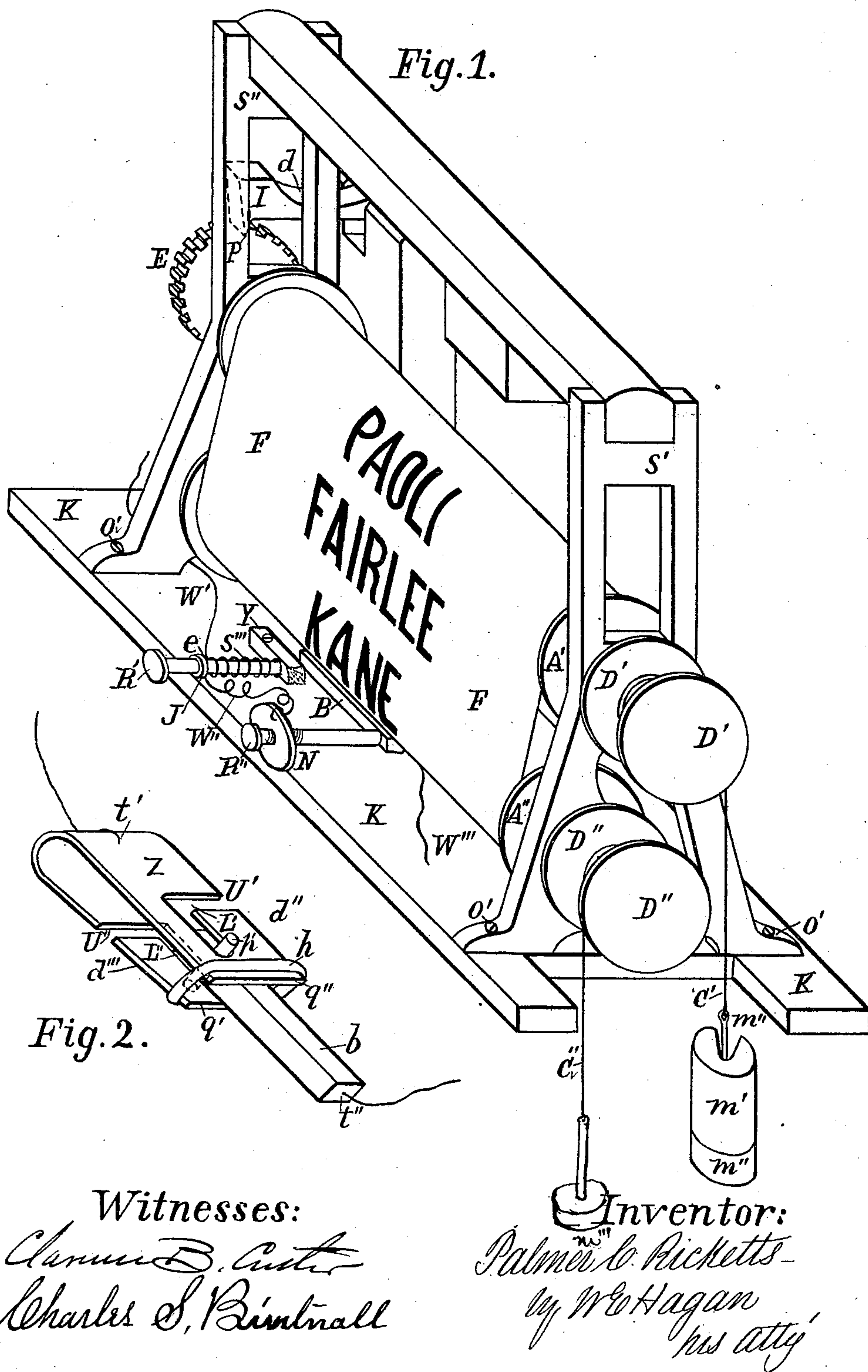


(No Model.)

