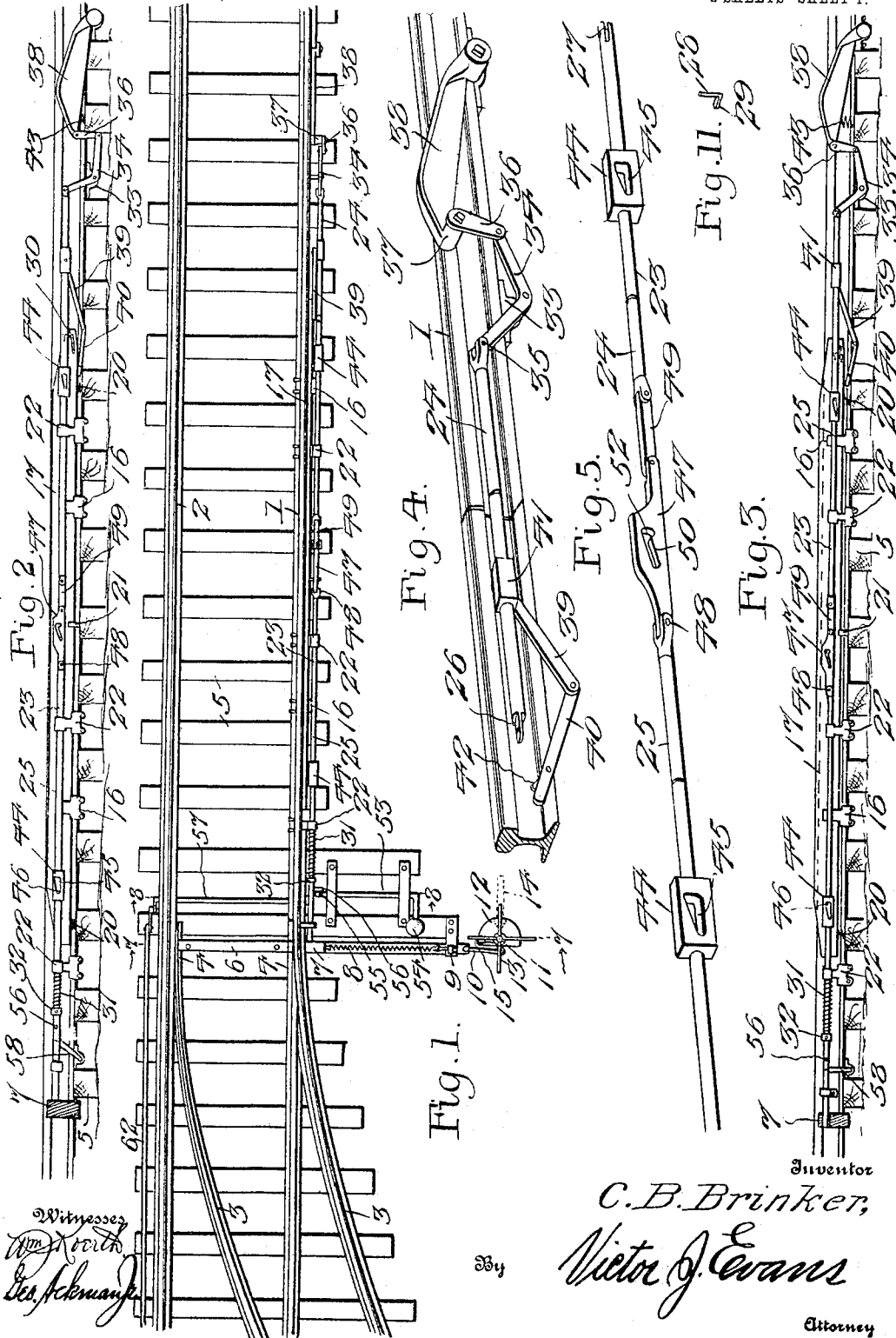


No. 818,865.

PATENTED APR. 24, 1906.

