

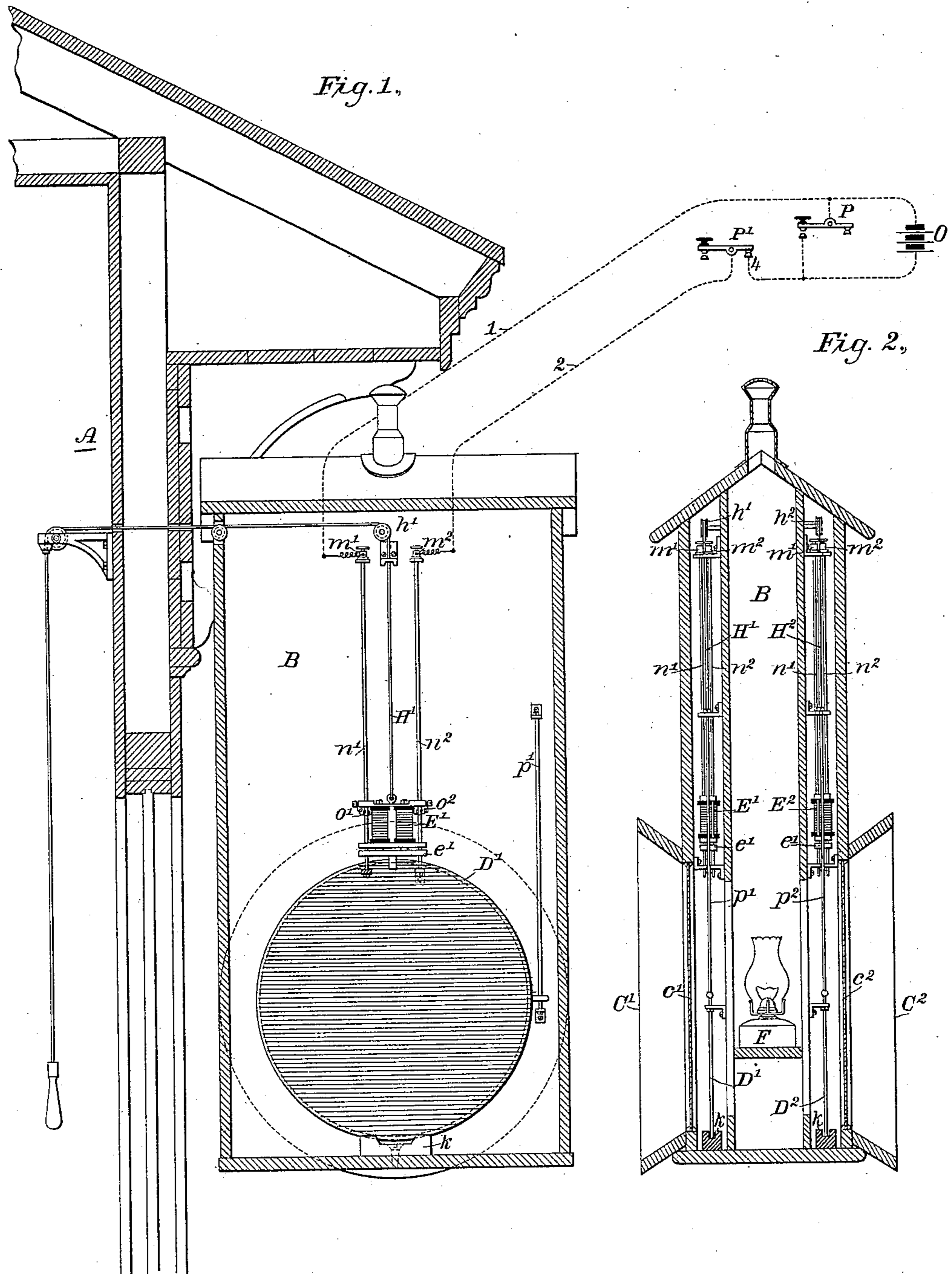
(No Model.)

J. T. HAMBAY.

APPARATUS FOR CONTROLLING RAILWAY SIGNALS BY ELECTRICITY.

No. 308,492.

Patented Nov. 25, 1884.



WITNESSES

Wm A. Sinker.
Carrie E. Ashley

INVENTOR

James T. Hambay.

By his Attorneys

Pope, Edgecomb & Butler

UNITED STATES PATENT OFFICE.

JAMES T. HAMBAY, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
UNION SWITCH AND SIGNAL COMPANY, OF SAME PLACE.

APPARATUS FOR CONTROLLING RAILWAY-SIGNALS BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 308,492, dated November 25, 1884.

Application filed April 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. HAMBAY, a citizen of the United States, residing in Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Controlling Railway-Signals by Electricity, of which the following is a specification.

My invention relates to the class of apparatus employed for controlling the movements of signaling devices in such a manner that they may normally be moved into position to indicate "safety" to approaching trains, but may also, under certain conditions, be rendered inoperative by controlling mechanism situated at one or more distant points, and thereby compelled to remain in position to indicate "danger."

