L. L. FERRIS.

ELECTRIC TRAIN-SIGNAL.

No. 186,467. Patented Jan. 23, 1877.

Fig: 1.

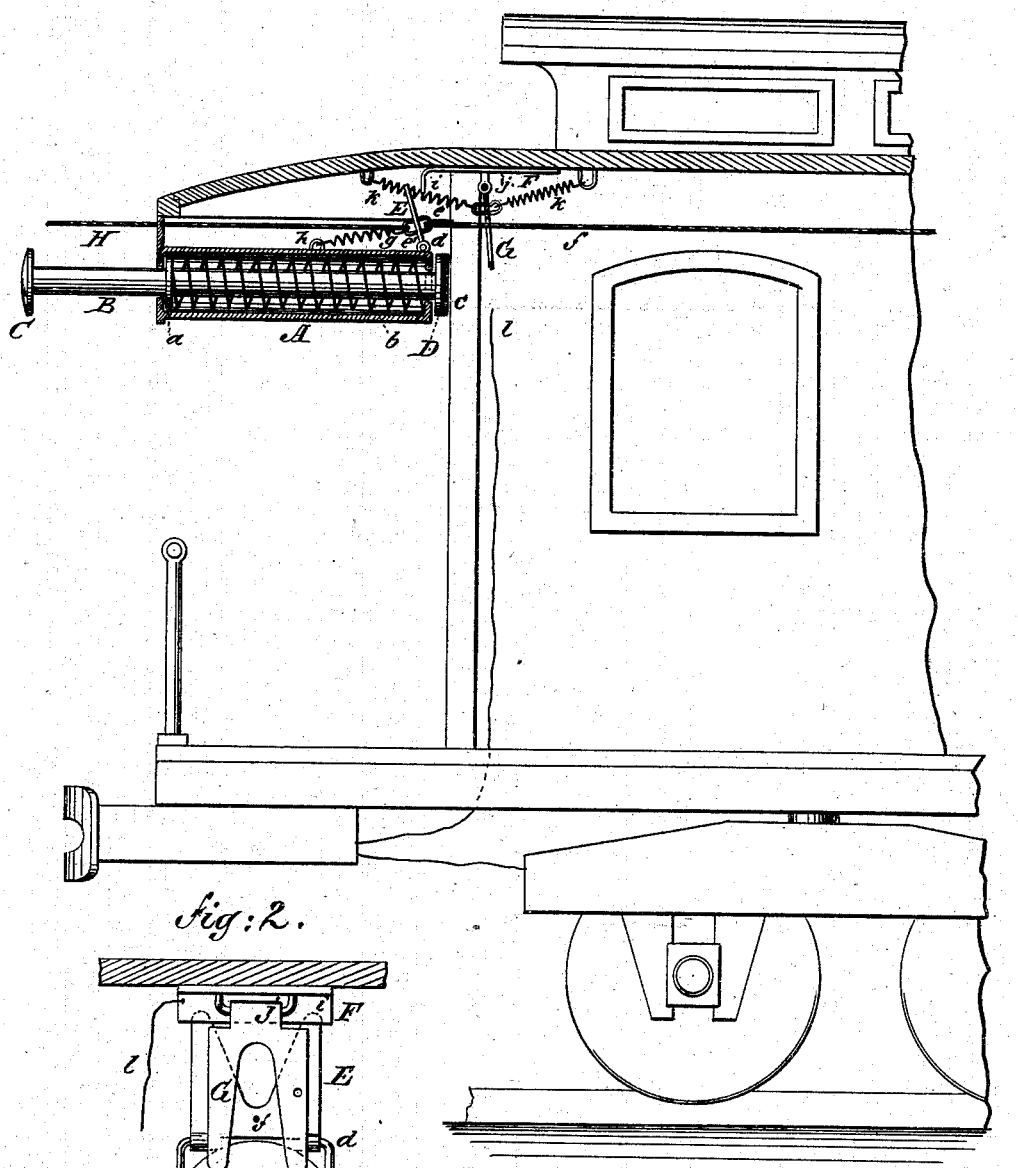
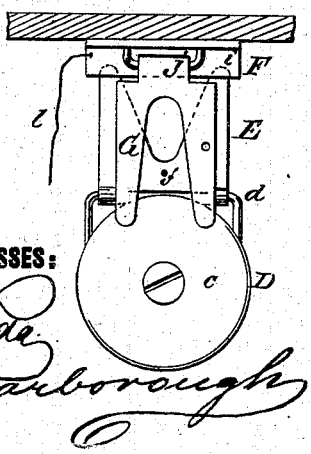


Fig: 2.



