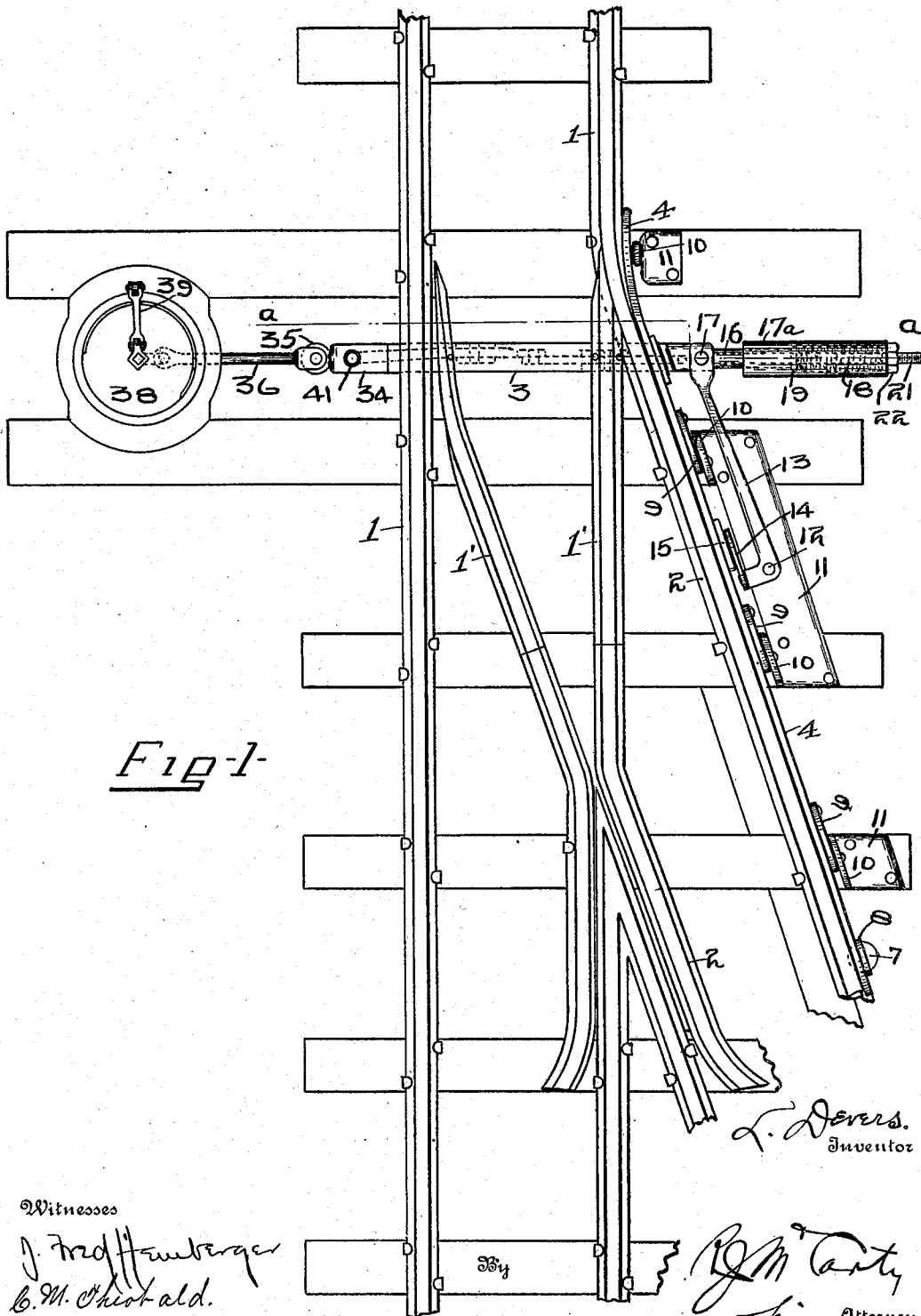


LE ROY DEVERS.
 SWITCH SHIFTING MECHANISM.
 APPLICATION FILED OCT. 21, 1908.

