Nov. 19, 1929. H. E. MEAD 1,736,544

CIGAR LIGHTER

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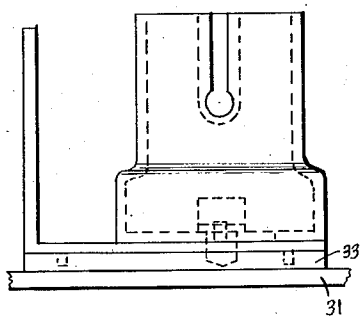


Fig. 1

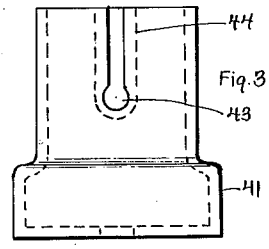


Fig. 3

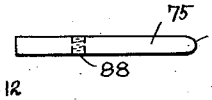


Fig. 13

Fig. 12

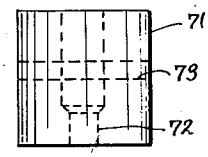


Fig. 11

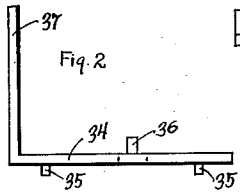


Fig. 2

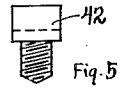


Fig. 5

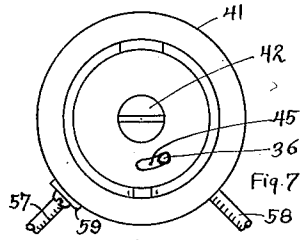


Fig. 7

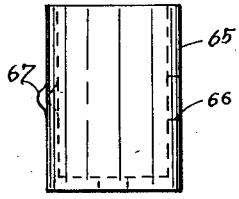


Fig. 10

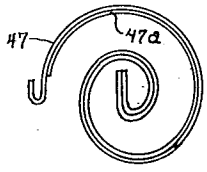


Fig. 6

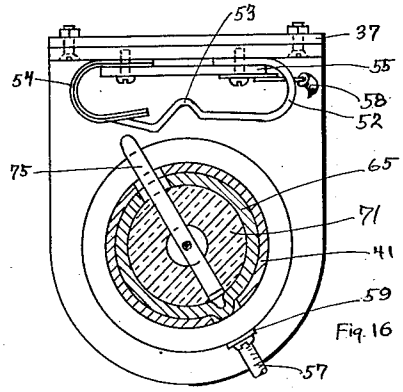


Fig. 16

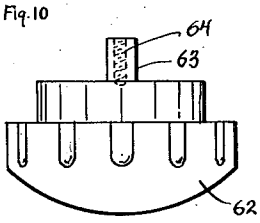


Fig. 9

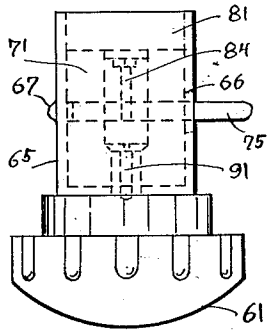


Fig. 8

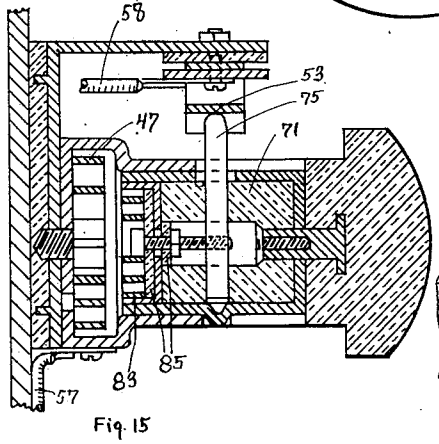


Fig. 15

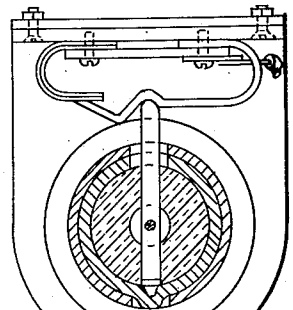


Fig. 4

Fig. 14

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CIGAR LIGHTER

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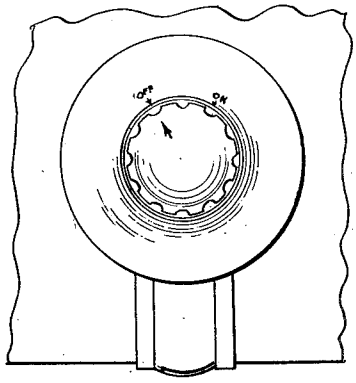


