

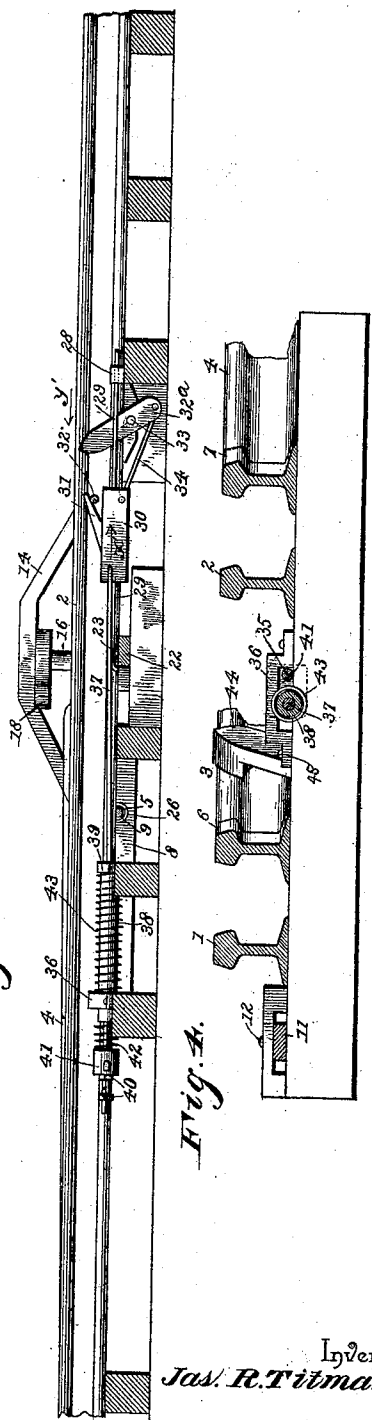
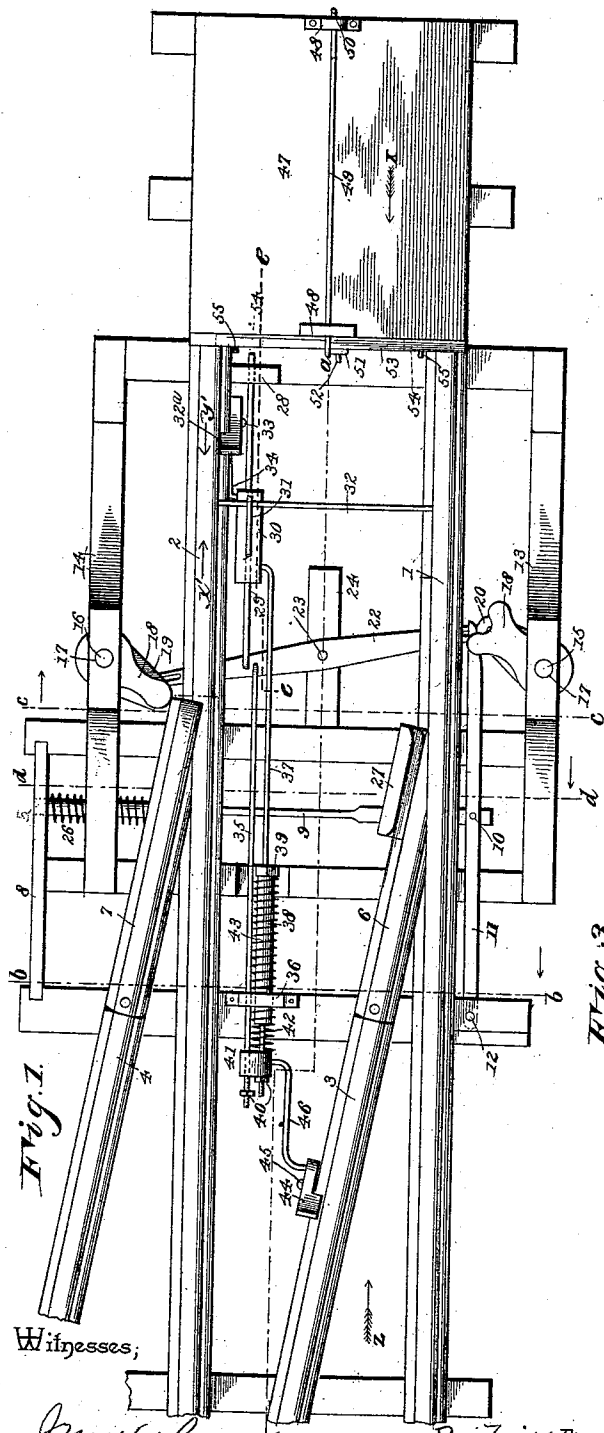
(No Model.)

