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ELECTRIC CIGAR LIGHTER

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5 Claims. (Cl. 219—32)

Our invention relates particularly to devices commonly employed for igniting cigars, cigarettes, etc. The main object is to provide a construction which is protected against overheating.

A popular type of lighter involves the use of a socket or other form of supporting device for a readily removable igniter unit or plug. When it is desired to use the lighter the circuit is closed for a sufficient length of time to bring the heater element to a temperature which will cause it to ignite the cigar or cigarette when placed in contact therewith. If for any reason the circuit is kept closed for too long a time, the heater element is likely to be damaged and ultimately burned out. We have sought to eliminate this hazard in a practical effective manner. One of the objects is to provide a construction which can be readily made and which is relatively inexpensive as well as durable and reliable.

Owing to the fact that the removable heater unit must remain at a temperature high enough to light the cigar, for a length of time great enough conveniently to allow such employment, this removable unit must possess considerable heat storage capacity, which entails thermal lag when the heating current is applied thereto.

Thus the heater unit becomes an electro-thermal converter which has the characteristic that if there is applied thereto an amount of electrical energy sufficient to cause rapid heating thereof, owing to such thermal lag the amount of such energy must be reduced before or when the heater unit has once attained its maximum safe temperature.

In carrying out the invention we employ a ballast coil or supplementary resistance arranged to be in series with the heater element when the circuit is closed. This coil has the characteristic of causing the resistance to rise very rapidly as it is heated so that the total current consumed drops perceptibly. In this way the heating unit is held to a definite maximum heat. The ballast coil will depend for its operation upon the use of a resistance element possessed of a comparatively high temperature-resistance coefficient, as for example, a coil of wire of some metallic alloy known to possess this particular characteristic. By arranging suitable means, such as ventilating or cooling means to limit the maximum temperature attained by such ballast coil, its time-resistance response may be suitably controlled.

Fig. 1 is a longitudinal sectional view of one form of cigar lighter embodying our invention in which the ballast coil is mounted in the socket for the removable igniter plug.

Fig. 2 is a transverse sectional view on the plane of the line 2—2 of Fig. 1.

Fig. 3 is a longitudinal sectional view of another modification of the construction showing the igniter plug in dotted lines.

The complete commercial igniter includes a socket and a removable plug with the ballast coil associated with one of these elements, preferably with the socket.

The stationary element of the form shown includes a socket 5 for receiving the removable igniter plug which includes the heater element, not shown. This socket may conveniently constitute the ground terminal of the power circuit. The cup-like member 6 constitutes the other contact terminal to be engaged by one of the terminals of the removable plug. The socket may conveniently have a spring finger 7 for frictionally holding the plug in the socket. The socket may also have a stop shoulder 8 for cooperating with the plug when inserted in the socket. These two terminals 5 and 6 are insulated from each other by the insulating disc 9.

The conductor 10 is connected to the terminal 6 through the ballast coil 11. The base 12 of the socket 5 and the base of another cup-like member 13 are placed together and they together with the conducting disc 14 and the insulating discs 9 and 15 are clamped together by the eyelet member 16.

The conductor 10 is electrically connected to the tubular member 17 by a sleeve 18 inserted in the tubular member and secured to the end of the conductor 10. One end of the ballast coil 11 is secured to the connector 19, the other end of which is mounted on the tubular member 17. The tubular member 17 is suitably insulated from the encircling eyelet 16 and held in place between the flanged portions 20 and 20' of the tubular member. A disc 21 is mounted in the rear end of the cup member 13 to support the cup member 13 at the base of the socket and assist in forming a chamber to enclose the ballast coil. This member 21 is mounted on an insulating sleeve 22 which embraces a part of the tubular member 17. The insulating disc 23 is inserted inside. An opening 24 is preferably provided in the cup member 13 for the purpose of ventilation and to permit inspection. The circuit from the conductor 10 to the contact terminal 6 may be traced to the members 18, 17, 19, 11, 14, 16 to 6.

In operation a plug 30 having some sort of suitable heating coil element 31 is inserted into the open end of the socket 5 until one terminal 32 of the heating coil element of the plug makes contact with the cup terminal 6. The switch mechanism may be of any suitable type such, for instance, as that shown in application Serial Number 747,377. In this construction when the contact is made the current must pass through the ballast coil 11 which is in series with the heating unit coil itself.

The continued insertion of plug 30 (Fig. 3)

after terminal 32 has come in contact with cup terminal 6, results in a compressional movement whereby plug coil terminal 33, which is held from contact with the body of the metallic sleeve 5 by being constructed of smaller diameter than the insulating body of the plug, is brought into contact with stops 8, thus completing the electrical circuit through the plug proper.

