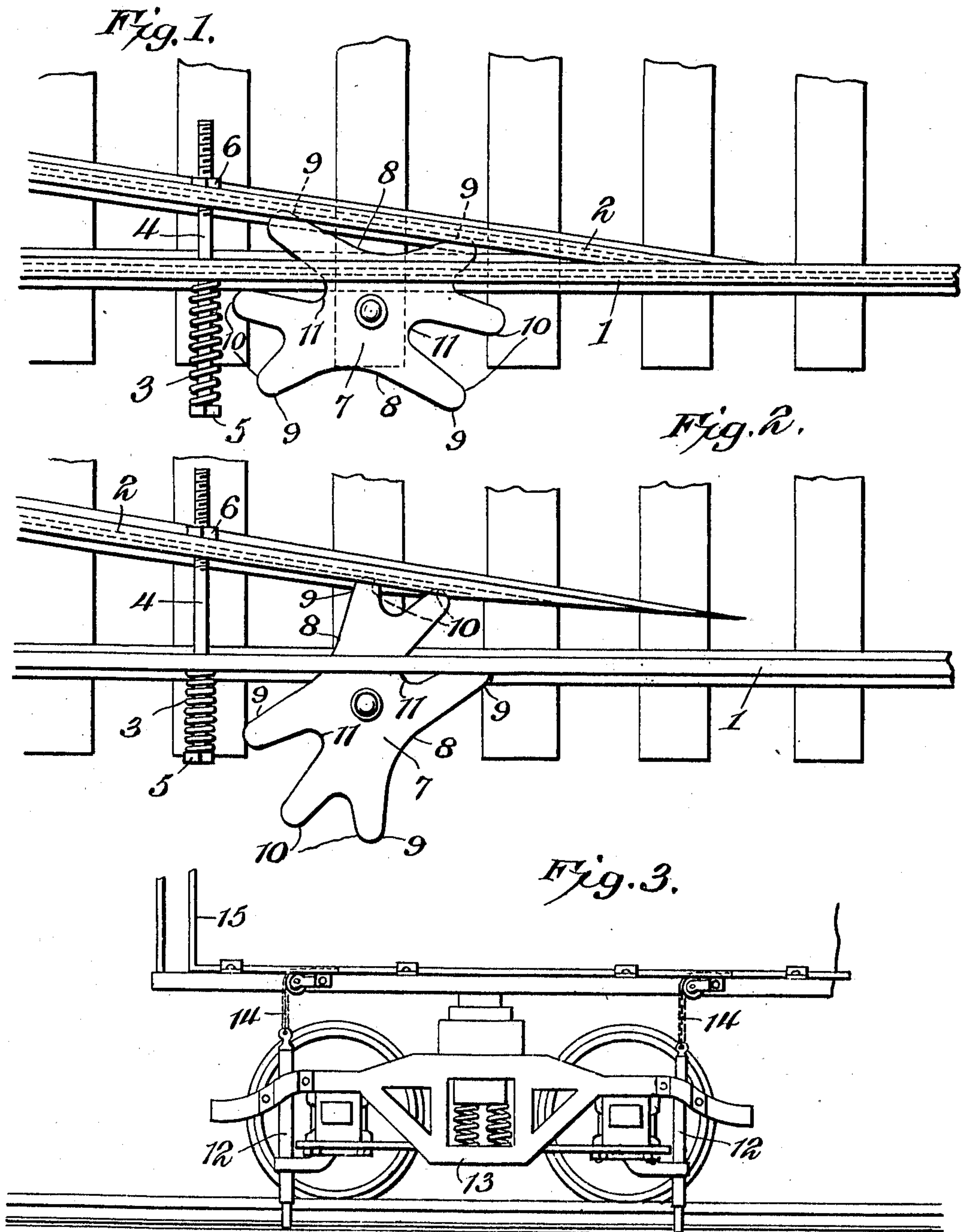


J. LEITH.
SWITCH OPERATING MECHANISM.
APPLICATION FILED JUNE 9, 1910.

993,695.

Patented May 30, 1911.



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SWITCH-OPERATING MECHANISM.

993,695.

