

No. 622.724.

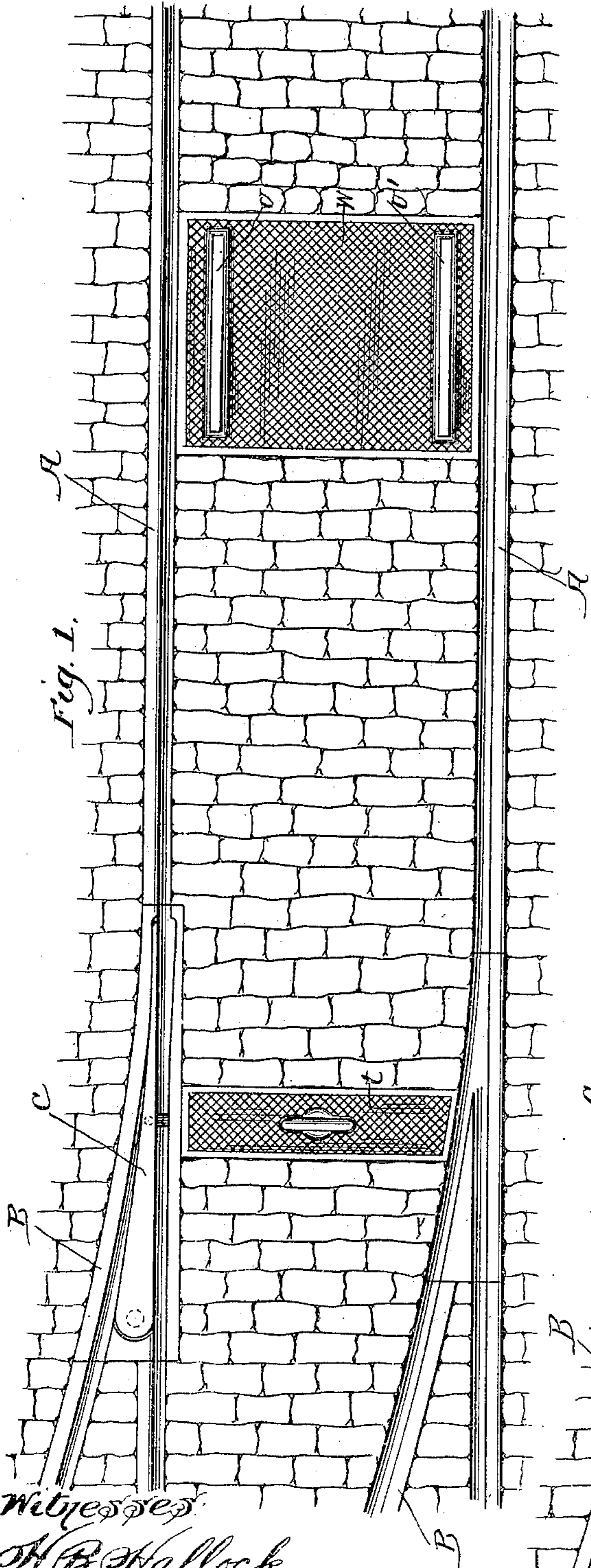
Patented Apr. 11, 1899.

