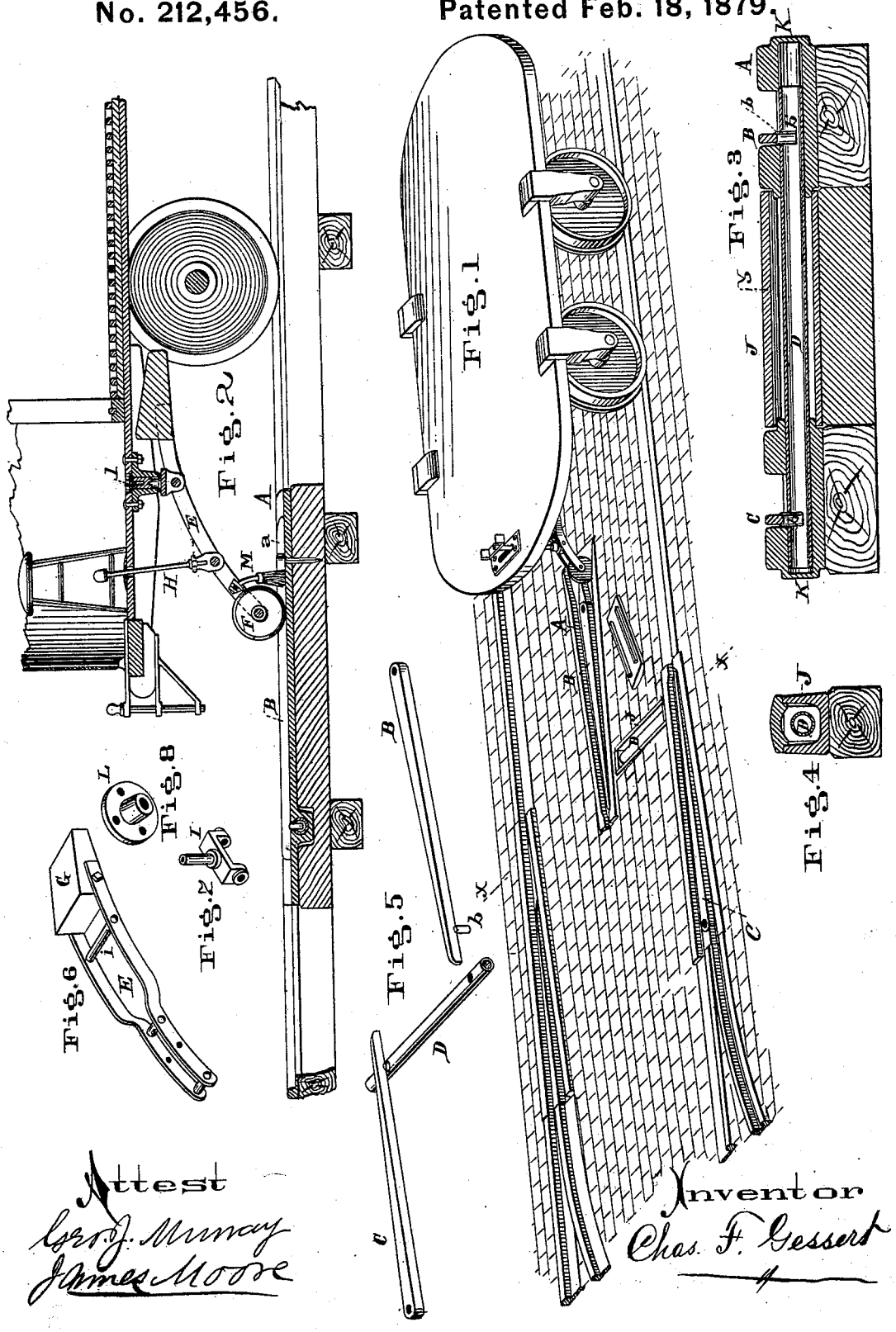
2 Sheets—Sheet 1.

C. F. GESSERT.

Railway-Switch.

No. 212,456. Patented Feb. 18, 1879.



Attest
Geo. J. Murray
James Moore

Inventor
Chas. F. Gessert

2 Sheets—Sheet 2.

C. F. GESSERT.

Railway-Switch.

No. 212,456. Patented Feb. 18, 1879.

