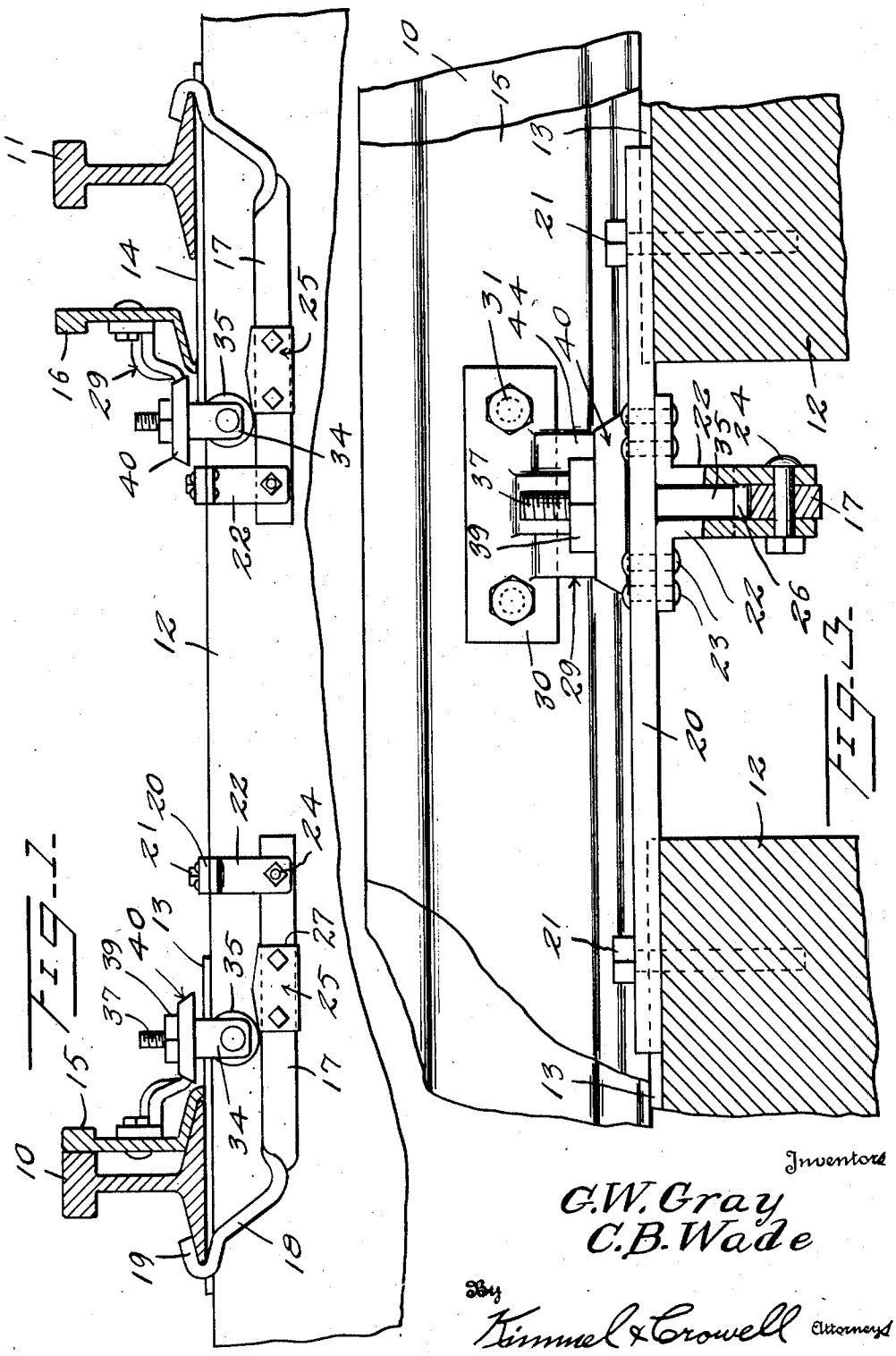
Dec. 12, 1950 G. W. GRAY ET AL 2,533,929