C. STADTFELD.
STREET RAILWAY SWITCH.

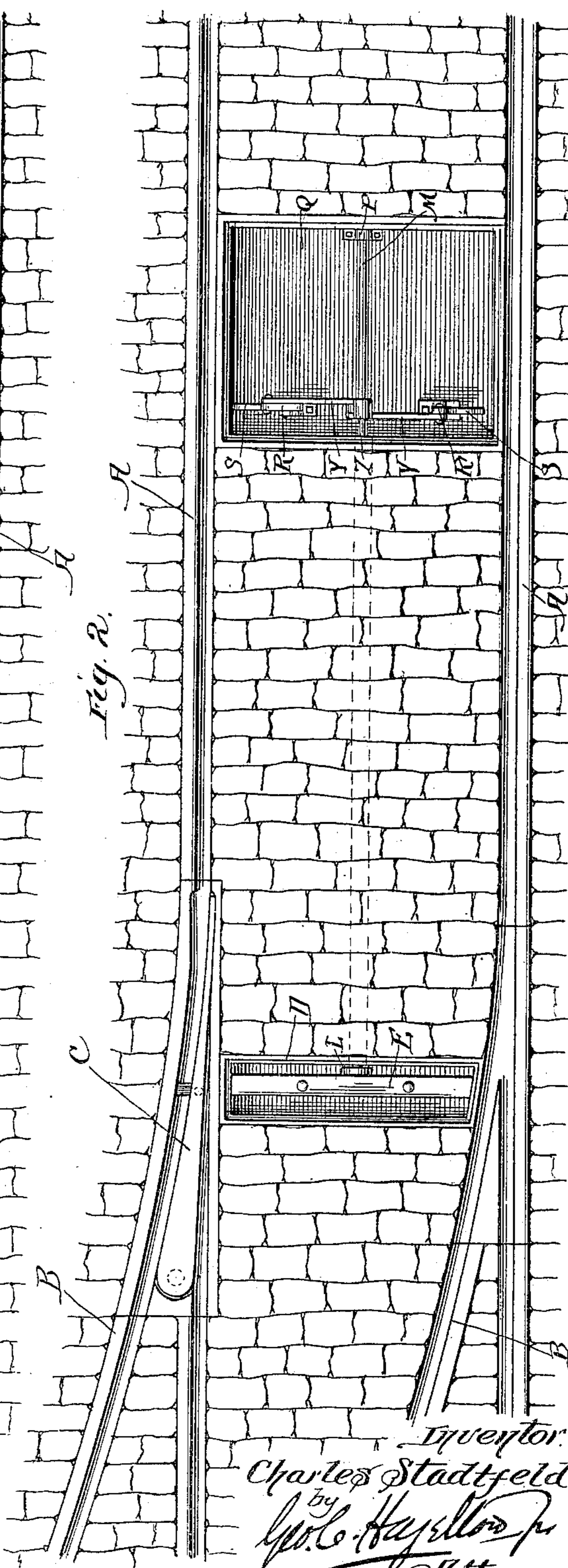
(Application filed Apr. 12, 1898. Renewed Jan. 26, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
H. B. Hallock.
Samuel Stuart



Inventor:
Charles Stadtfeld
by
H. C. Hallock
Attorney.

No. 622,724.

