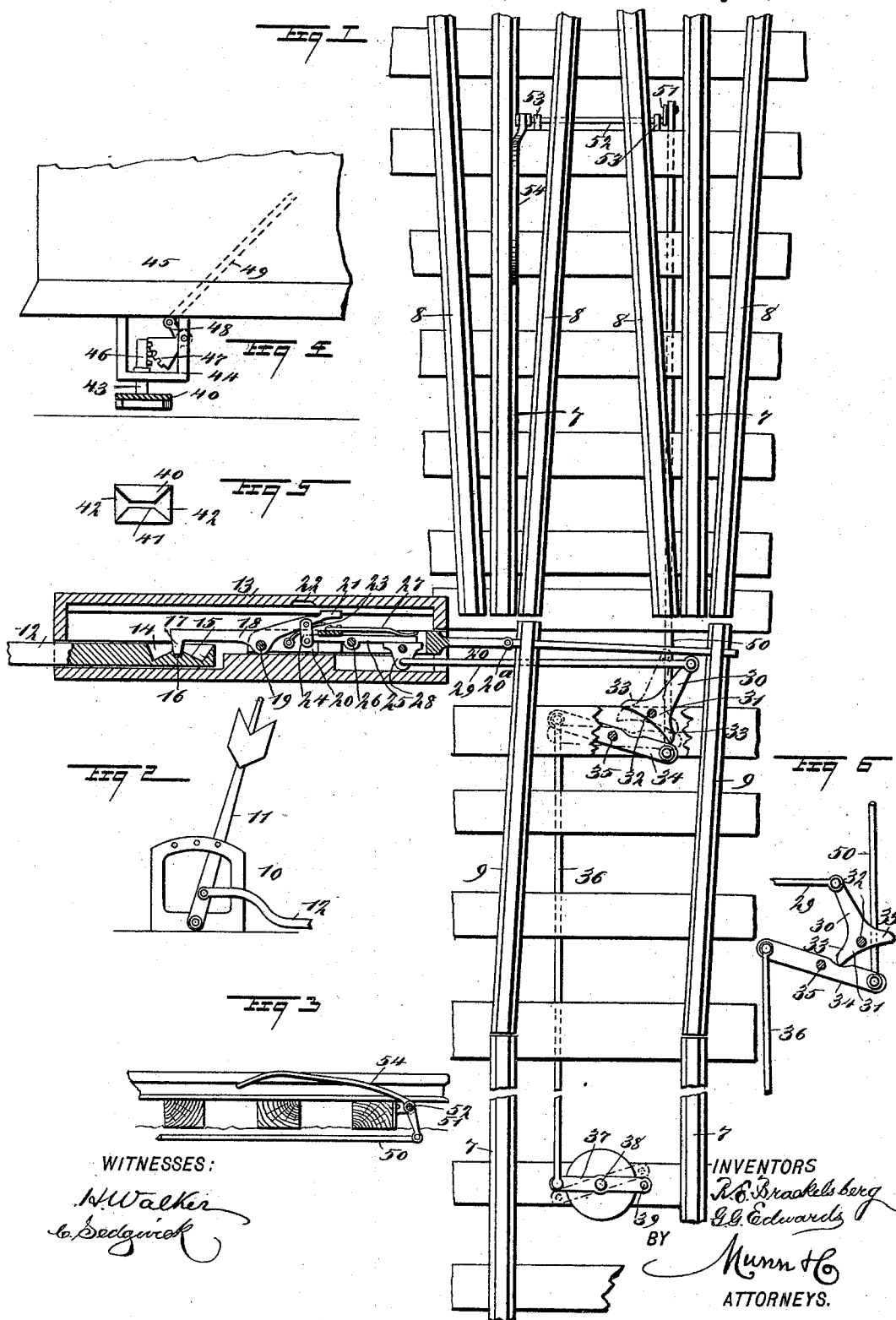


(No Model.)

R. E. BRACKELSBERG & G. G. EDWARDS.
SWITCH WORKING MECHANISM.

No. 519,230.

Patented May 1, 1894.



UNITED STATES PATENT OFFICE.

ROBERT E. BRACKELSBURG AND GEORGE G. EDWARDS, OF PORTLAND,
OREGON.

SWITCH-WORKING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 519,230, dated May 1, 1894.

Application filed June 27, 1893. Serial No. 478,977. (No model.)

To all whom it may concern:

Be it known that we, ROBERT E. BRACKELSBURG and GEORGE G. EDWARDS, of Portland, in the county of Multnomah and State of Oregon, have invented a new and Improved Switch-Working Mechanism, of which the following is a full, clear, and exact description.