Fig.17

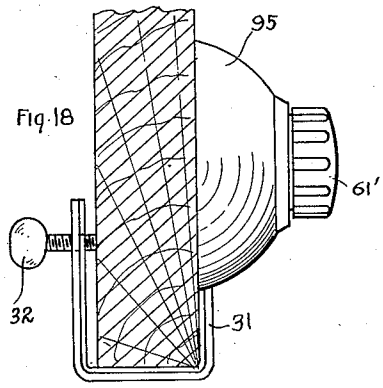


Fig.18

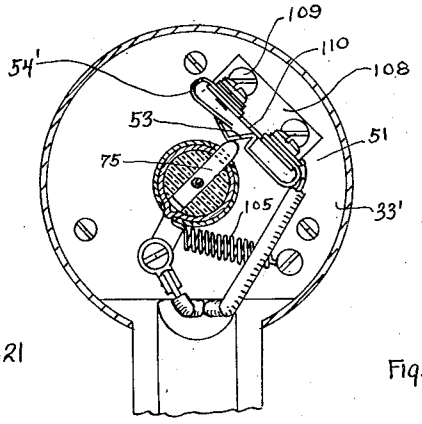


Fig.21

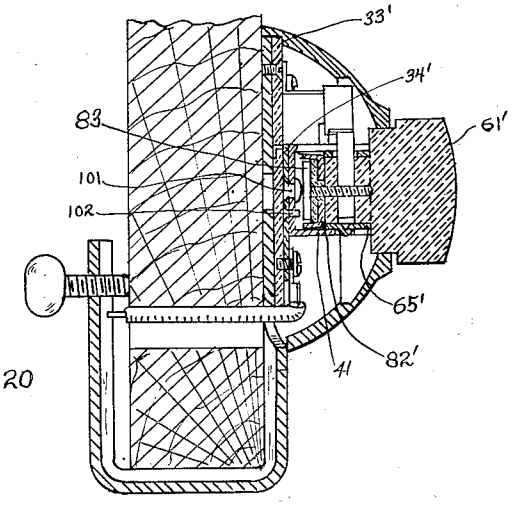


Fig.20

Fig.19

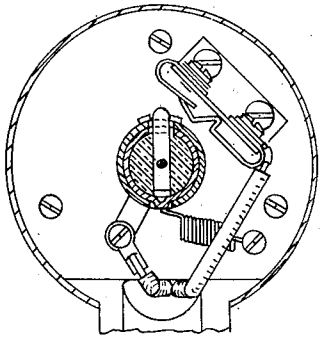


Fig.22

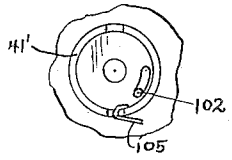
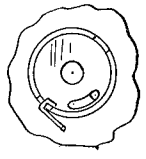


Fig.23



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UNITED STATES PATENT OFFICE

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CIGAR LIGHTER

Application filed August 24, 1927. Serial No. 215,236.

This invention relates to cigar lighters or devices of a similar nature wherein a member is arranged to be electrically heated to incandescence to be used for lighting cigars and the like.

Among the objects of the invention is a device of the above described character which is extremely simple and cheap in manufacture and more efficient than the devices used heretofore. The lighter, according to the invention, comprises a base unit and a plug removably mounted in the base unit. The plug carries a resistance coil that may be heated to incandescence to serve as a lighting medium. The base has a socket for receiving the plug, the socket with the plug being movable on the base between a position where the coil is energized and a position where the coil is de-energized. Normally the socket and the plug are held in a position where no current will flow through the heating coil. If the coil is to be heated for lighting purposes, the plug and the socket are moved to the energizing position where they are held locked until the heating coil has reached the desired temperature. A thermostatic element responsive to the temperature condition of the heating coil releases the engagement of the socket and plug in locked position whereupon the same are returned to the original position so that the plug may be removed and serve its purpose.