Specification of Letters Patent.

Patented May 30, 1911.

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To all whom it may concern:

Be it known that I, JAMES LEITH, subject of the King of Great Britain, residing at Sherbrooke, in the Province of Quebec and Dominion of Canada, have invented a new and useful Switch-Operating Mechanism, of which the following is a specification.

This invention relates to means for operating railway switches, and the object of the invention is to provide simple and inexpensive means which will operate efficiently to throw a switch point and to hold it in the position to which it has been thrown during the travel of a car.

A further object of the invention is to provide a switch operating device which may be actuated from the car to throw the switch point in either direction so that the car will be positively directed onto the main track or the branch track according to its destination without the services of a switchman or requiring the motorman or engineer of the car to leave the car for the purpose of setting the switch.

These stated objects, and such other objects as will incidentally appear, are attained in the use of the device illustrated in the accompanying drawings, and the invention consists in certain novel features of the same which will be hereinafter first fully described and then more particularly pointed out in the appended claims.

In the annexed drawings,—Figure 1 is a plan view of a portion of a railway track showing my improved switch throwing device in connection therewith and showing the parts arranged to direct a car onto the switch or branch line. Fig. 2 is a similar view showing the parts arranged to permit the car to travel continuously over the main line. Fig. 3 is a side elevation of means which may be utilized to actuate the element operating directly upon the switch point.

The track rail 1 may be of any preferred size or weight and laid in any desired manner. The switch point 2 is pivoted adjacent the track rail so as to move to or from the same in the usual manner, as will be readily understood. The switch point is held normally against the track rail by means of a spring 3 coiled around a bolt 4 between the outer side of the track rail 1 and the head 5 of the bolt and tending normally to throw the bolt away from the track rail. The body

or shank of the bolt passes through the web of the track rail and also through the web of the switch point, and a nut 6 is mounted upon the stem or shank to bear against the inner side of the web of the switch point so as to transmit to the switch point the force exerted by the spring through the bolt, thereby holding the switch point against the track rail, as illustrated in Fig. 1. Within the road bed, upon any convenient support, I pivotally mount a star wheel or cam 7 which plays through a slot in the web of the track rail and bears against the web of the switch point, as illustrated in Figs. 1 and 2. This star wheel or cam is provided with two diametrically opposite faces 8 which present wide shallow notches or recesses so that when the extremities 9 of the same bear against the web of the switch point, as shown in Fig. 1, the point will be permitted to lie against the track rail. Between these shallow recesses the cam is provided with diametrically opposite extended bearing points 10 which are closer together than the points 9 at the ends of the shallow recesses 8 so that when the said points 10 bear against the web of the switch point, as shown in Fig. 2, the switch point will be held away from the track rail to escape the flanges of the car wheel so that the car will continue to travel upon the main line.

Between the shallow recesses 8 and the bearing points 10 a deep notch 11 is provided at each side of the cam which, when the device is in the position shown in Fig. 1, will lie in the path of an operating rod carried by the car so that as the car moves forward the said rod will enter the said notch and by its continued travel rotate the cam upon its pivotal support to throw the switch point.

Any convenient form of operating rod may be employed to actuate the cam, but I prefer to use the device shown in Letters Patent, No. 952,076, granted to me March 15, 1910, and illustrated generally in Fig. 3 of the accompanying drawings. In this device a vertically movable rod 12 is mounted in suitable bearings on the truck 13 of the car and is equipped with a roller at its lower end to reduce friction, the said lower end being located outside the track rails and adjacent to the same so that as the car moves forward over the track the said operating rods will be carried into engagement with

the notches 11 of the cam 7 or against the flaring sides of the shallow recesses 8 in the said cam. These operating rods are supported by chains or cables 14 extending up to the car platform and connected to a controlling rod or lever 15 which may be manipulated by the motorman when occasion requires.

It is believed the operation of my device will be readily appreciated.