2 Sheets—Sheet 1.

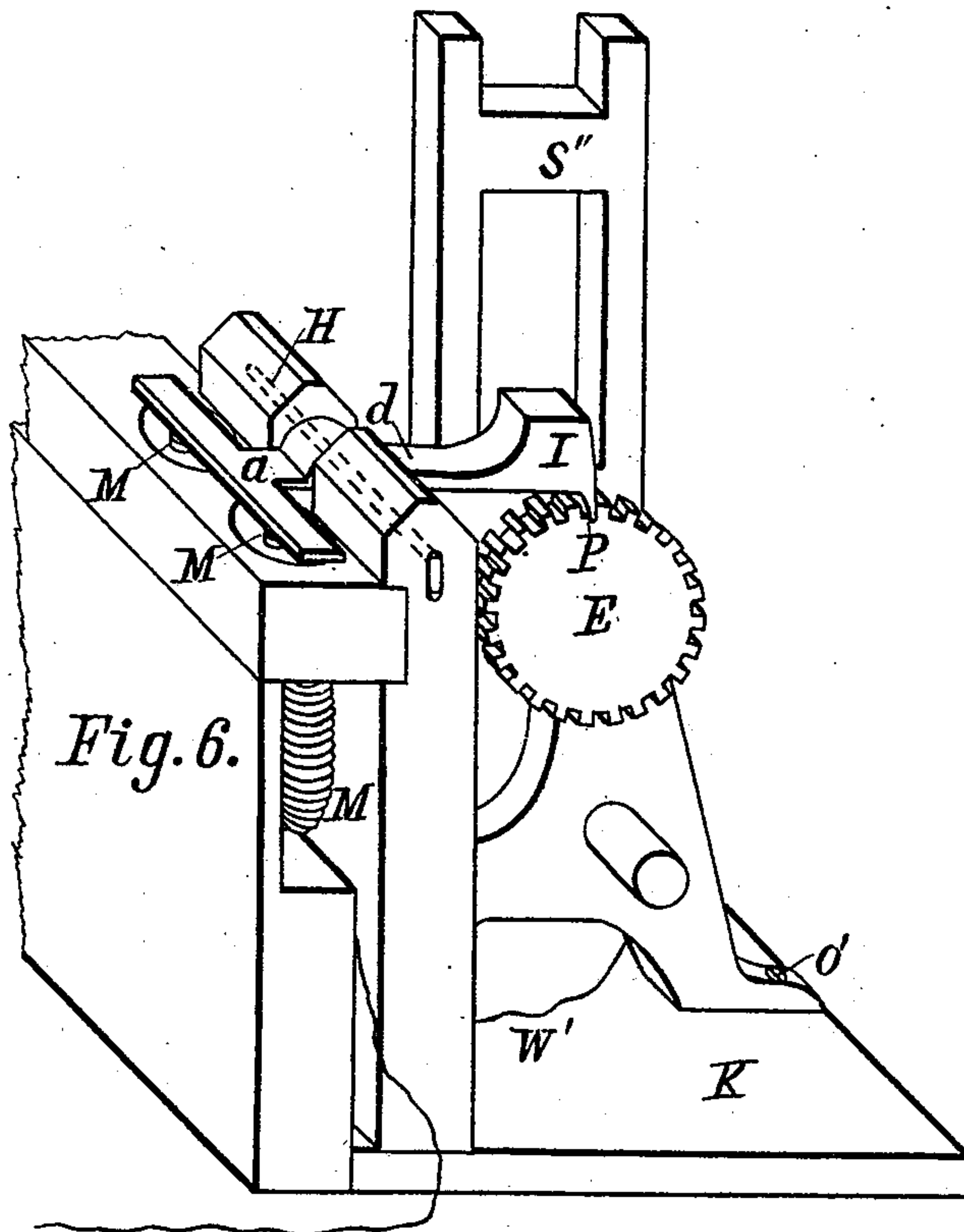