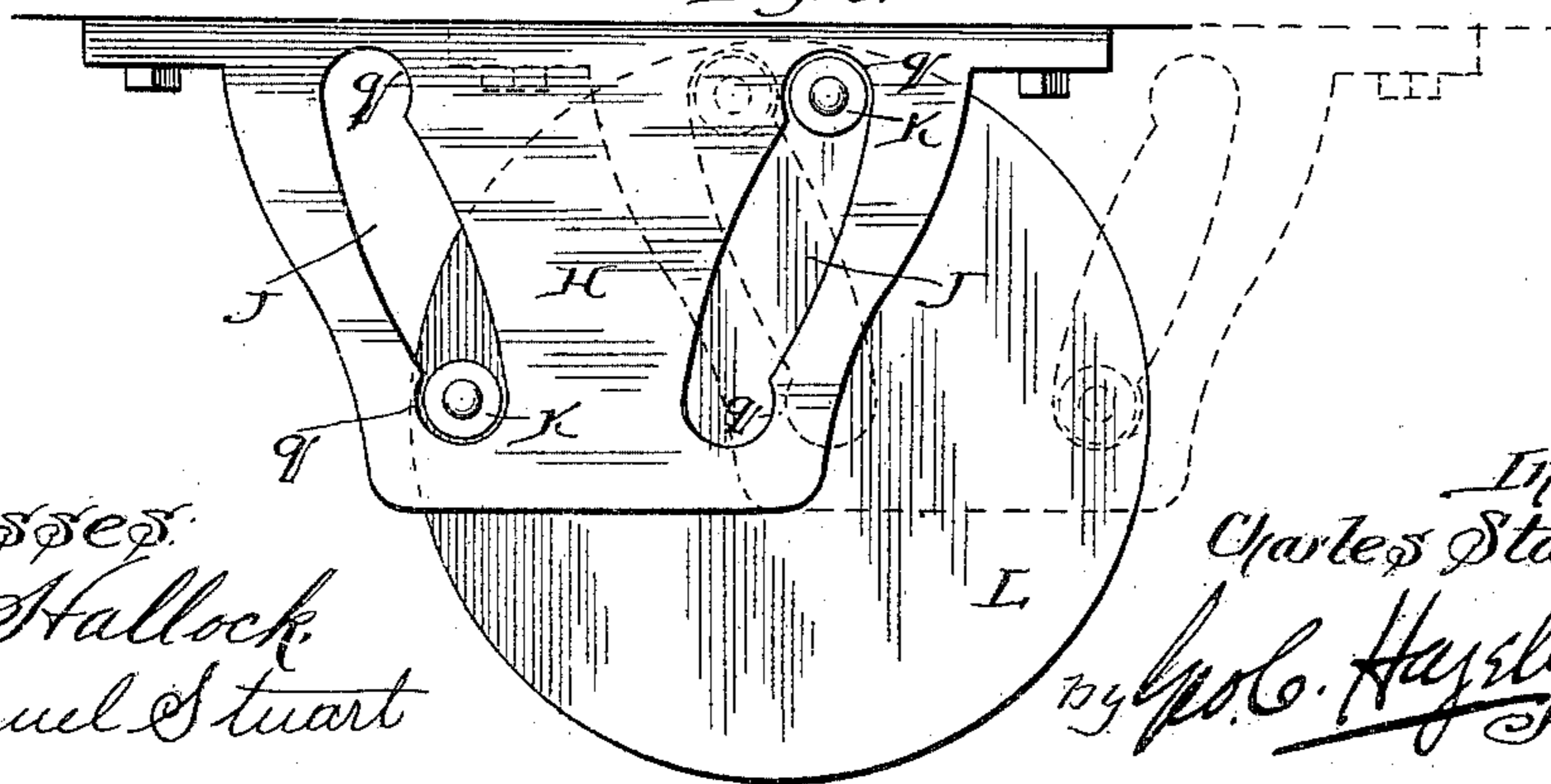
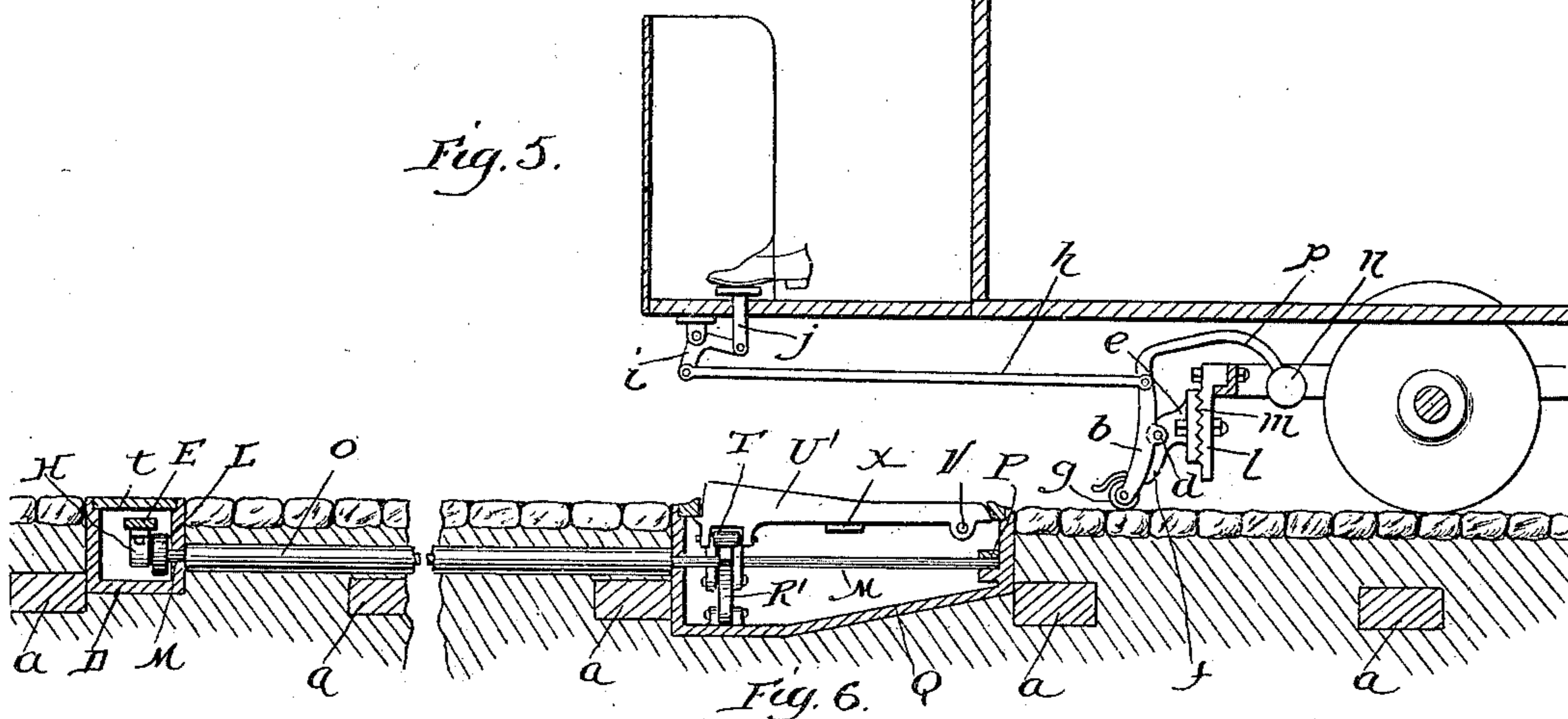