Our invention relates to improvements in that class of devices which are adapted to automatically throw a switch by the movement of a train.

The object of our invention is to prevent misplaced switches by providing a simple automatic switch-working mechanism worked by a passing train and which will also close the switch so that the train cannot by any possibility run off the track and take a siding.

A further object of our invention is to construct this mechanism in a very simple and substantial manner and arrange it so that it may be connected with any ordinary switch or switch stand, and also to make the connection between the switch stand and our improved mechanism in such a manner that the switch may be operated by hand in the usual way and that the mechanism may be operated by the train without interfering with the switch stand.

To this end our invention consists of certain features of construction and combinations of parts, as will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken plan view of a track, showing the main line, siding and switch and our improved switch mechanism, a portion of which is shown in section. Fig. 2 is a side elevation of an ordinary switch stand which is adapted to connect with our improved switch mechanism. Fig. 3 is a detail sectional view of a portion of the mechanism, showing the arrangement of the lever which is actuated by the flange of a car wheel and which works the switch. Fig. 4 is a broken detail view, partly in section, of the adjustable contact block carried by an engine and adapted to engage and work the switch mechanism. Fig. 5 is an inverted plan view of the

contact block. Fig. 6 is a broken detail view of the levers between the switch rails, showing them in the opposite position to that illustrated in Fig. 1.

In the drawings, 7 represents the rails of the main line, 8 the rails of the sidings, and 9 the customary switch rails which are adapted to align with either the siding or main line rails in the usual way. The switch stand 10 is also of the usual kind, having the customary lever 11 and switch rod 12, but this switch rod instead of connecting directly with the switch rails in the usual way, enters a case 13 which is arranged at the side of the track near the free ends of the switch rails and opposite the same, the rod 12 having its inner end recessed on one side, as shown at 14, in Fig. 1, and this recess has a convex back wall 15 in which, at the center, is a notch 16 adapted to engage the tooth 17 on the end of a swinging dog 18 which is fulcrumed near the center, as shown at 19, on one end of a second switch rod 20 which forms practically a continuation of the rod 12 and which is connected with the switch rails 9 in the usual way, the rod being jointed at 20^a to permit the swinging of the switch rails.

The dog 18 has one end bent outward, as shown at 21, which end has a flat face adapted to slide against the side of the case 13, and this end is also adapted to enter a notch 22 in the case, when the tooth 17 is out of the notch 16 and when in this position the switch rails connected therewith are in position to close the switch. The dog 18 is held, so that it normally engages the notches 16 and 22, by a spring 23 which is secured to the rod 20 and which presses against the dog. The dog is pivotally connected by means of a link 24 with a tilting lever 25, which is fulcrumed near its center, as shown at 26, on the rod 20, and which is pressed so as to lie normally parallel with the rod by a spring 27. The outer end of the lever 25 lies against the flat face of a tilting block 28 to which is secured a rod 29 which acts as a shifting rod and which extends outward through a slot in the inner end of the case 13 and beneath one of the switch rails 9, the outer end of the shifting rod being pivoted to one arm 30 of a three armed lever 31 which is fulcrumed beneath the track,

as shown at 32, and has oppositely extending arms 33 adapted to strike and tilt the lever 34, which is also fulcrumed centrally beneath the track as shown at 35, and both levers may be inclosed in a case if desired. The lever 34 has one end pivoted to a rod 36 which extends parallel with the track rails and is at its other end pivoted to one end of a lever 37, which is fulcrumed in the center on a stud 38 and turns horizontally on a suitable support. The opposite end of the lever 37 has an upwardly extending pin 39 thereon, which projects into the path of a contact block 40 which is carried beneath the locomotive and which is provided with a longitudinal groove 41 on its underside, wide enough to receive the pin, and having flaring ends 42 to make sure of its connection with the pin 39. When the switch is open the lever 37 extends transversely of the track, so that the pin 39 may be struck by the flaring ends of the contact block, but when the switch is closed, the pin 39 is in position to pass freely through the groove 41 in the block.

The contact block is vertically movable, as described presently, and when in its lowest position it strikes the pin 39 so as to tilt the lever 37 and operate the switch shifting mechanism, as hereinafter described, but if it is not desired to throw the switch by the movement of the locomotive, the contact block is raised slightly so that the pin may slide freely through the groove without affecting the switch mechanism. The contact block 40 has an upwardly-extending shank 43 which slides in a hanger 44 beneath the locomotive 45, and the shank 43 has teeth at its upper end, as shown at 46, which engage a segmental rack 47 which is also hung to swing vertically in the hanger 44 and is provided with a crank 48, to which is pivoted a reach rod 49, and the latter extends upward into the cab of the engine so that by manipulating it properly the rack 47 may be tilted and the shank 43 and contact block 40 raised or lowered.

