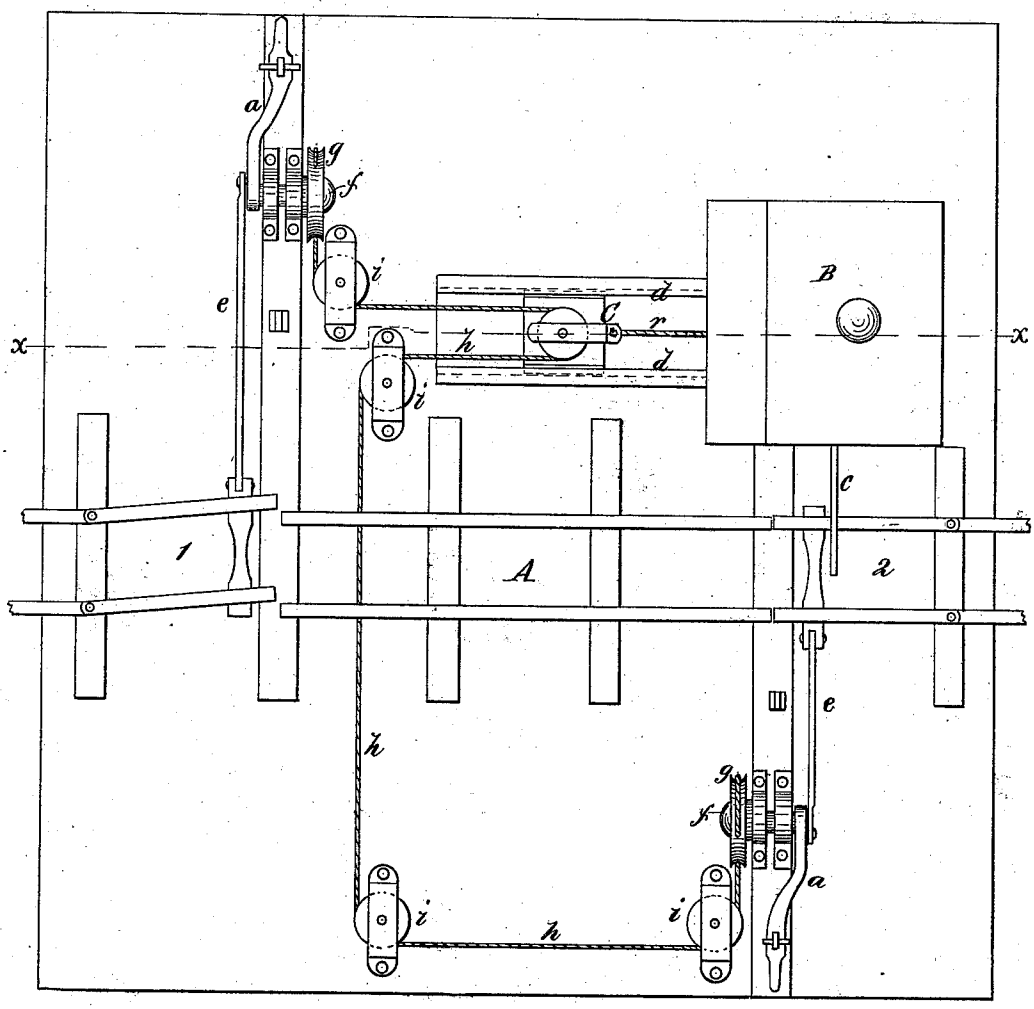
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Signaling Apparatus for Railroads.

No. 224,692. **Patented Feb. 17, 1880.**

Fig. 1.



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2 Sheets—Sheet 2.

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Fig. 3.

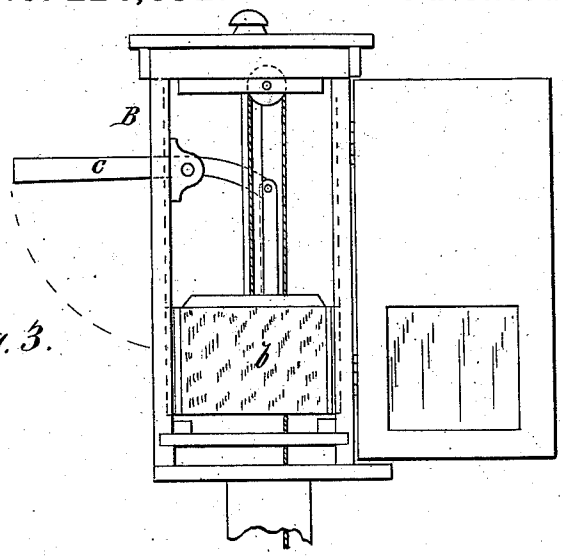


Fig. 2.

Fig. 4.

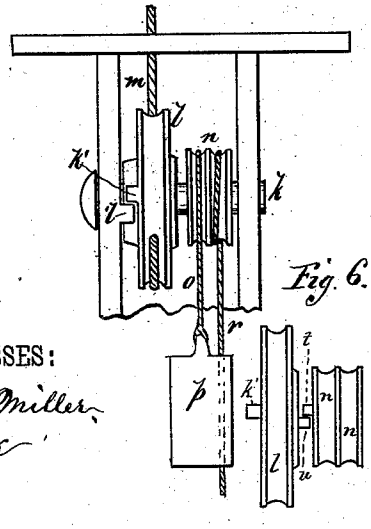
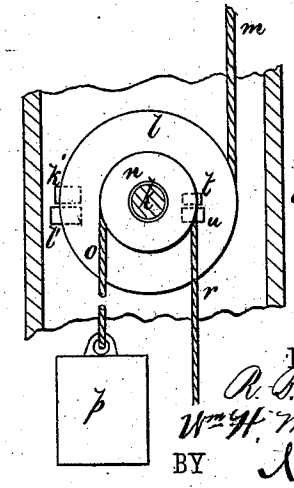


Fig. 6.

