

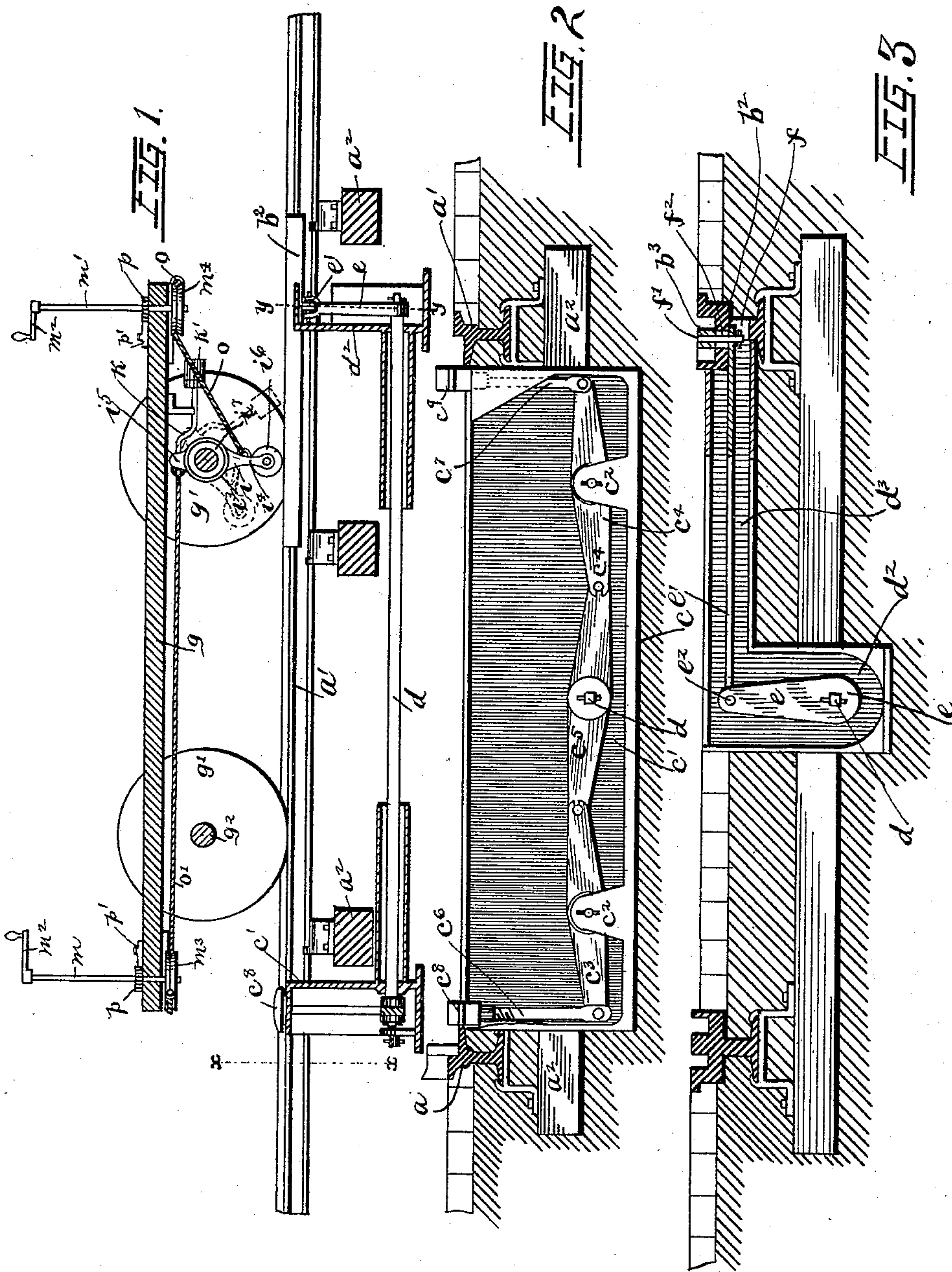
(No Model.)

2 Sheets—Sheet 1.

W. G. CARMELL.
TRAMWAY SWITCH.

No. 488,599.

