

(No Model.)

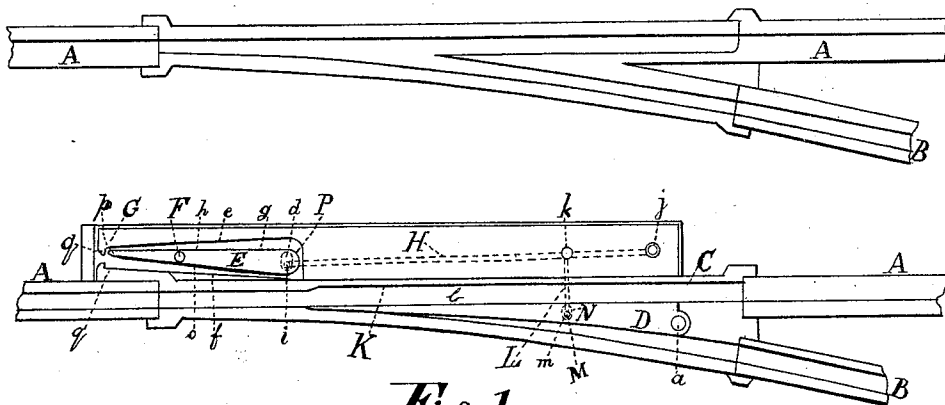
2 Sheets—Sheet 1.

T. P. DICKINSON.

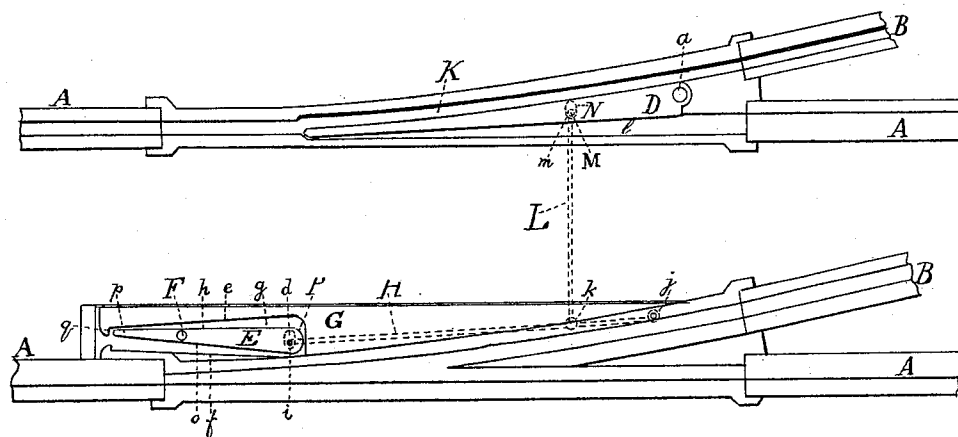
RAILWAY SWITCH AND SYSTEM OF OPERATING SAME.

No. 583,282.

Patented May 25, 1897.



*Fig 1.*



*Fig 2.*

Witnesses.  
Eugene P. Sadson.  
Wm. S. Cafferty.

Inventor.  
Theophilus P. Dickinson.  
By Francis D. Pastorius  
Attorney.

(No Model.)

