

(No Model.)

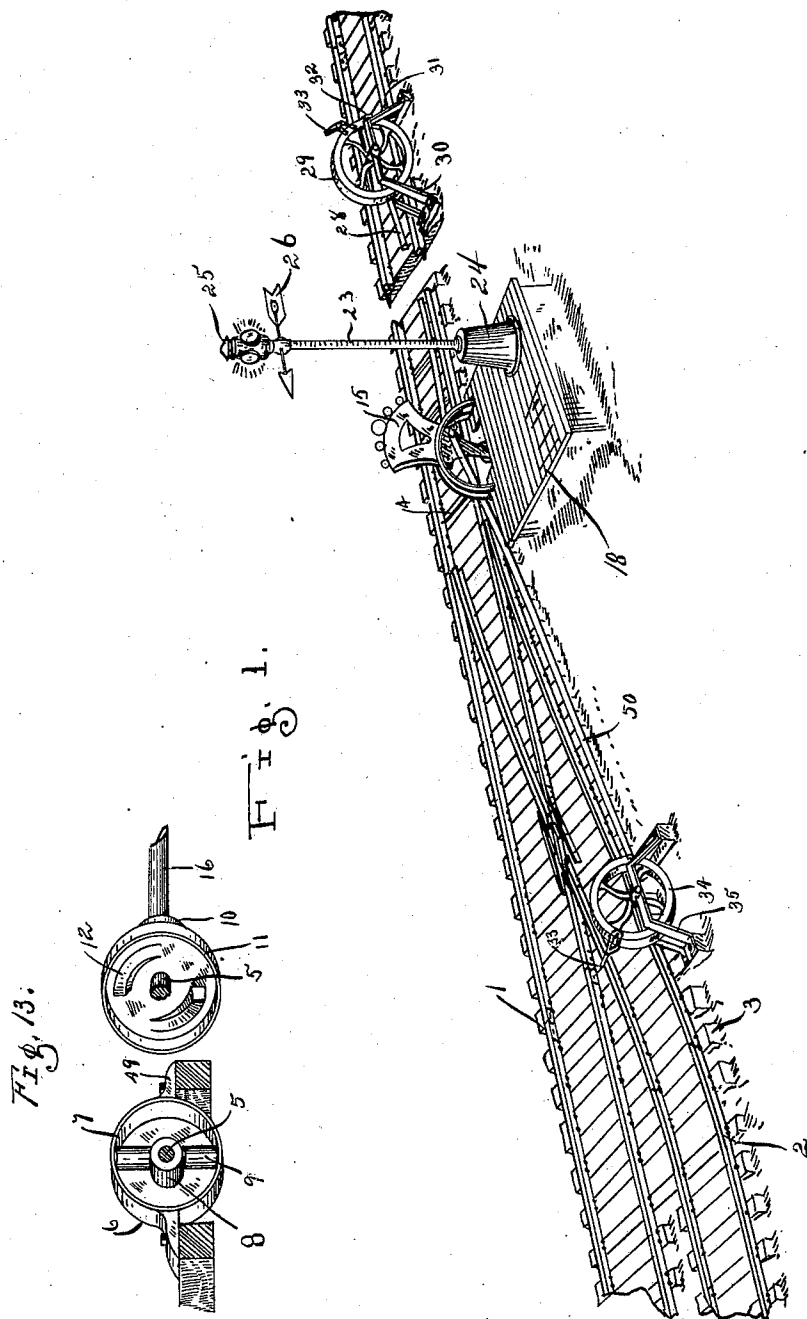
4 Sheets—Sheet 1.

J. GESSLER.

RAILWAY SWITCH OPERATING MECHANISM.

No. 574,319.

Patented Dec. 29, 1896.



WITNESSES:
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(No Model.)

4 Sheets—Sheet 2.

J. GESSLER.

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Fig. 2.

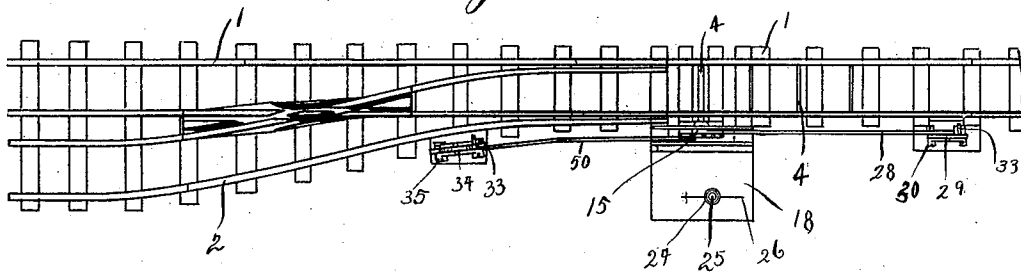


Fig. 3.