937,055.

Patented Oct. 19, 1909.

3 SHEETS—SHEET 1.



Witnesses

J. Hoffmeyer
C. M. Chetald.

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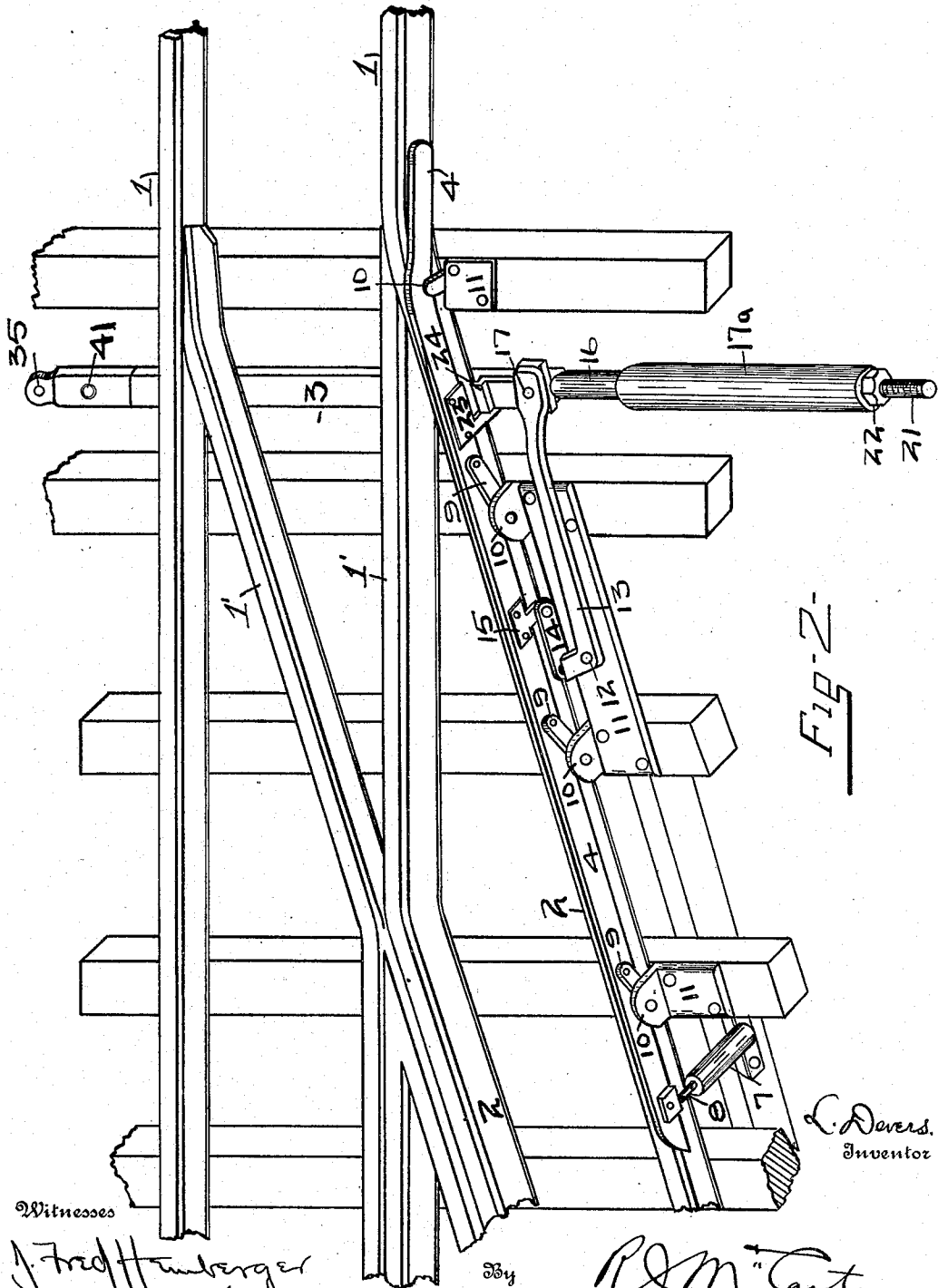