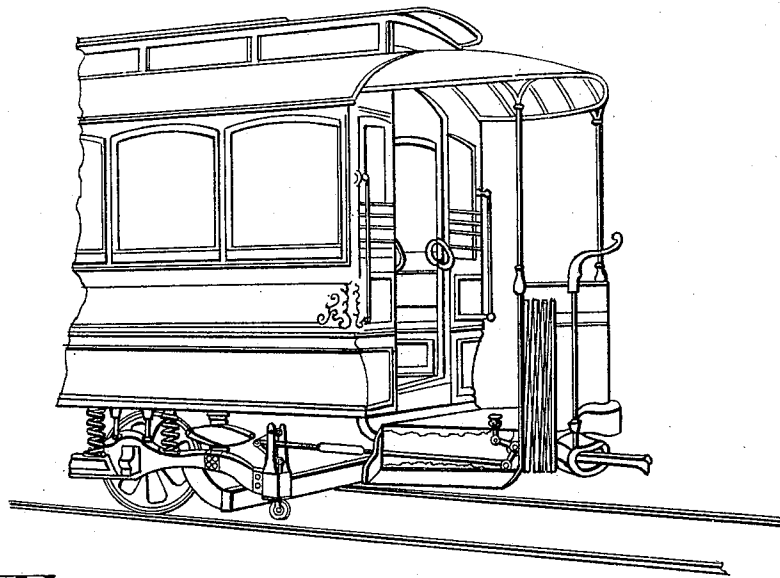
2 Sheets—Sheet 2

T. P. DICKINSON.

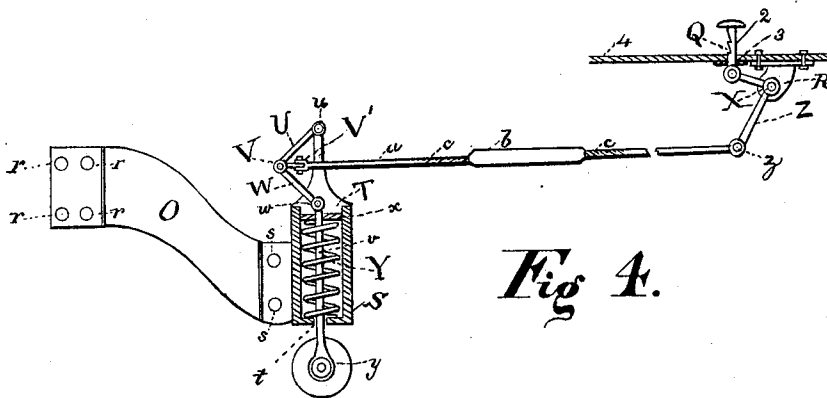
RAILWAY SWITCH AND SYSTEM OF OPERATING SAME.

No. 583,282.

Patented May 25, 1897.



*Fig 3.*



*Fig 4.*

*Witnesses.*

*Eugene P. Eadson.*

*Wm S. Cafferty.*

*Inventor.*

*Theophilus P. Dickinson*

*By Francis D. Pastorius*  
*Attorney.*

# UNITED STATES PATENT OFFICE.

THEOPHILUS P. DICKINSON, OF CAMDEN, NEW JERSEY, ASSIGNOR OF ONE-HALF TO WILLIAM S. CAFFERTY, OF MERCHANTVILLE, NEW JERSEY.

## RAILWAY-SWITCH AND SYSTEM OF OPERATING SAME.

SPECIFICATION forming part of Letters Patent No. 583,282, dated May 25, 1897.

Application filed December 4, 1896. Serial No. 614,460. (No model.)

*To all whom it may concern:*

Be it known that I, THEOPHILUS P. DICKINSON, a citizen of the United States of America, residing at Camden, in the county of Camden and State of New Jersey, have invented a certain new and useful Improvement in Railway-Switches and Systems of Operating the Same, of which the following specification is a full, clear, and exact description  
of my invention, such as will enable those skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in the construction and operation of switches for railways and of that class which are generally used or employed where it is desirable or necessary to switch, turn off, or transfer a car or train of cars from the line of rails on which they are running to another main line, siding, or turnout, and is more especially designed for use and adoption to street-railways and others using either electricity, steam, or other motive power; and the objects of my invention are, first, to provide a switch for use on street and other railways that will possess desirable advantages over all others as now in general use; second, to construct a street or other railway switch and system of operating the same that can be readily operated by the person having charge of the motive power of the car or train of cars without interfering or detracting the attention of the persons in charge from the careful attention to their duties necessary for the general safety of passengers and others; third, to provide a switch and system of operating the same by a suitable and effective device readily adaptable for use and application on and with all street-railway cars now in use or on others being constructed; fourth, to construct a switch and system of operating the same particularly advisable for use in the operation of street or other railways that can be safely operated by the motorman of the car without perceptibly decreasing the speed and entirely dispensing with the necessity of his reaching or leaning over the front of the car to turn the switch with the usual hand iron or rod as now generally used where a ground switchman is not

