

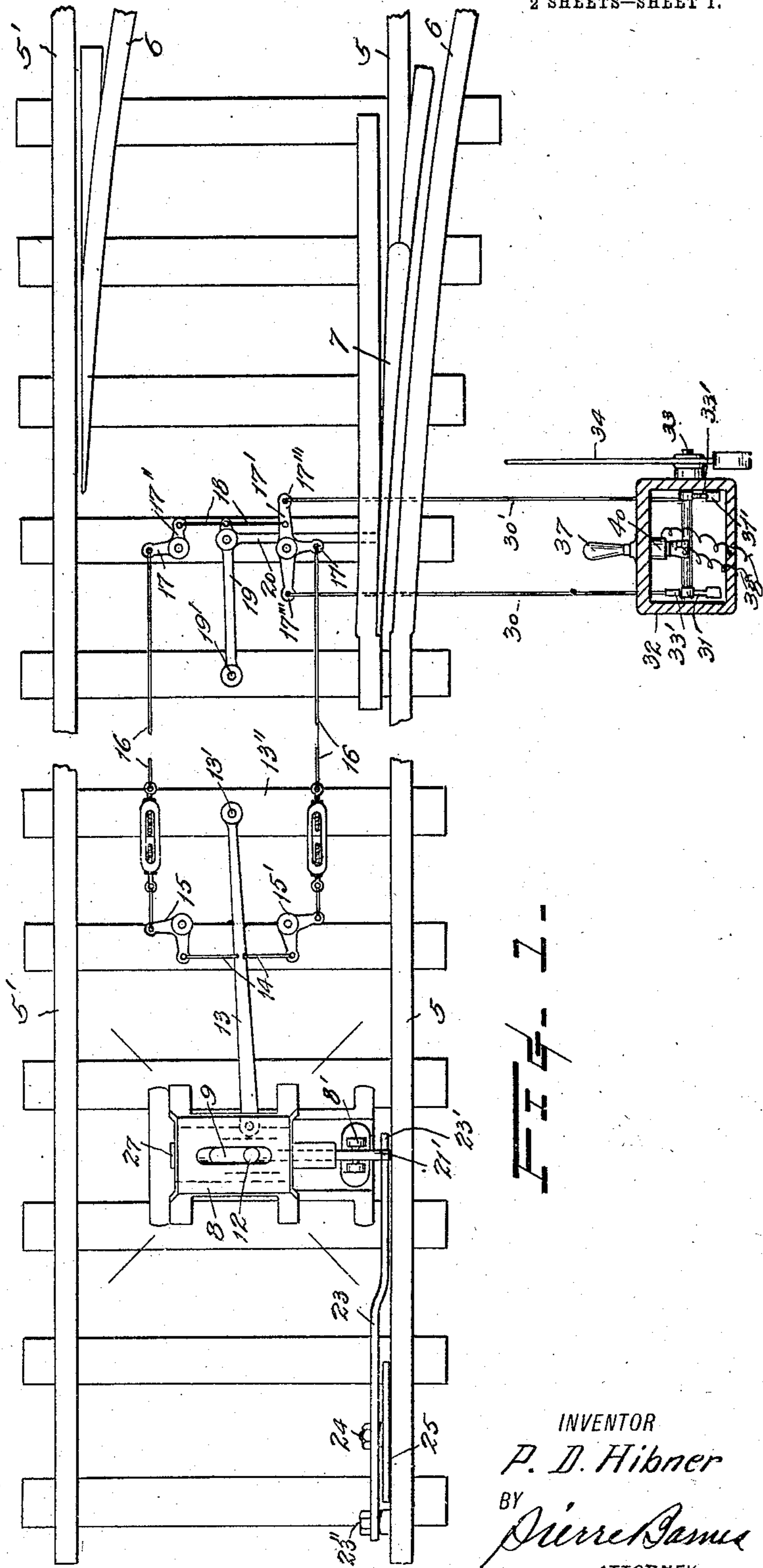
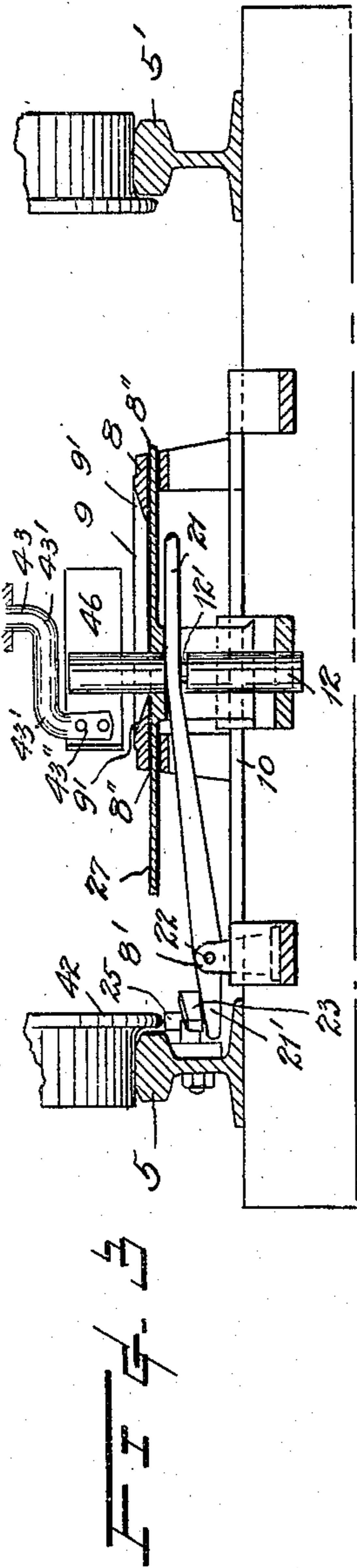
No. 842,460.

