No. 858,436. PATENTED JULY 2, 1907.

F. L. & A. BILLE.

RAILWAY SWITCH.

APPLICATION FILED APR. 29, 1907.

Fig 4

Fig 7.

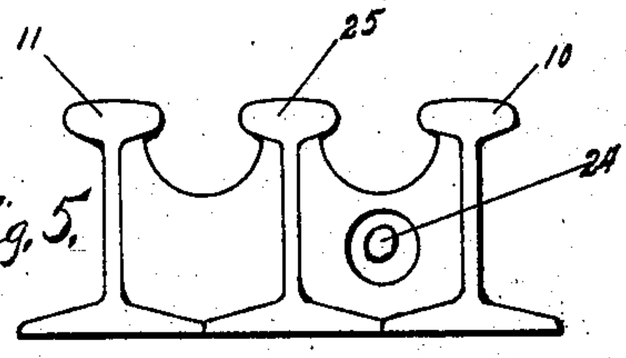

Fig. 5.

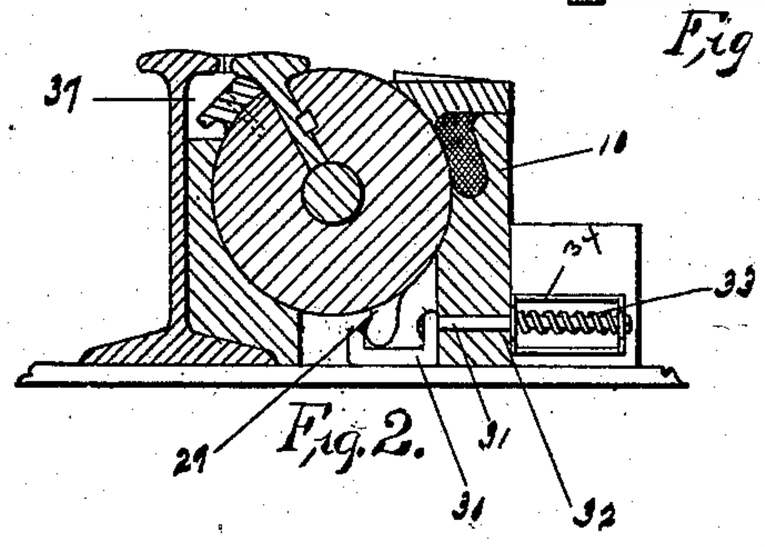

Fig. 2.

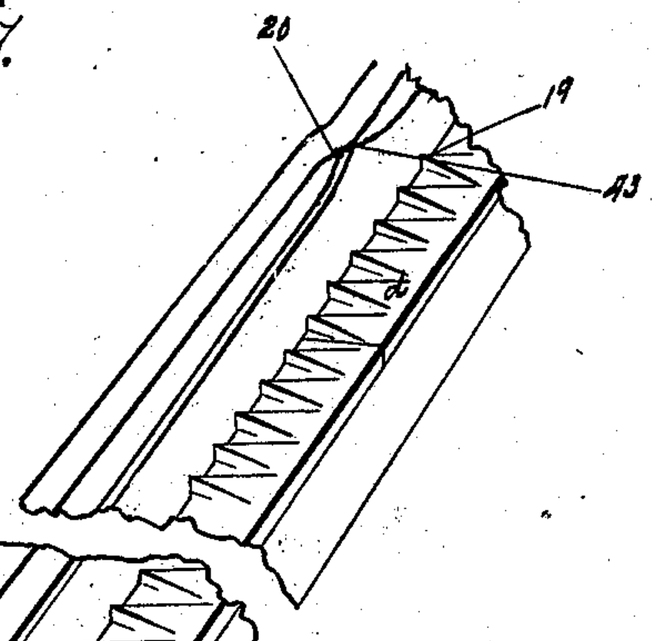

Fig. 1.

