

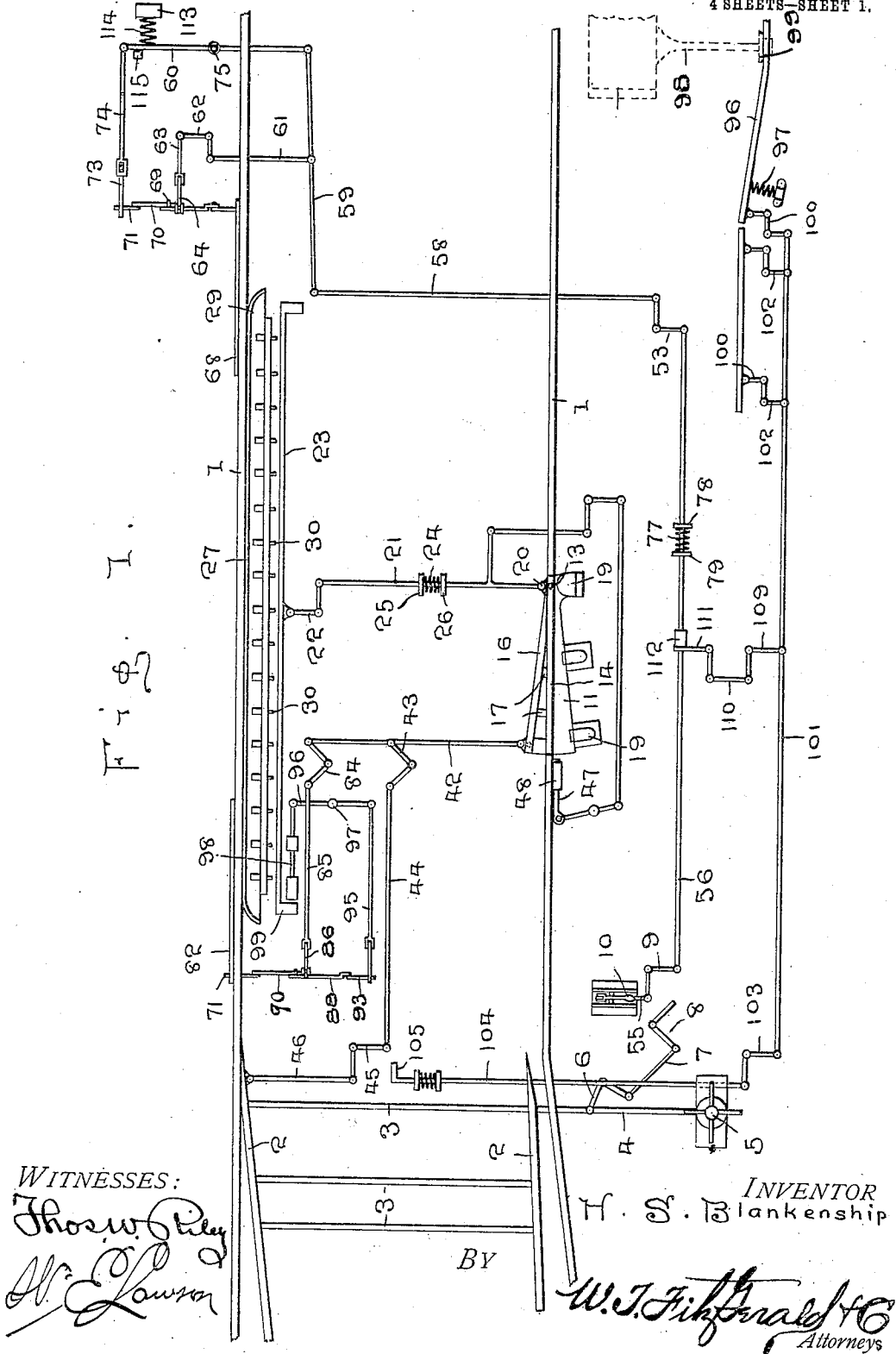
H. S. BLANKENSHIP.
RAILWAY APPLIANCE.
APPLICATION FILED SEPT. 8, 1908.

932,104.

Patented Aug. 24, 1909.

4 SHEETS-SHEET 1.

Fig. 1.