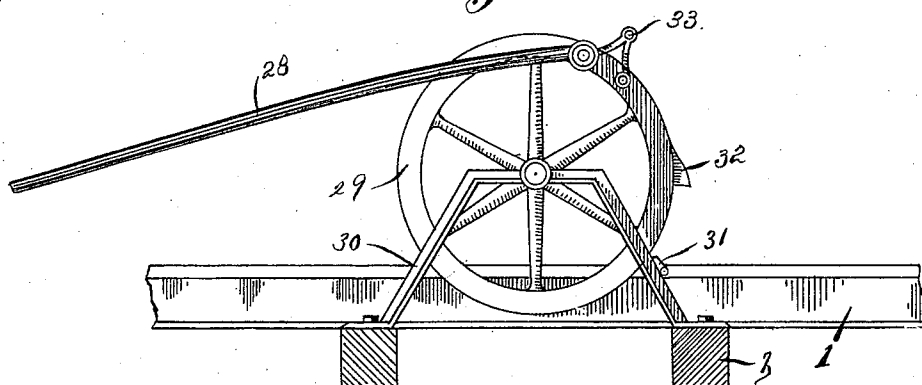


Fig. 4.

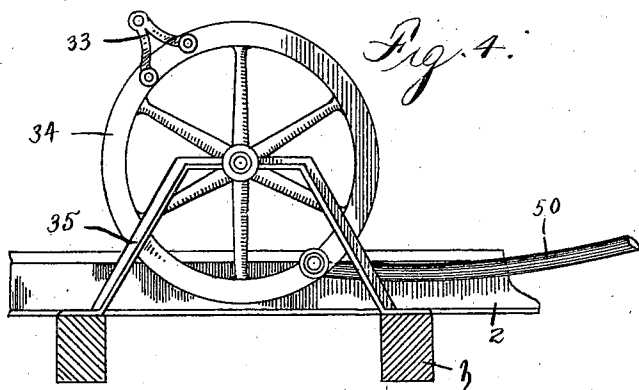
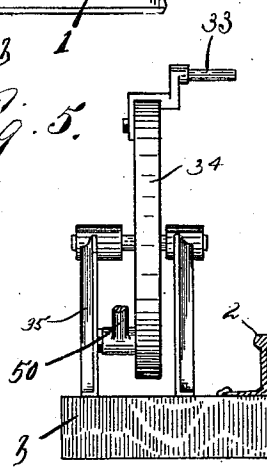


Fig. 5.



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(No Model.)