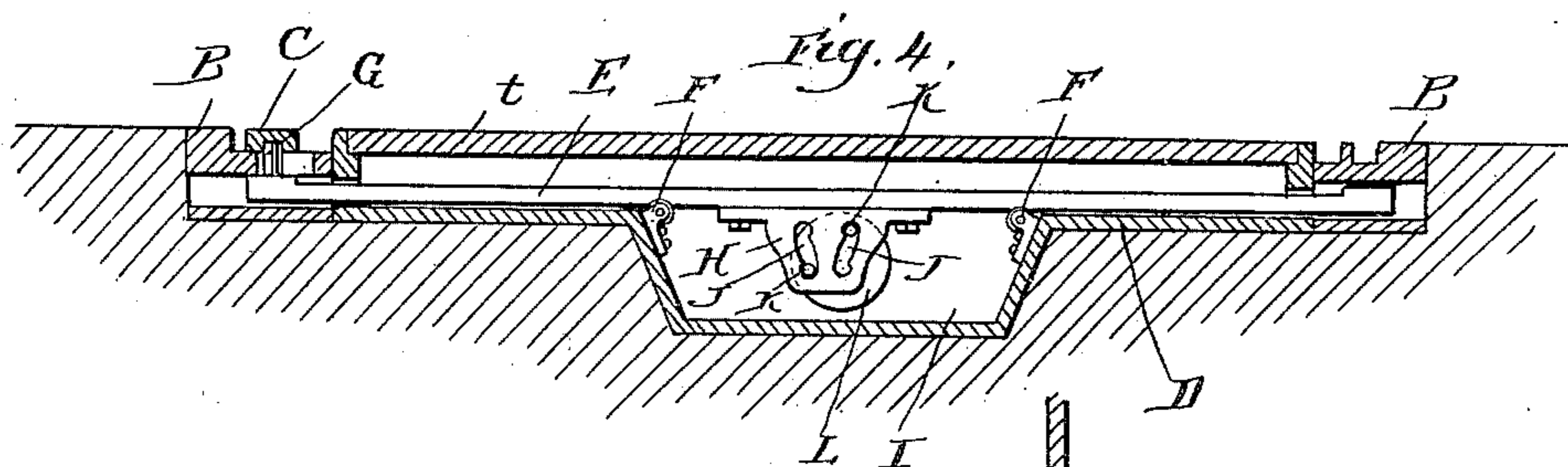