Fig. 5.



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UNITED STATES PATENT OFFICE.

RICHARD B. IRELAND, OF TRENTON, AND WILLIAM H. McDONALD, OF NEWARK, NEW JERSEY.

SIGNALING APPARATUS FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 224,692, dated February 17, 1880.

Application filed November 17, 1879.

To all whom it may concern:

Be it known that we, RICHARD B. IRELAND, of Trenton, in the county of Mercer and State of New Jersey, and WILLIAM H. McDONALD, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Signaling Apparatus for Railroads, &c., of which the following is a specification.

The object of our invention is to provide for operating a signal located at one point on a railroad from different places—say from two separate switches—in such manner that the signal shall be exhibited when either switch is open and until both are closed, or so long as the main line is not clear.

Our invention consists in a signal of any usual character operated by movement of a slide that is moved by wires or cords connected with the switches, the connection of the slide to the signal and to the switches being arranged so that the slide may move independently of the signal, whereby but a single signal is required to protect two switches.

The construction and operation will be fully described with reference to the accompanying drawings, wherein—

Figure 1 is a plan view, representing two switches fitted with our signaling mechanism. Fig. 2 is a vertical section on line *x x* of Fig. 1, showing the connections between the slide and signal. Fig. 3 is a front view of the signal-box. Figs. 4 and 5 are detail views in larger size. Fig. 6 is a detail front elevation of pulleys, with the shaft detached to show the position of stops.

Similar letters of reference indicate corresponding parts.

A is the track, with switches 1 and 2, that are fitted for operation by their respective levers *a*, that move the switch-rods *e*. B is a signal-box, of usual character, fitted with the vertically-sliding night-signal *b* and swinging day-signal *c*, which are arranged to move simultaneously. Both these signals may be used or either one dispensed with, if desired.

C is a slide fitted to move in suitable ways *d* at the side of the track. The connections from slide C to the switches 1 and 2 will first be described.

Each switch-lever *a* is hung on a rock-shaft, *f*, that is sustained in suitable supports, and on each shaft *f* is a fast wheel, *g*, having a grooved periphery. From the wheel *g* on switch 1 to the pulley *g* on switch 2 passes a wire, chain, or rope, *h*, having its ends connected upon the said pulleys and passing intermediately around a pulley on slide C, so that by movement of either switch-lever *a* the chain will be wound and slide C moved. The wire or chain passes around friction-pulleys *i*, which are placed at the changes of direction as required by the relative position and distance of the parts.

The connections between the slide C and the signals are shown in figures from 2 to 5, and are as follows: In the hollow post *a'*, supporting the signal-box B, is fitted a cross-shaft, *k*, carrying a grooved wheel, *l*, from which a rope or chain, *m*, passes up into box B, over a friction-pulley, *m'*, and is connected to the signal *b*. The wheel *m* is of such diameter that the required movement of the signals is given by about one-half of a complete revolution of the wheel, and the signals are weighted, so that when wheel *l* is not held the signal *b* will drop down into view and throw signal *c* outward into view also.

The wheel *l* is provided with a lug, *k'*, at one side, which comes in contact with a fixed lug, *l'*, on the side of post *a'*, when the signals are fully displayed and prevents further movement. The shaft *k* also carries a loose wheel, *n*, which is smaller than *l*, and is formed with two peripheral grooves, in one of which is connected a rope or chain, *o*, by which a weight, *p*, is suspended, and in the other groove is connected a rope or chain, *r*, that extends downward around a friction-pulley, *s*, to the slide C, to which it is made fast.

Upon the side of wheel *n* next to wheel *l* is a lug or projection, *t*, and upon wheel *l* is a similar lug, *u*, so that the wheel *n* will carry *l* with it by contact of the lugs.

The weight *p* tends to turn wheel *n* in one direction, and the movement of the slide C turns it the other way, and the entire movement of wheel *n* should be less than a complete revolution.

The operation is as follows: Both switches

being closed, the signals are hid and held in that position by the wheel *l* being held by wheel *n*. When either switch is opened, as shown at 1, the chain *h* is thereby slacked, the weight *p* turns wheel *n*, drawing the slide toward post *a* and permitting the wheel *l* to turn and the signals *b* and *c* to come into view. When the switch is closed again the slide C would be drawn upon and the parts restored to the first position, and these movements would be the same by the operation of either switch. If while one switch is open the other is opened, there will be a further movement of weight *p* and slide C without effect upon the signal; and when both are open, if either one is moved to close it, the slide will be moved simply to the intermediate position, and the signal remain in view until the second one is closed and the final movement given to wheel *n*.

It will be seen that instead of having separate mechanism and signals for each switch, as heretofore, we use a single signal operated by either switch. This is advantageous, as it insures safety, is cheaper, and in night-signals is better, because two signals drawn over the light would obstruct it.

The distance apart of the switches is not material. Switches generally occur in pairs a short distance apart, and our apparatus is intended for such places, but may be applied in connection with draw-bridges, water tanks or pipes, and other places.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a railroad-signaling apparatus, a single signal combined with a slide connected with two switches and having a movement independent of the signal, substantially as and for the purpose specified.

2. In signaling apparatus, the loose wheels *l n*, provided with the lugs *t u*, the ropes or chains *m o r*, and weight *p*, combined with the suspended signal and the slide that is fitted for operation by the switch-levers, substantially as described and shown.

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Witnesses:
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