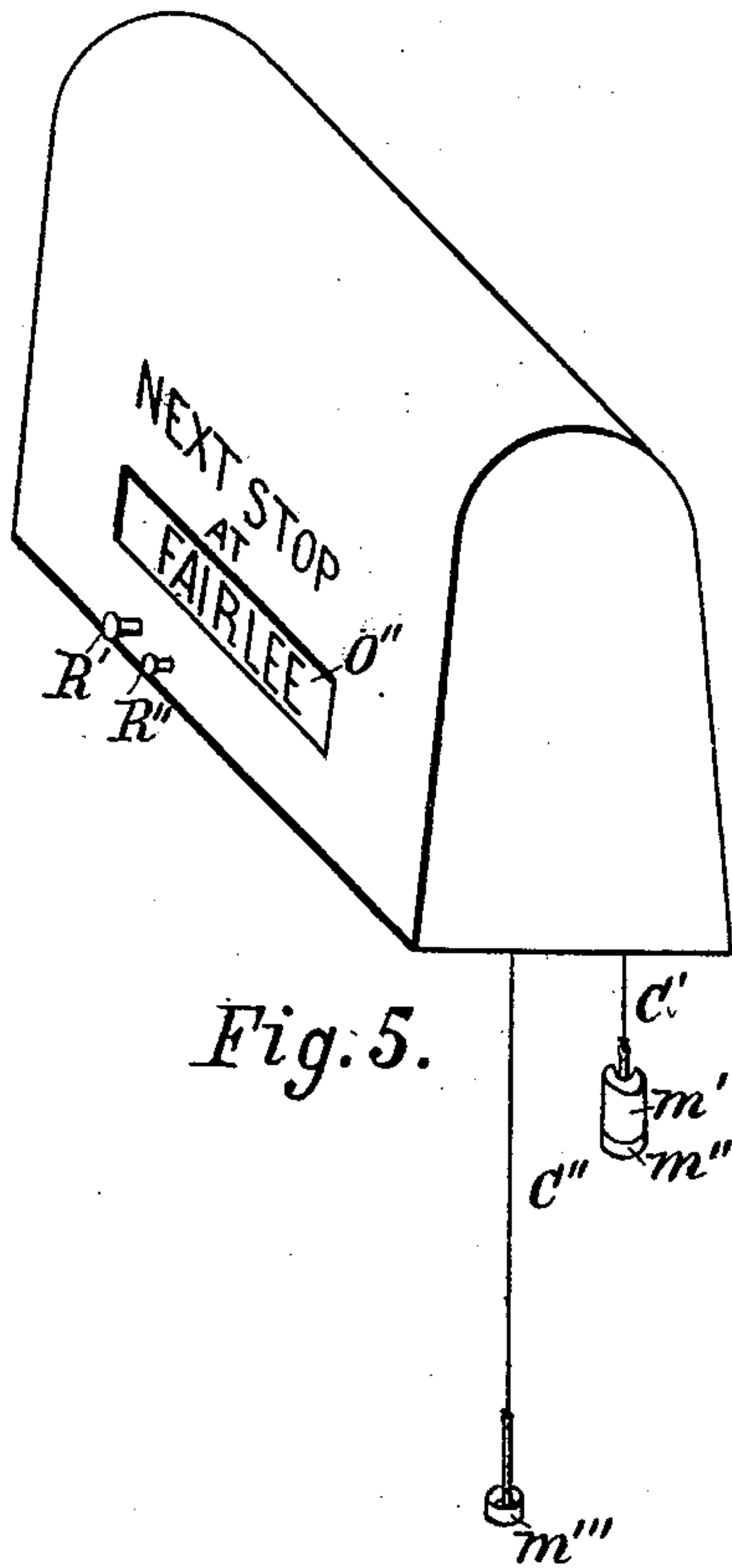
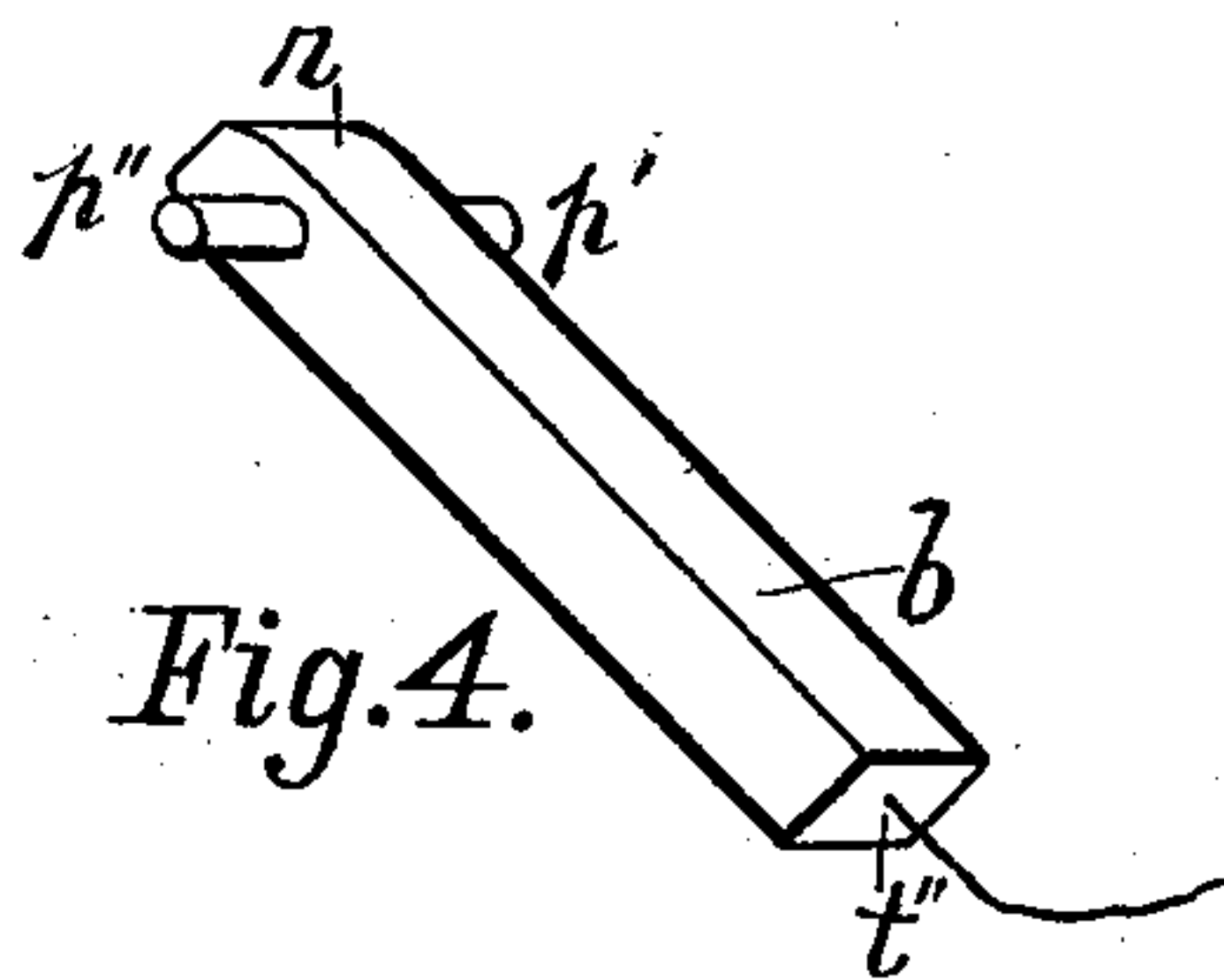
