Dec. 26, 1922. 1,439,977.

P. J. RAMION.

AUTOMATIC RAILWAY SWITCH OPERATING MECHANISM.

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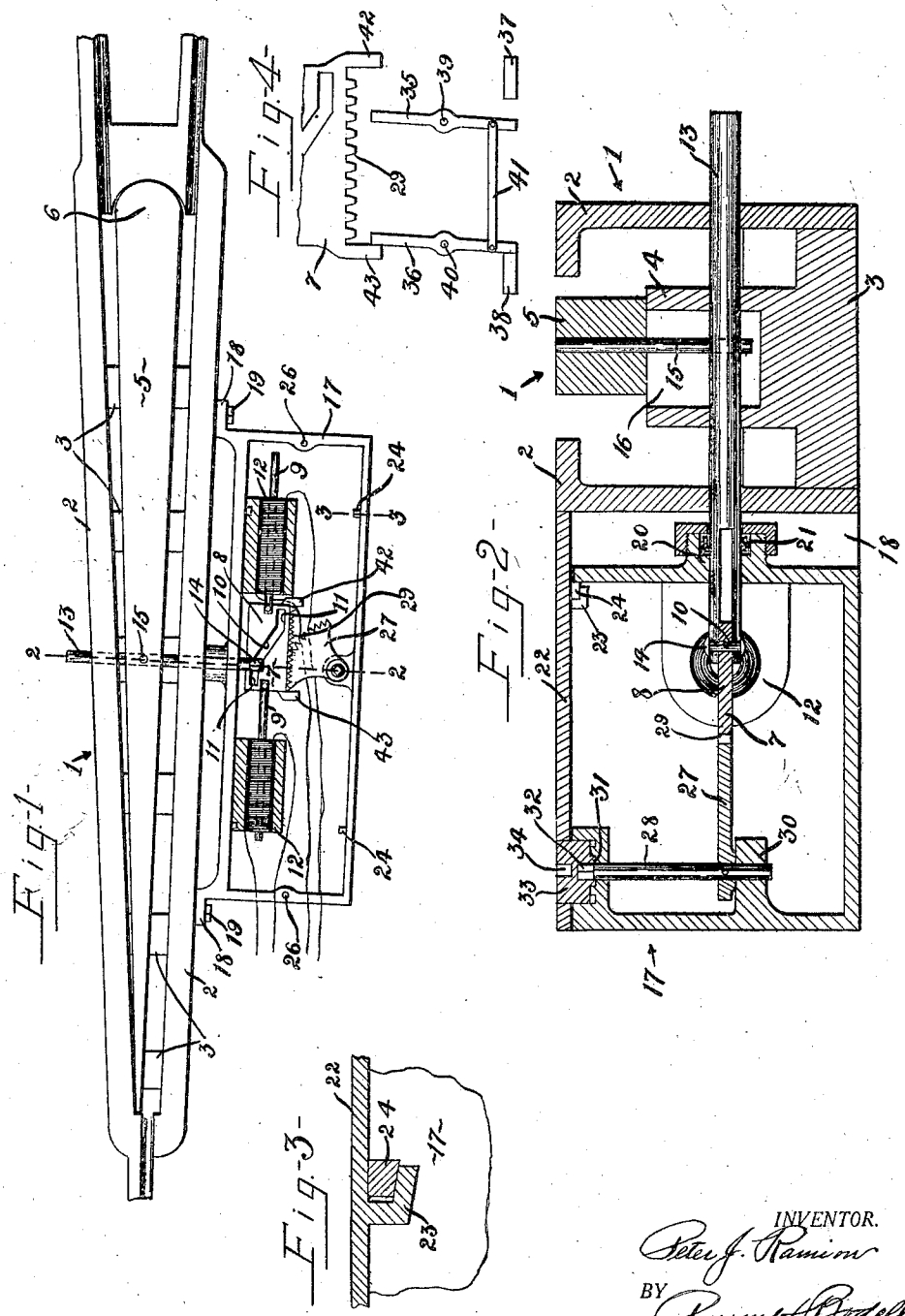

Fig. 1.



Fig. 2.



Fig. 4.



Fig. 3.

INVENTOR.

Peter J. Ramion

BY

Parsons & Bodell

ATTORNEYS.

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# UNITED STATES PATENT OFFICE.

PETER J. RAMION, OF SYRACUSE, NEW YORK, ASSIGNOR TO BERTREM HANSEN AND PAULINE M. RAMION, OF SYRACUSE, NEW YORK.

## AUTOMATIC RAILWAY-SWITCH-OPERATING MECHANISM.

Application filed February 16, 1920. Serial No. 358,997.

*To all whom it may concern:*

Be it known that I, PETER J. RAMION, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga and State of New York, have invented a certain new and useful Automatic Railway-Switch-Operating Mechanism, of which the following is a specification.

This invention relates to automatically operated railway switches and has for its object an operating mechanism for the switch point which is particularly simple in construction, economical in manufacture, readily installed and highly efficient and durable in use.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a plan view, parts being removed and partly in section of a preferable form of the operating means to the switch point.

Figure 2 is an enlarged sectional view on the plane of line 2—2, Fig. 1.

Figure 3 is a fragmentary detail view on the plane of line 3—3, Fig. 1.

Figure 4 is an enlarged fragmentary plan view of the electrically operated switch mechanism for operating the signal to show in what position the switch is shifted.

The railway switch is of the type described in my Patent No. 612,363, issued October 11, 1898, and comprises a frog, a shiftable switch point in the frog, means for shifting the point, and locking it in its shifted position.

The frog 1 is so constructed that it clears itself of water, snow, etc., it being here shown as consisting of sides 2 and cross bars or grating 3 at the bottom thereof, the intermediate part of the cross bars being raised as shown at 4. 5 is the switch point pivotally mounted at 6 in any well known manner and movable on the upper ends of the projections 4 of the cross bars 3.

