No. 648,046. Patented Apr. 24, 1900.

F. MORGENSTERN.

STREET RAILWAY SWITCH.

(Application filed June 26, 1899.)

(No Model.)

Fig. 1.

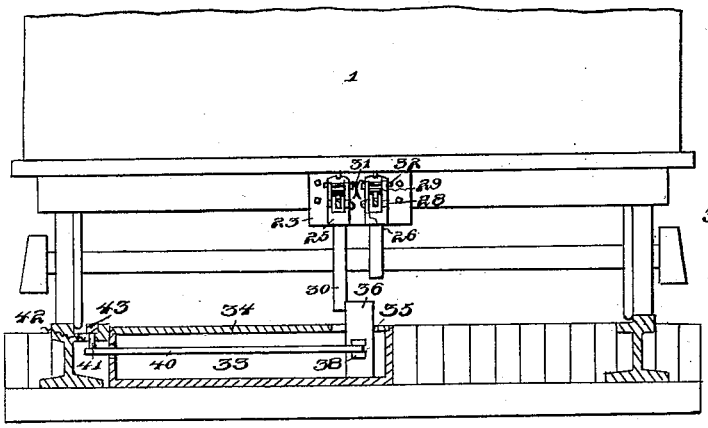


Fig. 11.

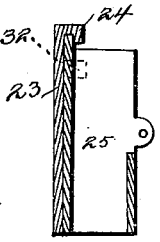


Fig. 2.

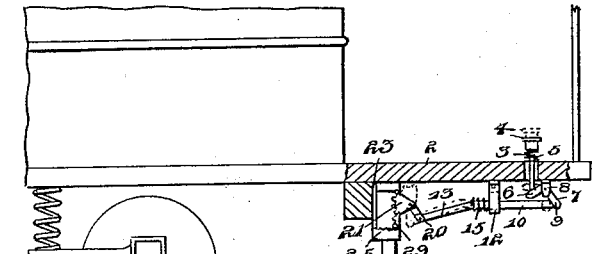
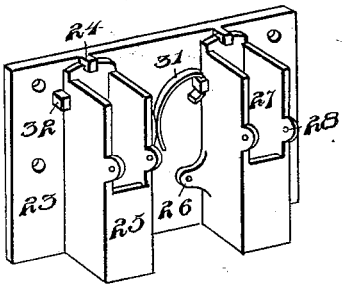


Fig. 3.



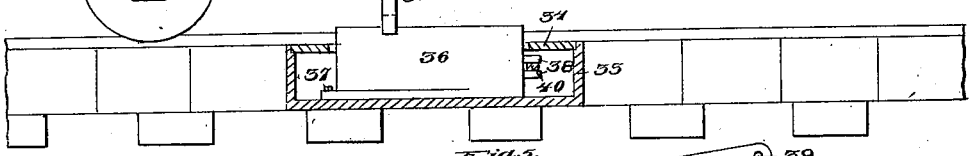


Fig. 5.

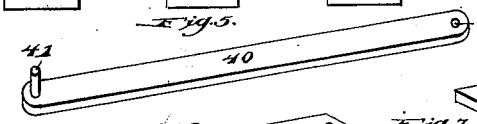


Fig. 4.

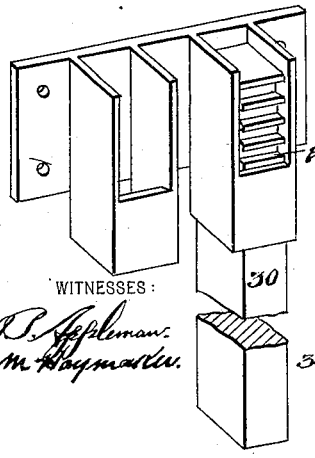


Fig. 6.

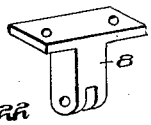
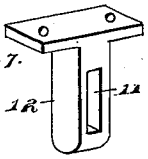


Fig. 7.



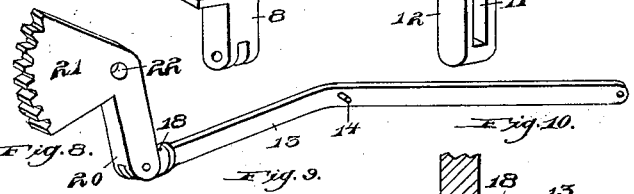
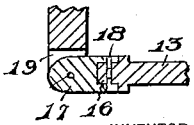
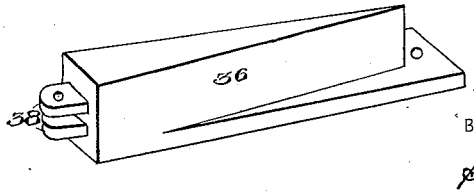


Fig. 8.

