March 21, 1939. J. SINKO 2,151,622

CIGAR LIGHTER

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Fig. 1.

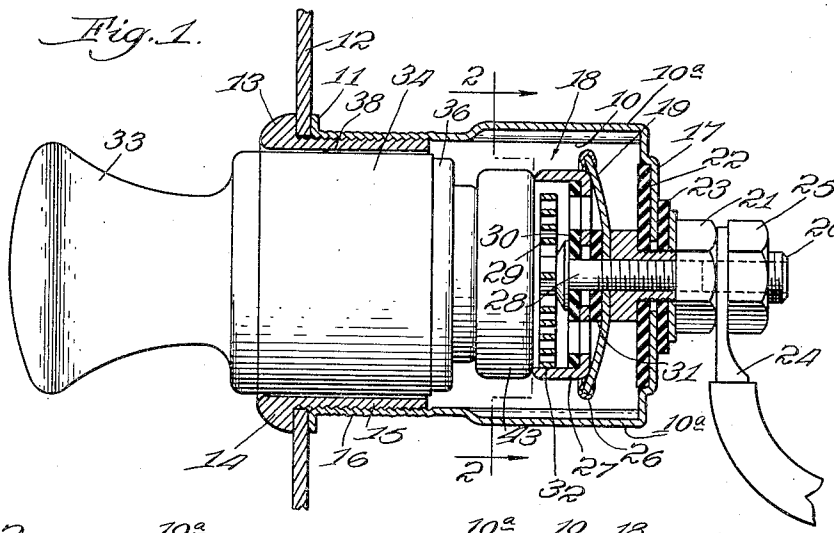


Fig. 2.

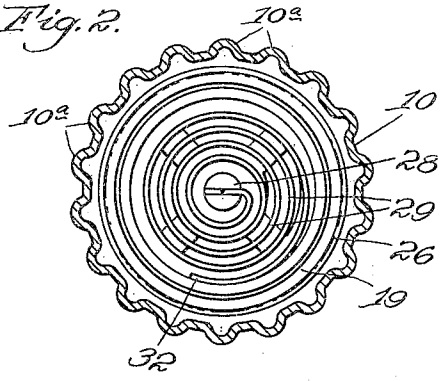


Fig. 3.

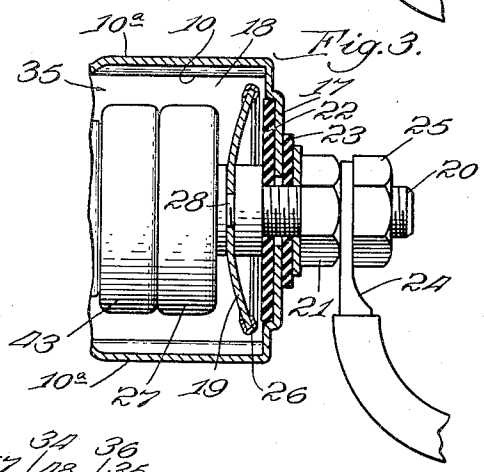
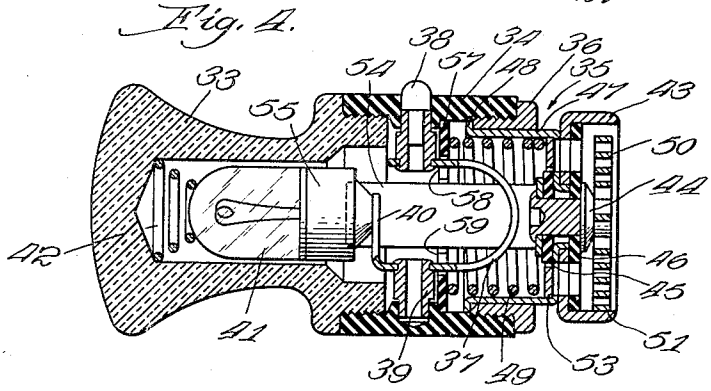


Fig. 4.



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Fig. 5.

