

J. L. WOOLEY.
 AUTOMATIC RAILWAY SWITCH.
 APPLICATION FILED JULY 6, 1911.

1,016,867.

Patented Feb. 6, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

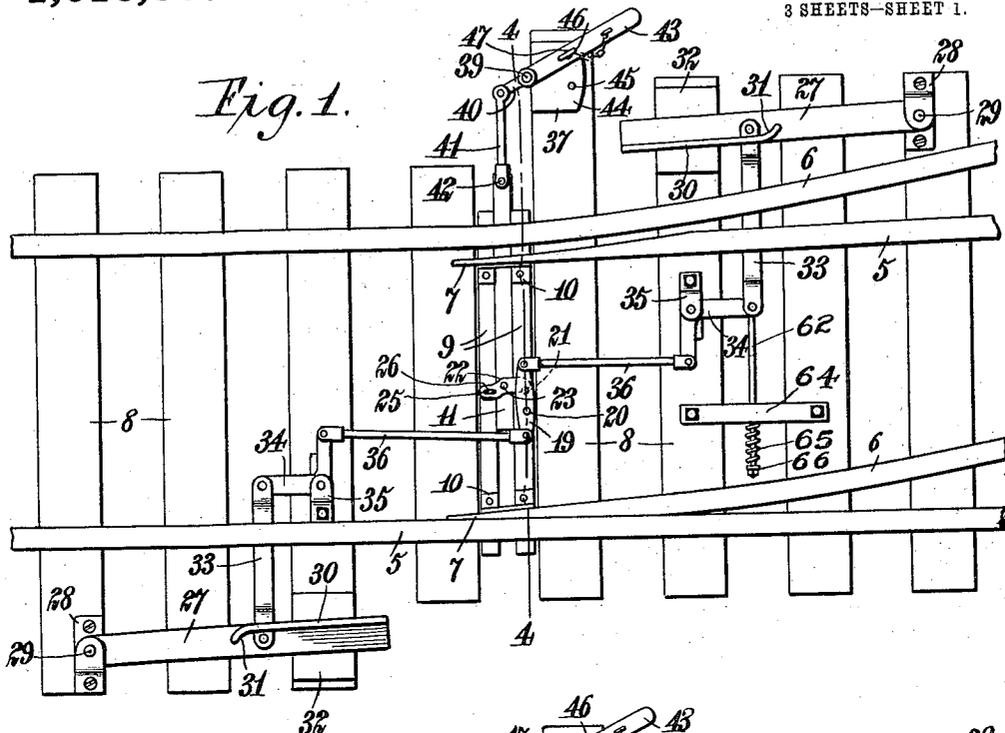
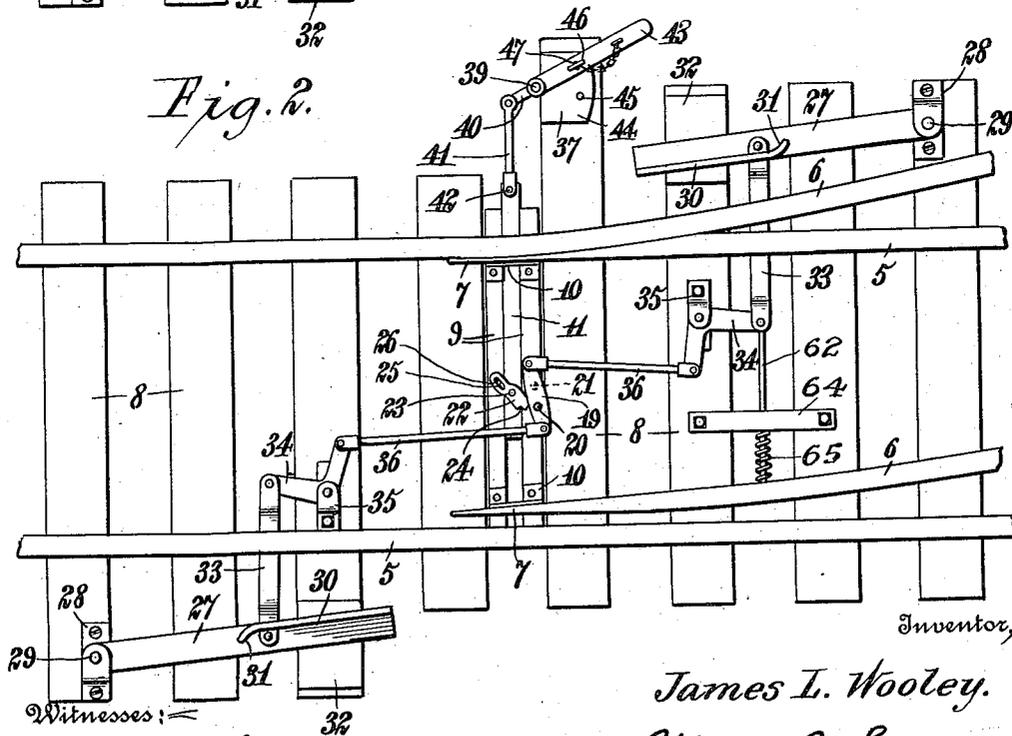


