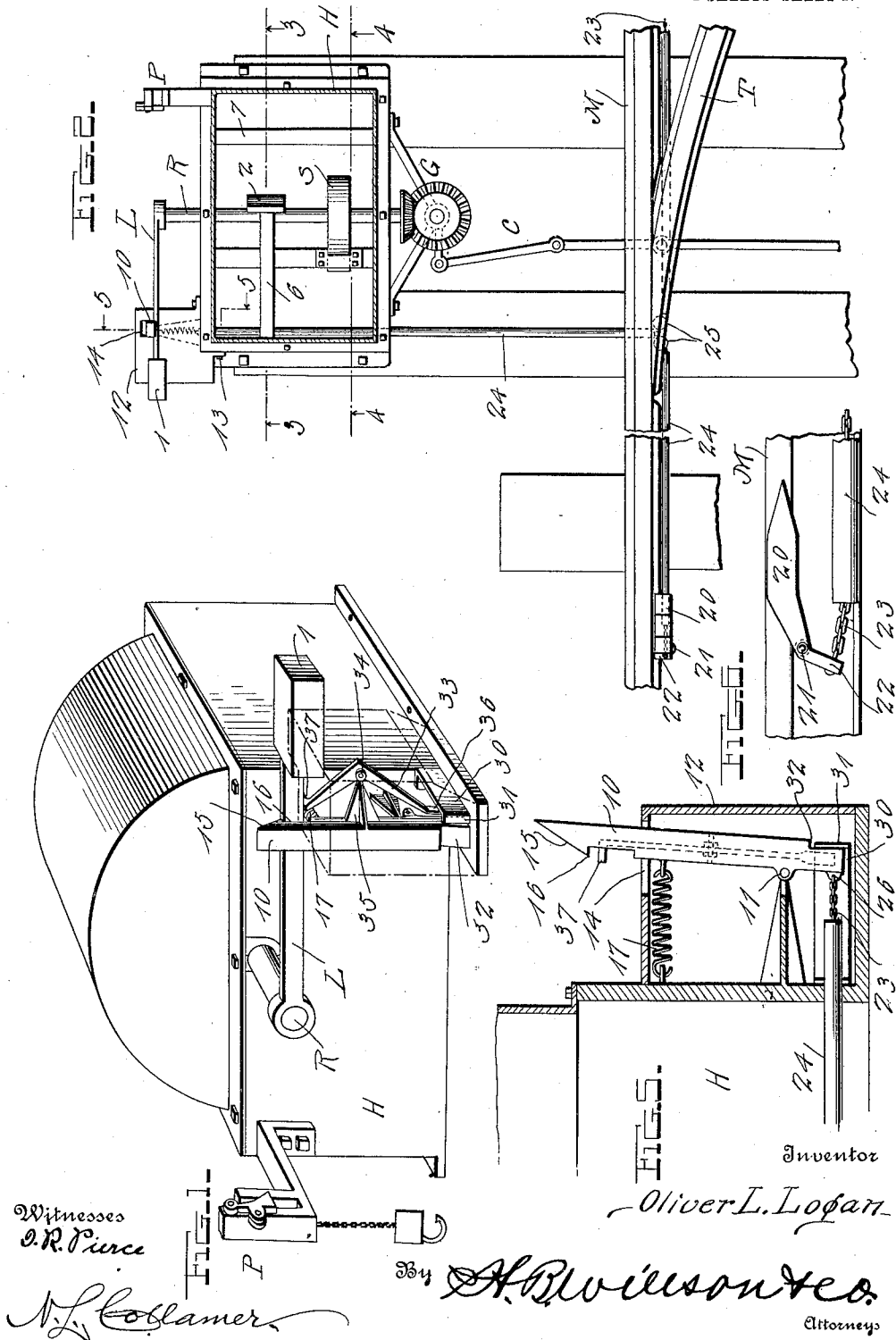


O. L. LOGAN.
 SWITCH THROWING MECHANISM.
 APPLICATION FILED SEPT. 3, 1912.

1,058,610.