4 Sheets—Sheet 1.

J. R. TITMAN. RAILROAD SWITCH.

No. 496,624.

Patented May 2, 1893.



Witnesses;
J. M. Whitcomb.
M. S. Duval.

By His Attorneys,

Chas. Snow & Co.

Inventor
Jas. R. Titman.

(No Model.)

4 Sheets—Sheet 2.

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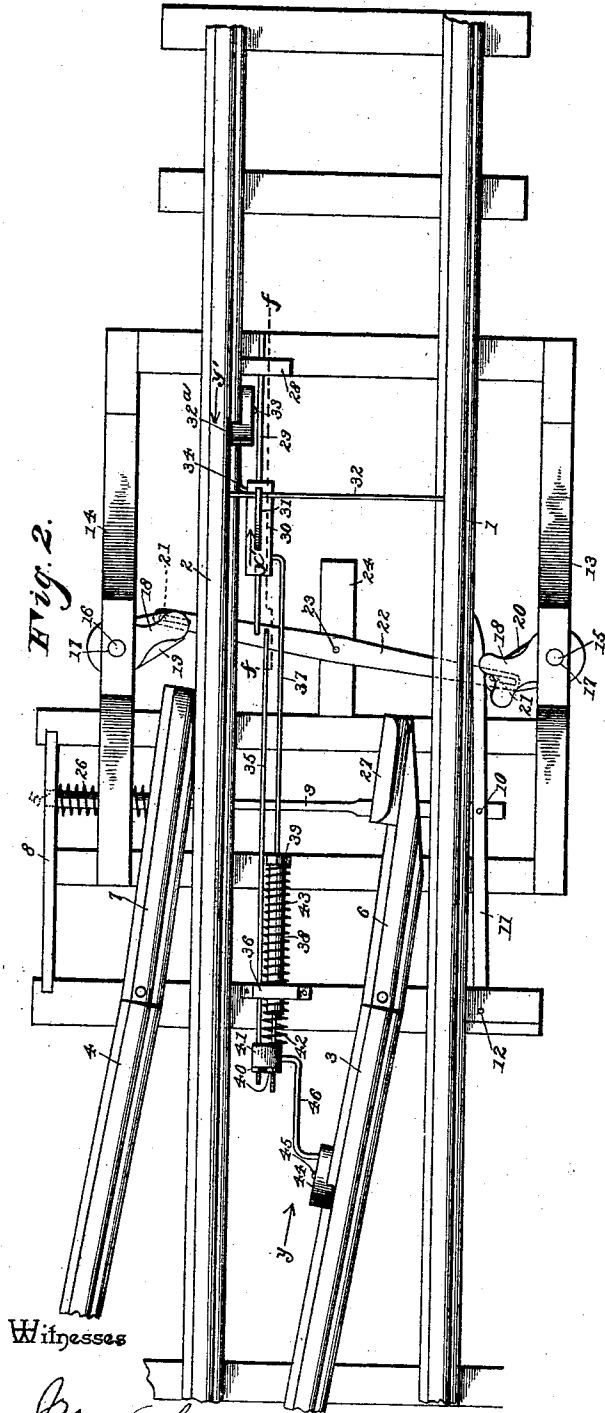


Fig. 2.

