

F. L. TAPIA.  
RAILWAY SWITCH SIGNAL.  
APPLICATION FILED NOV. 4, 1909.

967,855.

Patented Aug. 16, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

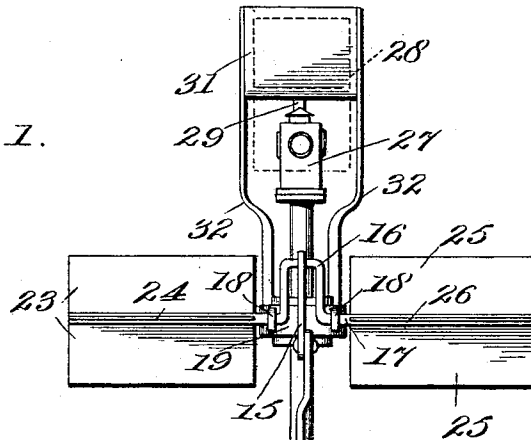
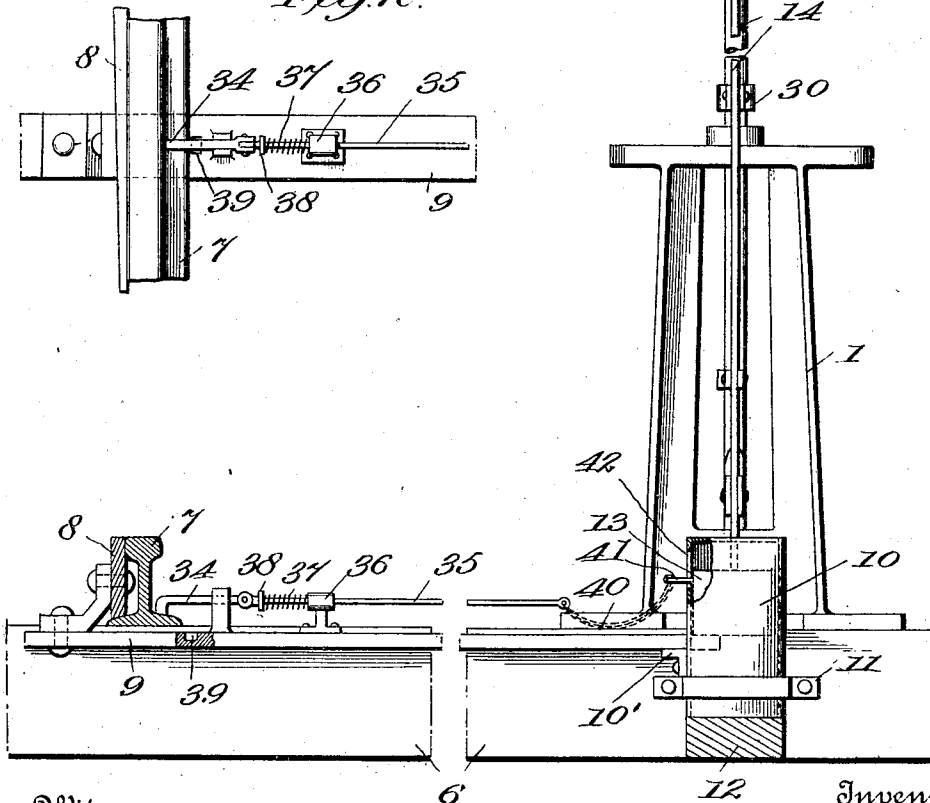


Fig. 2.



Witnesses

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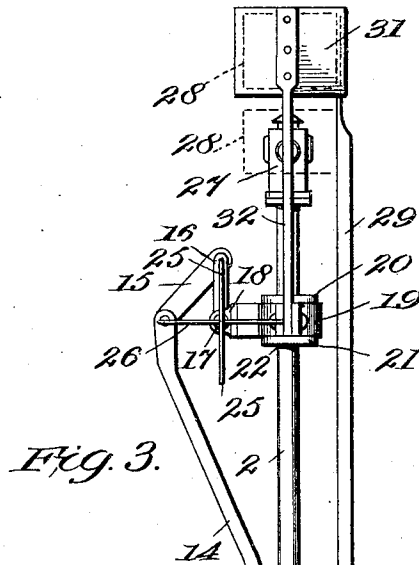
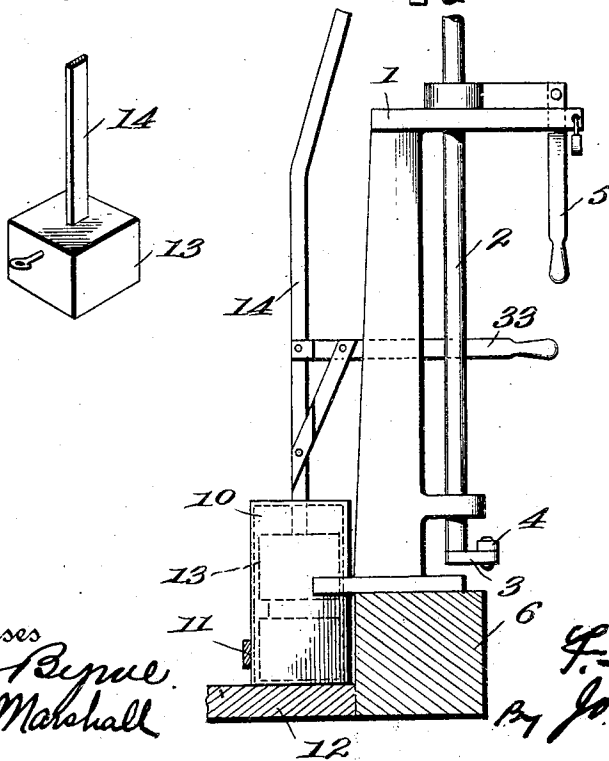


