

Oct. 28, 1930.

N. S. NELSON

1,779,946

BATTERY CONDITION INDICATOR

Filed April 17, 1925

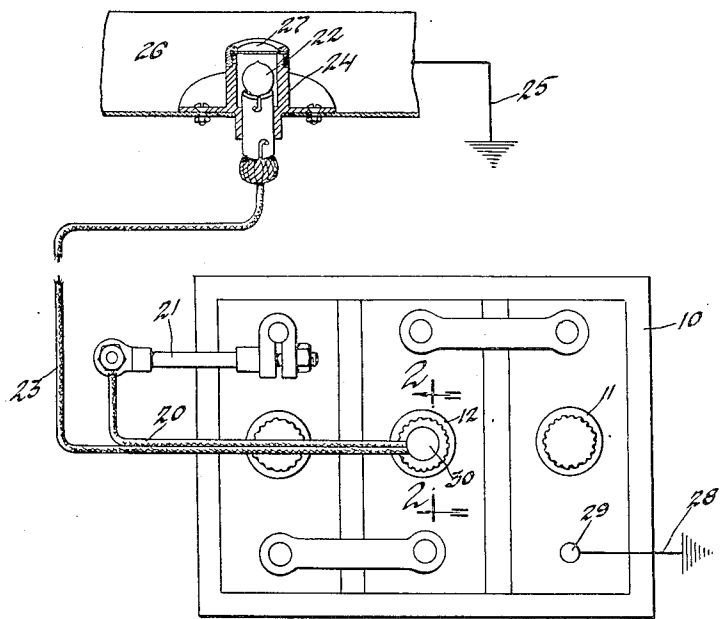


Fig. 1

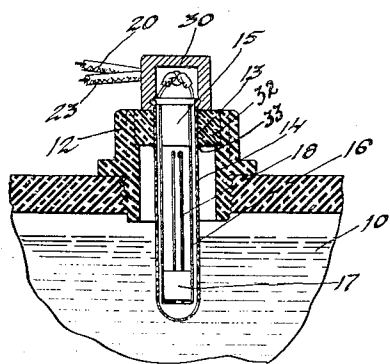


Fig. 2

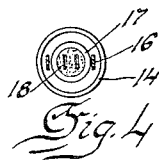


Fig. 4

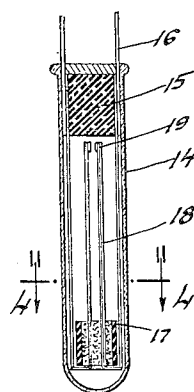


Fig. 3

INVENTOR
Nels S. Nelson
BY
John H. Harness
ATTORNEY

UNITED STATES PATENT OFFICE

NELS S. NELSON, OF PONTIAC, MICHIGAN, ASSIGNOR OF ONE-HALF TO GEORGE PETERSON, OF DETROIT, MICHIGAN

BATTERY-CONDITION INDICATOR

Application filed April 17, 1925. Serial No. 23,983.

It is the primary object of my invention to provide in a battery a thermostat that will act when the battery becomes heated, through any cause or causes whatsoever, to close an electric circuit to a light or other signal means, thereby notifying the operator of a vehicle that the battery needs attention.

In the ordinary thermostat, one strip of thermostatic metal is used. It is therefore another object of my invention to use two strips of thermostatic metal, thereby doubling the efficiency and at the same time reducing the size of the entire device, so that the same may be placed in a limited space.

It is a further object of my invention to place contact points on the ends of the thermostatic metal so that a direct contact may be obtained by the contraction of the metal, thereby setting up a complete circuit so that a light or other signal means, may be effected.

With the above and other objects in view, my invention consists in the arrangement, combination and construction of the various parts of my improved device, as described in the specification, claimed in my claims and shown in the accompanying drawings, in which:

Fig. 1 is a diagrammatic view of my invention.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged central sectional view of my improved device.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 3.

I have shown a conventional type storage battery 10, having the usual plugs 11 and the plug 12 that has the aperture 13 therein.

