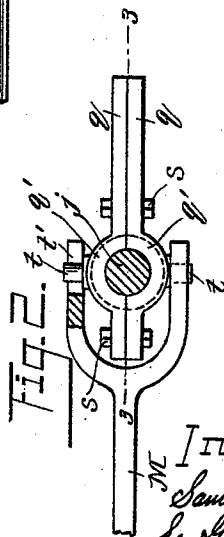
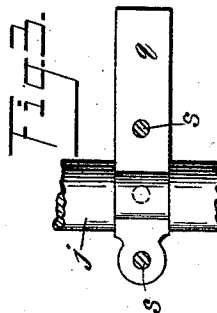
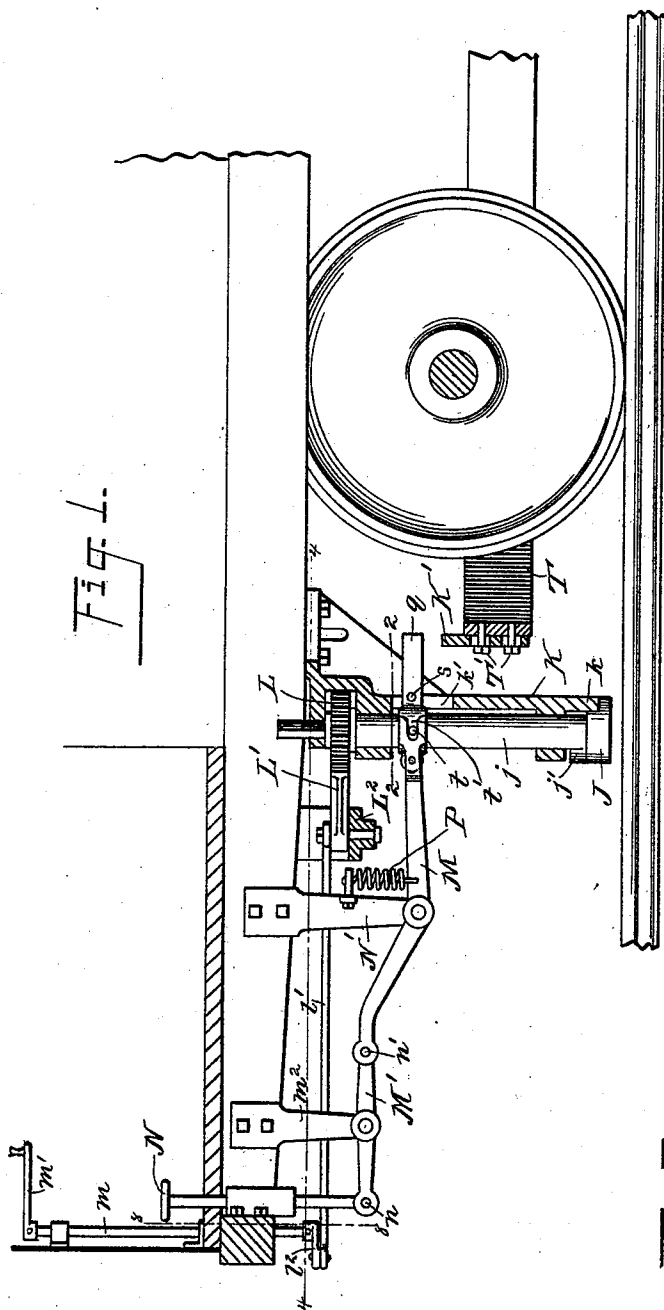


2 Sheets—Sheet 1.

No. 527,637.

Patented Oct. 16, 1894.



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(No Model.)

2 Sheets—Sheet 2.

S. WALKER & LE GRAND MARSHALL.
SWITCH ACTUATING MECHANISM.

No. 527,637.

Patented Oct. 16, 1894.

Fig. 4.

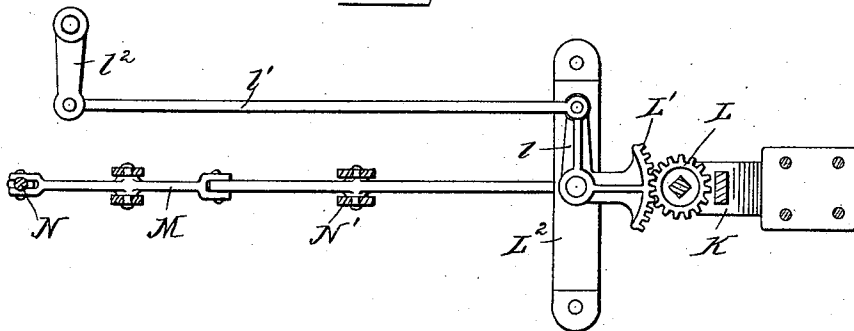


Fig. 5.