C. B. BRINKER.
RAILWAY SWITCH.
APPLICATION FILED APR 20, 1905.

2 SHEETS—SHEET 1.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 6

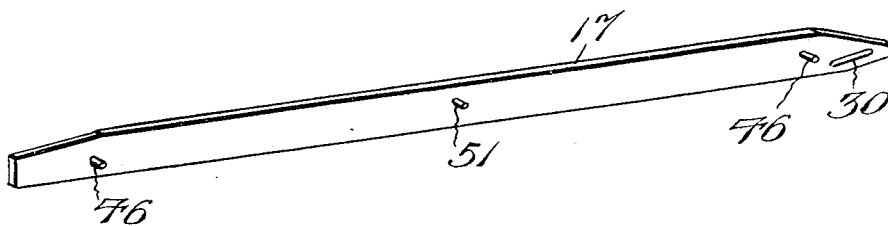


Fig. 7.

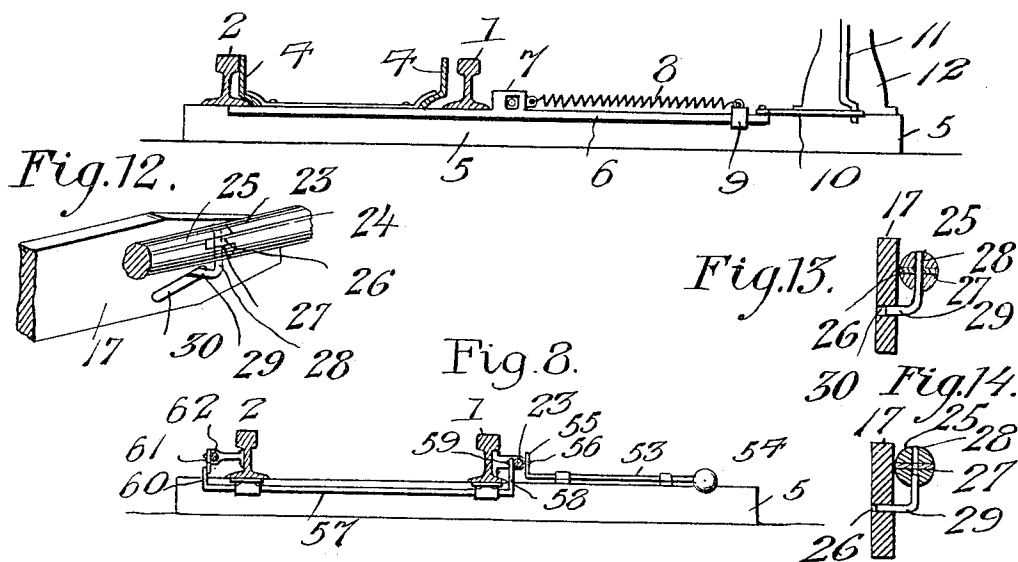


Fig. 8.

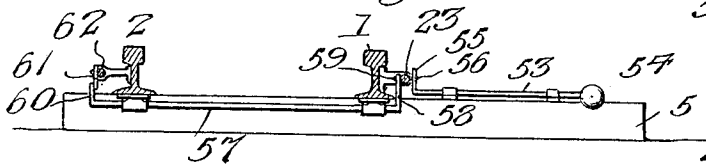


Fig. 9.

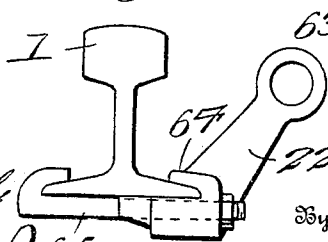
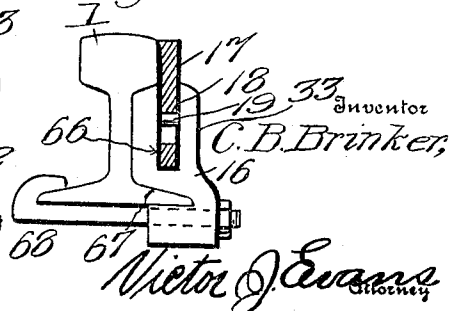


Fig. 10.



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RAILWAY-SWITCH.

No. 818,865.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed April 20, 1905. Serial No. 256,561.

