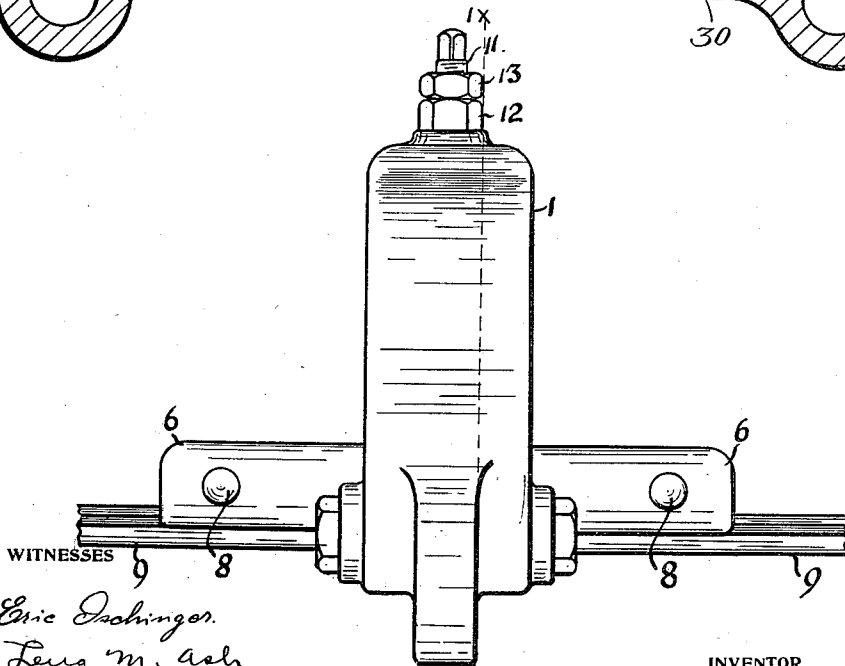
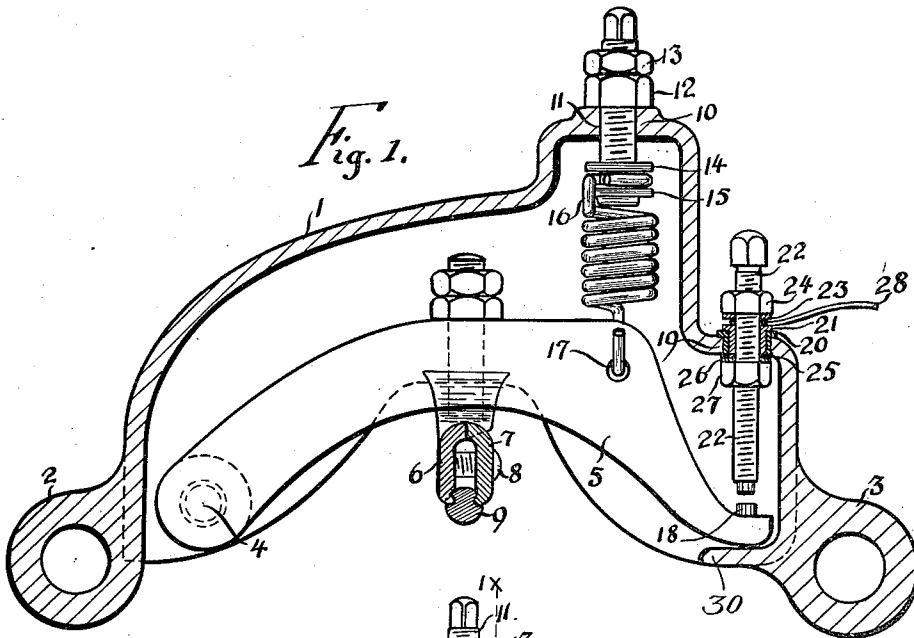


W. J. BELL.
ELECTRIC SIGNAL ACTUATING MECHANISM.
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1,009,015.

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ELECTRIC SIGNAL-ACTUATING MECHANISM.

1,009,015.

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To all whom it may concern:

Be it known that I, WALTER J. BELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Electric Signal-Actuating Mechanisms, of which the following is a specification.

My invention relates in general to circuit controllers or closers and more particularly to that class of devices which are automatically operated by an electrically propelled car passing a given point.