The invention consists in coupling the signaling device with the mechanical actuating-power by which it is actuated by means of an electro-magnet which is normally maintained in a magnetic condition by an electric current traversing a circuit leading to or through the points from which it may be desired to control the signaling device or render it inoperative. The electro-magnet is movably supported in any suitable manner, and is capable of being raised and lowered at will by any suitable mechanical device—such, for instance, as a cord passing over pulleys and leading to the operator's cabin. Upon the signal device, which is preferably a disk, is fixed an armature for the electro-magnet, and when the electro-magnet is vitalized the armature is attracted with sufficient force to raise the disk into a position to indicate "safety," provided the electro-magnet itself be raised by the cord. When, however, the electric circuit is interrupted or the battery is short-circuited or otherwise diverted from the electro-magnet, the latter becomes demagnetized, and, although the mechanical lifting apparatus may be operated as usual, the disk or signal device will not be moved, for the reason that no attractive force exists between the electro-magnet and its armature.

In the accompanying drawings, Figure 1 is a front elevation of an apparatus embodying

my invention, and Fig. 2 is a side elevation of the same, both being partly in section.

Referring to the figures, A represents any suitable supporting frame or building, upon which is carried the inclosing-case B of the signaling device. This case is constructed with openings C' and C² upon its opposite sides, and these openings are designed to be fitted with glass panes, as shown at c' and c². Behind these panes are placed red or other suitably-colored disks, D' and D², of well-known construction. Each disk may stand in either of two positions—that is to say, either directly opposite the corresponding opening, C' or C², or in the upper part of the case, in which latter position they are hidden by the sides of the inclosing-case. When in the former position they are intended to indicate "danger," and when in the latter "safety." A lamp, F, is placed in the interior of the inclosing-case, the light from which, passing through the disks D' and D², which are partially transparent, indicates whether or not the disks are in front of the openings—that is to say, between the lamp and the glass. Upon each disk is carried a soft-iron armature, e', which is acted upon by the corresponding electro-magnet E' or E². The electro-magnets are respectively suspended by cords H' and H², which extend over suitable pulleys, h' and h², to the signal-cabin or other desired point. By pulling on the cord H, for instance, the electro-magnet E' will be raised, and if this magnet be vitalized by an electric current its attraction for its armature e' will be sufficient to raise said armature and the disk D' with itself. If, however, the electro-magnet be demagnetized, its attraction for the armature will cease, in which case the electro-magnet will be raised, as before; but the disk will remain in its original position opposite the opening C'. The same is true with reference to the disk D².

At the bottom of the inclosing-case B are placed rubber cushions k, which are designed to break the fall of the disks D and to afford seats for the same. It is evident, therefore, that by simply controlling the connections of an electric circuit in which the electro-mag-

net E' or E^2 is included it will be possible to prevent at any point traversed by that circuit the disk from being removed from before the opening by the signalman in such a manner as to indicate "safety." In the event that the signal has been raised, and while so raised it is desired to place it in a position to indicate "danger," the same operation of opening the circuit or shunting the battery will effect this result, for the reason that the signal will drop as soon as the electro-magnet is demagnetized. The electro-magnets may, for convenience, be supported upon two guide-rods, n' and n^2 , and the electric circuit is preferably continued from binding-posts m' and m^2 to the respective terminals o' and o^2 of the electro-magnet through the guide-rods. Suitable guide-rods, p' and p^2 , are also provided for each of the disks D' and D^2 . It is evident that the conductors constituting the electric circuit may be extended to any desired points or to any distance.

In the drawings I have shown in diagram the respective poles of a voltaic battery, O , as connected through conductors 1 and 2, respectively, with the binding-posts m' and m^2 . One or more keys or circuit-controlling devices, P , may be included in the circuit thus formed in such a manner that when any one of them is operated it will interrupt the circuit of the battery, and thus cause the electro-magnet to be demagnetized. In like manner other circuit-controlling devices, P' , may be placed in normally-open shunt-circuits applied to the battery O , as indicated at 4. Such circuit-controlling devices, when operated, afford a circuit for the battery having less resistance than the circuit including the electro-magnet, which will divert the current from the latter and cause its magnetic attraction to be diminished to such an extent that it will no longer suffice to raise or sustain the signal-disk.

The circuit-controlling device P and P' may be organized to be operated by hand, or by switches, draw-bridges, locking or interlocking apparatus, or by any other movable por-

tion of a railway superstructure or appliance used in connection therewith, as may be found desirable.

The invention is equally applicable to various forms of visual signaling devices other than the disks represented; but the principle of the invention is sufficiently set forth in connection with the form described.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, with an electro-magnet and its armature, of a supporting or lifting device for said electro-magnet, a movable signal attached to said armature, and means, substantially such as described, for magnetizing and demagnetizing said electro-magnet.

2. The combination, substantially as hereinbefore set forth, of a visual signal, an electro-magnet and its armature, one of which is attached to said signal, while the other is attached to a mechanical lifting device, and stationary guides for said signal.

3. The combination, substantially as hereinbefore set forth, of an electro-magnet and its armature, a visual signal, means for causing said signal to be actuated through the conjoint action of said electro-magnet and armature when the former is vitalized, stationary guides for said signal, and means, substantially such as described, for placing said electro-magnet in circuit through said guides.

4. The combination, substantially as hereinbefore set forth, of a signal-disk, an electro-magnet and its armature, one of which is attached to said disk, while the other is attached to a mechanical lifting device, and an elastic cushion upon which said disk impinges after having been released by said electro-magnetic device, substantially as described.

In testimony whereof I have hereunto subscribed my name this 5th day of April, A. D. 1884.

JAMES T. HAMBAY.

Witnesses:

HENRY SNYDER,
CALEB H. JACKSON.