employed, which has been the only means available in the past; fifth, to provide a safe, reliable, and economical means specially adapted to facilitate the operating of street or other railways where inclosed-front or vestibuled cars are employed in the service, which entirely prevents the motorman or person in charge from operating the old style of switch and which has heretofore necessitated the conductor or other assistant to run ahead of the car and turn the old-style switch, all of which are entirely and effectively obviated by the use and adoption of my invention, which will be effective in its operation, simple in construction, and inexpensive in manufacture.

For a better understanding of the merits and objects for which my invention is intended they will be more readily understood by a brief description of the disadvantages attended by the use of the old or present methods as usually employed for manipulating switches in connection particularly with street-railways.

It has always been customary in the past, owing to the want of a more efficient and reliable means, to have the driver or motorman provided with a rod or bar of iron several feet in length and having one end flattened slightly, and on his desiring to turn or switch off from one track to another he gradually slows up the speed of his car until he stops immediately in front of the switch, at which time it is necessary for him to lean over and by the use of his rod push or pry over the point of the switch, an operation that causes considerable loss of time, especially when it occurs, as it often does, that he has failed to push the point over sufficiently far enough to have the desired effect of switching or transferring the car from one line to the other, and on his starting up he finds the car has passed over the tongue of the switch and he is still on the main track. Here the loss of time occurs. The car must be backed over the switch and the whole operation gone through again. All this inconvenience mostly occurs at night, though it is often experienced in the daytime, unless the costly system, as employed by some railways, where the busy traf-

fic necessitates it, of having a man to stand by and operate the switch by a hand-bar, which is expensive.

Having briefly explained the general disadvantages incurred by the operation of switches by the old methods, I attain the objects of my invention by the use and construction of a switch and an operating device for the same attachable to the cars, as shown in the accompanying drawings, where, for illustration and to more clearly describe the practical operation of my invention, I have confined my drawings and description as would be applied to an ordinary electric trolley-car as now in general use; but I wish it understood that my invention is applicable to all cars and street-railways where switches are employed that are required to be manipulated by the motorman.

In the accompanying drawings, Figure 1 is a general ground plan showing the switch located for a right-hand turn-off from the main track and gives a view of the auxiliary or mechanically-operating tongue with its connecting-rods in such a position that the car would continue on the main track. Fig. 2 is a general ground plan showing the switch located for a left-hand turn-off from the main track and gives a view of the auxiliary or mechanically-operating tongue in such a position that the car would be switched or turned off from the main track to the left-hand curve of side-track. Fig. 3 is a perspective view of a car, showing a general view of the attachment applied to the car for the operation of the auxiliary or mechanically-operated tongue, which by its rods and connections operates to turn the point of the switch in the direction desired. Fig. 4 is an enlarged view, partially in section, of the attachment to be attached to the car for the operation of the switch.

Similar letters and numerals of reference indicate the same parts in the various figures of the drawings.

Referring by letters and numerals to the drawings, in Fig. 1 A represents a top view or plan of a main-line portion of track.

B is a portion of a side-track running off to the right from the main track A.

C is the switch, which operates by the tongue or point D, pivoted at *a*, to turn off or direct the car either on the main line A or the track B, as desired.

E is an auxiliary and mechanically-operating tongue similar in form to the point of the switch-tongue D, but much shorter and smaller in its general proportions. This auxiliary tongue E is pivoted at F, on which it turns either in a direction toward the line *e* to the left or toward the line *f* to the right.

G is a cast or malleable iron bed-plate having its recessed portion *g*, bounded by the lines *e* and *f*, sunk sufficiently deep to allow the tongue E to lie in the recessed portion *g* with its upper portion or face almost flush with the top of the bed-plate G. The recessed or sunk portion *g* of the bed-plate G has the pivot F of the tongue E passed through it and

suitably secured to effectually prevent its being removed or jumping out of its position.

