

(No Model.)

R. M. HUNTER.  
RAILWAY TELEGRAPHIC SIGNAL.

No. 277,569.

Patented May 15, 1883.

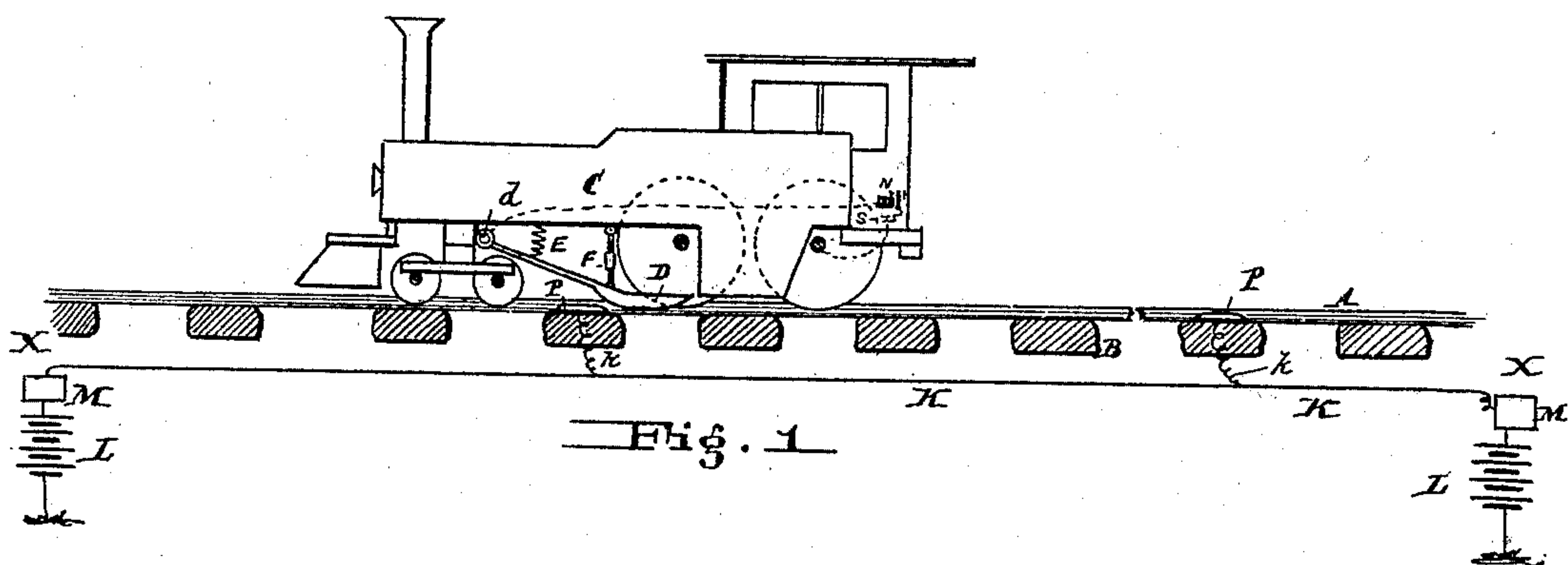


Fig. 1

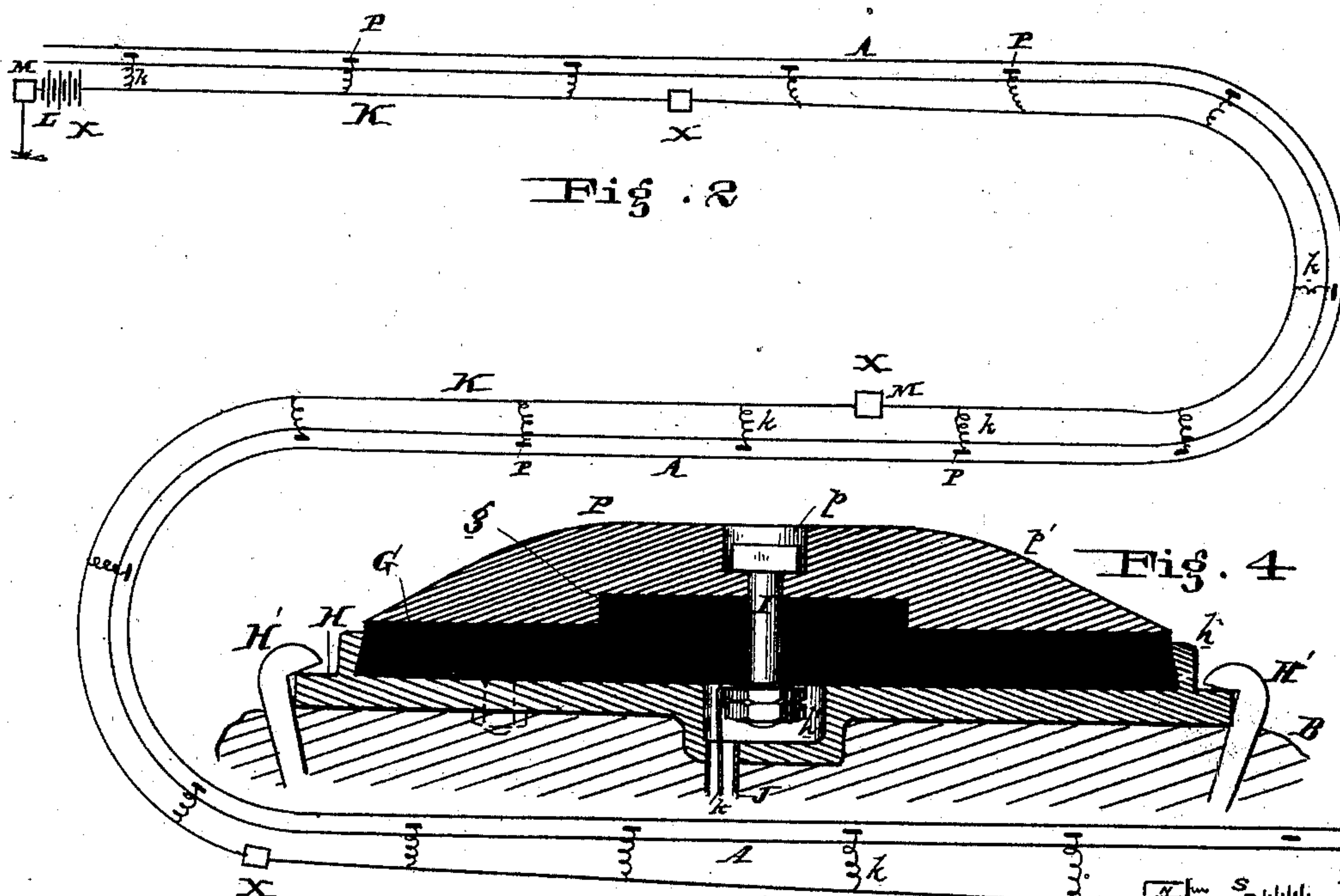


Fig. 2

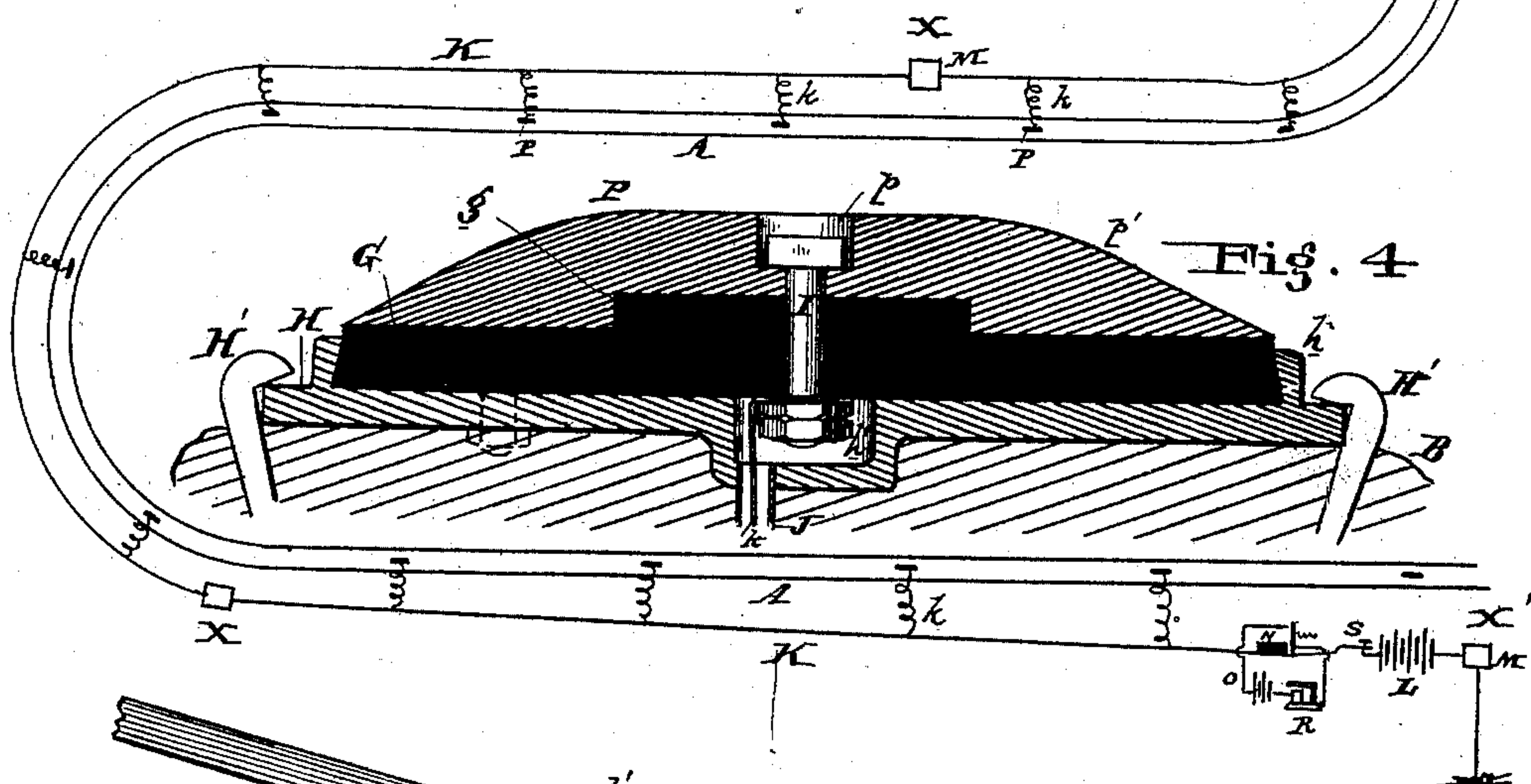


Fig. 3

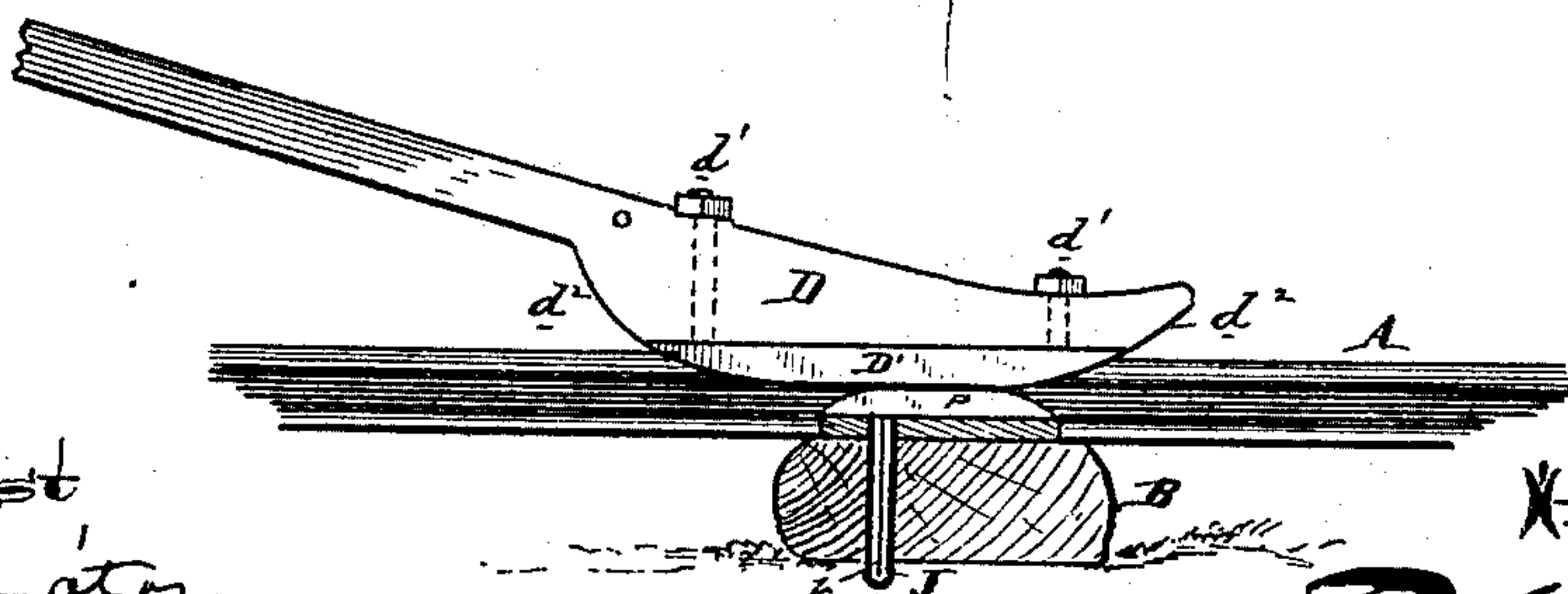


Fig. 4

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# UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA.

## RAILWAY TELEGRAPHIC SIGNAL.

SPECIFICATION forming part of Letters Patent No. 277,569, dated May 15, 1883.

Application filed October 16, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Telegraphic Signals for Railways, of which the following is a specification.

My invention has reference to electric signal and telegraphic devices for railways; and it consists in providing the road-bed