Feb. 12, 1929.

1,701,650

L. L. WINTERS

CIGAR LIGHTER

Filed April 25, 1928

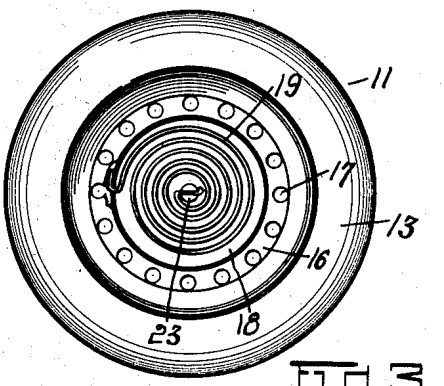

FIG. 3.

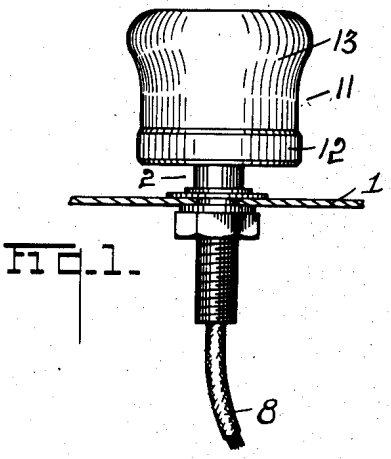

FIG. 1.

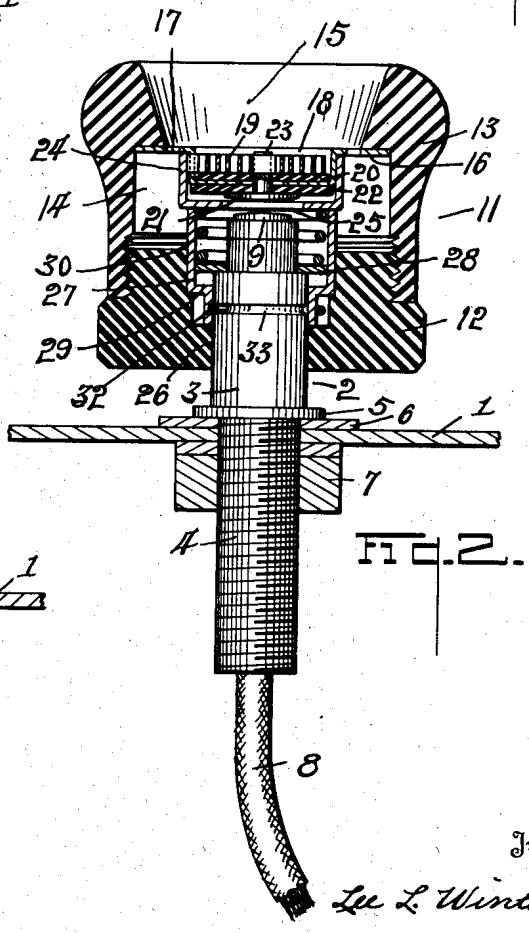

FIG. 2.

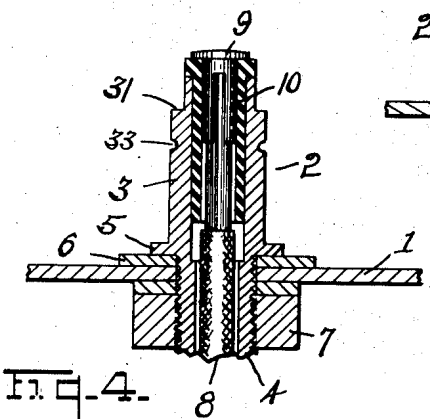

FIG. 4.

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Patented Feb. 12, 1929. 1,701,650

UNITED STATES PATENT OFFICE.

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CIGAR LIGHTER.

Application filed April 25, 1928. Serial No. 272,621.

This invention relates to cigar and cigarette lighters of the type adapted for use on the instrument boards of automobiles and including an electrically heated detachable lighter unit.

The primary object of the invention is the provision of a simple and inexpensive device of the class described which is composed of few parts, is capable of being easily and quickly assembled, and has the parts of the detachable lighter unit so arranged and exposed to air circulation as to prevent any objectionable heating of the external body parts of such unit when in use.

