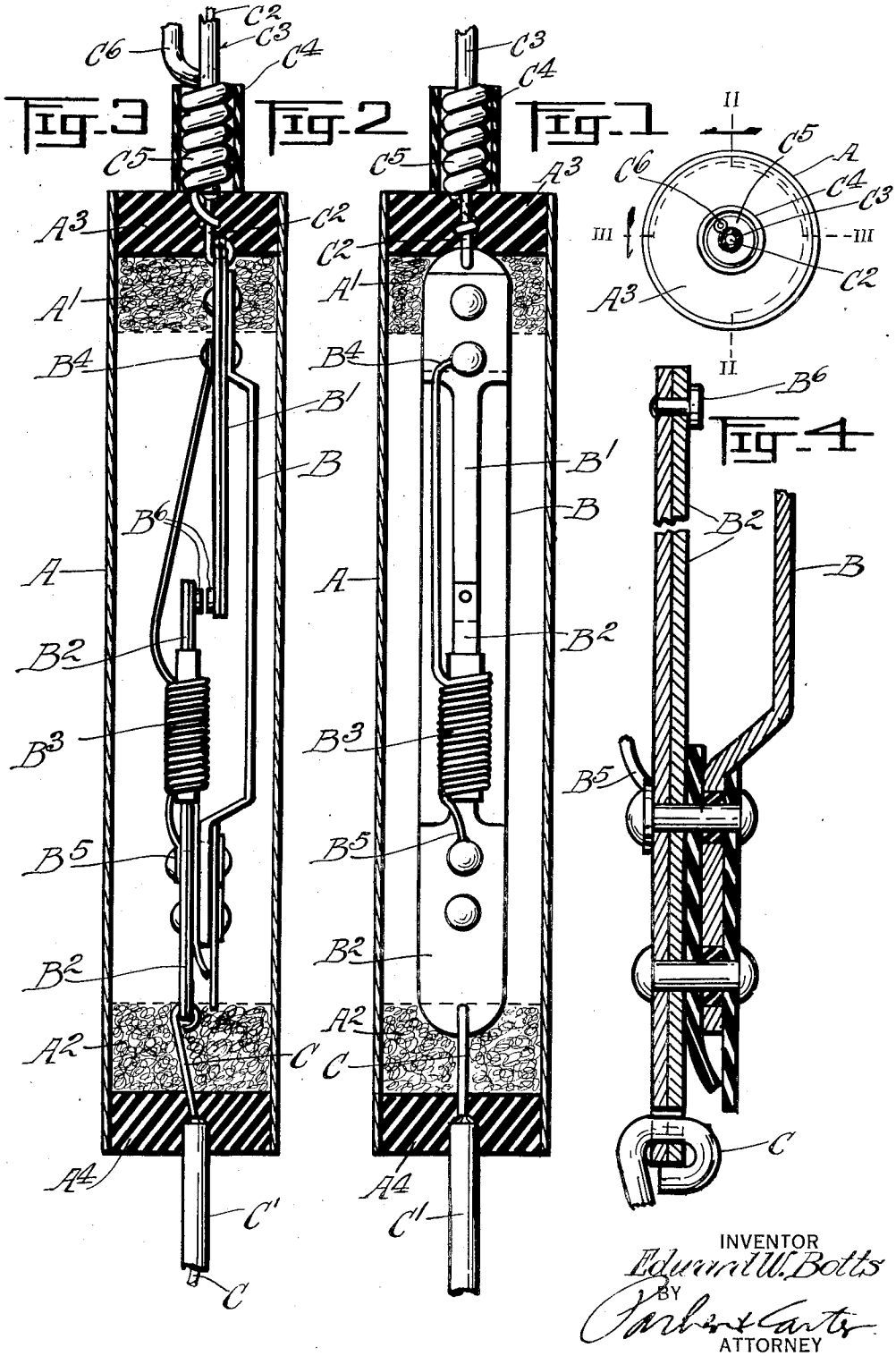
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AUTOMATIC SWITCH

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AUTOMATIC SWITCH

Application filed November 13, 1929. Serial No. 406,775.

My invention relates to improvements in automatic make and break switches for automobile stop lights and the like and has for one object to provide a super-sensitive make and break switch which may be enclosed in a light and portable housing and which may be placed in series with automobile stop or signal lights and wherein the assembly may be mounted as part of the wiring system supported by the wires and without relation to any other part of the vehicle. Other objects will appear from time to time throughout the specification and claims.

My invention is illustrated more or less diagrammatically in the accompanying drawing, wherein—

Figure 1 is an end view of the device;

Figure 2 is a section along the line II—II of Figure 1;

Figure 3 is a section along the line III—III of Figure 1

Figure 4 is a detail on an enlarged scale.

Like parts are indicated by like characters throughout the specification and drawing.

A is a housing. It is preferably cylindrical and preferably made of fiber or other suitable insulating material. It is closed at each end by plugs A^1 A^2 of fibrous material, preferably asbestos or mineral wool. The purpose of these plugs is to furnish a support and limit for the inward flow into the tube or housing of the insulating, sealing ends or closures A^3 A^4 which are poured in place and permanently close the unit.

B is a switch frame contained within the housing and insulated from the electric parts as indicated. Mounted on the upper end of the frame B is a switch arm B^1 made of two materials having different co-efficients of expansion as for instance brass and iron, which materials also serve as a conductor. This arm is rigidly mounted on and is in electrical connection with the frame B. In opposition to this arm is a similar switch arm B^2 which is supported on the frame B and insulated therefrom. Wound about this arm is a resistance coil B^3 insulated of course therefrom. One terminal of this coil is connected as at B^4 to the anchored base of the arm B^1, the other terminal is connected as at B^5 to the enlarged base of the arm B^2. Make and break points B^6 are mounted in opposition to the free ends of the switch arms B^1 B^2.

