

I. A. GROVES.
SWITCH.

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988,089.

Patented Mar. 28, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

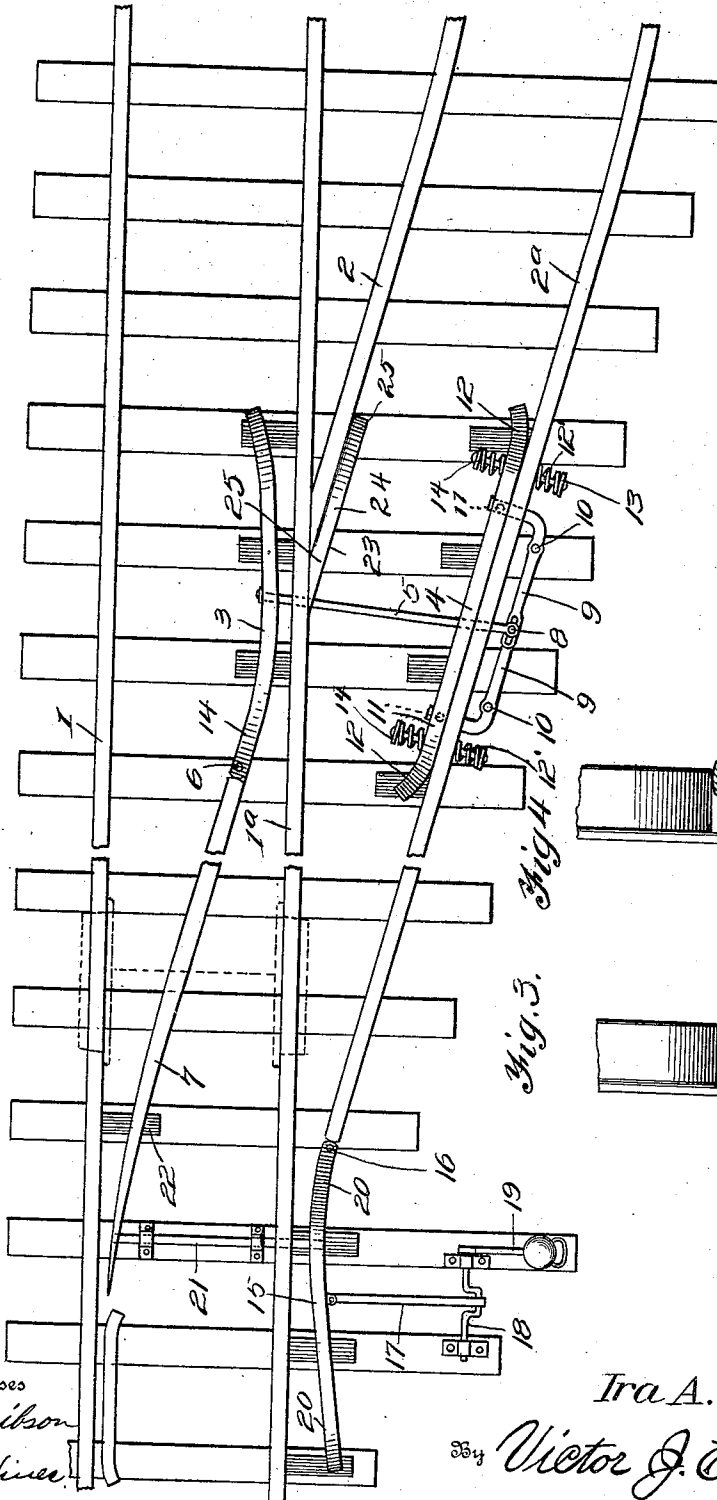
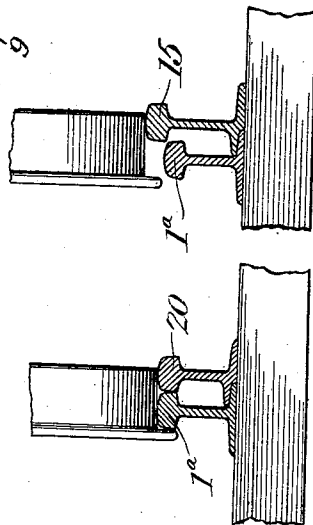


Fig. 3.