The invention is fully described in the following specification, and while it is capable of embodiment in numerous forms, one embodiment only thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a side elevation of a device embodying the invention with the part, on which mounted, fragmentarily shown. Fig. 2 is an enlarged elevation similar to Fig. 1, with parts in central longitudinal section. Fig. 3 is an outer end view of the detachable lighter unit of the device, and Fig. 4 is a fragmentary view of the stationary plug member of the device and its mounting with both in central longitudinal section.

Referring to the drawings, 1 designates a mounting member of an electrical conductive nature, such, for instance, as a metal instrument board of an automobile, and fixedly mounted on this member is the stationary plug or post member of the lighter embodying the invention.

The plug 2 includes a shell 3 of cylindrical form, in the present instance, and composed of metal or other suitable electrical conductive material and having in its inner end a stem 4 projecting through an opening in the instrument board. The shell 3 is also provided at its inner end with an annular flange 5 for shouldering against the mounting member 1 or an interposed washer 6. A nut 7 is threaded on the stem 4 and cooperates with the shoulder 5 to rigidly secure the shell 3 to the mounting. An electrical lead 8 extends from any suitbale source of electrical supply up through the stem 4 and shell 3, and is provided at the outer end of the shell with an exposed contact 9, which, together with the exposed portion of the lead 8 is insulated from the shell 3 by an insulating sleeve 10, which serves to fixedly mount the contact 9 within the shell.

The detachable socket member or lighter unit 11 of the device includes a shell, preferably of suitable insulating material, comprising the base member 12 and the cap member 13 threaded together and providing an air circulating chamber 14 therein. The outer end of the cap 13 is provided with an opening 15, which is closed, to the chamber 14 by a disc-like plate 16 of metal or other suitable material, except for the provision therein of a series of air circulating perforations 17 provided around the disc near its outer edge. The disc 16 is inserted into the chamber 14 from the inner end of the member 13 when removed from the base 12 and bears at its marginal edge portion against the outer end wall of the chamber 14, being held in such position as hereinafter described.

The disc 16 is provided in its central portion with a cylindrical cup-like depression 18 in which an electrical resistance element 19 is mounted in exposed relation to the shell opening 15, such element, in the present instance, being in helically coiled form. The heating element 19 is spaced from the bottom of the depression 18 by a washer 20 of mica or other suitable insulating material. A contact 21 is provided centrally at the underside of the depression 18, being spaced therefrom by a washer 22 of mica or other suitable insulating material and having a stem 23 projected upward therefrom through the washers 21 and 22 and an opening in the bottom of the depression 18 with its upper end connected to the inner end of the resistance coil 19. The outer end of the resistance coil 19 is projected through an opening in the side wall of the depression 18 and is clamped to the outer side of such wall by a cup member 24 which telescopes the depression 18 and is of electrical conductive material. The bottom of the cup member 24 is provided with a central opening 25 to expose the contact 21.

The base member 12 of the unit 11 is provided axially therethrough with a centrally disposed opening 26, the lower or outer end portion of which is of suitable size to receive the plug 2, while the inner end portion there-

of is enlarged and has a sleeve 27 mounted therein. The end portion of this sleeve which is disposed away from the chamber 14 is of a size to slidingly fit the plug 2, and the opposite end portion thereof is enlarged to slidingly receive a collar 28 adapted to normally seat down on the bottom 29 of such enlargement. This collar receives the lower end thrust of a coiled compression spring 30, the opposite end thrust of which is against the bottom of the cup member 24. The enlarged end of the sleeve 27 is of suitable length to bear against the adjacent end of the cup member 24 and cooperate therewith to firmly hold the disc 16 to its seat in the chamber 14 when the socket members 12 and 13 are screwed together.

The free end portion of the plug 2 is reduced to fit the central opening of the collar 22 and to provide a shoulder 31 on the plug against which the collar may seat. When the plug 2 is inserted into the member 11 through the opening 26 therein, the reduced end portion of the plug enters the collar 28, and, as the inserting movement is continued, the shoulder 31 of the plug engages the collar and moves it inward therewith, effecting a compression of the spring 30, such compressing movement being permitted to continue until the plug contact 9 engages the heating element contact 21. When such contact is made the electrical circuit is closed through the heating element, one side of which is grounded through the cup member 24, spring 30, collar 28, plug shell 3 and mounting member 1.

