No. 699,218. Patented May 6, 1902.

A. J. McCULLOUGH.

ELECTRIC SWITCH OPERATING DEVICE.

(Application filed Mar. 29, 1901.)

(No Model.)

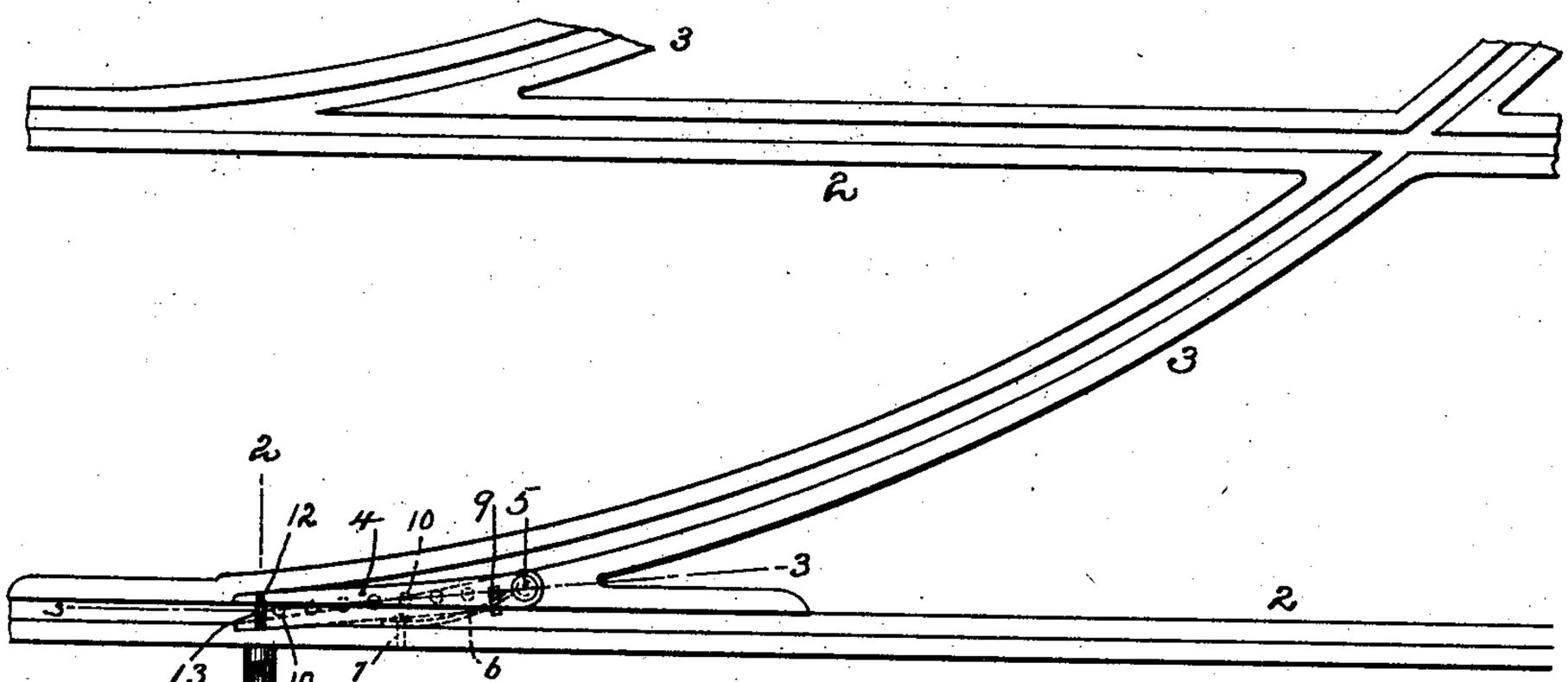

Fig. 1.

