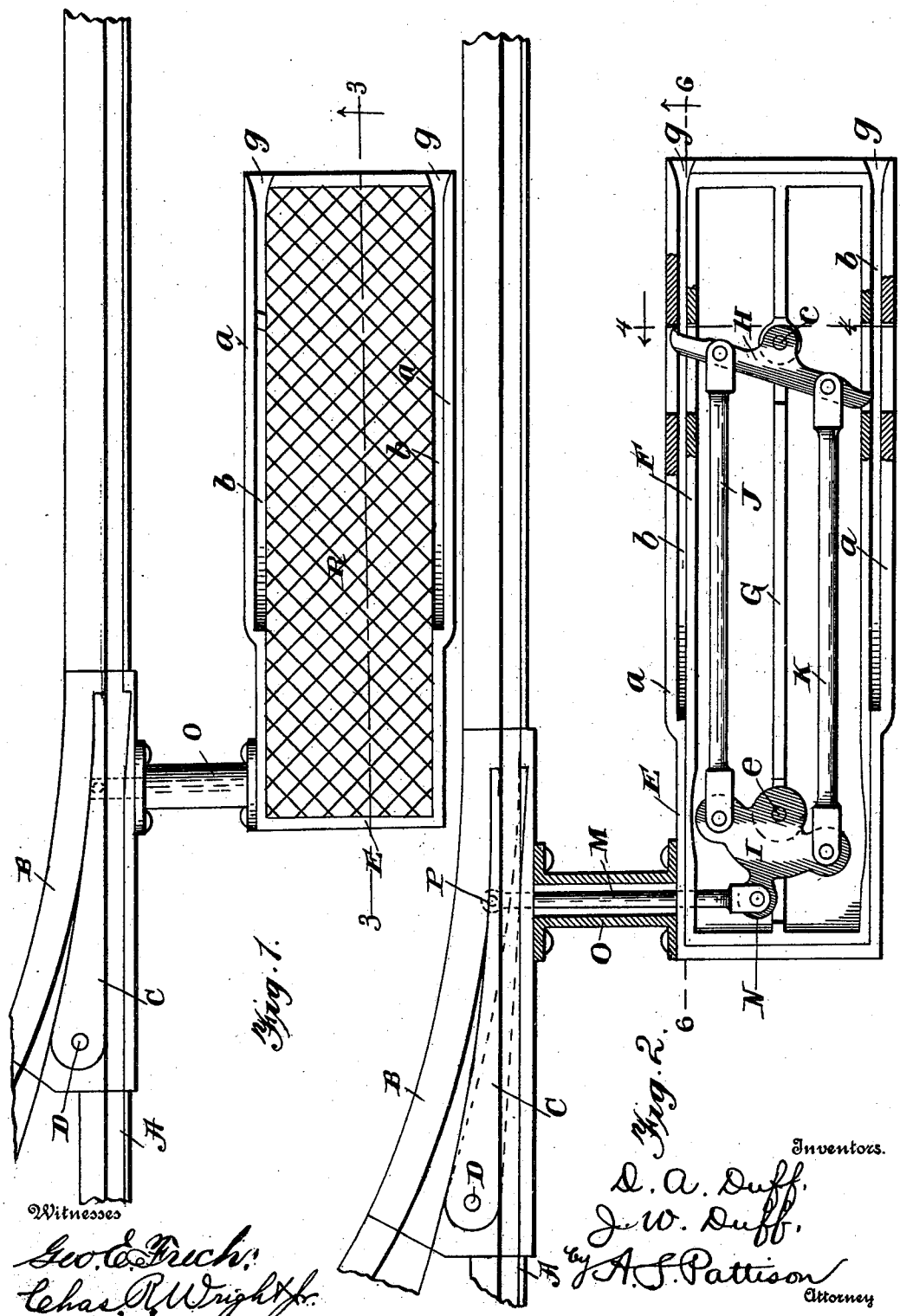
No. 674,236. Patented May 14, 1901.

D. A. & J. W. DUFF.

AUTOMATIC SWITCH.

(Application filed June 27, 1900. Renewed Mar. 15, 1901.)

(No Model.) 2 Sheets—Sheet 1.



Witnesses
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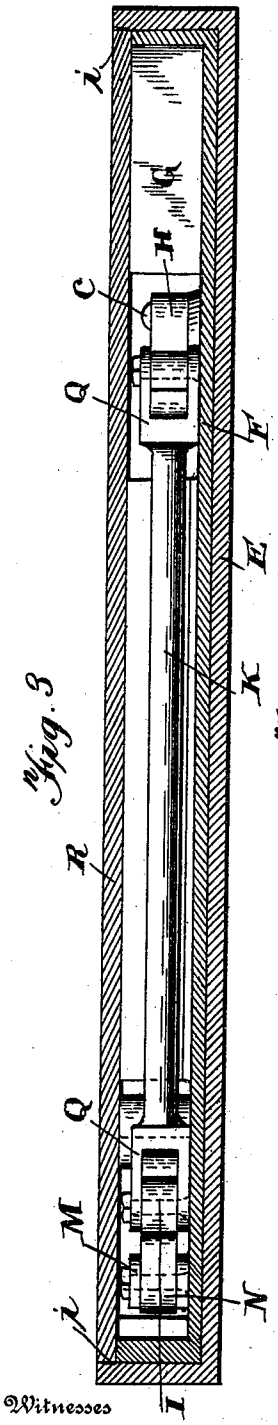


