(No Model.) 2 Sheets—Sheet 1.

J. A. EMERY.

RAILWAY SIGNALING APPARATUS.

No. 261,813. Patented July 25, 1882.

Fig. 1.

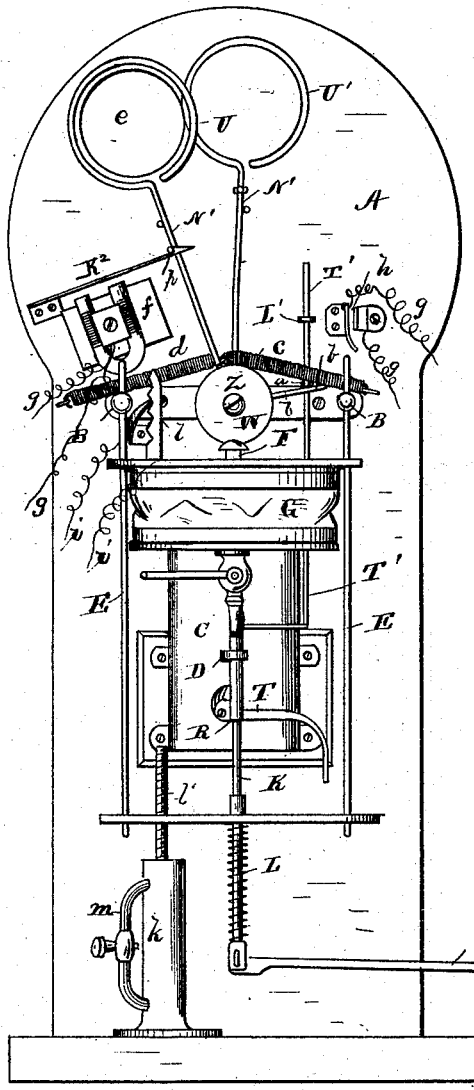

Fig. 2.

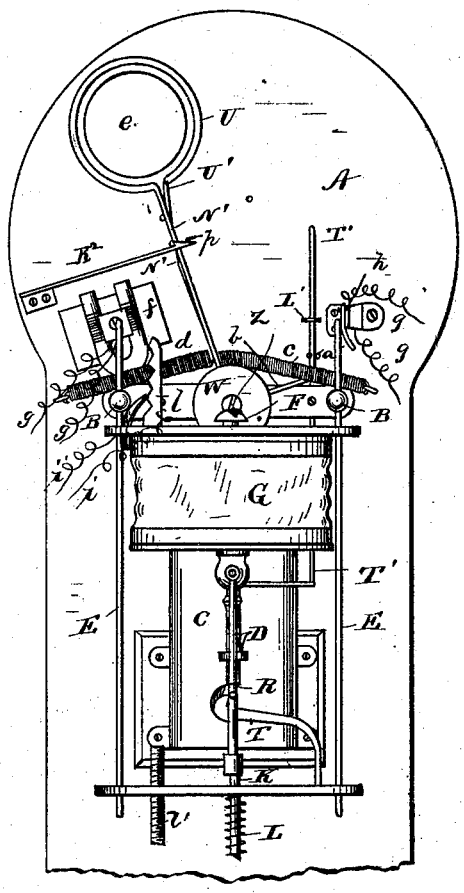

Fig. 3.

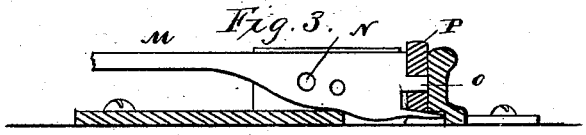

Fig. 4.

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Attorney

(No Model.) 2 Sheets—Sheet 2.

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RAILWAY SIGNALING APPARATUS.

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Fig. 5.

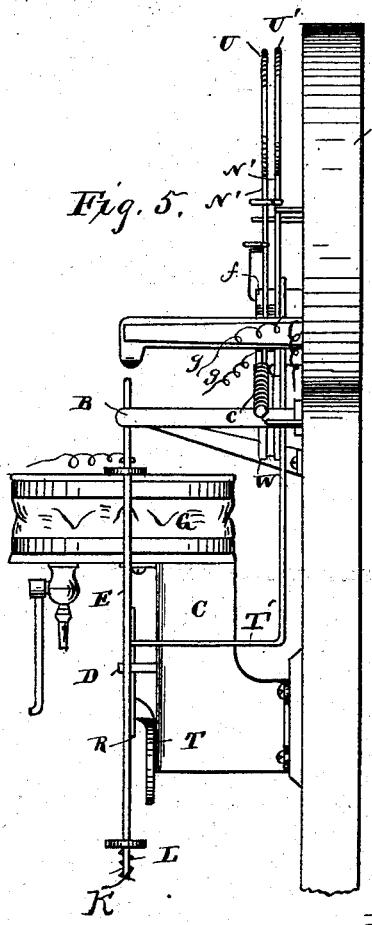


Fig. 6.