A conductor C having an insulated jacket C^1 embedded in the plug A^4 is connected to the switch arm B^2. A conductor C^2 insulated at C^3 and embedded in the plug A^3 engages the arm B^1. These two conductors by their engagement with the ends of the arms B^1 and B^2 which are rigidly mounted on the frame B, hold the frame, the switch arms, and the resistance coil firmly in place in the housing, the fiber plugs having no function so far as holding the parts together or in place are concerned, they being there only for the purpose as above indicated of preventing the liquid from which the plug is cast flowing too far into the housing. C^4 is a cup extending outwardly from the plug A^3 and containing a resistance coil C^5, one end of which is in electric circuit with the arm B^1, the other end C^6 leading out from the cup. The wire C is preferably connected to the battery, generator, or other suitable source of electric power. The wire C^6 is grounded. The wire C^2 is connected through a main control switch to the light circuit. This switch may be the usual type of switch responsive to the movement of the foot pedal of an automobile to indicate a stop or may be a signal switch controlled by the hand of the operator or any other type of switch manually or automatically controlled to operate a lamp signal or other circuit.

The two switch arms are both of them bimetallic so that they will both respond equally to changes in the normal temperature of the apparatus and render it immune to change resulting from changes in location of the structure or changes in the temperature

to which the entire apparatus is exposed, thus making it possible to have a comparatively sensitive switch element. This is important if the device is, for instance, applied to an automobile in the Far North or in the Tropics. The reaction of the two switch arms to such change being the same will not cause any change in their operation.

When current flows through the coil B^3, it will be heated to the point where the arm B^2 will move over to close a circuit through the points B^6. The arms B^1 B^2 being much better conductors than the coil B^3 and its terminals, current sufficient to heat the coil will no longer pass through. The arm will cool and the switch will go back to break the circuit when the coil will again be heated depending upon the size of the coil and the sensitiveness of the switch arms. The time during which the circuit is closed through the points B^6 may be varied at the will of the manufacturer. The total resistance in the light circuit through the resistance coil B^3 is enough to prevent lighting of the lamp but when the switch points B^6 are closed and the resistance coil B^3 is short circuited the current can light the lamp. The result of this is that when the main switch, is closed, the lamp will flicker on a controlled rate. The resistance of the coil C^5 is so great that when the main switch is closed, the grounding effect through the coil C^5 and the conductor C^6 is negligible.

The wire C^6 being grounded enables a small amount of current to flow at all times to maintain the resistance coil B^3 in an initially heated condition which will cause the switch to be in constant slow operation and be in readiness to instantaneously flash the stop light or other signal when the main switch is closed. Moreover, the closing of the main switch causes the additional current taken by the stop light to flow through the coil B^3, whereupon the coil is heated more rapidly and the make and break points B^6 are opened and closed at a much faster speed than during the initial heating or slow operation period.

It will be understood that the device shown in Figures 2 and 3 is about six times full size and the unit may be placed in the wiring circuit where desired without any special mounting, being supported only by the wires themselves.

I claim:

1. An automatic make and break switch comprising a permanently closed generally elongated housing, conductor wires extending into the housing through the opposed ends thereof, a supporting frame contained within the housing and supported on the ends of said wires, the make and break switch comprising a pair of opposed bi-metallic heat responsive arms with contact points in opposition.

2. An automatic make and break switch comprising a permanently closed generally elongated housing, conductor wires extending into the housing through the opposed ends thereof, a supporting frame contained within the housing and supported on the ends of said wires, the make and break switch comprising a pair of opposed bi-metallic heat responsive arms with contact points in opposition, a resistance coil wound about one of said arms and in series with the two arms whereby when a circuit is closed between the arms, the coil is short circuited.

3. An automatic make and break switch comprising a substantially tubular housing having closed ends, conductor wires extending into the interior of the housing through its ends, a pair of opposed bi-metallic heat responsive arms having their outer ends electrically connected to and supported by said wires, said arms having opposed contacts at their free ends, an insulated supporting base within the housing having its ends rigidly secured to the arms adjacent the outer ends thereof, whereby said arms are maintained in operative position, and a resistance coil wound about one of said arms, said coil having its ends connected respectively to said arms.

4. An automatic make and break device comprising a substantially tubular housing having closed ends, conductor wires extending into the interior of the housing through its ends, thermostatic switch elements in said housing in circuit with said wires, a heating coil to heat one of said elements, said coil being connected between said elements, and a high resistance connection to the other of said elements.

5. An automatic make and break device comprising a substantially tubular housing having closed ends, conductor wires extending into the interior of the housing through its ends, thermostatic switch elements in said housing in circuit with said wires, a heating coil to heat one of said elements, said coil being connected between said elements, and a high resistance coil surrounding one of said conductors having one end connected to the other of said elements.

6. An automatic make and break device comprising a substantially tubular housing having closed ends, conductor wires extending into the interior of the housing through its ends, thermostatic switch elements in said housing in circuit with said wires, a heating coil to heat one of said elements, said coil being connected between said elements, and a high resistance coil surrounding one of said conductors having one end connected to the other of said elements, said coil being external of said housing.

7. An automatic make and break device comprising a supporting structure, a pair of cooperable make and break switch elements

on said support, one of said elements being responsive to temperature changes, a heating coil to heat the temperature responsive element, said coil being connected between said elements, and auxiliary connections to said coil to enable the coil to initially heat the temperature responsive element.

Signed at Chicago county of Cook and State of Illinois, this 23rd day of October, 1929.

EDWARD W. BOTTS.