It is desirable to equip electric roads with the block signaling mechanism which indicates either in advance of the car or back of the car or both that a car is in a block and is traveling in a given direction. It is desirable to have this signaling mechanism operated by the passing of the car and one of the objects of my invention is to provide a circuit closing mechanism that will be so operated. In electric roads it is customary to suspend a trolley wire over the track and to place on the car a trolley that contacts with said wire. The trolley wire is more or less flexibly suspended from above and is lifted a small amount as the trolley passes thereunder, the trolley being pressed up against the wire by a spring support provided under the trolley for that purpose, causing the trolley to lift the wire as it passes along under it.

The object of my invention is to construct and mount the circuit closer so that the trolley wire can be suspended from the movable part thereof, which movable part will rise and fall with the trolley wire closing and opening the circuit in consequence thereof, which rising of the movable part may be accelerated or assisted by the construction of the switch as in my case by interposing a tension spring between the casing and the trolley wire support.

My invention will be more fully described hereinafter, reference being had to the accompanying drawing which forms a part of this specification, and to the reference numerals marked thereon.

In the accompanying drawings Figure 1 shows a vertical longitudinal section of my improved circuit closer, the section being taken on the line 1*-1* of Fig. 2. Fig. 2 is a view showing the circuit closer in elevation.

In the accompanying drawings like reference numerals indicate like parts.

Referring to the drawings, reference numeral 1 indicates a casing or housing for my improved contact switch. On each end of this casing or housing are the perforated lugs 2 and 3, to which are connected the span wires (not shown) by which the casing is supported over the track. Pivoted at 4 is a lever 5. From this lever depends a lug 6, pivoted thereon, which lug is suitably threaded, and to which is clamped a bit 7 by means of a screw 8. Between the bit 7 and the lug 6 is clamped and suspended the trolley wire 9. The top of the housing or casing is perforated and threaded at 10, through which perforation extends a stud 11. On this stud are carried the locking nuts 12 and 13. The upper end of the stud 11 has a square head which permits it to be turned by a wrench so as to be rotated in the nuts 12 and 13 and the housing 1, and set at any desired height, after which it may be clamped in position by the nuts 12 and 13 being turned against each other and against the housing. On this stud 11 are shoulders or collars 14 and 15 between which is fastened one end of a spring wire 16, the lower end of which is hooked into the lever 5 at 17. On the outer end of the lever 5 is mounted a contact 18. Above this contact the casing 1 is perforated at 19, in which perforation is set an insulating socket 20. In the insulating socket 20 is placed a brass sleeve 21 which is threaded on the inside to receive the threaded adjustable contact pin or post 22.

On top of the sleeve 21 is placed the washer 23, on top of which in turn is placed the nut 24. Below the sleeve is placed the insulating washer 25 below which is placed the metal washer 26, below which in turn is placed the nut 27, all on the contact pin or post. Between the sleeve 21 and the washer 23 may be clamped the signal wire 28, through which wire the electric impulse is transmitted to the semaphore or other signaling apparatus. By means of the insulating sleeve 20 and the insulating washer 25, the contact pin 22 and all the metal parts carried thereon are completely insulated from the housing or casing 1. It will be understood of course that the casing 1 and all the parts associated therewith are at the same potential as the trolley wire, ex-

cept the pin 22 and parts associated therewith that are insulated from the casing 1, and that the pin 22 which normally is at zero potential may be raised to the potential of the trolley wire and put in circuit therewith by the raising of the lever 5 and the closing of the contact 18 with the pin 22.

On the casing 1 is provided a lug 30 by which the downward movement of the free end of the lever 5 is limited and on which the lever is adapted normally to rest. The lever is adapted to swing between this lug 30 and the contact pin 22.

The lever 5 is pulled down by the weight of the trolley wire hanging therefrom which weight can be assumed to be any given amount, say for example fifty pounds. The gravity effect of the trolley wire is intended to be counteracted by the tension of the spring 16 which exerts an upward pull on the lever 5 sufficient to counteract the gravity effect of forty pounds of the trolley wire. This being the case it will be seen that an upward thrust of eleven pounds on the trolley wire would be sufficient to raise the lever 5 and close the contact 18 with the pin 22. As the trolley car approaches, this upward thrust will be accomplished gradually and will be sufficiently strong to close the contacts long before the trolley gets immediately under the casing, and as the trolley continues to approach it will lift the casing bodily, the casing reaching its maximum height or upward pressure when the trolley is immediately thereunder, after which the casing will drop again, and finally the weight of the wire will pull the lever down in the casing and open the contacts. This closing of the contacts causes an electric impulse to be communicated through the wire 28 to the relay of the semaphore, causing the signal of the semaphore to be operated.