The lighter according to the invention embodies, in addition to the principles of construction and operation described above, a number of other new features constituting distinct objects of the invention and contributing to the simplicity of construction and the cheapness of manufacture, as well as the effectiveness of the operation of the same. These objects will be best understood from the following description of exemplifications of the invention, reference being had to the accompanying drawings, wherein

Fig. 1 is a side elevational view of the base assembly of a lighter embodying the invention;

Fig. 2 is a similar view of the base plate of the assembly in Fig. 1;

Fig. 3 is a similar view of the socket;

Fig. 4 is a top elevational view of the locking unit with thermostatic release element;

Fig. 5 is an elevational view of the pivot screw used to hold the socket and base to the supporting plate;

Fig. 6 is a top elevational view of the biasing spring which tends to hold the socket in off position;

Fig. 7 is a top view of the socket in mounted position with the spring removed;

Fig. 8 is a side elevation view of the assembled lighting plug;

Fig. 9 is a similar view of the plug knob;

Fig. 10 is a similar view of the plug shell that is held on the knob;

Fig. 11 is a similar view of the porcelain core of the plug;

Fig. 12 is an elevation of the latch pin of the plug;

Fig. 13 is a side elevation of the heating unit of the plug;

Fig. 14 is a transverse sectional view through the lighter with the plug held in the socket in the on position;

Fig. 15 is a central sectional view through the lighter showing the plug mounted within the socket;

Fig. 16 is a view similar to Fig. 14 but with the socket and plug in the off position;

Fig. 17 is a top elevational view of the completely assembled lighter mounted on a dash board;

Fig. 18 is a side elevation of the completely mounted lighter;

Figs. 19, 20 and 21 are views similar to Figs. 14, 15 and 16, respectively, of a lighter of somewhat modified construction;

Figs. 22 and 23 are top elevational views of the base socket in the modification of Figs. 19 to 21 with the socket in the on and off positions.

Referring to the drawings, a cigar lighter is shown of a type suitable for use on dash boards of automobiles, the lighter comprising a metallic supporting plate 31 having a U-shaped extension adapted to overlap the dash board and arranged to be clamped thereto as by means of a clamping screw 32, as seen in Fig. 18. The supporting plate 31 carries a base unit or base assembly of the

lighter, as shown in Fig. 1, the base assembly being illustrated in Figs. 2 to 7.

The base assembly comprises a fiber or other insulating plate 33 adapted to be secured to the supporting plate 31. Mounted in the center of the fiber plate 33 is a socket carrier 34, Fig. 2, which consists of a brass stamping having two outwardly turned lugs 35 for anchoring in the fiber plate 33, and an upstanding lug 36 adapted to engage a slot in the socket referred to hereinafter. The socket carrier has a central hole and on one side thereof there is an upstanding bracket 37.

Mounted on the socket carrier is a socket 41, Fig. 3, in the form of a cup-shaped metallic cylinder having a closed bottom with a central opening through which it is rotatably secured above the carrier as by means of a pivot screw 42, Fig. 5. One side of the socket cylinder has a perforation 43 and the opposite side thereof has a slot 44 referred to hereinafter. The bottom of the socket has also a circular slot 45, Fig. 7, into which the upstanding lug 36 of the socket carrier projects to limit the rotary movement of the socket around the pivot screw 42. A spiral biasing spring 47 having its inner end anchored in the head of the screw 42 and its outer end secured to the wall of the socket 41 tends to hold the socket in one end position as determined by the lug 36 which thus acts as a stop, this position corresponding to the off postion of the lighter. The lower part of the socket surrounding the spiral biasing spring 47 is somewhat bulged in order to accommodate the spring.

The bracket 37 of the socket carrier has insulatingly mounted thereon a latch and release element 51 comprising a latch or catch spring 52, of phosphorous bronze for instance, having a folded end portion 53 adapted to act as a catch when held in the bent-away position by means of a thermostatic element such as a bimetallic strip 54. The catch spring 52 and the bimetallic strip of the spring 54 are suitably mounted on a supporting plate 55 which is insulatingly secured to the bracket 37.

The several parts described above are readily assembled into the complete base unit by simply screwing the latch unit to the upright part of the socket carrier; placing the pivot screw 42 in the base opening of the socket 41 and screwing it over the socket carrier on the fiber plate 33; and placing the spiral spring within the lower bulged portion of the socket. The base has also two supply connections in the form of two conductors 57 and 58 leading from a source of electric energy to a terminal extension 59 of the socket carrier and to the latch plate 55, respectively.

