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M. W. McINTIRE

ELECTRICAL SIGNALING DEVICE

Filed July 18, 1923

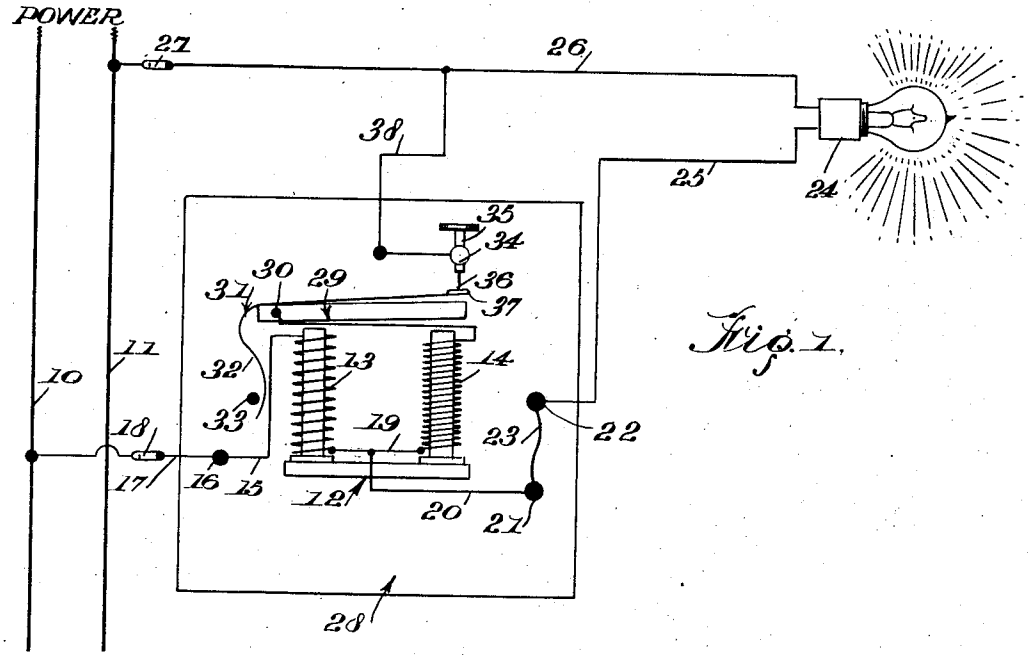


Fig. 1.

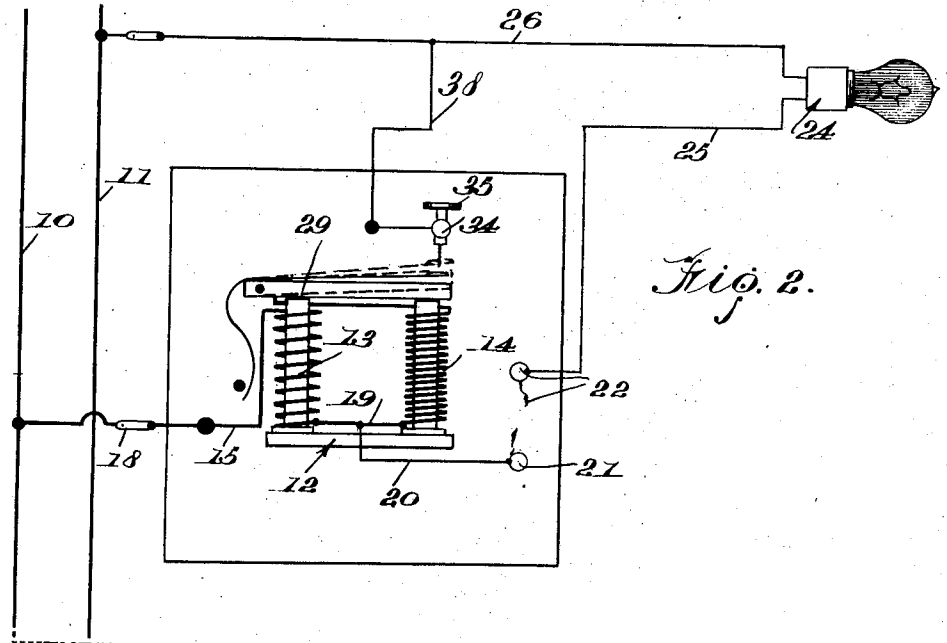


Fig. 2.

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UNITED STATES PATENT OFFICE.

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ELECTRICAL SIGNALING DEVICE.

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To all whom it may concern:

Be it known that I, MOTIER W. McINTIRE, a citizen of the United States, residing at Wilmington, in the county of New Hanover, State of North Carolina, have invented certain new and useful Improvements in Electrical Signaling Devices, of which the following is a specification.

This invention relates to an electrical indicator or signal device.

The object of the invention is to provide a device of the above character whereby the condition of an electrical circuit may be indicated at a remote point.

Other objects relating to details of construction, combination and arrangement of parts will hereinafter appear in the detailed description to follow.