Fig. 3

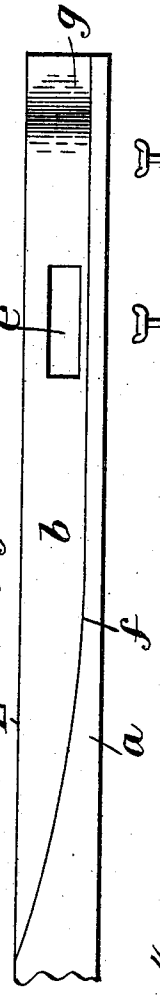


Fig. 6.

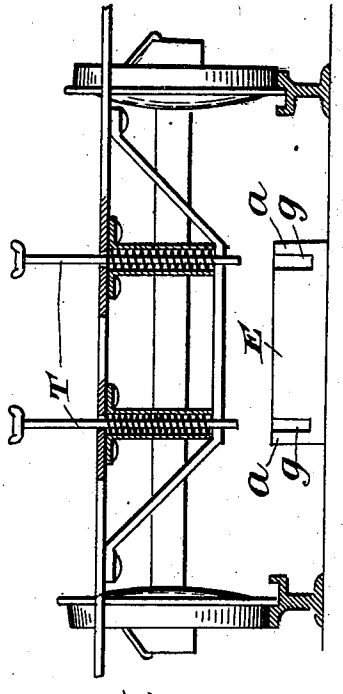


Fig. 5.

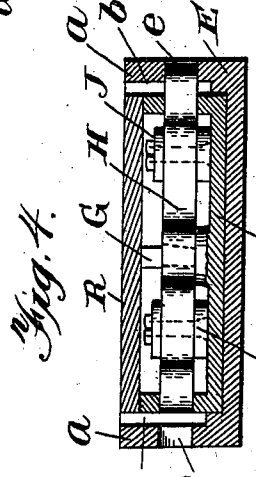


Fig. 4.

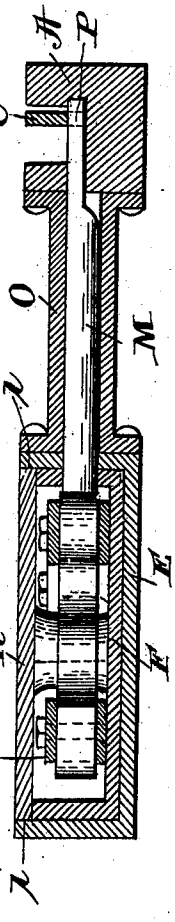


Fig. 7.

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DENNIS A. DUFF AND JOHN W. DUFF, OF MANORVILLE, PENNSYLVANIA.

AUTOMATIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 674,236, dated May 14, 1901.

Application filed June 27, 1900. Renewed March 15, 1901. Serial No. 51,386. (No model.)

To all whom it may concern:

Be it known that we, DENNIS A. DUFF and JOHN W. DUFF, citizens of the United States, residing at Manorville, in the county of Armstrong and State of Pennsylvania, have invented new and useful Improvements in Automatic Switches, of which the following is a specification.

Our invention relates to improvements in automatic switches, and pertains to a switch constructed and adapted to be operated from the car, all of which will be fully described hereinafter.

The object of our invention is to provide an automatic switch for street-car lines which can be operated by the foot of the driver from the car for the purpose of directing the car to another track when the switch or frog is set for the car to continue on the straight or main line or to operate the switch or frog to cause the car to continue on the straight or main line when the switch or frog is thrown to carry it to another line.

In the accompanying drawings, Figure 1 is a top plan view of a switch embodying our invention, the operating parts being hidden by the top of the box in which they are placed. Fig. 2 is a similar view with the top of the box removed and exposing the operating mechanism. Fig. 3 is a longitudinal sectional view of Fig. 1, taken on the line 3 3. Fig. 4 is a cross-sectional view on line 4 4 of Fig. 2. Fig. 5 is an end elevation of a car equipped for the operation of our switch. Fig. 6 is a longitudinal sectional view on the line 6 6 of Fig. 2.

Referring now to the drawings, A illustrates one rail of a straight line, and B one rail of a side or switch line.

C is a pivoted switch or frog which is pivoted at the point D and adapted to have its opposite and free end vibrated for the purpose of directing the car either upon the main or straight line A or upon the switch or side line B, as may be desired.

E is a box which is placed between the rails of the main line.