Patented Dec. 27, 1892.



Witnesses
H. B. Bradshaw
C. E. Holdsworth.

Inventor
Willis G. Carmell.
By his Attorneys
Staley and Shepherd.

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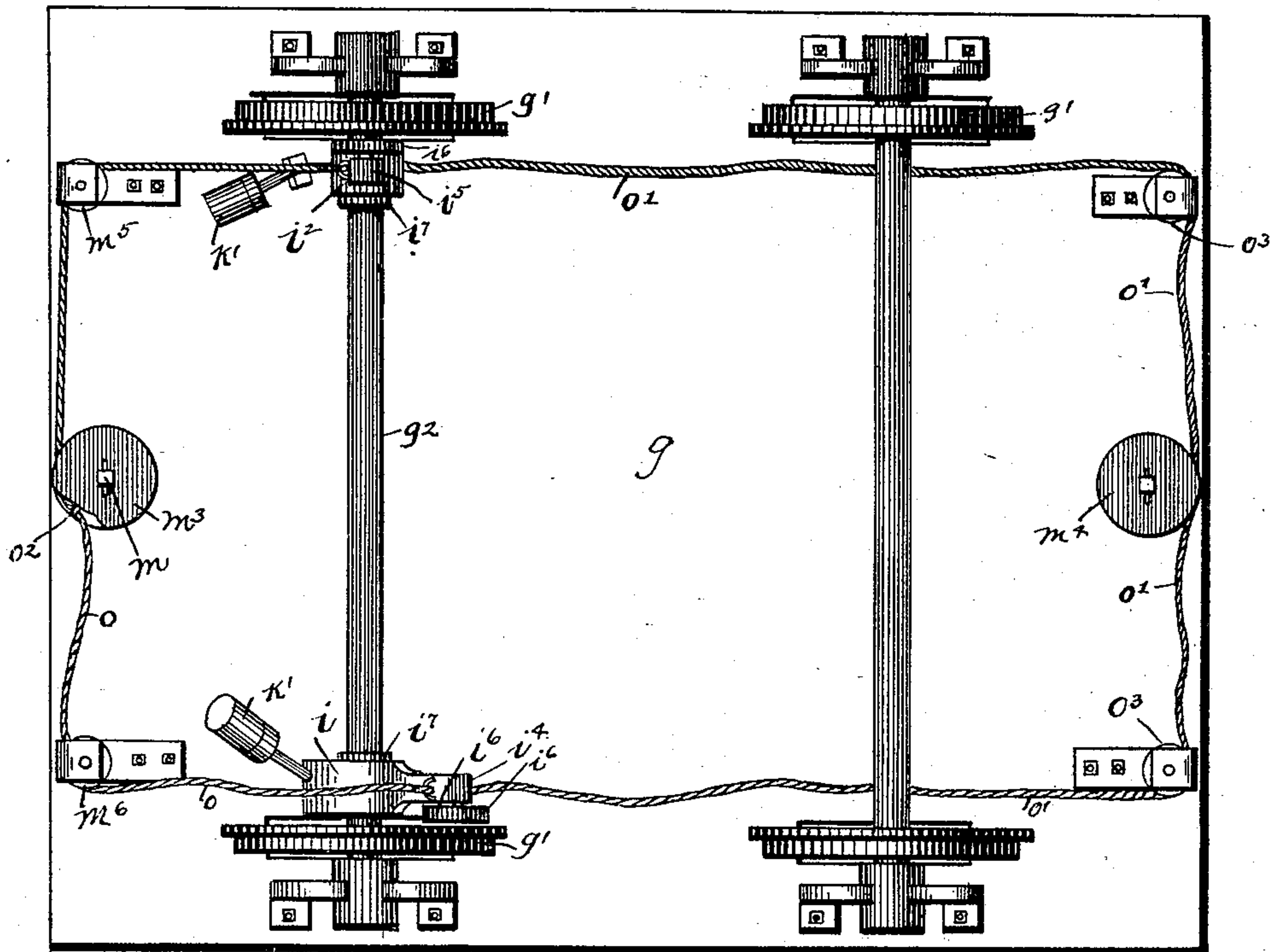