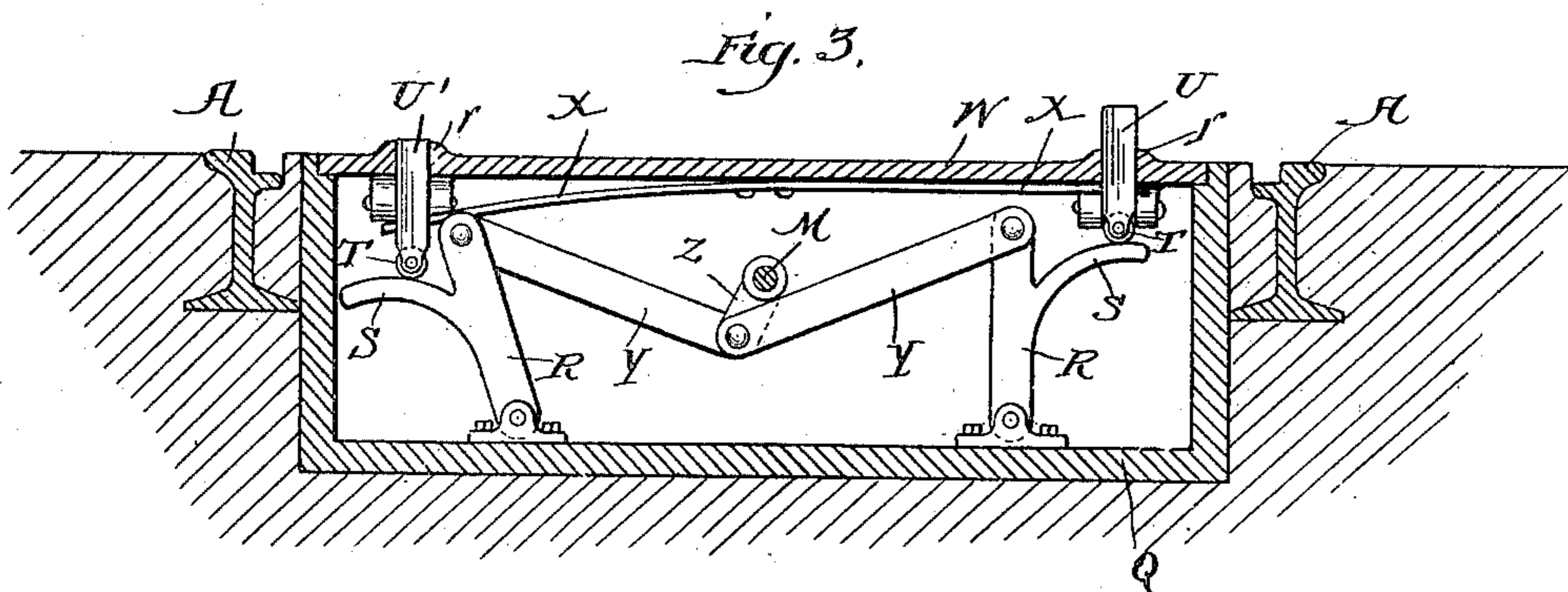
Patented Apr. 11, 1899.