Fig. 9

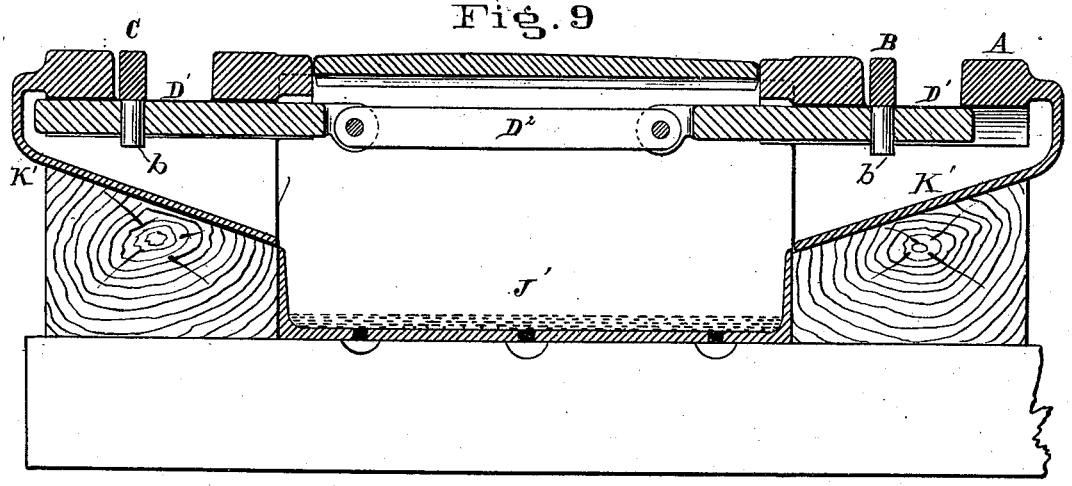
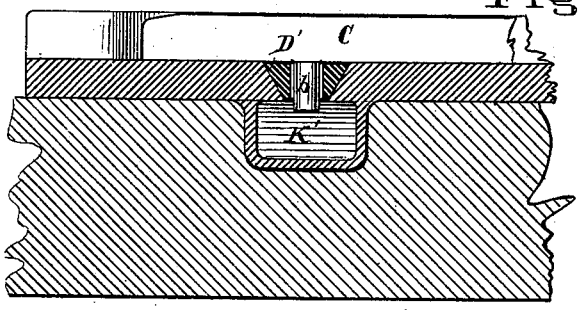


Fig. 10



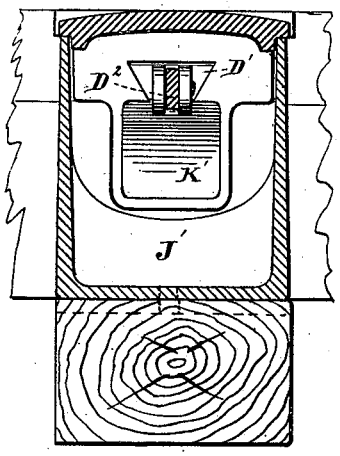


Fig. 11

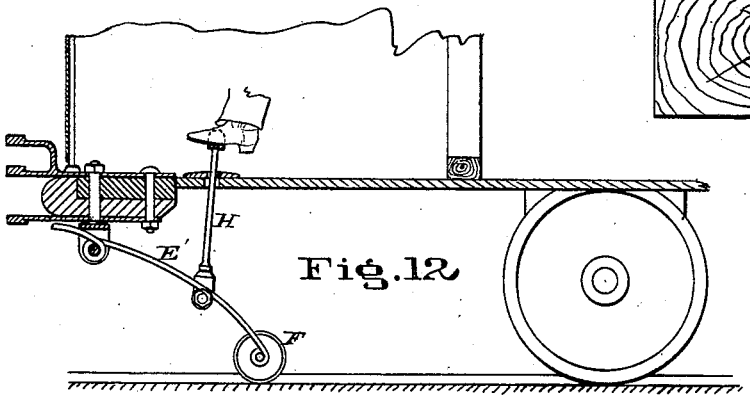


Fig. 12

Attest

Geo. J. Murray

James Moore

Inventor

Chas. F. Gessert.

UNITED STATES PATENT OFFICE.

