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H. B. SNELL.

CIRCUIT CONTROLLER FOR ELECTRIC RAILWAY SIGNALS.

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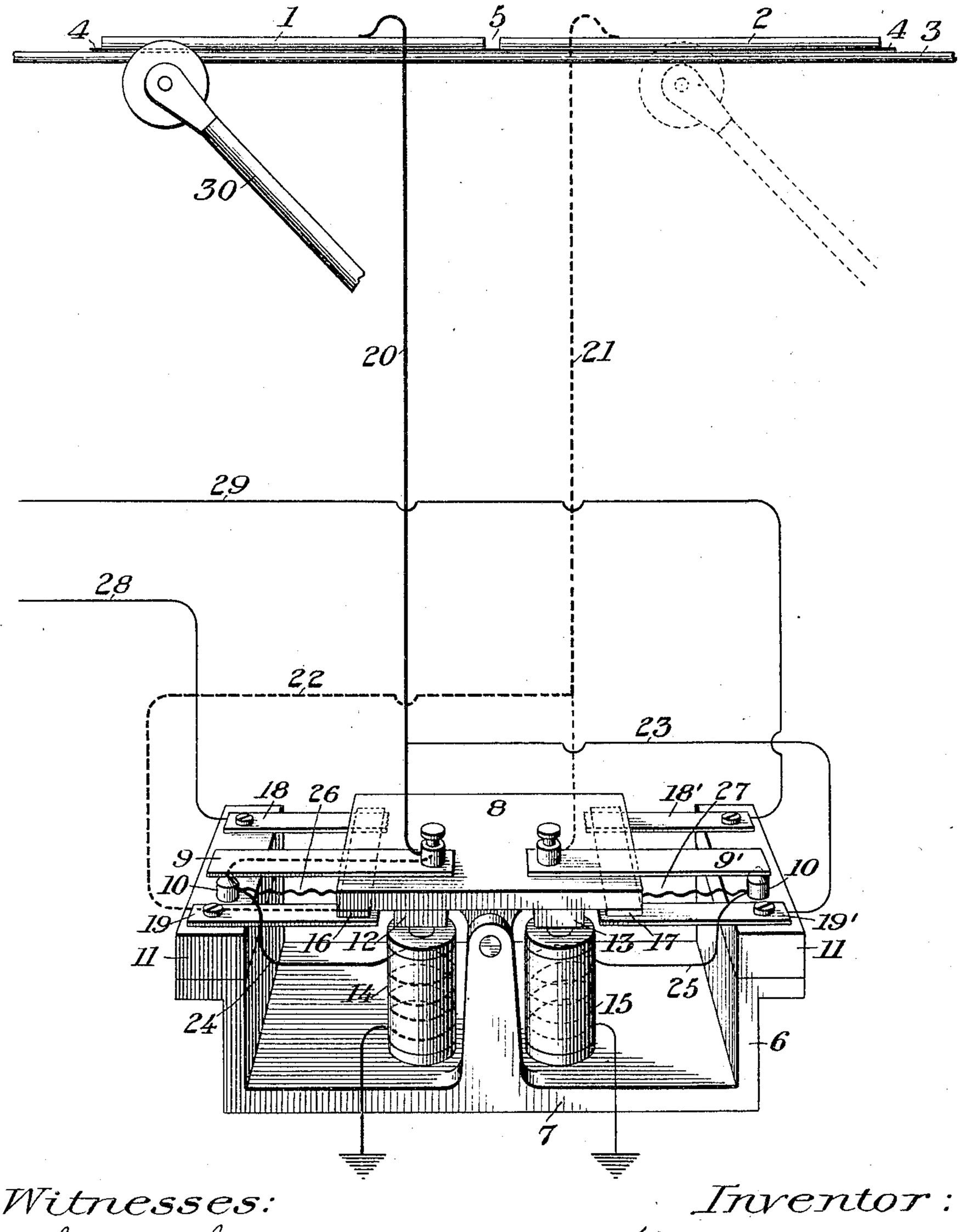

Witnesses:
Chas. S. Defenbaugh
Eugene Grimmer

Inventor:
Harry B. Snell
By Chas. J. Keller atty.

No. 784,357. Patented March 7, 1905.

UNITED STATES PATENT OFFICE.

HARRY B. SNELL, OF JACKSON, MICHIGAN.

CIRCUIT-CONTROLLER FOR ELECTRIC RAILWAY-SIGNALS.