C. STADTFELD.
STREET RAILWAY SWITCH.

(Application filed Apr. 12, 1898. Renewed Jan. 26, 1899.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:
H. B. Hallock
Samuel Stuart

Inventor:
Charles Stadtfeld.
by J. C. Haydon
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES STADTFELD, OF DAYTON, OHIO, ASSIGNOR OF ONE-HALF TO
GERTRUDE DRIGGS, OF SAME PLACE.

STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 622,724, dated April 11, 1899.

Application filed April 12, 1898. Renewed January 26, 1899. Serial No. 703,474. (No model.)

To all whom it may concern:

Be it known that I, CHARLES STADTFELD, a citizen of the United States, residing at Dayton, county of Montgomery, and State of Ohio, have invented a certain new and useful Improvement in Street-Railway Switches, of which the following is a specification.

My invention relates to a new and useful improvement in automatic switches for surface cars and trip mechanism for operating the same, and has for its object to so improve upon the construction shown in United States Patent No. 601,359, granted to me March 29, 1898, as to facilitate its adaptation to surface railways, especially trolley-cars.

A further object of my invention is to provide an effective tripping mechanism for operating the switch from the car, whereby but little effort upon the part of the motorman is required to throw the switch in either direction; and a still further object of my invention is to so construct the mechanism which operates the switch-point as to provide for the locking of said point in either position, thereby preventing it from being accidentally thrown from the ordinary course.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of a portion of a track, showing my improvement adapted to a switch; Fig. 2, a similar view, the covers being removed from the box, so as to show the mechanism therein; Fig. 3, a cross-section of the box containing the lever mechanism for oscillating the cam-disk which brings about the movement of the switch-point; Fig. 4, a similar view of the box in which the cam-disk is located, showing the connection of said disk with the cross-bar for actuating the switch-point; Fig. 5, a longitudinal section of the track and a portion of a car, illustrating

the manner of operating the trip mechanism for depressing the switch-blocks; and Fig. 6, an enlarged view of the cam-disk, showing the effect thereof upon the cross-bar in dotted lines.

In carrying out my invention as here embodied, A represents the main track, from which leads a branch track B by means of the usual switch, C representing the point of said switch, which is turned to one side or the other for permitting the car to run upon the main line or guiding it to the branch line, as desired. A metal box D is placed within the road-bed between the rails of the track at a point about midway of the switch-point, and within the upper portion of this box is located a cross-bar E, which is guided by the friction-rolls F, so as to facilitate its crosswise movement, and one end of this bar is connected to the switch-point by the pin G, so that to throw the switch from one side to the other it is only necessary to operate this bar. To the center of the bar E is secured a cam-block H, depending from said bar within a well I, forming a part of the box D, and this block has formed therein two slots J, in which project the pins K, the latter being carried by the cam-disk L. The shape of these slots is such relative to the movement of the pins when the cam-disk is oscillated upon its axis as to move the block from one side to the other, thereby carrying the bar E, which in turn throws the switch-point, as will be readily understood.

The disk L is secured upon the forward end of the shaft M, which has a bearing in the box D and passes rearward through a suitable tube O, which serves as a casing therefor to prevent the earth from the road-bed gaining access to the shaft, and the opposite end of this shaft is journaled at P within the lever-box Q. The lever-box Q is of the shape in cross-section shown in Fig. 5, and within this box are pivoted the levers R and R', each having an extension S, against which the roller T may operate. These rollers are journaled in the switching-blocks U and U', the latter being pivoted at V within the top W of the box. The switching-blocks U and U' are

inclined upon their upper surface and are normally held elevated by the spring X, which is secured in the center thereof to the top of the lever-box, while each end bears against the under side of one of the switching-blocks. Links Y connect the levers R and R' with the crank-arm Z, said arm being secured upon the shaft M, by which arrangement it will be seen that when either of the switching-blocks is depressed the roller T will so act upon the extension S as to move the levers R and R' sidewise and in so doing draw upon the crank-arm and oscillate the shaft M upon its axis. Now this oscillation will revolve the disk L through a portion of a revolution and in so doing cause the pins K to move the cam-block to one side or the other, thereby throwing the switch in the direction desired, as before set forth. When the switching-block which has just been depressed is freed, it will be moved upward by the spring X, thus leaving the levers R and R' in the position to which they were actuated, and they will remain in this position until the opposite switching-block has been depressed, which in the same manner will draw the levers to the reverse side, thereby throwing the switching-block to the opposite position.

It is to be noted that the construction here shown contemplates locating the shaft M entirely above the cross-ties *a*, and this is advantageous, since the laying of the switch mechanism will not interfere with the ties, and therefore require but little labor and no alteration of the track, it only being necessary to sink the box between the ties and run the shaft M from one box to the other, all of which is accomplished with but little excavation.