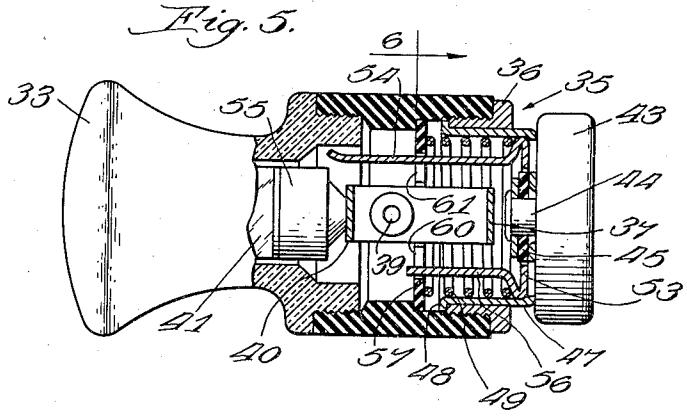


Fig. 6.

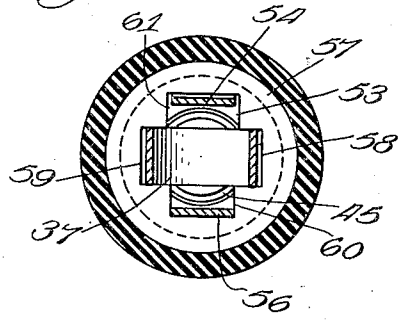


Fig. 7.

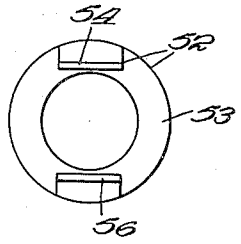


Fig. 8.

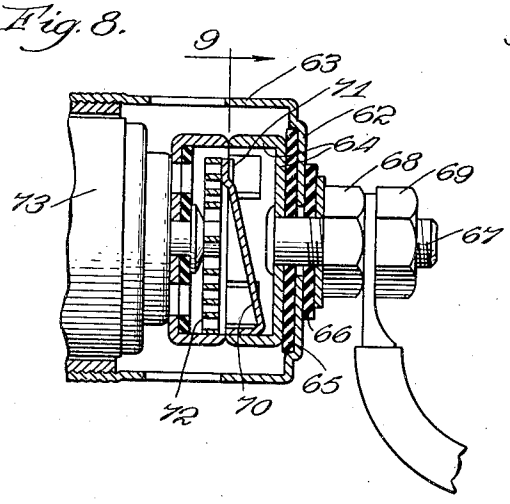
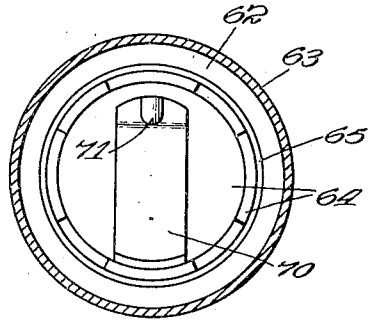


Fig. 9.



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UNITED STATES PATENT OFFICE

2,151,622

CIGAR LIGHTER

John Sinko, Chicago, Ill.

Application March 27, 1936, Serial No. 71,299

16 Claims. (Cl. 219—32)

This invention relates to cigar lighters and more particularly to electric cigar lighters of the "wireless type" for use in automobiles and the like.

The primary object of the invention is to provide thermostatic means for protecting the resistance wire in the igniter coil from being burned out, by increasing the amount of electrical resistance in the circuit when the element reaches a desired temperature.

A further object of the invention is to provide means in the handle of the withdrawable plug for indicating to the operator when additional resistance has been cut into the circuit. This indicator may be in the form of an electric light bulb and the bulb also may be thermostatically controlled, if desired.

A further object of the invention is to provide thermostatic means for first heating a portion of the igniting coil so that if a quick light is desired it will not be necessary to heat the entire coil. However, if the withdrawable plug is held in closed circuit position after the central portion of the coil is heated, the thermostat will open and permit the current to flow through the rest of the coil.

The invention is illustrated in a preferred embodiment in the accompanying drawings, in which—

Fig. 1 is a broken sectional view of a socket member embodying the invention, the withdrawable plug being shown in full; Fig. 2, a sectional view taken as indicated at line 2—2 of Fig. 1; Fig. 3, a fragmentary view similar to Fig. 1 but showing the thermostat in open position; Fig. 4, a longitudinal sectional view of the plug shown in Fig. 1; Fig. 5, a broken longitudinal sectional view of a portion of the plug taken at 90 degrees from the view shown in Fig. 4; Fig. 6, a sectional view taken as indicated at line 6 of Fig. 5; Fig. 7, a plan view of the plug thermostat; Fig. 8, a broken longitudinal sectional view showing a modified form of thermostat; and Fig. 9, a sectional view taken as indicated at line 9 of Fig. 8.