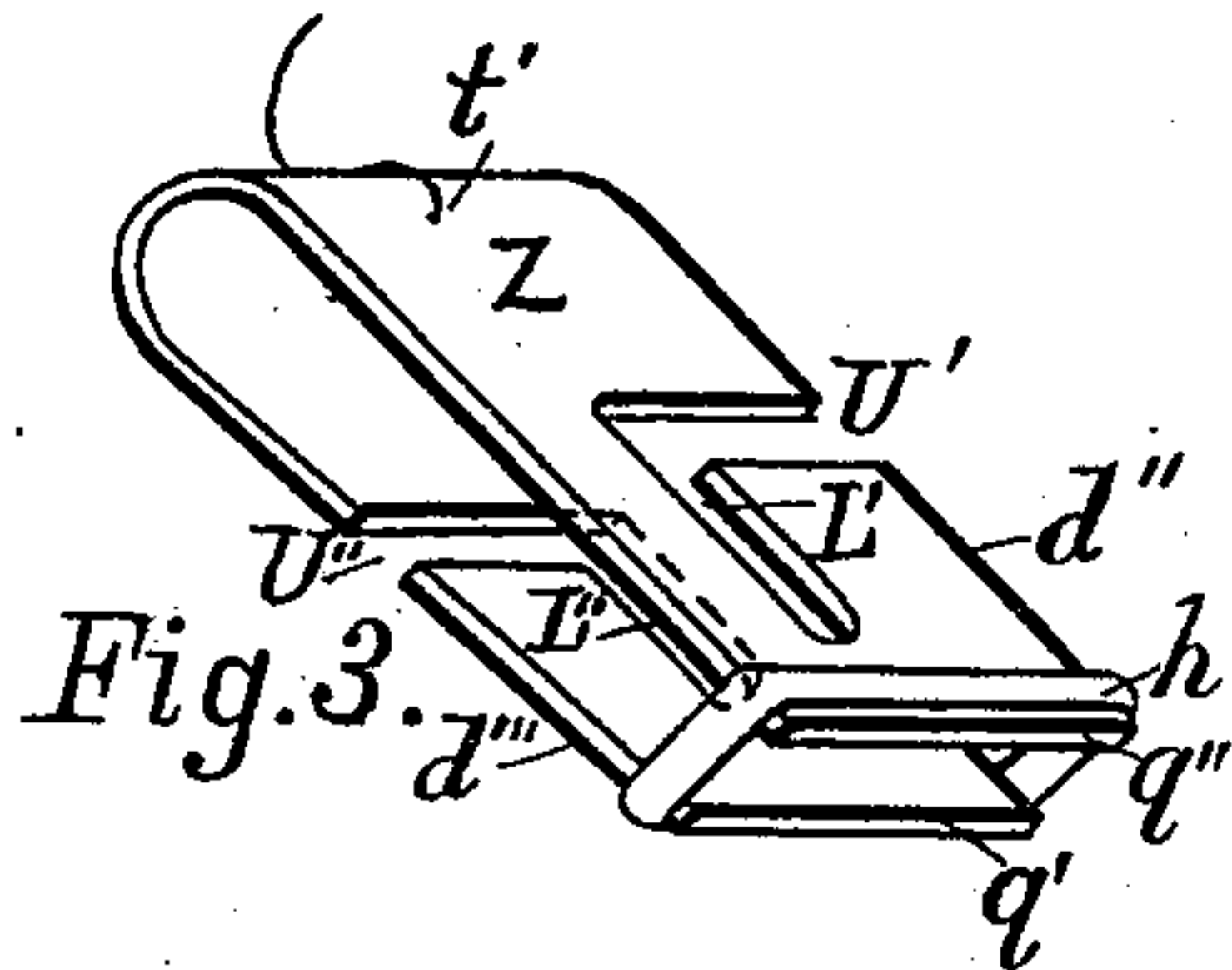
P. C. RICKETTS.
Electro Magnetic Station Indicator.
No. 236,629. Patented Jan. 11, 1881.