In order that the switching-blocks may be operated from the car by the motorman without stopping the car, I provide two tripping mechanisms, one upon each side of the car, each of which consists of a lever *b*, pivoted at *d* to an adjustable hanger *e*, this hanger having an extension *f*, against which the lower portion of the lever may bear when it is in operative position, whereby said lever will be backed up and supported when receiving the strain necessary to actuate the switch. The lower end of this lever has journaled therein the roll *g*, so arranged as to come in contact with the upper surface of one of the switching-blocks U or U', as will be hereinafter set forth, and this lever is connected by means of a rod *h* to a bell-crank lever *i*, pivoted to the under side of the car and having connected with the opposite member thereof a plunger *j*, which terminates in a foot-piece above the upper surface of the platform, by means of which the motorman may depress this plunger and in so doing actuate the bell-crank lever to swing the lever *b* so as to bring the roll *g* into active position. When this roll is thus depressed, the forward movement of the car will carry said roll into contact with the

upper surface of one of the switching-blocks, and by riding upon the inclined portion thereof this block will be depressed, which will bring about the actuation of the switch, as before described. Now it is obvious that should the switch-point be in the position shown in Fig. 1 the car passing along the main track would continue to do so when reaching said switch and not be permitted to pass to the side track; but should the motorman desire to run upon the side track it would be necessary for him to actuate the proper tripping mechanism to depress the switching-block R', and in so doing the switch-point would be thrown to the left, or the position shown in Fig. 2, when the car would pass to the side track, as is readily understood. The next car following if desiring to pass to the side track would not need to operate the switching mechanism; but if it be desired to continue upon the main track the right-hand tripping mechanism would be depressed by the foot of the motorman, and this when the roll *g* came in contact with the switching-block R would return the switch-point C to the position shown in Fig. 1, thus opening the main track, as clearly shown.

A desirable feature of my improvement is that no care is necessary on the part of the motorman either to observe the position of the switch in approaching the same or in otherwise determining the location thereof, since if he desires to go to the left he has only to depress the left-hand plunger and if to the right the right-hand plunger, and if the switch is in proper position it will not be disturbed. The only action of such depression will be the riding down of one of the switching-blocks; but should the switch not be in proper position this riding down of the switching-block will throw it in such position, and thus insure the proper direction of the car.

A bracket *l* is secured upon the truck-frame in any convenient manner and has a series of serrations upon its front face, to which are adapted serrations *m*, formed upon the hanger *e*, so that said hanger may be adjusted relative to the road-bed in order that the roll *g* may be brought into proper relation, so far as height is concerned, to the switching-block. A weight *n* is carried upon the arm *p*, which is formed with or connected with the lever *b*, the object of which is to return said lever to its normally-elevated position when the motorman has removed his foot from the plunger *j*. This prevents this roll from operating the switch-block except when desired.

It is usually desirable to lock the switch-point in whatever position it may have been turned, and this is readily accomplished by my improvement by simply forming undercut notches *q* in the ends of the slots J, so that when the pins K are brought into these notches a side thrust of the cam-block will not tend to revolve the cam-disk L upon its axis; but this in no wise interferes with the

revolving of the cam-disk by the switching mechanism, and when said disk is revolved it will actuate the cam-block, as before set forth; but should it be desirable for any special purpose that the switch-point be not locked in either position these undercut notches may be omitted or so formed relative to the pins as to permit the slots to actuate the pins in revolving the cam-disk.

To prevent water from gaining access to the lever-box through the openings in which are fitted the switching-blocks, a raised ledge *r* is formed around said openings which serves to shed the water away from these openings, and since the switching-blocks fit snugly within said openings this provision will be sufficient to prevent the ingress of water to any extent to the interior of the box.

In practice I prefer that the top *W* of the switching-box shall be removable, thus giving easy access to the mechanism therein for repairs or otherwise, and as the switching-blocks are pivoted to this box, but have no connection with the levers except the receiving of the rolls *T* upon the extensions *S* of said levers, it will be seen that the mechanism will be in no wise interfered with by the removal of said top. Likewise the top *t* of the box *D* is removable, thus also giving access to this box.

