

UNITED STATES PATENT OFFICE.

VICTOR KOHN, OF DULUTH, MINNESOTA, ASSIGNOR TO McKINNIS SWITCH LOCK COMPANY, OF DULUTH, MINNESOTA.

SWITCH-POINT LOCK.

1,053,515.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed June 20, 1912. Serial No. 704,859.

To all whom it may concern:

Be it known that I, VICTOR KOHN, citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Switch-Point Locks, of which the following is a specification.

My invention relates to railway appliances, and particularly to improvements in switch point locks.

The primary object of my invention is to improve in certain details upon the switch point lock described and illustrated in the patent granted to J. R. McKinnis, No. 946,612, issued January 18, 1910. The switch lock described and illustrated in the said patent is shown as being formed in two pieces applied one on each side of a rail and connected by bolts fastened through longitudinally extending slots in each rail. In the practical application of the McKinnis lock it has been found that the construction is defective in that it requires the slitting of the rail and consequently weakening thereof. A further improvement was made on the original McKinnis construction and covered under patent granted to J. R. McKinnis on the 29th day of Nov. 1910, No. 977,116, which showed a switch locking shoe having opposed portions adapted to engage on each side of the rail between the tread and the base thereof, these portions being connected by transverse yokes extending beneath the rail, these yokes being made in one piece with the opposed portions so that in order to place the locking member in proper position for sliding engagement with the rail it is necessary to slip the rail between the opposed portions. This construction has likewise been found defective in actual practice, and for the reason that in order to put it on the rail, it necessitates the tearing up of the track, and wherever there is a rail carrying electric current it causes a delay of traffic and the disconnection of the entire signal system. This, therefore, makes the cost of installation expensive, and in summer when the heat expands the rail it often becomes necessary to cut the rail to enable it to be lifted up in order to slide the locking shoe on to the same. In order to obviate the difficulties inherent to this construction I have provided a sliding locking member having the same general shape as the locking member

described in the last mentioned patent, but so constructed that it may be readily attached to or detached from the rail without the necessity of sliding it off the end of the rail, detaching the rail from the track, or cutting the rail.

A further object of the invention is to improve upon the construction illustrated in the said McKinnis patents by providing an adjustable link between the locking shoe and the operative member of the switch stand so that compensation may be made for the varying distances between the point or points of the switch and the tie or ties upon which the operative member is mounted. To this end I make the link adjustable for length, and I find in practice that this secures a further object. Where the traffic is all one way, and especially on double track roads, the rails tend to creep in the direction of the movement of the train, and the points either creep out of the locking shoe or into the locking shoe so that the shoe cannot be sufficiently shifted to clear these points. This necessitates in the first instance the making of individual links for almost every switch, and in the second instance requires a frequent adjustment of the ties and switch stand, or else leaves the mechanism open to faulty locking with the switch points. My improved link is built in sections, one adjustable upon the other so that it may be readily adjusted to compensate for any creeping of the rail.

With these and other objects in view, my invention is embodied in the form illustrated in the accompanying drawings wherein:

Figure 1 is a perspective view of a portion of a switch stand and actuating shaft extending therefrom and a switch point locking structure in accordance with my invention, the points and the rails of the track not, however, being shown; Fig. 2 is a top plan view partly in section of a portion of a railway track and one of the points of a switch (the web of the rail and of the point being shown in section) and of my point locking device applied thereto; Fig. 3 is a perspective view of the point locking device as improved by me, the two sections of the locking shoe being displaced from engagement with each other.

Referring to the drawing, and particularly to Fig. 3, it will be seen that my point