RAIL SWITCH POINT LIFTING MEANS

Filed Sept. 18, 1945 2 Sheets-Sheet 1



Inventors
G. W. Gray
C. B. Wade
By Kimmel & Crowell Attorneys

Dec. 12, 1950 G. W. GRAY ET AL 2,533,929

RAIL SWITCH POINT LIFTING MEANS

Filed Sept. 18, 1945 2 Sheets-Sheet 2

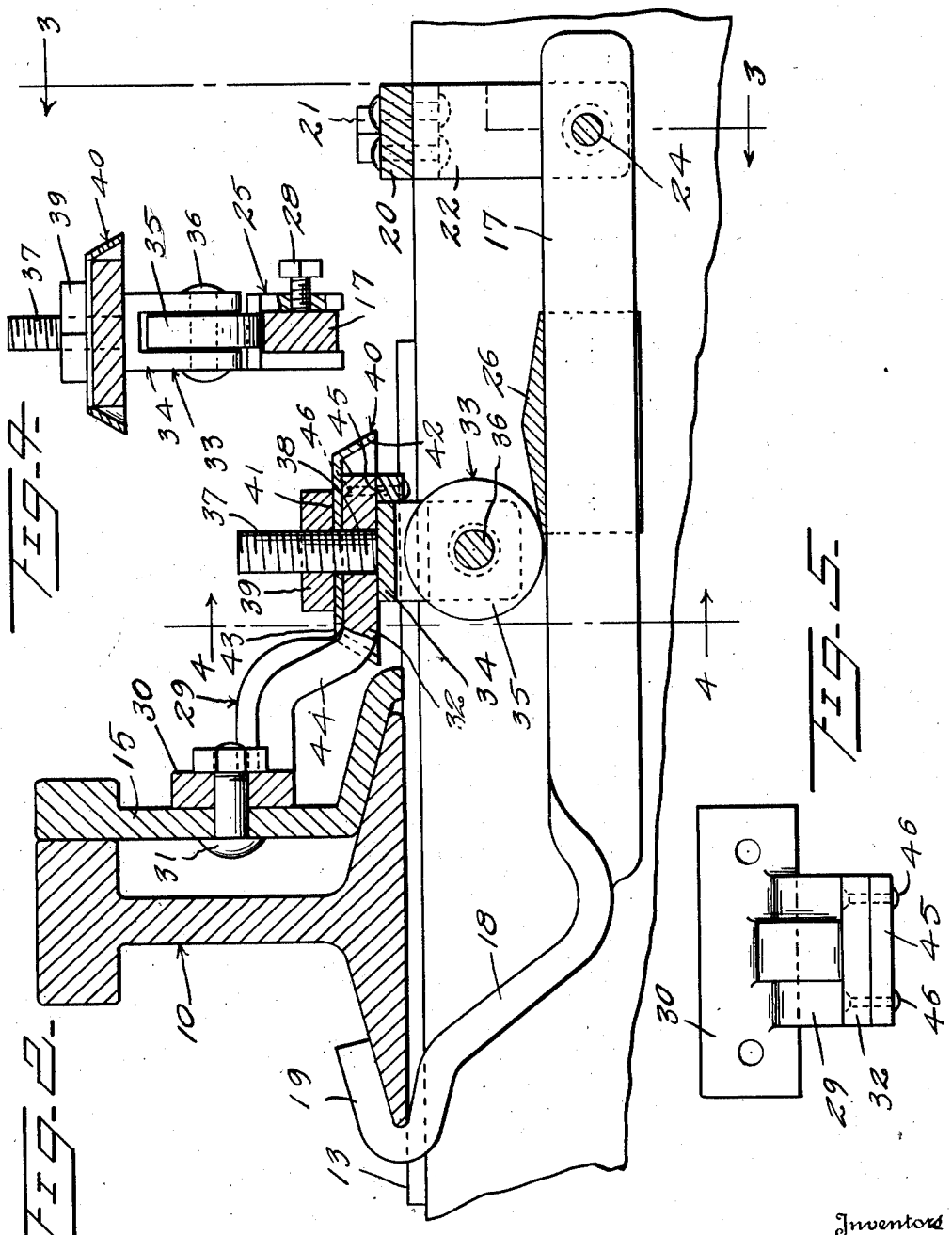


FIG. 4.

FIG. 5.

FIG. 2.

Inventors
G. W. Gray
C. B. Wade

By
Kimmel & Crowell Attorneys

Patented Dec. 12, 1950

2,533,929

UNITED STATES PATENT OFFICE

2,533,929

RAIL SWITCH POINT LIFTING MEANS

Griffin W. Gray and Charles B. Wade,
Roanoke, Va.

Application September 18, 1945, Serial No. 617,102

2 Claims. (Cl. 246—453)

1

This invention relates to railway switches and more particularly to an improved means for facilitating the movement of the switch points.