By actual tests it has been found that my improvement thoroughly accomplishes the result for which it is intended, relieving the motorman of all care as to the location of the switch and obviating the necessity of having a separate attendant for the switch.

Having thus fully described my invention, what I claim as new and useful is—

1. A switching mechanism and trip mechanism for actuating the same, consisting of two boxes located between the rails of the track, a switch-point, a cross-bar connected with said switch-point and adapted to be moved crosswise, a cam-block secured to said bar, said block having inclined slots formed therein, a cam-disk, pins projecting from said disk into the inclined slots, a shaft upon which said disk is secured, said shaft passing from one box to the other and being journaled therein, a crank-arm carried by the shaft, levers located within the rear box, links connecting said levers with the crank-arm, extensions formed with the levers, switching-blocks pivoted in the top of the box and carrying rolls which bear against the extensions, said blocks having their upper surfaces inclined, springs for holding said blocks in a normally-elevated position, a lever carried by the truck-frame of the car, a roll journaled in said lever adapted to ride upon the upper surface of the switching-blocks, and means for depressing said roll from the platform of the car, as specified.

2. In combination with a switching mechanism of the character described, a tripping

mechanism consisting of a lever, a hanger to which said lever is pivoted, a bracket to which said hanger is adjustably secured, said bracket being secured upon the truck-frame of the car, a bell-crank lever pivoted beneath the platform, a rod connecting said lever with the first-named lever, a plunger pivoted to one member of the bell-crank lever and extending through the floor of the platform, a roll journaled in the lower end of the first-named lever whereby the switching-block may be depressed, and means for elevating the roll, as specified.

3. A tripping mechanism for railway-switches consisting of a bracket secured to the truck-frame of a car and having serrations upon the face thereof, a hanger having corresponding serrations thereon whereby it may be adjustably secured to said bracket, a lever pivoted to the hanger, and extensions formed with the hanger for receiving the thrust imparted to said lever when in operative position, a roll journaled in the lower end of the lever, a weight carried by the lever adapted to return it to its normally-elevated position, a bell-crank lever pivoted to the under side of the platform, a rod connecting the first-named lever with the bell-crank lever, and a plunger pivoted to one member of the bell-crank lever and projecting through the floor of the platform, as and for the purpose set forth.

4. In combination with a car, two tripping mechanisms secured to the truck-frame thereof, each of said mechanisms consisting of an adjustable hanger, a lever pivoted thereto, an extension for sustaining the thrust imparted to said lever, a roll journaled in the lower end of the lever, means for depressing the roll and means for returning said roll to its normally-elevated position, as specified.

5. In combination, two boxes placed between the rails of the track, a shaft extending from one box to the other and journaled in each, a crank-arm carried by said shaft, levers pivoted within the rear box, links connecting said levers with the crank-arm, extensions *S* formed with said levers, switching-blocks pivoted within the top of the rear box, said blocks having their upper surfaces inclined, a spring for holding said switching-blocks elevated, rolls journaled in the switching-blocks and adapted to bear against the extensions, a cam-disk secured to the forward end of the shaft, pins projecting from said disk, a cam-block having slots therein for receiving the pins, a cross-bar from which the cam-block depends, and a switch-point to which said bar is attached, as and for the purpose set forth.

6. In combination with levers for actuating the switch, a shaft connected to said levers so as to be oscillated thereby, a disk secured upon said shaft, pins carried by said disk, a cam-block having inclined slots formed there-

in, the ends of which are undercut so that
when the pins pass therein the block will be
locked, and a cross-bar to which said block
is secured, said cross-bar being connected
5 with the switch-point so as to throw the same
when the cam-disk is oscillated, as specified.
In testimony whereof I have hereunto af-

fixed my signature in the presence of two sub-
scribing witnesses.

CHARLES STADTFELD.

Witnesses:

CHARLES C. TWEED,
SAMUEL L. TAYLOR.