Patented Apr. 8, 1913.

2 SHEETS-SHEET 1.



Witnesses
 O. R. Pierce

N. L. Collamer

By

A. B. Wilson & Co.

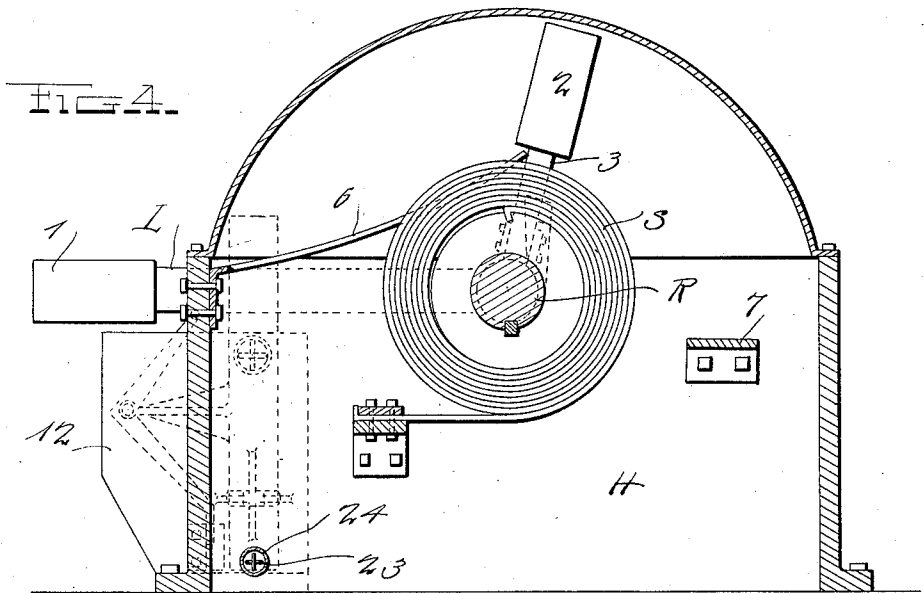
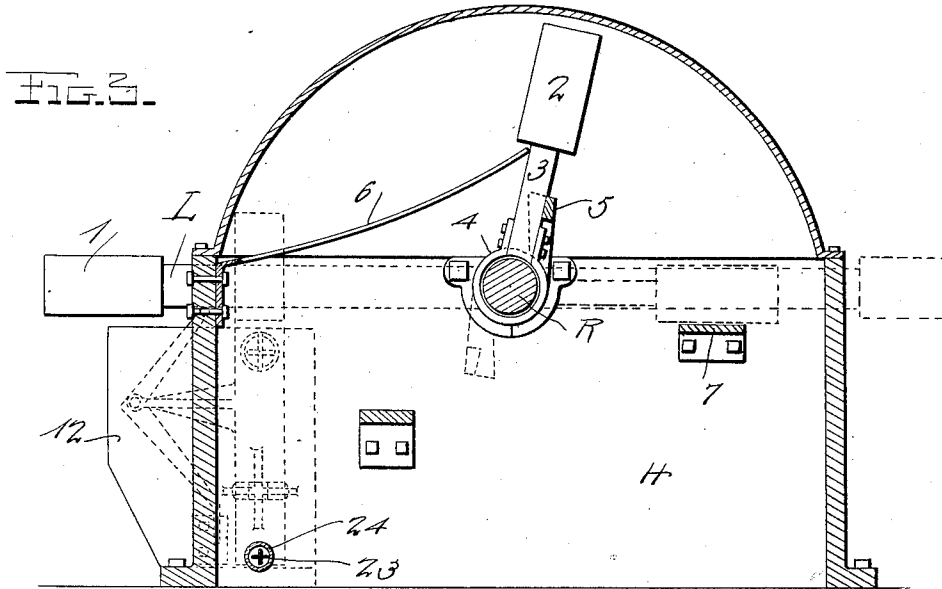
Attorneys

O. L. LOGAN.
 SWITCH THROWING MECHANISM.
 APPLICATION FILED SEPT. 3, 1912.

1,058,610.

