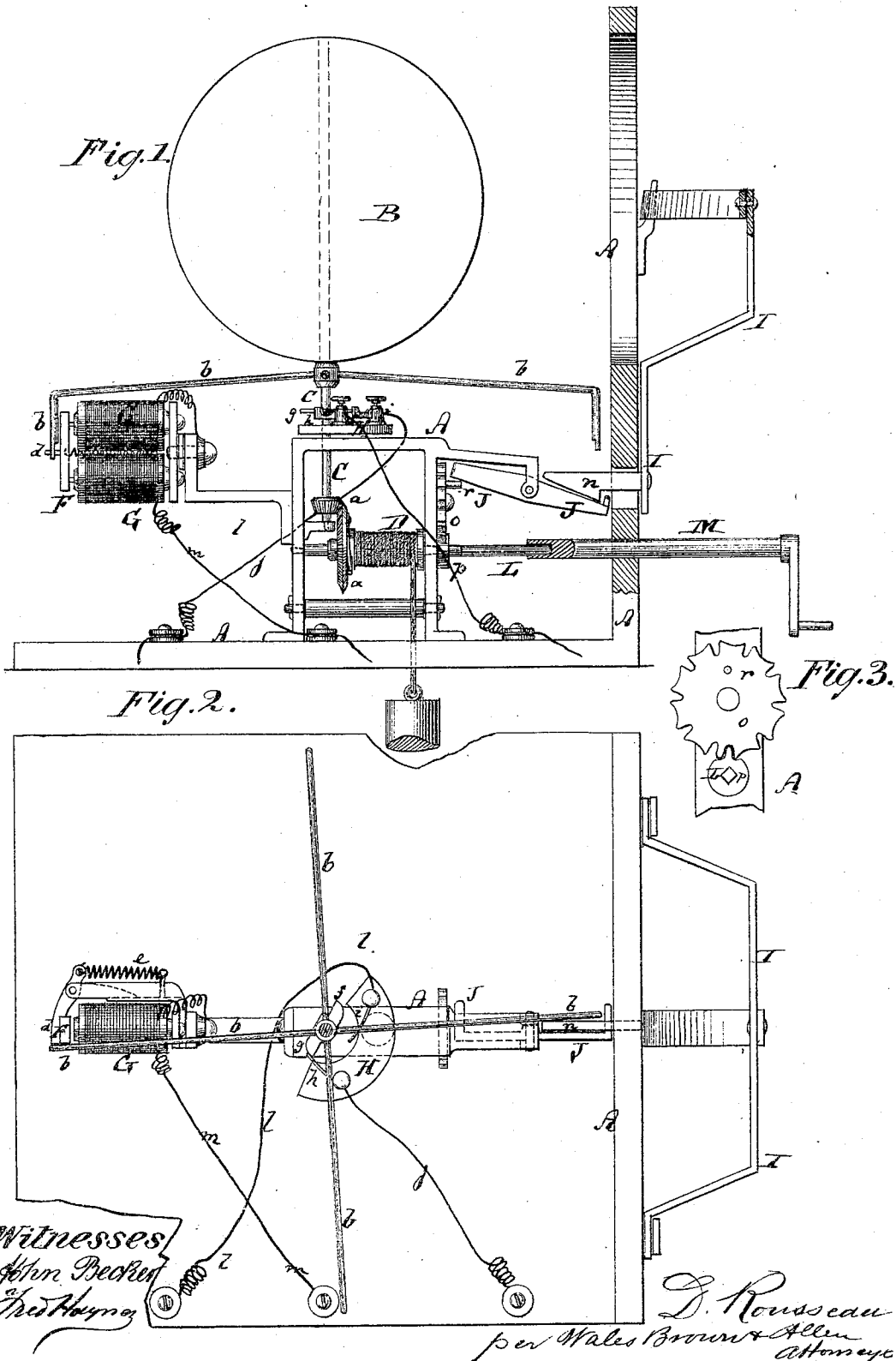


D. ROUSSEAU.
Electric Railway Signals.

No. 141,387.

Patented July 29, 1873.



UNITED STATES PATENT OFFICE.

DAVID ROUSSEAU, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
WILLIAM C. SMITH, OF SAME PLACE.

IMPROVEMENT IN ELECTRIC RAILWAY-SIGNALS.