Fig. 2-

Witnesses

J. Fred Humberger
 B. M. Theobald.

By

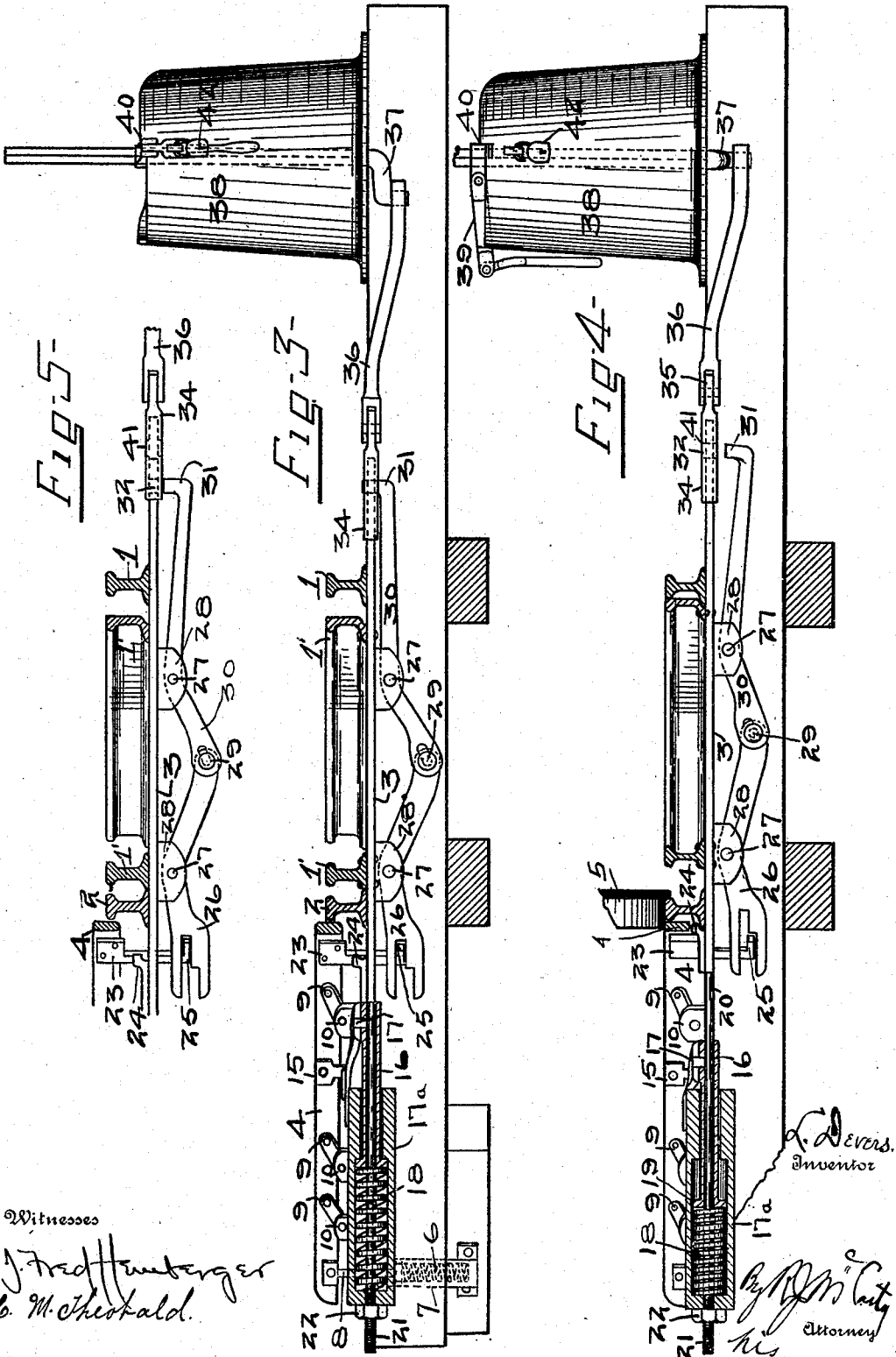
R. M. Tandy
 his Attorney

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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

LE ROY DEVERS, OF DAYTON, OHIO.

SWITCH-SHIFTING MECHANISM.

937,055.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed October 21, 1908. Serial No. 458,764.

To all whom it may concern:

Be it known that I, LE ROY DEVERS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Switch-Shifting 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in railway switch mechanism.

The object of the invention is to provide improved switch-shifting mechanism by means of which the switch will always be closed except when a train is taking the siding.

Preceding a detailed description of the invention, reference is made to the accompanying drawings, of which—

Figure 1, is a top plan view of my improved railway switch mechanism, showing the closed or normal position of the switch. Fig. 2, is a perspective view of the switch and adjunctive mechanism in the position shown in Fig. 1. Fig. 3, is a cross sectional view on the line *a a* of Fig. 1. Fig. 4, is a similar view showing the switch open as when a train or engine is passing thereon. Fig. 5, is a view showing the switch closed, and in the position it is placed immediately after the train passes off said switch or rather clears the mechanism.

In a detail description of the invention, similar reference characters indicate corresponding parts.

1 1 designate the rails of the main track; 2 2 designate the switch rails, and 1' 1' the switch tongues. The switch rails are secured to a transverse shifting bar 3 which lies below the rails and on a level with the cross ties. Lying along the outer side of the outermost switch rail 2, is a metallic switch bar 4, the entering