A glass tube 14, having the stopper 15 of non-conducting material, is secured in the aperture 13 of the plug 12, and the cap 30 is placed on the top thereof. Strips 16, which extend from and are supported by the stopper 15, are parallelly arranged on opposite

sides of the tube 14 within the same. At the bottom of the tube 14, the strips 16 support an insulated plug 17 that aids in keeping the said strips 16 separated.

Connected to the strips 16 are a pair of parallel strips 18 that are supported in limited spaced relation by and extending up from the plug 17. These strips 18 are composed of two sections of metal welded together, preferably the outside section of a brass composition and the inside section of a zinc composition. Thus by using these parallel strips that are composed of two metals—one metal of great expansion and the other metal of little or no expansion, the direction of movement of the metal is controlled, so that the two pieces, when heated, will move toward instead of away from each other.

The upper ends of the two strips 18 have the silver contact points 19 soldered to them, which makes an absolutely perfect contact under all conditions, as the coating that forms on silver is as good a conductor of electricity as the silver. I desire it to be understood, however, that any form of contact points may be used with my improved device.

One of the strips 16 has its upper end connected by the conductor 20 to one of the terminals 21 of the battery 10 and the other strip 16 is connected with the lamp 22 by the conductor 23. The lamp 22 is placed in a casing 24 that has the ground wire 25 leading therefrom on the instrument board 26 of a vehicle. A colored lens 27, preferably red, is placed in the casing 24.

A ground wire 28 leads from the other battery terminal 29 to some part of the body of the vehicle.

The cap 12 is composed of hard rubber into which is inserted a soft rubber top 32 that has the soft rubber flange 33 at the bottom of the aperture 13 so that when the cap 12 is being secured to or taken from the battery,

the tube 14 will not turn thereby preventing the twisting of the conductors 20 and 23. At the same time, the flange 33 holds the tube 14 firmly and prevents upward displacement under ordinary vibrations.

In the practical use of my improved device, when the battery 10 heats up for any reason whatsoever, the thermostatic strips 18 will bend under the heat action until the contact points 19 touch each other, thus setting up a circuit that flows from the positive terminal 21 of the battery through the conductor 20 to one of the strips 16, through the strips 18 by means of the contact points 19 to the other strip 16 and then to the lamp 22 through the conductor 23. In this manner, a signal will be given to the operator to warn him that his battery is becoming hot and therefore needs attention.

I have described my particular device as used with an automobile, but I desire it to be understood that the same may be used equally as well with any kind of machinery or other device wherein a battery is used.

It is obvious that various changes may be made in the arrangement, combination and construction of the various parts of my improved device without departing from the spirit of my invention, and it is my intention to cover by my claims such changes as may be reasonably included within the scope thereof.

What I claim is:

1. In combination, a cap for a storage battery, a tube carried by said cap and extending downwardly therefrom, the lower end of said tube being adapted to be immersed in the electrolyte of said battery, a supporting member closing the upper end of said tube, a pair of supporting conductors extending downwardly of said supporting member within said tube, a base carried by the lower ends of said supporting conductors, a pair of thermostatic metal strips carried by said base and extending upwardly therefrom, one of said strip being connected to one of said supporting conductors and the other of said strips being secured to the other of said supporting conductors, and co-operable contact points carried by the upper ends of said strips.

2. In a device of the class described, in combination, a cap for a storage battery, a tube carried by said cap and projecting downwardly therefrom, said tube having a closed lower end adapted to be immersed in the electrolyte of said battery, a primary supporting member supported by and closing the upper end of said tube, a secondary supporting member in the lower end of said tube, a pair of thermostatic metal strips supported at their lower ends by said secondary supporting member and extending upwardly therefrom, co-operable contact members carried by the upper ends of said strips, and

means for supporting said secondary supporting member from said primary supporting member and for electrically connecting said thermostatic strips with a point exterior to said tube comprising a pair of conductor supporting members extending downwardly through said primary supporting member and connected at their lower ends to said secondary supporting member and the lower ends of said strips.

NELS S. NELSON.

70

75

80

85

90

95

100

105

110

115

120

125

130