(No Model.) 2 Sheets—Sheet 1.

J. M. RUPEL.

ELECTRIC ALARM SIGNAL FOR RAILWAY TRAINS.

No. 507,170. Patented Oct. 24, 1893.

Fig. 1.

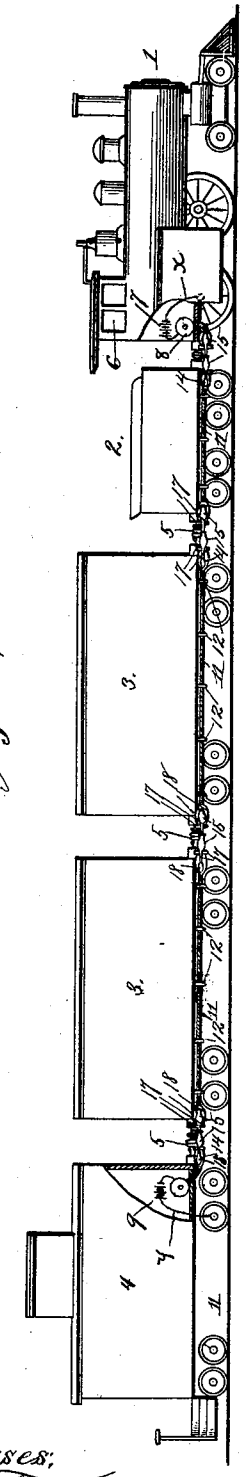


Fig. 4.

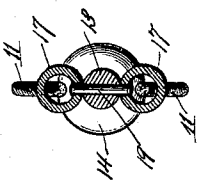


Fig. 5.

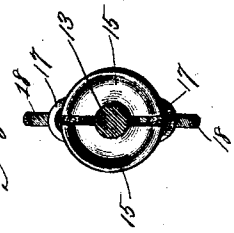


Fig. 6.

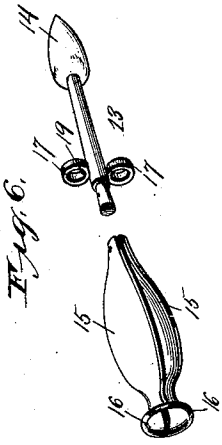


Fig. 2.

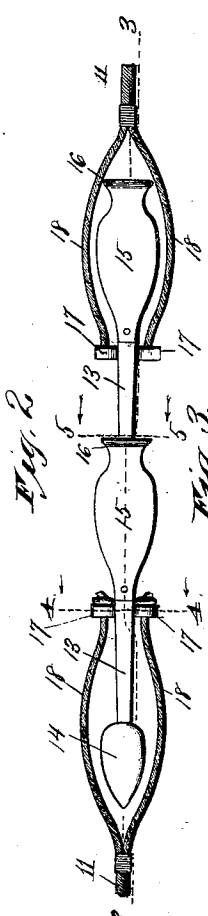
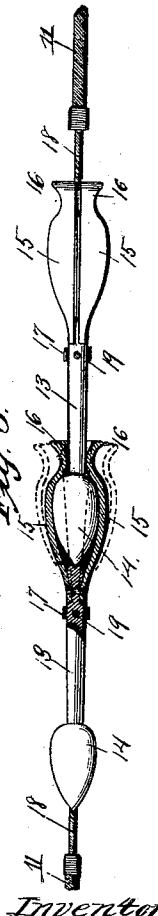


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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ELECTRIC ALARM SIGNAL FOR RAILWAY TRAINS.

No. 507,170. Patented Oct. 24, 1893.

Fig. 7.

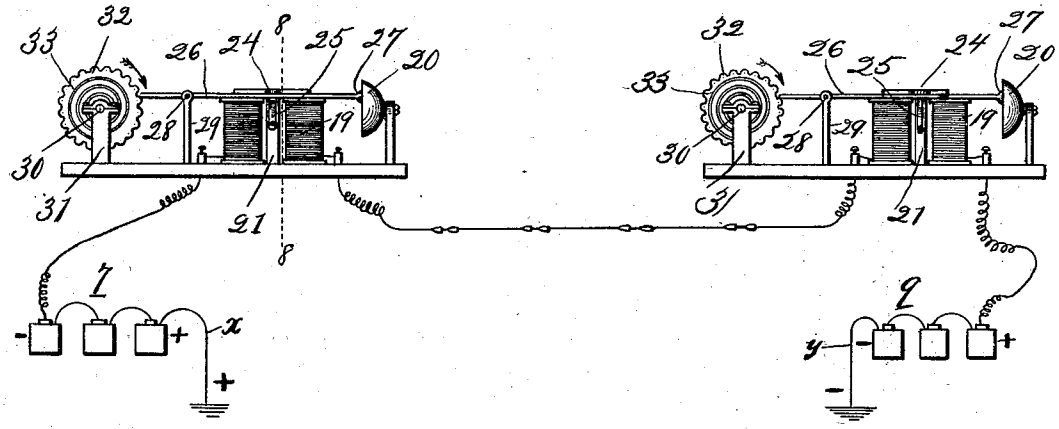
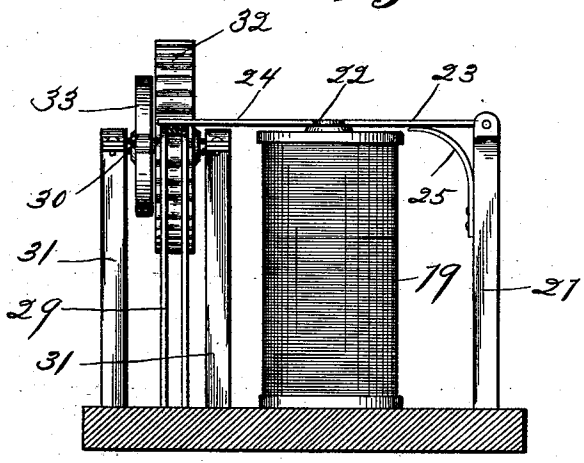