Placed within the box E is a supplemental box F, which contains the operating mechanism and which is capable of removal from the box E when desired. Extending longitudinal the central portion of the box F is a vertical supporting-web G for the top R, which rests upon this central web G and the upper edges of the sides of the box F and also against the shoulders *i*, formed by a rabbet made in the upper edge of the box E and which serves to form a substantial support for the top R to receive the traffic of vehicles thereover. The top R is preferably roughened, as here shown, as is usual in all such devices which are placed in the street and form a part of the road-bed.

A transversely-arranged horizontal lever H is intermediately pivoted at the point *e* upon the web G, the said web being cut out to receive it. An intermediately-pivoted lever I is situated at the opposite end of the box F, the said lever being pivoted at the point *e*, and connecting the ends of the levers H and I are the pitmen or links K and J, the said links having the bifurcated ends Q to receive the ends of the levers, as illustrated in Fig. 3.

Projecting laterally from the end of the box E, adjacent the lever I, is a transversely-arranged box O, which has its ends bolted, respectively, to the sides of the box E and to the rail A. A link or pitman M has one end pivotally connected with a centrally outwardly projecting stud or arm N, made as a part of or rigidly secured to the lever I, and the opposite end of the said pitman or link M is pivotally connected with the free end of the frog or switch C through the medium of a suitable pivotal pin P.

Attention is especially directed to the formation of the sides of the box E, in that it has the lateral and longitudinally-extending enlargement *a*, constituting the slots or spaces *b* between the inner side of the enlargement and the adjacent side of the box F.

The lever H is elongated and has outwardly-projecting ends L extending beyond the point of connection of the links J and K therewith, the said extensions passing through horizontal slots, formed in the sides of the boxes E and F, and the said extending ends passing transversely across the spaces or slots *b*. By reference to Fig. 6 it will be seen that the bottoms of the slots *b* have their outlet ends tapered from the point *f* upward to the top of the boxes for a purpose to be presently explained.

In Fig. 5 is shown in outline a portion of a car which is provided with the spring-actu-

ated bars T, the said spring serving to normally hold them upward in the position shown in said figure, but which are adapted to be pressed down by the foot of the driver or operator for the purpose of actuating the operating mechanism and controlling the switch or frog C. The inlet ends of the slots *b* are enlarged, preferably, as shown in Figs. 1 and 2.

In Fig. 2 the operating mechanism and the switch or frog C are shown to have the car move along the straight track A in solid lines and to be guided to the side or switch track B in dotted lines.

In operation when the car is approaching the switch and the switch is set, as shown in solid lines, Fig. 2, and the car is to be deflected or guided to the switch or side track B the operator depresses the right-hand bar T, Fig. 5, causing its end to enter the inlet end of the right-hand slot *b*. As the car moves along the lower end of the depressed rod T will strike the projecting end L and move it into the position shown, Fig. 2, and consequently moves the switch or frog C in the position shown in dotted lines in the same figure and causes the car to be deflected or guided to the switch or side track B. Should the switch be thrown in the position shown in dotted lines, Fig. 2, and it is desired that the car should continue on the straight track, the operator or driver will depress the left-hand bar T, Fig. 5, which will move the switch or frog C to the position shown in solid lines, so that the car will continue along on the straight track.

In approaching the switch the driver or operator can easily determine whether or not the switch is thrown as he wants it to guide his car in the direction he wishes to go, and if it is at night and it is dark he can avoid any accident by depressing that bar which will cause his car to travel in the direction desired. Indeed, this can be so in the day-time, so that the driver or operator need pay no attention in the way of watching the switch, but simply depress that bar T which he knows will cause his car to travel upon the desired track.

A car moving from the switch B to the main track will deflect the switch or frog C by the engagement therewith of the flanges of the wheel of the car, so that it will continue along on the main track without the operation of any element upon the car, and so if the car is approaching from the direction shown by the arrow, Fig. 2, the same result will be effected by the flanges of the wheel of the car in operating the frog or switch C should it be thrown in the position shown in dotted lines in said figure.

By having the mechanism in a separate box F, as here shown, the box can be removed and replaced readily at any desired time without disturbing the road-bed in any manner whatever, and the box will be fitted against the side of the permanent box E.

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

1. An automatic switch comprising a box E, a box F situated therein and containing an operating mechanism, a pivoted switch or frog, a connection between the said operating mechanism and the said switch or frog, the outer box having an enlargement to form a slot or space between the said boxes, and the operating mechanism projecting into the said space to be operated by an element from the moving car, substantially as described.

2. An automatic switch comprising a permanent box E, a removable box F situated therein, a lever mechanism carried within the last said box, the lever of the mechanism having ends projecting through the sides of the inner box, the outer box having a lateral deflection *a* to constitute a space or slot across which the projecting ends of the lever extend, a pivoted frog or switch, and a connection between the lever mechanism and the said pivoted frog or switch, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

D. A. DUFF.
JOHN W. DUFF.

Witnesses:
MYRTLE D. THOMPSON,
CALVIN RAYBURN.