end of which is suitably shaped to permit the wheels of the car trucks on that side to enter the switch track and to ride over and depress said switch bar. Fig. 4, illustrates the switch bar 4 thus depressed by a wheel 5 which is passing onto the outer switch rail. The switch bar 4 is normally held in the position shown in Fig. 3, by means of a spring

6 within a cylinder 7 and exerting upward pressure against a plunger 8, said plunger being attached to the entering end of the switch bar 4; the spring 18 which will be hereinafter more fully described, also serves to hold the switch-bar 4 in its upper position. The intermediate portion of the switch bar 4 is supported by a series of hinges in the form of short links 9, one end of each of which is pivoted to the outer side of the switch bar 4, and the other end of each of which is pivoted to upturned portions 10 of a series of brackets 11 which are secured to the cross ties; these upturned portions 10 of said brackets also serve as guides which inclose the pivotal links 9 and the switch bar 4 when said bar is depressed as in Fig. 4. There is also a guide at the entrance end of the switch bar 4 formed from a similar bracket 11 having an upturned end 10 which lies on the outer side of said switch bar. Pivoted to the elongated bracket 11 is an angular lever 13, the pivot of said lever being at 12. The short arm of said lever 13 is loosely connected to a short link lever or swivel 14 which is also suitably connected to a bracket 15 secured to the outside of the rail bar 4 and extending down therefrom. The long arm of the lever 13 is suitably connected by means of a pivot 17 to the exposed end of a sleeve 16, said sleeve 16 extending into a cylinder 17^a within which is a coil spring 18, said spring 18 being inclosed between the head 19 of said plunger or sleeve 16 and the end of the cylinder 17^a.