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Fig. 6

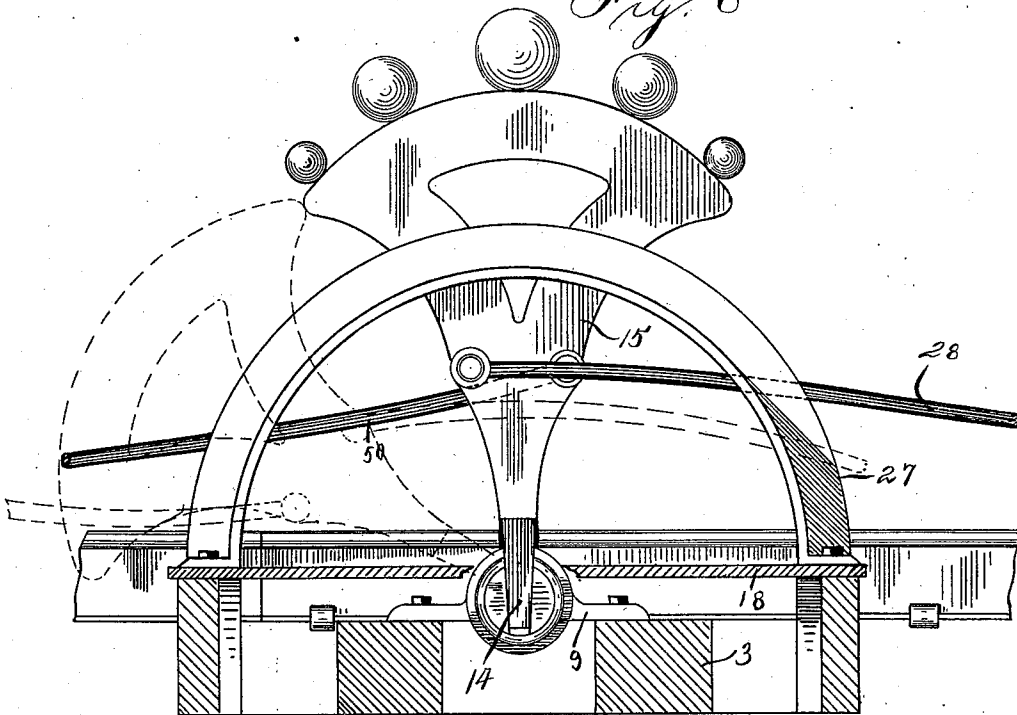


Fig. 8.

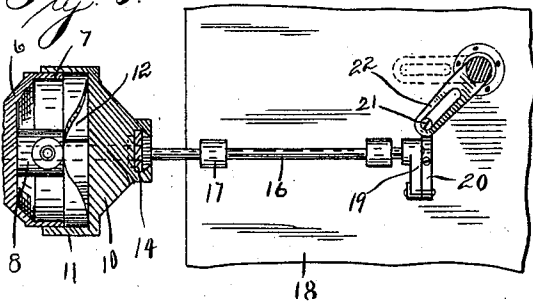
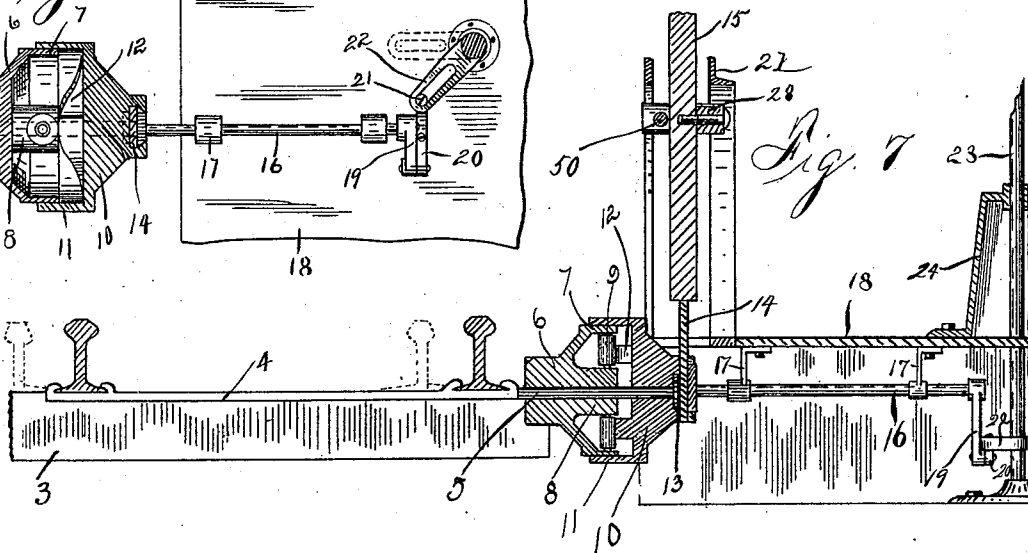