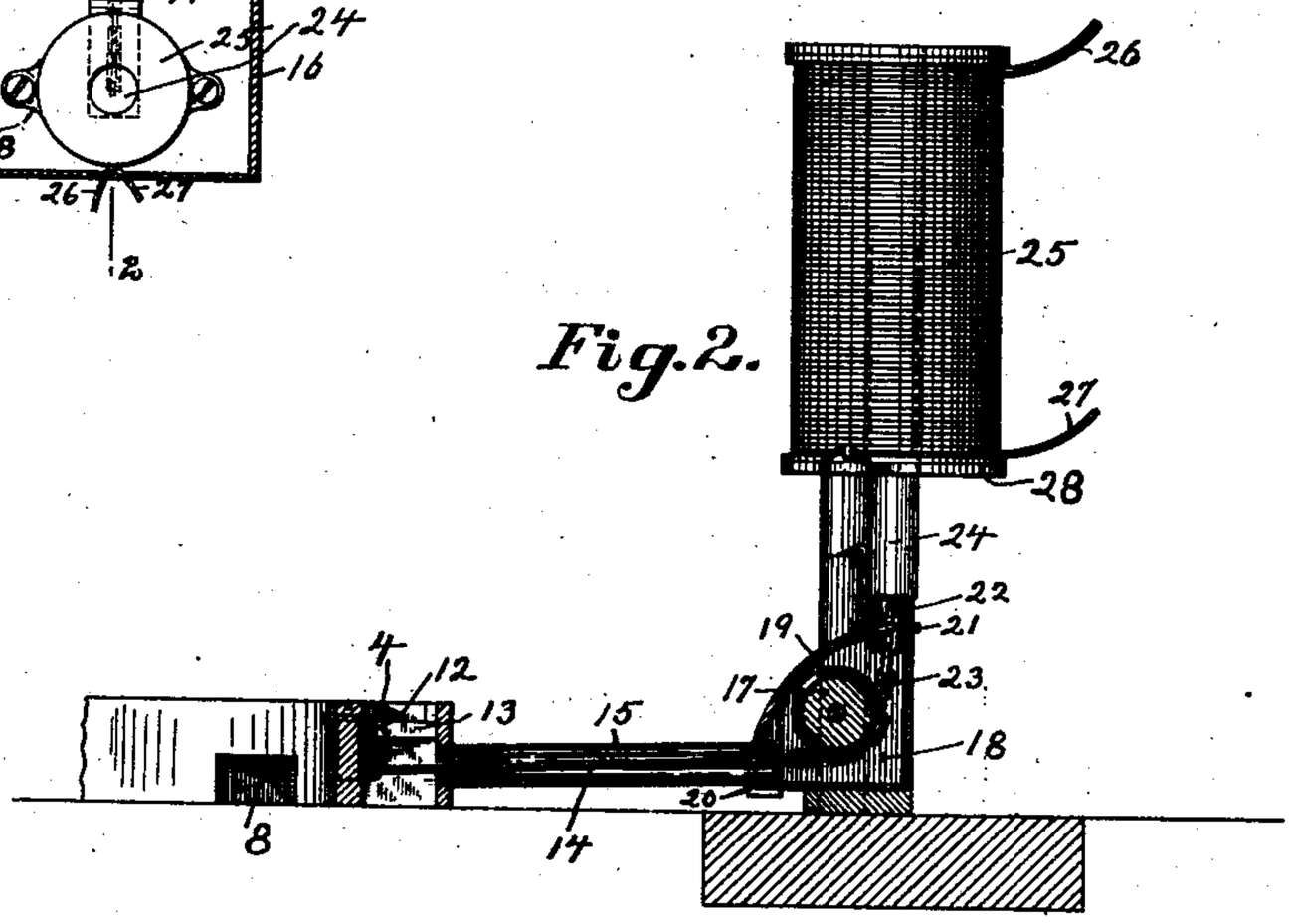

Fig. 2.

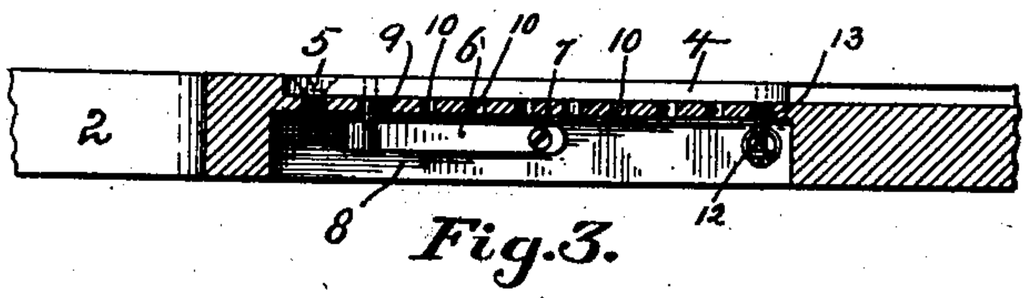

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

ALEXANDER J. McCULLOUGH, OF MEADVILLE, PENNSYLVANIA.

ELECTRIC SWITCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 699,218, dated May 6, 1902.

Application filed March 29, 1901. Serial No. 53,432. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER J. McCULLOUGH, a resident of Meadville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Improvement in Electric Switch-Operating Devices; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to mechanism for operating switches electrically.