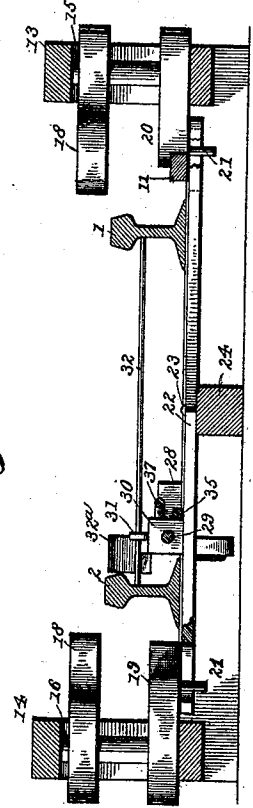


Fig. 5.

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4 Sheets—Sheet 3

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RAILROAD SWITCH.

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Fig. 6.

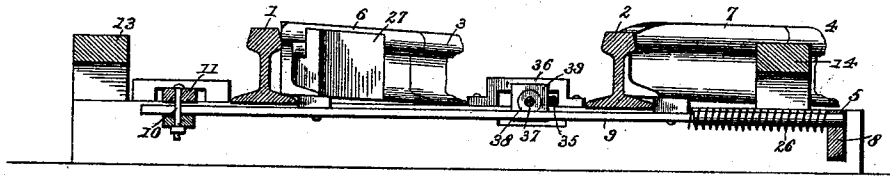


Fig. 7.

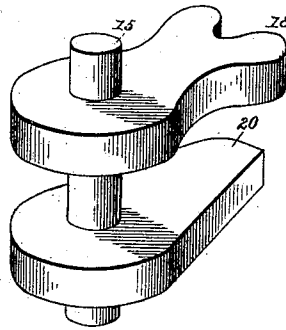
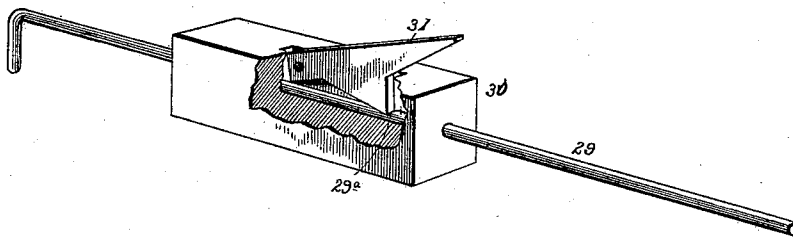


Fig. 8.



Witnesses;

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(No Model.)

4 Sheets—Sheet 4.

J. R. TITMAN.
RAILROAD SWITCH.

No. 496,624.

Patented May 2, 1893.

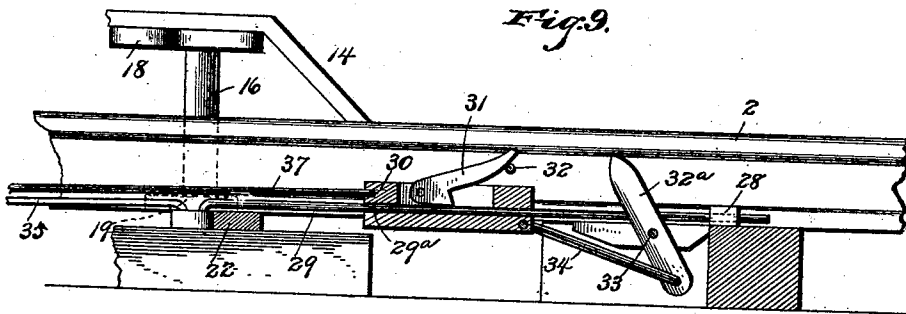


Fig. 9.

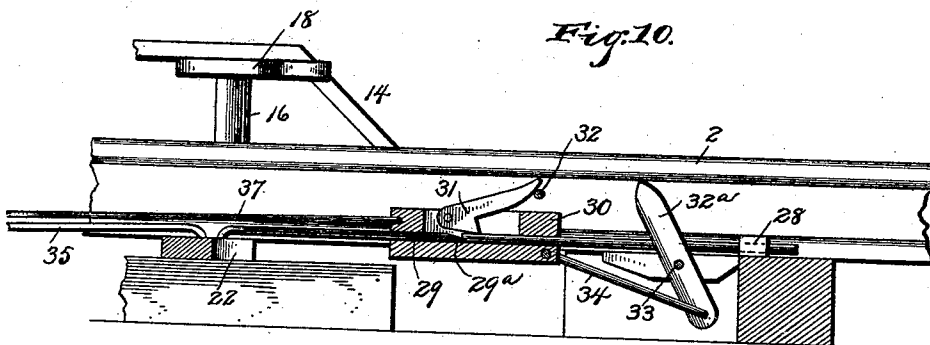


Fig. 10.

