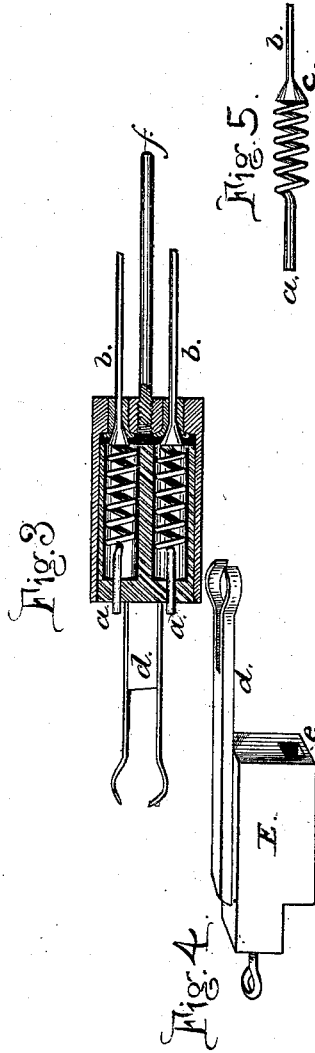
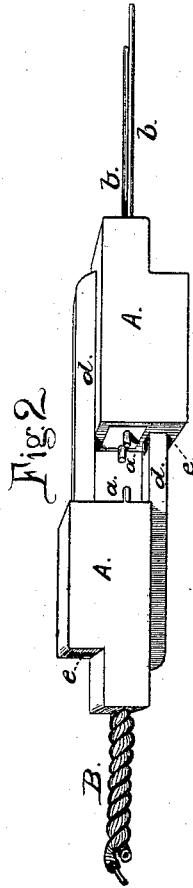
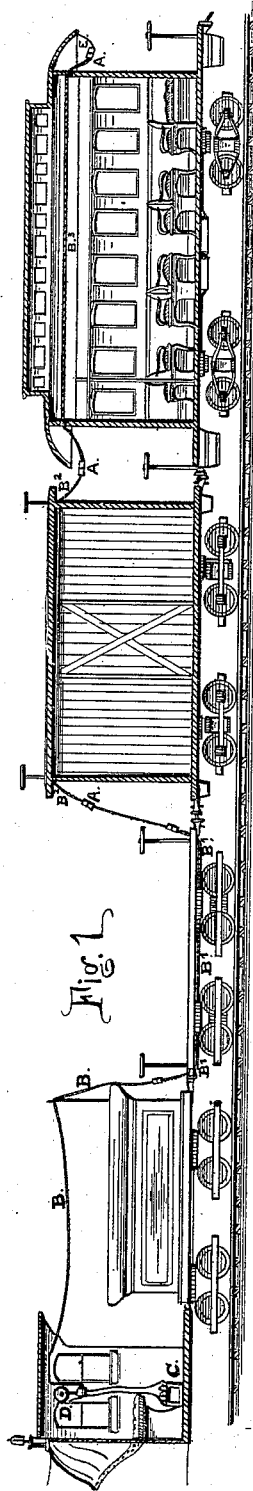


A. RYDER.

COUPLING FOR TRAIN-TELEGRAPHS.

No. 169,732.

Patented Nov. 9, 1875.



Witnesses

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UNITED STATES PATENT OFFICE.

ANDREW RYDER, OF OAKLAND, CALIFORNIA.

IMPROVEMENT IN COUPLINGS FOR TRAIN-TELEGRAPHS.

Specification forming part of Letters Patent No. **169,732**, dated November 9, 1875; application filed August 30, 1875.

To all whom it may concern:

Be it known that I, ANDREW RYDER, of Oakland, in the county of Alameda and State of California, have invented an Improvement in Couplings for Train-Telegraphs, of which the following is a specification:

My invention relates to an improvement in the construction of couplings for connecting together the ends of electric bell cords or cables between the cars and carriages of a railway-train, to establish a current of electricity throughout the train. It consists in the arrangement of two electrodes or conducting-wires within an insulated case, in such form that the points of the wires shall project and be held out a short distance beyond the face of the case, the electrodes being united to the conducting-wires of the cable, and the cases being so made that when two of them are brought together they shall form a complete coupling between the ends of the cables, and thus transmit the electric currents from one to the other.

The object of my invention is to provide a simpler and also more effective coupling than those heretofore in use, and one that shall not be injured or impaired by any break or parting between the engine or the cars of the train by accident.