locking shoe comprises essentially a longitudinally extending bar or member designated 2 and adapted as seen in Fig. 3 to be disposed on one side of rail A. One extremity of this bar 2 is formed with an offset head or block designated 3, the inner face 4 of which is substantially in the same plane as the outer face of the bar 2. This inner face 4 is slightly outwardly inclined, as will be seen more plainly in Fig. 2, so as to receive the relatively sharp extremity of the switch point B. Extending parallel to the bar 2 and laterally spaced therefrom is a bar or member 5 which is designed to be placed on the opposite side of the rail from the bar or member 2. This bar or member 5 has downwardly and outwardly extending supporting brackets 6, each shown as being provided with parallel upwardly extending bracing flanges 7. The inner face of the bracket 6 is upwardly inclined as at 8. The bar 2 is provided at one extremity and at a point adjacent to the junction of the inner end of the head 3 with the bar 2 with downwardly and outwardly extending yokes 9 which extend initially downward and outward as illustrated in Fig. 3, and then extend horizontally across beneath the rail A and are formed at their ends upon their upper faces with seats 10 to receive the flattened terminal portions 11 of the members 6. It will be seen that the end face of that portion of each yoke adjacent to the bar 2 is inclined downward and outward as at 12 so as to correspond to the downward and outward inclination of the inner face 8 of the member 6. The brackets 6 are intended to rest upon the faces 10 of the yokes 9 and to be held there- by means of bolts passing down through perforations 13. The extremity of the bar 5 opposite the head 3 is formed with a bifurcated knuckle 14 whereby the shoe as a whole may be operatively connected to a link.

In the application of the locking shoe described the bars 2 and 5 are disposed at each side of the web of a main rail, the bars 2 and 5 being of such depth as to substantially equal the depth of the rail between the under face of the head and the upper face of the base. Thus these bars 2 and 5 are supported in sliding engagement with the rail and are prevented from any vertical movement. The bars 2 and 5 are further prevented from any vertical movement, of course, by the fact that the yoke 9 extends beneath the rails, the ballast beneath the rails being separate at this point from the under side of the rail so as to permit the yokes to have longitudinal movement.

In order to reduce as much as possible the frictional engagement between the bars 2 and 5 and the rail itself, the inner faces of these bars or members are very largely cut

away so as to leave protruding portions 15 which will engage the face of the rail web. As shown, these protruding portions are disposed at the ends of the bars 2 and 5, the middle portion of the bars being cut away. This greatly reduces the frictional resistance of the shoe, and yet maintains the shoe in proper engagement with the rail.

While I do not wish to limit myself to any particular means for operating the shoe, I have illustrated to that purpose a switch stand of ordinary type and designated generally as C. The switch stand has an operating shaft 16 connected at its lower end to an arm 17 mounted upon a transversely extending rock shaft 18 which extends across the track. This rock shaft is provided with a radially extending arm 19, and this in turn is connected with the locking shoe. As illustrated in Fig. 1 the shaft 18 is provided with an arm 19 connected to a link formed of the members 21 and 22, the member 22 being received at its end within the knuckle 14 and being pivoted to the knuckle by a transverse pin or bolt. The adjacent faces of the members 21 and 22 are formed with vertically disposed corrugations 23, as shown clearly in Fig. 2, and one of the members is formed with a stud bolt 24, while the other member is slotted as at 25 so as to permit the passage of the said bolt, the stud bolt of course being provided with a nut 26. The bolt is for the purpose of holding the two sections 21 and 22 in locking engagement with each other, this locking engagement being secured by the intermeshing of the teeth 23 with each other. It will be plain that the link formed by the members 21 and 22 may be extended or decreased in length as desired to suit any particular condition.

The operation of this form of switch lock is so clearly set forth in the patents to McKinnis that it does not seem to be necessary to detail the operation of the lock or the advantages thereof. It may be said, however, that the locking shoe formed by the members 2 and 5 is longitudinally shiftable upon the rail A. When it is desired to shift the point in one direction the locking shoe is shifted away from the point until the end of the head 3 clears the extremity of the point B. As soon as this is accomplished, the point may be shifted. As soon as the point is shifted the locking member is shifted back to its original position so that the head 3 is interposed between the rail and the point, thus locking the point from any return movement. It is to be understood that in practice there are two of these locking members to the two points of the switch and that one is always interposed between one of the points and the adjacent rail, while the other locking point overlaps the point in the manner shown in Fig. 2 and holds the point

to the adjacent rail. It is to be particularly noted in this connection that the locking shoe is fast to the rail A, and that hence when in a locking position such as shown in Fig. 2 the point is held in contact with the rail and that the point locking shoe and rail must move together or not at all. In other words, there is no way by which the point may be wedged outward away from the rail and thus cause a splitting of the switch. This is one of the particularly valuable features of this form of switch lock.