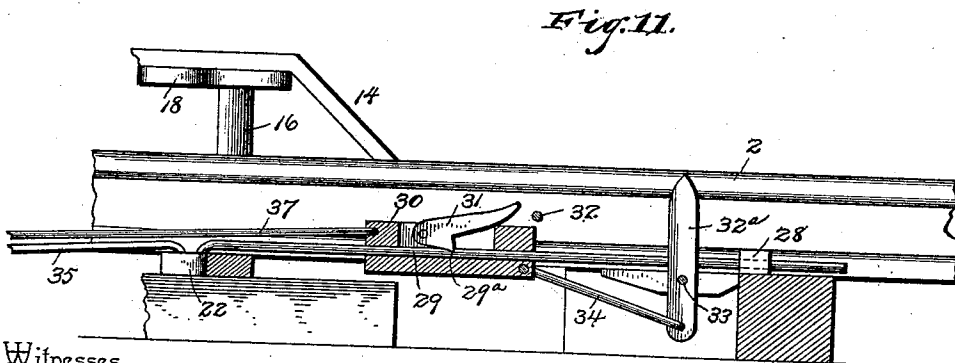


Fig. 11.

Witnesses

R. S. Ober
D. E. Ray

Inventor

Jas. R. Titman.

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Chas. H. Co.

UNITED STATES PATENT OFFICE.

JAMES R. TITMAN, OF LOWELL, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO CALEB M. NOLEN, OF KING'S MOUNTAIN, AND HARVEY F. FORBES, OF CROWDER'S CREEK, NORTH CAROLINA.

RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 496,624, dated May 2, 1893.

Application filed April 15, 1891. Serial No. 389,033. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. TITMAN, a citizen of the United States, residing at Lowell, in the county of Gaston and State of North Carolina, have invented a new and useful Railroad-Switch, of which the following is a specification.

This invention relates to railroad switches, and more particularly to that class of which the switches are operated automatically or by the rolling stock.

The objects of the invention are to construct a switch of this class which shall possess superior advantages in point of simplicity, ease of operation, certainty of action, and general efficiency.

With the above and other objects in view, the invention consists in certain features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawings: Figure 1 is a plan view of a switch constructed in accordance with my invention, the switch being shown open. Fig. 2 is a similar view, the switch being shown closed. Fig. 3 is a longitudinal sectional view on line *a-a* of Fig. 1. Fig. 4 is a transverse sectional view on line *b-b* of Fig. 1. Fig. 5 is a transverse sectional view on line *c-c* of Fig. 1. Fig. 6 is a transverse sectional view on line *d-d* of Fig. 1. Fig. 7 is a detail in perspective of one of the switch-stands. Fig. 8 is a similar view of the sliding block, partly broken away, its supporting rod and locking pawl. Fig. 9 is a partial longitudinal sectional view, enlarged, on line *e-e* of Fig. 1. Fig. 10 is a partial longitudinal sectional view, enlarged, on line *f-f* of Fig. 2. Fig. 11 is a partial longitudinal sectional view, enlarged, on line *e-e* of Fig. 1, with the sliding block drawn back, the tread 32^a in its vertical position, and the pawl in engagement with the notch in the supporting rod, as when the tread 44 has been operated.

Like numerals and letters of reference indicate like parts in all the figures of the drawings.

1 and 2 designate, respectively, the outer and inner unbroken main-line rails, and 3 and 4 designate, respectively, the inner and outer siding rails, which are arranged in the usual

manner upon the ties. The siding rails terminate at a suitable distance from the main-line rails, diverge therefrom in the usual manner, and at their inner terminals are pivotally mounted an inner and outer switch-rail 6 and 7.