PATENTED JAN. 29, 1907.

P. D. HIBNER.  
RAILWAY SWITCH.

APPLICATION FILED MAR. 15, 1906.

2 SHEETS—SHEET 1.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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## RAILWAY-SWITCH.

No. 842,460.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed March 15, 1906. Serial No. 306,100.

*To all whom it may concern:*

Be it known that I, PHILIP D. HIBNER, a citizen of the United States, residing at Seattle, in the county of King, State of Washington, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a plan view of mechanism embodying my invention and showing portions of the main and switch tracks of a railway-line. Fig. 2 is a longitudinal vertical section of a part of the same with the front end of a street-car. Fig. 3 is a detail cross-sectional view taken on line 3-3 of Fig. 2, and Fig. 4 is a detail cross-sectional view of signal apparatus employed in the invention.

The principal object of this invention is the provision of a simple and efficient apparatus for operating the opening and closing of railway-switches which is actuated and controlled by mechanical appliances provided upon a car and so constructed and arranged as to be capable of accomplishing such movements of the switch without the necessity of stopping the progress of the car or even under ordinary conditions reducing its speed.

Another object is to so arrange and assemble the parts of the switch-operating mechanism that the same will not incommode or be affected by the passage thereover of vehicles or the like.

To these and other ends the invention consists of the novel construction, adaptation, and combination of parts, as will be hereinafter described, and pointed out in the appended claims.

In the drawings the reference-numerals 5 and 5' designate the rails of the main track, 6 the switch-rails, and 7 the pivoted switch-tongue as ordinarily employed in street-railway services. 8 represents a frame which is located between the said rails of the main track and at some distance in advance of the switch and is provided with a transversely-arranged slot 9 in its top and similarly-disposed guideways 10. Upon these guideways is slidably mounted a chambered block 11, carrying a vertically-movable pin 12, provided with a peripheral groove 12'. Pivotal-ly connected to this block is a lever 13, which is fulcrumed to a stud 13', secured to a track-tie, as 13'', and is connected inter-

mediate its length by rods or lines 14 with the bell-cranks 15 and 15', disposed upon opposite sides of the lever. These bell-cranks are connected by rods or lines 16 with the arms 17 of bell-cranks 17' and 17'', having their other arms connected by lines 18 with a vibratory arm 19, which is positioned between the last-named bell-cranks and fulcrumed at 19' to a tie or other rigid support. The arm 19 is connected by a rod 20 with the switch-tongue 7.