CHARLES F. GESSERT, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO M. W. OLIVER, OF SAME PLACE.

IMPROVEMENT IN RAILWAY-SWITCHES.

Specification forming part of Letters Patent No. **212,456**, dated February 18, 1879; application filed July 6, 1878.

To all whom it may concern:

Be it known that I, CHARLES F. GESSERT, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Railway-Switches, which improvement is fully set forth in the following specification and accompanying drawings.

This invention is an improvement upon the invention shown and described in Letters Patent No. 203,133, granted to M. W. Oliver and myself April 30, 1878.

The object of the invention is to provide a cheaper, more convenient, and reliable means of constructing, applying, and operating the switches and switch-changing devices, and to provide against extraneous matter or substances accumulating around and clogging the operative parts.

The invention consists, first, in certain modifications of the ordinary switch frog and tongue, which adapt it to act as the guide-rail; second, in placing the frog and tongue so changed in a reverse position in advance of the switch, and centrally between the tram-rails, so that the tongues of the guide-rail and switch may be readily linked together, whether the switch be located upon the right or left of the track; third, in so fitting the tongue-connecting link into the frogs and inclosing it as to prevent extraneous substances from clogging the joints; fourth, of a peculiar switch-changing device, and the means of attaching it to the car so that it may be readily brought down by the driver to change the switch to the desired position, and return, when released, to its elevated position beneath the car-platform; and, finally, in providing, in connection with the switch-changer, a brush to clean the switch-frogs each time the switch is changed.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a perspective view of a platform-car and section of railway embodying my invention. In this view the cover of the link-box is shown removed and inverted. Fig. 2 is a central longitudinal vertical section through the car and roadway. Fig. 3 is a vertical transverse section through line *x*, Fig. 1, on an enlarged scale. Fig. 4 is a vertical section through the link and its box, taken through line *y*, Fig. 3. Fig. 5 is a detached view of the tongues and the form of connecting-link shown in Figs. 1 to 4, inclusive. Figs. 6, 7, and 8 show details of the switch-changing device shown in Figs. 1 and 2. Figs. 9, 10, and 11 show a form of construction which requires no packing nor very accurate fitting of the parts. In this form any extraneous matter that may get into the joints will be carried down into the link-box below the operating parts, and the link is jointed, so as to be readily removed for inspection or repairs, or to clean out any sediment that may settle in the link-box. Fig. 12 shows a modified form of the switch-changing device.

The guide-rail A, with its tongue B, is constructed like the ordinary switch-frog and tongue C, except the stump *a* and side flanges, which are beveled or rounded off to a point, so as to form a flaring mouth to guide the wheel F of the changing device into the proper groove. The guide-rail A is placed centrally between the tram-rails, in advance of the switch, and in a reverse position to it, so that, the narrow ends of the frogs being opposite each other, the free ends of the tongues may be united by link D.

Bosses or projections K are cast upon or secured to the narrow ends of the rail A and the switch-frog. These are bored out to receive the ends of link D, which unites the free ends of the tongues B and C by means of the pins *b*, which project down from the under side of the tongues, and, passing through transverse slots in the bottom of the frogs, enter perforations in the link D. The bosses protrude beyond the flanges of the frogs and enter the open ends of the link-box J, making a close joint between it and the sides of the frogs. The box is thus held firmly in place.

The link D is a piece of metal tubing, of a size to snugly fit the boxings bored in bosses K.

A packing may be introduced, if desirable, between the link and boxing, to exclude water.

For the convenient attaching and detaching of the link, so as to allow the guide-rail or switch-frog to be laid down or removed sepa-

rately, or to allow the link to be readily taken out for cleaning or repairs, the link may be made in three pieces, jointed within the link-box J, either by the union commonly used in gas and steam fitting, by having the center part of the link a rod to enter the tubes, and be secured by set-screws or keys, or by other well-known means, such as in the form of connection shown in Figs. 9, 10, and 11. In these figures the link consists of dovetailed slides D^1, which fit corresponding seats beneath the flanges of the frog and guide-rail. These slides are united by a hinged connection, D^2.

