

(No Model.)

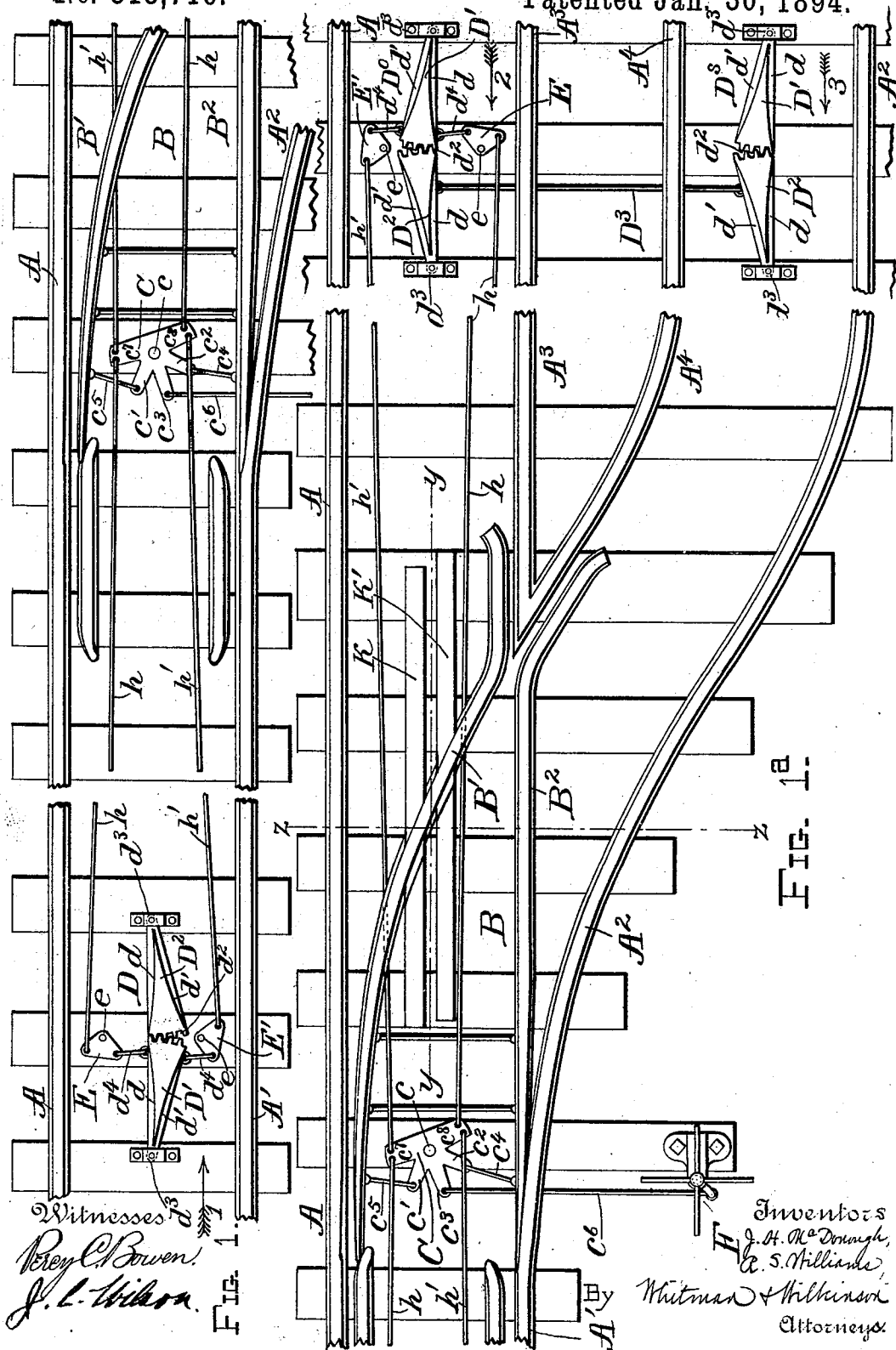
2 Sheets—Sheet 1.

J. H. McDONOUGH & R. S. WILLIAMS.

AUTOMATIC RAILWAY SWITCH.

No. 513,716.

Patented Jan. 30, 1894.



(No Model.)

