

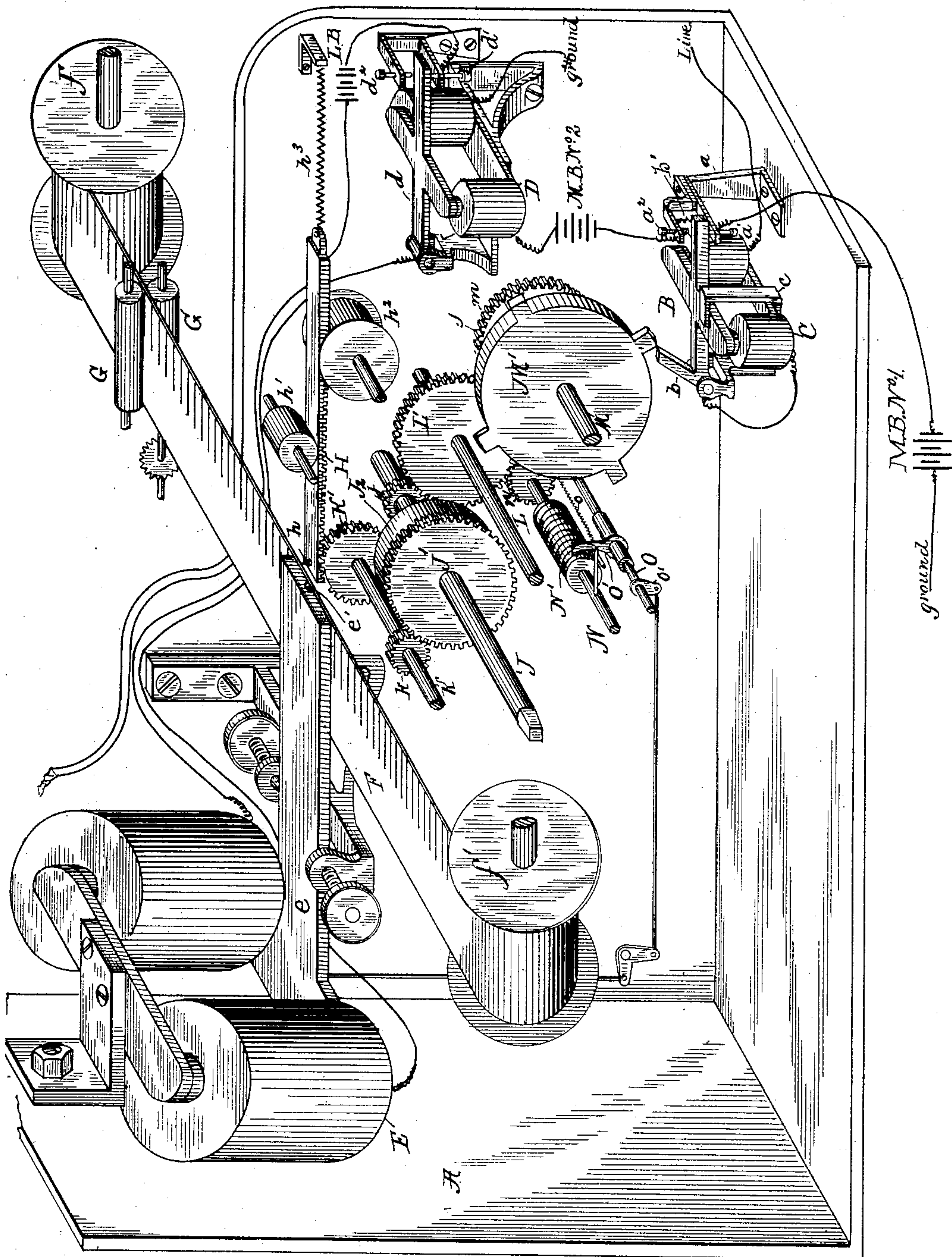
(No Model.)

W. M. PEASE.

RECEIVING INSTRUMENT FOR ELECTRICAL REPORTING.

No. 312,503.

Patented Feb. 17, 1885.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM M. PEASE, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO LENOX SIMPSON, OF SAME PLACE.

RECEIVING-INSTRUMENT FOR ELECTRICAL REPORTING.

SPECIFICATION forming part of Letters Patent No. 312,503, dated February 17, 1885.

Application filed April 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. PEASE, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Receiving-Instruments for Electrical Reporting Systems, of which the following is a full, clear, and exact description.