Fig. 7



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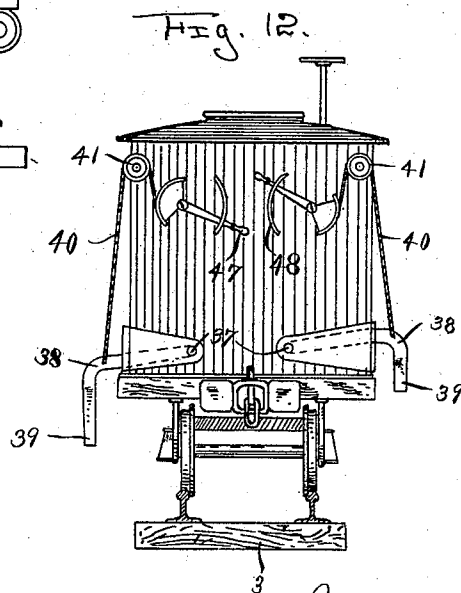
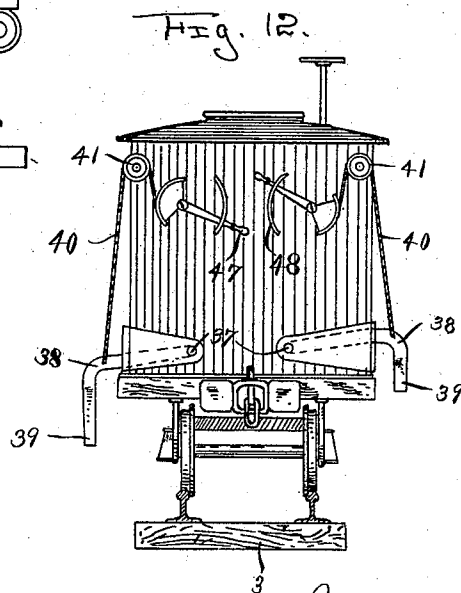
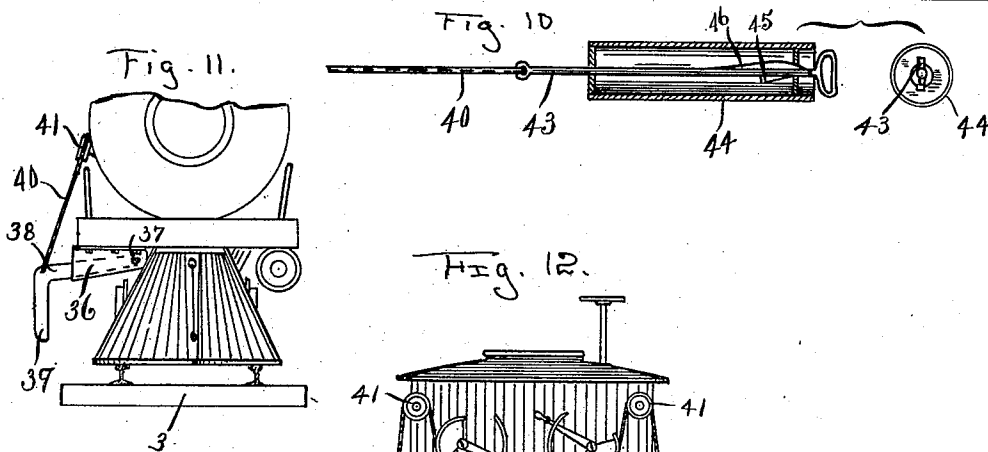
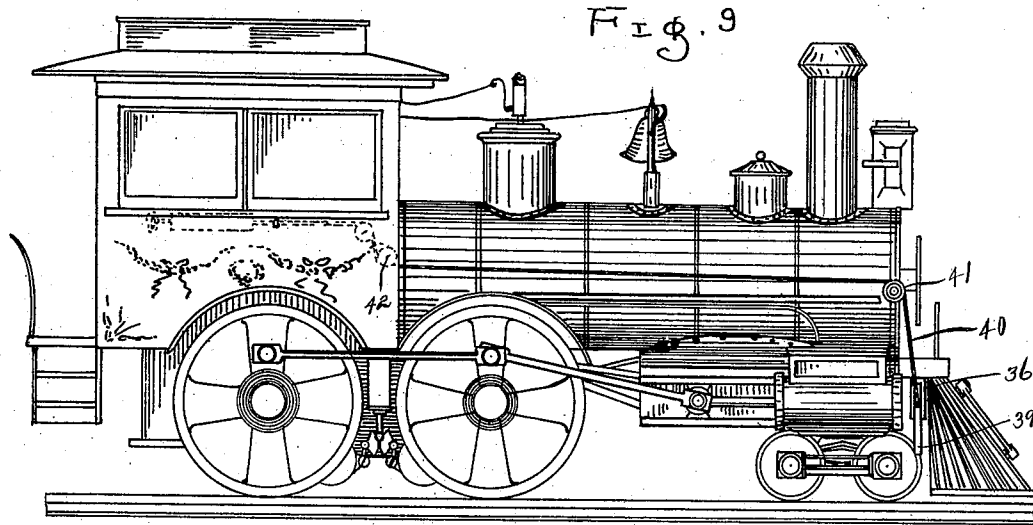
(No Model.)