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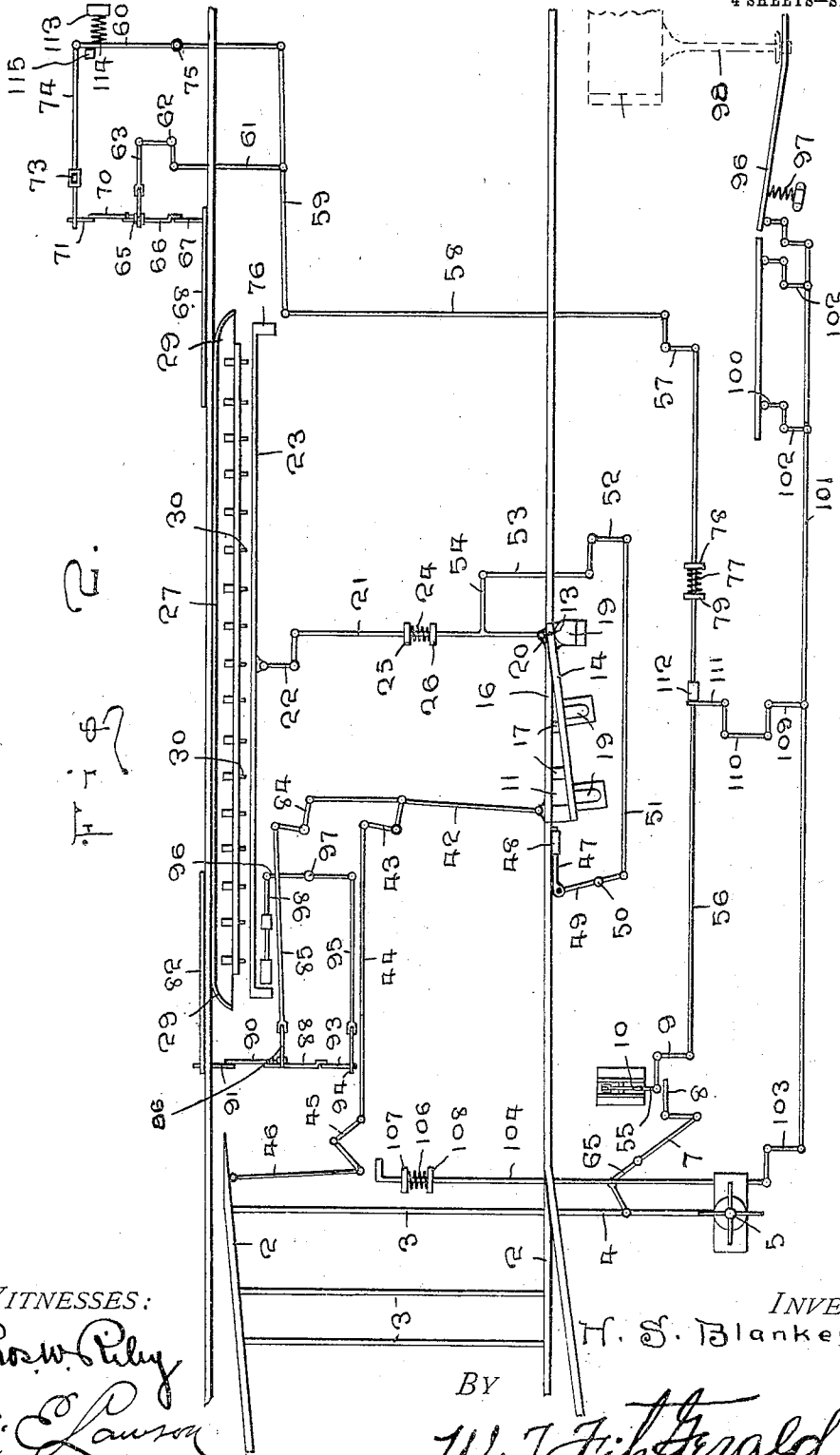
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4 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HOWARD SHELTON BLANKENSHIP, OF NORFOLK, VIRGINIA.

RAILWAY APPLIANCE.

932,104.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed September 8, 1908. Serial No. 452,028.

To all whom it may concern:

Be it known that I, HOWARD SHELTON BLANKENSHIP, citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Railway Appliances; and I 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 new and useful improvements in railway appliances and it is primarily an object of the invention to provide a novel device of this character whereby a train is prevented from accidentally entering an open switch.

It is also an object of the invention to provide a novel device of this character which acts in conjunction with the switch proper, said device being positioned in advance of the switch and being operated in the performance of its function by the passing of a train.

The invention also has for its object, to provide a novel device of this character which is movably mounted with relation to a track of the roadway, said movable member being so connected with the switch mechanism as to assure a closed switch under normal conditions as in Figure 2.