(No Model.)

2 Sheets—Sheet 2.

P. C. RICKETTS.
Electro Magnetic Station Indicator.
No. 236,629.
Patented Jan. 11, 1881.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

PALMER C. RICKETTS, OF TROY, NEW YORK.

ELECTRO-MAGNETIC STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 236,629, dated January 11, 1881.

Application filed March 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, PALMER C. RICKETTS, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Machines for Indicating Stations on Trains of Cars, of which the following is a specification.

My invention relates to improvements in machines for indicating stations within the cars of a moving train; and it consists, as hereinafter described, in a manner of constructing and arranging two rollers having their axial bearings one above the other, and at one end of each roller, where adjacent, a cord-drum, cord, and weight, with a flexible band attached at each end to the rollers, so that it may be wound from off one roller onto the other between its attached ends by the weight and cord, and by changing the weight from one roller-drum and cord to the other the band may be caused to run from either roller to the other between its attached ends, there being indicated upon the band in letters the names of the stations, and the rollers started to revolve and to stop rotating by means of a toothed wheel upon one of the rollers, and an engaging pawl-detent operated in the teeth of the wheel by means of an electrical current, armature, and electro-magnet, the object of my invention and improvement being to provide a method and means for indicating in all the cars of a moving train simultaneously the name of the next station at which the train will stop; and I accomplish these objects by means of the mechanism illustrated and designated by letter reference in the two plates of the accompanying drawings, of which—

Figure 1 is a perspective view of the device, with the cover removed to show the action of the weights upon the rollers by means of the drums on which the cord is wound, and also the manner of "making" and "unmaking" the magnet. Fig. 2 shows, in perspective, the coupling device used for connecting the wires and machines of the train, the wires being shown as connected in the illustration. Figs. 3 and 4 are views, in perspective, of coupler disconnected. Fig. 5 illustrates a view of the machine with the cover applied. Fig. 6 exhibits a view of a part of the device in perspective, and that relating to the operation of the electro-magnet and pawl-detent.

Similar letters refer to similar parts in all the illustrations.

The several parts composing the device are designated by letter reference and described as follows:

The letters S' and S'' denote the standards, and these are shown as screwed to the shelf K at O' O', and these standards support the bearings of the two rollers A' and A'', arranged one above the other, and to the exterior surfaces of which are attached at each of its ends the flexible band F, in the same manner that curtains are attached to rollers. This band is made long enough between its attached ends to contain in designation the station-names in succeeding order, and so that it can be rolled from off one of the rollers onto the other to where attached by turning the rollers in opposite directions. Upon the adjacent ends of the two rollers are arranged the drums D' and D'', on which, by means of the cords C' C'' and the pendent weight m', either of the two rollers may be actuated to revolve so as to wind up the flexible indicating-band from off the other by means of the descending weight and unwinding cord by changing the weight from one cord to the other. Upon the other ends of the rollers A' and A'' are bearings in the standards S' S'' for axial rotation, and upon one of them is arranged a toothed wheel, E, as shown in Fig. 6. This toothed wheel engages with the pawl-point P of the detent d, constructed as a pivoted lever, working as shown by the dotted line H, Fig. 6, and the other end of which forms the armature a of the electro-magnet M, and this magnet is made by any of the ordinary means employed for producing an electrical current. So long as the circuit is broken, the magnet M not being made or excited, the point P of the pawl-detent d, which is weighted at I on the pawl side of the pivot, engages with the teeth of the wheel E, and acts as a brake or detent to prevent the weight and cord from turning the rollers, thus keeping the name of a station printed on the flexible band in sight, as shown in Fig. 1, opposite the opening O'' in the cover, below the words "Next stop at," as shown in Figs. 1 and 5. When the magnet is "made," however, by the passage of the electrical current, the armature a is attracted, the point of the pawl-detent is raised from out the teeth of the wheel E, the weight and cord actuates the rollers to turn, so that the station-indicating band winds from off one roller onto the other until the circuit is broken, when the

pawl-detent d falls to engage the perimetral teeth of the wheel E , and arrests the rotation of the rollers and belt with one of the station-names opposite the opening O'' . After the train has reached its terminal destination and all of the indicating-belt has passed from one roller to the other, by changing the weight to the other cord and drum the motion of the belt is reversed and the names of the stations appear in the order required for the passage of the train over the same route in return.

At Fig. 1 there is shown an arrangement by means of which an operator at any one particular machine may control the action of all of the other machines on the same circuit, which are constructed in like manner, and as follows: One extremity of the wire W' of the electro-magnet is connected, as shown at e , with a metal rod, R' , fastened so that it can be pushed in until in contact with a metal bar, B , to which is connected a wire, W''' , from the next instrument of like construction in the circuit. This rod is kept from continuous contact with the bar B by means of a spring, S''' , which presses at one end against the fixed piece Y , through an opening in which the rod R' passes, and at the other end against a projection, J , on the rod R' , thus keeping this projection pressed forward against the cover and the rod away from the bar B . The rod R' is also connected by means of the wire W'' (which is bent, as shown in the figure, to allow the rod R' to move easily) with the nut N of a second parallel metal rod, R'' , on which is cut the threads of a screw, thus allowing it to be screwed in until in contact with the bar B .