of the railway with contact or circuit-closing blocks arranged at uniform intervals and electrically connected together by a line-circuit, at either end of which is a line-battery arranged to oppose or counterbalance each other; further, in providing the locomotive or car with a contact-shoe which is electrically connected with the ground, the said shoe being adapted to discharge the balanced circuit when it comes in contact with a circuit-closing block; further, in providing the stations along the line-circuit with registering devices, which register the number of escapements of electricity from the line due to the action of the moving shoe and stationary blocks, and in details of construction, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

The patent to Goodwin, No. 150,150, dated April 28, 1874, shows a closed circuit like any ordinary telegraphic circuit, and his cars open the circuit, but do not telegraph messages over it. From the nature of his construction the electric current is always passing, and when not used is going to waste. Now, with my circuit there is no passage of current until the circuit is grounded between the two line-batteries; hence there is no waste. When Goodwin signals his circuit is open, while when I signal my circuit is closed.

The object of my invention is to provide railroads with suitable automatic registering devices, whereby the station-master may know the exact location of the train, and whether it is stopped or running, and at what speed it is traveling; also, that, if desired, an operator in the train may telegraph to the station, or vice versa, either when the train is at rest or moving.

In the drawings, Figure 1 represents a sectional elevation of a railroad and locomotive

with my improvement attached thereto. Fig. 2 represents a plan of railroad and a number of stations located thereon. Fig. 3 is an enlarged view of the circuit-closing block and shoe, and Fig. 4 is a sectional elevation of one of the circuit-closing blocks.

A are the rails, and B the usual cross-ties. C is the locomotive or car, and is provided with a metallic shoe, D, provided with a wearing-piece, D', secured thereon by bolts d', both ends of said shoe being preferably curved up, as at d<sup>2</sup>. This shoe is pivoted to the locomotive at d, and may be provided with a spring, E, to force it down toward the track, and an adjusting-rod, F, to limit its downward motion.