Furthermore the invention has for an object to provide in combination with the movable device, novel means for holding the same away from the auxiliary rail to permit a train to pass thereby to the side track.

It is also an object of the invention to provide a novel device of this character wherein the movable member is operated manually at the same time the switch is operated.

The invention also has for an object to provide a novel device of this character including a movable member obstructing the auxiliary rail of the trackway when the switch is open, said movable member being connected to means operated by the passing of a train for holding said movable member away from the rail.

It is also an object of the invention to provide a novel device of this character which will couple on to any spring switch now in use without altering the switch.

It is also an object of the invention to pro-

vide a novel device of this character which will be simple in construction, efficient and advantageous in practice and comparatively inexpensive to manufacture.

With the above and other objects in view, the invention consists in the details of construction and in the novel arrangement and combination of parts to be hereinafter more particularly referred to.

In describing the invention in detail reference will be had to the accompanying drawings forming a part of the specification, wherein like characters of reference denote corresponding parts in the several views, and in which,

Fig. 1 is a plan view of a section of a trackway showing the position of the various parts of the invention when the switch is open. Fig. 2 is a view similar to Fig. 1, showing the position the parts assume when the switch is closed. Fig. 3 is an enlarged detail sectional view illustrating the mechanism for holding the movable device employed in the invention away from the auxiliary rail when the switch is open. Fig. 4 is an enlarged detail plan view of the movable member when the switch is open. Fig. 5 is a view similar to Fig. 4, illustrating the position the movable member assumes when the trackway is clear for the passage of a train to a siding and the switch is open. Fig. 6 is a sectional view taken on the line 6-6 of Fig. 5. Fig. 7 is a fragmentary view in perspective, illustrating a portion of the mechanism for operating the movable member when a train is passing rearwardly with relation to the switch. Fig. 8 is a view similar to Fig. 7 illustrating certain of the parts for operating the movable member when a train is traveling toward the switch. Fig. 9 is a fragmentary view, partly in elevation and partly in section, illustrating the depressible member employed in conjunction with the invention.

In the drawings 1 denotes the rails of a trackway and 2 the points or tongues of a switch. These points or tongues are connected by the cross rods 3 and one of these cross rods 3, as at 4, is extended beyond a rail and connected to the operating means 5, which may be manipulated in any desired manner.

Pivottally secured to the extended portion

4 is an end of a bell crank lever 6, which has its opposite end portion pivotally secured to a link 7. This link 7 has its opposite end pivotally connected to the end of a second bell crank lever 8. The opposite end portion of the bell crank lever 8 is free, and is adapted to contact with the adjacent end portion of a bell crank lever 9, to obstruct or prevent movement thereof by the operating lever 10. It is to be noted that the relation of these parts are such that when the switch is closed the bell crank lever 8 locks the bell crank lever 9 against movement, as shown in Fig. 2, and when the switch is opened, said bell crank lever 9 is free to move as shown in Fig. 1. It is thought to be within the province of the invention to state that the bell crank lever 6 can be left out and the link 7 made long enough to connect to the extended portion 4 where the bell crank lever 6 connects.

At a pre-determined distance in advance of the switch, one of the rails 1 is cut away and in this cut away portion, in a plane beneath the plane of the base of the rail and extending to either side thereof, is a base plate 11. Resting on this plate 11 is the movable plate 12 pivoted as at 13 to the plate 11. This movable plate 12 is provided with the rail section 14, which is adapted to snugly fit within the cut away portion of the rail 1, to form a continuous rail when the switch is open.

Pivoted adjacent the inner edge of the plate 12 and at an end opposite to the pivot 13 is pivotally secured at 15 the end portion of a point or tongue 16, which has its free end so shaped as to properly contact with the inner side of the rail section 14, said contact being such as when the tongue 16 is in such position, said tongue will be engaged by the flanges of the wheels of the train passing over the rail 1. To reinforce the tongue 16, when in such a position as in Figs. 1-2 the opposite face of the rail section 14 and the plate 12, has secured thereto the blocks 17, of proper configuration.

By mechanism, to be hereinafter described, the plate 12 is moved on its pivot 13, so that the tongue 16 will be positioned within the cut out portion of the rail 1, and in order to so limit the movement of the plate 12, the extensions 18 are provided which have secured thereto the stops 19.