FIG. 4

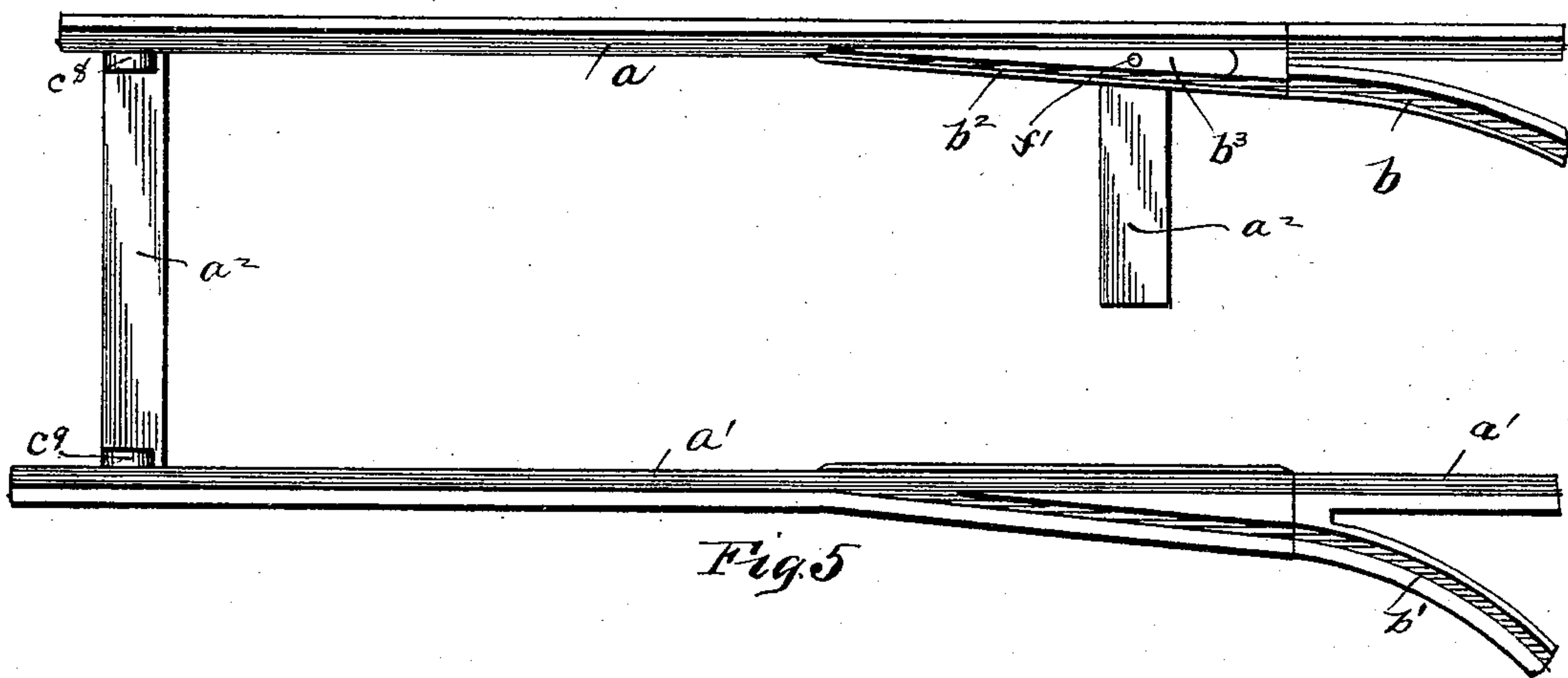


Fig. 5

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UNITED STATES PATENT OFFICE.

WILLIS G. CARMELL, OF COLUMBUS, OHIO.

TRAMWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 488,599, dated December 27, 1892.

Application filed December 11, 1891. Serial No. 414,746. (No model.)

To all whom it may concern:

Be it known that I, WILLIS G. CARMELL, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Railway-Switches, of which the following is a specification.

My invention relates to the improvement of street railway switches and means for operating the same.