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

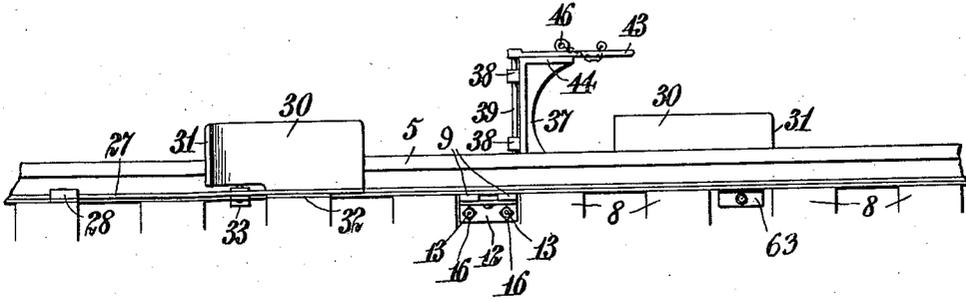


Fig. 4.

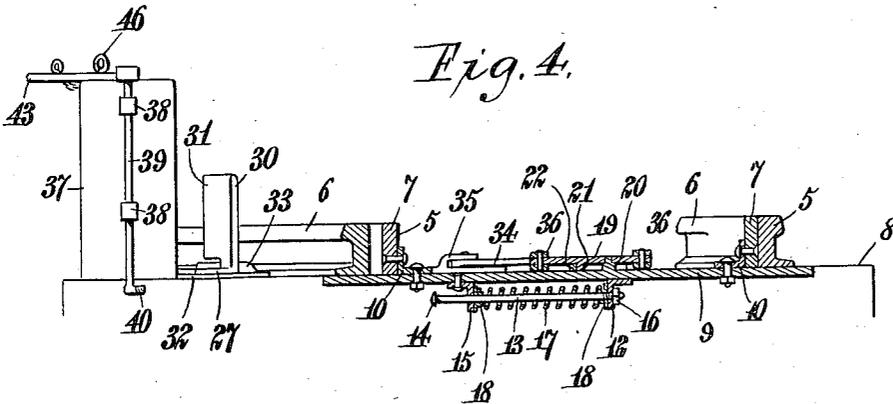
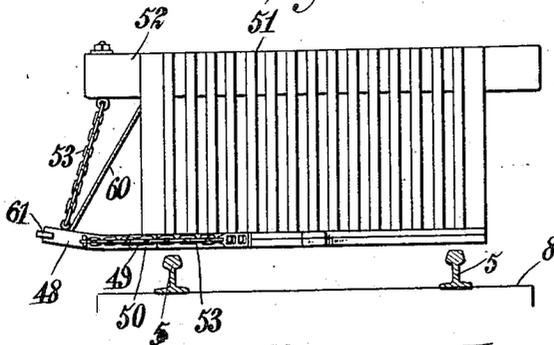