The inner edge of the free end portion of the tongue or point 16 is provided with an ear 20, to which is pivotally secured the end of a rod 21. The opposite end of the rod 21 is secured to the end of a bell crank lever 22, the opposite end of the bell crank lever being pivotally secured to the operating rod 23, said connection between the rod 23 and the bell crank lever 22 being centrally of the length of the rod 23. This rod 23 is arranged parallel with the rail 1, oppo-

site to the rail having the cut out portion, and this rod is adapted to move or reciprocate longitudinally, the reciprocation or movement of the rod 23 being obtained in a manner to be hereinafter described. When the rod 23 is moved in a direction toward the switch it is thought to be apparent that it will cause the tongue or point 16, or movable device, as it may be termed, to assume the position shown in detail Fig. 5. When the movable device is in this position the auxiliary rail is unobstructed and the train is free to pass into the switch.

In the operation of the device, it is essential that the movable device be held in the position shown in Fig. 5, until the train passes, as the point of said movable device is normally retained in the position shown in detail Fig. 4 and in Figs. 1 and 2 through the medium of the expansion spring 24. This expansion spring 24 embraces the rod 21 and has one end abutting the stationary stop 25, through which the rod 21 loosely passes, and its opposite end engaging the stop 26 fixed to the rod 21. To hold the movable device 16, away from the auxiliary rail, a plate 27 is positioned adjacent the inner edge of the rail and is pivotally secured at intervals along its lower edge to the ties of the roadbed, as indicated at 28 in Fig. 3. The ends of this plate 27 are flared inwardly or away from the rail, as at 29. This is done to assure the passage of the flanges of the wheels of the train between the rail and the plate 27. When the flanges enter between the plate 27 and the rail, said plate 27 is caused to swing inwardly and cause the plungers 30 to contact with the bar 23.

As the plungers 30 are positioned at intervals almost the entire length of the plate 27, it is thought to be apparent that the said bar 23 will be effectually held against movement until all of the wheels of the train have passed out between the said plate 27 and the rail. When the flanges of the wheels have passed from between the plate and the rail, the spring 24 will cause the movable device 16 to return to its normal position. In practice, the ends 31 of the plungers 30, engaging the bar 23, are toothed and are adapted to engage teeth or roughened surface 32 on the opposite face of the bar 23. It has also been found desirable that the bar 23 be in form of an inverted T and that the flanges 33 thereof, forming the head move within the guide ways 34, as is particularly shown in Fig. 3.

The plungers 30 are loosely mounted in a strip 35, suitably anchored and each plunger has its end portion adjacent the plate 29, loosely embraced by a head 36, said head 36 being provided with a recess 37 into which the end portion of the plunger 30 projects. Interposed between the inner end of the head

36 and the opposite face of the strip 35, and surrounding the plunger 30, is a coil expansion spring 38, and within the recess 37, between the base thereof and the end of the plunger 30, is a second coil expansion spring 39. By these springs 38 and 39, the head 36 is kept in continual contact with the plate 29. These springs also permit the entrance between the rail 1 and the plate 29, of flanges of various thicknesses and at the same time assure the proper performance of the function of the plungers 30. This movement to compensate for the different thicknesses of flanges, is most essential, as it is well known that the flanges of the driving wheels of the motor or locomotive, are in excess of that of cars, and that in many instances the thickness of the flanges of the wheels of the cars vary.

In order to reduce friction to a minimum, the contacting end of the head is provided with an anti-friction roller 40 and in order to prevent any undue movement of the head laterally of the plate 29, said plate 29 has struck therefrom, at the point of contact of the roller 40, the inwardly curved tongue 41, as is believed to be apparent.

When the movable device 16 is in the position shown in detail Fig. 4 and in Fig. 1, and the switch should be inadvertently open as shown in Fig. 1, the flanges of the wheels of the train traveling toward the switch will contact with said device 16 and move it inwardly within the cut out portion of the rail. This movement will cause the switch to close as shown in Fig. 2. The closing of the switch is effected through the medium of the rod 42, which is pivoted to the part 16, adjacent its free end, and pivotally engaging the rod 42 is the bell crank lever 43. The bell crank lever 43 has pivotally attached thereto an end of the link 44, said link 44 having its opposite end in pivotal engagement with the bell crank lever 45. The bell crank lever 45 is pivotally engaged by a link 46, which is pivotally connected to a point or tongue 2 of the switch. The operation of this portion of the invention is believed to be apparent without a detail description thereof.