Specification forming part of Letters Patent No. **141,387**, dated July 29, 1873; application filed
February 17, 1873.

To all whom it may concern:

Be it known that I, DAVID ROUSSEAU, a subject of Canada, residing in the city of New York, in the county and State of New York, have invented an Electric Signal and Signal-Lamp Lock, of which the following is a specification:

This invention relates to a new electric apparatus for operating railroad-signals from two or more different points by means of a single electro-magnet, so that when the circuit is established through said electro-magnet by an approaching train, the same will attract its armature and cause the signal to be displayed, while, when the circuit is again established by the same train, after it shall have passed the signal and reached the second instrument, the electro-magnet will once more attract its armature, and thereby cause the signal to be moved out of sight.

The invention is equally applicable to audible and visible signals. As far as the portion of mechanism above referred to is concerned, my invention consists, first, in providing the rotary signal stem or shaft with projecting cams or pins, and in placing near the same two springs, which are, respectively, connected with the two instruments, at opposite sides of the line, in such manner that when one of these springs is in contact with its cam of the stem the other spring will invariably be out of contact, and vice versa. The invention also consists in placing on the metallic frame of the signal, or at least in metallic connection with the signal and stem, an electro-magnet whose one wire is connected with the battery from which the power is derived.

The armature of this electro-magnet serves as a lock for projecting arms of the signal-stem, clock-work being employed to turn said stem whenever the lock is withdrawn from the said arms.

By this arrangement, of which the operation will be hereinafter more fully described, I am enabled to use but one electro-magnet and one battery to operate the signal by approaching and receding trains from opposite sides, to economize the power of the battery,

and to insure invariably the most perfect operation.

Another feature of my invention has reference to the placing and securing of the lamp in front of the signal; and consists in so locking the frame or guard by which the lamp is confined to the signal-support that said frame cannot be opened or detached to allow the insertion or removal of the lamp without first causing the winding up of the clock-work by which the signal is operated.

By such an arrangement I am enabled to insure the proper operation of the clock-work, as the lamp will have to be removed at least once each day, and the clock-work therefore wound up once during the same period.

In order to effect this object I can use various means, the one which I prefer consisting in applying a gear-wheel to the clock-work, which, when turned by the winding-up movement, will carry a pin against a lever that locks the lamp-holder, and so swing said lever as to permit the opening of the holder.

In the accompanying drawing, Figure 1 represents a side elevation, partly in section, of my improved signal and lock. Fig. 2 is a top view, partly in section, of the same.

Similar letters of reference indicate corresponding parts.

The letter A in the drawing represents a stationary frame, on which the signal B is supported. This frame I prefer to place on a post or pillar at such height that the signal will be properly displayed at the requisite distances. The signal B is mounted upon a vertical shaft or stem, C, which has its bearings in the frame A, and which, by means of beveled gear-wheels *a*, or otherwise, is in connection with a drum, D, upon which a weighted cord or rope, E, is wound, so that such drum or an equivalent spring will have the tendency, when wound up, to rotate the signal on and with its vertical shaft. This rotation is prevented by one of four, more or less, radially-projecting arms, *b*, of the shaft C striking a lug, *d*, that projects from the outer face of an armature-

lever, F. The armature is, by means of the spring *e*, held away from its electro-magnet G, and in such position as to bring its lug *d* in the way of one of the arms *b* of the shaft C. Upon the shaft C are further mounted two projecting cams or ears, *f* and *g*. A non-conducting platform, H, which is placed near the shaft C, serves to support two springs, *h* and *i*, which reach so near to the shaft C and are so placed that when the signal is in its hidden or non-displayed position, which is shown in Fig. 1, the spring *h* will be in contact with the cam *g*, while the spring *i* will be away from the cam *f*, as shown in Fig. 2. When, however, the signal is turned to be displayed, the cam *f* will be in contact with the spring *i*, and the cam *g* away from the spring *h*. The spring *h* is, by a wire, *j*, connected with an instrument which is placed at a suitable distance from the signal, near the railroad track, in that direction from which the train which is to operate the signal approaches the same. The spring *i* is, by a wire, *l*, connected with a similar instrument at the opposite side of the signal—that is to say, on that side toward which the train recedes from the signal. The electro-magnet G is, by a wire, *m*, connected with the battery from which the power for moving the armature F is to be derived. The same battery is also connected with the two operating instruments placed near the track.