The objects of my invention are, to provide a switch of this class of superior construction and arrangement; to provide in connection therewith superior means for throwing the switch-tongue of a street railway from the car; to so construct my device as to facilitate the direction of the cars, either upon a branch or main-track; to produce said invention in a simple, durable and inexpensive form and to produce other improvements in the construction and arrangement of parts thereof which will be more specifically pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which,

Figure 1 is a central longitudinal section of a street railway and car thereon having my improvements. Fig. 2 is a transverse section taken on line xx of Fig. 1. Fig. 3 is a view on line yy of Fig. 2 showing the switch operating rod and its casing, partly in elevation and partly in section. Fig. 4 is a view of the under side of a car having my improvements thereon, and Fig. 5 is a plan view of a portion of a railway track.

Similar letters refer to similar parts throughout the several views.

a a' represent the main-track rails of a street railway track and b b' branch or switch rails which connect with and lead from said main-track rails in the usual manner. At the switch point or intersection of the rails b and a , is pivotally supported in the usual manner, upon a suitable switch-plate b^2 , a switch-tongue b^3 . The rails are supported from the ties a^2 in the usual manner. Between the main-track rails at the desired distance in front of the switch-plate, is formed a suitable excavation c , (Fig. 2) within one end of which is seated transversely a suitable metallic casing c' . The floor of this casing c' is provided on each side of the center of its length with an upwardly projecting bearing

lug or bracket c^2 , said brackets having fulcrumed thereto, the central portion of lever-bars c^3 , c^4 . The inner ends of these two lever-bars or arms are jointedly connected by an intervening lever-bar c^6 , the ends of which are pivotally connected with or fulcrumed to the inner ends of said bars c^3 , c^4 . Jointedly connected with the outer end of each of the bars c^3 , c^4 , is an upwardly extending pressure arm, the latter being indicated at c^6 c^7 . Upon the upper ends of these pressure arms are supported as shown, suitable forms of pressure buttons, the latter being indicated at c^8 , c^9 . As shown in the drawings, these buttons are thus supported above and adjacent to the inner sides of the flattened or tread portions of the rails.

d represents a shaft or connecting-rod, which extends longitudinally through the central portion of the excavation c and which has one end which I will term its forward end, rigidly connected with the central portion of the central lever-bar c^5 , and which adjoining said lever-bar is provided with a bearing in the frame or casing c' . The opposite end of said connecting rod d is journaled in the lower portion of a suitable frame or casing d^2 , the latter rising as shown, from the forward portion of the excavation to the street level and being provided with a lateral extension in its upper end in the form of a boxing d^3 , which extends to the inner side of the switch-plate b^2 . With that extremity of the rod d which projects from the frame-piece d^2 is rigidly connected the lower end of a lever arm e , the upper end of which is jointedly connected as shown at e^2 , with a horizontal operating rod e' , which extending within the casing d^3 has its outer termination within an opening f of the web of the switch-plate. In this position the outer end of the operating rod e' is connected as shown, with the lower end of a pin f' , said pin extending upward through a slotted opening f^2 in the body of the switch-plate and having its upper end connected with the switch-tongue b^3 .

g represents a car-floor or frame, g' the wheels thereof, and g^2 the axles. Upon one of the axles g^2 are fulcrumed swinging arms i and i^2 , each of said arms consisting of a sleeve i^3 which loosely surrounds the axle or a fixed collar i^7 thereon at a point adjacent to the inner side of the car-wheel. These sleeve portions i^3 are as shown in the draw-

ings, provided with oppositely located projecting portions i^4 i^5 . Each of these arms i^4 i^5 has pivotally connected with its extremity a suitable roller i^6 , which, when said portion i^4 of the arm i is depending vertically, is adapted to come into contact with and exert a pressure upon one of the lever buttons c^8 or c^9 which adjoin the track rails. The portion i^5 which projects from the sleeve i^3 has projecting therefrom, an arm k which carries on its outer extremity a suitable weight k' , the latter projecting substantially at right-angles with the arm i .