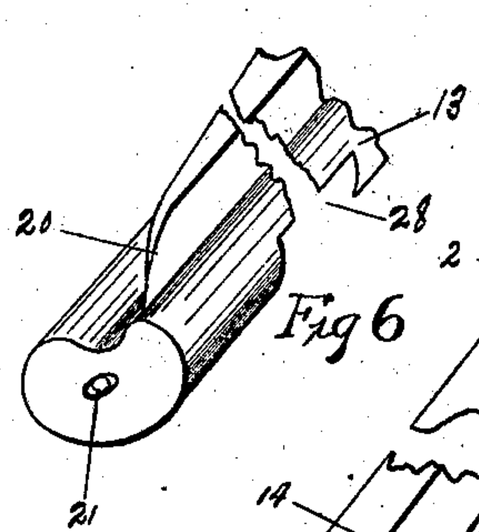

Fig 6

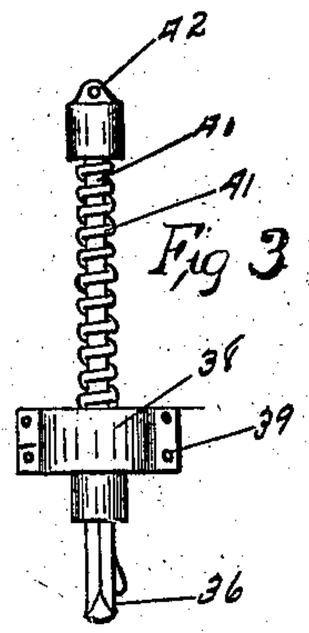

Fig 3

Witnesses
W. P. Sampson.

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Fred L. Bille
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UNITED STATES PATENT OFFICE.

FRED L. BILLE AND ANDREW BILLE, OF SPOKANE, WASHINGTON.

RAILWAY-SWITCH.

No. 858,436. Specification of Letters Patent. Patented July 2, 1907.

Application filed April 29, 1907. Serial No. 370,956.

To all whom it may concern:

Be it known that we, FRED L. BILLE and ANDREW BILLE, citizens of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification.

This invention relates to switches and has particular application to street and rapid-transit railways, and to the kind of switch that is opened by an appliance attached to or forming a part of the car or engine running over the track or by a person riding upon such car or engine by means of an appliance attached to the car or engine worked by hand or by electric, steam or other power, applied at will by the operator of the car or engine and which closes automatically, and consists in the novel construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of the switch, Fig. 2 is a cross-section of the switch taken on the line 2—2 of Fig. 1, Fig. 3 is an elevation of a plow or shoe to attach to the frame of a car and which is operated to open the switch, Fig. 4 is an elevation of the ends of two rails adapted to rest against the right end of the switch, Fig. 5 is an elevation of the ends of three rails adapted to rest against the left end of the switch and comprising the main rail, a switch and a guard rail, Fig. 6 is an elevation of the right end of the switch with the casing removed, and Fig. 7 is an enlarged elevation of the coil spring applied to the switch as a means of automatically closing the same.

At the juncture of the switch and main rail and between a guard rail 10 and the end of the switch rail 11, we provide a casing 12 adapted to serve as a bearing for a cylinder 13, which cylinder extends the entire length of the casing 12. This cylinder 13 carries the switch 14 mortised 15 into the cylinder so that the same will be secure at the upper surface thereof and is keyed 16 in that position. To the left of the switch 14 and subjacent thereto and also secured to the cylinder 13 is a small rail 17 extending a distance from the left end of the switch, the purpose of which will be explained herein later on. The guard-rail 10 for the full length of the switch is provided at its upper surface with a plate 18 in sections, *a*, *b*, *c*, *d*, with teeth 19 projecting inwardly towards the switch 14. The switch tapers to a point 20 at the right end thereof and the guard rail 10 bearing the plate 18 is so set that the distance from the teeth points 19 to the side of the switch 14 is uniform the entire length of the switch. The right end of the cylinder 13 has a shaft 21 which rests in the bearing 22 and the left end of the cylinder 13 has a shaft 23 which rests in the bearing 24.

When the switch is closed, it is in the position shown in Fig. 1 and the left end of the switch 14 engages the tread or main rail 25. Longitudinally arranged in the guard rail 10, adjacent to the cylinder 13 and underneath the plate 18 is a cavity 26, filled with waste 27, to be saturated with oil for lubrication purposes. Cavities 28 are also provided in the cylinder 13 to be filled with waste and saturated with oil for lubrication purposes. Secured to the cylinder 13 about midway between the ends thereof is a projection 29 engaged by a catch 30, the catch 30 being secured to a shaft 31 passing through an opening 32 in the guard rail 10 and engaging a coil spring 33 inclosed in a cylindrical casing 34 to protect it from the elements and from being interfered with by dirt or other substance, a boxing 35 inclosing the casing 34 as further means of protection and to facilitate an access to the coil spring and casing when for any purpose it is desirable.