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

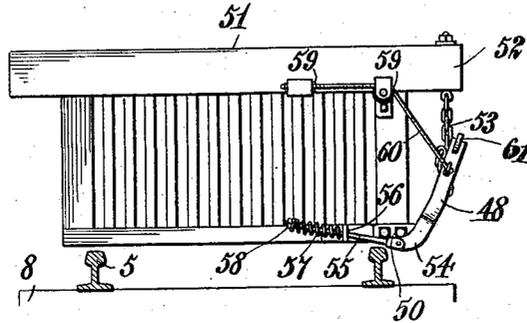
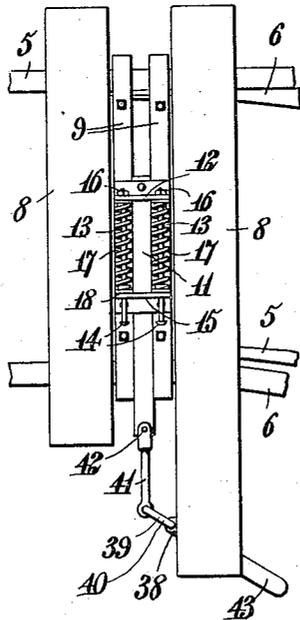


Fig. 7.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC RAILWAY-SWITCH.

1,016,867.

Specification of Letters Patent.

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Application filed July 6, 1911. Serial No. 637,058.

To all whom it may concern:

Be it known that I, JAMES L. WOOLEY, a citizen of the United States, residing at Shreveport, in the parish of Caddo and State of Louisiana, have invented new and useful Improvements in Automatic Railway-Switches, of which the following is a specification.

The invention relates to railway switches, and more particularly to the class of automatically operated railway switches.

The primary object of the invention is the provision of a switch in which the switch points, when open, may be automatically shifted to closed position by an approaching train, so as to prevent the same from entering a side track, thereby enabling the train to continue along the main track.

Another object of the invention is the provision of a switch in which the same will be automatically closed by a train passing over the main line, irrespective of the travel thereof, thus preventing derailment of the train at the switch, should the same be left open accidentally, the switch being capable of manual operation for the ordinary switching of trains from the main to the side track, or vice versa.

A further object of the invention is the provision of a railway switch which is simple in construction, reliable and efficient in operation, and inexpensive in manufacture.

With these and other objects in view, the invention consists in the construction, combination and arrangement of parts, as will be hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereunto appended.

In the drawings: Figure 1 is a plan view of a railway switch constructed in accordance with the invention, the same being shown in open position. Fig. 2 is a similar view, showing the switch in closed position. Fig. 3 is a side elevation thereof. Fig. 4 is a sectional view on the line 4-4 of Fig. 1. Fig. 5 is a front elevation of a pilot of a locomotive, showing the operating arm in operative position. Fig. 6 is a rear elevation of the pilot, showing the operating arm in raised position. Fig. 7 is a fragmentary bottom plan view of the shifting mechanism for the switch.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings by numerals, 5 designates the rails of the main track, 6 the rails of the branch or side track, and 7 the switch points or rails, all of which are of the ordinary well-known construction. The rails and switch points are supported upon spaced cross ties 8, the switch points being shifted from open to closed position, or vice versa, by means of automatic switch operating mechanism, presently described.

The switch operating mechanism comprises a pair of spaced parallel uniting bars 9, which have secured thereto clips 10, the same being secured to the switch points 7 near their free ends, so that the same will be moved in unison, either to open or closed position.

Arranged between the uniting bars 9 is a plunger bar 11, the same having fixed to its under face, near the inner end thereof, a winged plate 12, the same being disposed transversely of the uniting and plunger bars, beneath the same, and through which work spaced parallel bolt-like guide members 13, the same being formed with heads 14 engaged against a winged plate 15 fixed to the uniting bars 9, transversely thereof, and spaced from the winged plate 12, the bolt-like guide members being threaded at their opposite ends and carrying adjusting nuts 16, so as to regulate the throw of the plunger bar 11. Surrounding the guide members 13 are coiled expansion springs 17, the same having their bearings against washers 18, at opposite ends thereof, and carried by the guide members, between the winged plates 12 and 15, the washers being held in constant contact with the said winged plates by the said springs working between the same.