To all whom it may concern:

Be it known that I, CHARLES B. BRINKER, a citizen of the United States, residing at West Lebanon, in the county of Warren and State of Indiana, have invented new and useful Improvements in Railway-Switches, of which the following is a specification.

This invention relates to railway-switches, and has for its objects to provide a comparatively simple inexpensive device of this character which may be readily applied for use, one wherein the switch will be normally maintained in position for keeping the main line open, one in which the switch is manually operated for closing the main line and opening the siding, and one wherein in the event of the switch being left in the latter position it will be automatically released and shifted to normal position through the medium of mechanism actuated by an approaching train.

Further objects of the invention are to provide a device of this character in which a train coming from the siding to the main line will automatically lock the switch against movement and at the same time uncouple the sections of the locking member, thus to render the latter temporarily inoperative, one wherein said sections will be automatically coupled after the train has passed wholly onto the main line, one wherein the sections of the locking member will be automatically uncoupled by a train entering the siding, and one in which the parts of the switch mechanism will when the switch is in normal position be wholly free from unnecessary wear and strains.

With these and other objects in view the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a top plan view of a portion of a railway-track having my invention applied thereto and showing the parts in normal position. Fig. 2 is a side elevation of the same. Fig. 3 is a view similar to Fig. 2, showing the switch mechanism in a different position. Fig. 4 is a detail perspective view of part of one of the rails and portions of the switch-operating mechanism. Fig. 5 is a detail perspective view of a portion of the connecting element or rod. Fig. 6 is a perspective view of the

depressible detector bar or rail. Fig. 7 is a cross-section taken on the line 7 7 of Fig. 1 and viewed in the direction of the arrow. Fig. 8 is a similar view taken on the line 8 8 of Fig. 1 looking in the direction of the arrow. Fig. 9 is a detail view of one of the bearings for the connecting-rod. Fig. 10 is a detail view of one of the bearings for the depressible bar or rail. Fig. 11 is a detail view of the coupling-pin. Fig. 12 is a detail perspective view of a portion of the detector-bar and locking-rod and showing the means for coupling the sections of the latter. Fig. 13 is a detail sectional view taken centrally through the coupling member and showing the same in coupling position. Fig. 14 is a view similar to Fig. 13, showing the coupling member in uncoupling position.

Referring to the drawings, it will be seen that the track comprises main-line rails 1 and 2, side rails 3, and switch-points 4, these parts, which are of the usual construction and material, being sustained by ties 5. The switch-points 4 are connected for simultaneous movement by a bridle-bar 6, extended transversely of the rails and projecting beyond the outer face of rail 1, adjacent which latter it is provided with a perforated or socketed lug 7, constituting a keeper with which is engaged one end of a spring 8, having its other end engaged with a fixed bracket 9, attached to the adjacent tie 5, said spring serving to maintain the switch-points in the normal position illustrated in Fig. 1, with the main line open and the siding closed, there being connected with the outer end of the bridle-bar 6, by means of a link 10, a semaphore-shaft 11, journaled at its lower end for rotation in a stand 12 and provided at its upper end with semaphore arms or blades 13, as usual. Connected rigidly with the shaft 11 for manually rotating the same is an arm 14, which is pivotally connected and adapted to swing downward for interlocking engagement with a recess or keeper 15, provided in the switch-stand, whereby the semaphore will be locked against movement when the siding is opened and the red or "danger" blades of the semaphore are displayed, it being understood that when the semaphore is rotated through the medium of the arm 14 the switch-points 4 will be shifted for closing the main line and opening the siding.

Sustained by bearings 16 at the outer face of the rail 1 is a vertically-movable and depressible detector bar or rail 17, having vertical openings or slots 18 to receive connecting-pins 19, entered through said bearings, there being disposed beneath said bar springs 20, designed to force the bar upward and against the action of which the latter is depressed, while the downward movement of the bar is limited, through the medium of a stop or abutment 21, carried by one of the underlying cross-ties 5, for a purpose which will more fully hereinafter appear.

