(No Model.)

A. B. PATTON & R. S. CONNER.

RAILWAY SIGNAL.

No. 375,649. Patented Dec. 27, 1887.

Fig. 1.

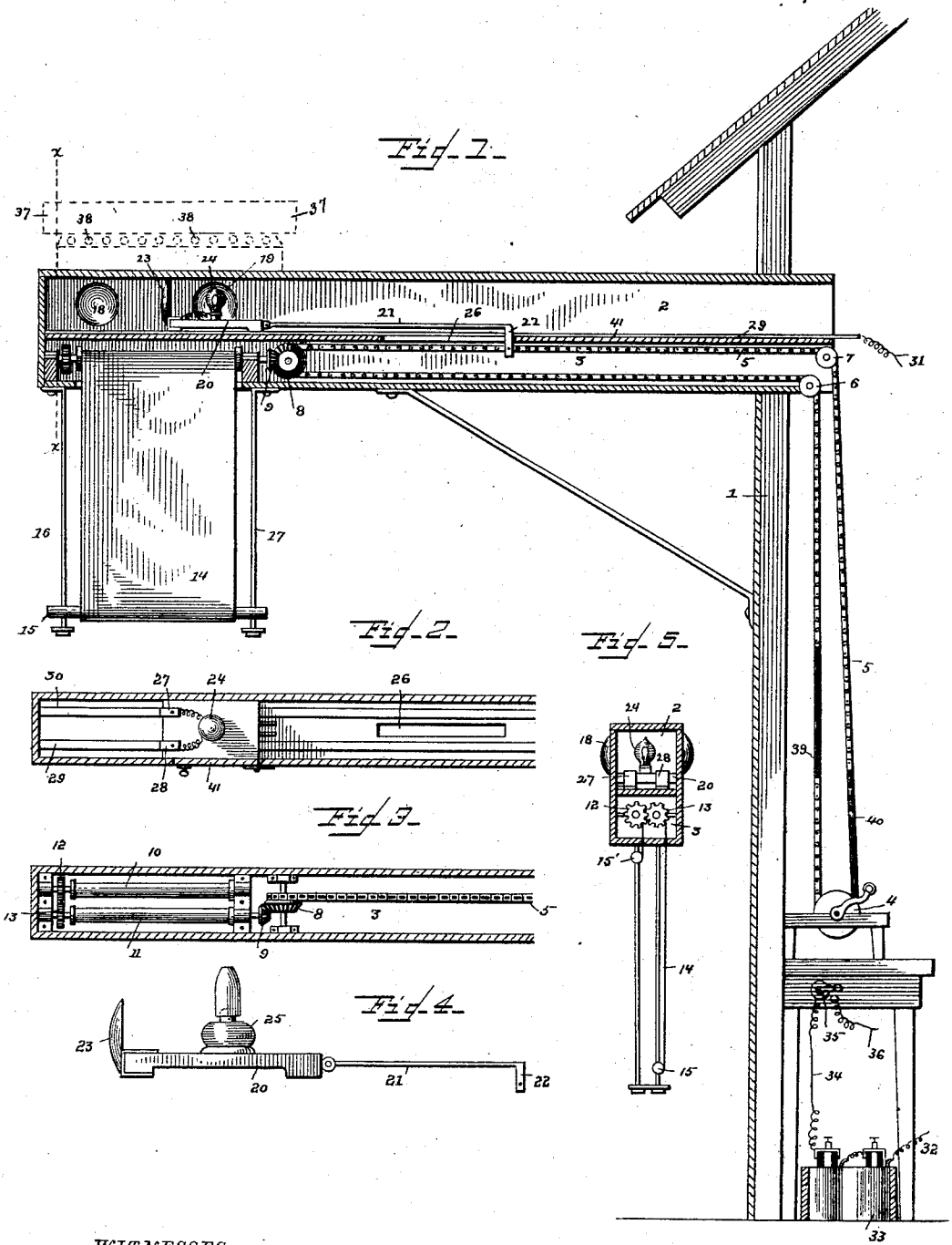


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

WITNESSES

Edwin L. Yewell,

Hamilton Pattin

INVENTORS

Austin B. Patton

Robert S. Conner,

J. H. Houghton

Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

AUSTIN BELLE PATTON AND ROBERT SMILEY CONNER, OF PARK CITY, UTAH TERRITORY.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 375,649, dated December 27, 1887.

Application filed August 9, 1887. Serial No. 246,497. (No model.)

To all whom it may concern:

Be it known that we, AUSTIN BELLE PATTON and ROBERT SMILEY CONNER, citizens of the United States, residing at Park City, in the county of Summit and Territory of Utah, have invented certain new and useful Improvements in Railway-Signals; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to railroad-signals of that class which are located at various points along a line of way and are controlled by an operator to communicate information to an approaching train; and its object is to give the operator entire control of the signals while under cover, and at all times to assure safety in the display and reliability in the operation of the signals.