10 This invention is intended to be used in my improved system of automatic electric railroad-train reporting described in application for patent filed by me in the United States Patent Office as of even date herewith, and marked
15 "Application A." In said system a positive and a negative circuit are employed. One of said circuits is normally closed, and so remains until the mechanism connected therewith makes the first break in the circuit. Immediately thereupon the first circuit is permanently
20 opened and the second circuit completed. The report is then made through the medium of the second circuit, and when said report is finished said second circuit is broken and the
25 first circuit reinstated in its place. In said system it is possible that two or more reports may be sent over the line in quick succession, and unless adequate means for distinguishing these reports are supplied they may become
30 confused. It is also desirable in a train-reporting system to secure a permanent record of the various reports, showing the time and order in which they were received.

It is the object of this invention to aid in
35 the changing of the circuits, to prevent confusion of reports, and to maintain a permanent timed record of all reports received. I attain this object by means of the apparatus hereinafter described.

40 The drawing represents a perspective view of the apparatus with parts broken away, so as to more completely exhibit the mechanism.

A is the frame of the receiving-instrument. Attached to said frame is a bracket or like device, *a*, carrying two insulated fixed contact-pins, *a'* *a''*, connected, respectively, with the
45 main batteries Nos. 1 and 2, (marked M B No. 1 and M B No. 2.) Between said pins is situated one end of an armature, B, whose
50 opposite extremity is hinged and provided with an upwardly and forwardly inclined arm,

b. Said armature is provided with a spring, *b'*, or equivalent device, whereby it may be normally held away from the magnet C. The latter is situated beneath armature B, and is
55 provided with a permanent magnet, *c*, which serves to polarize it. The magnet *c* is so arranged as that when the current through magnet C is from main battery No. 1 the armature may be attracted, and when said current proceeds from main battery No. 2 the armature
60 may be repelled. From this construction it will be seen that when the circuit (which normally proceeds from battery No. 1 to pin *a'*, thence through the armature, and, by means
65 of a connecting-wire, to the magnet-coil, and thence along the line) is broken the armature will be forced in contact with pin *a''*, and a circuit proceeding from battery No. 2 will be instituted. The circuit thus formed repels the
70 armature, so that the circuit of battery No. 1 can never be reinstated upon the line until the armature is forced downward against pin *a'* by some external power.

Within the circuit of battery No. 2 is a magnet, D, having a hinged armature, *d*, whose
75 outer extremity extends between two contact-pins, *d'* *d''*. The pin *d'* is connected with one pole of the local battery L B, the other pole being connected with the coil of a magnet, E.
80 The free extremity of the magnet-coil is connected with armature *d*. Fulcrumed beneath magnet E is an armature, *e*. From this construction it will be seen that when the circuit from battery No. 1 is broken circuit from bat-
85 tery No. 2 will be completed, the armature *d* be forced in contact with pin *d'*, the local circuit completed, magnet E energized, and the outer end of armature *e* elevated. Armature
90 *e* is provided with an arm having a longitudinal groove, *e'*, formed in its under side. Beneath the extremity of said arm moves a ribbon of paper, F. Said ribbon is divided into
spaces representing the hours and minutes of the day, and these spaces are appropriately
95 marked. The ribbon is held upon a spool, *f*, and as it is used is wound upon a second spool, *f'*, which is provided with means for taking up the slack in the ribbon.

G G represent two rollers, which are actuated by a clock, (not shown,) and pay out the ribbon in accordance with the hours and min-
100

utes marked thereon. Beneath the groove of the armature and under the ribbon is a stylus-point, h , carried by a rack, H. Said rack is provided with teeth upon its under side adapted to engage with the teeth of a wheel hereinafter described. A plain idle-roller, h' , and a roller, h^2 , having peripheral edge flanges, serve to guide and sustain the rack in its proper position.

h^3 is a spiral spring adapted to draw the rack backward when released.

J is the main or winding shaft of the mechanism for operating the rack H and the armature B. Said shaft carries an ordinary coil-spring, J^2 , and a cog-wheel, J' . The latter gears with pinion k , borne by shaft K. Shaft K carries the wheel K' , whose teeth mesh with those borne by the rack H. The wheel K' has two or more teeth lacking, so that when it has made almost a complete revolution the rack H, which has been previously driven forward, will be released and be drawn backward to its normal position by spring h^3 . The shaft L carries a wheel, L' , which gears with a pinion, j , borne by shaft J, and with a wheel, m , carried by shaft M, and also with a pinion, n , borne by shaft N. Shaft M carries a disk, M' , provided with four peripheral teeth, said teeth adapted, when the disk is revolved, to strike against the arm b of armature B, and force said armature downward and in contact with point a' . Shaft N carries a worm, N' , the outward limit of whose thread is provided with a stop. In said thread works the end of a catch, O' , carried by a sleeve feathered to a rocking bar, O. Said sleeve has lateral freedom of movement upon said bar, and is provided with a spring, o , adapted to draw the catch inward when released from engagement with the worm. Attached to the bar is an arm, o' , connected by rods and a bell-crank to the armature e . The gearing is so arranged as that the wheel K' and disk M' revolve in the same space of time, and the worm N revolves as many times as it has threads each time that said wheel and disk make one-fourth of a revolution.