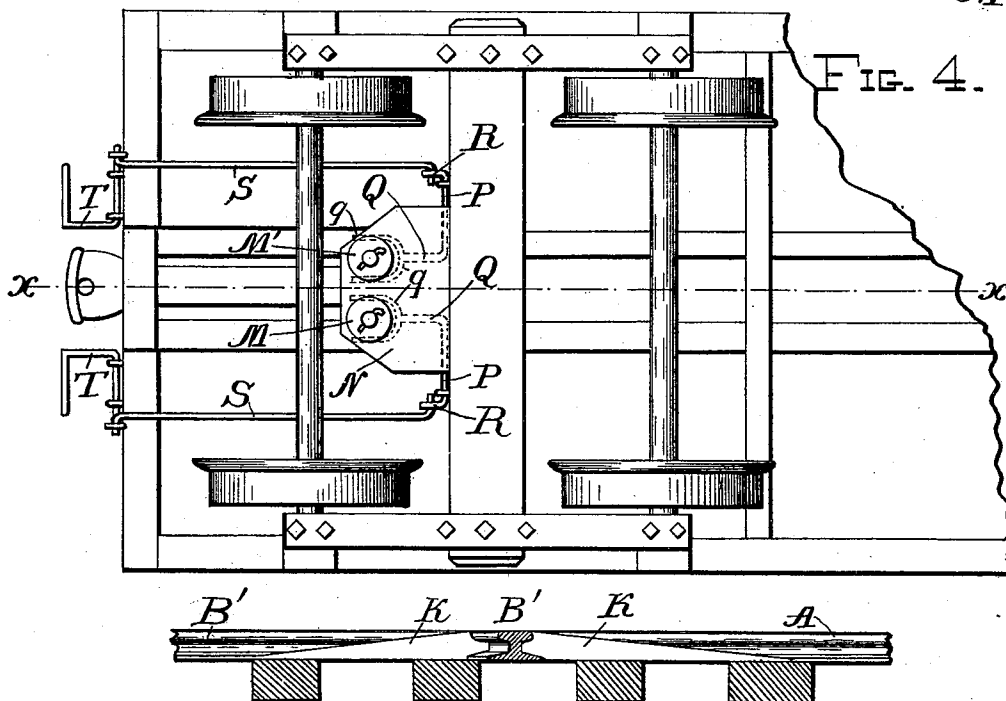
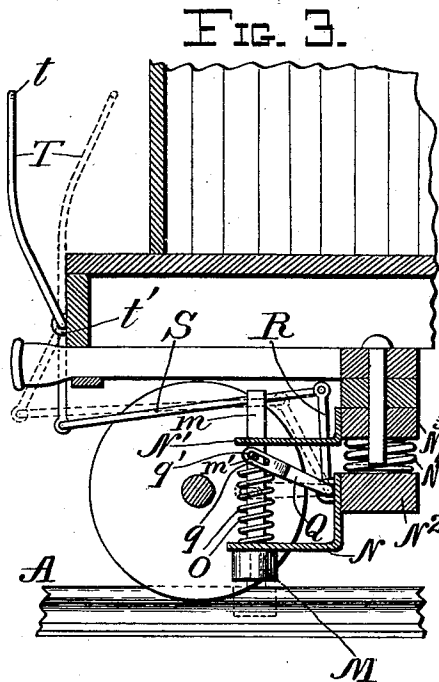
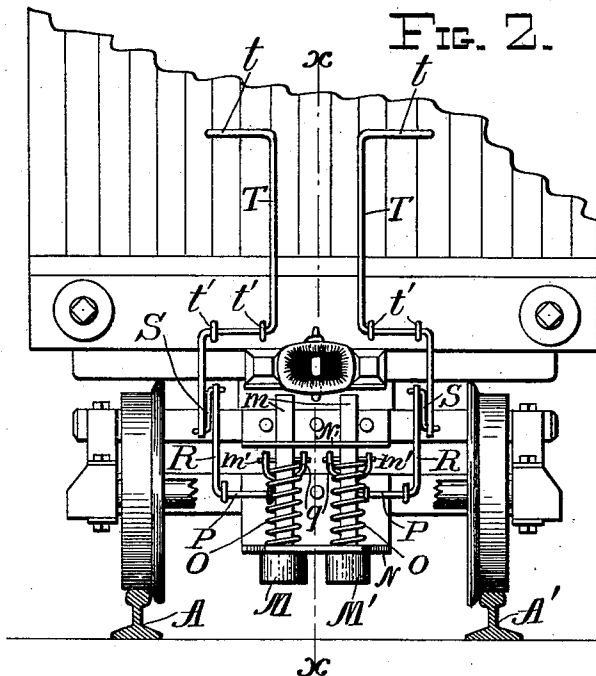
2 Sheets—Sheet 2.