In order to brace the rail section 14, when a train is passing thereover, the free end portion thereof abuts a latch 47 which travels in a bracket 48, secured to the outer surface of the adjacent portion of the rail 1, and in order that this latch may be caused to abut the rail section 14, the outer end of the latch is pivotally secured to a lever 49, pivoted as at 50 intermediate its length. The opposite end of the lever has pivotally connected thereto, the rod 51, which engages an end of the bell crank lever 52. The opposite end of this bell crank lever 52 is pivotally secured to a link 53, which engages an arm 54, extending from the rod

21. It is also stated that the latch 48 is normally free from the auxiliary rail section 14, but when the rod 21 is moved to cause the movable device 16 to travel away from the auxiliary rail section 14, this same movement of the rod 21 through the medium of the link 53, bell crank lever 52, rod 51 and lever 49, will cause the latch to travel behind the rail section 14.

The bar 23 is intended to be moved automatically by the passage of a train. When the lever 10, before referred to, is pulled, it causes, through the medium of link 55, the bell crank lever 9 to move the rod 56, which is pivotally secured to said lever 9. The opposite end of the rod 56 is pivotally connected to a bell crank lever 57 and said lever 57 is also pivotally secured to a link 58 which extends transversely of the trackway and has its opposite end pivotally secured to the link 59. This link 59 is secured at its opposite end to a lever 60 pivoted intermediate its length and which passes beneath the adjacent rail 1.

In advance of the lever 60, the link 59 has pivotally secured thereto, a link 61 which projects approximately at right angles thereto and passes beneath the adjacent rail 1, and is secured at its opposite end to a bell crank lever 62. This bell crank lever 62, has also pivotally secured thereto, a link 63, which is also pivotally attached to the bell crank lever 64, see Fig. 8. This bell crank lever 64 has a depending link 65 which is pivotally secured to an arm 66, pivoted to a bell crank lever 67. The free end portion of the bell crank lever 67 engages the under edge of a depressible bar 68, pivoted at its opposite end as at 69, adjacent the outer face of the rail. The movement of the lever 10 and its connecting parts, causes the arm 66 to be lowered until the lug 69, projecting therefrom engages the upper surface of the link 70. This link 70 is pivotally secured to the arm 66 and to a bell crank lever 71, as shown in Fig. 8. This contact of the lug 69 with the link 70, causes the arms 66 and the link 70 to become rigid and when the treads of the wheels engage the depressible bar 68, the movement of the bell crank lever 67 through the medium of the arm 66 and the link 70 will swing the bell crank lever 71 on its pivot. This lever 71 engages and moves a second bell crank lever 73. The movement of the bell crank lever 73, through the medium of the link 74, which is secured thereto and also to the bell crank lever 60, moves said lever 60 on its pivot. The movement of the lever 10 forces the link 58 to intersect the plane of the bar 23, and the movement of the lever 60 will cause the movable device 16 to assume the position shown in detail view Fig. 5. In order that the engagement between said link 58 and said bar 23 may be more readily effected than would

otherwise be the case as they are actuated, said bar is widened at one end as at 76.

Normally the lug 69 is held away from the link 70 and this normal position is maintained through the medium of the expansion spring 77, which embraces the rod 56 and has one of its ends engaging a stationary stop 78, through which the rod 56 passes, and its opposite end engaging the stop 79 carried by the rod 56. By this arrangement a continual pounding of the bar 68 on the lever 67 is obviated, as when the flanges of the wheels have entered between the plate 27 and the rail, the lever 10 is relieved of further duty and will be thrown back by the spring 77 and the engagement of the plungers with the bar 23, effectively holding said bar 23 against movement until the train has passed, as has been herein before specified.

The bar 68 has its upper edge, or the major portion thereof, normally held above the top of the rail through the medium of the expansion spring 80, which is positioned within a recess 81 in a tie of the roadway and bears against the free end of the depressible bar 68. It might be also well to observe that the upper head 82 of the depressible bar is arranged on an incline, so that no jar will be incident to the passage of the wheels of the train thereon. Further, the depressible bar has a depending lug 83 adjacent its free end which passes through the base of the rail to hold said depressible bar against undue lateral movement which would tend to displace the same.