Fig. 9.

Fig. 10.





WITNESSES:

P. Appleman.

Jam. Haymarket.

INVENTOR

F. Morgenstern.

BY

M. C. Ever & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FREDRICK MORGENSTERN, OF ALLEGHENY, PENNSYLVANIA.

STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 648,046, dated April 24, 1900.

Application filed June 26, 1899. Serial No. 721,847. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK MORGENSTERN, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Street-Railway Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in switches, and relates more particularly to that class employed for street railways and tramways.

The herein-described invention has for one object to provide new and novel means whereby a switch may be operated from the platform of the car in either direction.

Another object of the invention is to arrange novel mechanism to the platform of a car that will yield in the event of any obstruction in the switch.

The invention has for its further object to construct a switch of the above-referred-to class that will be extremely simple in its construction, strong, durable, and comparatively inexpensive to manufacture; furthermore, one that will be highly efficient in its operation.

The invention finally consists in the novel construction, combination, and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views, in which—

Figure 1 is a front view of a car equipped with my improvements, showing the track in vertical section. Fig. 2 is a side elevation of the same with the platform of the car partly in longitudinal section for the purpose of more clearly illustrating my improved mechanism attached thereto. Fig. 3 is an enlarged perspective view of the guides. Fig. 4 is a similar view showing a modified form of the same. Fig. 5 is an enlarged detail view of the connecting-lever operating the switch mechanism arranged between the rails. Fig. 6 is an enlarged perspective view of the forward hanger arranged under the platform of the car. Fig. 7 is a similar view of the slotted hanger arranged to the under side of the car. Fig. 8 is a perspective view of the cog-segment-arm and lever attached thereto. Fig. 9 is an enlarged perspective view of the operating-tongue. Fig. 10 is a vertical sectional view of the end of the downwardly-extending portion of the lever, showing the connection with the collar and the lower end of the cog-segment arm. Fig. 11 is a vertical sectional view through one of the lugs formed in the casing, as shown in Fig. 3.

Referring to the drawings by reference-numerals, 1 indicates the body of the car, and 2 the platform thereof. A foot-lever 3 extends through the platform of the car, the top of said lever carrying a tread 4. A spiral spring 5 is arranged to the under face of the said tread, encircling the upper end of the foot-lever 3, and is adapted to operate against the upper face of the platform and under face of the foot-lever, the lower end of the said foot-lever being pivotally connected at 6 to a bell-crank lever 7, the latter being fulcrumed to the forward hanger 8, arranged to the under face of the platform. The other end of the said bell-crank lever is pivotally connected at 9 to a lever 10, said lever 10 extending through the slot 11 of the slotted hanger 12, arranged to the under face of the platform, said lever 10 carrying a downwardly-extending portion 13, a pin 14 being arranged at the junction of the horizontal portion of the lever and the downwardly-extending portion.

A spiral spring 15 is secured to the pin 14, said spiral spring operating against the inner face of the hanger 12. The downwardly-extending end of the lever 13 carries a head 16, which is inserted in the sleeve 17 and held in position by means of the pin 18, said sleeve being allowed to turn upon the end of the said downwardly-extending end of the lever.

An apertured lug 19 is formed on the end of the sleeve, which is adapted to fit in and be secured to the bifurcated end 20 of the cog-segment arm 21, said arm also having formed therein an aperture 22. A plate 23

is secured to the under side of the platform, said plate carrying lugs 24, arranged at the upper end thereof. Casings 25 are arranged upon the said plate by means of apertured lugs 26, formed integral therewith and pivotally secured to said plate, the outer faces of said casings being partly cut away, as shown at 27, and provided with apertured lugs 28, which are adapted to receive a pin passing through the aperture 22 of the cog-segment arm, forming a fulcrum-point for the same. Cog-racks 29 are arranged in the said casings and are adapted to mesh with the cog-segment arm 21, said cog-racks carrying downwardly-extending rods 30. Retractile springs 31 are arranged to the inner faces of the casings, said springs being curved in opposite directions and are adapted to bear against each other, retaining said casings normally against the stops 32, formed upon the plate 23.