21 is a transversely-arranged bifurcated lever engaging with the block-pin 12, in the peripheral groove thereof, and is fulcrumed by a pin 22 to the frame-lugs 8' and thence, with its shorter arm 21', extends into close proximity of one of the rails, as 5, and contacting with the under side of the arm 23' of a lever 23, which is fulcrumed to a pin 23'', secured to the adjacent said rail. Attached to the lever 23, as by a bolt 24, is a T-shaped plate 25, adapted to slide vertically in close relation to the adjacent said rail and be suitably guided, as by having its stem 25' fitted within the slotted rail attachments 26. The relative weights of the opposing forces acting upon the levers intermediate the plate 25 and the block-pin 12 is such that the latter will be normally at its lowest position with its upper end even with or slightly below the upper surface of the frame 8 and sustaining said plate at its uppermost position with its top edge in or about the plane of that of the top of the track-rail.

Adjacent of the top of and within the frame 8, which is desirably positioned to have its upper surface even with the surface of the paving between the track-rails, is a shield-plate 27, through which the block-pin 12 extends and is coincidentally moved from side to side therewith in guide-slots 8'' provided. The purpose of this shield-plate is to prevent the admission of dirt through the slot 9 into the interior of the frame and to furnish means for clearing the slot itself of dirt accumulations, which might interfere with the free play of the various operative parts. The ends of the slot are inclined, as at 9', whereby the dirt is pushed outwardly in advance of the pin 12 during its reciprocating movements.

The bell-crank 17' is likewise provided with arms 17''', disposed rectangularly to arm 17 thereof, and connections are respec-

tively made by lines 30 and 30' with bell-cranks 31 and 31', which are located within the lower end of a column 32, supporting thereabove the mandrel 33 of an oscillating semaphore-blade 34. Operative connection is made between these bell-cranks 31 31' and the mandrel 33 by lines or rods 35 and 35' and crank-arms 33' of the mandrel. This blade is adapted to be moved by the aforesaid mechanism into a horizontal or exposed position to indicate during daylight the open or closed condition, as the case may be, of the track-switch, while at other times the corresponding slots of the switch are advantageously denoted by the presence or absence of an electric light, which is attained by the employment of a lamp 37 in a normally incomplete electric circuit 38, which includes terminals 39 and 40, of which the latter is stationary and the other oscillating with the aforesaid mandrel.

The switch-tongue is actuated by devices carried by a truck and upon the front platform 41 of a car and are capable of moving such tongue to open or close the switch when the car has sufficiently approached the latter to effect the elevation of the block-pin 12 by the wheel-flange 42 depressing the plate 25. Specifically, these actuating or controlling devices consist of a vertical spindle 43, journaled in a box 44, secured to the front of the truck-body 45 and centrally of its width. This spindle is formed with rectangular bends 43' to provide an offset portion 43'' at such a distance from its axis of oscillation that when swung to its full extent to either side it will not interfere with the said block-pin presented thereto. Secured to the spindle part 43'' and thence directed rearwardly through the prolonged axis of the main portion 43 is a blade 46, preferably of spring metal and adapted when depressed and oscillated to the proper angle to predeterminately swerve the block-pin and change the position of the switch-tongue correspondingly.

A spring 47, interposed between the box 44 and an annularly-grooved collar 48 of the spindle 43, acts to raise the blade 46 clear of the top of the block-pin 12, even when the latter is elevated. To depress the blade into operative position, I provide a lever 50, having at one end a fork engaging the grooved collar and fulcrumed at its outer end to an attachment 51, depending from the car-platform, and between its ends is connected to a post 52, which protrudes upwardly through a socket 53 in said platform and terminates in a tread enlargement 54 within convenient reach of the operator's foot.

The turning of the spindle 43, carrying the blade for effecting the movement of the switch-tongue, is accomplished by means of an upright shaft 55, extending through the car-platform and operatively connected with

the spindle in any suitable manner, as by a chain 56 passing around the sprocket-wheels 57 and 58, respectively. This shaft is journaled in bearings and is provided at its upper end with an arm 59, to which is fulcrumed a spring-pressed latch-lever 60, adapted to engage with serrations 61 of a sector-plate 62 for the purpose of reliably holding the shaft in various rotary positions.