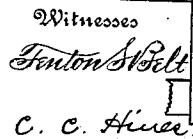
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SWITCH.

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2 SHEETS--SHEET 2.



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SWITCH.

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To all whom it may concern:

Be it known that I, IRA A. GROVES, a citizen of the United States, residing at Waldo, in the county of Columbia and State of Arkansas, have invented new and useful Improvements in Switches, of which the following is a specification.

This invention relates to railway switches for controlling the passage of rolling stock from a main line to a branch or side line, and vice versa.

The object of the invention is to provide a switch mechanism which dispenses with the use of solid frogs and a plurality of switch points, thus avoiding the expense of employing expensive parts of this character, and which also obviates the necessity of making any breaks in the continuity of the main line rails, so that when the main line is open for travel, a continuously smooth track will be provided at the switch point as though no switch were present thus insuring additional safety and comfort to passengers in the travel of trains.

With these and other objects in view, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a top plan view of a section of the tracks at their point of intersection, showing the main line open for the continuous travel of trains thereover. Fig. 2 is a similar view, showing the switch mechanism thrown for the passage of trains between the tracks. Figs. 3, 4 and 5 are sections on the line 3—3, 4—4 and 5—5 of Fig. 2.

Referring to the drawings, 1 and 1^a designate the rails of the main line and 2 and 2^a the rails of the branch or side line, the end of the rail 2 being arranged to abut against the side of the adjacent inner rail 1^a of the main line.

Arranged respectively between the rails of the main line and the branch line are main switch rails 3 and 4 respectively, which are disposed for coöperation with the rails 1^a and 2^a. These main switch rails are connected for movement in unison by a rod 5

slidably mounted in the rails 1^a and 2^a and extending transversely of the branch track at the intersecting point. The switch rail 3 is pivoted at one end for lateral movement, as indicated at 6, and is arranged for coöperation with the pivoted switch point 7 movable toward and from the rail 1.

The rod 5 is pivotally connected at its outer end, as indicated at 8 with the slotted inner ends of the long arms of a pair of elbow or bell crank shifting levers 9, pivotally mounted at 10, and having short arms extending at right angles beneath the base or through openings in the web of the rail 2^a and pivotally connected at their inner ends, as indicated at 11, to the switch rail 4, so that reverse movements of said levers will shift said rail 4 toward and from the rail 2^a. The rail 4 is provided with a body portion which extends flush with the head of the rail 2^a, and has its end portions 12 curved inwardly so as to admit the flanges of the wheels between the rail 2^a and body of the rail 4 when the latter is shifted inwardly to an inoperative position. Bolts 12' pass through the rails 2^a and loosely through openings in the ends of the rails 4 and are provided at their inner and outer ends with coil cushioning springs 13 and 14 which adapt the rail 4 to have yielding movement in either direction and assist in returning the same to closed position after movement to an open position. It will be apparent that these springs will permit the switch rail 4 to be automatically shifted by the flanges of the wheels of a car to draw the switch rail 3 into closed position in the passage of a train from the main line and to the branch line and vice versa.

The switch rail 3 is provided with a comparatively long body portion extending above the plane of the head of the rail 1^a and with inclined end portions 14^a which extend downward into the plane of the head of said rail 1^a. Arranged outside of the rail 1 in advance of the switch rail 4 and opposite the end of the switch point 7 is a supplemental switch rail 15 pivotally mounted at one end as at 16, for movement toward and from the rail 1^a and connected by a rod 17

