D. ROUSSEAU.

Switch Signals.

No. 199,107. **Patented Jan. 8, 1878.**

Fig. 1.

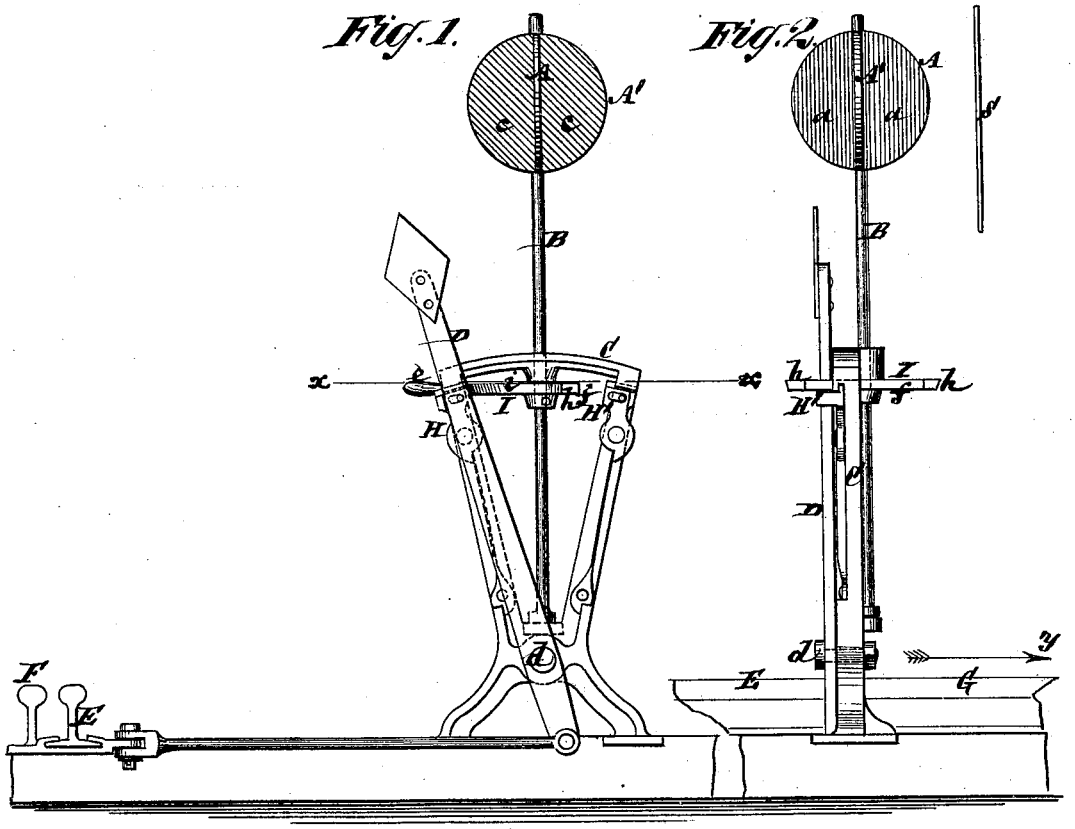
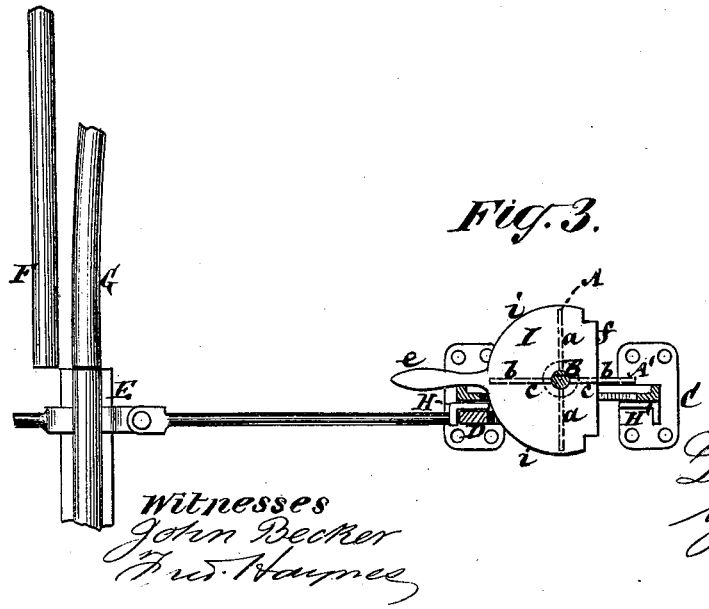


Fig. 2.