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES M. RUPEL, OF KANSAS CITY, KANSAS, ASSIGNOR OF TWO-THIRDS TO EDWARD J. HAYNES, OF SAME PLACE, AND ROBERT G. RHOADES, OF KANSAS CITY, MISSOURI.

ELECTRIC ALARM-SIGNAL FOR RAILWAY-TRAINS.

SPECIFICATION forming part of Letters Patent No. 507,170, dated October 24, 1893.

Application filed April 26, 1892. Serial No. 430,678. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. RUPEL, of Kansas City, Wyandotte county, Kansas, have invented certain new and useful Improvements in Electric Alarm-Signals for Railway-Trains, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to electric signals for freight, passenger, and other railway trains, and the objects of my invention are to produce an electric train-signal which shall be simple, durable and inexpensive in construction, and reliable and automatic in its operation, and which shall serve to automatically notify the crews of both engine and train, of the breaking of one or more of the draft-couplings.

A further object of my invention is to produce an electric train-signal which, in addition to the advantages above enumerated, shall be capable of ready application to railway cars and engines, and other railway vehicles without requiring any structural alteration in such vehicles, and the parts of which shall be capable of ready connection in circuit.

A still further object of my invention is to produce an electric train-signal which shall automatically break circuit when the breakage of one or more of the draft-couplings occurs; this breaking of the circuit causing no injury to the signal-mechanism, and causing the alarm to be automatically sounded both in the train and also in the engine.

To the above purposes, my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a railway freight-train and its engine and caboose, with my electric signal-mechanism applied thereto. Fig. 2 is a plan view of two of the automatically separable circuit-couplings in connected position. Fig. 3 is a central longitudinal section of the same. Fig. 4 is a transverse vertical section of the same, on the line 4—4 of Fig. 2. Fig. 5 is a transverse vertical section of the same, on the line 5—5 of Fig. 2. Fig. 6 comprises detached perspective views of the two parts of one of the coupling-members. Fig. 7, is a diagrammatic view is side elevation; and showing the bells and batteries and their connections. Fig. 8, is a vertical cross sectional view, taken on the line 8—8 of Fig. 7.

In the said drawings 1 designates a railway locomotive engine, 2 the tender or tank of the same, 3 a number of freight cars, of the box-type, and 4 a caboose. The several vehicles are shown as connected together by couplings 5, which may be of the usual pin and link type, or of any other suitable or preferred type.

It is to be understood that the engine 1 may be of any usual or preferred type; also that the cars 3 may be of any of the usual types of freight cars, and that the caboose 4 may also be of any usual or preferred type. It is to be further understood that the train may be a passenger train, instead of a freight train, or it may be composed of mixed freight and passenger cars, as circumstances may require, without departing from the essential spirit of my invention. In any event an electric battery 7 is located conveniently in the cab 6 of the engine, and a similar electric battery 9 is located in the caboose or last car of the train. Beneath each car, and beneath the caboose, and engine also, extends a cable 11, which is in sections, one for each car, or other vehicle, and which is secured to the car by means of staples 12, or equivalent devices, and the two ends of each section of which are located at the ends of the vehicles, as shown.

