

E. D. BROWN.
RAILROAD SWITCH.
APPLICATION FILED OCT. 11, 1911.

1,048,489.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 1.

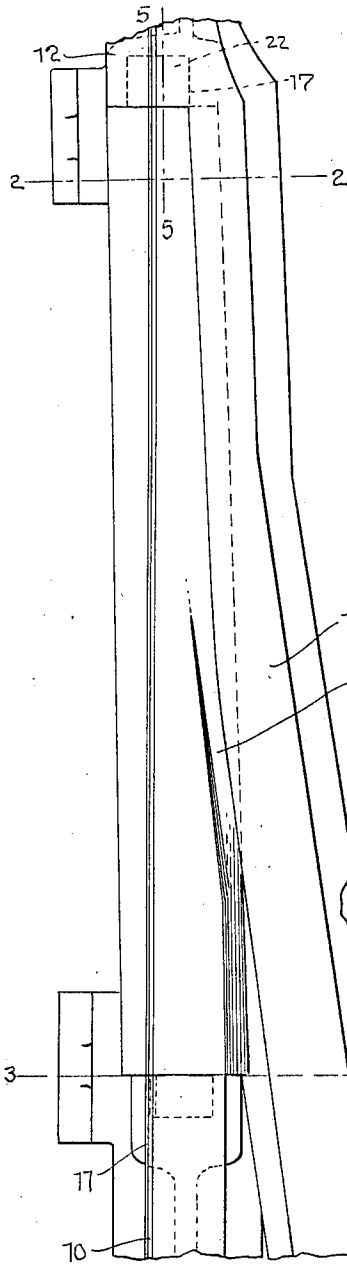


Fig. 1

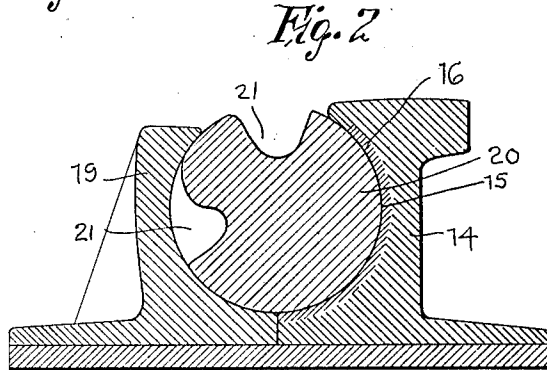


Fig. 2

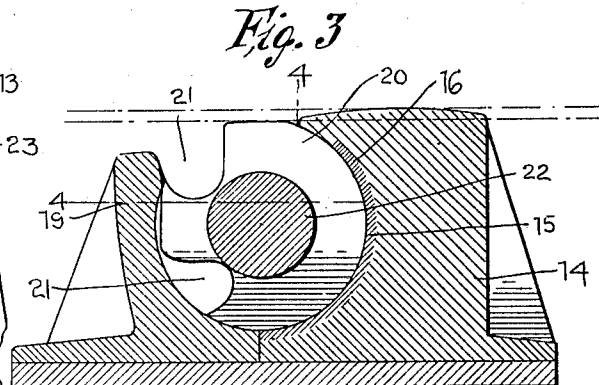


Fig. 3

Fig. 4

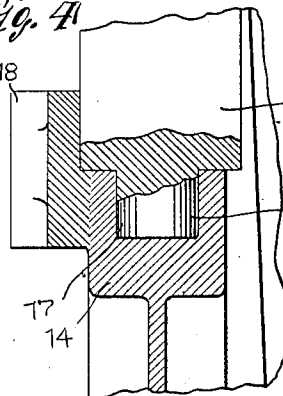
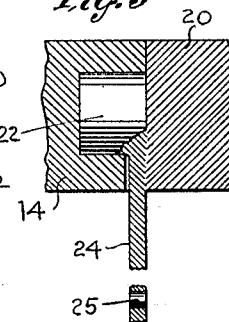