In order to use any number of these machines on the same circuit and to make them act simultaneously, the rod R'' must be screwed in until in contact with the bar B in all except one, and in this one when the rod R' is pushed in until in contact with the bar B , the current coming around the magnet and through the wire W' passes through the wire W''' to the next machine, where, after passing around the magnet, it goes through the wires W' and W'' to the nut N , and thence through the rod R'' and the bar B onward. Thus the operator at any particular machine, by pushing in the rod R' , makes or excites the magnets of all the machines simultaneously, the rollers commence to turn at the same time, and the same station-name appears before all the openings in the machines in different cars upon the train at the same period, assuming that the flexible bands and the station-names printed on them coincide in alternating sequence, and were arranged alike in this respect at starting.

The coupler is formed by means of the slotted and bent strap-tie Z and the key b , as shown in Figs. 2, 3, and 4. The strap-tie is made from a piece of sheet metal bent in a U form, having its sides $d'' d'''$ and its ends $q' q''$ parallel. Within the flat surfaces of the strap, between its ends and where bent, there are cut in its opposite edges the cross wards or slots $U' U''$, which connect at right angles with

slots or wards cut longitudinally, as shown at $L' L''$, the two latter being vertically parallel and the former oppositely parallel. The key b consists of a bar of metal having the cross-pins $p' p''$ near its attaching end, and the key and slotted strap-tie are connected by passing in the key flatwise between the flat ends of the former, and when the pins are opposite the cross wards or slots to turn the key half-round with the pins in the cross-wards, and to then pull the key outwardly with the pins in the longitudinal slots and in the position shown in Fig. 2. As the key is connected with the wire at t'' and the strap-tie at t' , the wires are thus easily coupled, and by forcing in the key and turning it half-round and then pulling it out they are uncoupled. While the springing of the strap-tie (shown at $q' q''$) is sufficient to keep the key in place, yet, if desired, an additional means of security may be applied by using an elastic strap upon the ends, as shown at h .

I do not desire to limit my invention to the manner of coupling a series of indicating-machines to that which I have shown and described, for the devices arranged to indicate the names of the stations would perform the same purpose in the same manner whether coupled as shown or in some other well-known way. As the arrangement of two rollers and one lettered belt connected to and with the latter, and upon which belt is printed the names of the railway-stations, when operated by means of the two drums, cords, and weight and started and stopped in revolution by means of the toothed wheel, detent-pawl, and electro-magnet, would co-operate to perform the same office, whether the mechanism operated to make or unmake the magnet was that shown, or some other known means was employed, I do not limit my invention of the combined parts named, as arranged, to their combination with the mechanism shown for making or unmaking the electro-magnet.

For a return wire to complete the circuit the battery may be connected with the truck or axle-bearings, so as to use the wheels and track for that purpose, or another wire may be run from the last machine on the train to the battery.

I am well aware that a registering device has been actuated to show upon a self-winding roller-belt the names of railway-stations automatically by means of an operating-connection made with one of the car-axles and intermediate clock-work that regulated the appearance of the station-names by the rotation of the car-axle and the distances traveled by the train, and in which device an electro-magnet and detent were employed, in connection with a disk-wheel and pins, to regulate the rotation of the belt and roller, the magnet and detent being employed to detain the belt and self-winding roller and the mechanism by means of levers to release the detent, as shown in the patent to J. F. Kettell, dated December 21, 1875. This device differed from mine in the

fact that I make no mechanical connection with the car-axle, and that the electro-magnet and pawl-detent lever and armature are employed to release the roller and belt when the magnet is made, and to detain and arrest the rotation of the roller when the magnet is unmade, the pawl-detent being formed at one end of the lever and the armature at the other, with an intermediate pivoted connection, and the pawl end weighted, so as to fall down and engage with the peripheral teeth of the wheel upon the roller-axis when the magnet is unmade and its lighter armature end released.