A spring detent 32 is provided in the reduced end portion of the sleeve 27 and is adapted to enter an annular recess 33 in the shell member 3 of the plug 2 and yieldingly retain the socket member 11 in open circuit position on the plug 2, in which position the contacts 9 and 21 are in spaced relation, as shown in Fig. 2. When the coil 19 is to be heated for the purpose of lighting a cigar or cigarette the unit 11 is forced inward on the plug 2 from the yielding stop position shown in Fig. 2 to a point where the contact between the contacts 9 and 21 is closed. When the heating element has been brought up to the desired heat, the unit 11 is removed from the plug 2 and used for the purpose desired.

It is apparent that the chamber 14 provides a considerable open space around the cup number 24 and other metal parts so as to provide for the circulation of a considerable quantity of air around such parts. It is found in practice that it is practically impossible to heat the shell 12, 13 of the unit 11 to such an extent as to render it too hot to be held in the bare hand without burning, even though the circuit to the heating element may be left closed for a considerable time. If the heating element should burn out, it is only necessary to separate the shell parts 12 and 13, remove the disc 16 carrying the heating element, and substitute therefor another disc and heating element.

The cup member 24 performs several functions. It receives the thrust of the sleeve 27, so as to firmly hold the disc 16 to its seat against the outer end wall of the chamber 14 when the base member 12 of the socket is screwed home. It forms a thrust for one end of the spring 30. It protects the insulation 22 and other delicate parts carried by the disc 16 from the thrust of the sleeve 27 and spring 30. Its bottom portion is preferably spaced from the insulation 22 and the bottom portion of the cupped recess 18 to provide therebetween circulation of air for cooling purposes. It also forms a part of the electrical connection between one terminal of the resistance coil 19 and the shell 3 of the plug 2 when the latter is inserted in the socket.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes without departing from the spirit of the claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a device of the class described, a plug member forming two contacts, one being at the end thereof, a socket member having a chamber therein into which the plug may be projected and having an opening at one side of said chamber, a member closing said opening and having air circulating openings therethrough providing communication between said opening and the chamber, an electrical resistance unit carried by said member and exposed to said opening and having a contact at the inner side of said member for engagement with the end contacts of the plug member when inserted to its full extent into the socket member, and means within said chamber yieldingly retaining the end contact of the plug out of engagement with said heating element contact and forming an electrical connection between said element and the other contact of said plug.

2. In a device of the class described, a plug member providing two contacts, one at an end thereof, a socket member adapted to receive the plug member and having its socket provided with an enlargement forming an air circulating chamber with the outer end of said chamber open, a closure member for said opening having air circulating openings therethrough providing communication between said opening and chamber, an electric resistance unit carried by said closure member in exposed relation to said opening and having a contact at one end disposed interiorly of the chamber in position to be engaged by the end contact of the plug when inserted a predetermined extent in the socket

member, spring means disposed within the socket member for yieldingly retaining the plug member in spaced relation to said element contact, one end of said means having electrical connection with a terminal of said resistance element and having its other end in electrical connection with the other contact of said plug member when the plug member is inserted in the socket member.

3. In a device of the class described, a plug member having an end contact and a side contact, a socket member capable of detachable engagement with the plug member and having a portion of its socket enlarged to form an air chamber, the outer end of the socket member having an opening, a closure disc for said opening mounted within said chamber and having a central depressed portion and air circulating perforations around said depression in communication with said chamber and opening, a resistance element mounted in said depression and having a centrally disposed contact insulated from said disc and exposed to the interior of said chamber for engagement with the end contact of the plug member when inserted the full extent into the socket member, and means within the socket member acting to normally retain the end contact of the plug member spaced from the central contact of the resistance element and also forming the electrical connection between the other end of said resistance element and the side contact of the plug member when the latter is inserted in the socket member.

4. In a device of the class described, a plug member having an end contact and a side contact, a socket member capable of detachable engagement with the plug member and having a portion of its socket enlarged to form an air chamber, the outer end of the socket member having an opening, a closure disc for said opening mounted within said chamber and having a central depressed portion and air circulating perforations around said depression in communication with said chamber and opening, a resistance element mounted in said depression and having a centrally disposed contact insulated from said disc and exposed to the interior of said chamber for engagement with the end contact of the plug member when inserted the full extent into the socket member, and means within said chamber serving to retain said disc member in its position within the chamber and also normally retaining the end contact of the plug member spaced from the central contact of a resistance element and forming the electrical connection between another part of the resistance element and the side contact of the plug member when the latter is inserted in a socket member.