Fig. 5



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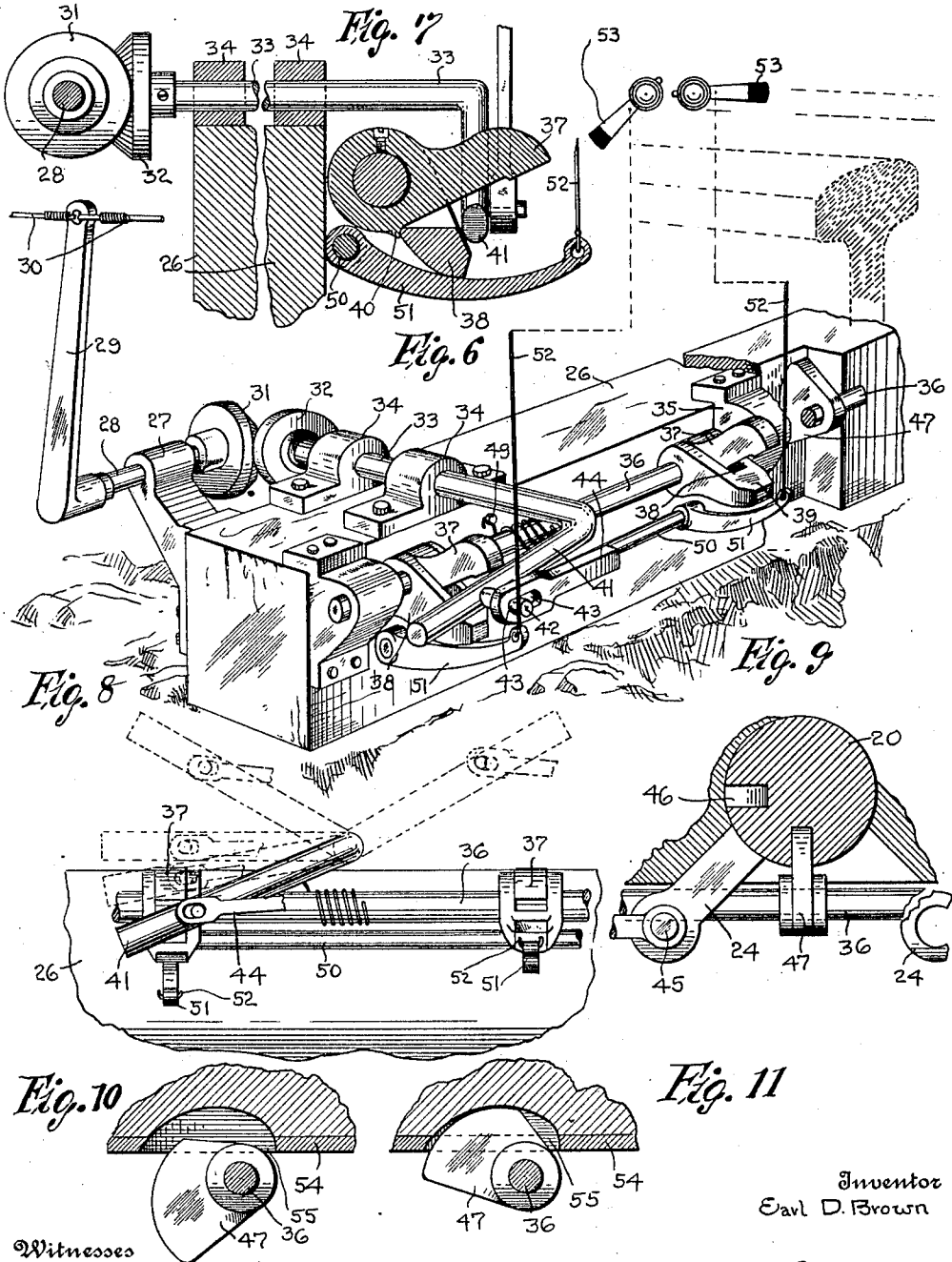
By E. C. Swanson
his Attorney.

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2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

EARL D. BROWN, OF KALISPELL, MONTANA.

RAILROAD-SWITCH.

1,048,489.

Specification of Letters Patent.

Patented Dec. 31, 1912.

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To all whom it may concern:

Be it known that I, EARL D. BROWN, a citizen of the United States, residing at Kalispell, in the county of Flathead and State of Montana, have invented certain new and useful Improvements in Railroad-Switches, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to railroad switches and has special reference to a railroad switch of the type wherein the switch member rotates.

The invention further relates to operating means for railroad switches.

Another object of the invention is to improve the construction of railroad switches of this type.

Another object of the invention is to provide an improved wearing surface for the movable member of such switches.

A still further object of the invention is to improve the construction of operating devices for railroad switches.

The invention further has for its object the provision of means for automatically controlling a signal or signals when the switch is worked.

With the above and other objects in view the invention consists in general of certain novel features of construction, combinations of parts, and arrangements of details hereinafter fully described, illustrated in the accompanying drawings, and specifically claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and Figure 1 is a plan view of a portion of a track and turn out showing the improved switch arrangement. Fig. 2 is a section on the line 2—2, Fig. 1. Fig. 3 is a section on the line 3—3, Fig. 1. Fig. 4 is a section on the line 4—4, Fig. 3. Fig. 5 is a section on the line 5—5, Fig. 1. Fig. 6 is a perspective view showing the switch operating mechanism applied to a tie, the signal devices being indicated diagrammatically. Fig. 7 is a detail cross section through the device shown in Fig. 6. Fig. 8 is a detail side elevation showing different positions of the mechanism in dotted lines. Fig. 9 is a cross section through a rotating switch member showing the lock arrangement. Fig. 10 is a side elevation of the lock in its unlocked position, the switch being shown in section. Fig. 11 is a view

similar to Fig. 10, but with the lock in its locked position.