Patented Apr. 8, 1913.

2 SHEETS—SHEET 2.



Inventor

Witnesses
 O. R. Pierce

N. L. Collamer.

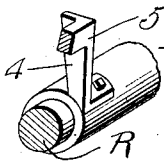


FIG. 1.

Oliver L. Logan.

By

A. B. Wilson & Co.

Attorneys.

UNITED STATES PATENT OFFICE.

OLIVER L. LOGAN, OF GALVESTON, INDIANA.

SWITCH-THROWING MECHANISM.

1,058,610.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed September 3, 1912. Serial No. 718,363.

To all whom it may concern:

Be it known that I, OLIVER L. LOGAN, a citizen of the United States, residing at Galveston, in the county of Cass and State of Indiana, have invented certain new and useful Improvements in Switch-Throwing Mechanism; and I do 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 railways, and more especially to switch stands; and the object of the same is to provide an attachment to the housing of the ordinary switch-throwing mechanism, which attachment includes a latch for holding the switch lever when the latter has been moved to a position to interrupt traffic along the main line, and mechanism tripped by the approach of the train for moving said latch to disengage the switch lever and allow the latter to turn so that the main line track is clear and the train may pass the switch with safety. This object is carried out by constructing the attachment in the manner hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a perspective view illustrating the outside of the housing of an ordinary switch; and Fig. 2 is a horizontal section through said housing and a plan view of all the parts thereof—the switch in both instances being set so that it will divert the train onto the siding or off of the main line. Figs. 3 and 4 are enlarged cross sections on the lines 3—3 and 4—4 of Fig. 2 respectively. Fig. 5 is an enlarged vertical section, taken through this attachment on the line 5—5 of Fig. 2. Fig. 6 is an enlarged elevation of the tripping mechanism standing alongside the rail of the main line and which is actuated by an approaching train in a manner to be described hereinafter. Fig. 7 is a perspective detail illustrating part of the finger hereinafter referred to.

In the drawings I have typically illustrated the main line M and the switch tongue T, the switch being open in Fig. 2 and in position to divert a train from the rails of the main line onto the siding; and also I have shown an ordinary housing H containing a rock shaft R turned in one direction by a stout spring S and gearing G connecting said rock shaft through links or other connections C with the switch tongue

so that when the rock shaft is moved the tongue is moved, either toward the main line rail M or away from it. When the main line is clear and the switch closed (the reverse position from that shown in Fig. 2) the switch lever L which is fast on the rock shaft R would be locked as at P as by means of a padlock, and in order to throw the switch tongue so that a train would be diverted from the main line M onto the siding it would be necessary to unlock the padlock and move the lever over to the position illustrated in Figs. 1 and 2.

Many accidents occur by reason of the fact that some one has thus thrown the switch and forgotten to return it to its normal position, with the result that a train approaches along the main line and even though the oversight is discovered there is not time to run to the switch and throw it so that the through train can pass another train which may possibly stand on the siding. The object of the present invention is to accomplish this act automatically. I would say, however, that the details of the switch and its throwing mechanism as described and referred to above by reference letters form no part of the present invention and are typically shown merely for purposes of illustration in connection with my invention. The latter might be applied to the housing H and possibly contained therein, but when built as an attachment it can be bolted to the exterior of the housing with very little change as will appear from the following specification.