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

1. A machine for indicating within the cars of a train the names of the stations, consisting of the two axial rollers A' and A'', arranged one above the other, and having at one of the adjacent ends of each the cord-drums D' and D'' and cords C' C'' and weight-hooks m'' m''', with the flexible band F, attached at its two ends to the rollers, and having displayed upon its surface the names of the stations in alternate order, the toothed wheel E, arranged upon one of the roller-axes, and the weighted and pivoted pawl-detent d, constructed to engage with the perimetral teeth of the wheel E, to arrest the rotation of the rollers and station-indicating belt, or, when raised, to release the detention, through its pivoted connection with the lever-armature a, and the electro-magnet M, actuated by means of an electrical current, and made active or passive by any suitable circuit-closing or circuit-breaking mechanism, for the purposes herein described and set forth.

2. In a machine for indicating within the cars of a railway-train the names of the stations by means of two rollers and an attached belt, upon which the names of the alternating stations are lettered, and the belt caused to revolve from off one roller onto the other, so as to show the station-names in passing, by means of drums and weighted cords upon the rollers, the combination of the toothed wheel E, arranged upon one of the rollers, the weighted pivoted pawl-detent d, its lever-armature end a, the electro-magnet M, electrical circuit-wires W' W'', and the circuit-closing and circuit-breaking rod R' and its mandrel-spring S'', for closing the circuit and raising the detent-pawl for the revolution of the rollers and station-indicating bands, and for breaking the circuit to stop the revolution of the rollers and band, as herein shown and as described.

3. In combination, a series of machines in circuit, arranged to indicate simultaneously within the cars of a railway-train where placed the names of the road-stations, and each machine constructed to contain the rollers A' and A'', station-indicating belt F, drums D' and D'', provided with cords, weight-hooks, and weight to actuate the rollers to revolve, the toothed wheel E upon one of the rollers, and the pivoted and weighted pawl-detent d, its

armature-lever end a, electro-magnet M, and the circuit-closing and circuit-breaking rod R', provided with the spring S'', by which, when the rod is pushed in against the force of the spring in any one of the machines in the circuit, the circuit is closed, to relieve simultaneously the detents for the revolution of the rollers and station-indicating belts in each machine, and, when the pressure is removed from the rod R' and it is returned outwardly under the force of the spring to break the circuit, allowing the detents to fall and stop the revolution of the rollers and indicating-belts in all the machines, as herein shown and described.

4. In a machine for indicating within the cars of a railway-train the names of the road-stations, and having two axial rollers, one above the other, and a station-indicating belt, attached to the rollers at its ends, upon which belt are shown the names of the route-stations, and the rollers so actuated by power that the belt can be rolled from off one roller onto the other between its attached ends, the combination of the toothed wheel E, arranged upon one of the rollers, the weighted pivoted detent-pawl d and its armature-lever end a, and the electro-magnet M, for detaining or relieving the detention of the rollers and belt in revolution, as herein shown and described.

5. In a device for indicating within the cars of a railway-train the names of the route-stations, and having two axial rollers, arranged one above the other, and a flexible belt attached at its ends to the rollers, having upon its surface the names of the railway-stations between its attached ends, the combination of the drums D' and D'', arranged upon the rollers, and the weight-cords C' and C'', attached to the drums, so that when one of the cords is unwound from off one of the drums the cord upon the other drum is being wound up, and by changing the weight from the unwound cord to the other the rollers and belt will be actuated to revolve in a reversed direction by the weight, and the belt will reproduce in passing the names of the route-stations in their return order, as shown and described.

6. To couple the circuit-wires of a series of station-indicating devices so that they may simultaneously show within the cars the names of the route-stations, the strap-tie Z, at its bent end attached to the circuit-wire, and constructed to have the cross slotted wards U' U'' formed in the opposite edges of the bent strap, and the longitudinal slots or wards L' L'' connecting with the former at right angles, and the keying-bar b, also connected with the circuit-wire at t'', and having the cross-pins p' p'', arranged to operate as herein shown and described.

Signed at Troy, New York, this 19th day of March, A. D. 1880.

PALMER C. RICKETTS.

Witnesses:

CLARENCE B. CUSTER,
CHARLES S. BRINTNALL.