

No. 648,470.

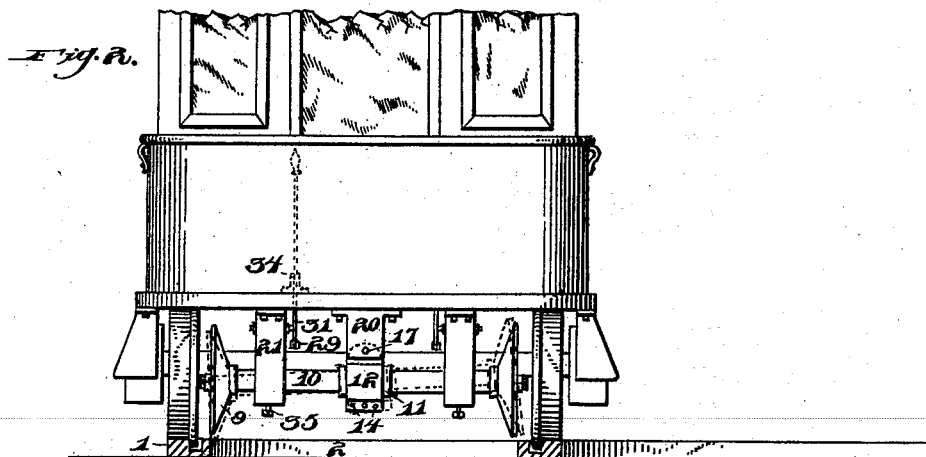
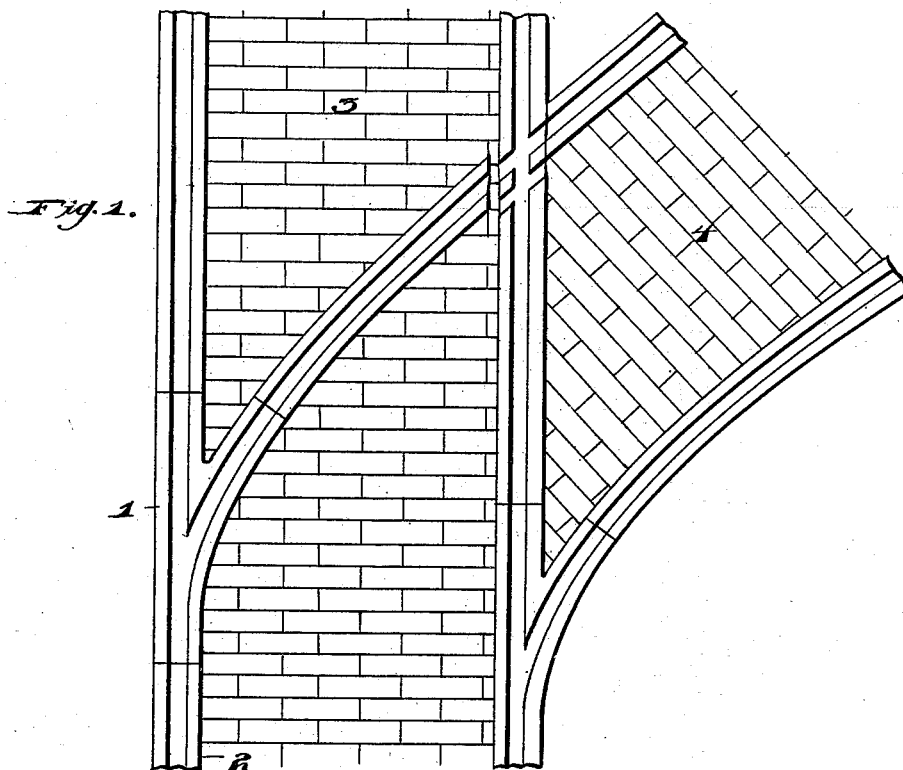
Patented May 1, 1900.

H. M. & C. J. UNDERWOOD.  
STREET RAILWAY SWITCH.

(Application filed Oct. 9, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

HERBERT M. UNDERWOOD AND CYRUS J. UNDERWOOD, OF PITTSBURG,  
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## STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 648,470, dated May 1, 1900.

Application filed October 9, 1899. Serial No. 733,019. (No model.)