Whenever a train approaches the signal it will, upon reaching that instrument toward which the wire *j* is conducted by suitable mechanism or means provided on that instrument or train, or both, close the circuit through the wire *j*, instrument, battery-wire *m*, electro-magnet G, metallic frame A, stem C, cam *g*, and spring *h*, so that by such closing of the circuit the electro-magnet will be charged, the armature F attracted, and the clock-work or drum D thereby liberated to partly rotate the signal. As soon as, during such rotation, the cam *g* has left the spring *h*, the circuit is broken, and the armature immediately withdrawn from the electro-magnet by the spring *e*, so that the next arm *b* of the stem C will be retained by the lug *d* of the armature. In this position, then, the signal will be displayed to the approaching train, or to parties who are to be advised of the approach of such train. In this position, furthermore, the cam *f* will be in contact with the spring *i*. After the train has passed the signal and reached the second instrument it will, by the mechanism there provided, close the circuit through such instrument, battery-wire *m*, electro-magnet G, frame A, shaft C, cam *f*, spring *i*, and wire *l*, and cause thereby the further attraction of the armature, the further rotation of the signal, and the final placing of the signal out of view.

The position reached after the motion last described will be the same as that shown in Fig. 2, with the exception only that the cam

f will then be in contact with the spring *i*, and the cam *g* in the position occupied by the cam *f* in Fig. 2.

It is evident that the features of the invention above described are applicable to various kinds of signals; and I do not confine myself in their use to the rotary signal herein described.

I is a frame or guard, by which a lamp that is used at night to show the signal is held to the frame A. This guard I is removable to permit the insertion and removal of the lamp, or, if not removable, is at least so attached to the frame A that it can be swung open and closed. When closed a hook-shaped projection, *n*, enters through an opening in the frame A from said guard, and is locked by a lever, J, which is clearly shown in Fig. 1. The lever J is so balanced on its pivot that it will, by its own weight, lock into the hook *n*, as shown. The inner end of the lever J is near the face of a toothed wheel, O, which is in gear with another toothed wheel, *p*, that is mounted upon the winding-shaft L of the drum D or clock-work. Every revolution of the shaft L causes the single tooth of the wheel *p* to partially turn the wheel O, and while the clock-work is operating the signal such rotation will cause a projecting pin, *r*, of the wheel O to be carried further and further away from the inner end of the lever J.

Whenever it is desired to open the guard I it is necessary so to turn the wheel O as to bring its pin *r* under the inner end of the lever J, thereby to raise the inner end of said lever and carry its outer end out of the hook *n*. To effect this it is necessary to apply the winding-key M to the shaft L through a key-hole provided for that purpose. When the shaft L has been, by means of said key, turned so far as to completely wind up the rope E, the pin *r* will arrive under the inner end of the lever J, and so swing it as to open the guard.

In this manner, therefore, the desired object of making the removal and insertion of a lamp impossible without first winding up the signal-operating clock-work is completely effected.

Other means for reaching the said object may, however, be used. Thus, I may construct the hinge of the swinging guard I so that by opening the guard the clock-work will be wound up, as I may cause the key M to be so constructed that in a certain position it will open the guard without requiring the use of the wheel O and the pin *r*. In fact, I do not confine myself to any special mechanism for carrying that feature of my invention which relates to the combination of the lock-guard I with the clock-work D or key M into effect.

What I claim, and desire to secure by Letters Patent, is—

1. The signal-stem C, provided with arms or projections *b*, which lock it against the ar-

mature F both in its displayed and concealed positions, as specified.

2. The cams or projections *f* and *g* on the stem C, arranged in combination with the springs *i* and *h*, for operation in the manner set forth.

3. The signal connected metallicly with one electro-magnet and alternately with one of two operating instruments, as specified.

4. A lamp-guard, I, locked to a signal apparatus so that the said guard cannot be

opened without the previous winding of the signal-operating clock-work, substantially as herein described.

5. The combination of the rotary pin *r* with the lever J, hook *n*, and guard I, as set forth.

D. ROUSSEAU.

Witnesses:

FRED. HAYNES,
MICHAEL RYAN.