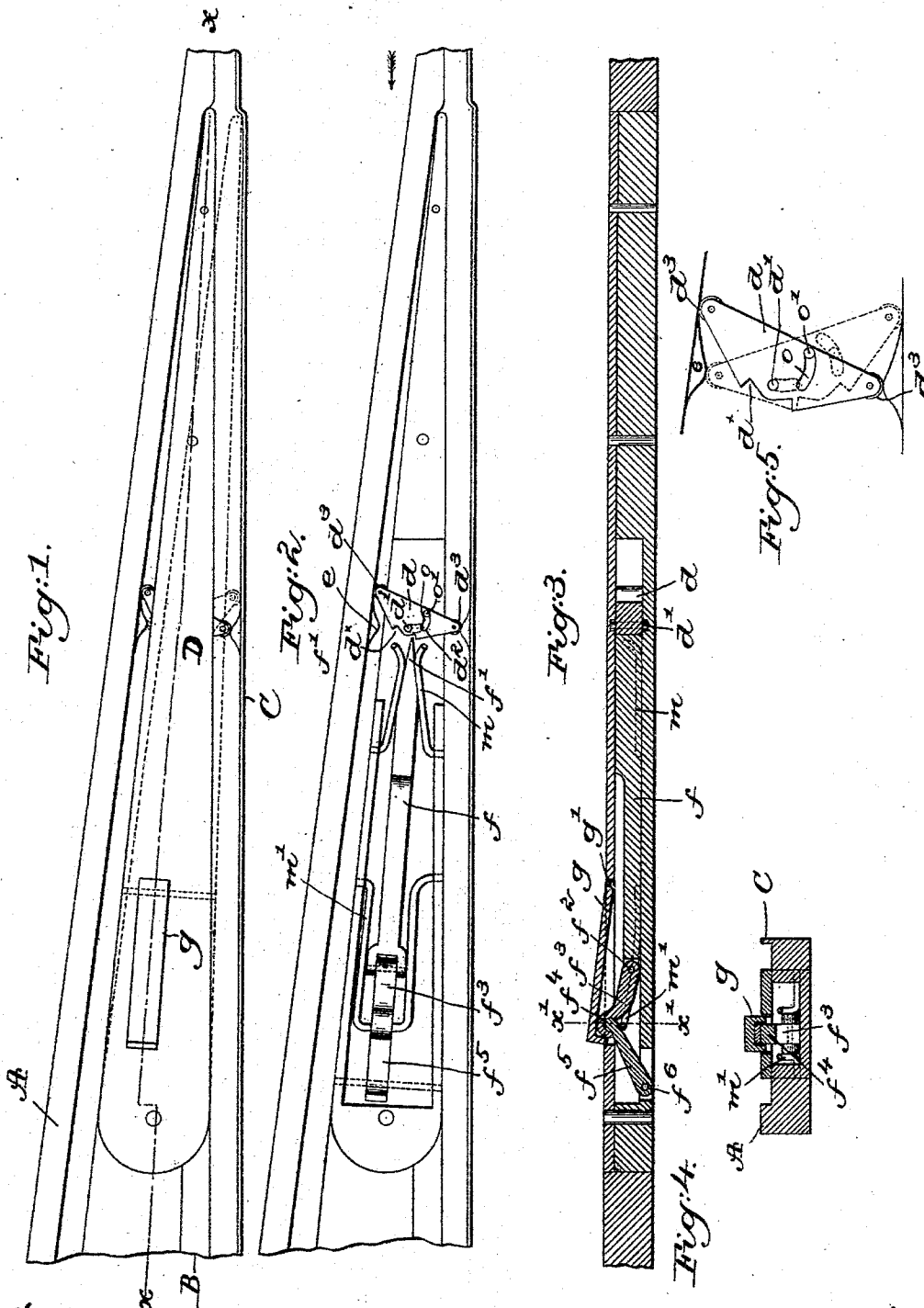


(No Model.)

W. J. COUGHLIN.
AUTOMATIC RAILWAY SWITCH.

No. 515,655.

Patented Feb. 27, 1894.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM J. COUGHLIN, OF LOWELL, MASSACHUSETTS.

AUTOMATIC RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 515,655, dated February 27, 1894.