To the switch lever L I would apply a weight 1; and the lever and this weight is practically counterbalanced by a larger weight 2 fast on the outer end of a counterbalancing lever 3 having a sleeve 4 at its inner end mounted loosely on the rock shaft R; and fast on the latter adjacent said sleeve I secure a finger 5 projecting at right angles to the direction in which the lever L projects from said shaft so that when this lever stands horizontal as seen in Figs. 2, 3 and 4 the finger will rise from the remote side of the shaft and the counterbalancing lever 3 will stand nearly upright with the weight 2 almost directly above the shaft R. A suitable stop 6 holds it in this position. To move the switch it is only necessary to release the lever L from the mechanism yet to be described and raise its outer end; this rocks the shaft R so that the switch tongue

is moved in a manner well understood to those familiar with this art, and as said shaft rocks the lever 3 and its weight descend to a horizontal and come to rest on a suitable stop 7 within the housing H, meanwhile substantially counterbalancing the switch lever L and its weight 1. Further turning of the switch lever causes the finger 5 to move downward within the housing out from under the counterbalancing lever 3 because said switch lever L and its weight 1 need no longer be counterbalanced, and finally the lever L is thrown over to a position where it may be locked as at P and the main line then be clear. In a reversal of this action to close the switch from the main line onto the siding, the operator would open the padlock P and raise the switch lever L, and as the rock shaft R turns the finger 5 would pick up the counterbalancing lever 3 and restore the parts to the position shown in Fig. 3. This detail of construction permits the spring S (or whatever mechanism is employed in its place) to exert practically its entire force in throwing the switch, and perhaps moving the signals which may be connected therewith; leaving the lever 3 and its weight 2 to offset the weight of the switch lever L and its weight 1.

For holding the switch lever L when the switch is open and its tongue T stands as seen in Fig. 2, I provide a latch 10 pivoted at 11 within a supplemental housing 12 which can be attached by bolts or screws 13 to the main housing H and will have its top slotted as shown at 14 to permit the movement of the upper beveled end 15 of said latch 10. As the free or outer end of the switch lever L descends, it passes the beveled end 15 of the latch 10 and drops into a notch 16, whereupon the upper end of the latch is moved inward toward the housing H by means of a spring 17 and the switch lever is held in this position until the latch is tripped. At remote points alongside the main rail M in both directions are located trips (as best seen in Fig. 6) each comprising an arm 20 standing alongside the ball of the rail and pivoted at 21 to its web, and a depending rear end 22 from which leads a chain 23 passing through a tube 24 alongside the rail and finally led over suitable pulleys 25 to and through the interior of the housing H and connected at the point 26 with the lower end of the latch 10. It follows from this construction that when a train approaches along the main line, the flange of the front wheel of the locomotive depresses the trip 20, and its rear end 22 is moved outward to draw upon the chain 23 so that the latter pulls the lower end of the latch 10 inward against the tension of its spring 17 and its hooked upper end frees the outer end of the switch lever L, and the

spring S instantly rocks the shaft R in the manner above described. Hence it is impossible for a careless employee to overlook the restoration of a main line switch to its normal position, because even if he should do so an approaching express train would automatically reset the switch and clear the main line.

So much of my invention as has already been described will operate well, but in order to prevent the continuous vibration of the latch 10 under the action of the many wheel flanges on the trip 20 as the whole train passes over it, I make use of the following details: The numeral 30 designates a catch which may well be a flat spring secured at its inner end at a suitable point within the metal housing 12, and having its outer end hooked at right angles as at 31 at a point to engage a recess 32 in the lower end of the latch 10 and on its outer side, which recess comes opposite said hook when a trip 20 gives the first jerk on the chain 23; and it follows that subsequent wheel-flanges passing over said trip will not jiggle the latch because the latter stands open thereafter as seen in Fig. 5. In order to permit the latch to close so as to hold the switch lever L down, means must be provided to disengage the catch 30. This consists of a trigger 33 pivotally supported between its ends as at 34 on any suitable support such as a bracket 35 projecting from one side of the latch 10, the lower end 36 of the trigger standing inside the catch 30 and the upper end 37 of the trigger standing alongside the latch 10 and in position to be struck by the switch lever L when the latter is depressed. With this detail added, whenever a switch is unlocked and its lever L turned over to the position shown in Figs. 1 and 2, it passes the beveled upper end 15 of the latch 10 and strikes the upper end 37 of the trigger, which is thereby turned on its pivot 34 so that its lower end 36 trips the catch 30 and frees the latch 10, and the latter may then move inward under the impulse of its spring 17 so that it hooks over the switch lever L and holds the same depressed—meanwhile drawing on the chain 23 to lift the trips 20 at distant points along the track and at both sides of the switch.