*To all whom it may concern:*

Be it known that we, HERBERT M. UNDERWOOD and CYRUS J. UNDERWOOD, citizens of the United States of America, residing at  
5 Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Switching a Street-Car from the Cab by the Motorman, 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 street-railway switches, and has for one of its objects the  
15 provision of novel means whereby the switch-tongue and other mechanism usually applied to the rail are entirely dispensed with.

Our invention has for its further object to apply simple and efficient means to the car  
20 whereby the car will be permitted to traverse over the main line or directed to travel over branch roads or around curves as desired.

Our invention has for its still further object to design mechanism of the character described that will be simple in its construction,  
25 strong, durable, and comparatively inexpensive to manufacture, and, furthermore, mechanism that will not be liable to become out of order and in which the broken parts may be  
30 readily placed in position in case of an accident.

The invention, briefly described, consists in placing a guard-wheel in front of the wheels of the car, said guard-wheel being adapted to  
35 engage the inner side of the rail, thereby guiding the wheels of the car in the desired direction.

Furthermore, the invention consists in the new and novel arrangement for the raising and lowering of the guard-wheel, as will be  
40 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, and wherein like numerals of reference indicate  
45 corresponding parts throughout the several views, in which—

Figure 1 is a top plan view of the main line  
50 and branch road. Fig. 2 is a front elevation of the truck equipped with our improve-

ments. Fig. 3 is a side elevation of the same.

Fig. 4 is an enlarged transverse vertical sectional view of the guard-wheel and bearing.

Fig. 5 is a vertical sectional view taken on the line 5 5 of Fig. 4. Fig. 6 is a vertical  
55 sectional view taken on the line 6 6 of Fig. 4. Fig. 7 is a vertical sectional view of the eccentric operating the bearing. Fig. 8 is a transverse vertical sectional view of the same,  
60 taken on the line 8 8 of Fig. 7.

In the drawings the reference-numerals 1 indicate the rails, and 2 the inner side thereof.

3 indicates the main line, and 4 the branch road.

The body of the car is designated by the numeral 5.

6 indicates the platform, 7 the truck, and 8 represents the wheels.

The reference-numeral 9 represents the  
70 guard-wheels, said guard-wheels being arranged in front of the wheels of the car in the direction in which the car is moving, these wheels being connected by an axle 10, said axle 10 having arranged thereon collars 11,  
75 between which is secured a split ring 12, having formed thereon apertured lugs 13, adapted to receive bolts 14 and nut 15, said ring having upwardly-extending flanges 16 formed  
80 integral therewith and apertured to receive a bolt 17, carrying a washer 18 and nut 19, serving as a pivotal connection in the hanger 20, the latter being rigidly secured to the under face of the car.

The axle 10 operates in bearings 21, arranged on each side or in close proximity to the guard-wheels, a block 22 being arranged in the said bearings, upon which are placed a spiral spring 23 and a follower 24 upon said spiral spring. Said bearing is further provided with a cam or eccentric 25, secured  
90 therein and adapted to operate against the said follower 24.

The reference-numeral 26 represents the shaft of said eccentric, the latter being provided with a lever 27, having its lower end bifurcated, as shown at 28, and adapted to receive an operating-rod 29, which is pivotally connected thereto, said operating-rod being formed of two sections and secured together by means of the turnbuckle 30. The  
100 end of the said operating-rod 29 is connected

to an operating-lever 31 and permitted to slide in a slot 32, formed in the lower end thereof, the said operating-lever 31 extending up through the platform of the car and is fulcrumed, as at 33. A segmental cog-rack 34 is secured on the platform of the car, which is adapted to serve as locking means for the operating-lever in the well-known manner. A regulating-screw 35 is secured in the bearing 21, which is designed to regulate the downward movement of the axle.

The operation of our improved switch mechanism is as follows: Normally the guard-wheels are arranged so as to not come in contact with the rails; but when a branch road or curve is reached the guard-wheels on one side of the car are lowered by operating the lever 31, causing the operating-rod 29 to be drawn forwardly, the latter communicating movement to the lever 27, which in turn operates the cam, thereby depressing the follower and compressing the spiral spring, which in turn operates against the block 22 and bears down upon the axle of the guard-wheels. The bolt 17 forms a pivotal point and allows the axle 10 to rock, and the flange of the guard-wheel engaging the inner face of the rail will naturally guide the wheel of the car in the proper channel in case it is desired to traverse over a branch or side line. When the operating-lever is released, the spiral spring will cause the guard-wheels to again assume their normal position, this spring serving a twofold purpose—namely, to equalize the mechanism and further serving as a buffer in case the car travels over or meets with any obstruction that may be found on the rails.