J. H. McDONOUGH & R. S. WILLIAMS.

AUTOMATIC RAILWAY SWITCH.

No. 513,716.

Patented Jan. 30, 1894.



Witnesses

Reory C. Bowen
J. R. Wilson

FIG. 5.

By

Inventors,

J. H. McDonough &
R. S. Williams

Whitman & Wilkinson
Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH H. McDONOUGH AND ROBERT S. WILLIAMS, OF IRONDALE, ALABAMA.

AUTOMATIC RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 513,716, dated January 30, 1894.

Application filed April 14, 1893. Serial No. 470,354. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH HARRIS McDONOUGH and ROBERT S. WILLIAMS, citizens of the United States, residing at Iron-
5 dale, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Train-Operated Railway-Switches; and we do hereby declare the following to be a full, clear, and exact description
10 of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to railway switches, and has for its object the providing of a safe
15 and reliable switch, which may be operated either from a fixed station, or from a moving train.

Reference is had to the accompanying drawings, wherein the same parts are indicated
20 by the same letters throughout the several views.

Figure 1 represents a plan view of a portion of a railroad track provided with the switch, parts being broken away. Fig. 1^a represents
25 a plan view of another portion of the track shown in Fig. 1, parts being broken away. A part of Fig. 1^a from the left of the sheet to the line *z z*, is duplicated in Fig. 1, in order that the manner of operating the switch by a
30 train coming from either direction may be illustrated in the drawings. Fig. 2 represents the front of a box car fitted with the improved tripping device for operating the switch. Fig. 3 represents a section along the
35 line *x x* of Fig. 2, and looking to the left. Fig. 4 represents an inverted plan view of one end of the car shown in Figs. 2 and 3. In Figs. 2, 3, and 4, many of the fittings not essential to the operation of the device, are omitted,
40 for the sake of clearness in the drawings. Fig. 5 represents a section of Fig. 1^a along the line *y y* of the said figure.

A, A², A³, A⁴ and A⁵ represent the fixed rails at or near the siding.

45 B represents the switch composed of the switch rails B¹ and B² secured together in the usual way.

C represents a lever pivoted at *c*, and having a plurality of arms *c*¹, *c*², *c*³, *c*⁴ and *c*⁵. The
50 arms *c*¹ and *c*² are connected by the rods *c*⁴ and *c*⁵ to the switch rails B² and B¹ respectively, while the arm *c*³ is connected by the

rod *c*⁶ to the switch stand F which is constructed in the usual way. The arms *c*⁷ and *c*⁸ are connected by the rods *h* and *h*¹ to the
55 double levers E and E', pivoted at *e*. These levers are connected by straps *d*⁴ to one of the double wedge-shaped levers D' or D² which compose the track part of the tripping device for moving the switch. Three of these
60 tripping devices, D, D^o and D^s are shown, as will hereinafter be described. These wedge-shaped levers have sloping sides *d* and *d*¹, and are pivoted at *d*³ close down to the cross
65 ties.

K and K' are two sloping pieces of wood or metal placed parallel to the rails and in the form of a double inclined plane on either side of where the switch-rail crosses the track, as
70 shown in Fig. 5.

M and M' represent tripping bars attached to the train. These tripping bars may be provided on the locomotive or cab, or on any or all cars of the train. In Figs. 2 and 3 they are shown as attached by plates N and N' to
75 the cross timbers N² and N³, the lower one of which is connected to the upper series by the spring N⁴. Each of the tripping bars is provided with an upwardly-extending reduced portion *n*, passing through the plate N'. The
80 spring O normally holds the head M clear of the track devices, but the said head may be pushed down into the position shown in dotted lines in Fig. 3, as will hereinafter be described.

