No. 631,491. Patented Aug. 22, 1899.

S. L. PHILLIPS.

PREVENTING ACCIDENTS ON DRAWBRIDGES TO ELECTRIC CARS.

(Application filed May 2, 1899.)

(No Model.)

Fig. 1.

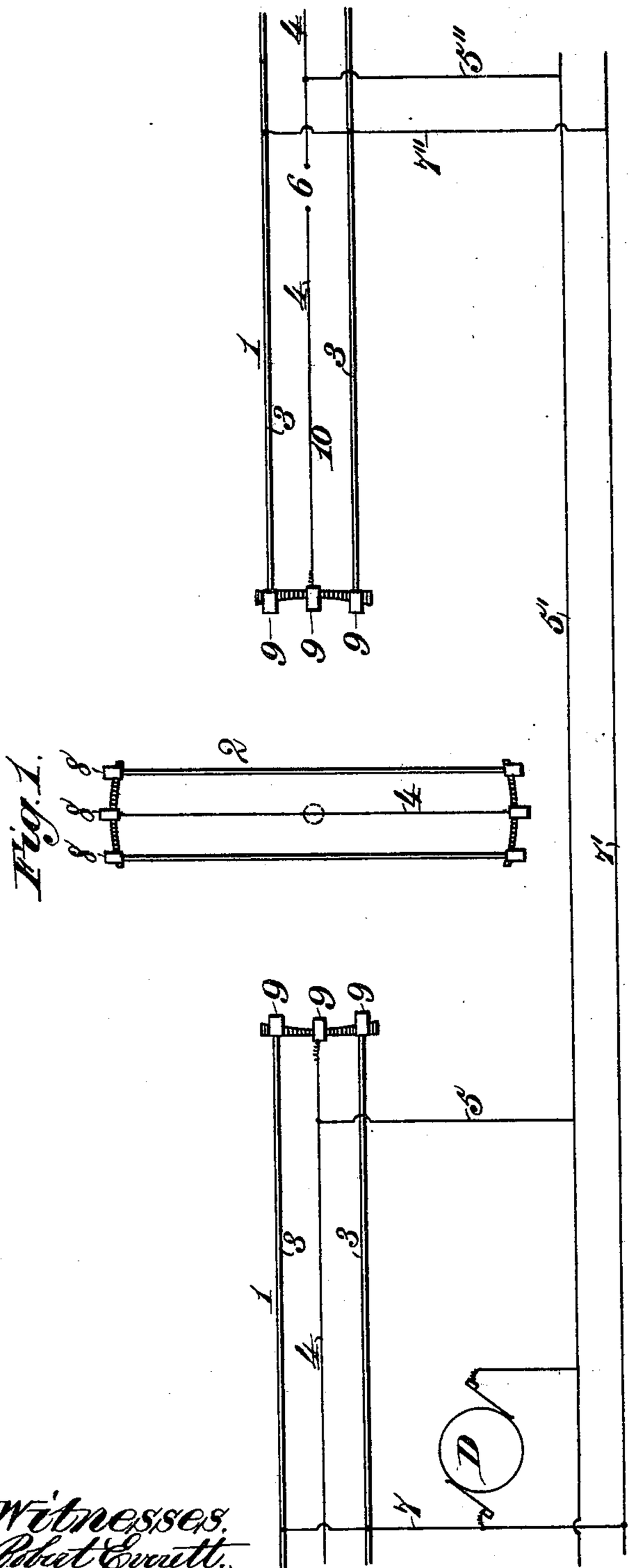
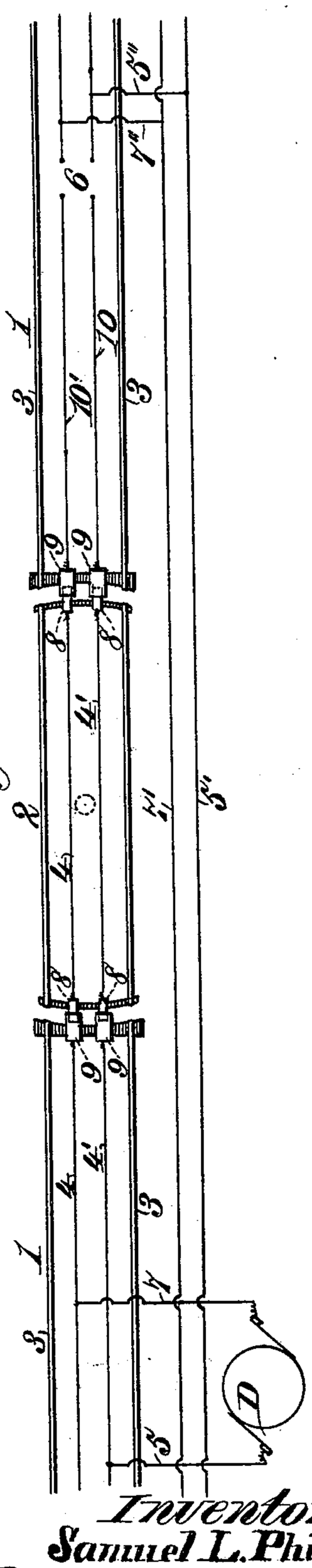


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL L. PHILLIPS, OF WASHINGTON, DISTRICT OF COLUMBIA.

