

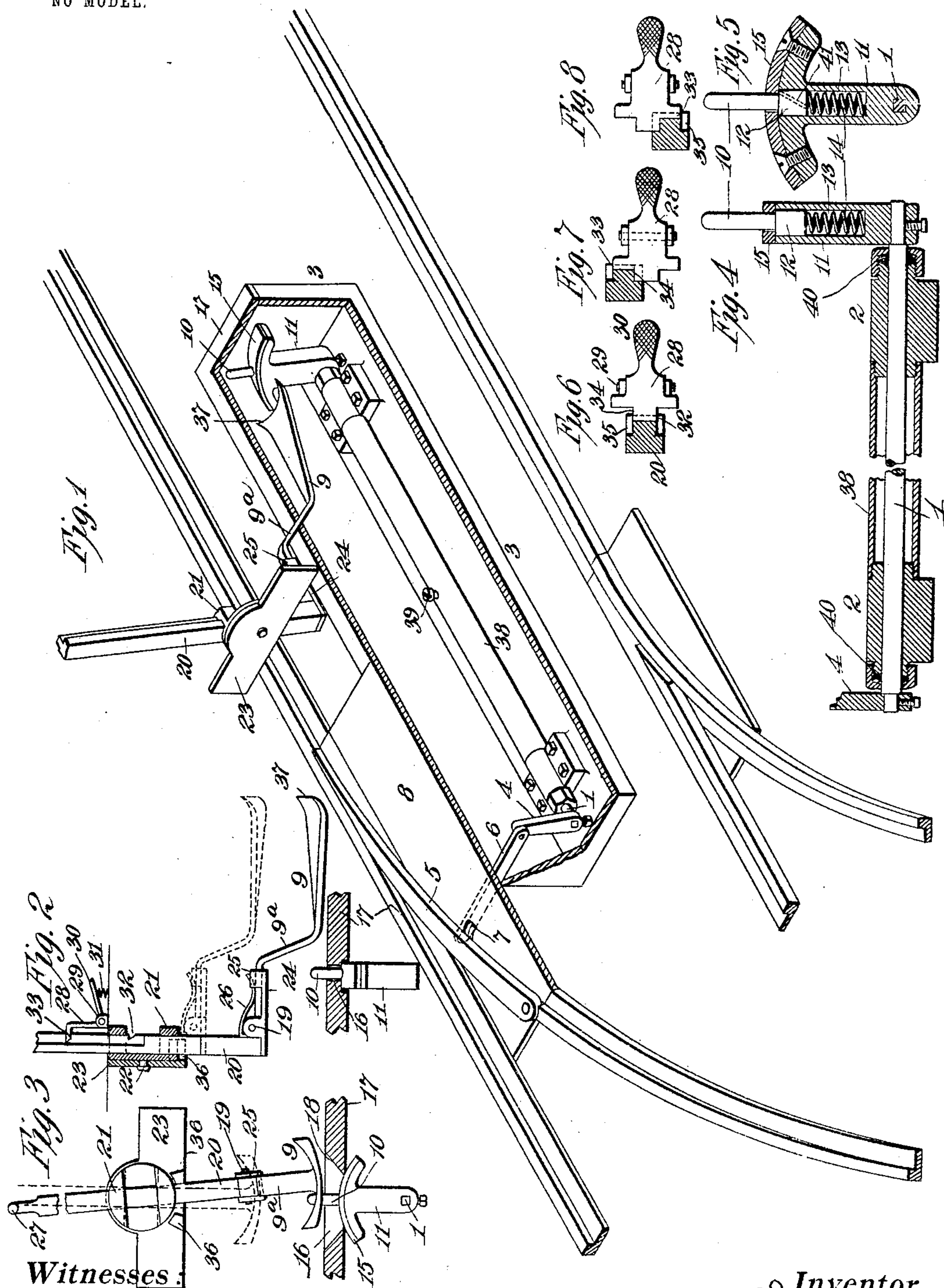
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E. F. DAVIS.
RAILWAY SWITCH.

APPLICATION FILED FEB. 25, 1904.

NO MODEL.



Witnesses:

Jas. F. Coleman
Mo. Robt Taylor

Inventor
Edwin L. Davis,
By *Nero J. J. J.*

Attorneys.

UNITED STATES PATENT OFFICE.

EDWIN F. DAVIS, OF SPRINGFIELD, NEW YORK.

RAILWAY-SWITCH.

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To all whom it may concern:

Be it known that I, EDWIN F. DAVIS, a citizen of the United States, residing in Springfield, Queen's Station, Long Island, New York, have invented a certain new and useful Improvement in Railway-Switches, of which the following is a specification.

The present invention relates to improvements in devices carried by the car for throwing railway-switches, particularly the switches of street-railways, and has for its object to produce a mechanism by means of which a switch may be positively moved without the need of stopping the car.

A further object is to secure this end by simple mechanism which will be inexpensive to install and which will not be liable to get out of order.

Another object is to provide the mechanism which protrudes from the pavement between the rails with means for automatically cleaning it of accumulated dirt and snow, and a further object is to provide a device which when used in street-railways will not be damaged by engagement with the wheels of trucks and other vehicles.