Q represents an arm projecting from the rock shaft P, the said arm being provided with a forked portion *q* slotted at *q*¹ and engaging the pins *m*¹ set transversely across the
85 bar *m*.

R represents a second arm attached to the rock shaft P, which is joined by the connecting rod S to the lever T pivoted at *t*¹, and having handles *t*, as shown in Fig. 2.

The distance between the track-tripping
95 device, D or D^o, or D^s, should be sufficiently great to allow the parts ample time to operate before the train reaches the switch.

The track-tripping device D^s is joined to the track-tripping device D^o by a stout rod
100 D³, and thus it becomes unnecessary to use more than one set of rods, *h* and *h*¹ at either side of the switch. Moreover, by this arrangement the necessity for running rods

along the curved portion of the track is obviated.

The rod D^3 is sufficiently stiff to stand either a pulling or a pushing strain.

5 The operation of the device is as follows:—
Suppose a car fitted with the improved tripping device to be coming in the direction of the arrow 1 of Fig. 1, and that it be desired to run off on the siding, the switch being either
10 in the position shown, when the main track is continuous, or being adjusted for the siding. If the switch be closed as shown, and the tripping bar M be thrown down just before the car reaches the pair of levers D , the said
15 bar will strike on the sloping face d' of the lever D' , throwing it to the left, and by means of the rods d^4 , lever E' , rods h' , lever C , and rods c^4 , the switch will be thrown to the left, and will direct the car onto the siding.
20 If the pairs of levers D remain in this position after being thrown to the left, and another car desires to go on the siding, as it comes along in the direction of the arrow 1, throwing the right hand tripping bar M
25 down, will not produce any effect; while if the tripping bar M' be thrown down, the lever D' will be thrown over in the opposite direction causing the switch to be set for the main line. In a similar way the switch may
30 be set for the main line or the siding by a car coming in the direction of the arrow 2 shown in Fig. 1^a. Should a car be coming in the direction of the arrow 3 in Fig. 1^a along the siding, and it be desired to set the switch
35 for the main line, which is represented as open in the said figure, if the tripping bar M be thrown down before reaching the pair of levers D^s , the said bar will strike the sloping face d' , wedging it to the left, and pulling
40 over the bar D^3 , and the pair of levers D^o , which pull on the rods h' and cause the lever C and rods c^4 to move the switch as desired. The switch may also be adjusted by hand from the switch stand f by means of
45 the rod c^6 connected to the lever C , the hand switch-lever and other attachments to the switch-stand F being well known in the art, and are not shown in the drawings. The double wedge-shaped levers D , D^o , and D^s
50 are made in two symmetrical parts D' and D^2 so that they may be operated with equal facility by a train moving in either direction. Thus, if after a train has passed the switch and entered the siding, it be desired to set
55 the switch for the main line for the next train this may be readily done by throwing the tripping bar M' down, which will strike the sloping face d' of the part D^s of the pair of levers D^s and will set the switch as hereinbefore described. By having double sets
60 of rods d^4 and h and h' , and double levers E and E' , the device is always adapted to exert a pulling strain, on the switch bar and various connections, and thus the various rods may
65 be flexible, and of light material. The rods c^6 and D^3 should be of sufficient rigidity, however, for use either in pushing or in pulling.

In order to prevent the tripping bars M and M' from being carried away should they be carelessly held down too long, by the train
70 hand at the lever T , or should they stick when down from any cause, the inclined planes K and K' are placed in their path as they would cross the switch. By means of these double inclines, the tripping bars when
75 down are wedged up by these double inclines before they strike the switch rail B' .

The spring N^4 is placed between the parts N^2 and N^3 supporting the plates N and N' in order to give the yielding connection re-
80 quired.

The pairs of levers D , D^o and D^s would ordinarily be placed at such a distance from the switch that the train might be stopped before reaching the switch should the parts
85 fail to operate from any cause.

It will be obvious that many modifications might be made which could be used without departing from the spirit of the invention.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In a device of the character described, the combination with the main and siding rails and the pivoted switch rails, of the lever
95 C pivoted at c , rods connecting said lever to the switch rails, wedge-shaped levers pivoted between the rails at the requisite distance from the switch, double levers E and E' at
100 either side of said wedge-shaped levers, rods connecting said levers E and E' and said wedge-shaped levers, rods running along the track connecting said levers E and E' with
105 said lever C , and a device carried by the train for striking said wedge-shaped levers and pressing them to one side, substantially as and for the purposes described.