A plow or shoe 36 is provided to be secured to the frame of a car and which is to be operated as a means of opening the switch and also to serve in the capacity of a cleaner for the cavity 37, should dirt or other substance become lodged therein. The bearing 38 is adapted to be riveted 39 or otherwise secured to the frame of a car, the plow or shoe 36 comprising the lower end of the shaft 40 bearing the coil-spring 41. The force used to throw down the plow or shoe 36 to engage the switch will be applied at 42 and the tension of the spring 41 will elevate the plow or shoe 36 as soon as the force is removed.

The apparatus is adapted for the car to approach the switch at 20 the same being the right end thereof and the switch 14 comprises a portion of the main track and is passed over by a car in all cases where the car is not thrown onto a side track and when it is desired to side track a car the switch 14 is thrown to one side and not traversed by the car.

When it is desired to side track a car, the operator will throw down the plow or shoe 36 by whatever force is applied at 42, as he approaches the right end 20 of the switch 14, the plow or shoe 36 will enter the opening 43 between the switch 14 and side-track rail 11 spreading the opening 43 by throwing the switch 14 against the guard-rail 10 by rotating the cylinder 13 in its bearing 12, this throws the switch out of the way of the passage of the car and leaves the side-track-rail 11 in line of the car to be engaged by the same and the car consequently carried onto the side track. After the plow or shoe 36 has passed the length of the switch 14, leaving the same at the left end thereof, the tension of the coil spring 33 upon the shaft 31 secured to the catch 38 engaging the projection 29 upon the cylinder 13, causes the cylinder 13 to rotate in the opposite direction and thereby returns the switch 14 to the position shown in Fig. 1. A slight opening 44 is provided at the left end of the switch 14 between the same and the side-track-rail 11 in order that the car may be returned to the main track from the side track automatically, this opening being provided for the entrance of the flange of the car wheel.

The switch will always be made long enough to avoid a split-switch, long enough so that the fore-truck of the car will hold open the switch until the rear-truck has engaged the same.

We wish to place special stress upon the self-cleaning character of this switch and the safe guards provided against its workings being interfered with by dirt or other obstructions. In case dirt or other matter enters the cavity 37, the plow or shoe 36 as it passes through the same in opening the switch 14 carries the same before it and out at the end of the switch. In case dirt or other substance engages the surface of the cylinder 13 between the switch 14 and the guard-rail 10, the rotation of the cylinder 13 forces the same over the guard rail 10, and the teeth 19 upon the plates 18 will cut and separate any packed or frozen particles, and so separate the same as to make the substance easily crowded out of the way by the repeated thrusts of the switch 14 against the same. In the rotation of the cylinder 13 the surface thereof that is exposed between the switch 14 and the guard rail 10 becomes oiled from the lubrication at the packing 27, this prevents any freezing of dirt or other substance to the surface of the cylinder 13. The sub-rail 17 is provided as a side bearing for the plow or shoe 36 in order that the switch 14 may be thrown against the guard rail 10 each time the switch is thrown and the surface of the cylinder 13 lying between the switch and guard rail completely cleaned and lubricated.

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

1. In a railway switch, the combination of a switch point borne by a cylinder calculated to rotate in a casing for a bearing, such cylinder being longitudinally arranged between a guard-rail on one side and the end portion of a switch rail on the other side, the said switch point adapted to be opened by a plow or shoe secured to the frame of a car and engaging such switch point by passing between the same and the switch rail and throwing the same side-wise by rotating the cylinder to which the same is secured, the said switch point being closed automatically by the tension of a coil spring upon a shaft connected to a catch engaging a projection upon the under surface of the cylinder, substantially as set forth.

2. In a railway switch the combination of a switch-point borne by a cylinder longitudinally arranged between a guard rail on one side and a switch rail on the other side, such guard rail having on its upper surface, plates in sections, with teeth thereon projecting inwardly towards the switch point adapted to sever and separate packed or frozen substances accumulating between such guard-rail and the switch point and upon the surface of the cylinder exposed between the same, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRED L. BILLE.
ANDREW BILLE.

Witnesses:
L. L. WESTFALL,
MARY SHOLDERER.