The switch or rail bar 4 is normally held in the elevated position shown in any of the figures of the drawings with the exception of Fig. 4, through the instrumentality of the springs 6 and 18, as before intimated, said springs being allowed to expand at such times when the rail bar 4 is relieved of the pressure due to the passing of a car or engine on the switch. The spring 18 exerts its influence upon said bar through the action of the lever 13 and the link 14. The transverse switch bar 3 lying immediately below the main rails and the switch rails, is flat—but one end of said switch bar terminates in a rod 20 which extends through the plunger or sleeve 16 and the spring 18, and has its extreme end 21 screw-threaded and passed through a screw-threaded opening in the end of the cylinder 17^a, said screw-threaded end being fitted with an adjusting nut 22, by means of which the tension of the spring 18

may be regulated to the extent desired. The spring 18 is the means by which the switch is closed for the main line when the last car of the train or the engine and tender passes off the switch bar 4. The length of the bar 4 is equal to the length of the longest car, therefore, there is always two pairs of trucks on said bar until the entire train clears said bar.

23 designates a bracket rigidly attached to the rail or switch bar 4 above the transverse shifting bar 3, and acting as a dog in connection with a shoulder 24 on said shifting bar to lock the switch open during the period when pressure is on the switch rail 4. The lower horizontal portion of said bracket 23 moves down, and on the outside of the shoulder 24, and acts as a lock for the switch-shifting bar 3, and during this period, the switch is relieved of the pressure due to the compression of the spring 18. The lower portion of the bracket 23 terminates in an arm 25 which lies within the bifurcated end of a lever 26 which is pivoted at 27 between ears 28 that extend down from the lower side of the shifting bar 3. The inner end of the lever 26 has a pivotal connection at 29 to the inner end of a lever 30 which is likewise pivoted at 27 between ears 28 projecting down from the underside of the shifting bar 3. The pivot pin 29 by means of which the levers 26 and 30 are connected, moves within an elongated opening in the end of one or the other of said levers. The extreme outer end of the lever 30 extends as at 31 and is adapted to enter an opening 32 in the outer end of the shifting bar 3 at stated times to lock the switch in the closed position. The opening 32 in the end of the shifting bar 3 is shown in dotted lines in Figs. 3, 4 and 5. The end of the shifting bar 3 having said opening 32, lies within a sleeve or casing 34 and has free movement therein to a certain extent. This sleeve or casing 34 so fitting over the end of the shifting bar 3, has its extreme outer end terminated in a head 35 which extends into the bifurcated end of a connecting lever 36 and is pivotally connected to said lever 36. The lever 36 is connected to the lower crank end of a shifting post 37 which extends up through a switch stand 38 and has its upper end connected with a hand-operative shifting lever 39, the outer end of which is pivotally connected therewith. The switch stand 38 is of a common form of construction and is provided with the usual locking notches 40 for the engagement of the lever 39 in either of its two positions.

The sleeve or casing 34, has an opening 41 in both sides thereof which is adapted to come in alinement with the opening 32 in the shifting bar 3. As shown in Figs. 3 and 4, the opening 41 in said sleeve or casing, and the opening 32 in the end of the shifting bar