10 This ballast coil is made of a special nickel alloy wire which has the characteristic of causing the resistance to rise very rapidly as current passes and the coil becomes heated. The characteristics are so selected that after the 15 igniter unit is heated to the proper degree the total current consumed will drop perceptibly. It is impossible, therefore, to overheat the igniter coil.

As an example we might refer to a design 20 calculated to be operated on a six volt circuit. When the circuit is closed to heat the lighter approximately nineteen amperes is required at the beginning. This drops rapidly as current continues to flow and the coil becomes heated. 25 The current may drop as low as thirteen or fourteen amperes and will fluctuate but slightly as the current remains on. In other words, the heat of the lighter unit is held substantially constant. Such a construction is especially desirable in a unit which is designed to attain igniting heat rapidly.

In the form shown in Fig. 3 the chamber which encloses the ballast coil 11 is formed by an extension of the socket 5 whose rear wall 5' 35 is mounted upon but insulated from the tubular member 17. The contact cup 6 in this case is mounted upon the eyelet 16 and these parts are centered within the socket 5 by a partition 12' which is mounted upon but insulated from 40 the eyelet 16. One end of the ballast coil 11 is connected by member 19 to the tubular member 17 and the other end of the ballast coil is electrically connected to the disc 14 which is mounted on the eyelet 16. The construction 45 and operation are otherwise the same as in the construction first described.

We claim:

1. A socket for a removable plug carrying a cigar igniter, a pair of terminals carried by the 50 socket for cooperation with terminals on the plug, one of the socket terminals being mounted on a transverse socket wall and insulated from the socket, an electrical resistance carried in 55 back of said wall, said resistance being helical and substantially coaxial with said socket, a conductor passing through said wall and connecting said terminal on the transverse socket wall with the adjacent end of said coil, another 60 conductor for supplying current to said socket, passing axially through said coil and mechanically connected to but insulated from said wall, and a third conductor electrically connecting a fore part of the second conductor with a rear part of said helical resistance, said third con- 65 ductor lying between the second conductor and helical resistance.
2. A socket for a removable plug carrying a cigar igniter, a pair of terminals carried by the socket for cooperation with terminals on the 70 plug, one of the socket terminals being mounted

on a transverse socket wall and insulated from the socket, an electrical resistance being helical and substantially coaxial with said socket, a 5 conductor passing through said wall and connecting said socket terminal on the transverse socket wall with the adjacent end of said coil, another conductor for supplying current to said socket, passing axially through said coil and mechanically connected to but insulated from 10 said wall, and a third conductor electrically connecting a fore part of the second conductor with a rear part of said helical resistance, said third conductor lying between the second conductor and helical resistance, said third conductor 15 being twisted and having its ends in different planes.

3. A socket for a removable plug carrying a cigar igniter, a pair of terminals carried by the socket for cooperation with terminals on the 20 plug, one of the socket terminals being mounted on a transverse socket wall and insulated from the socket, an electrical resistance carried in back of said wall, said wall having a disc insulated from and carried on the rear of said wall, 25 the adjacent end of said coil being connected to said disc, an eyelet passing through said wall and disc, insulated therefrom and clamping the opposite end of said resistance against and insulated from the disc.

4. A socket for a removable plug carrying a cigar igniter, a pair of terminals carried by the socket for cooperation with terminals on the 30 plug, one of the socket terminals being mounted on a transverse socket wall and insulated from the socket, an electrical resistance device mounted on the back of said wall, and a conductor 35 for supplying current to said socket and electrically connected to one end of said resistance, the other end of said resistance being electrically connected to said wall contact, said socket 40 being extended in rear of said wall and housing said resistance, said supply conductor being tubular and coaxial with the socket and said resistance.

5. A cigar lighter socket adapted to carry a 45 removable plug having a resistance heater and contact terminals, contacts carried by the socket for cooperation with contacts on the plug, one of the socket contacts being groundable there- 50 through, a transverse wall carried by the socket, and another of the socket contacts being carried in front of said transverse wall of said socket and insulated from said first mentioned socket 55 contact, a circuit terminal in rear of said wall, a resistance having a positive temperature-resistance coefficient carried in rear of said transverse wall and inserted in electric series between said terminal and said second mentioned 60 socket contact, a common electrically conductive means securing one end of said resistance and said second mentioned contact to said transverse wall, said terminal being carried by said socket and protruding in rear of said resistance 65 and a ventilating guard around said resistance whereby it is constantly coolable, said second mentioned socket contact, said terminal and said guard being substantially coaxial with the socket.

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