When the train is moving from the siding to the main rail, the rail section 14 is at the cut out portion of the rail and the movement of the plate 12 incident to such positioning of the section 14, causes the link 42 to move as before stated. This lever 42 is also pivotally secured to a bell crank lever 84 which is in turn, engaged by a link 85. This link 85 pivotally engages a bell crank lever 86, from which depends a link 87, pivotally secured to an arm 88. This arm 88 has a lug 89, which contacts with the upper edge of a link 90, pivoted at one end to the arm 88 and at its opposite end to the bell crank lever 91. The free end of this bell crank lever 91, projects beyond the depressible bar 92. When the lug 89 is in engagement with the link 90, the arms 88 and 90 are rigid and the depression of the bar 92 will cause the arm 88 to move the bell crank lever 93 to which it is connected. This bell crank lever 93, see Fig. 7, contacts with a bell crank lever 94, and the movement given to said lever 94 causes the link 95 to swing the lever 96, which is pivoted as at 97, intermediate its length. This movement of the lever 96, forces the arm 98 to abut the intumed lip or flange 99 of the bar 23, and imparts sufficient movement to the bar 23 to move the tongue or point 16 away from the auxiliary

rail. By this arrangement it will be seen that when the main line is open the lug 89 is disengaged from the link 90 and the point or tongue 16 is not molested, but as soon as the switch is open the depressible bar 82 is in a position to perform its function.

As hereinbefore described, both the switch mechanism and the appliance or movable device 16 are placed in operative position manually, but it has been found of advantage, however, to employ automatic means, whereby the switch may be opened when a train is moving in a direction theretoward and to automatically cause the appliance to operate. To effect this a movable rail 96 is positioned to one side of the trackway, and this rail is movable in a direction laterally of the trackway and is preferably pivoted at one end and caused to move in a direction toward the trackway by the expansion spring 97, as is believed to be obvious. A vehicle more particularly a locomotive, running on the trackway is provided with a laterally extending arm 98, shown in dotted lines in Figs. 1 and 2, and has secured to its outer end a wheel 99 which is adapted to engage the rail 96 and move the same outwardly from the trackway. This rail 96 is pivotally secured to the bell crank lever 102, which lever, when the rail 96 is moved, causes a movement of the rod 101, said movement being effected through the medium of the link 100, pivotally secured to the bell crank lever 102 in turn connected to the rod 101. The end of the rod 101 more distant from the rail 96 is pivotally secured to a bell crank lever 103, which has pivotally secured to its opposite end the link 104, which terminates in an angular portion 105. This angular portion 105 is adapted to contact with the bell crank lever 45, before referred to when the switch is closed, Fig. 2, and thereby open the switch as in Fig. 1, which is believed to be apparent. This link 105 is held normally away from contact with the lever 45 through the medium of the expansion spring 106, which is interposed between the stops 107 and 108, the stop 107 being stationary and the link 104 passing there-through and the stop 108 is secured to the link 104.

In order that the mechanism for operating the movable device 16 may become operative, the rod 101 is pivoted intermediate its length to the bell crank lever 109, which is pivotally connected, through the medium of the link 110 to the bell crank lever 111, said bell crank lever 111 contacting with the stop 112 on the rod 56.

An expansion spring 114 is interposed between the lever 60 and a stationary contact block 113, said expansion spring being positioned to the rear of the link 60 for returning the bell crank lever 73 to normal position. When the spring 114 has forced the

bell crank lever 73 and the link 74 to normal positions, the lever 60 strikes a stop 115 placed in front of the spring 114.

I claim:

5 1. In combination with a trackway and a switch, of means for operating the switch, means normally obstructing one of the rails connected to the switch, means for moving the obstructing means away from the rail,
10 means for holding said obstructing means against movement and means interposed along the trackway for closing the switch.

2. In combination with a trackway having a cut out portion in one of its rails of a
15 pivoted plate positioned beneath the cut out portion of the rail, a rail section carried by the plate to fit within the cut out portion and a pivoted tongue carried by the plate contacting with the rail section, the pivot
20 of the tongue being adjacent the end of the plate opposite to the pivot of the plate.

3. In combination with a trackway having a cut out portion in one of its rails, of a
25 rail section carried by the plate to fit within

the cut out portion, a tongue pivoted to the plate, contacting with the rail section, means for moving the plate on its pivot and means for moving the tongue on its pivot and means for limiting the movement of the 30 plate.

4. In combination with a trackway a movable device positioned adjacent one of the rails thereof to contact therewith, a movable bar, connections between the movable plate 35 and movable device whereby a movement of the bar moves the movable device away from the rail and means operable by the passage of a train for imparting movement to the bar and means engaging the plate to 40 said bar against retrograde movement until after the passage of the train.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOWARD SHELTON BLANKENSHIP.

Witnesses:

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H. TYLER SMITH.