Connected medially with one of the uniting bars 9 is a rocking lever 19, the same being centrally pivoted upon a lug 20, rising from the said bar 9 and to one side of the lug 20, and fixed in the lever 19 is a depending keeper pin 21, with which is adapted to lock a locking dog or catch 22, the latter being connected to the plunger bar 11 by means of a pivot 23, near the inner end thereof, the dog or catch 22 being formed with a notch 24 at one end for receiving the said keeper pin, when the plunger bar has been pulled outwardly to one side of the main track, while the opposite end of the said dog or catch is provided with an elongated guide slot 25, into which projects a

guide pin or lug 26, fixed in and rising from the other uniting bar 9, so that when the said plunger bar 11 is moved in one direction between the said uniting bars, the guide
 5 pin 26 engaging in the slot 25 will cause the turning of the dog or catch 22 into position for locking engagement with the keeper pin 21 on the locking lever 19, thereby holding
 10 the said plunger bar 11 in such position against the resistance of the springs, and thus sustaining the trip devices set, as will be presently described.

Located at one side of the main track, and at the opposite side of the side track,
 15 and on opposite sides of and spaced from the switch points 7, are switch operating arms 27, each being connected at one end in bearings 28 by means of pivots 29, the bearings being fixed to adjacent cross ties 8, and
 20 these arms 27 have rising therefrom vertical contact plates 30, formed with outwardly curved ends 31. The free ends of the arms 27 slidably engage or contact with wearing plates 32 fixed to the upper faces of adjacent
 25 cross ties 8, and pivotally connected to these operating arms, medially thereof, are links 33, the same being also pivotally connected to the long arms of bell-crank levers 34, which are pivoted in brackets 35 fixed
 30 upon the upper faces of adjacent cross ties 8, between the rails 5 of the main track, the short arms of the bell-crank levers 34 being pivotally connected to the pull rods 36 which are also pivotally connected to opposite ends
 35 of the rocking lever 19, so that when the trip levers are actuated and the switch points are in open locked position, the rocking lever 19 will be moved for releasing the dog or catch 22, and through the medium
 40 of the springs 17, the said switch points 7 will be moved automatically to closed position, the trip levers being actuated by means of operating mechanism mounted upon the pilot of a locomotive, as will be
 45 presently described.

Mounted upon one of the cross ties, adjacent to the plunger bar 11, outside of the main track, is a switch stand 37, the same being provided with vertical bearings 38, in
 50 which is journaled a crank shaft 39, to the crank 40 of which is pivotally connected one end of a pitman rod 41, the same being also pivotally connected, as at 42, to the outer end of the plunger bar 11. Fixed to the
 55 upper end of the crank shaft 39 is a handle bar 43, the latter being adapted for movement across the head 44 of the switch stand 37, the said head being provided with spaced openings 45, either of which is adapted to
 60 receive a locking key 46 adapted to be passed through a suitable opening 47 formed in the handle bar 43, thereby locking the said handle bar in adjusted position to sustain the switch points when thrown in either open
 65 or closed positions.

The operating mechanism for the trip arms comprises an operating arm 48, the inner end of which is pivoted, as at 49, in a bearing 50 fixed to one side of a pilot 51 of a locomotive (not shown). Connected with
 70 the arm 48, near its outer end, and to the cross bar 52 of the said pilot 51, and one side of the latter, are chains 53 which sustain the said arm 48 in substantially horizontal position when lowered, the arm, when in
 75 this position, being adapted to extend outwardly from one side of the locomotive for engagement with either of the contact plates 30 on the trip arms 27 for operating the same.