To these ends the invention consists in operating the day and night signals simultaneously by the movement which sets either, so that a single operation of the same controlling agency will suffice for either class of signals, and a signal set near the period of change between daylight and darkness will be in condition to give notice through either medium; in providing for notification to the operator that his signals are set by indicating the same within his building; in notifying the operator whether or not the signaling-light for night use is properly acting by reflecting the same into his building, and in certain details, which will hereinafter be fully set forth in this specification, and definitely pointed out in the appended claims.

The day-signals we adopt are strips of colored textile fabrics, which are wound upon or unwound from drums when the operator shifts the mechanism to display one of them. The night-signals are displayed by a shifting light, which can be brought behind any one of several glazed openings, the color of the transmitted light determining the information to be communicated to the approaching train.

The mechanism to accomplish the ends set forth is illustrated in the accompanying drawings, of which—

Figure 1 is a section of a building and a trough or box containing the operating parts and showing a flag-signal in elevation. Fig. 2 is a detail horizontal section of the lamp-compartment of the box. Fig. 3 is a detail horizontal section of another compartment immediately under that for the lamp, showing the flag-shifting device in plan. Fig. 4 is a detail showing the lamp-stand and connecting-link, with an oil-lamp mounted on the stand. Fig. 5 is a transverse section of the trough on the line $x\,x$, Fig. 1, the lamp-reflector being removed.

In the side 1 of the operator's room is firmly mounted a box divided into two compartments, 2 3, by a horizontal partition, 41, Fig. 1. On a stand in the building is secured a sprocket wheel or pulley, 4, having a crank attached, over which passes a sprocket chain or belt, 5. Pulleys 6 7 lead the chain into the lower compartment of the box, in which is placed the flag-shifting mechanism. The chain 5 engages a wheel-operating bevel-gearing, 8 9, operating the flag-drums 10 11, the two being operated simultaneously in opposite directions by the gear-wheels 12 13. To each drum is secured a strip of textile material, as 14, passing through openings in the bottom of the box, and so attached to the drums that when one is completely wound up the other is unwound. Weight-rods 15 15′, attached to the lower end of the fabrics, keep the same properly stretched. These rods are perforated, and slide on guides 16 17. The lamp-stand 20 is made of such a size as to slide freely and yet be maintained in position by the sides of the box. In the partition 41, Fig. 1, is a slot, 26, Fig. 2, through which passes an arm, 22, of the link 21, attached to the lamp-stand. This arm is secured to the sprocket-chain 5.

On the stand 20 is mounted an electric lamp, of which the incandescent is the preferred type, electrically connected with conducting-strips 27 28 on the stand, which strips are in constant contact with conducting-strips 29 30, suitably secured on the partition 41. These strips 29 30 are in electrical connection through conductors, the terminals of which are indicated at 31 32 35 36, with a constant battery, 33, in the building, and the circuit is controlled by a switch or circuit-closer conveniently located, as at 35.

On the outer end of the lamp-stand is a re-

flector, 23, which, when the lamp is alight, throws part of its rays into the building. This also serves as a screen to obstruct the light from the outer—say the danger—signal, when the inner or ordinary signal is displayed. The slot 26 is made long enough to permit the lamp to be shifted from one glazed opening, 18, in the side of the box to the other, 19. Glass bull's-eyes of suitable colors will be used in these openings. The bevel-gearing is so arranged as to number of teeth, or the size of the flag-drums is so proportioned, that a flag will be completely unwound while the lamp is shifted from one bull's-eye to the other. The chain 5 is painted for a length equal to the distance between the limits of travel of the lamp in two colors corresponding to the signals, and these colored parts are so placed that in either extreme of movement one will stand above the other, as shown at 39 40. As shown in the drawings, 40 indicates that, say, the safety-signal is displayed. If the signals were changed, 40 would be raised and 39 lowered, so as to be nearer the operator's eye, and would indicate that its corresponding signal was set. It is evident tags secured to the chain at a proper distance apart would serve the same end.

In Fig. 4 we have shown an oil-lamp mounted on the stand. It may in some cases be preferred to adopt this as the source of night-light. We prefer the incandescent electric lamp, because there is no occasion during its life for trimming, and it can always be lighted by a simple closure of the circuit in the building. A door, 41, Fig. 2, is provided for the removal of the lamp when necessary for renewal or trimming. A ventilator, 37, is secured to the box, with perforations 38 38 in its side, to provide an air-draft and carry off the products of combustion. This ventilator may be dispensed with if an incandescent electric lamp be used, or it may be retained to preserve thorough ventilation and prevent overheating of the parts.

