R. L. & G. W. VERNON.

Railway-Switch Signal.

No. 205,703. Patented July 2, 1878.

Fig. 1.

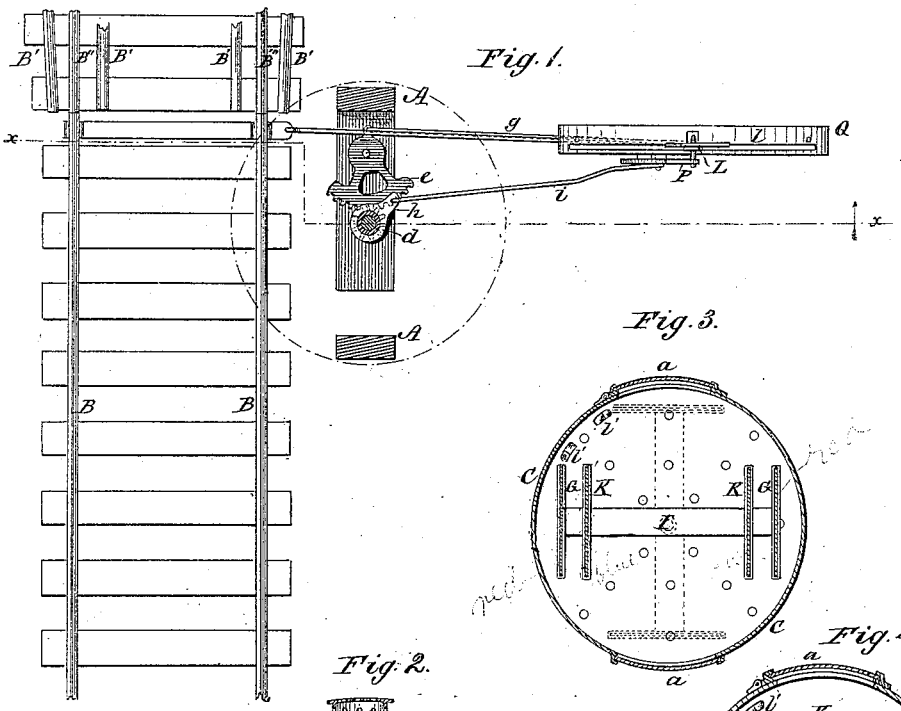


Fig. 3.

Fig. 4.

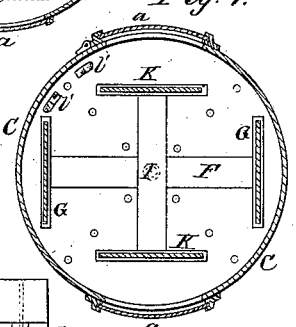


Fig. 2.

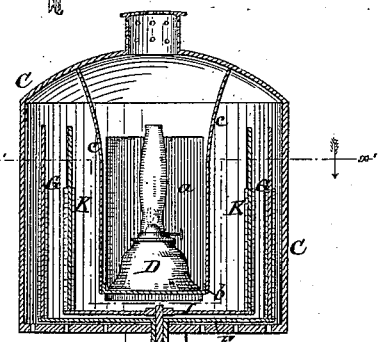


Fig. 5.

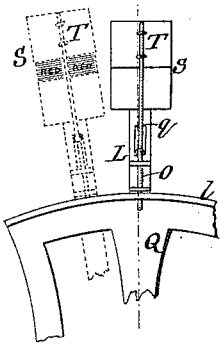
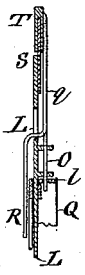
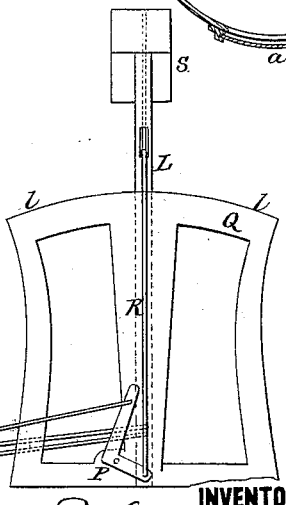


Fig. 6.





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UNITED STATES PATENT OFFICE.

ROBERT L. VERNON AND GEORGE W. VERNON, OF GREENSBOROUGH, N. C.

IMPROVEMENT IN RAILWAY-SWITCH SIGNALS.

Specification forming part of Letters Patent No. **205,703**, dated July 2, 1878; application filed May 14, 1878.

To all whom it may concern:

Be it known that we, ROBERT L. VERNON and GEORGE W. VERNON, of Greensborough, in the county of Guilford and State of North Carolina, have invented a new and Improved Railway-Switch Signal; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention is an improvement in the class of railway-switch signals in which a rotating lantern is employed to give different-colored lights, and thereby indicate whether the switch is opened or closed.

The invention consists in the construction and arrangement of parts, as hereinafter described and claimed.

In the accompanying drawing, forming part of this specification, Figure 1 is a horizontal section of the apparatus. Fig. 2 is a vertical section on line *x x* of Fig. 1. Fig. 3 is a cross-section of the lantern on line *x' x'* of Fig. 2. Fig. 4 is a section similar to Fig. 3, except that the position of the green glasses is changed. Figs. 5 and 6 are detail side and section views of the switch-stand, lever, and day-signal.

A stand or frame, A, is located beside the switch-rails B, (which constitute part of the main line,) and supports a stationary drum or cylinder, C, having windows *a a* on opposite sides, which are visible from the track. A lamp, D, is supported between the windows *a* by a cup-shaped holder, *b*, suspended from the top of the cylinder C by straps or rods *c*. A hollow shaft, E, passes through the base of the cylinder C, and a cross-head or horizontal bar, F, which is affixed to it, carries in sockets attached to its ends two glass plates, G G, having a particular shade or color—say red. Another shaft, H, passes up through the hollow shaft E, and has a cross-head, I, which similarly supports or carries two other glass plates, K, which have a different or distinctive color—say blue.