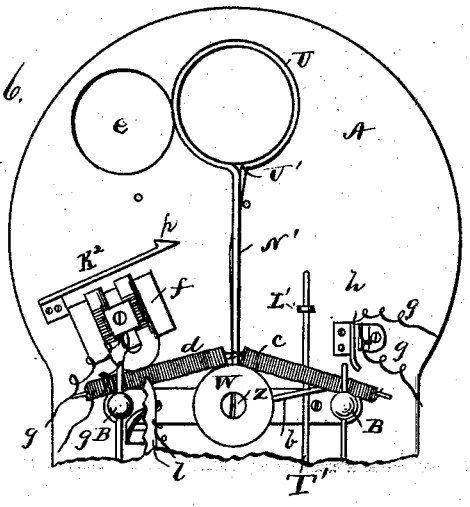


Fig. 7.

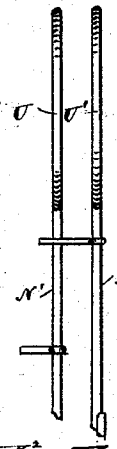
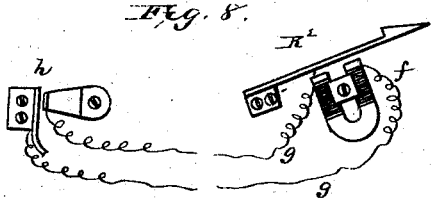
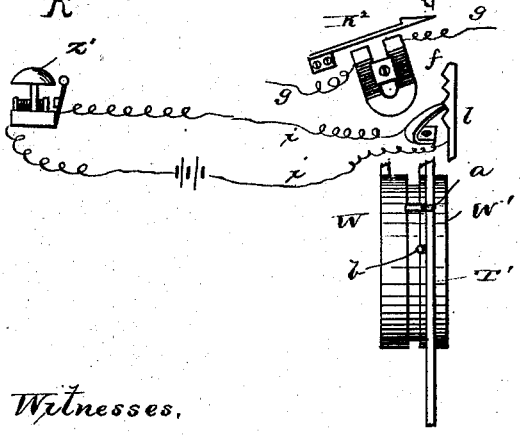


Fig. 8.





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UNITED STATES PATENT OFFICE.

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RAILWAY SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 261,813, dated July 25, 1882.

Application filed October 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. EMERY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Railway Signaling Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to certain improvements in railroad-signals; and it has for its objects to provide certain means whereby a series or system of signals may be automatically operated as a train of cars passes along a track to elevate and depress said signals at proper intervals, as more fully hereinafter specified. These objects I attain by the mechanism and devices illustrated in the accompanying drawings, in which—

Figure 1 represents a front view of my apparatus and means for operating the same, the signals being in the position they assume after the train has passed and before it has reached the next signal-station in advance. Fig. 2 represents a front view of the upper part of the apparatus with the signals in the position they assume while the train is passing. Figs. 3 and 4 represent detached views of portions of the operating mechanism. Fig. 5 represents a side elevation of a portion of the apparatus. Fig. 6 represents a front view of a portion of the apparatus with signals in normal position, and Fig. 7 a detached side elevation of the signals and the pivoted disks to which they are attached; and Fig. 8 represents a diagram showing the electrical connections of the signal.

The letter A indicates a vertical standard, which supports the signaling devices. The said standard, on its front, is provided with brackets B and a rectangular frame or block, C, the latter of which is provided with a short bracket, D, in front. The brackets B are provided with openings, through which pass the vertical rods of a vertically-traveling frame, E, to which is secured at F the top of a flexible chamber or bellows, G, the bottom of which is fastened to the frame or block C. Through the lower part of the traveling frame passes loosely a vertical rod, K, which below the frame is surrounded by a spiral spring, L, the lower end of said rod being secured to an actuating-lever, M, which is fulcrumed in bearings N and loosely connected at O to a short rail, P, located at one side of the main rails of the track in such position that it will be depressed by the tread of the wheels of the passing train, the upper surface of said short rail being curved, so that the wheels will ride freely up onto it. The said rod K is shouldered at R, forming a stop, which is engaged by the bent lever T when the said rod is elevated, the function of the said lever being to retain the rod K in an elevated position until the spring L has elevated the frame E a sufficient distance to bring the lower cross-bar of the said frame in contact with the lower end of the lever T, by which it will be operated to release the rod K and allow the frame to drop or descend by reason of its gravity, which causes the signal U′ to assume a normal position, this latter being effected through the medium of the rod T′ and pin *a*, acting on the pin *b* of the arm N′.