The mechanism just described is adapted to operate the switch when the train is running in one direction, and to provide for operating the switch when the train is going in the opposite direction,—the lever 34 has its other end pivoted to a rod 50 which runs along the track in the opposite direction to the rod 36, and the rod 50 connects with a crank 51 on a crank shaft 52, this being journaled in supports 53 on the track and having secured to it a curved arm 54 which lies at the side of one of the rails 7 and projects slightly above the rail so as to be struck and depressed by a passing wheel. The arm will only project above the rail when the switch is opened, as will be seen from its connection with the lever 34.

The springs 23 and 27 are sufficiently stiff to hold the dog 18 and lever 25 in the position shown in Fig. 1 and permit the switch to be thrown by the hand lever 11 in the ordinary

way, but the springs are overcome by the greater power of a train, and if the switch stand is locked and the switch open, then the operation is as follows: Suppose the train to be coming from the side on which the lever 37 lies and that it is not desirable to take a siding the block 40 is lowered and, as the train approaches the switch one of the flaring sides of the block strikes the pin 39 and tilts the levers 37 and 34 the flaring side of the block serving to swing the pin and lever to one side, and when the pin aligns with the groove 41 it slides freely through the groove in the block. When the lever 34 is tilted it strikes an arm 33 of the lever 31, and if the lever 31 is in the position shown in Fig. 1, tilts it to the left, while if it is in the position shown in Fig. 6, it tilts it to the right. The position of the lever 31, will, of course, depend on whether the switch, which as illustrated is a double one, is thrown to the right or left. When the lever 31 is tilted it pushes or pulls, as the case may be, on the rod 29, which oscillates the block 28, tilts the lever 25 and dog 18, and as the block 28 is fulcrumed on the rod 20, the above described movement also moves the said rod and throws the switch rails 9 into position to close the switch. This will bring the tooth 17 out of the notch 16, and the head 21 of the dog 18 will catch into the recess 22 and thus hold the switch in closed position. If the train is coming from the opposite direction and the switch is open, the curved arm or lever 54 will project slightly above the rail 7 and a wheel of the train will strike and depress the said lever, thus oscillating the crank shaft 52 and oscillating the crank 51 so as to pull upon the rod 50 and tilt the lever 34 which will actuate the switch mechanism and close the switch in the manner already described.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with a switch stand and an adjacent switch, of a two part switch rod connecting the stand and switch, the parts being connected by a coupling adapted to hold the parts of the rod in operative position to be thrown by hand but to be separated when thrown by a train, a swinging lever pivoted on a track between the switch rails and connected with devices actuated by the passing of a train, a tilting three-armed lever pivoted on the track and having two of its arms arranged to be alternately struck by the swinging lever, and an operative connection between the three-armed lever and the coupling parts of the switch rod, whereby the tilting of the lever will actuate said parts and throw the switch, substantially as described.

2. The combination, with the switch, the switch stand, the two-part switch rod and the spring coupling connecting the parts of the rod and adapted to hold them in operative position to be moved by the switch stand, of

a lever mechanism on the track adapted to be operated by a passing train, and an operative connection between the lever mechanism and the switch rod, whereby the switch may be thrown and the rod coupling released, substantially as described.

3. The combination, of the switch, the switch stand, the two-part switch rod connecting the switch and switch stand, the case inclosing the adjacent ends of the switch rod, a spring-pressed dog pivoted on one section of the switch rod and arranged to engage the adjacent switch rod section and also a notch in the case, a shift rod operatively connected with the dog to release the same, and a lever mechanism on the track adapted to be operated by a passing train and arranged to actuate the shift rod, substantially as described.

4. In a switch mechanism, the combination, with the switch rod and the swinging lever pivoted upon the track and operatively connected with the switch rod, of a pin arranged on one end of the tilting lever and projecting upward, and a vertically movable grooved contact block with flaring ends carried by a

locomotive and adapted to engage the pin, substantially as described.

5. The combination, of the switch, the switch stand, the two-part switch rod connecting the switch and stand, one part of the rod having a recess with a convex back wall and a central notch therein, a case inclosing the adjacent ends of the switch rod and provided with a notch in one wall, a tilting spring-pressed dog having a tooth at one end to engage the notch of the switch rod and a head at the other to engage the notch of the case, a spring-pressed lever fulcrumed on one section of the switch rod and pivoted to the dog, a sliding shift rod projecting through one end of the case and pivotally connected with the lever, and a lever mechanism on the track adapted to be operated by a passing train and to move the shift rod, substantially as described.

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Witnesses:

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C. F. THARP.