A bar 8 is let into the inner edges of a pair of cross-ties located adjacent to the switch-rails, and in the same is formed a perforation or bearing 5, and a rod 9 having an outer rounded end is mounted loosely in the perforation, is connected to the two switch-rails 6 and 7, passes under the two main-line rails 1 and 2, and at its opposite end and side of the track is pivoted, as at 10, to a switch-lever 11, which latter is pivoted, as at 12, at one end to a convenient tie.

In suitable switch-frames 13 and 14, located at the outer and inner sides of the main line, are journaled the masts 15 and 16 of the switch-stands. These masts are mounted for rotation in bearings 17, provided for the purpose in the frames, and each is provided with a mast-arm 18 at its upper end. The mast 16 carries a lever 19 at its lower end, while the mast 15 carries a cam-lever 20 at its lower end, the levers 19 and 20 being in line with the mast-arms 18 of their respective masts. The levers 19 and 20 have pins 21 depending from their under sides, and are loosely connected at those points by means of a vibrating or oscillating lever 22, pivoted at its center, as at 23, to a block 24, located between the rails of the main line and slotted at the outer ends for the reception of the pins 21. The lever 20, as before stated, is a cam-lever, and against the face or cam of the same the free end of the switch-lever 11 rests, and is pressed by means of a stout coiled spring 26, encircling the cylindrical portion of the switch-bar 9 between its bearing 5 and its connection with the outer switch-rail 7, whereby the switch-rails are held in their open position by the spring 26 and are locked in their closed position by the cam 20, and are automatically thrown to their open position by said spring when the cam is turned to the position shown in Fig. 1.

The switch-rail 6 is chamfered upon its outer side to lie close to the inner side of the

outer main rail, and has its head slightly raised above the head of said main rail, and at the side of said switch-rail is located a guard-rail 27. The outer switch-rail 7 has its head undercut to overlap the head of the main rail 2, and the web of said switch-rail is also slightly chamfered to lie close to said rail.

A bearing block 28 is located between the rails 1 and 2 in advance of the lever 22, and a rod 29 is connected to the lever 22 and has its opposite end passed loosely through the block. The rod is notched or shouldered at its center, as shown at 29^a, and a block 30, having a gravity-pawl 31 pivoted thereto, receives the rod and is adapted to slide thereon. The pawl 31 has an extended upper end and is designed to ride over a liberating-rod 32, connecting the two rails 1 and 2, when the block 30 is moved toward the rod. A tread 32^a is pivoted, as at 33, to the inner rail 2 of the main line, and a link or connecting-rod 34 connects the front end of the sliding block 30 with the lower end of the tread.

A rod 35 is connected at its front end to the lever 22, as shown, and at its rear end passes loosely through an opening in a keeper 36, secured to one of the ties in rear of the switch-rails. A second rod 37 is connected to the block 30, and has its rear end also passed through the keeper 36. At each side of the keeper extends a sleeve 38, which is mounted upon the rod 37 and provided at its front end with a head 39. The rear ends of the rods 37 and 35 are each provided with a stop-nut 40, and said rods are connected by a sleeve 41. A coiled spring 42 is interposed between the keeper 36 and sleeve 41, and a similar spring 43 is interposed between the head 39 and the opposite side of the keeper 36, each of said springs being coiled upon the sleeve 38. A tread 44 is pivoted, as at 45, to the inner side of the inner siding rail, and the same is connected at its lower end to the sleeve 41 by means of a link 46.

47 designates what may be the front of a locomotive, and in opposite bearings 48 thereof is located a shaft 49, said shaft terminating at its rear end in a crank-lever 50, extending into the cab of the engine and at its front end in a depending slotted crank 51. The slotted crank 51 has passed therethrough a pin 52, extending from the front face of a laterally-sliding bar 53, which is slotted, as at 54, at each side of its crank and receives supporting-pins 55, extending from the front end of the locomotive.