2. In a device of the character described, the combination with the main and siding rails and the pivoted switch rails, of the lever
110 C pivoted at c , a switch stand, and a rod connecting said lever with said switch stand, rods connecting said lever to the switch rails, wedge-shaped levers pivoted between the rails at the requisite distance from the switch,
115 double levers E and E' at either side of said wedge-shaped levers, rods connecting said levers E and E' and said wedge-shaped levers, rods running along the track connecting said levers E and E' with said lever C , and a device
120 carried by the train for striking said wedge-shaped levers and pressing them to one side, substantially as and for the purposes described.

3. In a device of the character described, the combination with the main and siding rails and the pivoted switch rails, of the lever
125 C pivoted at c and provided with arms c' , c^2 , c^3 , and c^6 , rods c^5 and c^4 connecting two of said arms to the switch rails; levers D' and D^2 provided with sloping faces d and d' pivoted between the rails at the requisite distance from the switch; double levers E and E' at either
130 side of said levers D' , and D^2 and connected

thereto; rods h and h' connecting said levers E and E' with said lever C ; and a device carried by the train for striking one of the faces d or d' of the levers D' or D^2 , substantially as and for the purposes described.

4. In a device of the character described, the combination with the main and siding rails and the pivoted switch rails, of the lever C pivoted at c , and provided with arms c' , c^2 , c^3 , c^7 and c^8 , rods c^5 and c^4 connecting two of said arms to the switch rails; a switch stand F and a stiff rod c^6 connecting said arms c^3 to said switchstand; levers D' and D^2 provided with sloping faces d and d' pivoted between the rails at the requisite distance from the switch; double levers E and E' at either side of said levers D' and D^2 and connected thereto; rods h and h' connecting said levers E and E' with said lever C ; and a device carried by the train for striking one of the faces d or d' of the levers D' or D^2 , substantially as and for the purposes described.

5. An apparatus of the character described, comprising a tripping device actuated from a moving train, the main rails A and A^3 ; the siding rails A^4 and A^2 ; the pivoted switch rails B' and B^2 ; the wedge-shaped levers D^0 pivoted between the said main rails; the wedge-shaped levers D^3 pivoted between the siding rails; the bar D^8 connecting said levers; and a system of rods and levers connecting said wedge-shaped levers D^0 with the switch, whereby the switch may be operated from either the levers D^0 or the levers D^3 , substantially as and for the purposes described.

6. An apparatus of the character described comprising a tripping device actuated from a moving train; the main rails A and A^3 ; the siding rails A^4 and A^2 ; the pivoted switch

rails B' and B^2 ; the pair of levers D^0 pivoted between the main rails, and the pair of levers D^3 pivoted between the siding rails, each lever of the said pairs of levers D^0 and D^3 being provided with sloping faces d and d' ; the bar D^8 connecting said pairs of levers D^0 and D^3 ; the double levers E and E' at either side of said pair of levers D^0 and connected thereto the lever C pivoted between the switch rails, and adapted to move the switch; and rods h' and h connecting said levers E and E' and said lever C , substantially as and for the purposes described.

7. An apparatus of the character described, comprising a tripping device actuated from a moving train; the main rails A and A^3 ; the siding rails A^4 and A^2 ; the pivoted switch rails B' and B^2 ; the pair of levers D^0 pivoted between the main rails, and the pair of levers D^3 pivoted between the siding rails, each lever of the said pairs of levers D^0 and D^3 being provided with sloping faces d and d' ; the bar D^8 connecting said pairs of levers D^0 and D^3 , the double levers E and E' at either side of said pair of levers D^0 and connected thereto; the lever C pivoted between the switch rails and adapted to move the switch; the rods h' and h connecting said levers E and E' and said lever C , a switch stand F , and a rod connecting said lever C to said switch stand F , substantially as and for the purposes described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH H. McDONOUGH.
ROBERT S. WILLIAMS.

Witnesses:

D. R. W. McIVER,
A. LATADY.