WITNESSES:

Chas. Nida.

J. H. Scarborough

INVENTOR:

L. L. Ferris.

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

LANING L. FERRIS, OF NEW YORK, N. Y.

IMPROVEMENT IN ELECTRIC TRAIN-SIGNALS.

Specification forming part of Letters Patent No. **186,467**, dated January 23, 1877; application filed December 23, 1876.

To all whom it may concern:

Be it known that I, LANING L. FERRIS, of the city, county, and State of New York, have invented a new and Improved Self-Coupling Electric Train-Signal, of which the following is a specification:

Figure 1 is a longitudinal section of a portion of a car having my improved signal attached. Fig. 2 is a detail view of the circuit-making apparatus.

Similar letters of reference indicate corresponding parts.

My invention relates to signals used on railway-trains for indicating the separation of the train or the detachment of cars, and for the use of the conductor in signaling the engineer; and it consists of a device attached to each end of the cars that automatically makes an electrical connection so as to ring a bell at the engine when the cars are separated. It also consists in the arrangement of levers or keys by which the conductor by pulling a cord may signal the engineer.

In the drawing, A is a cylinder suspended from the roof of the car, over the platform, and a metallic rod, B, which is longer than the cylinder, is fitted to holes bored in the head of the cylinder, and is capable of sliding longitudinally. A collar, *a*, is secured to the rod B, and between it and the inner head of the cylinder a spiral spring, *b*, is placed. C is a buffer-head, formed on the outer end of the rod B, that engages with a similar head projecting from the adjacent car when the cars are coupled. D is a head attached to the inner end of the rod B, and provided with an insulating-surface, *c*. E is a key or lever that is hinged to the cylinder A at *d*, and provided with eyes *e e'*; to one of which, *e*, an insulated conducting wire or cord, *f*, is attached. A spring, *g*, is hooked into the eye *e'*, and an eye, *h*, attached to the cylinder A. F is a plate attached to the roof of the car or to any other convenient stationary object, and provided with the lip *i*, which the lever or key E may strike when the cord *f* is drawn. G is a key that is hinged to the plate F at *j*, and is provided with the spiral springs *k k*, which hold it in its normal position except when it is moved by the head D of the rod B. The plate F is provided with a ground-wire, *l*, which is connected both with the car-couplings and axle boxes. H is an ordinary bell-cord that may run from cars in the rear of the train not provided with the electrical apparatus and be attached to the eye *e'*, and by pulling which the electrical signal may be operated. The first car in the train is provided with an electrical conducting-wire, which leads to the bell-magnet and battery on the engine. The electrical connection is made continuous throughout the train by contact of the buffer-heads C, and when the cars are coupled the heads D are forced in beyond the key G. By pulling the cord or wire *f* the key E is made to touch the lip *i* of the plate F, making an electrical connection with the ground-wire, and causing the bell at the engine to ring. The cord *f* may be pulled by drawing the ordinary bell-cord H. When the cars separate, the spring in the cylinder A draws the head D toward the cylinder, when its inner or conducting surface, coming into contact with the key G, forms a connection with the ground-wire *l*, and causes the bell to ring at the engine.

The apparatus is alike at both ends of the car, and when a connection is made the current flows through the rods B, cylinders A, keys E, wire *f*, plate F, and ground-wire *l*. If desired, the wire *l* may return to the engine, instead of communicating with the earth.

The advantages claimed for my improved signal are that it is automatically coupled and uncoupled, effecting a great saving in time, and insuring a perfect means of communication with the engineer. It also indicates the separation of a train or the detachment of a car, thereby obviating the accidents caused by trains becoming accidentally separated and leaving a car or portion of a train behind.

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

1. In electric train-signaling apparatus, a spring-buffer, attached to the car, and a key and conducting-wire, arranged to make an electric connection by the springing out of the buffer when the cars are separated, substantially as herein shown and described.

2. The combination of the cylinder A, rod B, having heads C D, and the collar *a*, spring

b, key G, and wires *f* and *l*, substantially as shown and described.

3. The head D, having a non-conducting surface, *c*, in combination with the key G, for permitting the buffer-rod to move inward without making a connection, as herein shown and described.

4. The combination of the key E, cylinder A, wire *f*, and plate F, substantially as herein shown and described.

LANING L. FERRIS.

Witnesses:

C. SEDGWICK,

ALEX. F. ROBERTS.