The operation of my improved switch is as follows: With the parts in the position shown in Fig. 1, a train approaching the switch in the direction indicated by the arrow Z, upon the main track, will, by reason of the wheels forcing themselves between the main track rails and the switch rails, press the latter out of contact with the main rails and deflect them sufficiently to allow the flanges of the wheels

to pass, the switch rails immediately resuming their former positions after the train has passed. With the parts in the position shown in Fig. 1, a train approaching the switch from the siding track in the direction indicated by said arrow Z, will pass to the main track without altering any of the members of the switch, but the wheels of the train, in passing over the tread 44, will move the upper end thereof in the direction of the movement of the train, thereby drawing the rod 37 in the opposite direction, and, as said rod is connected to the block 30, the latter will be moved in the direction indicated by the dart y' , thus allowing the pawl 31, which is normally held elevated by means of the rod 32, so that its nose is out of engagement with the notch in the rod 29, to fall and engage said notch, thereby holding the said block in said retracted position, and maintaining the tread 32^a in its vertical or elevated position. As the train leaves the siding track and passes along the main track, its wheels will depress or deflect the tread 32^a in the opposite direction to that indicated by the dart y' , thereby sliding the block 30, at each engagement, in the opposite direction to that indicated by the dart x' , but without affecting the position of any of the members of the switch, owing to the fact that said block is capable of free sliding movement in this direction, independent of the rod 29. Thus, any trains approaching the switch, whether from the siding or along the main track, in the direction of the arrow Z, will pass freely over the tread 32^a without altering the relative positions of the members of the switch. If, however, a train approaches the switch in the direction indicated by the arrow X, the first wheel thereof will engage the tread 32^a and, moving its upper end in the direction indicated by the dart y' , will move the block 30 in the direction indicated by the dart x' , and as the pawl 31 is in engagement with the notch in the rod 29, said rod will be moved in the same direction and will turn the lever 22 to the position shown in Fig. 2, thus closing the switch.

The particular function of the sliding block and pawl, the rod 29, and the tread 32^a, is as follows: Assuming that the parts are in the position shown in Fig. 1, in which the switch is open, a train approaching along the main track in the direction indicated by the arrow Z, is to be divided, a portion being side-tracked while the balance is to continue to a distant destination. The portion of the train which is to continue is left upon the main track, just before reaching the switch, and the other portion, which is still attached to the engine, and one or more cars of which are to be side-tracked, is run beyond the switch, the rails of which yield freely as above described, to allow the flanges of the wheels to pass. After having passed the switch-rails, the latter, as above described, resume their former positions, as shown in Fig. 1, thereby

allowing the train to be backed upon the siding in the ordinary way. After disconnecting those cars which are to be left upon the siding, the train runs forward out of the siding and in its passage, it operates the tread 44, thus drawing the block 30 backward and causing the pawl to engage the notch in the rod 29, and elevating the tread 32^a to its vertical position. This portion of the train, after leaving the switch, runs beyond the tread 32^a, which still retains its upright position. The train is now backed toward the switch and in its passage the upper end of the tread 32^a is engaged and moved in the direction of the dart y' , thus drawing the rod 29 in the direction of the dart x' and swinging the lever 22 to the position shown in Fig. 2, thereby closing the switch and allowing the train to back upon the main track to connect with that portion of the train which had been left thereupon previous to side-tracking the intermediate cars, as above described. Thus a train in leaving the siding track invariably elevates the tread 32^a to its operative position, and if backed immediately over the said tread, the switch will be closed to allow the train to pass along the main track, and therefore if a train leaves the siding track and continues in the direction of the dart Z, upon the main track, thereby leaving the switch open, another train, in the opposite direction, will invariably close the switch by engagement with the upright tread 32^a.

Trains approaching the switch from the direction indicated by the dart X may either pass along the main track or enter the siding, as desired, irrespective of the previous position of the parts of the switch by the extension to the right or to the left of the switch-bar 53. With the parts in the position shown in Fig. 1, if it is desired to continue upon the main track, said switch-bar is extended to the left to engage the arm upon the mast 15; and with the parts in the position shown in Fig. 2, if it is desired to enter the siding, said switch-bar 53 is extended to the right to engage the arm upon the mast 16.

