EFNER & BOYNTON.

Switch Signal.

No. 100,018. Patented Feb. 22, 1870.

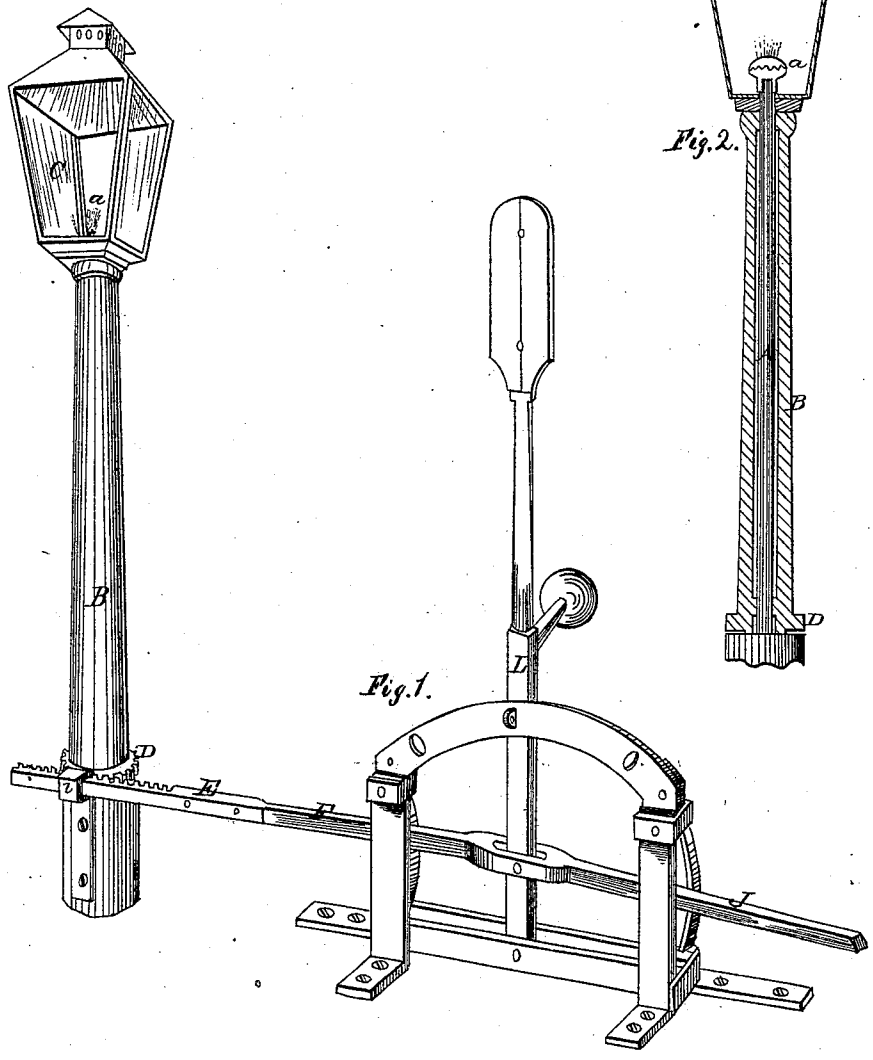

Fig. 1.

Fig. 2.

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United States Patent Office.

HENRY A. EFNER AND CHARLES BOYNTON, OF MARSHALL, MICHIGAN.

Letters Patent No. 100,018, *dated February* 22, 1870.

IMPROVEMENT IN SWITCH SIGNALS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, HENRY A. EFNER, of the city of Marshall, in the county of Calhoun, and State of Michigan, and CHARLES BOYNTON, of the same place, have invented a new and useful Improvement in Switch Signals for Railroads; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings making a part of this specification, in which—

Figure 1 represents the switch-stand and connected signal in perspective.

Figure 2 exhibits a vertical longitudinal section of the signal.

Similar letters of reference indicate corresponding parts in both the figures.

The nature of our invention consists in communicating an intermitting revolving motion to an elevated glazed signal-frame, surrounding a stationary burner or any description, the parts being so arranged relatively with the switch-stand, and so connected and operated that the signal may be placed at any desired distance from the stand, and the steadiness of the light will not be affected while moving the signal simultaneously with the switch-stand lever and track-rails, as will hereinafter be fully explained.