Fig. 3.



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2 Sheets—Sheet 2.

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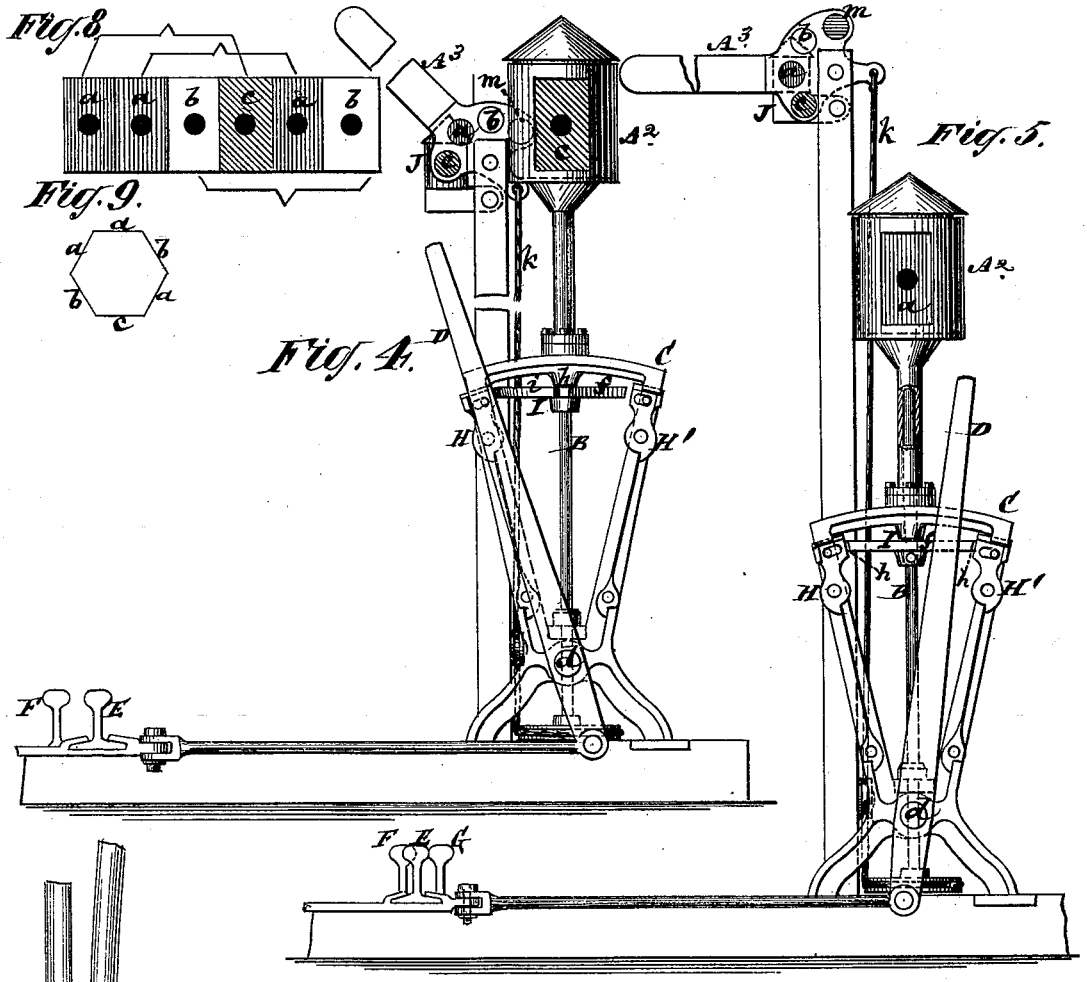

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UNITED STATES PATENT OFFICE.

DAVID ROUSSEAU, OF NEW YORK, N. Y.

IMPROVEMENT IN SWITCH-SIGNALS.