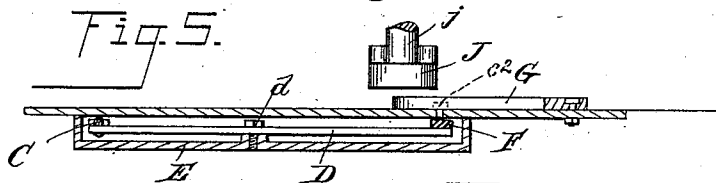


Fig. 6.

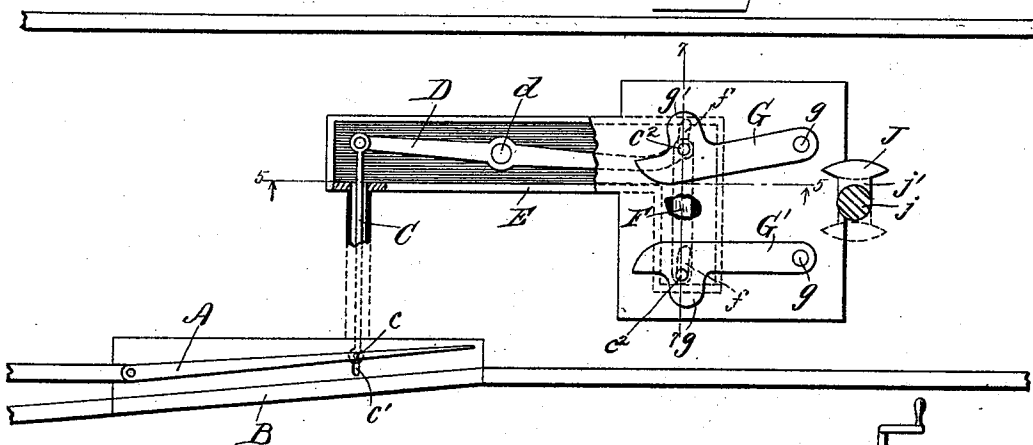


Fig. 7.

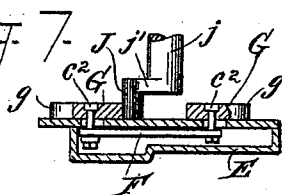
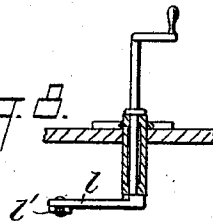


Fig. 8.

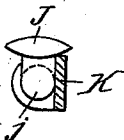


Witnesses,

M. M. Miles.

E. E. Chapin

Fig. 9.



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Attorney.

UNITED STATES PATENT OFFICE.

SAMUEL WALKER AND LE GRAND MARSHALL, OF MILWAUKEE, WISCONSIN.

SWITCH-ACTUATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 527,637, dated October 16, 1894.

Application filed August 21, 1893. Serial No. 483,616. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL WALKER and LE GRAND MARSHALL, citizens of the United States, residing at Milwaukee, county of Milwaukee, State of Wisconsin, have invented a certain new and useful Improvement in Switch-Actuating Mechanism; and we declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Our invention relates to improvements in the construction of switch actuating mechanism for railways, and consists in the matters hereinafter described and pointed out in the appended claims.

Our invention consists of a device carried by the car and adapted for operation by the driver or motor-man upon the platform of the car, to engage with a suitable mechanism located between the track rails so as to shift the same to open or close the switch, as will be presently described in detail.

In the accompanying drawings illustrating our invention, Figure 1 is a vertical sectional view of one end of a car equipped with our improved device for engagement with the lever mechanism between the track rails. Fig. 2 is an enlarged detail sectional view taken on line 2—2 of Fig. 1. Fig. 3 is a detail vertical sectional view of the same, taken on line 3—3 of Fig. 2. Fig. 4 is a horizontal sectional view taken on line 4—4, of Fig. 1. Fig. 5 is a vertical sectional view taken on line 5—5 of Fig. 6. Fig. 6 is a plan view of the lever mechanism located between the track rails, and shows part of the casing broken away to expose the operating parts. Fig. 7 is a transverse sectional view taken on line 7—7, of Fig. 6. Fig. 8 is a detail vertical sectional view taken on line 8—8, of Fig. 1. Fig. 9 is a detail sectional view of the cam device for engagement with the device upon the track.