I accomplish the above objects by the device shown in the accompanying drawings, which illustrate one embodiment of the invention, and in which—

Figure 1 is a perspective view, partially in section, of a track and switch, showing the switch-throwing mechanism and the actuating mechanism therefor carried by the car. Fig. 2 is a side view, partially in section, of a portion of the mechanism. Fig. 3 is a front view of the same mechanism. Fig. 4 is a side view, partially in section, of the horizontal shaft, throwing-lever, and their supports. Fig. 5 is a front sectional view, partially in section, of the throwing-lever. Figs. 6, 7, and 8 are top views, partially in section, of a portion of the throwing mechanism and the latch for supporting and locking the same.

In all of the views like parts are designated by the same reference-numerals.

In carrying out my invention I locate between the rails and in the case of street-railways below the surface of the pavement a

horizontal shaft 1, which is mounted in suitable bearings 2, which may be placed within a box or other receptacle 3. One extremity of the shaft 1 is provided with an arm 4, which connects to the switch 5 through the intermediary of the link 6, which may pass through a slot 7 in the switch-plate 8. The shaft 1 is to be oscillated upon its bearings a partial revolution, so that the switch may be moved from the open to the closed position, as will be understood. The shaft is oscillated by engagement of a cam-bar 9, carried by the car, engaging with a pin 10, carried by a vertical arm or throwing-lever 11, keyed to the extremity of the shaft 1 opposite to that from the lever 4. The pin 10 is cylindrical and has an enlarged cylindrical head 12, which rests within a cylindrical opening 13 in the arm 11, so that it may be elevated and depressed, and will be free to turn about its longitudinal axis and is normally elevated by a spring 14, so that the head will be in engagement with a cover 15, secured to the top of the arm 11. This cover is curved, as shown, being drawn to an arc of a circle the center of which is the shaft 1. The pin 10 passes through a slot 16, formed within the plate 17, which may or may not be the cover of the box 3. The sides of the slot 16 are beveled at 18, so as to form sharp edges, which will engage with the top 15 of the arm 11. The arm 11 being oscillated about its axis by engagement with the cam-bar 9, carried by the car, the sharp edges 18 will cut or remove all the accumulated dirt or other obstruction which may be forced into the slot 16 from the top of the arm 11 and prevent the choking of the mechanism. The spring 14 is so adjusted that the wheel of a vehicle engaging with the pin 10 will depress the latter and prevent it breaking or bending.

The cam-plate 9, as before stated, is carried upon the car, it being understood that every car which passes over the switch is provided with such a cam. The cam-plate is triangular, as shown, with inclined sides and has a narrow shank 9^a, which is pivoted at 19 to a vertical arm 20, which passes through a bearing 21, pivoted at 22 to a plate 23, attached to the front dashboard of the car. The bearing 21 is

of such a character as to permit the arm 20 to be elevated or depressed from the position shown in solid lines to those in broken lines in Figs. 2 and 3, and the pivot 22 permits the bearing and arm to be oscillated, as shown in Fig. 3. The arm 20 is provided with an extension 24, its lower extremity having ears 25, which engage with each side of the shank of the cam-arm 9 and rigidly hold it against lateral displacement. A spring 26 tends to normally depress the cam-arm and hold it in engagement with the extension 24. The arm 20 may be elevated or depressed and oscillated by means of a handle 27, and the cam-arm 9 is so designed that upon the arm 20 being lowered to the position shown in full lines in Fig. 2 and oscillated to one side or the other the shank 9^a and one of the edges of the cam will be thrown to one side, causing the edge to engage with the pin 10 and move it, together with the arm 11, to one side or the other, as determined by the inclination of the arm 20, thus throwing the switch to one side or the other, the pin rotating upon its longitudinal axis with little friction. The cam-plate is made sufficiently wide to throw the arm 11 to one side sufficient to fully open or close the switch. The arm 20 is made square, and the bearings 21 are also made square, so that the engagement of the cam-arm with the pin will not twist the arm upon its longitudinal axis. The bottom of the cam-arm 9 is curved, as shown in Fig. 3, and is so arranged that when it is lowered and the arm so oscillated to one side it will engage with the pavement or be carried through the air but a short distance above the latter.

The arm 20 is held in the elevated position (shown in dotted lines in Figs. 2 and 3) by means of a latch 28, pivoted at 29 and provided with a foot-lever 30, by means of which it may be depressed. A spring 31 serves to elevate the foot-lever and keep the latch in engagement with the arm 20. A notch 32 is so arranged in the arm 20 that when it is engaged with the latch 28 the arm 20 will be held in the elevated position, and a second notch, 33, in the arm 20 is so arranged that when engaged with the latch 28 the arm will be held in the lowered position. In order to lock the arm 20 in an inclined position, the latch 28 is provided with a shoulder 34, which will engage with a groove 35 on the arm 20. (See Figs. 7 and 8. These two views show the position of the arm 20 as oscillated to each side.) Stops 36, secured to the plate 23, limit the amount of movement of oscillation of the arm 20.