*d* is a small elongated slot provided in the recessed or sunk portion *g* of the bed-plate G, through which extends a pin *i* of that end of the rod II working freely on its pivoted end *j*. The vibrating movement of the auxiliary tongue E on its center F is imparted to the pin *i* in the elongated slot *d*, which in turn vibrates said rod II. A rod L is pivotally connected between the rod II at *k* and at *m* to the switch tongue or point D by means of its pin M, which passes downwardly through an elongated opening N, provided for it in the base *l* of the bed-plate K, on which said switch tongue or point D rests and is moved in either direction by the auxiliary tongue E through the medium of the intermediate pivoted rods II L.

To secure the correct movements desired, the auxiliary tongue E is so formed that one of its sides *h* or *o* will always be parallel with the straight line of the track or rail A, and its rounded end P is so constructed and arranged that its width transversely will always be sufficient to fully cover and conceal the elongated slotted opening *d* in the recessed base *g* of the bed-plate G, thereby affording an efficient means of protecting the parts and effectively preventing the possibility of any undesirable object getting jammed in or entering the slotted opening *d*.

The near or shorter end portion of the auxiliary tongue E is gradually tapered off by the formation of its angular sides *h* and *o*, and its extreme end is formed as a rounded point at *p*, which recedes flush with the point *q*, thereby preventing any uncertainty of the operating mechanism on the car from properly operating it as it passes over or through, the value and necessity of this precaution being taken so as to insure the correct and certain directness of the mechanical attachment on the car operating with certainty and without any liability of striking with an abrupt or direct blow the point *p* of the auxiliary tongue E and serving as a guide for said attached mechanism on the car, as herein after described.

The elongated opening or slot N in the bed or base of the switch, as at *d*, is so located that in the movements to and fro of the tongue or point of the switch D the latter will always be over or completely cover and conceal the opening N for the purpose of preventing dirt or any other obstacle from entering or getting jammed in the opening of the slot, and thereby preventing the effective working of the pin M, which operates it, by its connecting rod L with the rod II.

In Fig. 2 the same reference letters and numerals refer to the same parts, and the operation of this switch, which to the left or direct, is exactly the same and governed in all its conditions and movements precisely the same as the one described under head of Fig. 1.

Fig. 3 shows a general view of the proposed

system of attaching the device to the car for the operation of the auxiliary tongue which controls the movements of the switch—that is, when the auxiliary tongue is located in the position, as shown in Figs. 1 and 2, alongside of the rail at any desired distance in advance of the rail switch-tongue D; but if the auxiliary tongue should be placed for any purpose of convenience on the outside of the rail, or if it should be placed in the center between the rails, then in that case the operating device would be placed on the car in such a position as to suit the requirements and attached in the most convenient manner for its manipulation.

In Fig. 4, an enlarged view of the device for operating the auxiliary tongue E, O represents a curved bracket attachment suitably formed to hold the mechanism by bolts at *r r r r r* to the side or framework of the car-truck or other portion to which it may be attached, and at its lower end it is constructed for convenience of manufacture to be secured by bolts *s s* to a rectangularly-formed box, (shown in section S,) which is provided at its base with a rectangular opening *t* and its upper end left open. Two sides of this box are extended upward and formed so as to furnish the upright extension or supporting-bearings T, to which is pivoted a connecting-link U by the bolt *u*. This upper connecting-link U is pivoted at V with the lower link W, the lower link W being pivoted at *w* to the upper end of an extension-rod *v*, which passes downwardly through the sliding plate *x* and passes through the rectangular opening *t* at the base of the box S. The portion of the rod *v* where it passes through the rectangular opening *t* at the base of the box S is made square to prevent all inclination of the rod *v* from turning and causing a strain on the pivot at *w* or on the links W and U. The lower end of the rod *v* is forked to receive a small roller-wheel Y. The coiled spring Y is placed in the box S, its lower end resting on the base of the box S and its upper end pressing upward against the lower side of the sliding plate *x*, against it presses up to its correct position, and thereby retaining the links W and U in a position at right angles to each other.