At each end, the line-cable 11 carries a reversible and separable coupling which is constructed as follows: 13 designates the shank or stem of the coupling, said shank being of any suitable length, and which is formed at one end with a head or enlargement 14; said stem and enlargement being preferably integral with each other, and being also of any metal which is a good conductor of electricity,

and the head or enlargement being preferably of ovoid form, as shown. To the opposite end of the stem or shank 13 riveted, or otherwise suitably connected, is a pair of spring-jaws 15, which lie in parallelism with each other, and which are also of any metal which is sufficiently resilient and a sufficiently good conductor of electricity. The jaws 15 are of such form as to produce internally a longitudinally divided cavity or socket which corresponds with the external form of the head or enlargement 14, so that when the head or enlargement of the companion coupling is inserted between the jaws of this coupling there shall be close engagement and contact of the parts, as shown. The outer ends of the spring-jaws 15 are flared, as shown at 16, so as to form a trumpet-mouth for properly guiding the heads 14 into the socket or cavity between the jaws. Each stem or shank 13 is provided near that end to which the jaws 15 are attached, with two oppositely disposed rings or eyes 17, to which the extremities of the two strands 18 of the line-cable 11 are connected. The eyes 17 are swiveled upon the outer ends of cross-pin 19, which is passed through the said portion of the stem or shank 13 of each coupling-member.

As shown in the drawings, the circuit between the bell and the battery in the engine cab, and the bell and the battery in the caboose is a metallic circuit, that is to say, a current flowing from one battery to the other through the line conductor and returning to the opposite pole of first battery, through the wheels, axles and rail. In such instance the cable, consisting of separate sections secured to each car and coupled together at the adjacent ends thereof, contains only one wire or conductor, having branch ends 18—18 at each end thereof, which are attached to the rings or eyes 17 to support the separable couplings, and the wire or conductor of the engine coupling section of the cable, first connects through an electro magnet 19, and to one of the poles of the battery located in the engine cab, and the wire or conductor of the caboose coupling section of the cable also first connects through a similarly arranged electro-magnet 19, and then to the pole of the battery located in the caboose, opposite to that pole of the battery to which the engine coupling wire is attached. The opposite poles of each battery are then connected, through wires x and y, car axle, wheel and rail, as shown in Fig. 1 or any other suitable manner.

Arranged vertically at one side of the electro-magnet 19, is a post 21, and the armature 22 has the side extension arms 23—24, the outer end of the arm 23 being pivoted to operate vertically in the upper end of the post 21, and the arm 24 extending outward on the opposite side of the electro-magnet, as shown in Fig. 8. A leaf spring 25 is secured at its lower end to the inner side of the post 21 and its outer end bears against the under side of the arm 23 of the armature, the tendency of said spring being to raise the armature from the upper end of the electro-magnet. The arm 26 of a bell-clapper 27, is pivoted at 28 in an upright 29, and extends transversely of and under the extension arm 24 of the armature 22. Arranged in any suitable manner, adjacent to the clapper 27, is the alarm bell 20. Mounted loosely upon a shaft 30 supported in the upper ends of uprights 31, is a toothed or serrated wheel 32, the toothed or serrated periphery of which engages the free end of the pivoted bell-clapper arm 26, and a coiled spring 33 is secured to the shaft 30 and to the wheel 32 at its opposite ends, always exerting its pressure in the direction of the arrows Fig. 7. It will be understood that the construction just described, is duplicated at each end of the line. Now when the cars are coupled together, the line is also coupled up by inserting the head of one member into the jaws of the companion member; the pivoting of the shanks to the eyes 17, permitting the line couplings to be readily turned so as to properly match each other; the circuit is then complete, and the armatures 22, are attracted to their respective magnets; the arms 24 depress the clapper-arms 26 and hold the clappers 27 out of engagement with the bells 20, and the opposite ends of the clapper-arms engaging the toothed periphery of the wheels 32, prevent the revolution of the same. In the event of one of the draft couplings 5, being broken, the corresponding line coupling will be drawn apart, thus breaking the circuit. The circuit being broken, the springs 25 immediately elevate the armatures 22 from their respective magnets; the arms 24 release the clapper-arms which are immediately rocked on their pivots by the spring actuated revolution of the wheels 32, thus causing the clappers to ring the bells in both the cab of the engine and the caboose of the train. The train-crew and the engine crew will thus be notified, and the proper steps taken to avoid accident and to repair the break.

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

1. An electric train-signal-mechanism, comprising line-conductors carried by the cars, and couplings carried between the cars and each composed of a shank or stem provided with pivotal connections to the line-conductors, and also with a head at one end and a longitudinally divided spring-socket at the opposite end to receive the head of a companion-coupling, substantially as set forth.

2. A separable coupling for electric train-signaling-mechanism, comprising a shank or stem having a head or enlargement at one end and a pair of parallel longitudinal spring-jaws at the opposite end, to receive a corresponding head of a companion coupling, and

a pair of eyes or rings pivoted to the shank and serving for connection to the line-conductors, substantially as set forth.

3. In an electric train signal, a line conductor comprising a number of sections, having branched or bifurcated ends, and a number of couplings interposed between the sections, having each a pair of eyes or rings pivoted thereto, to which the branched ends of the sections are secured, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

JAMES M. RUPEL.

Witnesses:
JNO. L. CONDRON,
H. E. PRICE.