Owing to the open bottom of the switch frog, water and other obstructions can clear itself out of the frog or be forced out during the shifting of the switch point 5. In winter provision is made to melt snow and ice by electrically heating the switch frog.

The means for operating the switch point comprises a member reciprocally movable lengthwise of the switch point and at a right angle to the shifting movement of the point, and motion transmitting means between said member and the switch point.

7 designates the operating member as a whole which includes an intermediate part as a plate and rods 9 extending from the ends of the plate, the plate being formed with a cam slot 10 inclining relatively to the direction of movement of the member 7 and having dwell portions or seats 11 at its opposite ends. The rods 9 are the cores of electromagnets 12 connected in any suitable manner in electric circuits. The motion transmitting means consists of a rod 13 movable in a direction crosswise of the direction of movement of the member 7 and having a follower or wiper 14 movable in the cam slot 10 and the dwell portion or seat. This rod 13 is pivoted at 15 to the switch point, the pivot 15 being here shown as extending into a slot 16 formed in one of the cross bars 3 at the bottom of the frog 1. The follower 14 moves into one or the other dwell or seat 11 and is locked from movement laterally by the wall of the dwell or seat and hence the switch point is locked in either of its shifted positions.

This operating mechanism is supported in a housing 17 mountable on one side of the frog 1, it being here shown as formed with feet or flanges 18 at its opposite ends which rest on one side of the frog 1, and are secured to the frog 1, in any suitable manner as by bolts or cap screws 19. The rod 13 extends through a bearing 20 provided on one side of the box, this bearing 20 having a packing 21. The housing includes a detachable cover 22 and is held in position by hook shaped lugs 23 on the under side of the cover which interlock by an endwise movement of the cover with lugs 24 provided on the housing 1 near the upper edge thereof, these lugs 23, 24 having a wedging movement as they move into engagement with each other. The cover is held in position in any suitable manner as by screws 26 threading through the cover and into the housing when the cover is in position.

The switch may be manually operated by any suitable means for engaging the member 7, this means being here shown as a segment 27 mounted on a rock shaft 28 jour-

naled in the housing and meshing with the rack 29 provided on one edge of the plate 8.

The shaft 28 is journaled in a suitable bearing or shelf 30 on the interior of the housing and extends upwardly through the bottom of a recess or sink 31 located below the cover, the shaft having a squared upper end 32 which is engaged by a head 33 rotatable in the recess and having its upper face flush with the upper face of the cover. This head has a socket 34 for receiving any suitable turning tool or wrench.

The electromagnets 12 are energized automatically through means on the car and within the control of the motorman or other operator, as is well understood by those skilled in the art.

I have also illustrated means for controlling the operation of an indicator which shows in which position the switch is thrown, this means being here shown as alternately operating electric switches 35, 36 located in the housing and coacting with the contacts 37, 38, said switches being here shown as pivoted at 39, 40 respectively between their ends, and like arms thereof being connected together by a link 41 and their other arms being arranged in the paths of shoulders 42, 43 provided on the plate 8 beyond the ends of the teeth. Thus, as the member 7 approaches the limit of its throw to the right, Fig. 1, the shoulder 43 will engage the switch arm 36 and move it into engagement with its contact 38 and through the link 41 the switch arm 35 will be moved out of engagement with its contact 37. Likewise, when the member 7 is moved to the left, Fig. 1, the shoulder 42 will shift the switch arm 35 into engagement with its contact and the switch 36 out of engagement with its contact 38. These contacts 37, 38 are connected in any suitable manner in circuits which control the operation of signals or lights.

In operation, the switch including a housing 17 and the switch operating mechanism can be readily attached to the switch frog and the power transmitting rod to the switch point, and owing to the arrangement of the member 7 in a direction lengthwise of the switch point a particular compact construction of switch frog and operating mechanism is provided.

In operation as the car approaches the switch, the motorman or other operator can readily close the circuit through one or the other of the magnets causing the switch point to be thrown in any desired position and it is firmly and positively locked in such position by the dwell or seat 11 of the cam slot.

What I claim is:

1. The combination of a switch point, and means for operating the switch point comprising a member movable in a direction lengthwise of the switch point and including an intermediate part, power transmitting connections between the intermediate part and the switch point, electro-magnets arranged to act on opposite end portions of said member, the intermediate part of said member being formed with a rack, and manual means including a segment meshing with the rack, substantially as and for the purpose described.

2. The combination of a railway switch including a frog, a switch point shiftably mounted in the frog, means for shifting the switch point comprising a support mounted on and secured to one side of the frog and forming a unit with the frog, a shifting member mounted on the support and including a plate located intermediate of said member and having a cam slot extending in a direction lengthwise of the switch point and the frog, electromagnets arranged at opposite ends of said member to alternately throw said member in opposite directions, and a shifting rod having a follower arranged in the cam slot, the rod extending transversely through the frog and being connected to the switch point, substantially as and for the purpose described.

3. The combination of a railway switch including a frog, a switch point shiftably mounted in the frog, a housing mounted directly on the side of the frog and forming a unit therewith, a shifting member mounted in the housing and extending lengthwise thereof and having a plate intermediate of its ends formed with a cam slot extending in a direction lengthwise of the switch point, electromagnets in the housing and arranged at opposite ends of said member to throw the same alternately in opposite directions, and a shifting rod having a follower in the cam slot, the rod extending through the housing and through the frog, and being connected directly to the switch point, substantially as and for the purpose specified.

In testimony whereof, I have hereunto signed my name, at Syracuse, in the county of Onondaga, and State of New York, this 5th day of February, 1920.

PETER J. RAMION