I would employ a supplemental housing 12 rather closely inclosing all parts of this attachment so as to protect it from the weather and keep it as clean as possible.

As first above suggested, this attachment may be applied to the housing H of an ordinary switch throwing mechanism, and but little change need be made therein.

If the switch lever L be weighted as shown at 1, I would add to the rock shaft the counterbalancing lever 3 and its weight 2, and the finger 5 for lifting it at the proper time; but this detail is not absolutely necessary, for the weight 1 might be omitted

from the outer end of the lever L—especially if the spring S were of sufficient strength to throw said lever in addition to its function of throwing the switch and setting the signals if they exist.

The parts are obviously entirely of metal, and their details of construction other than as above described, their sizes and their proportions, are matters of no moment.

What is claimed as new is:

1. In a switch, the combination with a horizontal rock shaft, connections between it and the switch-tongue, and means for turning the shaft automatically in a direction to close the switch; of a lever fast on said shaft and projecting horizontally therefrom in one direction when the switch is closed, and horizontally in the opposite direction when the switch is open, and a counterbalancing lever and weight rising from the shaft at an obtuse angle to said switch lever when the latter stands in position to hold the switch open.

2. In a switch, the combination with a horizontal rock shaft, connections between it and the switch-tongue, and means for turning the shaft automatically in a direction to close the switch; of a lever fast on said shaft and projecting horizontally therefrom in one direction when the switch is closed and horizontally in the opposite direction when the switch is open, and finger rising rigidly from said shaft when the switch lever stands in position to hold the switch open, a counterbalancing lever mounted loosely on the shaft alongside said finger and rising obliquely from the shaft and resting against the finger, a stop for holding it in this position, and a counterbalancing weight at the outer end of this lever heavier than the switch lever, for the purpose set forth.

3. In a switch, the combination with the switch-throwing mechanism including a rock shaft, means for automatically turning it in a direction to close the switch, and a main lever; of a spring-actuated latch disposed on said mechanism and positioned to engage said lever when the switch is open, trips carried by the main line rails at remote points, chains leading from said trips over suitable guides to said latch whereby the latter is automatically disen-

gaged from the switch-lever on the approach of a train along the main line, and a spring-actuated catch for holding the latch in its disengaging position.

4. In a switch, the combination with the switch-throwing mechanism including a rock shaft, means for automatically turning it in a direction to close the switch, and a main lever; of a spring-actuated latch disposed on said mechanism and positioned to engage said lever when the switch is open, trips carried by the main line rails at remote points, chains leading from said trips through tubes and over pulleys to said latch whereby the latter is automatically disengaged from the switch-lever on the approach of a train along the main line, a spring-actuated catch for holding the latch in its disengaging position, and a trigger for disengaging the catch from the latch when the switch lever is again moved to open the switch.

5. In a switch, the combination with the switch-throwing mechanism including a rock shaft, means for automatically turning it in a direction to close the tongue, and a main lever; of a spring-actuated latch engaging said lever when the switch is open, trips carried by the main line rails at remote points, connections leading from said trips over suitable guides to said latch whereby the latter is automatically disengaged from the switch lever on the approach of a train along the main line, a catch consisting of a spring-hook engaging the lower end of said latch after the latter has been moved by said trips, and a trigger pivoted between its ends with its lower extremity engaging said catch and its upper extremity lying in the path of the switch-lever, whereby on the turning of the latter to again open the switch the trigger is actuated to disengage the catch from the latch and permit the latter to engage said lever.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

OLIVER L. LOGAN.

Witnesses:

JAMES S. LOGAN,
REBECCA RICHARDS.