Arranged at the outer face of the depressible bar 17 and sustained by bearings 22 is a longitudinally-movable locking member or rod 23, comprising a pair of sections 24 25, of which the rear section 24 is provided with a tongue or projection 26, designed to enter a slot or recess 27, provided in the rear end of the section 25, there being provided for connecting said sections a coupling member or pin 28, which enters suitable registering openings in the meeting ends of the sections 24 25 and has a horizontal inwardly-extended portion 29, adapted to seat in a downwardly and forwardly inclined slot or way 30, provided in the adjacent end of the bar 17 for a purpose which will hereinafter appear, while disposed upon the forward end of the rod 23 is a spring 31, which bears at one end against the adjacent bearing member 22 and at its other end against a collar 32, fixed on the rod, and serves to move the latter forwardly for entrance into and locking engagement with the socketed lug or keeper 7, as will be more fully hereinafter explained.

Pivoted, by means of a bearing 33, to the rail 1 is a bell-crank or elbow lever 34, having one of its arms pivotally connected, as at 35, with the rear end of the locking-rod 23 and its other end pivoted to a link 36, in turn pivoted upon an outwardly-projecting arm or journal 37, provided on the free end of a depressible track-lever 38, pivotally connected with the rail 1, there being disposed at a point in advance of and suitably remote from the bell-crank 34 a pair of links 39 40, having their meeting ends pivotally connected, the links 39 being pivoted to a block or head 41, fixed upon the rear section 24 of the rod 23, while the other link 40 is pivoted at a point adjacent its forward end upon a crank-arm or handle 42, in turn pivotally engaged with the rail 1, while beneath the track-lever 38 there is disposed a spring 43, tending to move the lever upward, with its upper edge projecting beyond the tread of the rail.

The section 25 has fixed thereon a pair of blocks or heads 44, disposed, respectively, adjacent the ends of the bar 17 and each provided with a guide opening or way 45, designed to receive one of a pair of connecting members or pins 46, projecting horizontally outward from the adjacent face of the bar,

the opening being of the form illustrated in Fig. 5 and having a horizontal lower wall and a downwardly and forwardly inclined upper wall, whereby the guide-opening will be of greater width at its rear than at its forward end to permit vertical movement or play of the adjacent pin 46 in said opening when at the rear end of the latter. There is also carried by the section 25, which is made in two parts, a member or head 47, pivotally connected at one end, as at 48, to one part of the section 25 and connected at its other end to the other part of said section by means of a link 49 and having formed therein a downwardly and forwardly inclined guide-opening or slot 50, designed to receive a pin 51, projecting from the face of the bar 17, said slot being terminated at its rear end in an enlargement or recess 52, which under certain conditions, as hereinafter described, may receive the pin 51 for locking the rod 23 against movement, it being observed in this connection that owing to the head 47 being pivotally connected within the rod-section it will have a certain amount of movement or play relative to the latter.

In practice the spring 8 normally maintains the switch-points 4 in shifted position for opening the main line and closing the siding, under which conditions the arm 14 will be entered into the slot 15 for locking the parts in such position, and the recessed lug or keeper 7 will be out of alinement with the adjacent end of the locking bar or member 23, thus maintaining the rod 23 in the position illustrated in Fig. 2, with the spring 31 slightly compressed and the pins 46 and 51 at the forward ends of their respective downwardly-inclined slots 45 and 52, whereby the bar 17 will be drawn downward against the action of springs 20 and with its upper edge flush with the tread of the rail 1, while at the same time the bell-crank lever 34 will be held in position for drawing the free end of the lever 38 downward against the action of its lifting-spring 43 to maintain its upper edge also flush with the tread of the rail, it being understood that under these conditions trains may pass over the main line without contacting with or in any wise affecting the lever 38 or bar 17, thus obviating undue movement of and the consequent wear and strains upon said parts. When it is desired to side-track a train from the main line, the arm 14 is released from the notch or keeper 15 and turned to the dotted-line position illustrated in Fig. 1, thereby rotating the semaphore to display its red or danger-signal blades and at the same time shifting the switch-points 4 for closing the main line and opening the siding, whereupon the bridle-bar 6 will be moved sufficiently to bring the lug or keeper 7 into register with the adjacent end of the locking member or rod 23, which latter will be moved under the influence of