Within the socket 41 there is removably mounted a plug unit 61 shown completely assembled in Fig. 8 and having its several parts illustrated in Figs. 9 to 12. The plug comprises a knob 62 of suitable insulating material, such as bakelite, having a molded-in central square brass pin 63 provided with a longitudnal tapped perforation 64. The knob has mounted thereon a cylindrical metallic shell 65, stamped and drawn from brass for instance. The shell is open at one end and closed at the other, having at the closed end a square hole fitting over the square pin of the knob. On one side of the side wall of the shell there is a perforation 66 corresponding to the perforation 43 in the socket, and on the opposite side of the shell there is an embossed protuberance 67 adapted to fit into the slot 44 of the socket and engage the same so that upon turning the shell by means of the knob the socket will be rotated on the pivot screw 42.

Within the brass shell 65 there is mounted a core 71 of porcelain or similar material. The core fits the shell and has a longitudinal perforation 72 of which the lower portion fits over the square end of the knob pin 63. Extending transversely through the core at right angles to the longitudinal perforation there is a second perforation 73 in which is mounted a latch pin 75, one end of the latch pin being rounded at 76 for smooth engagement with the spring latch 53. Fitting into the open end of the shell in front of the porcelain core 71 is a heating unit 81 comprising a flat cup-shaped metallc container 82 having mounted therein an insulated spirally-wound heating coil 83, the outer end of which is connected to the walls of the cup and the inner end of which is secured to a central screw 84. The coil and the screw are insulated from the cup as by means of mica washers 85 so that by establishing circuit connections to the walls of the cup 82 and to the screw 84, current may be sent through the coil 83. The coil 83 with the screw 84 are inserted through the perforation in the bottom of the cup 82 and held in place with the mica washers by a nut 86 screwed against the bottom of the cup. The heating unit may thus be readily replaced with little cost.

The heating unit screw 84 is arranged to be threaded into a tapped perforation 88 in the latch pin 75. To assemble the plug the porcelain core 71 is inserted in the brass shell 65 and the two are secured over the square pin in the knob by means of a screw 91. The latch pin 75 is thereupon inserted through the perforation 66 of the shell into the perforation 73 of the core and the heating unit screw 84 screwed in place, thereby firmly locking the latch pin in its position, the perforation 66 of the shell being sufficiently wide to prevent contact of the pin with the shell. Accordingly, with this arrangement the latch pin will act as a terminal connection to the inner end of the heating coil 83 while the

shell will act as a terminal connection to the outer end of the coil. The walls of the cup 82 of the heating unit are preferably somewhat tapered so as to wedge tightly on the inside of the shell 65 when screwed down in place.

When the plug is inserted into the socket, the pin 76 and the protuberance 67 slide into the slots 43 and 44 of the socket, the protuberance 67 serving to drive and rotate the socket when the knob is turned. The width of the slot 44 of the shell is such that the latch pin makes no contacting connection with the walls of the socket.

As explained above, the spiral biasing spring 47 normally holds the socket in the off position as shown in Fig. 14. Accordingly, with the plug inserted into the socket the terminal end 76 of the latch pin will project freely in space and no current will be passing through the heating coil. In order to operate the lighter, the plug is turned to the on position. This brings the projecting end of the latch pin 76 into engagement with the detent of the catch spring 53 which is held pressed outwardly by the metallic strip 54. The socket with the plug are held in this position by the detent against the tension of the spiral biasing spring 47 and in this position a circuit is established from the supply wire 57 through the terminal 59, socket 41, shell 65, heating cup 82, through the heating coil to the screw 84, thence through the spring 53, bimetallic strip 54, to the other supply wire 50. The thermostatic element in the form of the bimetallic strip 54 is so arranged as to hold the latch pin 75 in engagement with the pin 75 until the coil has become heated to incandescence and is ready to be used for lighting cigars or the like.