3, are in alinement so that the upturned end of the lever 30 may enter said openings as in Fig. 3 to lock the switch in its closed position. In Fig. 4, the end 31 is shown in a position to enter said openings 32 and 41 when the pressure is removed from the rail bar 4, and the hand-operative lever 39 is moved to the position in Fig. 3. When a wheel enters the switch and rides upon the rail bar 4, the spring 18 is compressed through the action of the rail bar upon the bell crank lever 13, and the sleeve or plunger 16, said spring being compressed between the end of the cylinder 17^a and the head 19 of said plunger. The bracket 23 acting as a dog, engages the shoulder 24 on the shifting bar and relieves the switch of the pressure due to the compression of the spring 18; the end 25 of the bracket 23 at such times lies within the larger portion of the opening of the lever 26, and the downward movement of the switch bar 4 transmits movement to said lever 26 through the extension or arm 25 and thus lowers the nose 31 of the lever 30 out of locking engagement with the openings 32 and 41 in the shifting bar 3 and the casing 34. When the switch bar 4 is relieved of the pressure, the shifting bar 3 is given over to the expanding influence of the spring 18 and the switch is closed for the main track; the movement of the switch rails 2 2 through the movement imparted to the shifting bar 3 from said spring 18, has the effect of imparting such movement to the levers 26 and 30 as to cause the nose 31 of the lever 30 to press against the underside of the casing 34 as shown in Fig. 5. At such time, the hand-operative lever 39 is in the position to which it was moved by the switchman when he opened the switch, such position being that shown in Fig. 4. When the spring 18 has closed the switch, it is held in such position until the switchman moves the hand-operative lever to the position shown in Figs. 1 and 5; this movement shifts the casing 34 inwardly on the end of the shifting bar 3 and brings the opening 41 therein in alinement with the opening 32 in said shifting bar, at which time, the nose 31 of the lever enters said opening and the switch is locked thereby. The hand-operative lever 39 in such position, may be securely locked by means of a padlock 42. When the switch is closed through the expansion of the spring 18, the tension of such spring is sufficient to prevent it from accidentally opening until it is locked.

I claim:

1. In a switch mechanism, the combination of switch tongues, one of which is in alinement with the inner rails of the switch track, and the other of which is in alinement with the inner rails of the main track, a transverse shifting bar to which said tongues are connected, a hand-operative lever, connections

between said shifting bar and hand-operative lever for manually opening the switch, consisting of a sleeve into which the end of the shifting bar lies, a lever connected to said sleeve, and means for effecting a disengagement or engagement between said sleeve and shifting bar; a rail bar parallel and adjacent to the outer rail of the switch track, means for normally maintaining said rail bar above the upper surface of said rail until pressure exerted upon said rail bar lowers it, and means for closing the switch instantaneously with the removal of the pressure from said rail bar.

2. In a switch mechanism, switch tongues, a shifting bar to which said tongues are suitably connected, manually-operative mechanism connected with said switch bar for throwing the switch tongues to open the switch, a rail bar adjacent to one of the rails of the switch track adapted to be depressed by the pressure due to the train passing from the main track onto the switch track, means interposed between the rail bar and the shifting bar whereby when the weight upon the rail bar is relieved, the switch tongues are instantaneously thrown to their closed position, and means controlled by the manually-operative means for throwing the switch tongues to their open position, and whereby said switch tongue is locked in the closed position to which it is moved when the pressure upon the rail bar was relieved.

3. In a railway switch mechanism, switch tongues mounted in alinement with rails of a main track and a switch track, a transverse shifting bar to which said tongues are suitably connected, hand-operative shifting mechanism connected to said shifting bar by means of which the switch is manually thrown to its open position, a rail bar adapted to be depressed by the train moving onto the switch, and devices interposed between the transverse shifting bar and said rail bar which are controlled by said rail bar while the latter is held in its depressed position and by means of which the switch is closed when said rail bar is relieved of the pressure and is permitted to assume its normal position.

4. In a railway switch mechanism, the combination with switch tongues, of a transverse shifting bar to which said tongues are suitably connected, hand-operative shifting mechanism, a connection between said hand-operative shifting mechanism and said shifting bar by means of which the switch may be manually thrown to its open position and locked in its closed position, a spring on said shifting bar adapted to move it to its closed position, a rail bar adapted to be depressed by a train entering the switch, means interposed between the shifting bar and the rail bar for relieving the switch from the pres-

sure of the spring while the train is passing over said rail bar for permitting said spring to close the switch when the pressure is relieved from the rail bar.

5. In a railway switch mechanism, the combination with switch tongues, of a shifting bar to which said tongues are attached, manually-operative switch-throwing mechanism connected with said shifting bar, a rail bar mounted adjacent to one side of the switch rails and adapted to be depressed by the wheels passing onto the switch rails, a compression spring mounted upon the shifting bar and adapted to close the switch when the weight is removed from the rail bar, and means interposed between the rail bar and the shifting bar adapted to lock the switch and relieve the same from the pressure due to the compressed spring on the shifting bar while the train is passing onto the switch track.