PREVENTING ACCIDENTS ON DRAWBRIDGES TO ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 631,491, dated August 22, 1899.

Application filed May 2, 1899. Serial No. 715,345. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. PHILLIPS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Preventing Accidents on Drawbridges to Electric Cars, of which the following is a specification.

My invention relates to a system and means for the prevention of accidents to electric cars while crossing drawbridges, such as running into the water at open draws, by automatically cutting off the supply of power to the cars by the act of opening the draw and reëstablishing said supply by the act of returning the draw to its proper place for public travel, and at night giving notice of such facts to the conductor and passengers by the electric lamps of the cars losing their lights when the draw is open and by maintaining their luminosity when the draw is safe. I accomplish these results by the system and means illustrated in the accompanying drawings, in which—

Figure 1 represents a plan view of a bridge with the draw open and an overhead-trolley line, rail return, switches open, and current from approached draw cut off. Fig. 2 represents also a plan view of a bridge and an overhead-trolley line, metallic return, switches closed, current on the entire line of bridge, and draw in a position safe for travel.

The same numerals refer to similar parts throughout both views.

Numeral 1 represents the sections of a bridge adjacent to a draw; 2, the draw of the ordinary type used over navigable streams. The wheel-rails of an electric railroad crossing the bridge are indicated by 3, and a dynamo to supply power to the cars and electric lights of the cars by D. This dynamo is connected to an overhead-trolley wire 4 by feed-wires 5 and 5″. The trolley-wire 4 is permanently broken at 6. The wheel-rails are connected to main wires 7 and 7′ by feed-wires 7 and 7″, and the circuit for the main line, independent of the bridge-section, is always maintained from the dynamo through feed-wires 5 and and 5″ and 7 and 7″ and main wires 5′ and 7′. Numeral 8 represents the blades of electric switches connected with the trolley-line and the rails, and 9 are the clips in which said blades engage when the draw is in position for travel. I do not, however, confine myself to any particular kind of switches or any position in which they may be placed, as my invention only requires that they be placed so that when the draw has been moved the width of the switch contact they will break their circuits. They should be situated so as to reëngage automatically when the draw is brought back to its normal position. The same numerals apply to Fig. 2, with the exception that 4 and 4′ represent two overhead-trolley lines, 4 taking the place of the rail return.

The operation of these several means by which the electric cars will be prevented from inadvertently running into open draws and the extinguishment of the electric lights of the cars will indicate that the draw is in an unsafe position for travel is as follows: The blades and clips of the switches being severally in the direct lines of the wheel-rails and trolley-lines they can only make circuit when the draw is in safe position for travel. The moment, however, the draw has been moved the distance of the width of the switch-contacts the circuit is broken both at the trolley line or lines and at the wheel-rails, and inasmuch as section 10 of the single trolley-line and sections 10 and 10′ of the double trolley-line are broken at 6 current is withdrawn entirely from the space between 6 and the draw. If a car is approaching this dead-section, it will be able to proceed over it the distance only of its previously-acquired momentum. If it is already on this section and moving at the usual speed for bridges, it will stop within a few feet after the circuit is broken by moving the draw. It is apparent that as the reciprocal parts of the switches are so placed that they must engage automatically when the bridge is in position for travel and disengage when unfit the making and breaking of circuit are always coincident, respectively, with safety and danger and automatic in action. Inasmuch as the electric-lighting circuit is completed through the trolley-line 4, the wheel-rails, and the trolley, and is coincident in every particular with the electric circuit which operates the car, (the same being tapped off the power-circuit,) it is apparent that when the car is deprived of cur-

rent for movement the electric lamps are also without current and the car will be without illumination. This will soon be known by the public to be a sign, if the car be on the section between 6 and the draw, that the draw is open. When the light comes back to the lamps or the lights are maintained on the bridge as the draw is approached, passengers will also have the assurance that the car may safely proceed.

I have shown only one track and approach; but it is evident that the same means may be used for two parallel tracks and two approaches.

What I claim is—

1. The hereinbefore-described system of preventing accidents to electric cars, while crossing drawbridges, by running into the water at the open draw, which system consists in automatically breaking the power-circuit, by opening the draw, and thereby depriving the section of the railway approaching the draw, of electric power, and restoring said power by replacing said draw in its position of safety.

2. In an electric railway traversing one or more drawbridges, a power-circuit provided with means upon the draw and upon the side of the bridge on which the cars approach, for automatically opening and closing said circuit by the opening and closing of said draw, substantially as set forth.

3. In an electric railway traversing a drawbridge, the combination with a power-circuit, of electrical contacts arranged so as to be operated automatically by the opening and closing of the draw, whereby the power-circuit is deprived of current over a section of suitable length when the draw is open and remains inoperative until the bridge is in position for travel, substantially as set forth.

4. The combination with a drawbridge crossed by an electric railway, of current-distributing mains, and means automatically operated by the movement of the draw to open and close the circuit on said mains.

5. The combination with a drawbridge crossed by an electric railway, of current-distributing mains, electric lights upon the cars supplied with current from said mains, and devices automatically operated by the opening and closing of the draw to open and close the lamp-circuit and extinguish and rekindle said lamps, thereby giving a signal that the road is unsafe for travel, or the opposite, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL L. PHILLIPS.

Witnesses:
D. T. HASSAN,
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