Specification forming part of Letters Patent No. **199,107**, dated January 8, 1878; application filed June 2, 1877.

To all whom it may concern:

Be it known that I, DAVID ROUSSEAU, of the city and State of New York, have invented certain new and useful Improvements in Railway-Signals, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to switch-signals on railways; and consists in a certain combination, with the operating lever or mechanism of the switch, of a variable signal provided with certain devices or mechanism for independently operating said signal and for locking the switch, whereby the same signal mechanism is made to lock the switch in both directions of its set.

The invention also consists in a combination, with a variable signal constructed to indicate when the switch is in line with the main track or with the side track, or out of line with both tracks, of a locking plate or device actuated by said signal for locking the switch in both directions of its set, stops for arresting the motion of said locking plate or device, and the switch-operating lever or device, constructed to control said stops and to admit of the adjustment of the signal.

By this combination not only is the same signal mechanism made to lock the switch in both directions of its set, but the same variable signal is made to indicate danger when the switch is set but not locked, and to indicate the adjustment of the switch when locked.

When more than one signal is used in combination with the same switch, said signals operate simultaneously, and such combined signals virtually form but one signal, substantially as hereinafter described.

Figure 1 represents a front view of a target-signal constructed and combined with a switch-operating lever in accordance with my invention. Fig. 2 is a side elevation of the same, and Fig. 3 a horizontal section thereof on the line *x x*. Figs. 4 and 5 are front views of certain other forms of switch-signals, combined with a switch, and having the invention applied, said views showing the working parts in different positions to accord with different adjustments of the switch. Figs. 6 and 7 are plan views of certain signal-adjusting and switch-locking devices in different positions. Figs. 8 and 9 are diagrams in illustration of the construction of one of the signals shown in Figs. 4 and 5.

Referring, in the first instance, to Figs. 1, 2, and 3 of the drawings, A A^1 is a target-signal, more especially designed for double-track roads, for use when the train is moving in one direction only toward the switch, as indicated by the arrow *y* in Fig. 2, said signal being concealed by a shield, S, from view in an opposite direction. This signal is mainly composed of duplicate cross-disks A A^1, showing three different signaling-faces—that is to say, a face, *a a*, which may be red, to denote danger; a face, *b b*, which may be white, to indicate that the switch is set in line with the main track; and a face, *c c*, which may be green, to denote that the switch is in line with the siding. Said disks A A^1 are mounted on, and made capable of turning with, an upright rod or post, B, which may be fitted to work in bearings of a frame, C.

D is a lever for operating the switch E, and which, accordingly as it is thrown to opposite sides of the frame C from its fulcrum *d* as a center of motion, serves to throw the switch E into line either with the main rail F or the side rail G.

H H′ are spring-stops, against which the switch-lever D strikes when thrown over, said stops being attached to the frame C on opposite sides of the signal-post B, and the lever D, in its motion, sweeping across the face of the frame C.

I is a switch-locking plate attached to the turning-post B of the signal, and provided with a handle, *e*, for adjusting the latter. This plate is of approximately semicircular form from the axis of the post B as a center, and its curved outline is connected by a chord or straight edge, *f*, the ends of which have notches *h h* for the spring-stops H H′ to enter. These stops serve to hold the plate I from being turned when the edge *f* faces in the direction from which the signal is seen. This edge *f* is coincident or in a parallel plane with the danger or red face *a a* of the signal. Said stops also serve as rests for the switch-lever

D when thrown over to either side, which can only be done when the danger-face *a a* of the signal and the straight edge *f* of the locking-plate are presented to face the direction from which an approaching train is or may be expected. When such is the position of the signal and its attached locking-plate I, then the switch-lever D may be set slightly forward to relieve it from pressure on the spring-stop H or H′, and by this adjustment of it in front of the face *f* of said plate the switch-lever D serves to lock the signal from being turned when its danger-face *a a* is being presented, as described. The signal, however, cannot be turned from its position indicating danger, as just described, to a position indicating, by exposure of its faces *b b* or *c c*, that the switch E is in line with the main rail F or side rail G without causing the plate I, by one or other of its curved portions *i i*, to lock the switch by coming in front of and arresting any back movement of the switch-lever D, as shown in Figs. 1, 2, and 3. Thus the signal locks the switch, and the switch-lever, in its turn, locks the signal, as hereinbefore described.