The invention is illustrated by way of example in the accompanying drawings, in which:

Figure 1 is a diagrammatic view showing the device connected with an electrical circuit and operated to indicate that said circuit is properly functioning, and

Figure 2 is a view similar to Figure 1 but showing the device operated to indicate that the controlled electrical circuit is opened or broken.

Like reference numerals designate corresponding parts throughout the several views of the drawings.

Referring to the drawings more particularly, 10 and 11 indicate bus wires or electric current supply wires which may be connected to a suitable source of electric current. At 12 there is indicated a core for an electro-magnet and said core carries the two windings 13 and 14. The winding 13 is preferably of wire of greater cross section than the wire constituting the winding 14, and also the winding 14 is of a greater number of turns than the winding 13, as illustrated. The one end of the winding 13 is connected to a contact post 16, and this post in turn may be connected through a wire 17 with the bus wire 10. In the wire 17 there may be interposed a switch 18. The remaining end of the winding 13 is connected through a wire 19 with the one end of the winding 14 and also the wire 19 is connected through a lead or wire 20 with a fuse terminal 21. A second fuse terminal is indicated at 22 and between the terminals 21 and 22 there is extended a fuse 23. At 24 there is indicated an electric light, and one terminal of this light is connected through a wire 25 with the fuse terminal 22, while the other terminal of the light is connected through a wire 26 with the supply wire 11, and in this wire 26 there is preferably interposed a switch 27. The magnetic core 12 may be suitably supported within a housing or casing, generally indicated hy the reference character 28, and this casing may also support an armature 29, said armature being pivotally supported, as at 30, adjacent one end. A spring 31 extends longitudinally of the armature 29, and upon the upper side thereof, said spring having its one end portion 32 turned downwardly and extended so that the same engages upon the inner side of a pin or other suitable stop 33. The tendency of the spring 31 is to urge the free end of the armature 29 to swing from the poles of the magnetic core 12. A suitable contact member 34 may be supported by the casing 28 and this contact member may carry an adjustable screw 55, said screw being suitably threaded through the contact member 34 and carrying a contact point 36 adapted to be brought to engage with a contact plate 37 carried by the free end of the spring 31. The contact member 34 is in turn connected through wire 38 with the wire 26.

As heretofore referred to the object of the present invention is to indicate at a remote point the condition of an electrical circuit. The electrical circuit control in the arrangement shown in Figures 1 and 2 is that which includes an electric light 24. It is, of course, to be understood that the lamp may be replaced by a motor or other current absorbing device which would be operated by an electric current. With the connections shown in Figure 1 and heretofore described, the current will proceed from the supply wire 10 through the windings 13 and through the fuse 23 and from thence through the electric lamp 24 to the supply wire 11. This current will energize the winding 13 sufficiently to retain the armature 29 in the position illustrated in full lines in Figure 2. Should the control electrical circuit including the wire 20, fuse 23, wire 25, lamp 24 and wires 26 be opened then current will cease to flow through the winding 13, and the free end of the arma-

ture 29 together with the same end of the spring 31 will be lifted so that the free end of the spring will engage with the contact point 36. Upon this occurring a current will be established through both of the windings 13 and 14 and said current will flow from the supply wire 10 through the coils 13 and 14; from thence through the spring 31 and through wire 38 to the supply wire 11. Upon the coils 13 and 14 becoming energized the armature 29 will be drawn against the poles of the magnetic core 12 and thus again breaking the circuit. This action will continue as long as the control electric circuit is open and in substance the action of the armature 29 will be the same as that of an ordinary vibrator.

The present device might be employed in connection with railroad signaling systems in an obvious manner and also it might be employed in connection with the tail lamp of a motor vehicle, and in such use of the invention the vibratory action of the armature 29 will call to the attention of the driver of the motor vehicle that the tail lamp for his vehicle was not lighted; that is, the circuit for this lamp is broken.

By providing the winding 13 of wire having a relatively large cross section, the same would carry sufficient current to enable blowing of the fuse 23 and thus protect the lamp 24 or other electrical device connected with the control electric circuit. With a smaller wire for forming the coil 14 a greater magnetic attraction is had for the armature 29 when this winding is energized and thus to cause the device to operate in a more positive and reliable manner.

It is also important to note that in event a short circuit occurring between wires 26 and 25 or in the instrument under control, the fuse 23 would be blown and the indicator would function or operate in the same manner as heretofore described for indicating that the circuit for lamp 24 is open. It is clearly obvious from the description of my invention that the same might be used to advantage in connection with the running lights of ships and also may be employed in connection with burglar alarm systems.

I claim:

An apparatus of the character described, comprising a source of current supply, an electro-magnet having two windings or coils, one coil having a greater ohmic resistance than the other, a circuit connected to said source of supply and having interposed therein the low resistance coil and a current absorbing device, a fuse interposed in the circuit between the low resistance coil and said current absorbing device, said low resistance coil being adapted to pass sufficient current to blow said fuse and also to hold the vibrator against the core of the electro-magnet, and a vibrator circuit including the coil of greatest resistance, adapted to be established upon the vibrator being released from the core of said electro-magnet.

MOTIER WILLIAMS McINTIRE.