Secured upon the ties B, and preferably between the rails, are contact-blocks P, arranged, say, half a mile apart. They may be arranged closer or farther apart, if desired, as it is immaterial so long as their separation is uniform. These contacts may be constructed as shown in Fig. 4, in which a cast-iron bed-plate, H, is secured to the ties by bolts or nails H', and are provided with flanges, h', made dovetailed to hold the insulating-block G, which may be provided with projection g, and over which fits the contact metallic piece P, made curved on each end, as at p'. The top of piece P is provided with a depression or recess, p, into which the head of bolt I rests, the bolt passing through the said piece and insulator-block to hold them together. The nut of said bolt fits loosely into a depression, h', in the bed-plate H. If desired, the nut of bolt I may be up in depression p, so as to allow easy removal of piece P.

k is the conducting-wire, and is electrically connected with piece P, from which it may be directly connected to line or may be passed through a lead tube, J, which conducts it through the ground and ties to the main line K, which may be arranged on poles, as in the case of ordinary telegraph-lines. If wire k passes through a lead tube or is in contact with the ground, it should be insulated. Each end of the main-line circuit K is provided with a battery, L, so arranged that they counterbalance and render neutral their effects.

X are stations, and are provided with any suitable recording-instrument, M, in circuit



with the main line K, so that upon every pulsation of the electric current which passes through the line the recorder will automatically record the fact. If desired, a relay, N, may be arranged in the line at the stations, which may control the usual local circuit, O, in which a sounder, R, is located, and may be operated by a key, S, when the shoe D is resting on a contact-block, P, and, if desired, the current which passes through the shoe may be directed through corresponding telegraphic instruments in the cab of engine or car, and then put to ground by wheels. By this means telegraphic communications could be had should an accident occur.

The operation is as follows: The effects of the batteries L being counterbalanced, the train is made to move in either direction, and as it passes over the contact-blocks P the shoe D completes the double circuit through the engine or car-wheels to ground, this causing a discharge from both batteries to line, and inducing all of the recording-instruments M to record the fact, and as every discharge indicates the passage of the train over a contact-block, the number of discharges multiplied into the distance the contacts are apart will give the distance the train is from the station in its rear. By this means it is easy to ascertain the exact location of the train, to know whether it is moving or at rest, and to enable an operator to carry on telegraphic communications with the stations should an accident make it necessary.

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

1. The combination of a railway with contact-blocks arranged along the same and at equal distances apart, a main-line circuit-wire in circuit with said contact-blocks and a line-battery at each end of same, said batteries being arranged with similar poles to line, and means attached to a car or locomotive and arranged to strike said contacts and ground the line-wire between the batteries, substantially as and for the purpose specified.

2. The combination of a railway with con-

tact-blocks arranged along the same and at equal distances apart, a line-wire provided on each end with a line-battery having similar poles to line and in circuit with said contact-blocks, recording devices arranged in said line-circuit and at the stations, and means attached to the locomotive or car to strike said contact-blocks and ground the line-circuit between said batteries, substantially as and for the purpose specified.

3. The combination of a railway with contact-blocks arranged along the same and at equal distances apart, a line-wire provided on each end with a line-battery having similar poles to line and in circuit with said contact-blocks, recording devices, arranged in said line-circuit, telegraphic apparatus also arranged in said line-circuit and at the stations and on the train, and means attached to the locomotive or car to strike the contact-blocks and ground the line-circuit through the telegraphic apparatus and at a point between said line-batteries, substantially as and for the purpose specified.

4. The combination of rails A, contact-blocks P, line-wire K, wires k, batteries L L, recording-instruments M, locomotive or car C, and shoe D, in circuit with the ground, substantially as and for the purpose specified.

5. The combination of rails A, contact-blocks P, line-wire K, wires k, batteries L L, recording-instruments M, locomotive C, shoe D, spring E, and adjusting-link F, or its equivalent, substantially as and for the purpose specified.

6. The combination of rails A, contact-blocks P, insulating-blocks G, line-wire K, wires k, batteries L L, recording-instruments M, locomotive C, shoe D, having wearing-piece D', and means to electrically connect said shoe with the ground, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

RUDOLPH M. HUNTER.

Witnesses:

R. S. CHILD, Jr.,

R. A. CAVIN.