My improvement in this form of switch lock permits the locking device to be applied to the rail without removing the rail or without removing the point, so that in case the lock is broken or damaged for any reason it may be immediately repaired without the necessity of tearing up the track and thereby blocking traffic.

It will be understood that the switch is an ordinary switch and will operate to throw the points whether the locking device is applied thereto or not, so that with my construction it is possible to remove the locking device entirely in case of break and yet not interfere at all with the operation of the switch, and that it is also possible to readily apply a locking device of this construction without interfering with the action of the switch and without tearing up the track. It will further be obvious that a locking device of the character shown acts to brace the rail and prevent it from spreading. The brackets 6, for instance, extending upward and inward as they do against the edge of the rail will assist in receiving the shock of a wheel passing from a point on to the rail and striking the main rail. The strain caused by the impact of a wheel striking the main rail will be partly distributed to the rail on the opposite side of the track and will also be partly distributed to the switch point itself, thus the lock acts to bind the switch point and main track rails securely together.

By reason of the adjustability of the link connecting the operating mechanism with the shoe, it is possible to make more or less constant adjustments whenever needed and to provide a lock adjustable to suit any particular circumstance of operation.

Having described my invention, what is claimed as new is:

1. A switch point locking shoe of the character described including opposite parallel main-rail engaging members, one of said members adapted to engage and lock a point relative to the main rail, yokes carried by one of said members and extending transversely beneath the said rail, and brackets carried by the other member and detachably engaging the extremities of the yokes.

2. A switch point locking shoe of the char-

acter described including oppositely disposed parallel main-rail engaging members, one of said members having an off-set head adapted to engage and lock a point relative to the main rail, yokes extending outward and downward from said last-named member and then transversely toward and beneath the other member, and brackets downwardly and outwardly inclined from the second member and adapted to detachably engage said yokes.

3. A switch point locking shoe of the character described including opposed parallel main-rail engaging members, one of said members being adapted to engage and lock a point relative to the main rail and having yokes formed therewith and extending outwardly and downwardly, the said yokes being then returned upon themselves and extending horizontally beyond said member and being adapted to be disposed beneath the base of a rail, the other of said members being formed with downwardly and upwardly projecting brackets, the extremities of the brackets being formed with faces adapted to bear upon and engage with the extremities of said yokes.

4. A switch point locking shoe of the character described including oppositely disposed parallel main-rail engaging members, one of said members being formed with an off-set head for engaging the switch point, the inner faces of said members being cut away for portions of their length to form protruding portions, the faces of which engage the web of the main rail.

5. The combination with a main rail and a switch point, of a switch point locking member engaging the web of the main rail and slidably guided between the base and the tread of the rail, said member having outwardly and downwardly extending yokes engaging with one base flange of the rail and then extending transversely beneath the base of the rail, and a member opposed to the first-mentioned member and engaging the other base with the web of the rail and formed with downwardly and outwardly projecting brackets having bearing faces at their extremities adapted to bear against the extremities of the yokes and to be attached thereto.

6. The combination with a main rail and a switch point, of a point locking member slidable upon the main rail into or out of a point locking position, an actuating means, and an extensible link connecting the actuating means with said slidable locking member.

7. The combination with a main rail and a switch point, of a slidable point locking member mounted upon the main rail, an actuating means, and a link operatively connecting the actuating means with the locking member, the said link being composed of

two overlapping sections the connecting faces of the sections having intermeshing corrugations, one of said sections being provided with a bolt and the other being slotted for the reception of said bolt.

8. The combination with a main rail and a switch point, of a locking member slidable along the main rail and comprising oppositely disposed longitudinally extending members engaged on each side of the main rail, one of said members having yokes extending beneath the main rail and operatively engaged with the other member, said last named member being provided with a knuckle, an actuating mechanism, and a link

connecting the knuckle to the actuating mechanism, said link being formed of two overlapping sections one of said sections being provided with a bolt and the other with a slot in combination with the bolt whereby the sections may be adjusted upon each other to extend or contract the link, the contacting faces of the sections being vertically corrugated.

In testimony whereof I affix my signature in presence of two witnesses.

VICTOR KOHN.

Witnesses:

ALBERT MARK,
DOROTHY SWENSON.

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