An object of this invention is to provide a means whereby the switch points will be slightly elevated from the tie plates in their movement between the rails, so that the switch points will easily move between the rails. At the present time in order to facilitate the movement of the switch points which are either manually moved or moved by a power means such as an electric operator, it is necessary to periodically clean the tie plates which serve as guides for the switch points and to also thoroughly grease these tie plates. Unless the tie plates are cleaned and greased at relatively short intervals they become corroded and sand or other foreign matter engages on the upper surfaces thereof, so as to thereby provide increased friction which requires excessive force to move the points and where the points are moved by a power device, such as a motor, the increased friction places undue strain on the motor. It is, therefore, an object of this invention to provide in combination with a pair of switch points means whereby the points will be elevated a slight degree as they are moved between the rails so that they will freely move and so that where they are automatically shifted, such as by a power device, no undue strain will be exerted on the operator.

Another object of this invention is to provide by way of an attachment means carried partly by the main rails and partly by the points whereby the movement of the points will be facilitated.

A further object of this invention is to provide a means of this kind which can be easily and quickly applied to the points and the rails and which will not be subjected to any pressure strains during the movement of a train over the rails and the points.

A further object of this invention is to provide a means of this kind which is positioned between a pair of ties and spaced from the terminal ends of the points and will not interfere with the normal movement of the points.

To the foregoing objects, and others which may hereinafter more fully appear, the invention consists of the novel construction, combination and arrangement of parts, as will be more specifically referred to and illustrated in the accompanying drawings, but it is to be understood that changes, variations, and modifications may be resorted to which fall within the scope of the invention as claimed.

2

In the drawings:

Figure 1 is a transverse section of a pair of rails and a pair of switch points having connected thereto means constructed according to an embodiment of this invention to facilitate the shifting of the points relative to the rails,

Figure 2 is an enlarged sectional view partly broken away of one of the device connected to one rail and one point,

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 2,

Figure 4 is a sectional view taken on the line 4—4 of Figure 2, and

Figure 5 is an inner side elevation of the roller carrier.

Referring to the drawings, the numerals 10 and 11 designate a pair of rails mounted on cross ties 12. The rails 10 and 11 also have tie plates 13 and 14 interposed between the base flanges thereof and the upper sides of the ties 12. A pair of switch points 15 and 16 are disposed between the two rails 10 and 11 and are adapted to be moved horizontally so that one or the other of the points will engage its associated rail. The means for moving the points 16 and 15, which slidably engage on the upper sides of the tie plates 13 and 14, is conventional and may be in the form of a manually operated means or an automatic or power operated means. The two points 15 and 16 each have connected therewith and the rails 10 and 11 have connected therewith a separate point elevating means and as the elevating means for one point is identical with the elevating means of the other point, the description of one of these means will apply equally as well to the other.

The rail 10 has disposed therebelow elongated flat bar 17 which is positioned in edgewise position and is placed between a pair of the ties 12. The outer end of the bar 17 is twisted at right angles and bent upwardly, as at 18, and the extension 18 terminates in a substantially V-shaped rail flange gripping jaw 19. The bar 17 is supported at its inner end so that this bar will be horizontally disposed by means of a bar 20, which is secured by fastening means 21 between a pair of ties 12. The supporting bar 20 has secured to the lower side thereof a pair of angle members 22, which may be secured to the lower side of the supporting bar 20 by fastening members 23 or the like. The inner end portion of the horizontal bar 17 engages between the angle members 22 and is secured therebetween by means of a fastening member 24.

The horizontal bar 17 has secured thereto a

U-shaped cam member, generally designated as 25. The cam member 25 is formed with a V-shaped cam surface 26 which straddles the upper edge of the horizontal bar 17 and the parallel legs 27 of the U-shaped member 25 extend on the opposite sides of the bar 17 and are secured in adjusted position along the length of the bar 17 by a pair of set screws 28 or other suitable fastening means. The point 15 has secured thereto an inwardly projecting bracket arm 29 which is formed with a base plate 30 secured by fastening members 31 to the inner side of the point 15. The arm 29 includes a downwardly offset inner end portion 32, which serves as a carrier or support for a roller structure, generally designated as 33. The roller structure 33 includes a substantially U-shaped bearing member 34 having a roller 35 disposed therebetween and rotatably mounted on a shaft 36.

A threaded stud 37 extends upwardly from the bight of the U-shaped member 34 and extends through an opening 38 which is formed in the lower carrier member 32. The stud 37 is locked on the carrier 32 by means of one or more nuts 39. A downwardly dished shield 40 is carried by the carrier 32 being formed with an upper wall 41 and downwardly and outwardly inclined flanges 42 which overlie the carrier 32 and extend over the roller assembly 33. The shield 40 is formed with a slot 43 within which the upwardly and outwardly extending arm 44 of the bracket is adapted to engage.