spring 31 into engagement with said keeper for locking the switches and their operating mechanism against further or accidental movement, it being understood that the train to enter the siding is previously to throwing the switch brought to a standstill upon the main line, with the wheels of the engines or one of the cars at rest over the bar 17. As the rod 23 is moved forwardly to locking engagement through the medium of spring 31 the portion 29 of the coupling-pin 28 will travel downward in the slot or way 30, thus withdrawing the pin from engagement with the tongue 26 and uncoupling the rod-sections 24 and 25, while at the same time the lower edge of the bar 17 which rests upon the stop or abutment 21 contacts with the forward end of link 40, thus rocking the latter on its pivot 42 and causing it, through the medium of link 39, to move the section 24 backward and through the medium of the intermediate sections 34 and 36 draw the free end of lever 38 downward for maintaining the latter in its normal position with its upper edge flush with the tread of the rail. When the bar 17 is in depressed condition by a train waiting to enter the siding 3, the rod 23 will, as soon as the switches are shifted for opening the siding, be moved forward under the action of spring 31 for engagement with keeper 7, it being understood that under these conditions the pins 46 will travel along the lower horizontal walls of the slots 45, while the pin 51 will be permitted to travel through the slot 50, owing to the member 47 being pivotally connected in the rod, and thus having a certain amount of movement relative thereto, as heretofore explained. As the last car of the train passes off of the depressible bar 17 the latter will be moved upward under the influence of the springs 20, thereby relieving pressure on the forward end of link 40 and permitting a simultaneous upward movement of lever 38 under the influence of its spring 43, it being understood that as the lever moves upward the rear section 24 of the locking-rod will, owing to the movement of the bell-crank 34, be moved for seating the tongue 26 in its recess 27 and for engagement by the coupling-pin 28, which of course is moved upward with the bar 17, it being understood that the movements of the parts are so timed that the tongue 26 will enter the recess 27 prior to the coupling movement of the pin 28, which is never wholly withdrawn from engagement with the section 24 and is consequently maintained by the latter in proper position for movement to couple the sections. After the sections have been coupled the parts will occupy the position illustrated in Fig. 3, with the upper edges of the bar 17 and lever 38 projected slightly above the tread of the rail 1. With the parts in this position if the attendant fails to release the bridle-bar 6 and move the switch-

points 4 to normal position with the main line open and a train approaches the switch the lever 38 will be depressed by the first wheel coming in contact therewith, and will thus rock the bell-crank 34 on its pivot and draw the rod 23 rearwardly, thereby disengaging the forward end of the rod from the keeper 7 and permitting the spring 28 to automatically move the switch-points to normal position for closing the siding and opening the main line, attention being directed to the fact that as the rod 23 is moved rearward, owing to depression of lever 38, the pins 46 and 51 will be brought to a position at the forward lowermost ends of their respective openings 45 and 50, thereby drawing the bar 17 vertically downward to normal position with its upper edge flush with the tread of the rail, the lever 38 being at the same time maintained in depressed position, as illustrated in Fig. 2.

With the parts in the position illustrated in Fig. 3 if a train comes out of the siding onto the main line the bar 17 will be depressed, carrying with it the pin 28, as heretofore explained, for uncoupling the sections 24 and 25 of the rod and at the same time acting upon the link 40 for moving the section 24 rearwardly to depress the lever 38, the downward movement of the bar 17 being limited by the stop 21. With the bar 17 so depressed the pin 51 will seat in the enlargement or recess 52, thereby locking the rod 23 against movement and preventing accidental disengagement of the rod with the keeper 7. As the rear wheels of the last car move off of the bar 17 the latter will immediately rise under the influence of springs 20, as will also the lever 28, and the sections 24 and 25 will be automatically coupled, whereupon the rear wheels of the last car passing over the lever 38 will actuate the latter for withdrawing the rod 23 from engagement with the keeper 7 to permit the spring 8 to shift the switches to normal position with the main line open.

For manually moving the locking member or rod 23 to disengage it from the keeper I provide a pivoted member or lever 53, having at its outer end a weighted crank-arm 54 and at its inner end a normally vertical crank-arm 55, designed to contact with a pin or abutment 56 on the rod and move the latter to interlocking position when the lever 43 is swung in the proper direction.