Application filed November 21, 1892. Serial No. 452,683. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. COUGHLIN, of Lowell, county of Middlesex, State of Massachusetts, have invented an Improvement in Automatic Railway-Switches, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve that class of automatic railway switches in which the switch point or tongue is automatically thrown from a moving car.

In accordance with this invention the switch tongue is thrown by means of a fulcrumed operating plate or member which is automatically moved about its fulcrum to effect the movement of the tongue by suitable devices upon or controlled from the car. The operating devices by which the tongue is moved are preferably carried in or by the tongue itself, and movable therewith, so that no sub-chamber beneath the switch is necessary.

In the drawings Figure 1, represents in top or plan view a switch having its tongue moved in accordance with this invention; Fig. 2, a similar view with the top of the tongue removed to expose the operating parts; Fig. 3, a section taken on the dotted line $x-x$, Fig. 1; Fig. 4, a cross section taken on the dotted line $x'-x'$ Fig. 3; and Fig. 5, an enlarged detail illustrating the movement of the operating member.

Referring to the drawings, A, B, represent two converging rails; C a usual guard, and D a switch tongue or point which is to be thrown into one or another position to determine the direction of movement of a car, in accordance with this invention. As herein shown, and preferably, the tongue D is made hollow to receive the operating mechanism for the tongue, such mechanism consisting of a fulcrumed operating member, represented by d , Fig. 2, having its fulcrum at the pin d' which projects vertically above and below the member and enters and moves in slots d^2 in the top and bottom plates of the tongue shown in dotted lines Fig. 2, and in full lines Fig. 3. This operating member d , is herein shown as provided at its ends with anti-friction rollers d^3 , which, when the member is rocked about its fulcrum are acted upon by suitable cam surfaces e which cause the ful-

crum of the operating member to be moved laterally, as shown. The length of lateral movement of the fulcrum of the operating member is considerably in excess of the length of the slots d^2 in the tongue, so that if the operating member has been moved slightly about its fulcrum sufficient to move its fulcrum from one to the other end of the slots, the switch tongue will thereafter be shifted by and with said fulcrum plate. The mechanism to move this operating member about its fulcrum and throw the switch, as shown, consists of a longitudinally movable slide-bar f having a pointed end f' which is adapted to enter one or the other of the notches or recesses d^x in the operating member, the said notches being located at opposite sides of the fulcrum pin. The slide bar f at its end opposite the operating member is jointed at f^2 to one end of a lever f^3 jointed at f^4 to an end of a lever f^5 in turn pivoted at its opposite end at f^6 to or in the said tongue. The levers f^3 , f^5 constitute in effect a toggle joint normally elevated as shown in Fig. 3, but which, when depressed will cause the slide-bar f to be moved forward, or to the right, Figs. 2 and 3, to shift the operating member into one or another position, as will be described. The toggle joint is depressed by means of a track bar G pivoted at g' and recessed to fit down over the elevated end of the lever f^3 to thereby decrease the height to which the track-bar rises about the upper face of the tongue. Springs m , Fig. 2, act to center the end of the slide bar, while springs m' maintain the toggle levers normally in their elevated positions Fig. 3.

The operation of the switch is as follows, viz:—The operator upon a car moving in the direction of the arrow Fig. 2, will, just prior to reaching the switch tongue, depress an arm or roller, not herein shown but which is common to all switches of this class, which arm will act upon the track-bar G and depress the same before the wheels upon the car arrive at the point of the switch tongue. When the track-bar G is depressed the toggle levers are depressed and straightened, and the slide-bar f is moved to the right, Fig. 2, its end entering one of the notches d^x in the operating member and turning the same about its fulcrum into its dotted position