As the heating coil warms up and becomes incandescent the simultaneously heated bimetallic strip 54 becomes deflected so that the end acting upon the detent 53 turns inwardly towards the supporting plate 55 thereby releasing the latch pin, the relative arrangement being such that the latch pin is not given free until after the heating coil has reached the desired temperature. As soon as the latch pin is released the biasing spring 47 throws the socket with the plug to the off position. The plug may then be removed and the heating coil being at incandescence the cigar or cigarette may be lighted. The on position of the plug and the socket is shown in Fig. 16.

In Figs. 17 and 18 the assembled lighting unit is shown comprising also a dome-shaped shell 95 enclosing the operating elements of the lighter to prevent dust, and the like, from reaching the same.

In the modification of the invention shown in Figs. 19 to 23 the arrangement of the base and of the plug is similar to that of the modification described in the previous figures, the distinctions residing in minor constructional features of the various elements. Thus, the socket 41 is secured to the socket carrier 34′ by a rivet 101 which is so arranged as to permit rotary movement of the socket on the rivet shank, a pin 102 serving as a stop to limit said movement. Instead of a spiral biasing spring as used in the first described modification, the socket is normally held in the off position by means of a coil spring 105, one end of which is attached to the socket wall as shown in Figs. 22 and 23, and the other end of which is attached to the fiber base plate 33′.

The latch unit 51 is carried on a separate bracket 108 also secured to the fiber plate, as by means of screws 109. The bracket has a perforation 110 to permit the folded detent portion 53 to recede back and unlock the latch when released by the bimetallic thermostat 54′.

The plug 61′ is also somewhat different from that used in the first described modification in that the shell 65′ does not encircle the cup 82′ of the heating unit. Fig. 19 shows the position of the socket and plug in the off position while Fig. 21 shows the on position of the lighter, Figs. 22 and 23 illustrating the range of the movement of the socket 41′ as limited by the stop formed by the pin 102.

The control action of the thermostatic element 54 depends on the rate at which it is heated while current is being sent through the lighting coil 83. Accordingly, the action of the device will depend on the manner in which the heat control of the thermostatic element will be effected. In some cases the thermostatic element 54 will be heated only by conduction of heat from the heating coil 53 and also by radiation and convection. In other cases it may be preferable to include the thermostatic element 54 in the circuit from the latch pin 75 so that either the entire or part of the heating current must traverse the bimetallic element 54 and heat the same coincidentally with the heating of the lighting coil.

In another modification of the invention, the biasing spring 47 shown in Fig. 6, in connection with the first modification described hereinabove, is made of a thermostatic material, for instance a bimetallic strip which on being heated increases the force with which it acts upon the socket 41 tending to return it to its off-position. Accordingly, when the lighter such as shown in Figs. 14 to 16 but with a biasing spring of thermostatic material, is turned to the on-position, Fig. 14, and the heater spiral 83 is energized and heated, the force exerted by the biasing spring 47 will increase with the rise of the temperature of the heater spiral until the force exerted by it will be sufficient to pull the latch pin 75 off from the engagement with the latch spring 53. In such arrangement, it is not necessary to use the thermostatic element 54

for upholding the latch spring 53 but an ordinary spring material may be used in making the element 54. However, the thermostatic action of both elements may be utilized with advantage, that is, bimetal may be used both for the element 54 that holds the latch spring 53, as well as for the biasing spring 47, in which case the release of the latch pin 75 from the off-position is determined by the thermostatic action of both thermostatic elements.

Cigar lighters utilizing either one of the foregoing constructions operate very satisfactorily.

When making the biasing spring 47 of thermostatic material, it is often found desirable to use an additional spring 47ª arranged in the interior thereof so as to press the thermostatic spring 47 outwardly. This permits convenient control of the action of the thermostatic spring 47 and has proven very satisfactory in adjusting and controlling the length of time required to increase the tension of the thermostatic element 47 to a point where the latch pin 75 will be pulled off from engagement with the latch spring 53.

The invention is susceptible of many other modifications and the various features thereof may be utilized in a variety of other arrangements. It is accordingly desired that the appended claims be given a broad construction commensurate with the scope of the invention.

I claim:

1. In a device of the class described, a base member, a removable plug supported on said base member, an electrical heating coil on said plug, means on said base member for moving said plug to an energizing position in which said coil is energized, means tending to withdraw said plug from said energizing position, and a thermostatic element responsive to the heating of said coil for controlling the action of said withdrawing means.