The operation of the invention will, it is thought, be understood from the foregoing, wherein it will be perceived that the block-pin is normally entirely housed by the frame 8, so as to be incapable of interfering with the ordinary street traffic, that when the flange of a car-wheel depresses the plate 25 it coincidentally exposes the said block-pin, which can then be swerved by the previously-depressed deflecting-blade 46, whereby the movement of the switch-tongue is attained.

It is apparent that various changes may be made from the illustrated embodiment of the invention. For example, where it is desired to utilize it in situations where connected pairs of track-rails are simultaneously to be vibrated to open or close a switch or turnout either rail of such a pair would be connected with the afore-described apparatus and so fulfil the required duty. With urban railways the operative parts in practice are protected from injury by the use of inclosing casings and placing the same below the surface of the street-bed.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a railway-track and a swinging switch-tongue, of a frame, a chambered block having guideways on the outer face of its side walls, said block being slidable within said frame, mechanical connections between said tongue and the block, a vertically-movable pin carried by the block and adapted to be normally in its lowermost position, and means actuated by a car-wheel whereby said pin is elevated into operative position.

2. The combination with a railway-track and a swinging switch-tongue, of a frame in the track-bed, a chambered block having guideways on the outer face of its side walls, said block being slidable within said frame, mechanical connections between said tongue and the block, a normally-depressed pin carried by the block, means actuated by the wheel of a car for protruding the said pin above the top of said frame, and devices carried on the car and adapted to be controlled therefrom whereby the said pin is engaged to predeterminately move said tongue in either direction.

3. The combination with a railway-track, a swinging switch-tongue, of a frame having transversely-arranged guides, a block slidably mounted on said guides, a vibratory le-

ver connected to said block, mechanical connections between the lever and said tongue, a device carried by said block and arranged to be normally in its lowermost position, means actuated by the wheel of a car for raising said device into position to be engaged by devices carried upon the car when the same are depressed, said last-named devices, and means to control the actions thereof.

4. The combination with a railway-track, a swinging switch-tongue and a semaphore, of a frame having transversely-arranged guides, a block slidably mounted on said guides, a vibratory lever connected to said block, mechanical connections between the lever and said tongue and also between the lever and the semaphore, a device carried by said block and arranged to be normally in its lowermost position, means actuated by the wheel of a car for raising said device into position to be engaged by devices carried upon the car when the same are depressed, said last-named devices, and means to control the actions thereof.

5. The combination of a railway-track, a switch-tongue, a slidable chambered block having guideways on the outer face of its side walls, mechanical connections between the block and the tongue, and means actuated by the wheel of a car for rendering the said block capable of being engaged by devices carried by the car for predeterminately swinging said tongue.

6. The combination of a railway-track, a switch-tongue, a semaphore, a slidable chambered block having guideways on the outer face of its side walls, mechanical connections between the block and the tongue and also with the said semaphore, and means actuated by the wheel of a car for rendering the

said block capable of being engaged by devices carried by the car for predeterminately swinging said tongue.

7. The combination of a railway-track, a switch-tongue, a slidable block, mechanical connections between the block and the tongue, and means actuated by the wheel of a car for rendering the said block capable of being engaged by devices carried by the car for predeterminately swinging said tongue, said devices and comprising a vertically-movable spindle having an offset in its lower portion, a blade connected to said offset portion of the spindle, a spring tending to maintain the spindle at its most elevated position, a shaft having an arm at its top end, means to retain the shaft in various rotary positions, and operative connection between the shaft and the spindle.

8. The combination of a railway-track, a switch-tongue, a semaphore, a slidable block, mechanical connections between the block and the tongue and also with the said semaphore, and means actuated by the wheel of a car for rendering the said block capable of being engaged by devices carried by the car for predeterminately swinging said tongue, said devices and comprising a vertically-movable spindle having an offset in its lower portion, a blade connected to said offset portion of the spindle, a spring tending to maintain the spindle at its most elevated position, a shaft having an arm at its top end, means to retain the shaft in various rotary positions, and operative connection between the shaft and the spindle.

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