Fig. 4



Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANK L. TAPIA, OF TUSCALOOSA, ALABAMA.

RAILWAY-SWITCH SIGNAL.

967,855.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed November 4, 1909. Serial No. 526,265.

*To all whom it may concern:*

Be it known that I, FRANK L. TAPIA, a citizen of the United States, residing at Tuscaloosa, Alabama, in the county of Tuscaloosa and State of Alabama, have invented certain new and useful Improvements in Railway-Switch Signals, of which the following is a specification.

This invention relates to that class of railway signals which are adapted to indicate the condition of a switch, that is, whether the switch is open or closed, automatically indicating danger when the switch is not in the safety position; and the object of the invention is to provide for this purpose a mechanism which shall be positive in its action and simple in its construction, and one which may be readily attached to existing switches and switch stands without necessitating their alteration.

The said invention also embraces automatic locking mechanism whereby the track switch and signal are automatically locked in the event that parts of the apparatus become accidentally displaced.

In order to more fully describe my said invention reference will be had to the accompanying drawings which form a part of this specification, and, wherein,

Figure 1, represents in front elevation partly in section a switch stand and a portion of a track switch mechanism provided with a form of my invention; Fig. 2, a detail top plan view of a form of the locking mechanism; Fig. 3, a side elevation of the mechanism shown in Fig. 1, with the track connections omitted, and, Fig. 4, a perspective view of the signal-operating weight.

In the accompanying drawings, 1 indicates a switch stand of common construction; 2, the vertical switch rod which, at its lower end, connects as usual through the crank connection 3, with a rod 4, which acts in the usual way to shift the movable switch rail, or rails, as the case may be. This is a well known construction which need not here be further described. The switch rod 2, is rotatable on its vertical axis in the ordinary way, as by the switch lever 5, and it is assumed that this switch stand is mounted in the usual way upon a sill 6.

7, indicates one of the track rails, and 8, a movable switch rail point. In carrying out the form of my invention shown, I se-

cure to this movable switch point by bolts as shown, or in any other suitable way, a bar or rod 9, extending under the track rail 7, and thence into a casing 10, secured in position on one side of the sill 6. This casing may be held in position by letting it into one side of the sill 6, and securing it to the sill by means of a metal strap 11, or in any other suitable way. A block 12, may be placed under the casing to afford a base therefor. In the casing 10, is located a weight 13, movable vertically in said casing, and attached to this weight is an upright signal-operating rod 14, which extends upward through the said casing. Obviously, while I have shown this weight substantially cubical in shape, it may be of any other desired shape. The upper end of rod 14, is pivotally connected to link 15, which is in turn pivotally connected to a crank 16, of shaft 17, journaled in bearings 18, formed on one half of a split collar 19, mounted between flanges 20, and 21, of a collar 22, fast on switch rod 2, the collar 22 being adapted to turn in the split collar 19. The shaft 17, carries four pairs of signal boards 23, 24, 25 and 26, the boards 23 and 25 lying in the same plane and painted to indicate safety, and the boards 24 and 26 lying in a common plane at right angles to the boards 23 and 25, and painted to indicate danger.

The usual signal board at the top of the switch rod 2, is replaced by a suitable night signal, as lamp 27, made fast to the top of rod 2, the glasses of said lamp being uncolored so that it will normally emit a "white" light. This night signal is operated to indicate either safety or danger by means of a red glass casing 8, made fast to a rod 29, which is carried by a collar 30, slidably mounted for vertical movement on the switch rod 2. This collar 30, is in turn made fast to the rod 14.

Located above the lamp 27, is a metal or other suitable casing 31, supported by uprights 32, made fast at their lower ends to the split collar 19. This casing is located in line with the glass casing 28, so as to receive and inclose the latter when it is raised to the safety position, as hereinafter described. The object of this casing 28, is to protect the said glass when the same is not in use in connection with the lamp.

For the purpose of lifting the weight 10, I provide a handle 33, rigidly secured to the

rod 14. This handle, however, may be replaced by any other desired lifting means.