In the embodiment illustrated, a socket member 10 may be in the form of a cup made of sheet metal or the like, and preferably is provided at its open end with an outwardly extending flange 11 adapted to abut against a perforated panel 12 through which may be inserted a bushing 13. Preferably, the bushing is provided with an outwardly extending flange 14 and has a threaded sleeve portion 15 adapted to engage the threaded portion 16 of the socket. As shown in Figs. 1 and 2, the socket member may be provided with longitudinal flutes 10*a*, which provide finger grips to facilitate attaching the device to the instrument board of an automobile.

The closed end portion 17 of the socket member serves to support a base terminal 18 which is equipped with a dish-like thermostat 19. The terminal member may comprise a bolt-like member 20 which is gripped against the closed end of the socket 17 by means of a nut 21 and is insulated from the socket by means of fiber washers 22 and 23. A lead-in wire 24 may be secured to the terminal by means of an additional nut 25. The outer end of the terminal, within the socket, is in electrical contact with the thermostat 19 which is dished and has its rim portion in a closed U-shaped molding 26 so that it will move from the position in Fig. 1 to that shown in Fig. 3 with a snap when sufficiently heated. The thermostat and insulating cup are held on the bolt 20 by means of a cap screw 28 which is provided at its outer end with a resistance coil 29. However, the cup 27 is insulated from the cap screw 28 by means of fiber washers 30 and 31. Thus it will be understood that the cup 27 is always in electrical contact with the lead-in wire 24 by means of the resistance coil 29 which is connected to the cup at 32. Normally when the device is cold the thermostat 19 also contacts the cup and thereby short-circuits out the resistance coil. However, when the thermostat becomes heated it snaps back to the position shown in Fig. 3 and the only current going to the cup 27 must pass through the resistance coil 29.

The withdrawable igniter plug comprises a translucent knob 33 which is hollow and makes a threaded connection with an insulating sleeve 34 to which is connected a depressible heater unit 35 by means of a bushing 36. As shown in Figs. 4, 5 and 6 a U-shaped spring 37 is bowed longitudinally with its closed end to the front and is provided with a contacting stud 38 extending outwardly through the sleeve 34. The other leg of the spring is provided with a stud 39 and these members prevent the spring from being displaced longitudinally. The rear end of the spring is turned inwardly as indicated at 40 and serves as a support for one terminal of an electric light bulb 41 which is yieldingly held in contact therewith by means of a compression spring 42. The heating unit 35 is shown with a cup-shaped contacting member 43 which is insulated from a central terminal 44 by means of insulating washers 45 and 46. A cup-like slide member 47 is rigidly secured to the cup 43 by means of the terminal 44 and is provided at its rear end with

an outwardly extending flange 48. A compression spring 49 urges the heating unit forwardly and this movement is arrested by the flange 48 abutting against the rear edge of the bushing 36. A heating element of high resistance wire 50 has one end secured to the cup 43, as indicated at 51, and the other end is secured to the terminal 44. Thus, it will be understood that when the stud 38 and the cup 43 are in contact with a source of electrical supply such as provided in the socket member described above, and the heating element is depressed, the circuit through the coil 50 is completed by current passing through the terminal 44 and the U-shaped spring 37 to the stud 38. At the beginning of the action the thermostat will be in the position shown in Fig. 1 so that the electrical resistance 29 will be short-circuited out. However, when the thermostat becomes hot it will snap to the position shown in Fig. 3 and thereafter all of the current must also pass through the resistance 29 before reaching the coil 50. This will greatly reduce the amount of current passing through the coil 50 and prevent its being burned out. It will be noted that while the amount of current passing through the coil is greatly reduced, it is not entirely cut off and the heat developed in the coil 29 will be reflected against the coil 50 and tend to keep it hot.