It will be noted, of course, that two levers will be employed, one at each end of the car, and that the mechanism may be operated from either end; but for the purpose of illustration we have shown only one lever.

Various details of construction enter the herein-described invention, and we have therefore only shown the preferred form of mechanism for raising and lowering and also for tilting the guard-wheels, and we do not wish to limit ourselves to this specific form of construction, as the same result may be obtained in various ways; but

What we do claim as new, and desire to secure by Letters Patent, is, broadly—

1. The combination with a car, of a hanger 20 secured to the underneath face thereof, a split collar pivotally connected to said hanger, a shaft mounted on the said collar and having a guide-wheel secured to each end thereof, suitable bearings for the said shaft, and means for operating the said shaft causing thereby the lowering of the said guide-wheels, substantially as described.

2. The combination with a car, of a hanger secured to the under face thereof, a split collar suitably connected to the said hanger, a shaft mounted in the said collar and having a pair of guide-wheels suitably arranged there-

on, suitable bearings for the said shaft, means arranged in the said bearings for lowering the said shaft and guide-wheels, means arranged in the said bearings for limiting the movement of the said shaft, and means connected to the said lowering means for operating the same, substantially as described.

3. The combination with a car, of a shaft pivotally connected to the under face thereof and having a pair of guide-wheels suitably arranged thereon, a pair of bearings for the said shaft, a follower arranged in each of the said bearings, a spring mounted in the said bearings and adapted to engage the said follower, an eccentric adapted to engage the said spring for lowering the said shaft, and means connected to the said eccentric for operating the same, substantially as described.

4. The combination with a car, of a shaft pivotally connected to the under face thereof and having a pair of guide-wheels suitably arranged thereon, a pair of bearings for the said shaft, a follower arranged in each of the said bearings, a spring mounted in the said bearings and adapted to engage the said follower, an eccentric adapted to engage the said spring for lowering the said shaft, means connected to the said eccentric for operating the same, and means arranged in each of the said bearings for limiting the movement of the said shaft, substantially as described.

5. The combination with a car, of a hanger secured to the under face thereof, a split collar pivotally connected to the said hanger, a shaft mounted in the said collar and having a pair of guide-wheels suitably arranged thereon, a pair of bearings for the said shaft, a follower arranged in each of the said bearings, a spring mounted in the said bearings and adapted to engage the said follower, an eccentric adapted to engage the said spring for lowering the said shaft, means connected to the said eccentric for operating the same, and means arranged in each of the said bearings for limiting the movement of the said shaft, substantially as described.

6. The combination with a car, of a hanger secured to the under face thereof, a split collar pivotally connected to the said hanger, a shaft mounted in the said collar and having a pair of guide-wheels suitably arranged thereon, a pair of bearings for the said shaft, a follower arranged in each of the said bearings, a spring mounted in the said bearings and adapted to engage the said follower, an eccentric adapted to engage the said spring for lowering the said shaft, means connected to the said eccentric for operating the same, means connected to the said bearings for limiting the movement of the said shaft, substantially as described.

7. The combination with a car, of a shaft pivotally connected to the under face thereof, and having a pair of guide-wheels suitably arranged thereon, a pair of bearings for the said shaft, a spring-actuated follower-plate for lowering the said shaft, means arranged

in the said bearings for operating the said follower-plate, an operating-rod suitably connected to said means for operating the same, and suitable operating means connected to the said rod, substantially as described.

8. The combination with a car, of a shaft pivotally connected to the under face thereof and having a pair of guide-wheels suitably arranged thereon, a pair of bearings for the said shaft, a spring-actuated follower-plate for lowering the said shaft, means arranged in the said bearings for operating said follower-plate, an operating-rod suitably con-

nected to said means for operating the same, and suitable operating means for the said rod, and means arranged in the said bearings for limiting the movement of the said shaft, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

HERBERT M. UNDERWOOD.  
CYRUS J. UNDERWOOD.

Witnesses:

JOHN NOLAND,  
H. C. EVERT.