It may be advisable to place a number of these devices in multiple or parallel on separate span wires, as shown in Figs. 3 and 4, each of which in the block will communicate the same electric impulse to the relay in the semaphore, thus causing repeated operations at the signaling device as the car advances to insure positive operation in case the first one fails. The wire 28 communicates with a relay, which in turn operates the semaphore circuit, in which case no spark or arc would flash at the contacts 18 and pin 22 when the arm or lever 5 dropped and the contact was severed.

It will now be seen that after the electric signal actuating mechanism has been installed properly in connection with the trolley wire and connected with the semaphore relay circuit, that as the car approaches the trolley wire and the lever 5 will be lifted, closing the circuit, which circuit will remain closed while the car is traveling

perhaps one hundred or one hundred and fifty feet, half this amount on each side of the switch, that the closing will be by an easy contact, and that there will be no severe jar on the moving parts, but that on the contrary the contact is made easily and thereafter the lever is lifted without any sudden jar either on itself or on the trolley wheel. It will also be seen that a period of long contact is secured, thus making the closing of the circuit the more secure and reliable.

Having thus described my invention, what I claim as new and patentable is as follows:

1. The combination in a signaling apparatus for trolley railways of metallic casing, a horizontal lever pivoted therein at one end, a trolley wire suspended from said lever and a coiled spring suspended from said casing, connected to said lever, said spring tending to draw said lever up and partly counterbalancing the weight of said trolley wire, a contact set in said casing and insulated therefrom, said contact being in line with the path of travel of said lever and making contact therewith on the raising of said trolley wire.

2. The combination in a signaling apparatus for trolley railways of metallic casing, a horizontal lever pivoted therein at one end, a trolley wire suspended from said lever and a coiled spring suspended from said casing, connected to said lever, said spring tending to draw said lever up and partly counterbalancing the weight of said trolley wire, a contact set in said casing and insulated therefrom, said contact being in line with the path of travel of said lever and making contact therewith on the raising of said trolley wire, means for adjusting the lifting force of said spring.

3. The combination in a signaling apparatus for trolley railways of a metallic casing, a horizontal lever pivoted therein at one end, a trolley wire suspended from said lever and a coiled spring suspended from said casing, connected to said lever, said spring tending to draw said lever up and partly counterbalancing the weight of said trolley wire, a contact set in said casing and insulated therefrom, said contact being in line with the path of travel of said lever and making contact therewith on the raising of said trolley wire, means for adjusting the lifting force of said spring, means for adjusting the position of the contact to vary the travel of the lever before making contact therewith, said contact passing through said casing.

4. The combination in a signaling apparatus for trolley railways of metallic casing, a horizontal lever pivoted therein at one end, a trolley wire suspended from said lever, a lug on said casing projecting inwardly therefrom, on which lug the free end of said lever is adapted to normally rest, said

lever being adapted to swing upwardly therefrom.

5 5. The combination in a signaling apparatus for trolley railways of metallic casing, a horizontal lever pivoted therein at one end, a trolley wire suspended from said lever, a lug on said casing projecting inwardly therefrom, on which lug the free end of said lever is adapted to normally rest, said lever being adapted to swing upwardly therefrom, a spring suspended from said casing and connected to said lever, said spring tending to swing said lever up and away from said lug.

15 6. The combination in a signaling apparatus for trolley railways of metallic casing,

a horizontal lever pivoted therein at one end, a trolley wire suspended from said lever, a lug on said casing projecting inwardly therefrom, on which lug the free end of said lever is adapted to normally rest, said lever being adapted to swing upwardly therefrom, a contact set in said casing and insulated therefrom, said contact being in line with the path of travel of said lever. 20 25

In testimony whereof I affix my signature in presence of two witnesses.

WALTER J. BELL.

Witnesses:

ROY B. SUMNER,

JENNIE L. FREDERICK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."