SPECIFICATION forming part of Letters Patent No. 784,357, dated March 7, 1905.

Application filed April 15, 1904. Serial No. 203,350.

To all whom it may concern:

Be it known that I, HARRY B. SNELL, of Jackson, county of Jackson, and State of Michigan, have invented certain new and useful Improvements in Circuit-Controllers for Electric Railway-Signals; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

This invention has reference to a circuit-controller, and has especial reference to trolley-actuated means for controlling the circuits of electric railway-signals. In Letters Patent of the United States granted to me bearing date February 23, 1904, and numbered 752,719, I have disclosed a mechanically-operated circuit-controller mounted upon the trolley-wire, the same being arranged to be operated by contact with the trolley-wheel. The device referred to or any other device adapted to be mounted upon the trolley-wire and be operated mechanically will be found impracticable, owing to the fact that they are not conveniently accessible when it becomes necessary to effect repairs to the same, being liable to damage by the repeated contact of the trolley-wheel.

To overcome the liability to get out of order and to provide simple, inexpensive, and effective means for controlling the circuits connected with an electric railway-signal my invention is constructed; and it comprises the novel arrangement hereinafter shown, described, and claimed.

In the drawing illustrative of my invention, 1 and 2 are elongated metallic contacts mounted above the trolley-wire 3, being insulated therefrom by any suitable means, that shown being an intervening strip of insulation 4. The contacts 1 and 2 are separated from each other at their adjoining ends by an air-space 5 or by any other suitable means to cause them to be out of direct electrical connection with each other. The contacts 1 and 2 are further arranged so that when the trolley-wheel is passing underneath them an electrical connection will be established therethrough with the trolley-wire. Furthermore, when the trolley-wheel is passing underneath the air-space 5 the connection with the contact 2 will be established before the trolley-wheel has left the contact 1, and vice versa. Operated in connection with the trolley-contacts 1 and 2 is a controller 6, protected from the weather by being housed within a suitable case (not shown) secured to one of the trolley-poles along the track of the railway or any other convenient place. Said controller comprises a metal frame or base 7, upon which is mounted a tilting table 8, of insulated material, carrying flat resilient strips 9 and 9′, secured at their inner ends thereto, the outer ends of said contact-strips being adapted to normally rest upon metal contact-points 10, mounted upon blocks of insulating material 11, supported upon the base. Upon the bottom of the table 8, on opposite sides of its pivotal connection with the base, are provided armatures 12 and 13, adapted to be actuated by the attractive force of magnets 14 and 15, also supported upon the base.

16 and 17 are contact-strips carried on the lower face of the table at its outer ends, the same being adapted to contact with the free ends of resilient metal contact-strips 18 and 19 and 18′ and 19′, respectively, when the table is tilted on one side or the other by the action of the magnets. The strips 18 and 19 and 18′ and 19′ are secured at their outer ends upon the blocks of insulation 11.

20 and 21 are wire circuits leading from the trolley-contacts 1 and 2 to binding-posts secured upon the inner ends of the strips 9 and 9′, respectively, and 22 and 23, respectively, are branches from said circuits leading to the contact-strips 19 and 19′.

24 and 25 are connections leading from the contacts 10 through the magnets 14 and 15 to the ground.

26 and 27 are flexible cord connections between the contacts 10 and the contact-strips 16 and 17.

28 and 29 are line connections leading from the contact-strips 18 and 18′ to a suitable signaling device or indicator.

30 indicates a trolley-wheel moving along the trolley-wire in a right-hand direction.

When the controller 6 is not in operation,

the parts of the same are relatively disposed as follows: The tilting table not being attracted on either side of its pivotal connection will lie in a horizontal plane, the resilient strips 9 and 9′ resting at their free ends upon the contacts 10. The contact-plates 16 and 17 will both be elevated out of contact with the strips 18 and 19 and 18′ and 19′, an air-space intervening between them.