In connection with this switch a special form of rail is used which is of the ordinary cross section throughout most of its length but at a point adjacent one end of the switch is provided with a greatly thickened web. The rail is indicated in its usual form at 10 and the thickened portion at 11. From the other end of the switch the rail extends from a thickened portion 12, and the turn out extends at an angle from a point about half way between the two thickened portions, this turn out being indicated at 13. Between the thickened portions 11 and 12 the web of the rail is also thickened as indicated at 14 and the inner side of this web is recessed in arcuate form as indicated at 15. This recessed portion 15 is preferably lined with a hard metal which may be made in the form of a plate 16 welded within a suitable depression so as to maintain the surface of the welded plate in the same arc as the upper portion of the recess where the rail itself is used. This plate is welded in this position for the purpose of affording a wearing surface as will be hereinafter understood. Each of the portions 11 and 12 of the rail is provided with cylindrical pockets 17 and welded to the portion 11 is a tie block 18 which has its outer surface forming a continuation of the arc at the recess 15. Adjacent the other portion 12 there is provided a detachable tie block 19 similarly formed to the welded block 18. This block 19 may be of any desired length so that if necessary it may constitute a car rail.

Fitted within the recess 15 is what I preferably term the switch point and this switch point consists of a substantially cylindrical body portion 20 provided with spaced grooves 21 which are of the same size and cross sectional dimensions as the flange of a car wheel. At each end of this switch point there is provided a journal 22 which fits a respective one of the recesses 17. The grooves 21 are so disposed that when the point 20 is rotated in one position the groove 21 which is brought upper-most will guide the flange of the wheel on to the track portion 13 while when the other groove 21 is brought upper-most the side of said groove forms a continuation of the main track. Small grooves 23 are provided in points of this construction so that in the event of a car or other piece of rolling stock running

over the switch from the siding when the same is closed the flange of the wheel will ride up the groove 23 of the respective member and permit the car to run on to the main line without derailment.

For the purpose of operating the member 20 an arm 24 is welded to one end thereof and this arm is provided with a suitable eye 25 for the reception of a pin or bolt as will be hereinafter understood.

In order to operate said switch the mechanism shown in Figs. 6 to 11 is provided. Attached to a tie 26 is a bracket 27 where-through extends a shaft 28. Upon one end of this shaft there is fixed a lever 29 which constitutes the operating lever of the device. This lever may be connected by suitable wires 30 to one or more towers or distant signals or operating means and may be operated by hand if desired. Upon the opposite end of the shaft 28 there is provided a beveled gear 31 which meshes with a gear 32 carried upon a shaft 33 which is journaled in bearings 34 fixed upon the tie 26. On the tie 26 there are also provided other bearings 35 wherein is journaled a shaft 36. Upon the shaft 36 is keyed a pair of spaced arms 37 and straddling each of the arms 37 are the arms 38 of a U-shaped member 39 which is mounted on the shaft 36 to rotate thereon.

In order to raise the member 39 as the respective arm 37 is raised these arms 37 are each provided with a projecting lug 40 which contacts with the underside of the member 39 as the respective arm 37 is raised.

Extending from the end of the shaft 33 is an arm 41 from which projects a pin 42 which works in the slot 43 of a switch rod 44, the other end of which is attached to the arm 24 by means of a pin 45. The arm 41 normally lies between one of the members 37 and the respective member 39 as can be seen in Fig. 6. When, however, the lever 29 is actuated the arm 41 will move upward and swing over the opposite side. Through the first portion of this movement, as can clearly be seen by reference to Fig. 8, the switch rod 44 can not be moved in the direction of its length but will merely have the slotted end raised up. The rotary point 20 is provided with a pair of slots 46 which are arranged at right angles to each other and on the shaft 36 is keyed a lock 47 which is adapted to enter one or the other of these slots 46 in accordance with the position of the member 20.

It will be obvious from an inspection of Fig. 9 that as long as the lock is in one of the slots 46 the member 20 cannot rotate. However, by reason of the idle movement of the arm 41 with respect to the switch rod 44, the lock 47 will be withdrawn prior to any movement of the switch rod. Now, as the rotation of the arm 41 continues the respective member 37 will be raised to a vertical

position and it will be obvious that the other member 37 will also assume the same position. When the movement of the arm 41 continues still further the switch rod 44 will be forced in the direction of its length by such movement and this will result in the rotation of the member 20 through the medium of the arm 24. As the arm 41 is about to complete its movement it will come in contact with the member 39 and force that member downward carrying with it the arm 37 at the opposite end of the shaft 36. At this time the switch rod 44 will cease to move and as the shaft 36 rotates the lock 47 will again be turned into its locking position and will enter the other slot 46, thus locking the member 20 in its new position.