Hollow boxes K^1 (cored out in casting, as are also the dovetail slats of the slides D^1) have their bottoms inclined to the ends of the link-box J′, so that any sediment or water that gets into the slides D^1 will be carried down into the link-box J′. The bottom of the link-box is perforated above transverse grooves in the timber upon which it rests, to allow water which may get into the box to leak out into the ground.

Fig. 9 is a vertical transverse section through the roadway in the line of the connecting-link. Fig. 10 is a vertical section through switch-frog, and Fig. 11 is a section through the link-box in a plane at right angles to the view shown in Fig. 9.

Of course, the slides D^1 and their seats beneath the flanges may, instead of being of the dovetail shape in cross-section, be of any well-known form that will accomplish the same results.

The preferred form of switch-actuating device (represented in Figs. 1, 2, and 6 to 8) consists of a frame or arm, E, secured beneath the platform in a swivel-frame, I, and socket L. This frame E carries a wheel, F, at one end and a counter-balance, G, at the opposite end, and has a rod, H, secured to it between the fulcrum *i* and the wheel, which passes up through the platform in a position to be operated by the driver.

The frame has lateral play, limited by the slot in the platform through which rod H passes, so that the wheel may be brought down in either the right or left groove of the guide-rail A. The weight G returns the wheel to the elevated position beneath the platform when the rod H is released.

The socket L has a projecting flange, through which it is bolted to the platform, and also a screw-bolt, *l*, passing from the top of the platform into the swivel-pin of frame, whereby I secure the parts together.

The turned-up ends of the step upon the top of rod H furnish bearings for the foot to push the rod to the right or left end of the slot before pressing the wheel down as the car approaches the switch. The rod H is pressed at the right end of the slot to bring the wheel F in the right groove of rail A, when it is desired to turn a right curve or avoid turning to the left. To avoid turning to the right or to turn a left curve it is pressed down at the left-hand end of the slot.

The form of the changing device above described will always operate well if the street at the ends of the guide-rail has an even hard surface; but if it is uneven or soft the wheel F will, if pressed down before coming to the guide-rail, or held down after leaving it, have a tendency to plow into the street and strain or break the device. To insure against this danger, flagging-stones should be placed at each end of the guide-rail, or the form of changing device shown in Fig. 12 adopted. In this form the swivel-frame is attached nearer to the front of the car, and the frame which carries the wheel F reversed end for end, so that the wheel will drag as it is pressed down.

The arms E are made, preferably, of spring-steel, with the ends opposite the wheel pressing against the swivel-frame with sufficient force to return the wheel up to near the bottom of the car when the rod H is released. These extended ends of the arms E perform the same office as the weight G in the preferred form, and it is evident that either a spring or weight may be used, as preferred, in either form, to elevate the wheel F.

M, Fig. 2, is a brush, made of steel wire. It is secured to the changing device in proximity to wheel F, and is operated simultaneously with it by the changing device to sweep the groove of the guide-rail clean each time the switch is changed.

I have only shown the brush attached to clean the grooves of the guide-rail; but an arm may be extended from the changing device, to which a similar brush may be secured vertically above the switch-frog, so that its grooves may be swept at the same time and by the same operation.

I claim—

1. In a railway-switch of the character stated, the combination, with a changing device on the car, of the fixed centrally-located guide-rail A, constructed with converging side flanges, and tongue B, pivoted therein, substantially as and for the purpose specified.

2. In a street-railway, the combination, substantially as specified, of the guide-rail A, having its flanges and tongue in relation to each other, as shown, and placed centrally between the tram-rails in advance of the switch-frog, so that the same device may be used to connect the tongues of the guide-rail and switch-frog, whether the switch be located on the right or left side of the track.

3. The combination, substantially as specified, in a railway, of the guide-rail A and the switch-frog, located with relation to each other in the roadway, as described, and having boxings at their adjacent ends beneath their flanges, with a connecting-link adapted to fit said boxings, said link being inclosed with a box, J, for the purpose specified.

4. In combination with the guide-rail, a switch-changing device attached to the car so as to have vertical and lateral motion, to permit its wheel to be brought down so as to run in either the right or left groove of the guide-rail, substantially as shown and described.

5. In combination with the described switch-changer, the brush M, to automatically sweep the grooves as the switch is changed, substantially as shown and described.

CHARLES F. GESSERT.

Witnesses:
GEO. J. MURRAY,
JAMES MOORE.