Assuming that a car is running in a right-hand direction, the trolley-wheel as it passes along the trolley-wire will close the current into the elongated contact 1, the same being conducted through the circuit 20, through the resilient strip 9, resting upon the contact 10 on the left, and through the magnet 14 to the ground, the complete circuit being indicated by the heavy lines in the drawing. The magnet 14 being energized by the passage of the current therethrough will attract the armature 12, the table 8 being drawn downwardly on this side, the opposite side being elevated. It is apparent that as long as the trolley-wheel remains in contact with the trolley-contact 1 the current will continue to pass from the trolley-wire through the magnet 14 and maintain the table in tilted position. Owing to the tilted position of the table the plate 16 will contact with the free ends of the strips 18 and 19. The flexible connection 26 will therefore lead the current from the contact 10 on the left of the plate 16 and therefrom through the line-circuit 28, leading to a signal device or indicator adapted to indicate the direction in which the car is running. As the trolley-wheel passes the air-gap 5 the circuit through the elongated contact 1 and the connection will be broken. However, contact of the trolley-wheel with the trolley-contact 2 will be closed before that with the contact is broken. The current from the trolley-wire will therefore continue to pass along the connection 21, the branch 22, and through the strip 19 and the plate 16, the flexible connection 26 to the contact 10, from whence it is conducted through the connection 24 and the magnet 14 to the ground. It is apparent that owing to the contact of the trolley-wheel with the trolley-contact 2 before the connection with the contact 1 is broken there will be an uninterrupted passage of the current through the magnet 14, the table 8 being tilted in one direction only while the trolley-wheel is passing the entire distance along the trolley-contacts 1 and 2. On the other hand, when the table is tilted, as has been described, the contact-strip 9′, normally in contact with the contact 10, will be raised from said contact, the connection between the two being broken as long as the table is tilted on the opposite side. Therefore in the action of the device hereinbefore described when the trolley-wheel passes from the contact 1 to the contact 2 the current will not be conducted through the circuit 21 and through the strip 9′ to the contact 10, the table remaining without interruption in tilted position while the trolley passes underneath the contacts 1 and 2. As the trolley-wheel continues in a right-hand direction along the trolley-wire and leaves the contact 2 the circuit to the controller 6 will be opened and the table will instantly resume its normal position in a horizontal plane owing to the resiliency of the strip 9, both the strips 9 and 9′ then again being in contact with the contact-points 10 on opposite sides. The connection between the plate 16 and the strips 18 and 19 will now again be broken, as it was prior to the operation of the device. The action of the controller 6 when the trolley-wheel passes in an opposite direction will be the reverse from that described, the table 8 being tilted in an opposite direction as long as the trolley-wheel is underneath the contacts 2 and 1, the current being then closed into the line-wire 29, leading to the signal device. It will thus be seen that as the trolley-wheel passes in a right-hand direction the line-wire 28 alone will be active, and as the trolley-wheel passes in a left-hand direction the line-wire 29 alone will be active.

By means of my invention the employment of a mechanical device having moving parts adapted to be actuated by the trolley-wheel is dispensed with.

The novelty, simplicity, and improved operation of my invention will be obvious.

I do not wish to confine the application of my invention to railways employing overhead trolleys, since it is apparent the same may be employed upon three-rail or ground-circuit systems.

While I have specifically illustrated a preferred embodiment of my invention, I do not intend to limit the scope thereof to the exact construction shown, as modifications and changes in detail may be made and appropriated in such a way as not to constitute a substantial departure.

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

1. In a circuit-controller for railway-signals, a pair of trolley-contacts insulated from direct connection with each other and from the trolley-wire, a magnetically-operated controller, two line-circuits leading from the controller to a suitable signal device, and connections whereby a trolley-wheel passing beneath the trolley-contacts in one direction will close the current from the trolley-wire through one of the line-circuits and when passing in the opposite direction through the other line-circuit, substantially as described.

2. In a circuit-controller for railway-signals, a pair of elongated, metallic contacts rigidly supported above the trolley-wire, and insulated therefrom and from each other, a magnetically-operated controller, independent connections from the trolley-contacts to the controller, two line-circuits leading from

the controller to a suitable signal device, and connections whereby a trolley-wheel passing beneath the trolley-contacts in one direction will close the current from the trolley-wire through one of the line-circuits and when passing in the opposite direction through the other line-circuit, substantially as described.

3. In a circuit-controller for railway-signals, a pair of elongated trolley-contacts arranged in line with each other above the trolley-wire and insulated therefrom and from each other, a controller embodying in its construction a pivotally-supported table adapted to be tilted on one side or the other, independently-actuated magnets on opposite sides of the pivotal support of said table, and connections from the trolley-contacts through the magnets whereby a trolley-wheel passing beneath the trolley-contacts in one direction will energize the magnets on one side of the pivotal support of the table, and when passing in the opposite direction the magnets on the opposite side of the pivotal support will be energized, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HARRY B. SNELL.

Witnesses:
CARL H. KELLER,
EUGENE GWINNER.