From this description it will be seen that when the red or danger face of the signal is exposed to view the engineer of a train approaching the signal will know that there is danger, and that the switch either has not been set as required or that it is not locked, it being the duty of the switch-tender first to set the switch to connect with the main rail or with the side rail, as required, and then to turn the signal to indicate by its faces *b b* or *c c* the position or connection formed by said switch; and this cannot be done without one or other of the curved portions *i i* of the locking device or plate I being brought across or in front of the switch-lever D. When the handle *e* attached to the plate I, or any suitable stop thereon, strikes the frame C, then the signal is fully adjusted to indicate safety and that the switch is locked as set. Fig. 3 illustrates such a locked position of the switch by the plate I.

By this combination of the signal with its attached switch-locking device and independent switch-operating mechanism it will be impossible to move the signal without the switch being in a safe and locked position, or without the signal indicating danger, and after the switch has been set the responsibility is then transferred from the switch-tender to the engineer of the train.

In Figs. 4 and 5 a lantern-signal, A^2, suitable either for a single or double track, is substituted for the target-signal shown in Figs. 1, 2, and 3; but the same means for shifting the signal and for locking the switch are shown as in Figs. 1, 2, and 3, and are referred to by like letters in Figs. 4, 5, 6, and 7, and the action is the same as that already described. The lantern-signal A^2, however, has six instead of three exposing-faces, to signal both up and down the line of road through opposite openings in the lantern-case. These faces may be arranged as shown by the diagrams Figs. 8 and 9, Fig. 8 showing the several faces as spread out into a common plane, and Fig. 9 showing their arrangement as in the lantern. This arrangement consists, first, of two red glasses or faces, *a a*, then a white or plain glass, *b*, then a green glass, *c*, followed by another red glass, *a*, and this latter by another white glass, *b*. Such arrangement will give all the necessary adjustments of the signal in both directions, and when the switch-locking plate I has its straight edge or face *f* in position for the movement of the switch-lever D across it, as shown in Fig. 6, the signal will expose a red or danger face on both or opposite sides of the lantern.

Of course, any colors may be used to indicate different positions or conditions of the switch, and to denote danger or safety, and such colors may be variously arranged.

Figs. 4 and 5 also show a semaphore-signal, A^3, arranged at any desired distance from the switch, in advance of the latter, but which might be in immediate connection with it, and be used alone, if desired. It is here shown, however, as arranged at a distance from and connected by a rope, wire, or other suitable connection, *k*, with the turning-post B of the signal A^2 last described, and so that it acts in unison with the signal A^2. This semaphore A^3 it will be found convenient to use, for instance, at a curve in the road in advance of the switch, and may be adjusted so that when horizontal or standing straight out it indicates danger. When adjusted to an angle of forty-five degrees, or thereabout, to the horizon in an upward direction, it indicates that the switch is in connection with the siding, and when adjusted to an angle of forty-five degrees, or thereabout, to the horizon in a downward direction, it indicates that the switch connects the main rail or rails. Said semaphore may also have corresponding faces or glasses *a b c*, of different colors, in front of a lantern, J, to give like indications of the switch at night, and it may have an additional face or glass, *m*, of a blue or other different color to the rest, to indicate that the connection operating the semaphore is broken, said glass *m* only being brought in front of the lantern J when the semaphore falls into a perpendicular position in a downward direction by the breakage of its operating connections, which changed position will be readily noticed by day, and indicated by exposure of the light through the glass *m* at night.

I claim—

1. The combination, with the lever or devices by which the switch is set into or out of line with the main track or with the siding, of a variable signal provided with a handle or lever and locking-plate, constituting a signal mechanism for turning or adjusting the signal and for locking the switch, whereby the same signal mechanism is made to lock the switch

in both directions of its set, substantially as specified.

2. The combination, with a variable signal constructed to indicate the several positions and adjustments of the switch, of a locking plate or device actuated by said signal, for locking the switch in both directions of its set, stops for arresting the motion of said locking plate or device, and the switch-operating lever or device, constructed to control said stops, and to provide for the adjustment of the signal, essentially as and for the purposes herein set forth.

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