Fig. 5, the said fulcrum first moving to take up the lost motion in the slots d^2 , and thereafter moving the switch point over with it into its dotted position Fig. 1. The centering springs m permit the pointed end of the slide-bar to follow the lateral movement of the notch which the said slide-bar engages, and upon the release of the track-bar G the spring m' will return the levers to their normal positions Fig. 2, the springs m again centering the slide-bar. The lateral movement of the fulcrum pin of the operating member is provided in order that the fulcrum may be carried first to one and then to the other side of the center line of movement of the slide-bar that the latter may engage the operating member always at one side of the fulcrum and turn the same about the fulcrum. Were it not for this lateral movement of the fulcrum, the point of the slide-bar might engage the operating member directly in line with the fulcrum and fail to move or turn the latter in either direction. As it is, however, the fulcrum in either of its extreme positions is at one side of the center line of movement of the slide-bar, therefore, the latter must strike the operating member at one side of and turn the same about its fulcrum. The switch having been thrown in the manner described the car proceeds upon the track represented by the rail A , the operating member and switch point or tongue remaining in the positions into which they were moved. If now a car proceeding in the same direction as before is to continue upon a straight track, the operator upon the car will depress in precisely the same manner as before the arm or roll upon the car to cause the same to act upon and depress the track-bar G , such depression of the track-bar, as before, causing the slide-bar to be moved to the right Fig. 2, but this time, owing to the changed position of the operating member and its fulcrum, the said slide bar engages the other notch d^x at the side of the fulcrum opposite the notch it previously engaged, the action of the slide-bar in this instance turning the operating member back again into its former position, and through the cams e returning the switch tongue to its original position, the fulcrum being first moved to the opposite or to its original position in the slots d^2 before moving the tongue. It will thus be seen that the fulcrum operating member is shifted about its fulcrum first into one position and then into the other position to move the tongue first into one and then into another position, the actuating mechanism for the operating member being controlled from the car. It will also be noticed that all the parts are contained within and carried by the switch tongue, obviating the necessity for any sub-chamber or mechanism located below the level of the road-bed.

65 If desired, the operating member may be provided with a slot o into or through which passes a pin o' on the tongue to positively

move the fulcrum of the operating lever laterally to opposite sides of the center line of movement of the slide-bar instead of depending upon the action of the slide-bar itself to so shift the fulcrum.

This invention is not restricted to the particular construction of parts herein shown, as the same may be varied without departing from the spirit and scope of the invention.

I claim—

1. In a railway switch, a movable tongue, a fulcrumed operating member connected with and to move the same, and an actuator to act upon said operating member alternately at opposite sides of its fulcrum to thereby turn the same about its fulcrum first in one and then in an opposite direction, to move the tongue, substantially as described.

2. In a railway switch, a movable tongue, a fulcrumed operating member connected with and to move the same, and an actuator adapted to be acted upon and moved from a moving car to act upon said operating member alternately at opposite sides of its fulcrum to thereby turn the same about its fulcrum first in one and then in an opposite direction, to move the tongue, substantially as described.

3. In a railway switch, a movable tongue, a fulcrumed operating member therefor, and co-operating cam surfaces whereby the angular position of the operating member determines the position of the tongue, and an actuator for said operating member, to operate substantially as described.

4. In a railway switch, a movable tongue, a fulcrumed operating lever, and an actuator to act upon said operating member alternately at opposite sides of its fulcrum to turn the operating member about its fulcrum and shift the position of the tongue, the fulcrum of the said operating lever being automatically shifted first to one and then to the other side of the center line of movement of said actuator, substantially as and for the purposes set forth.

5. In a railway switch, a movable tongue a depressible track-bar and tongue operating devices actuated by depression of said track-bar carried by and movable with the tongue, substantially as described.

6. In a railway switch, a movable tongue, a fulcrumed operating member therefor, and a movable track-bar and connections between said track-bar and said operating member whereby successive depressions of the same track-bar turns the operating member about its fulcrum first in one direction and then in another direction to shift the said tongue, first into one and then into another position substantially as described.

7. In a railway switch, a movable tongue, a fulcrumed operating member therefor, an actuator for the operating member, and a movable track-bar, successive depressions of the same track-bar causing the actuator to engage the operating member alternately at opposite sides of its fulcrum to turn the operating member about its fulcrum and thereby shift the

tongue, first into one and then into another position substantially as described.

8. In a railway switch, a movable tongue, a fulcrumed operating member therefor having
5 a movable fulcrum, a cam slot to cause the fulcrum of the operating member to be shifted as the said member is turned, combined with an actuator for the said operating member, substantially as described.

10 9. In a railway switch, a movable tongue, a single track-bar and mechanism connecting the said track-bar with and to move said

tongue, whereby successive depressions of the said track-bar act to throw the said tongue first into one and then into another of its positions, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM J. COUGHLIN.

Witnesses:

FREDERICK L. EMERY,
AUGUSTA E. DEAN.