Our improved apparatus relates particularly to the device carried by the car for engagement with devices upon the track, having operative connection with the switch tongue, such, for instance, as that shown in our application, Serial No. 474,794, filed May 19,

1893, although our said device may be used in connection with any other desired form of track mechanism.

In the particular form of construction shown in the drawings, A designates the switch tongue which is pivoted to the base plate of the switch, in the usual manner, and B the rail leading from the main to a branch or side track. The pivoted switch tongue A is pivotally engaged at *c*, with a transversely arranged link C, by means of a vertical bolt or pin which extends upwardly through a slot *c'* in the base plate of the switch. This link C is arranged to extend horizontally through a pipe C', which is arranged beneath the central portion of the track, and communicates with a suitable horizontally disposed casing or housing E, within which a lever D is pivotally supported as at *d*, said lever being operatively engaged at one end with the end of the link C, as best illustrated in Fig. 6, of the drawings, and at the other end having an operative connection with the lower end of a bolt *e*, which serves to connect the said lever with a transverse bar F, arranged to reciprocate within the casing E. Two of these bolts *e e* are provided at opposite ends of said bar F, and are arranged to extend upwardly through slots *f f* in the upper plate of the casing E. Above said plate are arranged two levers G G', operatively connected with the two upwardly extending bolts *e e* as illustrated more particularly in Figs. 6 and 7, of the drawings, and pivotally engaged at their other ends with the upper side of said plate, as at *g g*. As illustrated more particularly in Fig. 6, these levers G G' are provided with laterally extending ears *g' g'*, which are arranged to cover the slots *f f* in the top plate of the casing E. It will be seen that by this construction, the two levers G G' being tied together by the transverse bar F, and the lever D being operatively connected with the said transverse bar, a movement of either lever G or G' in either direction will produce a corresponding movement of the other lever, and the said transverse bar F, and thus through the medium of the lever D and the link C, will operate to adjust the switch tongue A, and to open or close the switch, according to the

direction of the movement of the levers G G'. The two levers G G' are so disposed upon the upper side of the casing E, that their faces will converge toward the free ends of said levers, and the free ends of said levers are curved or rounded outwardly in the manner shown, for a purpose to be presently described.

Upon the end of a car, within reach of the motor-man or the driver, is located the actuating mechanism for engagement with the levers G G' to open and close the switch, and this actuating mechanism consists of a vertically disposed post *j*, revolvably journaled in bearings in a bracket K which depends from the bottom of the car, and this post carries, at its lower end a suitable cam J, which is arranged at the end of a laterally directed arm *j*, and adapted, by a depression of said post, to be brought into engagement with one of the levers G G', according to the position of the said cam with respect to the post. The upper end of the post *j* is squared to receive a pinion L, which is arranged to mesh with a segmental gear L' having a bearing in a suitable hanger L² beneath the car, and as illustrated in Fig. 1 of the drawings, the squared part of the post *j* is arranged to normally extend considerably above the pinion L, so as to permit the said post to be depressed without affecting the engagement of the pinion therewith, the squared part of the post simply slipping down or up through the angular aperture in the pinion, in an obvious manner.

The segmental gear L' is arranged at the end of one arm of a bell crank *l*, to the other arm of which is connected a rod *l'* having operative engagement at its other end with a crank arm *l''* upon the lower end of a vertically disposed shaft *m*, which extends upwardly through the floor of the car, and is provided at its upper end with a suitable operating handle *m'*.

Pivotaly supported in a hanger *m* beneath the car, is a lever M', having a pivotal engagement at one end, as at *n*, with a push bar N, which is arranged to extend downwardly through the floor, as in Fig. 1, and the other end of said lever M' is operatively engaged at *n'* with a second lever M, which is pivotaly supported at the lower end of a suitable hanger N' the other end of said lever M being bifurcated and arranged to embrace the post *j*, as best illustrated in Fig. 2 of the drawings.

An annular groove is provided in the outside of the post *j* and two plates *q q*, each provided with a half bearing for said post, are arranged to embrace the post, and to rest within said annular groove, suitable bolts *s s* serving to secure the two plates together, and the parts *q' q'* forming the bearing for the post, being provided with lateral studs *t t*, arranged to engage with slots *t' t'* in the ends of the bifurcated part of the lever M. A spring P is engaged at one end with the

hanger N', and at the other end with the lever M, and serves to normally hold up the end that is connected with the post *j*, as shown in Fig. 1.