The operation of the invention is as follows: When the circuit proceeding from main battery No. 1 is broken, the armature B is released, a circuit from main battery No. 2 is instituted, the local circuit completed, and the magnet E energized. The effect of this is to draw upward the armature e and depress its arm against the paper ribbon, which is thereby forced against the stylus. Simultaneously the rocking bar O is actuated, and the end of the catch O' forced out of contact with the stop at the outward limit of the worm-thread. Said catch is forced along the rocking bar by spring o , and catches in the thread of the worm at the opposite end of the latter. When the catch releases the worm, the mechanism starts, and the rack H is thereby forced forward and the disk M' revolved. At the next break in the circuit the rack H has carried the stylus some distance across the paper ribbon, so that

the mark upon the ribbon is differently situated from the first mark. Said rack having a uniform motion, the spaces between the different marks made by the breaks in the circuit will correspond with the spaces of time between the said breaks. The series of breaks forming the report will be thus accurately displayed upon the ribbon. The wheel K' completes nearly a quarter-revolution during the reception of a single report, and in the same time the catch O' has been carried along the thread of the worm almost to its outward limit of movement. Shortly thereafter one of the teeth upon disk M' strikes against the arm b and forces the outer end of armature B against the contact-point a , thus breaking the circuit from battery No. 2 and re-establishing the circuit from battery No. 1. At the same time the catch O' has come in contact with the stop at the end of the worm-thread, and the mechanism is thereby stopped. The machine is now in readiness for the reception of another report. The next report will be marked upon the ribbon somewhat more toward the left than the first, and so on until four reports have been received, when the rack is released and drawn backward by the spring h^3 . This forward and backward movement of the rack is repeated for every four reports received. By this mode of operation, if a number of reports are received in rapid succession, all confusion is avoided, there being no opportunity for two marks to be made in such close lateral proximity as to be blended. The time elapsing from the end of one report to the alternation of the circuits and the beginning of another report is greater than that occupied between any two breaks in the circuit in a single report, and the reports are thus easily distinguished apart. The ribbon, having a constant timed movement and being marked with the hours and minutes of the day, records the exact time of the reception of each report; and the breaks in the circuit being arranged in such relation as to show the station from which the report is received and the direction of movement of the train, (as explained in concurrent application hereinbefore referred to,) the exact condition of the road at any specified time is shown.

Having thus described my invention, what I claim is—

1. In a receiving-instrument, the combination, with the contact-pins $a' a^2$, said pins connected with opposite poles of two batteries, of the polarized magnet C, one end of whose coil is connected with the line-wire, the armature B, connected with the free end of said coil and provided with arm b , and the disk M' , provided with teeth adapted to force—at intervals—the armature against pin a' , substantially as and for the purposes described.

2. In a receiving-instrument, the combination of contact-pins $a' a^2$, said pins connected with opposite poles of two main batteries, magnet C, one end of whose coil is connected with armature B and the other end with the

line-wire, armature B, magnet D, having armature *d*, contact-pin *d'*, a local battery having one pole connected with said pin, a magnet, E, one end of whose coil is connected with the
5 free pole of said local battery, and the other end with the armature *d* and armature *e*, all arranged in the manner and for the purposes described.

3. In a receiving-instrument, the combination, with armature *e*, of the paper ribbon
10 F, the rack H, provided with stylus *h* and adapted to be retracted when released, and a toothed wheel, K', having a break in the continuity of the teeth, and adapted to be revolved
15 in the manner and for the purposes described.

4. In a receiving-instrument, the combination, with the rollers G, the armature *e*, rack H,

provided with stylus, and toothed wheel K', of the ribbon F, divided into spaces marked to represent the time of the day, and adapted to
20 travel at right angles to the rack, as and for the purposes described.

5. The combination, with the stylus-bearing rack, armature B, provided with arms *b*, and armature *e*, of spring-actuated wheels and pin-
25 ions J' *k l* K' L' *m n*, disk M', worm N', spring-actuated catch O, and the mechanism connecting the armature *e* with the catch O, substantially as described.

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Witnesses:

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