In order to normally retain the parts in the position shown in Fig. 6, a coil spring 48 is wound around the shaft 36, and has its end attached thereto, the other end being secured by a bolt 49 to the tie 26. The tendency of this spring is to rotate the shaft in such direction that the members 37 will move downward but during the rotation of the member 20 when the arm 41 is free from these members 37 the lug 47 will bear against the cylindrical portion of the member 20 and will hold the shaft 36 from rotating.

For the purpose of signaling there is provided beneath the shaft 30 a shaft 50 whereon is rotatably mounted a pair of spaced arms 51 which are located in the path of movement of the members 39. Each of these arms 51 is connected by means of a suitable cable 52 with a semaphore or other signal means as indicated at 53. Now when the arm 41 is in either extreme position it presses down on the respective member 39 and this depresses the arm 51 which raises the semaphore connected therewith to the clear position. The other semaphore however by reason of its weight raises its arm 51 and drops to the danger position. During the turning of the member 20 just as soon as the depressed member 39 is raised the semaphore controlled thereby will drop to the danger position thus both semaphores being at danger while the switch is being operated gives the engineer a clear indication that the switch is not in position to be used.

It will be noted that beneath the switch there is provided a plate 54 having a slot 55 therein through which the lock 47 passes. The slot is so arranged that it fits the lock closely thus preventing any tendency for the lock to move laterally and bringing any stress upon it in such manner that the stress will be in shear.

It will be noted that the rail has its tread slightly higher than the upper surface of the switch point 20, this being for the purpose of preventing jamming or bruising of the thin edge which overlaps the switch

point. To aid in this the tread of the rail is made concaved also.

It will be obvious that a second shaft similar to 36 may be employed and connected by suitable links with the shaft 36 so that other locks 47 may be carried on this second shaft and lock the switch points at both ends.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that many minor changes may be made in the form and construction of this invention without departing from the material principles thereof. It is, therefore, not desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope claimed.

By considering Fig. 3 it will be seen that the tread of the rail is elevated above the cylindrical body portion 30 so as to prevent the edge thereof from lapping on said cylinder.

What I claim is:—

1. A railroad switch comprising a pair of rails each having a web provided with an enlarged end portion recessed to form a socket, said socket being in alinement, a switch point consisting of a cylindrical body provided with longitudinally extending spaced grooves and having journaled ends fitting in said sockets, and a siding rail extending at an angle from said switch point.

2. A railroad switch comprising a pair of alined rails provided with webs having enlarged socketed ends, a rotatable switch point having journaled ends held in said socket web ends, said point being provided with a pair of spaced longitudinally extending grooves, a siding rail extending at an angle from said switch point, said switch point being further provided with a diagonal groove alined with said siding rail when the switch is closed, and means to operate said switch point.

3. A railroad switch comprising a pair of alined rails provided with webs having enlarged socketed ends, a rotatable switch point having journaled ends held in said socket web ends, said point being provided with a pair of spaced longitudinally extend-

ing grooves, a siding rail extending at an angle from said switch point, said switch point being further provided with a diagonal groove alined with said siding rail when the switch is closed, means to operate said switch point, and tie plates formed on the enlarged webbed end of each rail and surrounding a portion of the switch point adjacent its journals.

4. In a switch operating device, a switch lock, a rotating member carrying said lock, a switch rod, a shaft provided with a laterally extending arm connected to said switch rod, and an arm fixed on said rotating member and normally lying in the path of movement of the arm on said shaft.

5. In a switch operating device, a shaft, a lock fixed upon said shaft, and rotating therewith, spaced arms on said shaft and fixed thereto, other arms loosely mounted on said shaft, lugs on the first mentioned arms contacting with the last mentioned arms to limit the relative movement in one direction, a second shaft extending across the first mentioned shaft, an arm extending laterally from said second shaft and adapted for engagement with the arms on the first shaft, a switch rod provided with a slot at one end, and a pin projecting from the arm on the second shaft through said slot.

6. In a switch operating device, a shaft, a lock fixed upon said shaft and rotating therewith, spaced arms on said shaft and fixed thereto, other arms loosely mounted on said shaft, lugs on the first mentioned arms contracting with the last mentioned arms to limit the relative movement in one direction, a second shaft extending across the first mentioned shaft, an arm extending laterally from said second shaft and adapted for engagement with the arms on the first shaft, a switch rod provided with a slot at one end, a pin projecting from the arm on the second shaft through said slot, and a spring surrounding the first mentioned shaft and normally urging it to rotate in one direction.

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

EARL D. BROWN.

Witnesses:

L. N. GILLIS,

I. L. McCATHRAN.