Within the plug body is placed a bi-metal thermostat 52, which comprises a washer-like base 53 which is adapted to be held against the front of the slide member 47 by the compression spring 49. The thermostat has two rearwardly extending legs, the longer leg 54 (see Fig. 5) being adapted upon heating to turn inwardly and contact the terminal 55 of the light bulb 40. This will enable current to flow directly from the cup 43 through the bulb to the terminal 38 without passing through the coil 50. The thermostat is further provided with a shorter leg 56 which helps to hold the thermostat in proper radial position with respect to the spring member 37 and prevent a short circuit. As shown in Figs. 4, 5 and 6, an insulating washer 57 is provided within the insulating sleeve 34 and has cut-out portions 58 and 59 to receive the spring member 37. It is further provided with a cut-out 60 to receive the leg 56 of the thermostat and a larger notch 61 to loosely receive the leg 54 of the thermostat. This member may be separate from the insulating sleeve 34 or, if desired, may be molded therewith. It is particularly useful when the heating unit 35 is being assembled on the insulating sleeve 34 for in turning up the collar 36 the cup 43 has a tendency to turn and, as the base 53 of the thermostat is only held in position by the spring 49, the heating unit is free to turn while the thermostat is held in proper position by the notches in the washer 57.

By employing the thermostat in the plug member, the light bulb 41 will not flash on until the resistance coil 50 has been heated to a desired temperature. When the thermostat 19 snaps open the additional resistance will cause considerably less current to pass through the coil 50 and as this reduces the load, on a battery for example, the bulb will glow with a noticeable decrease in brightness when the additional resistance is cut in. When pressure on the knob 33 is relieved, contact between the terminal member 44 and the spring 37 will be broken and at the same time the leg 54 of the thermostat will move rearwardly with the heating unit and contact will be broken with the terminal 55 of the light bulb.

In the modification shown in Figs. 8 and 9 the end wall 62 of a socket member 63 is provided with a contacting cup 64 held snugly against insulating washers 65 and 66 by means of a terminal bolt 67 provided with nuts 68 and 69.

Within the cup 64 is provided a bi-metal strip 70 having a contacting tip 71 which normally, when cold, contacts several of the outer convolutions of the resistance coil 72 provided on a withdrawable plug 73. As the bi-metal strip 70 is heated up it will swing rearwardly and break its contact with the heating coil. Thus it will be understood that when the current is originally turned on by means of a switch within the plug 73, the current from the terminal member 67 will pass through the bi-metal strip 70 to the coil 72 and short out the outer convolutions. This will cause the inner coils to heat to incandescence very quickly and if it is desired to light only one cigarette, for example, the plug 73 may be withdrawn before the bi-metal strip 70 acts to permit the remainder of the coil to be heated. However, if the withdrawable plug is held in contact for a longer period, all of the convolutions of the resistance coil will be heated. This feature provides a quicker light than is normally obtainable, takes less energy and helps to protect the coil from burning out through overheating, for when the central convolutions of the coil reach a desired temperature, additional resistance will be cut in.

The foregoing detailed description has been given for clearness of understanding only and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

I claim:

1. In a cigar lighter: a stationary tubular base member with its side wall forming one electrical terminal and having another electrical terminal on its base; an igniter plug removably supported by said base member and having a heating element adapted to be connected in series with said terminals; and a unit removably mounted in the base member and connected with said second mentioned terminal including a resistance element and a thermostat adapted to automatically connect said resistance in series with said heating element to prevent overheating after the heating element reaches a desired temperature.

2. In a cigar lighter: an elongated tubular socket member having a shell adapted to provide one electrical terminal for an igniter plug, and having a base terminal member insulated from said shell terminal; an outwardly exposed electrical resistance member mounted in said socket member adjacent to said base terminal; a withdrawable igniter plug having a heating element adapted to be connected in series with said terminals with said element adjacent to the resistance member; and a thermostat mounted in the socket member adapted to short circuit the resistance member from a series connection with the heating element when cold and to connect said resistance member and heating element in series when the latter reaches a desired temperature.

3. In a cigar lighter: a base member provided with a pair of electrical terminals which may be connected to a suitable source of electrical supply; a withdrawable igniter plug having a heating element adapted to be connected in series with said terminals; thermostatic means for automatically placing additional resistance in series with said element when the device is heated to a de-

sired temperature; and an electric light bulb mounted in said igniter plug and connected with said terminals so as to indicate by a change in brilliance when the additional resistance is placed in series with the element.

4. In a cigar lighter: a base member provided with a pair of electrical terminals which may be connected to a suitable source of electrical supply; a withdrawable igniter plug having a heating element adapted to be connected in series with said terminals; thermostatically controlled means for automatically placing additional resistance in series with said element when the device is heated to a desired temperature; a thermostat in said plug; and an electric light bulb mounted in the igniter plug and adapted to be electrically connected to said terminals by said thermostat when the heating element reaches a certain temperature, and said bulb thereafter indicating by its brilliance when said additional resistance has been placed in series with the element.