The letter T′ indicates a bent rod, extending horizontally from the rod K and then vertically upward through a guide, L′, secured to the supporting-standard.

The letters U U′ indicate the signals, which are attached by means of the rods N′ N′ to the disks W W′, which are pivoted to the standard A at Z. The disk W′ is provided with a pin, *b*, which extends across the rod T′, the said rod being provided with a pin, *a*, which engages said pin *b* when the rod T′ is depressed and throws the signal U′, attached to the disk W′, into the position shown in Fig. 1 of the drawings.

The letter *c* indicates a spiral spring for throwing the disk W and its signal back to normal position when the armature K^2 is depressed.

The letter *d* indicates a similar spring, which operates to throw both of the signals toward the opening *e*, as more fully hereinafter specified.

The letter *f* indicates an electro-magnet which connects with a contact-maker at the signals ahead (which are similar in every respect to the signals above described) by means of the wires *g g*. Such a contact-maker is indicated by the letter *h* in the drawings, one arm of said contact-maker (which consists of

a flat spring) being forced against the other by one side of the frame E when the frame is elevated, forcing them into electrical contact, the said arm being released when the frame falls, springing back so as to break the contact, the two arms being insulated from each other. The letter *l* indicates a contact-maker adapted to make a series of contacts as the frame rises and falls. This connects by means of wires *i i* with an electro-magnetic bell, Z′, at the signal-station at the rear, to indicate when the train is passing the signal-station next ahead, the bell being of the ordinary construction or of any approved form to be electro-magnetically operated, and a bell being located at each signal-station.

The letter *k* indicates a cylinder containing a piston, to which is attached a screw-rod, *l′*, secured to the traveling carriage. The said cylinder contains a non-congealable fluid, and is connected above and below the piston by means of a pipe, *m*, and serves as a governor for the traveling frame.

The signals U U′ are shown in their normal positions in Fig. 6. When a train passes a signal-station it elevates the rod T′, and the spring *d* throws the signals into position shown in Fig. 2 of the drawings. This exposes signal U′ for a short period (or until the train has passed) through the opening, when the traveling frame gradually falls, depressing the rod T′ and causing the signal U′ to return to its normal position, the signal U being held by the detent *p* on the armature K^2 of the electro-magnet. When the train arrives at the signal-station next ahead the circuit is made by one of the upright rods of the traveling carriage making contact with the contact-maker, which establishes a circuit through the magnet, releasing the signal U of the previously-passed signal-station and permitting it to return to a normal position.

The letter U^2 indicates a pipe leading from the bellows G, and provided with a cock, V^2, by means of which the volume of air escaping from the bellows in a given time may be controlled and the time for dropping the movable frame and the signal U′ regulated.

Having described my invention, what I claim is—

1. In combination with the signals U U′, the vertical frame E, and elastic chamber G, the loosely-connected rod K and its spring L, the actuating-lever M, connecting with the track-lever P, and the vertical rod T′, secured to the loosely-connected rod K, the whole arranged and adapted to operate to set the signals U and set and return the signal U′ to normal position, substantially as specified.

2. In combination with the flexible chamber G and its actuating mechanism, the contact-maker *l* and its connecting-wires *i i*, communicating with a suitable battery and an electric alarm, Z′, at a distant station, substantially as specified.

3. In combination with the traveling frame E, the contact maker *h*, communicating by suitable wires, *g g*, with an electro-magnet, *f*, and a suitable battery, the said magnet being adapted to control the signal-releasing mechanism at a distant station, substantially as specified.

4. In a signaling apparatus, the combination, with a flexible chamber, G, its lower end having a fixed connection with a suitable support and its upper end being connected with a traveling frame, of a loosely-connected rod, K, a pawl-lever adapted to engage a shoulder on the said rod, the actuating-lever, and a spring adapted to gradually raise said frame and expand the chamber and then release the pawl-lever, whereby the parts are returned to their normal position, substantially as shown and described.

In testimony whereof I affix my signature, in presence of two witnesses, this 28th day of April, 1881.

JOHN A. EMERY.

Witnesses:
AUGUSTUS KING,
F. T. CROMMETT.