The object of my invention is to provide a simple and compact form of mechanism by means of which the switch-tongue is operated electrically without the necessity of the motorman stopping the car to permit himself or the conductor to leave the car to move the switch by use of the ordinary hand-bar now generally employed, which is the occasion of much delay and annoyance.

To these ends my invention comprises the mechanism as hereinafter set forth and claimed.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a plan view of a portion of a track with my invention illustrated in connection therewith. Fig. 2 is a cross-section on the line 2 2, Fig. 1. Fig. 3 is a detail sectional view on the line 3 3, Fig. 1.

Like numerals indicate like parts in each of the figures.

The numeral 2 designates a portion of an ordinary track, such as is used for an ordinary overhead electric-trolley line.

The switch is designated by the numeral 3, the switch-tongue 4 being adapted to swing on its pivotal point 5. In order to keep the switch normally closed, a spring 6 is secured to the switch, as at 7, in the space 8 beneath the switch, said spring at its free end bearings against the stud 9, extending down from the switch-tongue 4.

The switch has the openings 10 leading into the open space 8, so that water caused by rain or snow may be carried off and not interfere with the operation of the switch-tongue. At the free end of the switch-tongue is the downwardly-extending pin 12, which is adapted to move in the slot 13. Connected to this pin 12 is the rod 14, said rod passing through the conduit 15, which may be laid under ground and which extends from the switch to the sidewalk or other convenient point of location. Located at or adjacent to the sidewalk is the box 16, which incloses the mechanism by means of which the switch is operated. A pulley 17 is journaled in suitable bearings in the plates 18, said plates forming a housing for said pulley, so that when the top plate 19 is added said pulley is completely inclosed. This top plate 19 is cut away, as at 20 and 21, to fit over the conduit 15 and around the guide 22. A chain or other flexible connection 23 is attached to the rod 14, said chain passing under the pulley 17 and through the guide 22, where it is connected to the core 24 of the solenoid 25. This solenoid 25 may be of the ordinary construction, having the terminal wires 26 and 27, and said solenoid is supported on the stand 28.

As the manner of operating the solenoid forms no part of my invention, I have not deemed it necessary to illustrate or describe the connections; but said solenoid should be preferably operated by the current taken from the overhead wire which supplies the current to operate the car.

When my invention is in use and it is desired to open the switch, circuit connections are made with the solenoid 25, whereupon the core 24 is raised, and through the connections illustrated the switch-tongue 4 is moved sufficiently to open the switch. The car as it advances then passes off onto the switch, and after passing beyond the same the circuit to the solenoid is broken and the core 24 released. The core falls of its own weight, and the spring 6 causes said switch-tongue to resume its normal position to close the switch.

By my invention I provide a simple and compact form of mechanism in which there are few parts, and consequently little liability of their getting out of order. The power required to operate the switch is reduced to a minimum, as there are no levers to be moved and owing to the pulley there is very little friction to overcome. The switch-tongue only needs to be moved with power in one direc-

tion, as it resumes its normal position just as soon as the car has passed and the circuit to the solenoid is broken.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In switch-operating mechanism, the combination with the switch-tongue, of a vertically-arranged solenoid, a chain or other flexible means connected directly to both the switch-tongue and the core of the solenoid, and a pulley below said solenoid around which said chain passes.

2. In switch-operating mechanism, the combination with the switch-tongue, a spring bearing against said switch-tongue to hold it normally in one position, of a vertically-arranged solenoid, a chain or other flexible means connected directly to both the switch-tongue and the core of said solenoid, and a pulley below said solenoid around which said chain passes.

3. In switch-operating mechanism, the combination with a switch-piece provided with a floor or bottom and having an open space beneath the same, of a switch-tongue pivoted therein and provided with a projection extending down through a slot in the bottom of the switch-piece, a spring located in the space beneath the switch-piece and bearing against said projection, a solenoid, and connections between said switch-tongue and the core of said solenoid.

4. In switch-operating mechanism, the combination with a switch-piece provided with a perforated bottom and having an open space beneath the same, of a switch-tongue pivoted thereto and having two downwardly-extending projections extending through slots in the bottom of the switch-piece, a spring located in the space beneath the switch-piece and bearing against one of the projections on the switch-point, a chain connected to the other of said projections, and the solenoid to the core of which the opposite end of the chain is connected.

In testimony whereof I, the said ALEXANDER J. MCCULLOUGH, have hereunto set my hand.

ALEXANDER J. MCCULLOUGH.

Witnesses:

W. C. CARPENTER,

C. O. GOODRICH.