5. In a cigar lighter: an elongated socket member having a shell adapted to provide one electrical terminal for an igniter plug, and having a base terminal member insulated from said shell terminal; a withdrawable igniter plug having a heating element adapted to be connected in series with said terminals; and a thermostat in said socket member adapted initially to make direct electrical contact with said heating element to short circuit a portion of the element from a series connection with the terminals.

6. A device as specified in claim 5, in which the thermostatic means comprises a strip of bimetal mounted in said base terminal and bent outwardly when cold so as to initially short circuit out a portion of the heating element.

7. In a cigar lighter: an elongated socket member having a shell adapted to provide one electrical terminal for an igniter plug, and having a base terminal member insulated from said shell terminal; and a withdrawable igniter plug comprising a hollow handle member, a spring member bowed longitudinally of said handle and provided with an outwardly extending stud adapted to contact said shell, and a heating unit slidably mounted in said handle so as to engage said base terminal and be yieldingly depressible into electrical contact with said spring member to complete the circuit.

8. A device as specified in claim 7, in which a light bulb is mounted in said handle member and has one terminal in engagement with the spring member, and a thermostat is mounted on the heating unit so as to provide a contact for the other terminal of said bulb when said unit reaches a desired temperature.

9. A cigar lighter igniter plug comprising: a hollow body member provided with a contacting stud and internal supporting-means for yieldingly urging said stud outwardly; a hollow light-conducting handle on the end of said body member; an electric light bulb mounted in said handle and having one terminal in electrical connection with said stud; a heating unit slidably mounted on said handle and having one terminal adapted to make electrical contact with said stud when the unit is depressed; and a U-shaped thermostat carried by said heating unit and in electrical contact with the other terminal of the heating unit, said thermostat having arms extending rearwardly around said supporting means and adapted to contact the other terminal of said bulb when the unit is depressed and reaches a desired temperature.

10. A device as specified in claim 9, in which the handle is provided with a spring for urging the bulb into contact with the supporting means.

11. A device as specified in claim 9, in which the supporting means comprises a U-shaped spring mounted in said body so that its front end may contact one terminal of the depressed heating unit, and its rear end may form a contact for one terminal of said bulb.

12. A device as specified in claim 9, in which a compression spring is provided in said body for urging said heating unit out of contact with the supporting means and holding the thermostat in contact with one terminal of the heating unit.

13. A cigar lighter plug comprising: a hollow body member; a U-shaped spring having its closed end to the front and having one of its legs provided with an outwardly extending contacting stud; a light bulb in the rear of the body member having two terminals, one of said terminals being in contact with said spring; a heating unit, having a rearwardly extending thermostat adapted to contact the other terminal of said bulb, slidably mounted on said body member by means of a bushing threaded to the front of the body member, said heating unit having a terminal adapted to contact the closed end of the spring when depressed; insulating means in said body member for holding the U-shaped spring and thermostat out of contact at all times; and a compression spring yieldingly urging said heating element out of contact with said U-shaped spring.

14. A cigar lighter plug comprising: a body member having a contact member provided with a laterally extending stud; a heating unit slidably mounted on said handle so as to be yieldingly depressible into electrical butt contact with said contact member; a light bulb mounted in the rear of said body member and having two terminals one of which is in contact with said contact member; and a thermostat mounted on said heating unit and having a rearwardly extending arm adapted to contact the other terminal of the light bulb when the unit reaches a desired temperature.

15. In a cigar lighter: a stationary base member provided with a pair of electrical terminals which may be connected to a suitable source of electrical supply; an outwardly exposed resistance coil mounted in said base member; an igniter plug removably supported by said base member and having a heating element normally in close proximity to said resistance coil and adapted to be connected in series with said base terminals; and a thermostat in said base member exposed to heat from said heating element and adapted when hot to cut said resistance coil into electrical series with the heating element so as to reduce the electrical energy supplied to said element.

16. A device as specified in claim 15, in which the resistance coil in the base is mounted in a contact member, the heating element comprises a cup-shaped member in which is mounted a resistance ribbon so that heat radiating from the ribbon will tend to warm the base resistance coil and vice versa, and the thermostat is mounted in the base member in rear of the contact member.

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