Extended transversely of the track and journaled in suitable bearings beneath the rails is a rock-shaft 57, having at one end an upstanding crank-arm 58, designed for engagement with a pin or abutment 59 on the rod 23 and provided at its other end with a crank-arm 60, connected by a bell-crank lever 61 with a traction element or rod 62, which in turn is operatively connected with a track-lever corresponding to the lever 38 and disposed upon the other side of and suitably

remote from the switch, it being understood that the operation of the lever with which the rod 62 is connected is identical with that of the lever 38, as heretofore described. Under this arrangement provision is made for a train approaching the switch in a direction opposite to that above described automatically releasing the locking-rod 23 from the keeper 7 to permit the switches to move for opening the main line and closing the siding, it being understood that when the lever connected with the rod 62 is actuated for moving the latter in the direction indicated by the arrow in Fig. 1 the rock-shaft 57 will be rotated in the proper direction to cause its crank-arm 58 to act upon the pin 59, and thus move the rod 23 to releasing position.

As illustrated in Fig. 9, the bearings for sustaining the rod 23 are in the form of upwardly and outwardly extending arms provided at their outer ends with openings 63 to receive the rod and connected at their inner ends with a casting 64, designed to engage the base-flange of the rail at one side and to be secured to the rail-base by a clip-bolt 65, which engages at the other side of the base-flange, while the bearings 33 for the detector-rail consists, as illustrated in Fig. 10, of a casting designed to lie against the outer face of the rail 1 and provided with a vertically-opening recess 66, in which the bar 17 is arranged for vertical movement, the casting or bearing 33 being provided with a recess 67 to receive one edge of the base-flange of the rail and being attached to the latter by a clip-bolt 68, similar in form and operation to the clip-bolt 65.

It is apparent from the foregoing that I produce a simple inexpensive device wherein the switch will in the event of the siding being left open be automatically released by the approaching train and moved automatically to position for opening the main line and closing the siding, thus to insure the main line being always kept open, and one wherein a train in passing through the siding will, as before stated, uncouple the actuating-lever 38 from the remainder of the switch mechanism, thus to obviate the operation of the latter by a succeeding train. In attaining these ends it is to be understood that minor changes in the details herein set forth may be resorted to without departing from the spirit of the invention.

Having thus described my invention, what I claim is—

1. In a device of the class described, a movable switch, means for shifting the same, means, including a locking member and track-

lever, for automatically locking the switch in shifted position, said member and element being operatively connected, and means for automatically disconnecting said parts at predetermined intervals.

2. In a device of the class described, a movable switch, means for shifting the same, a member for locking the switch in shifted position, a device coupled to and operable by a passing vehicle for automatically actuating said member, and means for automatically uncoupling the device and member at predetermined intervals.

3. In a device of the class described, a movable switch, means for shifting the same, a movable locking-rod adapted to lock the switch in one position, a device operable by a passing train for actuating the rod, means for coupling the device to the rod, and means for automatically coupling or uncoupling said parts at predetermined intervals.

4. In a device of the class described, a movable switch, means for shifting the same, a switch-locking rod, a device designed to be coupled to, and automatically operable by a passing vehicle for actuating the rod, and an automatically-operable member for coupling or uncoupling the rod and device relatively at predetermined intervals.

5. In a device of the class described, a switch, means for shifting the same, a movable element comprising a pair of sections and adapted to lock the switch in shifted position, a member connected to, and operable by a passing vehicle for automatically actuating the element, a member for coupling the sections of the latter, and means for automatically moving the coupling member to coupling or uncoupling position.

6. In a device of the class described, a switch, means for shifting the same, an element for locking the switch in shifted position, a member automatically operable by a passing train, a coupling member designed to couple the member to the element for actuating the latter, an automatically-operated detector member operatively connected with and adapted for moving the coupling member to coupling or uncoupling position, and operative connections between the detector member and locking element for locking the latter against movement at predetermined intervals.

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

CHARLES B. BRINKER.

Witnesses:

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