At a convenient point upon the truck frame T, is provided a stop plate K' adjustably secured to the truck frame by means of bolts T' T' passed through slots in said stop plate.

The rear ends of the plates *q q* extend into the line of the stop plate K', so that when the mechanism which operates to depress the post *j* has been moved so as to bring the lower end of said post to a predetermined level, the rear ends of the plates *q q* will come into engagement with the said stop plate to limit the movement of said post, in an obvious manner.

As illustrated in Fig. 1, the plates *q q* are arranged to extend rearwardly through a slot *k'* in the hanger K, so as to prevent any tendency of said plates to rotate with the post *j*.

The operation of our improved device is as follows: When a car equipped with our improved actuating device approaches a switch constructed as before described, the man upon the front platform, by means of the handle *m'* upon the upper end of the shaft *m*, rotates said shaft so as to give a partial rotation to the segmental gear L' and the pinion L, to partially rotate the post *j*, and move the cam J to the desired side of the said post, so as to enable said cam to engage with a desired one of the levers G G'. Then by a downward pressure upon the push bar N, he actuates the levers M' and M, to depress the post *j*, so as to bring the cam J into the same horizontal plane with the levers G G', when by the forward movement of the car the cam J will be operated to open or close the switch according to the one of said bars engaged by the said cam. The levers or bars G G' are made of sufficient length to effect a gradual movement of the switch tongue and the intermediate mechanism as the car approaches the switch, and the movements of the parts are thereby rendered even and uniform.

In order to afford a support for the cam J, when it is in engagement with the switching bar G or G', the hanger K is provided, immediately in rear of the post *j*, with a transversely arranged shoulder *k*, against which the lateral arm *j'* rests when the post is turned so as to bring the cam into operative engagement with either one of the said bars.

Our improved device may be readily applied to any of the ordinary forms of cars.

By the arrangement of the stop upon the truck frame, as described, the downward movement of the post and the operating cam carried thereby is limited at the time when said cam is brought into position to engage with one of the switch operating bars, regardless of the position of the car; that is to say, that if the car were but slightly loaded, so that the floor of the car rested at a level above the track, a little above the normal, the post would be permitted to descend a greater dis-

5 tance with respect to the car body, before the
said motion of said post was stopped, than if
the car were heavily loaded, so that the post
had a shorter distance to travel to bring the
cam into position. It will thus be seen that
we are enabled to insure the positive engage-
ment of the operating cam with the proper
one of the switch actuating levers or bars,
and thus to effect a certain and positive ad-
justment of the switch tongue.

Having thus described our invention, what
we claim as new, and desire to secure by Let-
ters Patent of the United States, is—

1. A switch actuating device comprising a
vertically disposed post movably supported
upon a car, and carrying a cam at its lower
end, suitable means for depressing and turn-
ing said post so as to bring said cam into po-
sition for engagement upon a desired side of
said post with a switch moving device upon
the track, and a stop upon the truck adapted
for engagement with a projecting part of the
movable mechanism to limit the downward
movement of said post when it has reached a
predetermined position, substantially as de-
scribed.

2. A switch actuating device comprising a
vertically disposed post revolubly secured in
suitable bearings in a hanger beneath the
car, and carrying at its lower end a suitable
cam arranged eccentrically with respect to
said post, suitable means for depressing and

turning said post so as to present said cam
for engagement upon a desired side of said
post, with a switch moving device upon the
track, a stop for limiting the downward move-
ment of said post, and a stop for limiting its
rotation in either direction, substantially as
described.

3. A switch actuating device comprising a
vertically disposed post, revolubly supported
in a suitable hanger beneath the car, and
carrying at its lower end a cam arranged ec-
centrically with respect to the axis of said
post, said post being provided with an angu-
lar portion, and to slide vertically in its bear-
ings, a suitable gear wheel slidably engaged
with the angular portion of the post, a second
gear arranged to mesh with said first men-
tioned gear, and operatively connected with
a suitable crank, and an operative connection
extending from said crank above the plat-
form, whereby said gears may be operated to
partially rotate the post so as to present said
cam for engagement upon a desired side of
the same with a suitable switch moving device
upon the track, substantially as described.

In testimony whereof we sign this specifica-
tion in the presence of two witnesses.

SAMUEL WALKER.

LE GRAND MARSHALL.

Witnesses:

JOHN E. WILES,
E. W. STOUT.