In connection with the above description, with regard to the automatic adjustment of the switch-rails by means of the treads 44 and 32^a, it may be said that if a train approaching in the direction of the dart X is to be side-tracked temporarily, in order to allow a following train to pass upon the main track, its switch-bar 53 is extended to the right to engage the arm upon the mast 16, thereby opening the switch and allowing it to enter the same. The following train extends its switch-bar to the left to engage the arm upon the mast 15, which closes the switch and allows the train to continue upon the main track. The side-tracked train now backs out of the siding, and in so doing operates the tread 44, and in the manner above described closes the switch and sets the tread 32^a. This train is

backed until it passes the tread 32^a, when it is run forward to cause one of its wheels to operate the tread 32^a, which, as above described, again closes the switch and allows the train to continue upon the main track.

The bar 53 is preferably carried upon the front end of the engine, and is provided with such operating means as to enable it to be extended either to the right or to the left by the engineer or fireman to adjust the switch. Such a switch-bar 53 may also be carried upon the rear end of the rear car of the train, whereby a train in leaving the siding may, by the lateral extension of such bar, close the switch without depending upon the tread 32^a.

The normal position of the tread 32^a is shown in Fig. 9, in which it is out of reach of the flanges of the wheels upon trains passing in either direction. The trip-rod 32 is designed to elevate the free end of the pawl, when the block 30 has been advanced sufficiently in the direction indicated by the dart x' to dispose the members of the switch as shown in Fig. 2, and after the disengagement of the pawl with the notch in the rod 29, said rod is free to move through the block 30, as necessitated by the adjustment of the switch through the operation of the rotary masts. In other words, it is designed to provide means whereby the switch may be set in either position by means of the switch-bar carried by the engine, such adjustment being independent of the automatic devices comprising the treads 44 and 32^a, the notched rod 29, the sliding block, pawl, &c., and furthermore, to provide means for automatically closing the switch when the latter has been left open by a train leaving the siding to enable said train, or a train in the opposite direction, to pass freely along the main track without the manual adjustment of the switch. This automatic mechanism is further designed to facilitate the switching of cars and trains in making up freights, &c.

Having described my invention, what I claim is—

1. In a railroad switch, the combination with the main line rails, and the siding rails together with the switch rails, of the connecting bar for the latter, a bar having a bearing arranged adjacent to the outer switch rail, and receiving the connecting bar of the switch rails, and a spring coiled upon the connecting bar and interposed between the bearing bar and the outer switch rail for closing the latter, substantially as specified.

2. In a railroad switch, the combination with the main line rails, the siding rails, and pivoted switch rails, of a bar connecting the switch rails, a spring for normally closing said rails, a pivoted switch lever loosely connected with the bar, a switch stand comprising an oscillating mast, a cam located at the lower end of the mast for operating against the switch lever, and an arm located at the upper end of the mast and adapted to be struck by

a projection on a car, substantially as specified.

3. In a railroad switch, the combination with the main line rails, the siding rails and the switch rails pivoted to the ends of the siding rails, of the bar connecting the switch rails, a pivoted switch lever connected at an intermediate point to the bar, a switch stand having a rotatable mast carrying a cam for operating the same and an arm to be struck by the passing train, a second opposite switch stand carrying an arm also adapted to be struck and an intermediate lever connecting the two stands and transmitting motion from one to the other, substantially as specified.

4. In a railroad switch, the combination with the main line rails, the pivoted switch rails, the bar connecting the same, the spring for normally closing the switch rails against the main line rails, and a pivoted switch lever connected to the bar, of a lever located between the tracks of the main line, opposite oscillating switch masts, a lever located at the lower end of one mast and pivotally connected to the intermediate lever and provided at its upper end with an arm adapted to be struck by a projection, on a moving train, and an opposite mast, a cam lever located at the lower end of the same and connected to the intermediate lever and terminating against the switch lever, and an arm located at the upper end of the mast and adapted to be struck by a projection from a moving train, substantially as specified.