In order to provide for locking the U-shaped roller support 34 against rotation in the carrier 32 we have provided a bar 45, which is fixed by fastening means 46 to the lower side of the carrier at its inner end. The bar 45 extends across the lower side of the carrier 32 and engages against the inner end portion of the U-shaped member 44. The cam member 25 is so positioned along the length of the supporting bar 17 that when the point 15 is in operative position engaging the head of the rail 10, the roller 35 will be substantially out of contact with the outer end portion of the cam surface 26. In this manner when the train passes over the rail and the point, the weight of the train will cause the rail and the point to move downwardly, but the supporting bar 17 will move downwardly therewith and as the roller 35 is normally out of contact with the cam surface 26, the roller 35 and the cam structure 25 will not be subjected to any pressure.

In the use and operation of this structure one roller, such as the roller at the left in Figure 1, will normally be at the outer end of the associated cam member 25 and the opposite roller will be at the inner end of its associated cam member. Assuming that the switch points 15 and 16 are to be shifted to the right, as viewed in Figure 1, when the switch operator is operated and the points start their lateral movement, the two rollers 35 will engage the lower points of the cam surfaces 26, one roller engaging the outer point of the cam surface and the other roller engaging the inner point of the cam surface. These rollers will ride up over the cam surfaces and when the two points have been completely shifted so that the point 16 engages rail 11 the right hand roller will be at the outer end of its associated cam member and the left hand roller will be at the inner end of its associated cam member.

This device can be mounted on the rails and the switch points very quickly and as the two points are first elevated and then lowered in their movement from one side to the other the lower flanges of the points are slightly raised from the tie plates, so that the movement of the points will not be frictionally retarded by any abrasive matter, such as sand or the like, or corrosion which may be disposed on the upper surfaces of the tie plates or the lower surfaces of the flanges of the points. The rollers may be mounted in the U-shaped member 34 by anti-friction means which is permanently sealed so that the rollers need not be periodically lubricated. The cam surfaces 26 can be periodically lubricated and as these surfaces are relatively narrow and short they will not accumulate any abrasive material. Even though abrasive material or corrosion is disposed on the cam surfaces 26, the rollers will nevertheless freely ride over such retarding elements and shifting of the points will not be frictionally retarded as is at present the case.

What we claim is:

1. In a railway switch including a pair of points movable relative to a pair of rails, an elongated horizontally extending cam supporting bar for each point disposed longitudinally with and between a pair of ties, said supporting bar being formed of a twisted strap having the major transverse axis disposed vertically at the inner portion thereof and the major transverse axis of the outer portion thereof disposed horizontally, said outer portion being bent upwardly and formed with a V-shaped hook on the end thereof engaging over the outer edge of the rail base, means carried by said pair of ties for supporting the inner end of said supporting bar, a cam member including a pair of depending ears slidably engaging on the opposite sides of said inner portion, means extending through at least one of said ears for locking said cam member relative to said inner portion, a roller supporting bracket fixed to a point, a roller carried by said bracket and adapted to engage said cam member during the shifting movement of said point whereby said point will be raised during movement of said point and the path of movement through which said point will be raised may be controlled by adjustment of said cam member along said cam supporting bar.

2. In a railway switch including a pair of points movable relative to a pair of rails, an elongated horizontally extending cam supporting bar for each point disposed longitudinally with and between a pair of ties, said supporting bar being formed of an inner portion and a connected outer portion, the inner portion having its major transverse axis disposed vertically, and the outer portion having its major transverse axis disposed horizontally, said outer portion being bent upwardly and formed with a V-shaped hook on the end thereof engaging over the outer edge of the rail flange, means including a bar extending transversely between said pair of ties parallel to a rail, said transversely extending bar including a depending fork straddling said inner portion of said supporting bar and fixedly secured thereto, a cam member including a pair of depending ears slidably engaging on the opposite sides of said inner portion, means extending through at least one of said ears for locking said cam member relative to said inner portion, a roller supporting bracket fixed to each switch point, a roller carried by said bracket and adapted to ride over said cam member during the shifting movement of its associated point whereby said point will be raised during movement of said point and the path of movement through

which said point will be raised is controlled by adjustment of said cam member along said cam supporting bar.

GRIFFIN W. GRAY.
CHARLES B. WADE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
394,744	Whitner	Dec. 18, 1888
853,270	Stiff	May 14, 1907
1,965,803	Post et al.	July 10, 1934
2,324,622	Hewes	July 20, 1943

FOREIGN PATENTS

Number	Country	Date
5,689 of 1902	Great Britain	Jan. 15, 1903
9,815 of 1908	Great Britain	Apr. 22, 1909
120,412	Germany	Mar. 23, 1900
299,181	Great Britain	Oct. 25, 1928
729,737	France	May 2, 1932