6. In a railway switch, the combination with switch tongues, of a shifting bar to which said tongues are connected, manually-operative means connected to the switch bar for opening the switch, means for locking the switch bar in a position to close said switch, said means being interposed between the manually-operative means for throwing said switch bar and the switch bar *per se*, a compressible spring mounted on the switch bar, a rail bar mounted adjacent to one side of the switch rails and adapted to be compressed by the weight of a train passing onto the switch, mechanism actuated by the depression of said rail bar for compressing the spring on the switch bar, mechanism interposed between the rail bar and the switch bar for locking the switch bar while the rail bar is depressed and whereby the switch is relieved of the pressure exerted upon the switch bar by the compressed spring, and means interposed between the rail bar and the manually-operative means for throwing the switch bar to its open position, and whereby the shifting bar is placed in a condition to be locked to the manually-operative means for opening the switch when the switch is closed by the expansion of the spring.

7. In a railway switch, the combination with switch tongues, of a shifting bar to which said tongues are connected, manually-operative means for opening the switch by shifting said bar, a compression spring on the shifting bar by which the switch is closed, when a train leaves the main track and enters the switch track, and mechanism adapted to be depressed to compress said spring during the period in which the train is passing over the switch track adjacent to the main track, and by the weight of said train, and whereby the spring is permitted to expand to close the switch when the train has cleared or passed over said mechanism,

and means for instantaneously locking the shifting bar to the manually-operative means for throwing said bar when said spring has closed the switch.

5 8. In a railway switch, the combination with switch tongues, of a shifting bar to which said tongues are connected, manually-operative switch-shifting mechanism loosely connected to the shifting bar for moving the
10 switch to its open position, a rail bar adapted to be depressed by the weight of a train entering the switch track, and means interposed between said rail bar and the manually-operative means for moving said switch
15 bar adapted to lock the switch in a closed position after the train has entered the switch track a sufficient distance.

9. In a railway switch, the combination with switch tongues, of a shifting bar to which said tongues are attached, a compression spring for throwing the switch tongues to close the switch, a rail bar mounted adjacent to the switch and adapted to be compressed by a train entering said switch, connections between the rail bar and the spring
25 whereby the spring is compressed during the period of depression of the rail bar, and means for elevating said rail bar when relieved of the pressure due to the train riding
30 thereon and whereby the spring is allowed to expand and thereby actuate the shifting bar to close the switch.

10. In a railway switch, a rail bar mounted parallel to the switch rails adjacent to the rails of the main track, pivotal connections supporting said rail bar, means for normally holding the rail bar above the surface of the

switch rail, a shifting bar to which the switch tongues are connected, means consisting of manually-operative connections
40 suitably connected to the shifting bar for opening the switch, a spring mounted upon the shifting bar, devices mounted on the shifting bar and cooperating with the spring for compressing said spring during the de-
45 pression of the rail bar, said spring being allowed to expand when the rail bar is relieved of pressure, and whereby the switch is closed through the action of the spring on the shifting bar.

11. In a railway switch, the combination with switch tongues, of a shifting bar to which said tongues are attached, manually-operative means for moving the shifting bar to open the switch tongues, said manually-
55 operative means being loosely connected to the switch bar, means on the switch bar for interlocking said shifting bar with the manually-operative means when the switch tongues are moved to their closed positions,
60 a spring on the shifting bar adapted to be compressed and to expand to close the switch tongue, and mechanism affected by the weight of trucks passing onto the switch track, said mechanism acting to compress the
65 spring while the pressure is applied thereto, and to release the spring when the pressure is removed therefrom.

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

LE ROY DEVERS.

Witnesses:

R. J. McCARTY,
MATTHEW SIEBLER.