5. In a device of the class described, a plug member having an end contact and a side contact, a socket member having its socket provided with an interior enlargement forming an air chamber and having an opening at the outer end of said chamber, a resistance element, means carrying said element and disposed within the outer end portion of said chamber with the element exposed to said opening and having perforations around the element, said socket member having provision for opening commuication between said chamber and the atmosphere, said heating element having a contact exposed to the interior of said chamber in position to be engaged by the end contact of the plug member when such member is inserted into the socket member, and yielding means normally retaining said resistance contact and the end contact of the plug member in spaced relation and also serving as an electrical connection between another portion of the resistance element and the side contact of the plug member when the latter is inserted in the socket member.

6. In a device of the class described, a plug member having an end contact and a side contact, a socket member having its socket provided with an interior enlargement forming an air chamber and having an opening at the outer end of said chamber, a resistance element, means carrying said element and disposed within the outer end portion of said chamber with the element exposed to said opening and having perforations around the element, said socket member having provision for opening communication between said chamber and the atmosphere, said heating element having a contact exposed to the interior of said chamber in position to be engaged by the end contact of the plug member when such member is inserted into the socket member, and yielding means normally retaining said resistance contact and the end contact of the plug member in spaced relation and also serving as an electrical connection between another portion of the resistance element and the side contact of the plug member when the latter is inserted in the socket member, said yielding means also serving to retain said resistance element carrying means in position within the socket member.

7. In a device of the class described, a plug having an end contact and a side contact, a socket member for receiving said plug and having its socket provided with an enlargement interiorly of the member to form an air chamber with the outer end of said chamber open, a disc mounted in one end of said chamber in closing relation to said opening and having a centrally disposed depressed portion, an electrical resistance element mounted in the depression of said disc and having a contact at one end exposed to the interior of said chamber in position to be engaged by the end contact of the plug when inserted in the socket member, a cup member fitting around the depressed portion of said

disc and having electrical connection with the other end of said element, a collar mounted in the socket member below said chamber and adapted to be engaged and moved inwardly by the insertion of the plug into the socket, and a spring interposed between said collar and cup member opposing an inward movement of the collar and cooperating with the collar to provide an electrical connection between said cup member and the side contact of the plug.

8. In a device of the class described, a socket member for receiving said plug and having its socket provided with a chamber open at one end, a disc disposed within said chamber for closing the open end thereof and having a depressed central portion, a resistance unit disposed within said depressed portion and having a terminal extending without one side thereof, a cup member fitted over the recessed portion of the disc in electrical connection with said terminal, and means in releasable thrust contact with said cup member for acting therethrough to hold the disc member firmly seated in the socket.

9. In a device of the class described, a socket member comprising a detachable cap and base members forming a socket with an enlarged chambered portion, a disc seated in one end of the chambered portion and having an inwardly cupped central portion, an electric resistance unit mounted in the cup portion of the disc, a separate cup member mounted over the said cupped portion and having electrical connection with one end of the resistance element, and means carried by the base member of the socket for thrust engagement with the cup member to act therethrough to retain the disc firmly seated in the chamber when the socket members are assembled, and a plug member for insertion into the socket and having spaced contacts, one for engagement with one terminal of the electrical resistance and another for electrical connection with said cup member.

10. In a device of the class descirbed, a socket having separable base and cap members and forming a chamber with one end open, a disc disposed within said chamber and seated against the open end thereof, said disc having an inwardly depressed portion, an electric resistance unit disposed in the depressed portion of the disc in exposed relation to the chamber opening and having a centrally disposed terminal and a side terminal, a cup member mounted over the depressed portion of the disc in electrical connection with the side terminal of said element and having an opening in its closed end portion exposing the central terminal of the element, said cup member being spaced at its bottom from the bottom of said recessed portion, a sleeve in the base member of the socket coacting with the inner end of the cup member to retain the disc seated in the socket when the socket members are assembled, a collar mounted for limited axial reciprocatory movements in said sleeve, a coiled expansion spring disposed within the sleeve between said collar and said cup member in opposed thrust contact therewith, and a plug member for insertion into the socket and having a centered contact for engagement with the centered contact of the resistance element and a side contact for electrical connection through said collar, sleeve and spring with said cup member, said plug having shouldered engagement with said collar whereby the centered contact to the plug is normally retained out of engagement with the centered contact of the resistance element.

In testimony whereof I have hereunto signed my name to this specification.

LEE L. WINTERS.