The cross-head I is shorter than the cross-head F, and the glass plates are set vertical, so that, as the shaft E rotates, the red plates G G will pass around the green plate K between them and the windows *a a;* and obviously, as the shaft H rotates, the blue plate K will pass the red plates on the inside. Yet either the red or blue plates may be set before the windows *a*—*i. e.*, between the latter and the lamp D—to give a red or blue signal, as required by the position of the switch; or both may be turned away from the windows to allow a white light to be transmitted. The aforesaid shafts E H extend down to the road-bed, and are supported in suitable sockets or bearings, so as to be free to rotate. A pinion, *d*, is keyed on the lower end of shaft H, and operated by a segmental toothed lever, *e*, which is connected with the switch-lever L by a rod, *g*. Hence, when the switch-lever is moved in one direction or the other, the blue plate K will be rotated. The red plates G are similarly operated by connection with the fastening device O of said switch-lever L. The means which form such connection are a radial arm, *h*, of shaft E, an elbow-lever, P, pivoted to the switch-stand Q, a connecting-rod, *i*, and a vertical rod, R, which passes through a slot in the switch-lever L, and is attached to the pin O. Said pin fastens or locks the switch-lever in any one of three positions—*i. e.*, vertical, or inclined toward or from the track B—by entering different holes in the arc-shaped bar *l* of the stand Q. When the pin is raised out of one of the holes *k*, the rod R throws the elbow-lever P into such position that the rod *i* pushes arm *h* toward the track B, and thereby turns the shaft E, so that the red glasses G appear in the front of the windows *a*.

A red or "danger" signal is thus obviously given, except when the blue glasses are interposed between the red glasses and the lamp. When the lever is in the inclined position, the blue glasses are between the lamp and windows *a*. The combination of red and blue rays causes a purple light to be emitted from windows *a*. Hence a purple signal is given so long as the two glasses (red and blue) are in the path of the rays emitted through windows *a*. Thus the red light or signal is given while the lever L is moving from one inclined position to the other; but the purple signal is given at the moment of starting and stopping the lever, since the red and blue glasses are then momentarily in conjunction—*i. e.*, until the lever is locked in the inclined position by

the pin O again entering a hole in the switch-stand, thus causing the red glasses to be swung away from the windows *a*. There are therefore two danger-signals by reason of the employment of two not complementary colors—the red or main signal, which indicates the lever L is at some point between the limits and the center of its movement or throw, and that the switch-rails are not then in apposition with the rails of the side or main tracks; and the subsidiary or incidental purple signal, which indicates the lever L has reached the limit of its throw, and that the switch-rails are hence in apposition with one of the side tracks, but that the pin O has not yet entered the hole in the switch-stand, and hence the switch-rails are not locked.

Thus the engineer of a train approaching the switch will be made aware by a red light that the switch-rails are misplaced, and by a purple light that the rails are in apposition with one of the side tracks, but not locked, and will, of course, govern himself accordingly.

When the lever is inclined in one direction, the switch-rails B coincide with the rails B′ of one side track, and when in the other direction with the rails B′ of the other side track. Both these positions are indicated by the blue lights, the blue glasses K being then turned so as to interpose between the lamp and the windows *a a*, as in Fig. 4. The intermediate position of the switch-lever—which indicates adjustment of the switch-rails in line with main rails B″—is indicated by a white-light signal, since both red and blue glasses I and K are then swung away from windows *a*, as shown in Figs. 2 and 3. Thus the engineer is able to know the condition of the switch, and avoid all danger by observation of the different signals.

At proper points on the base of the drum or cylinder we place two rubber blocks or stops, *l′*, to prevent the hollow shaft E from turning far enough in either direction for the radial arm *h* to get on a dead-center and become locked.

We employ, in connection with the pin O for locking the switch-lever L, a red day-signal, formed by painting a red strip, *m*, across a portion of the sign-board S of said lever, and providing a sliding cap or hood, T, for the sign-board, which is connected with the pin O by means of a rod, *q*, and is thus made to slide upward, uncover, and display the red mark *m*, Fig. 5, whenever the pin O is raised out of a hole in the switch-stand, and, *per contra*, to slide downward and cover and conceal the red mark *m* whenever the pin enters a hole in the stand. In other words, when the switch is not adjusted properly, the hood T will always be raised and the red danger-signal *m* displayed; but when the switch is properly adjusted, the hood will be drawn down over the red signal.

What we claim is—

1. The combination of the locking-pin or the fastening of a switch-stand with the rotating shaft, a rotating danger-signal consisting of red glasses attached to the shaft, and the lantern composed of a stationary windowed-cylinder and the lamp suspended therein, the rubber stops *l′*, all as shown and described.

2. The combination, with the switch-rails and the switch-stand, of the rod passing through slot in switch-lever, and also attached to the pin, and connected with the rotary shaft for operating a signal, all as shown and described, for the purpose specified.

3. The combination of the fixed lamp and cylinder, having the windows *a a*, the red and blue glasses fixed in sockets of cross-heads or bars attached to the rotary shaft, so that one set of glasses will revolve around the other, the switch lever and stand, the locking-pin, and mechanism connecting the lever-pin and shafts, also the switch-rails, all as shown and described, for the purpose specified.

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GEORGE W. VERNON.

Witnesses:
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F. G. CRUTCHFIELD.