the subject of a separate application for Letters Patent.

The key has two levers, $K' K''$, (see Figs. 2, 3, and 4,) both fulcrumed on the plate m at or about a right angle to each other and connected to the stem L . The lever K' is mounted on ears w , and has an opening at its inner end, through which the stem L is freely passed. The lever K'' is mounted disconnected on one end on a lug, w' , and has an opening between its ends for the stem L , and the outer end of each lever has an eye or hook for attachment of an operating-rope. It will be seen that the conductor may thus pull the rope in either direction, and the lever K'' will be operated and the signal sounded or given, said lever K'' being adapted to be pulled out or down by the conductor. The lever K'' may have a rope or cord depending from it, so that if the conductor is near the end of the car he may operate said lever by drawing it down, as it readily turns on the lug w' as a fulcrum. For the rear car the lever K' may have a rope attached to it, passed through the end, and convenient to the platform, from which point a signal may be given, it being evident that the levers may be multiplied to signal from other points.

In the cylinder G the insulating-piece g and contact-point h may be dispensed with, in which case the end of the stem e will abut against the bracket H when the eye F is disengaged from the hook J , and the wires that run across the car at each end to close the circuit are dispensed with. The stem is guided in the cylinder so as to be prevented from turning, whereby when the eye F is engaged with the hook J said eye is securely retained in position.

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

1. In an electric signaling apparatus for railway-trains, consisting of an open metallic circuit, wires and an interrupting bell-magnet, a weather and dirt proof coupling-fixture consisting of the bracket b , the bent link C , spring c , and the inclosing box d , one eye of the coupling-cord being permanently fixed to the link C and forming a bright metallic connection therewith, the two limbs of the link passing through said bracket b and the box d inclosing the long limb of the link and said spring c , substantially as and for the purpose set forth.

2. In an electric signaling apparatus for railway-trains, the cylinder G , the bracket H , the bracket H' , and the sliding stem e with the hook J , in combination with the coupling-cord having an eye, F , said eye being removably fitted to said hook J , and bearing against the bracket H , substantially as and for the purpose set forth.

3. In an electric signaling apparatus for railway-trains, the coupling-cord consisting of wires with collars r encircling the ends thereof, the inclosing-sleeves M , with internal shoulders, r' , nuts t , and the eyes $D F$; the stems of the eyes entering the sleeves M and bearing

against the wires whose ends are held by the aforesaid collars *r*, which latter abut against the described shoulders *r'*, substantially as and for the purpose set forth.

- 5 4. In an electric signaling apparatus, a key consisting of two or more levers and a circuit-closing stem common to said levers, substantially as and for the purpose set forth.

5. The sliding stem *L*, in combination with

the loosely-fulcrumed key *K''*, which is connected to said stem, whereby the key may be pulled out or down, substantially as and for the purpose set forth.

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Witnesses:

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