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RAILWAY SWITCH OPERATING MECHANISM.

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UNITED STATES PATENT OFFICE.

JACOB GESSLER, OF INDIANAPOLIS, INDIANA.

RAILWAY-SWITCH-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 574,319, dated December 29, 1896.

Application filed February 20, 1896. Serial No. 580,081. (No model.)

To all whom it may concern:

Be it known that I, JACOB GESSLER, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful
5 Railway-Switch-Operating Mechanism; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

10 My invention relates to a mechanism for the operation of railway-switches.

My object is to provide a mechanism which can be operated from the train, whereby the switch can be either opened or closed, as desired, without the brakeman being required
15 to alight from the train.

My device is so made as to be very positive in its action and at the same time be simple and durable.

20 The full nature of my invention will be understood from the accompanying drawings and the description and claims following.

In the drawings, Figure 1 is a perspective of a section of the railway, showing a switch and my switch-throwing mechanism in place.
25 Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of the actuating-wheel on the main track. Fig. 4 is a side elevation of the actuating-wheel on the side-track. Fig. 5 is an end view of the latter. Fig. 6 is a side elevation of the vertical lever and guideway located at the central portion of the mechanism, the lower portion being in section on the line A A of Fig. 7. Fig. 7 is a cross-section of a railway and the central portion of my mechanism, the upper parts of the lamp-post and vertical lever being broken away. Fig. 8 is a detail of the lamp-operating mechanism, the switch-shifting mechanism being shown
35 in horizontal section. Fig. 9 is a side elevation of a locomotive provided with means for actuating my switch-throwing mechanism. Fig. 10 shows a longitudinal section and also an end view of the portion of my device located
40 within the cab of the locomotive. Fig. 11 is a front elevation of the locomotive provided with means for actuating my switch-throwing mechanism, the upper portion of the locomotive being broken away. Fig. 12 is an end
45 elevation of a railway-car provided with means for actuating my switch-throwing mechanism; and Fig. 13 shows the two parts

of the switch-shifter in perspective, ready to be united.

Alongside of the main track 1 and the side-track 2, at their junction, where the switch is located, I place my switch-throwing mechanism, as seen in Figs. 1 and 2. The movable rails or switch-rails are held in place, so as to slide laterally upon the ties 3, by means of the
60 brace-bar 4, which is flat between the rails, but is preferably round at the end 5, that extends to the side of the track. The lateral extension 5 extends loosely through the hollow disk 6, which is held securely in place by
65 a pair of lugs 49, extending in opposite directions and bolted to the ties, so that it can have no lateral movement. This stationary disk 6 has on its outer side a rim or annular extension 7, and also a hub or central extension 8. Between the rim and the hub I mount
70 two friction-rollers 9, placed on opposite sides of the hub and extending radially from the center of the disk.

On the outer end of the extension 5 of the switch-brace bar 4 I place a companion disk 10, having on its inner side a rim or annular extension 11, that overlaps the rim 7 of the stationary disk 6. Within the hollow made on the disk 10 by the rim 11 I provide integral
75 with the body of the disk the inclined lugs or cams 12, which are segmental and concentric with the center of the disk 10 and so placed as to engage simultaneously the pair of friction-rollers 9, that are mounted in the stationary disk 6. I provide a head 13 on the outer
80 end of the extension 5 of the switch-bar 4, abutting against the lower end 14 of the vertical lever 15. The lower end of said lever is mounted in the disk 10, which is a rotary disk, so that when the lever is operated such disk
85 will rotate and push the brace-bar 4 endwise, thus shifting such brace-bar enough to push the rails held by said bar into line with the side-track. This is the preferable shift. When the
90 rotary disk is rotated in the reverse direction, it permits the brace-bar and switch-rails to be moved back by means of the spring of the switch-rails themselves. This is the plan which I have adopted for returning the switch-
95 rails to their normal position in line with the main track. I secure the half of the switch-rail farthest away from the switch-throwing mechanism in such a line that ends of the
100

rails adjacent to the switch-throwing mechanism will be bent somewhat when they are thrown in line with the side-track, that is, they will be curved. When the push on the
 5 brace-bar is relieved, they will spring back into their normal position. Of course a spring could be used, but what I have mentioned I consider preferable, and neither performs any part of the invention I have sought herein to
 10 protect by a patent.