2. In a device of the class described, a removable heating member having an electrical heating unit, a socket for receiving and holding said heating member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and means responsive to the temperature of said heating unit for interrupting said energizing circuit.

3. In a lighting device for cigars and the like, a removable heating member having an electric heater, a support for receiving and holding said heating member, current supply terminals on said support, said heating member being movable on said support to a position where said heating unit is energized from said terminals and means responsive to the temperature of said heating unit for controlling the heating thereof.

4. In an electrical lighter of the class described, a plug having an electrical heater, a socket for receiving said member and holding the same, a base for said socket, current supply terminals on said base, said socket being mounted on said base for movement to a position for establishing an energizing connection from said terminals to said heater, and means responsive to the heating of said heater for interrupting the current supply connections thereto.

5. In an electric lighting device of the class described, a removable heating member having an electrical heater, a base, a movable socket on said base for receiving said heating member, current supply terminals on said base, and a bi-metallic thermostat for controlling movement of said socket to vary the energization of said heater on said base.

6. In an electric lighter of the class described, a lighting member having an electrical heater, a socket for receiving and holding said heater, current supply terminals on said base, means for moving said socket and the heater supported thereby to position where it is energized from said current supply terminals, means tending to withdraw said socket from the energizing position, a latching means for locking said socket in the energized position, and a bi-metallic strip controlling said latching means to cause withdrawal of said heating member from the energizing position.

7. In a lighter of the class described, a base, a socket member movably mounted on said base, a heating plug adapted to be inserted and held in said socket, an electric heating coil on said plug, said socket being movable on said base member between an energizing and a de-energizing position.

8. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket, an electrical heater on said plug, electrical supply terminals on said base member, said socket being rotatable between an energized position where circuit is established from said terminals to said heater and an off position where said circuit is interrupted, means tending to hold said socket in the off position, locking means for locking said socket and the associated plug in the energizing position and thermostatic means for releasing said locking means.

9. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket, an electrical heater on said plug, electrical supply terminals on said base member, said socket being rotatable between an energized position where circuit is established from said terminals to said heater and an off position where said circuit is interrupted, means tending to hold said socket in the off posi-

tion, locking means for locking said socket and the associated plug in the energizing position and a bi-metallic element responsive to the heating of said heater for releasing said locking means.

10. In a lighter of the class described, a base member, a tubular socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket and rotated therewith, a heater on said plug, said plug having a shell fitting and engaging such socket; a latching pin on said plug insulated for said shell, said heating element being connected between said pin and said shell, latching means mounted on said base for engagement with said pin, an electric terminal connection to said socket, an electric terminal connection to said latching means, means tending to move said socket to an unlatched position and a thermostatic element for releasing said latching means in response to the heating of said heater to cause de-energization of said heating coil after being brought to temperature in the energizing position.

11. In an electric lighter of the class described, a base member, a heater member movably mounted on said base member, an electric heater on said heater member, electrical supply terminals on said base member, said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, and automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater.

12. In an electric heater of the class described, a movable heating member having an electrical heating unit, a socket for holding said heater member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and automatic means for withdrawing said heating unit from said energizing position upon predetermined heating of said heating unit.

13. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted in said socket, an electrical heater on said plug, said socket being rotatable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, locking means for locking said socket in the energized position, thermostatic means for releasing said locking means, and a spring screened against the action of said heater arranged to withdrew said socket to the off position.

14. In an electric heater of the class described, a base, a socket movably mounted on said base, a heating plug adapted to be inserted into said socket, a heating unit on the inner end of said plug adapted to be housed in said socket, electrical supply terminals, said socket being movable between an energized position where a circuit is established from said terminals and an off position where said circuit is interrupted, and a spring disposed outside of said socket tending to move the same to a de-energized position.

15. In an electric heater of the class described, a base, a socket movably mounted on said base, a heating plug adapted to be inserted into said socket, a heating unit on the inner end of said plug adapted to be housed in said socket, electrical supply terminals, said socket being movable between an energized position where a circuit is established from said terminals and an off position where said circuit is interrupted, a spring disposed outside of said socket tending to move the same to a de-energized position, and automatic means holding said plug in an energized position until predetermined heating thereof.

In testimony whereof I have hereunto subscribed my name.

HERBERT E. MEAD.