In the closed position of the switch the weight 10, rests upon one end of the rod 9, and in this position the signal boards 23 and 25 indicate safety, and the red glass casing 28, is raised above the lamp 27, and into the casing 31, so that the said lamp will indicate safety. When the switch point 9, is thrown from the closed position, by the operation of the switch, or in any other way, the rod or bar 9, will be withdrawn from the weight 13, thereby permitting the said weight to fall by gravity to the bottom of the casing 10. When this weight thus falls, it carries down with it the rod 14, and this rod, acting through the link 16 and crank 17, rotates the signal boards 23, 26, through an angle of 90° thereby displaying the danger signal boards 24 and 26. At the same time, rod 14, acting through collar 30, and rod 29, causes the red glass casing 28, to be lowered, and if the night signal lamp 27 is in position, this lamp will thereby be caused to give a red or danger signal. The casing 10 may be provided with a ledge or shelf 10' to support the free end of rod 9, when it is withdrawn from the weight 13, in case the end of the said rod is drawn entirely out of the opening through which it extends into said casing.

The locking device hereinbefore referred to consists, in the case shown, of a latch or dog 34 pivotally secured to the end of a rod 35 slidable in a bracket 36 made fast to the rod 9, the said latch being normally held in the unlocked position by coil spring 37, on said rod 35 between said bracket 36 and a shoulder 38 on said rod. When the rod 35 is drawn sufficiently to the right (Fig. 1) the nose of latch 34 drops into an opening 39 made in rod 9, the said opening being so located that when the latch drops thereinto the said latch will act as stop to prevent movement of the switch point 8 relative to rail 7, thereby locking the said switch point in the safety position. In the case shown the rod 35 is connected as by means of chain 40 to an eye 41 on the weight 13, the said eye extending through a slot 42 in said casing. The rod 35, however, may be attached to any other parts which are connected to the switch stand, or any parts, the tearing away of which would render the switch inoperative.

It will be seen from Fig. 1, that should the switch stand and weight 10 or the weight alone be displaced as for example by being torn out of position by an accident, the rod 35 will pull the latch back against spring 37 thereby causing said latch to lock the movable switch rail by dropping into opening 39 as described.

It must not be understood, however, that I limit my improved signal apparatus to

use with this or any other locking mechanism, since if desired such locking mechanism may be dispensed with.

I desire it to be further understood that while I have herein shown and described a specific arrangement of apparatus embodying my invention, this apparatus is susceptible to changes and modifications which may be made without departing from the spirit of my invention.

What I claim is:

1. The combination with a track switch comprising a movable track rail and a vertical switch operating rod, of a signal-operating rod attached to said switch rod for vertical movement, means connected to said signal operating rod to impart said movement thereto, means to hold said movement-imparting means in a given position, means operated by the track rails to release said holding means and thereby to permit the operation of said movement-imparting means, and, therethrough, the movement of said signal operating-rod, and movable signals operated by said signal operating rod.

2. The combination with a railway track switch, of a movable weight, means adapted to support said weight, operative connection between said switch and said supporting means whereby said support is withdrawn from said weight when the switch is moved to one of its operating positions, a switch signal, and operative connection between said signal and said weight.

3. The combination with a movable switch rail of a railway track, of a bar connected to said rail for movement thereby in opening and closing the switch, a weight adapted to be supported by said bar and to drop by gravity from said bar when the switch rail is moved in one direction, a switch signal, and operative connection between said weight and said signal.

4. The combination with a railway switch having a vertical switch-operating rod, a signal-operating rod attached thereto for vertical movement, a weight attached to said signal rod, a movable support for said weight operatively connected to a movable rail of the track switch and adapted to be withdrawn from said weight by the movement of the said switch rail in one direction, the said weight being adapted to fall by gravity when said support is thus removed, and a switch signal connected to said rod and automatically operated by the said weight in falling.

5. The combination with a railway track switch, of a signaling apparatus comprising a casing, a weight mounted in said casing for vertical movement, a bar adapted to support said weight and to be withdrawn therefrom to allow said weight to descend, operative connection between said bar and a movable switch rail of the track, a vertical

switch operating rod, a signal operating rod connected to said weight and attached for vertical movement to said switch rod, and movable signals operatively connected to said rod.

6. The combination with a railway switch having a vertical switch-operating rod, a signal-operating rod attached thereto for vertical movement, a bracket supported by said vertical rod, a crank shaft journaled on said bracket, signal boards mounted on said shaft, a lamp carried by said switch-operating rod, a signal screen mounted for

vertical movement by said signal-operating rod relative to said lamp, a fixed casing adapted to receive said screen in one of the operating positions of the switch, and operative connection between said signal-operating rod and one of the movable track switch rails.

In testimony whereof I hereby affix my signature in presence of two witnesses.

FRANK L. TAPIA.

Witnesses:

CHAS. BRADY, Jr.,  
JNO. W. WATTS.