Fixed near the inner end of the operating arm 48 is an offset extension piece 54, to which is pivotally connected a rod 55, the latter working through a guide ear fixed to the rear end of the pilot 51, and surrounding
 80 this rod 55 is a coiled expansion spring 57, one end of which works against the ear 56, and its opposite end against an adjustable nut 58 threaded on the rod 55, the spring 57 being designed to move the operating arm
 85 48 to lowered position into the path of the contact plates 30 of the trip arms 27 for actuating the latter, when a train is approaching the switch, so that should the latter be in open position, the same will be
 90 automatically moved to closed position.

Trained over guide pulleys 59, suitably mounted upon the rear end of the pilot 51, is a pulley cable 60, the same being connected at one end to the operating arm 48,
 100 and its end is extended into the cab of the locomotive, so that an engineer may manually raise the arm 48, so that the same will clear the contact plates 30 on the trip arms 27, when the switch is in closed position.

In the automatic operation of the switch, assuming that the switch points have been manually moved to open position for connecting the side or branch track with the main track, and it is desired that a train
 110 on the latter continue along the same, past the switch, it being understood of course that when the switch is moved to open position, the plunger rod is shifted in a direction, so that the locking dog or catch 22
 115 will engage the keeper pin 21, thereby locking the plunger rod with the uniting bars connecting the switch points, and when the train approaches the switch, the engineer or other attendant within the cab of the
 120 locomotive slackens the cable 60, thus permitting the operating arm 48 to be lowered into the path of the contact plates 30, whereupon the connections between it and the rocking lever 19 will simultaneously move
 125 the latter, thereby freeing the locking dog or catch 22, when the plunger rod will become freed from locked connection with the uniting bars 9, and through the medium of the springs 17, the switch points will be
 130

moved to closed position, thus allowing the train to pass through the switch and continue on the main track. The operating arm 48 has journaled at its outer end the friction roller 61, which is adapted to contact with the contact plate 30 on the trip arm 37 for causing the latter to be shifted.

By reason of the fact that the trip arms 27 are disposed at opposite sides of the switch, they may be automatically operated, irrespective of the direction of travel of the train on the main line.

Connected to the pivot, connecting the short arm of one of the bell-crank levers 34 with the adjacent link 33, is a rod 62, the latter working through a guide ear 63 formed on and depending from a stationary plate 64, the rod 62 carrying a coiled expansion spring 65, surrounding the same, one end of which is engaged with the ear 63, and its opposite end with the nut 66 threaded on the outer end of the rod, the spring being designed to reset, or in other words, to move the trip arms to normal position, after being actuated by the operating arm 48 carried by the pilot 51 of the locomotive.

From the foregoing, taken in connection with the accompanying drawings, it is thought that the construction and operation of the invention will be readily understood, without requiring a more extended explanation.

What is claimed is:

1. In a railway switch, the combination with main and siding rails of movable switch bars arranged at the points of intersection of the siding rails with the main rails, spaced uniting bars connecting the switch bars, a plunger element movably mounted between the uniting bars, expansion means coöperative with the plunger ele-

ment and the uniting bars for moving the same in reverse directions to each other, locking means for holding the plunger element and uniting bars against independent movements, manually operated means connected with the plunger element for opening and closing the switch bars, means engaging the manually operated means to lock the same for holding the switch bars open, and means operated upon by a moving car for releasing the plunger locking means, whereby the switch bars will automatically swing to closed position.

2. In a railway switch, the combination with main and siding rails, of movable switch bars arranged at the points of intersection of the siding rails with the main rails, spaced uniting bars connecting the switch bars, a plunger element movably mounted between the uniting bars, expansion means coöperative with the plunger element and the uniting bars for moving the same in reverse directions to each other, locking means for holding the plunger element and uniting bars against independent movements, manually operated means connected with the plunger element for opening and closing the switch bars, means engaging the manually operated means to lock the same for holding the switch bars open, and means located at opposite sides of the switch bars and operated upon by a moving car for releasing the plunger locking means, whereby the switch bars will automatically swing to closed position.

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

JAMES LEE WOOLEY.

Witnesses:

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