The reference-numeral 33 represents a casing arranged between the rails below the surface of the street, said casing being provided with a suitable cover 34, said cover containing an opening 35, through which extends the operating-tongue 36, which is pivotally secured at 37 to the bottom of the casing. The opposite end of the said operating-tongue is bifurcated, as shown at 38, for the reception of the apertured end 39 of the connecting-lever 40, carrying at its other extremity a pin 41, operating through the slot 42, formed in the rail and connecting with the switch-tongue 43.

The operation of my improved switch is as follows: Foot-pressure being applied to the foot-lever 5 will operate the bell-crank lever 3 and retract the lever 10, operating through the slot 11 of the hanger 12, thus lowering the cog-rack 29 by means of the cog-segment arm 21, the lower end of the rod 30 engaging the sides of the operating-tongue 36, and as the rod 30 rides along the inclined side of the operating-tongue will cause the latter to turn and impart motion to the connecting-lever, which in turn operates the switch-tongue. When the foot-pressure is released, the springs 5 and 15 will serve to return the mechanism to its normal position. When it is desired to operate the switch in the opposite direction, the opposite foot-lever is depressed.

The operation of my improved mechanism is clearly illustrated in Fig. 2 of the drawings, showing in dotted lines the position of the different parts.

In case the switch-tongue should be clogged so as to prevent its movement, the mechanism will yield to prevent injury thereto when operated by reason of the casings 25 being pivotally secured to the plate 23. The pressure of the segment 21 is toward the center of the plate 23, causing the casings 25 to be forced toward each other, the upper ends of these casings riding in the notches in the under face of the lugs 24, compressing the springs 31 until the plunger or rod 30 has passed from engagement with the tongue 36, at which time the said springs 31 will return the casings 25 to their normal position.

It will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a switch of the class described, the combination with a car, of a foot-lever operating through the platform thereof, a slotted hanger secured to the under face of the car-platform, a lever operating in and supported by said hanger, a bell-crank pivotally suspended from the car-platform with its one end pivotally connected to said lever and its other end similarly connected to the foot-lever, a cog-segment rotatably mounted on the other end of said lever, a plate rigidly secured to the under side of the car-platform, a pair of spring-pressed casings pivotally secured to said plate, a cog-rack arranged in each of said casings and adapted to be engaged by said cog-segment, and means carried by said cog-racks to engage switch-turning mechanism arranged between the tracks, substantially as described.

2. In a switch, the combination of a foot-lever operating through the platform of a car, said foot-lever connecting a lever, said lever carrying a collar rotatably connected thereto, a cog-segment arm connected to said collar, a casing secured to the under side of the car, a cog-rack adapted to operate in said casing, said cog-rack carrying a rod adapted to engage switch-turning mechanism, and a spring connected to said casing to return the same to its normal position when tilted, substantially as described.

3. In a switch, the combination with a car, a foot-lever adapted to operate through the platform of the car, a hanger arranged to the under face of said platform carrying a bell-crank lever connected to said foot-lever and carrying a lever, a slotted hanger arranged to the under side of said platform for supporting said lever, a spring mounted on said lever and operating against the face of said slotted hanger, a collar swiveled upon the end of said lever, a cog-segment arm connected to said collar, a plate secured to the platform of the car, a casing pivotally secured to said plate, said casing carrying apertured lugs, a cog-rack slidably mounted in said casing engaging said cog-segment arm, a spring connecting said casing, and a rod connected to said cog-rack adapted to engage suitable switch-turning mechanism, substantially as described.

4. In a switch, the combination with a car, of a foot-lever operating through the platform thereof, a bell-crank lever pivotally suspended from the under side of the car-platform with its one end pivotally connected to the

foot-lever, a lever having its one end pivotally connected to the other end of the bell-crank lever and having a rotatable collar mounted on its other end, a cog-segment connected to said collar, a plate secured to the under side of the car-platform, a spring-pressed casing pivotally secured to said plate, a cog-rack slidably mounted in said casing, a rod carried by said rack, said rod being adapted to operate suitable switch-turning mechanism.

In testimony whereof I affix my signature in the presence of two witnesses.

FREDRICK MORGENSTERN.

Witnesses:

JOHN NOLAND,

E. W. ARTHUR.