*a* is a connecting-rod provided with a coupling *b*, having a right-handed and left-handed thread and adapted to connect the two threaded ends of the connecting-rod *a*, as at *c c*. This connecting-rod *a* is secured by the same pivot as the links W and U at V and is provided with the joint V' to allow the radial movement when applied to a car having two trucks, and its other end is pivoted at *z* with the lower end of the angular lever-arm Z, the angular lever-arm Z working on a pivot X, supported by a suitable bracket or fixture R, the upper end of the angular lever-arm Z being connected to a foot-push Q, which is provided with a serrated catching-point 2, adapted to retain the mechanism in a fixed position by engaging with a plate 3, secured to the floor

of the platform 4 of the car, thereby dispensing with the necessity of the motorman or driver of the car holding the foot-push down with his foot and leaving his attention free and enabling him to have the free and untrammelled use of his feet for other purposes.

The opening *t* at the base of the box S is made rectangular for the purpose of allowing the rod *v* to have sufficient motion sidewise or in a direction either way at a right angle to the track, so that the roller-wheel *y* may pass freely and without binding as it passes the pivotal point F of the auxiliary tongue E.

It will be apparent that a railway-switch and its operating device constructed on or embracing the principles of my invention will greatly facilitate the operation of the railway and afford a sure and desirable means for manipulating the switch and greatly enhancing the safety of passengers and others by taking less time and attention of the motorman, thereby enabling him to give all his attention to other operation of his car.

Minor changes in the form, details, or construction may be resorted to without departing from the principles or sacrificing any of the advantages of my invention.

Having fully described the operation, construction, and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A railway-switch and device for operating the same, comprising in its construction the combination of an auxiliary tongue E, working on a pivot F near its middle portion, and provided with a bed-plate G, having the recessed portion *g*, to receive the auxiliary tongue E, and having its sides *e* and *f* so formed as to suit the movements of the auxiliary tongue E, on the pivot F, through its recessed portion *g*, and having a small elongated slot *d*, in its recessed portion *g* of the bed-plate G, adapted to allow the free movement of the fixed or integrally-formed pin *i* on underneath side of the auxiliary tongue E, and operating the rod H on its pivoted end *j*, and having the pivoted rod L connected by a joint *k* with the rod H, and reverse end of rod L, engaging at *m*, and connected to a securely-fixed or integrally-formed pin M on the underneath side of the switch tongue or point D, all substantially as shown and described, and for the purpose specified.

2. A railway-switch and system of operating it, comprising in its construction the combination of a curved bracket O, suitably constructed, to be attached to the framework of a car-truck, or other portion to which it may be attached, by bolts at *r, r, r, r*, and at its lower end attached by bolts *s, s*, to a rectangular box S, provided at its base with the rectangular opening *t*, and having its two opposite sides T carried higher, and forming bearings for the upper link U, connected by the bolt *u*, the link U being pivoted by the bolt V to the lower link W, and the rod *a*, and having the lower link W pivoted at *w* to the

upper end of a sliding extension-rod *v*, and  
said rod *v*, passing downwardly through a  
sliding plate *x*, and the rectangular opening  
*t*, and provided with a roller-wheel *y*, and  
5 having the coiled spring *Y* supported at its  
base by the bottom of rectangular box *S*, with  
its upper end pressing upward against the  
sliding plate *x*, and having the connecting-  
rod *a*, separated near its middle portion, and  
10 its ends *c, c*, threaded and connected by the  
screw-coupling *b*, and provided with a ver-  
tical joint at *V*, and pivoted at *z* with the

angular lever-arm *Z*, the lever-arm being piv-  
oted at *X* to the supporting-bracket *R* and  
supporting the foot-push *Q*, with its sides 15  
serrated at 2, all substantially, as shown, and  
for the purpose set forth.

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

THEOPHILUS P. DICKINSON.

Witnesses:

FRANCIS D. PASTORIUS,  
W. S. CAFFERTY.