The accompanying drawing, to which reference is made for a better understanding of my invention, shows, in Figure 1, the manner of arranging the electric apparatus, and the cables and couplings, with the engine and the cars of a railway-train. Fig. 2 is a full-size view of the coupling. Fig. 3 is a longitudinal sectional view of one of the cases; Fig. 4, a view of the circuit-closing cap, to return the current from the last car back through the train. Fig. 5 is one of the electrodes removed from the case.

The coupling is composed of a case, A, with a chamber to hold the electrodes *a a*. Two of these cases, when brought together, form a complete coupling, and they are held in this position and in line with each other by the spring-arms *d* and sleeves *e*, so that the electrodes *a* will touch and press against each other—the positive conductor of one case with the positive of the other, and the negative with the negative. These fastenings *d e*, while they

hold the two parts firmly together, have the quality of permitting the coupling to separate by any jerk or pull upon the cable, if from any cause one car in the train shall become detached from another.

A A are the cases; B B¹ B² B³, the cables, composed of two insulated wires twisted together. C is the battery in the engine-cab; D, the signaling apparatus, connected with the battery and the cable of the train. E is the circuit-closing cap to connect with the last coupling of the train.

The wires that form the electrodes *a a* are placed within the case, where they are surrounded by a lining of some non-conducting material, as ivory or gutta-percha, that insulates them from the sides of the case and from each other. They are made from a short coil of wire, to give them the necessary elastic property, and the end that projects from the face of the case is extended in a line with the axis of the coil, as shown in Fig. 5. The other end of the electrode is fastened by soldering, or in any proper manner, to the top of a washer or enlarged head on the conducting-wire *b*, that is joined to the wire of the cable.

The holes in the rear end of the case, through which these wires pass, are provided with a bushing or lining of some insulating material to keep the case from interfering with the circuits through the two wires. The electrodes *a a* and the case are insulated from each other by the employment of the plug that fills up the chamber, and has two holes bored through it to receive the two coils, as shown in Fig. 3. But this plug would not be necessary if the chamber in the case A were made large enough to hold the two coils of the electrodes *a a* without their touching each other or the sides of the case. Instead of the plug a plate to cover the face of the case could be used, with two holes at proper distances apart, and lined with a non-conducting substance, to hold and guide the points of the electrodes; but in practice where the couplings are made of small size it may be safer to insulate the case and the electrodes from each other, as shown.

The spring-fastenings that hold the couplings together are secured upon the outside of the case, and form a part of it, the arm *d* with its spring-arms being placed on one side

of one case, and the sleeve *e* upon the opposite side, so that when two such cases are brought together the arm of one shall be in line with the sleeve of the other.

The form and arrangement of these fastenings may be changed without affecting the working of my invention, so long as they do not hold the parts rigidly together, but possess the quality of holding the two in line with each other, and yet of separating with a pull.

The enlarged head *c* upon the ends of the conducting-wires takes the strain from the coils of the electrodes, and prevents any stripping of the wires by a pull upon the cable.

The last coupling on the train has the circuit-closing cap *E* coupled to it for the purpose of closing the circuit and returning the current back through the cables. This cap is made with a smooth conducting-face, and has an arm and sleeve, *d e*, the same as the couplings, by which it is held in place and against the points of the electrodes.

The pin or small rod *f* on the end of the coupling is designed to hold the coupling out and keep it from bending down or sagging from its own weight, and thus breaking or injuring the conducting-wires at the points where they enter the case. These wires at this point are liable to become bent and injured by the motion and weight of the coupling unless some similar means be employed to take the strain from the wires at the junction of the cable and the case.

In the operation of my invention a signal is given by pulling apart, or slightly separating, the two parts of any one of the couplings of the train, by which the electrodes are separated and the current of electricity broken. Whenever this takes place the armature that acts to sound the alarm is released from the magnet and strikes the gong.

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

1. An electric coupling for train-telegraphs, consisting of two hollow cases, *A*, containing two coiled electrodes, *a*, insulated from the case and from each other, and each having one end projecting through the case, and the other secured to the ends of the conducting-wires, substantially as described.
2. The circuit-closing cap *E*, having a spring-arm, *d*, and sleeve *e*, and adapted to be attached to the last coupling on the train, and provided with a smooth conducting-face, which is brought in contact with the electrodes of the said coupling when the several parts are attached and operated, as and for the purpose set forth.
3. The combination, with the case *A* and wires *b*, of the rod *f*, when the several parts operate as described.

ANDREW RYDER. [L. S.]

Witnesses:

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