This mechanism, it is observed, is extremely positive in its action and yet comparatively free from friction. The fit between the overlapping rims 11 and 7 should be so close as to
 15 prevent dirt, sand, or water entering the space between the stationary or rotary disks, so that the roller and cam-lugs therein will have nothing to interfere with their positive and easy action.

It is observed that when the rotary disk is turned so as to throw the track to the left and therefore in line with the main track, as the mechanism is arranged in these drawings, the rim 11 of the disk 10 will wholly overlap and
 25 even extend beyond the rim 7 on the stationary disk 6 for the purpose just spoken of.

Connected up with the rotary disk 10 and the lower end 14 of the vertical lever 15 is a rotary bar or rod 16, carried loosely in hangers 17, mounted within the box 18, that is located beside the track at the switch-point. On the outer end of such rotary bar 16 I rigidly secure the arm 19, on whose outer end I pivot a link 20, provided with a wrist-pin 21, that operates loosely within the slot in the
 35 outer end of the arm 22, that is rigidly secured to the vertical lamp-post 23, which is rotatably mounted within said box and the extension 24 on the box. On the upper end
 40 of such lamp-post I provide a lamp 25 and the arrow 26 for purposes well known. It is thus apparent from this description that the same mechanism which opens or closes the switch rotates the lamp-post 23, so as to indicate by
 45 the lamp or the arrow whether the switch is opened or closed.

The switch-throwing mechanism just described is operated as follows: The vertical lever 15, which is preferably weighted somewhat at its upper end, moves between two
 50 semicircular guides secured to the box 27. Said lever 15 is actuated from the main track by the link 28, extending to the wheel 29, mounted on the frame 30, that is secured to the ends of the cross-ties at a reasonable distance from the switch, say twenty or thirty feet. On the frame 30 is a cross-bar or stop
 55 31, so located as to engage the lug 32 on the periphery of the wheel 29 and to limit the movement of the wheel. Secured to the wheel 29 is a laterally-extending arm 33, which can be engaged by something on the train, and when so engaged will cause the wheel 29 to rotate in the direction that the train is moving, and when said wheel rotates it actuates
 60 the vertical lever 15 through the link 28. Thus when a train is traveling from right to

left on a track, as shown, the wheel 29 is moved in the same direction and the vertical lever 15 thrown downward in the position
 70 shown by the dotted lines in Fig. 6 and the switch opened, the mechanism being in the position shown in Fig. 7. The wheel just described is actuated in the movement just described by means from the locomotive. After
 75 the train has run in on the side-track as its rear end passes the wheel 34, mounted on the frame 35 beside the side-track, the switch is closed. To effect this result, the wheel 34 is operated by the engagement of something
 80 on the rear end of the train with a laterally-extending arm 33 on said wheel, causing it to rotate in the direction in which the train is moving and to push the lever 15 back into its vertical position by means of the link 35, extended from the lower part of the wheel 34
 85 to the lever 15. Suppose a train has run in on the side-track and has permitted another train to pass it on the main track and desires to run out again on the main track. As is customary, the switch is opened, while the train is backing onto the main track, by suitable mechanism on the rear end of the train engaging the arm 33 on the wheel 34 and moving
 90 said wheel in the direction the train is backing, causing the rod 35 to act as a link and pull down the lever 15, thus opening the switch, as we have seen. After the train has backed out on the main track the engineer, through suitable means on the engine, engages
 95 the arm 33 on the wheel 29, moving it also in the direction in which the train is backing and causing the link 28 to pull the lever 15 up into a vertical position, thus closing the switch. Thus it is seen that a switch can be
 100 opened or closed from a moving train without the necessity of stopping the train for a brakeman to get off and on. The means located on the train for actuating the switch mechanism which I have devised I will now proceed to explain.