In order to prevent the cam-arm 9 from engaging with the pavement without elevating the arm 20 in the event of it being necessary to run the car backward, the rear edges of the cam are turned upward at 37.

The shaft 1 is surrounded by a sleeve 38,

which may be connected to the bearings 2 and will form a reservoir capable of holding a sufficient supply of oil for lubricating the bearings of the shaft for a number of months. A tap 39 serves as a means for supplying oil to the inside of the casing 38, and stuffing-boxes 40 prevent leakage of oil out of the ends of the shaft. The cylindrical opening 13 serves as a reservoir for oil for lubricating the pin 10 and the bearing within the arm 20. An oil-passage 41 through the head of the pin permits introduction of oil into the opening 13, and the occasional downward movement of the pin, caused by the wheels of a vehicle passing over it or a pedestrian or a horse stepping upon it, forces the oil through the passage 41, the head 12 acting like a piston.

In operation upon a car approaching the switch the foot-lever 30 on the car is depressed, which action will release the arm 20, which will drop by its own weight or may be assisted by force applied to the handle 27. The operator will then oscillate the arm one side or the other, as depends upon the way he desires to open the switch. Upon the arm being oscillated the shoulder 34 will engage with the groove 35 on the arm and firmly lock the latter in the inclined position. The cam-arm 9 will then be dragged upon or immediately over the pavement, and if it should strike an obstacle before reaching the pin 10 it would oscillate upon its pivot 19 against the tension of the spring 26. Upon engaging with the pin 10 the inclined sides of the cam-arm will engage with the pin 10 by a rolling motion and force it, and with it the arm 11, to one side or the other, as depends upon the position of the arm 20, oscillating the shaft 1, and through the action of the lever 4 and link 6 will throw the switch 5. The arm 20 may then be elevated, the operator first depressing the foot-lever 30 to release the latch 28.

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

1. In a railway-switch, the combination with a switch and a lever connected thereto, of an arm carried by the car, a cam on the arm, and a support for the arm so arranged that it may be inclined to cause one edge or the other of the cam to engage with the lever and throw the switch.

2. In a railway-switch, the combination with a switch and a lever connected thereto, of an arm carried by the car, a cam on the arm, and a support for the arm so arranged that it may be inclined to cause one edge or the other of the cam to engage with the lever and throw the switch, and means for elevating the cam-arm.

3. In a railway-switch, the combination with a switch and a lever connected thereto, of a cam-arm carried by the car, and a support for the cam so arranged that it may be inclined

to cause one edge or the other of the cam-arm to engage with the lever and throw the switch, and means for elevating the cam-arm, and a lock for holding the cam-arm in the elevated position.

4. In a railway-switch, the combination with a switch and a lever connected thereto, of an arm carried by the car, a cam on the arm, and a support for the arm so arranged that it may be inclined to cause one edge or the other of the cam-arm to engage with the lever and throw the switch, and a lock for holding the cam-arm in a depressed position.

5. In a railway-switch, the combination with a switch, of a lever connected thereto, a spring, an elevated projection on the lever, and a cam-arm carried by the car, and arranged to engage with the projection for throwing the switch.

6. In a railway-switch, the combination with an arm, and a support therefor, the said arm carrying a cam, and being pivoted to the support.

7. In a railway-switch, the combination with an arm, of a support therefor, the said support being mounted in bearings on the car so that it can be elevated or depressed the said arm carrying a cam.

8. In a railway-switch, the combination with an arm, of a support therefor, the said support being mounted on the car so that it can be oscillated the said arm carrying a cam.

9. In a railway-switch, the combination with an arm, of a support therefor, the said support being mounted on the car, so that it can be oscillated and moved in a vertical direction the said arm carrying a cam.

10. In a railway-switch, the combination with an arm, of a support therefor, bearings for the support through which the support may be elevated or depressed, and oscillated,

and a single latch for supporting the cam-arm and holding it in an inclined position the said arm carrying a cam.

11. In a railway-switch, the combination with an oscillating shaft, of a lever connected thereto, the said lever having a curved upper face, and a plate engaging with the lever, and having a slot with inclined edges, and means for oscillating the lever.

12. In a railway-switch, the combination with a shaft, and connections for throwing the switch, of bearings for the shaft, and a casing surrounding the shaft and connecting the bearings, the said casing serving as a reservoir for holding oil for lubricating the bearings.

13. In a railway-switch, the combination with a switch, of a lever connected thereto, a cylindrical opening therein, and a cylindrical pin projecting from the lever, the said pin being capable of being free to rotate upon its longitudinal axis.

14. In a railway-switch, the combination with a switch, of a lever connected thereto, an opening therein, and a projecting pin within the opening, the said pin having an oil-passage connecting with the opening.

15. In a railway-switch, the combination with a switch, of a lever connected thereto, a cylindrical opening therein, and a projecting cylindrical pin within the opening, the said pin having an oil-passage connecting with the opening, and being free to rotate about its longitudinal axis.

This specification signed and witnessed this 18th day of February, 1904.

EDWIN F. DAVIS.

Witnesses:

JNO. ROBT. TAYLOR,
JOHN L. LOTSCH.