5. The combination with the main line rails, and the siding rails, of an inner pivoted switch-rail beveled to a point at its free end, an outer switch-rail, undercut at its free end whereby its head may overlap that of the main rail, the bar connecting the switch-rails, the spring to hold the free ends of the switch-rails in contact with the main line rails, and means for operating the switch-bar, having a switch-lever connected to said bar, and a switch-mast carrying a cam to engage the switch-lever, substantially as specified.

6. In a railroad switch, the combination with the main line rails, the siding rails, and the pivoted switch-rails, of the bar connecting the switch rails, the spring for operating said bar to close the switch, the pivoted switch-lever connected to said bar, a switch-mast carrying a cam to operate said switch-lever, an opposite switch-mast both of said masts being provided with arms to be engaged by passing trains, a connecting-lever between said masts whereby they may be mutually operated, and a pivoted tread arranged in proximity to one of the siding-rails, and connected with said connecting lever by a rod having a stop, a sliding sleeve carried by said rod, and a link between the sleeve and the tread, substantially as specified.

7. In a railroad switch, the combination with the main line rails, the siding rails and piv-

oted switch rails, of the pivoted switch connecting bar, a switch lever pivoted at one end and between its ends pivoted to the bar, opposite switch stands comprising rotatable masts, levers extending from the masts, arms extending from the masts and adapted to be struck by devices upon a moving train, a pivoted intermediate lever pivoted at its ends to the levers of the masts, one of said mast levers serving to actuate the switch lever, a tread, a rod connected to the pivoted lever and terminating at its opposite end in a stop, a sleeve mounted for sliding on the rod and a link connecting the sleeve and tread, which latter is mounted on the siding rails, substantially as specified.

8. In a railroad switch, the combination with the main line rails, the siding rails, the pivoted switch rails, the connecting bar, the spring for closing the switch rails, the pivoted switch lever connected to the bar, the opposite oscillating masts, the arms at the upper ends of the masts the levers at the lower ends of the same, the intermediate oscillating lever connecting said levers, one of which operates the switch lever, of the rod 29 connected to the oscillating lever at one side of its pivot, and mounted for reciprocation in the bearing 28, and furthermore provided with a notch, the liberating bar 32 extending at an angle to the bar 29, a block mounted for sliding on the latter and having a pawl for engaging the notch thereof, which pawl is adapted to ride over the liberating bar, a tread pivoted to one of the main rails, a link connecting the same with the block, a keeper located at the opposite side of the oscillating lever, a rod connected to said lever and mounted for reciprocation in the keeper and terminating in its rear end in a stop, a rod 37 connected to the block, also passing through the keeper and terminating in a stop, a sleeve mounted on the rod 37 and terminating at its front end in a stop, a spring interposed between said stop and the keeper of the rod, a sleeve mounted upon the two rods located in the keeper, a spring interposed between the keeper and the sleeve and mounted upon the rod 37, a tread pivoted to one of the rails of the siding and a link connecting the tread with the sleeve of the two rods, substantially as specified.

9. The combination with the main rails, siding rails, and switch-rails, of the spring-actuated connecting-bar 9, the lever 11, the switch-masts 15 and 16, carrying mast-arms, the mast 15 carrying also a cam to operate lever 11, the connecting lever 28, connected at its ends to said masts, the tread 32^a, the guide-rod 29 having a notch, the transverse liberating-rod, the sliding-block carrying a pawl, and the spring-actuated rods 35 and 37 connected respectively to the connecting-lever and the sliding block, substantially as specified.

10. The combination with the main rails, the siding rails, and the switch-rails, of the

bar 9, the switch-lever 11, the opposite switch-
masts having mast-arms adapted to be en-
gaged by passing trains, a cam carried by one
of the masts, the connecting-lever 22, the
5 guide-rod 29, sliding block 30, pawl 31, liber-
ating-rod 32, the rod 37 connected to said
block, the springs carried by said rod, the rod
35 connected to lever 22, the sleeve 41 con-
nected to a tread arranged in proximity to a

siding rail, and stops on rods 37 and 35 to en- 10
gage said sleeves, substantially as specified.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
presence of two witnesses.

JAMES R. TITMAN.

Witnesses:

R. S. SUGG,

R. H. GARRETT.