When the switch is closed, as shown in Fig. 1, the widely separated points 9 at the ends of the shallow recesses 8 will bear against the web of the switch point and the switch point will then be held against the track rail by the spring 3 acting on the bolt 4, as will be readily understood. Should an approaching car be required to continue to travel upon the main line, the motorman will drop the operating rods 12 which will thereupon be carried into the notch 11 and impinge against the forward wall of the same at a point between the bottom of the notch 11 and the outer end of said wall as defined by the corresponding point 10. The continued travel of the car and the operating rod will, of course, rotate the cam through the engagement of the rod with the front wall of the notch 11, and the cam will thus be brought into the position shown in Fig. 2, in which position the rod readily escapes from the notch 11, and the bearing points 10, which are close together, will be brought against the web of the switch point so as to force the switch point from the track rail against the tension of the spring 3. The rotation of the cam will also bring one of the shallow recesses 8 into the path of the operating rods of any following car so that should the next car be intended to move onto the switch or branch line, the operating rod may be lowered so as to engage the wall of the said shallow recess and thereby rotate the cam so that it will be brought again to the position shown in Fig. 1. It will be readily appreciated that inasmuch as the bearing points 10 are immediately adjacent the points 9 and close together, a line connecting the same will be at a greater distance from the pivotal center of the cam than a line connecting the widely separated bearing points 9 so that when the points 10 engage the switch point, it will be held away from the track rail, and when the points 9 engage the switch point, it will be permitted to lie against the track rail. The cam need make only a quarter rotation at each operation, as the working faces of the same are duplicated at diametrically opposite points of the cam, but where the switch point is to be operated only occasionally, it is preferable to cause the cam to make a half rotation at each setting of the switch. For this purpose, I prefer to provide an operating rod at each end of the car truck arranged just in ad-

vance of the front wheels and just in rear of the rear wheels so that after the car has passed the switch point, the cam may be actuated to return the switch point to its normal position. It will be noted that in either position of the switch, it will rest against points which are at opposite sides of a line drawn through the pivotal support of the cam so that the pressure of the switch point against the bearing points of the cam under the influence of the spring 3 will act as a brake to positively prevent undue rotation of the cam and the consequent accidental throwing of the switch point.

While I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described my invention, what I claim is:—

1. In a switch operating mechanism, the combination with a track rail, and a pivoted switch point, of a cam having bearing points arranged to engage the switch point and disposed at opposite sides of the pivotal support of the cam, and means for holding the switch point constantly against the edge of the cam.

2. In a switch operating mechanism, the combination of a track rail, a switch point adapted to lie against the track rail, a spring acting on the switch point to hold it normally against the track rail, and a cam rotatably mounted adjacent the track rail and bearing against the switch point, the said cam having a plurality of bearing points spaced at different distances apart whereby to hold the switch point away from the track rail in opposition to the said spring or permit it to lie against the track rail under the influence of the spring.

3. In a switch operating mechanism, the combination of a track rail, a switch point, means for holding the switch point normally against the track rail, and a cam arranged upon the switch point in opposition to said means and provided with diametrically opposite shallow recesses presenting widely separated bearing points, diametrically opposite notches adjacent opposite ends of the opposite recesses adapted to be engaged by an operating rod, and closely arranged bearing points between the said notches and the ends of the shallow recesses.

4. In a switch operating mechanism for railways, a switch point, means for constraining the switch point toward one limit of its travel, and a rotatable cam in normal edge engagement with the switch point and having bearing points at different distances from the axis of rotation of the cam, said

bearing points of the cam directly engaging the switch point.

5. In a switch operating mechanism for railways, a switch point, means for constraining the switch point to one limit of its travel, and an operating means for the switch point comprising a rotatable cam in normal engagement with the switch point and having its active portion at different distances from its axis of rotation, and car carried means for directly engaging the cam to impart rotative movement thereto.

6. In a switch operating mechanism for railways, a switch point, means for constraining the switch point to one limit of its travel, and an operating means for the

switch point comprising a rotatable cam in normal engagement with the switch point and having its active portion at different distances from its axis of rotation, and a plurality of car carried means for directly engaging and actuating the cam, said car carried actuating means being spaced to cause a half rotation of the cam on the passage of a car by the switch point.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES LEITH.

Witnesses:

ALEXINA JONCAS,
HARRY ROBINSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