At any desired distance from the switch-stand, where a signal light can be seen from either side of the line at a sufficient distance to stop a train before it reaches the switch, and in a corresponding range with the vertical plane in which the switch-lever moves, we erect a post, A, of any desired height, the upper end of which carries a gas-burner, *a*, or a lamp and burner furnishing any other light suitable for a signal, and attached to the end of said post in any convenient way.

The post may be of wood, set firmly in the ground, or of iron, secured firmly at the base in any desirable manner.

A hollow sleeve or tube of wood or metal is placed over the post, so as to be free to revolve around it; said sleeve is shown at B.

The glazed signal, having usually two white and two red lights, as shown at C, is properly attached to the top end of the hollow sleeve, the sleeve and its signal C being supported by the lower end of the sleeve resting on a shoulder or bearing, so they may turn freely.

The post and its sleeve may be very readily constructed of iron tubing of proper relative size, the best manner of fitting the burner and signal to which might, perhaps, be by screwing the same into threaded sockets; but they may, of course, be connected in any of those suitable ways that will readily suggest themselves to the mind of a good mechanic; and if gas is to be used, it may be conveyed to the burner through the center tube, or in a small pipe leading through it.

The lower end of the hollow sleeve B is intended to extend downward near the ground, or even below it, if deemed best, and is fitted with a spur-pinion, D, partially cogged, into which a rack-bar, E, gears, said rack being connected to a rod, F, of proper length, jointed or pivoted to the target lever L, operating the switch rail.

In the drawing—

The rod or bar F, connecting the signal light with the switch-lever, is shown as an extension of the bar J, connecting with the switch; but these connecting-bars may be separate and jointed at different points to said lever, it being understood that the diameter of the pinion D and the point of connection to the lever must be so arranged and proportioned to the throw of said lever or movement of the switch-rails, that each shift of the switch from the main to a side track on either side will turn the signal frame a quarter round, and expose to view from the track a different and appropriate signal-light.

The rack-bar may be kept in gear with its pinion by a guide-bearing, *i*, and if deemed advisable to work the rack-bar closer to, or even below the ground in a casing, it may be bent, or a rectilinear motion may be imparted to the said rack by the vibration of the switch-lever, through the intervention of any of the well-known devices for this purpose.

The rack is so geared with the sleeve pinion that when the switch is set to the main track, the white lights will alone be seen; but when the switch-lever is moved to throw over the switch-rails to a side track, the geared connection with the hollow sleeve will revolve said sleeve and attached signal a quarter of a turn around the stationary burner, and expose the red or other colored glass symbolic of danger, to the sight of an engineer of an approaching train, in a dark night, and warn him that the switch is wrongly set; and the will be equally distinct if the switch shall have only been partially shifted, so that the rails do not coincide with any track, for then the signal will exhibit a streak of red and white.

Although we at present regard the operation of the rack, pinion, and hollow sleeve the best calculated to maintain the steadiness of the stationary signal-burner, yet we do not desire to confine ourselves strictly to these devices, for the signal-frame might be revolved in a bearing at the top of the burner-post or column by means of a similar pinion on the said signal, operated by a segmental rack at the upper end of a vertical lever pivoted to the side of the burner-post, and jointed below to the connecting-bar.

The main difference between our invention and others for the purpose is this: That in ours the signal may be operated at any distance necessary from the switch-stand or switch-rails in a manner to render it a conspicuous warning, while the steadiness of the flame

from the burner is not impaired by the shifting of the signal; and we will say here that we regard our invention as equally applicable for the purpose when operated by a direct connection from and with the switch-rails as when operated by connection with the switch-lever, substantially as described herein before.

We claim, as our invention—

The stationary post and burner A *a*, in combination with a revolving signal, C, operated by the movement of the switch-lever L, or of the switch-rails, through the connection and intervention of the rack-bar, pinion, and hollow sleeve, or their equivalents, substantially in the manner and for the purpose set forth.

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Witnesses:
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