m m' represent respectively, vertical stems or reel-posts which are journaled in the ends of the car platform g , said stems carrying upon their upper ends suitable crank handles m^2 and upon their lower ends beneath said platform grooved pulley or reel wheels m^3 , m^4 . o and o' represent suitable operating ropes or chains, which may be formed of any desired material. The central portion of the rope o is secured as shown at o^2 in the groove of the reel wheel m^3 . From this reel wheel the rope extends toward the longer sides of the platform g and passes over suitable pulley wheels m^5 , m^6 , arranged on opposite sides of the pulley wheel m^3 . From these pulley wheels, the rope is extended in the direction of the length of the platform, and has its ends connected with the projecting portion i^4 of the arms i . The central portion of the rope o' is as described for the rope o secured within the groove of the reel wheel m^4 . From said reel wheel, said rope extends in opposite directions as described for the rope o and passes about pulleys or sheaves o^3 which correspond with the pulleys m^5 , m^6 . From these pulleys, the portions of the rope o' extend inward and have their ends secured as shown, to the projecting portions i^4 of the arms i . Each of the reel stems m is provided adjacent to the upper side of the platform g with a small ratchet wheel p with which is adapted to engage a suitable pawl p' pivoted to the platform.

Presuming that the car upon the main-track is approaching the points where the buttons c^8 , c^9 project above the rail tread and it being desired to direct said car on the branch track b , and presuming that the switch tongue b^3 is in the position shown in Fig. 5 of the drawings, *i. e.*, against the inner switch-plate flange, the method of operating my device is as follows: The car operator rotates the reel stem m^3 sufficiently to cause that portion of the rope o on the switch side of the car to be partly wound upon the reel stem m^3 . This taking up of the rope portion will result as will readily be seen, in turning the arm i to the vertical position indicated in Fig. 1 of the drawings; in which position the roller wheel i^6 of said arm i will be in contact with and exert a downward pressure upon the button c^8 . This pressure upon said button will result, through the consequent downward movement of the arm c^6 and the jointed connec-

tion therewith of the lever bars c^3 , c^5 , c^4 and arm c^7 , in imparting such movement to said bars as to elevate the pressure button c^9 . The movement of said lever bars will also through the bar c^5 , sufficiently rotate the connecting rod d as to result in the movement of the arm e in a small arc of a circle and in a consequent inward movement of the rod e' . This movement of the rod e' will result in moving the switch tongue which is connected therewith as described laterally toward the main-track rail, and in directing the car-wheel upon the branch track b . This having been accomplished, the reel stem m is released from the grasp of the operator, when the dropping of the weight k' of the arm i which will result from gravity, will operate to throw the portion i^4 of said arm to such an angle as to elevate the roller i^6 from contact with the track or buttons. It will thus be seen that the weights k' will serve to automatically hold the rollers out of the path of the buttons, when it is desired to continue the car upon the main-track, past the switch point. In case a main track car desires to continue thereon, and the switch tongue is in position to direct the car upon the branch track, the operator of the main track car may, by rotating the reel stem m' , and reel wheel m^4 take up that portion of said rope o' which connects with the arm i^2 and thereby cause the roller i^6 of the arm i^2 , to come into contact with the button c^9 , and through contact with the latter so turn the switch tongue as to open the main track at the switch point.

From the construction shown and described, it will be seen that without stopping or leaving his car, the driver or operator may control the direction taken by the car at the switch-point and that the means employed are exceedingly simple and effective.

It is obvious that I may provide the working parts of my device with suitable casings or covers and that the opening f^2 of the switch plate may be covered at all times by the switch tongue, thus preventing the entrance of dirt and the clogging of the parts.

Having now fully described my invention, what I claim and desire to secure by Letters Patent is,

In a railway switch operating mechanism, the combination with the main and branch track-rails, a switch-plate and pivoted tongue thereon, jointedly connected lever bars as described, between the main track rails and pressure buttons supported therefrom adjacent to the main track rails, of an operating rod e' connected with the switch-tongue, connecting rod d having one end connected with one of said lever bars and its remaining end connected as described with the operating rod e' , through an arm e , substantially as specified.

WILLIS G. CARMELL.

In presence of—

C. C. SHEPHERD,
BARTON GRIFFITH.