It will be seen from the foregoing description that the sections 39 40 of the chain always indicate to the operator what signal is set, and that he is always advised as to whether the lamp is acting by the reflection on the wall of his room.

The rods 15 15′ are made to slide freely on their guides, and the flags will always be properly displayed irrespective of the condition of the wind. We desire to have it understood that this invention is not limited to the specific features set forth in this specification, and that parts of the invention may be used alone. An ordinary belt and pulley would serve, though less efficiently, as a means of operating the parts in lieu of the sprocket-chain.

A single chamber in the box 2 3 might evidently be used to contain all the operative parts inclosed in the two chambers. The form described is, however, the preferred one and will prove very efficient in practice.

The operation will be clearly understood without further amplification. The battery 33 should be of sufficient electro-motive force to keep the lamp incandescent.

It will be observed from the foregoing that the signals displayed command trains approaching the signaling-station from either direction, and when a danger-signal is displayed every train is commanded to stop. In a multiple-track system it is evident that additional signal-boxes or additional signals might be provided without departing from the spirit of the invention.

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

1. In a railroad-signal, the combination of a signal-lamp and a box supported by the operator's building containing the lamp, said box provided with an opening toward the building, and being in communication with the interior thereof by a box or passage, so that the rays of light from the lamp may be seen in said building.

2. In a railroad-signal, the combination of a sliding signal-lamp, a box containing said lamp, glazed openings in the sides of the box facing the track, connections between the lamp and the operator's room, whereby the lamp may be shifted behind the desired opening to transmit a signal, and connections between the lamp and the operator's room, whereby the lamp may be lighted from said room.

3. In a railroad-signal, the combination of a signal-lamp, a sliding support for said lamp, a signal-box containing said lamp and its support, glazed openings in the sides of the box facing the track, a belt passing from the operator's building into the box, and connections between the lamp-support and the belt to shift the lamp from one glazed opening to the other when the belt is moved.

4. In a railroad-signal, the combination of a signal-lamp and an operating-belt for shifting said lamp into its several signaling positions, said belt passing into the operator's building and provided with an indicator to show which signal is displayed.

5. In a railroad-signal, the combination of two co-operating drums, signal-flags carried by said drums, one being unwound when the other is wound, a belt for revolving the drums, said belt extending into the operator's building, and means within the building for shifting said belt, whereby either flag may be displayed at the will of the operator.

6. In a railroad-signal, the combination of two co-operating drums, signal-flags carried by said drums, one being unwound when the other is wound, weights at the lower ends of the flags, guide-rods for the weights, and means in the operator's building for rotating the drums, and thereby changing the signal.

7. In a railroad-signal, the combination of a signal-box, a horizontal partition dividing the same into two compartments, a shifting lamp in the upper compartment, glazed openings in the sides of the box at the limits of

movement of said lamp, coiled signal-flags in the lower compartment extending out through a slot in the same, one being unwound when the other is wound, weights to the lower ends of the flags, a belt in the lower compartment for operating the flags, a slot in the partition, connections through said slot between the lamp and the belt, and means within the operator's building for shifting the belt, as and for the purpose set forth.

8. In a railroad-signal, the combination of an electric lamp, a shifting stand on which said lamp is supported, contact-pieces secured to said stand in circuit with the lamp, electric conductors extending through the path of movement of said stand, with which said contact-pieces contact, circuit-connections between said conductors and an electric generator, and means within the operator's building for shifting the lamp-stand.

9. In a railroad-signal, the combination of a signal-lamp, a signal-box containing the same, said box supported at and provided with an opening into the operator's building, and a reflector beyond the lamp to throw the light through the opening into the building.

10. In a railroad-signal, the combination of a signal-lamp, a sliding support for said lamp, a box containing the lamp and its support, glazed openings in the sides of the box facing the track, and a screen on the lamp-stand to obstruct the light from the outer signal when the inner signal is displayed.

11. In a railroad-signal, the combination of a box opening into the operator's building, a signal-lamp contained within the box, glazed openings in the sides of the box, through which signals may be transmitted, and a ventilator on top of the box, as and for the purpose set forth.

12. In a railroad-signal, the combination of a signal-box supported by and opening into the operator's building, a shifting lamp within said box, glazed openings in the sides of the box at the limits of movement of the lamp, co-operating drums carrying flag-signals, the flags passing through openings in the bottom of the box, weights on the ends of the flags, guides for the weights, gear-wheels for rotating the drums in opposite directions, a sprocket-chain passing through the box into the operator's building, connections between the same and the flag-gear and lamp, and a sprocket-wheel in the building for operating the chain, as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

AUSTIN BELLE PATTON.
ROBERT SMILEY CONNER.

Witnesses:
WM. M. FERRY,
JOS. M. COHEN.