with a crank shaft 18 adapted to be operated by a switch throw 19 to move said switch rail 15 to open and closed positions. The said switch rail 15 is provided with a body portion extending above the plane of the head of the rail 1^a and inclined ends 20 arranged in the plane of the heads of the respective rails of the tracks. A rod 21 connects the switch rail 15 with the switch point 7 so that both may be operated in unison. The switch rails and switch point are adapted to slide upon wear plates 22 secured to the ties in order to attain a free and easy movement thereof. At the point of junction of the rail 2 with the rail 1^a a supporting block 23 is provided. This block extends along the inner side of the rail 2 and abuts against the outer side of the rail 1^a and has one of its end portions 24 extending above the plane of the head of the rail 1 and to a position in line with the upper surface of the body portion of the rail 3, its opposite end 25 being flush with the upper surfaces of the heads of the rails 2 and 2^a. The block thus has its upper surface inclining upwardly between its ends 25 and 24 from a position flush with the heads of the respective track rails to a position above the level of said rails, so that in the passage of a wheel from the rail 2 to the switch rail 3, it will elevate and carry a wheel over the rail 1^a and conduct the same to the elevated portion of the switch rail, as will be readily understood.

Fig. 1 of the drawings shows the parts of the switch mechanism arranged for the continuous passage of a train along the main line, while Fig. 2 shows the parts of the switch mechanism arranged for the passage of a train from the main line to the branch line or vice versa. By reference to Fig. 1 it will be seen that the switch rail 4 is adjusted into abutting relation with the rail 2^a, while the switch rails 3 and 15 are moved out of abutting relation with or spaced from the rail 1^a, while the switch point 7 is also disposed in open position. Hence, the main track is open for the passage of trains along the same without interference at the junction point, continuous solid rails being provided so as to enable high speed of the rolling stock to be obtained without jar in passing over the switch points and with consequent comfort to the passengers.

When the parts are adjusted to the position shown in Fig. 2, the wheels of a train running from left to right from the main line to the branch line will pass on the switch point 7 and switch rail 15, the latter elevating the engaging wheels above the level of the rail 1^a so that they may pass over the same without interference. From the said rail 7 and 15, the wheels will pass

on to the switch rail 3 and rail 2^a, and at the point where they pass over the rail 1^a will be elevated by the body portions of the switch rails 3 and 4, so that the wheels at the inner side will pass over the rail 1^a without contact therewith and then run upon the supporting block 23, which latter will sustain the rolling stock at an elevation above the rails 1^a and 2^a until the wheels pass down the incline portions 12 and 25 of the rail 4 and block 2 and run upon the rails 2 and 2^a, as will be readily understood. As a result, it will be seen that the car or train running in the direction mentioned from the main track to the branch track will pass over the main line rail 1^a. A train traveling in the direction from right to left from the branch track to the main track will first shift the rail 4 inwardly, thus moving the switch rail 3 into abutting engagement with the rail 1^a, and the wheels running along the track 2 will be elevated by the block 23 so that they will pass over the rail 1^a onto the switch rail 3, and thence run along the switch point 7 to the rail 1, while the wheels traveling along the rail 2^a will travel up on the switch rail 15 and run from the same onto the rail 1^a, said rail 15 sustaining the wheels in an elevated position until the wheels pass down the inclined portion 20 thereof onto the rail 1^a, as will be readily understood. As a result, the necessity of employing solid frogs and a plurality of switch points or other complicated switch elements at the switch points is obviated, as well as the necessity of breaking the continuity of the main line rails, thus decreasing the cost of track structure at the switch point and enabling trains to be run with higher speed and greater safety on the main line while at the same time permitting trains to pass from one line to the other with greater facility.

Having thus described the invention, what is claimed as new, is:—

In a railway switch, a main line having continuous track rails, a branch line, a laterally movable switch point arranged to cooperate with one of the rails of the main line, a switch rail movable to cooperate with the other rail of the main line, a second switch rail in the branch line opposite the switch point to cooperate with the last-named rail of the main line and movable with said switch point, a third laterally movable wheel operated switch rail in the branch track opposite the switch rail in a main track, guide bolts on which said third switch rail is slidably mounted, springs associated with said bolts for maintaining said third switch rail in normal position, bell crank levers having

arms connected with the third switch rail, a
rod pivotally connected with the other arms
of said levers and connecting the same with
the switch rail in the main track for shift-
5 ing said switch rail, and means for operat-
ing the said switch point and the second-
named switch rail in unison.

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

IRA A. GROVES.

Witnesses:

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