On the side of the locomotive, near the cattle-fender or on any other suitable part of the framework, I place a cast-iron casing 36, with the laterally-extending opening. At the rear
 115 end of such casing, at 37, I pivot a bar 38, with a downwardly-turned end 39 outside the casing. The opening in the casing 36 is preferably made flaring, so that the bar 38 can have a vertical movement. I then connect to said bar
 120 38 a chain or rope 40, which runs over the pulley 41, mounted on the side of the locomotive and extending therefrom about a pair of pulleys 42, (shown in the dotted lines in Fig. 9,) to be located in the cab and connected with
 125 the handle-bar 43, that moves through the cylinder 44 longitudinally. The front end of the cylinder 44 is provided with an opening larger than the rod 43, so that by placing the lug 45 on the under side of such rod 43 I can hold
 130 the handle-bar 43 in an outward position, as when it is pulled outward the lug 45 would catch against the end wall of the cylinder 44. In this position the bar is elevated. When

I desire to unlock it, I lift the handle end of the bar 43 and then push the handle-bar into the position shown in Fig. 10. In order to keep the handle-bar locked in an outward position

5 when necessary, I provide the flat spring 46, that tends always to push the handle-bar down and thus to hold the lug 45 in engagement with the end wall of the cylinder 44.

10 At the rear end of the train or on the end of each car, whether it be a freight or passenger car, I provide a somewhat similar mechanism to actuate the switch-throwing device as that heretofore described. It may be seen in Fig. 12, where I have the same mechanism,

15 excepting that instead of having a piston-like handle-bar to actuate the chain or rope 40 I have hand-levers 47, with a segmental end, the hand-lever moving through a segmental guide 48. It is clear that the means on the train or

20 locomotive for actuating the switch-throwing mechanism may be modified in various ways plain to anybody without departing from the spirit of my invention, and also that the inclined lugs 12 may be placed on the stationary disk and the friction-rollers on the rotary

25 disk, merely reversing the parts without any material change.

What I claim as my invention, and desire to secure by Letters Patent, is—

30 1. In a switch-operating mechanism, a bar secured to the switch-rails, a stationary disk loosely mounted on said bar beside the railway-track, a separate rotary disk mounted on the bar face to face with the stationary disk

35 and having on its face one or more inclined lugs that engage the stationary disk, and means for actuating the rotary disk.

2. In a switch-operating mechanism, a bar secured to the switch-rails, a stationary disk

40 loosely mounted on said bar beside the railway-track and having mounted in its face friction-rollers, a rotary disk mounted face to face with the stationary disk and having on its face one or more inclined lugs that engage

45 the friction-rollers on the stationary disk, and means for actuating the rotary disk.

3. In a switch-operating mechanism, a bar secured to the switch-rails with an extension to one side of the track, having a head on its

50 outer end, a rotary disk mounted on the outer end of such extension with a seat for the head on such bar, said disk having on one of its faces one or more inclined lugs, a lever extending up from said disk and attached at its

55 lower end to the disk, means for throwing said lever so as to rotate the disk, a station-

ary disk mounted face to face with the rotary disk and having in its adjacent face friction-rollers that are engaged by the inclined lugs on the rotary disk.

4. In a railway-switch-operating mechanism, a bar secured to the switch-rails and having an extension to one side of the track, a rotary disk mounted on the extension of said bar having on one face a laterally-extending rim and within the hollow formed by said rim inclined lugs, a stationary disk mounted face to face with the rotary disk and having on the side adjacent to the rotary disk a rim and a hub, the rims of said disks at all times overlapping each other, friction-rollers mounted in the stationary disk between its hub and rim, and means for actuating the rotary disk.

5. In a railway-switch-operating device, a suitable switch-shifting mechanism, an upwardly-extending lever secured thereto, means to limit the downward throw of the lever to prevent centering, wheels mounted beside the track on each side of the switch-throwing mechanism, links extending from such wheels to the upwardly-extending lever, and arms extending from such wheels inward toward the track whereby the wheels may be rotated from a moving train and the switch thereby operated.

6. In a railway-switch-operating device, a suitable switch-shifting mechanism, a vertical lever connected therewith, means to limit the downward throw of the lever to prevent centering, a wheel mounted some distance from the switch alongside the main track, a link extending from the upper portion of said wheel to the vertical lever, a wheel mounted in the opposite direction beside the side-track, a link extending from the lower portion of said wheel to the vertical lever, and arms extending inwardly toward the track from the upper portion of said wheels whereby the wheels may be rotated from the moving train and thereby the switch is opened by the train as it approaches the same and it closes the switch as it runs in on the side-track and also opens the switch as the train runs off of the side-track and closes it as it runs onto the main track.

In witness whereof I have hereunto set my hand this 4th day of February, 1896.

JACOB GESSLER.

Witnesses:

V. H. LOCKWOOD,
ZULA GREEN.