Jan. 13, 1942. G. F. BAHR 2,269,507

CIGAR LIGHTER

Filed July 20, 1937

Fig. 1

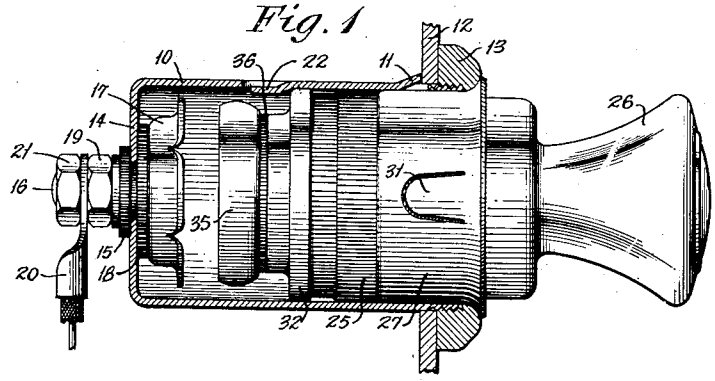


Fig. 2

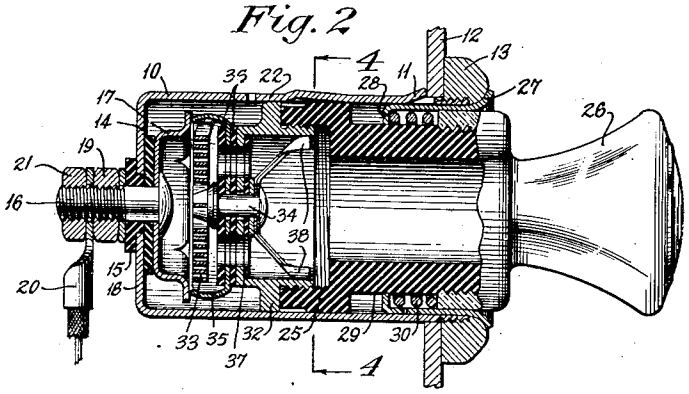


Fig. 3

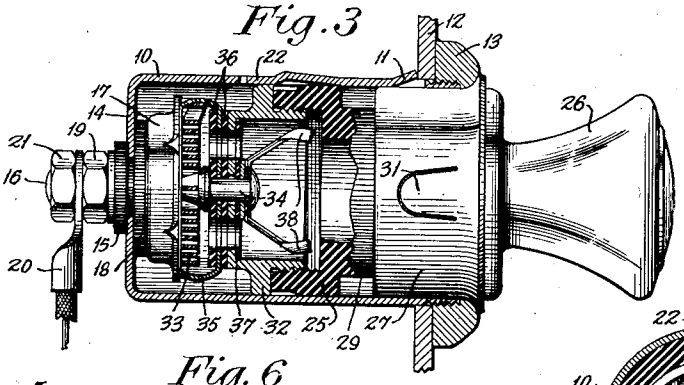


Fig. 4

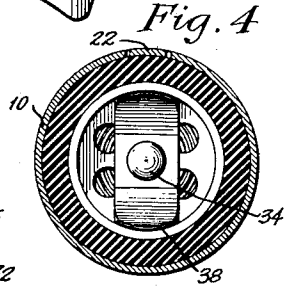


Fig. 5

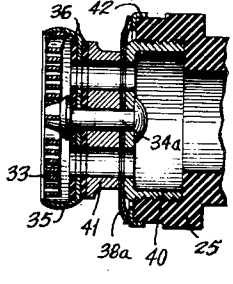


Fig. 6

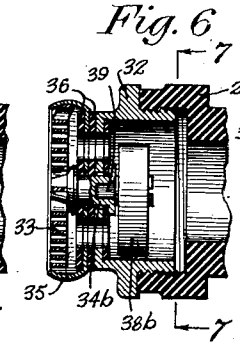
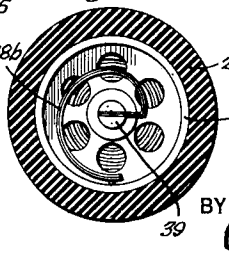


Fig. 7



INVENTOR
Gustave F. Bahr,
BY
ATTORNEY

Patented Jan. 13, 1942

2,269,507

UNITED STATES PATENT OFFICE

2,269,507

CIGAR LIGHTER

Gustave F. Bahr, Fairfield, Conn., assignor to Automatic Devices Corporation, Bridgeport, Conn., a corporation of Connecticut

Application July 20, 1937, Serial No. 154,546

10 Claims. (Cl. 219—32)

This invention relates to electric cigar lighters, and more particularly to a cigar lighter in which the igniting unit carrying the heating element is bodily removed from a holding device when the heating element has been brought to incandescence.

In such devices, the igniting unit is usually movable on the holding device to be brought to an energizing position, and in some cases the igniting unit is held in energizing position by hand until the heating element is ready for use and in other cases the igniting unit is held in energizing position automatically to be released when the heating element is ready for use. In either case, upon a predetermined signal, the user removes the igniting unit from the holder and applies the heating element to a cigar or cigarette to light the same.

In the case where the igniting unit is automatically maintained energized until the heating element is ready for use, the time required for heating the heating element is not important. However, in the case where the igniting unit is held in energized position by hand, it is important that the user, especially if he is the driver of the automobile, be relieved from holding the igniting unit in place any longer than necessary.

Accordingly, the present invention provides a cigar lighter of the type above referred to in which the resistance of the heating element is made so low that a large amount of current passes through the resistance wire of the heating element and brings it to incandescence very quickly. Instead of requiring approximately eight seconds, as was heretofore necessary to bring the heating element to incandescence, according to the present invention the resistance of the heating element may be made so low as to bring it to incandescence in a second or two, and with this arrangement, the driver of the automobile containing the cigar lighter may quickly bring the heating element to incandescence and light his cigarette or cigar, return the igniting unit to its normal position, and gets his hands back on the wheel.

An important feature of this invention is the provision of means for preventing the burning out of the low resistance element even if the user should hold the igniting unit in energized position too long. For this purpose, the device of the present invention is provided with an automatic switch, preferably in the form of a bimetallic thermostat, for opening the energizing circuit of the heating element when the heating element has been brought to a predetermined temperature.

In the form of the invention herein shown, this automatic switch is of such design that it will maintain the energizing circuit leading to the heating element open until the heating element has cooled off, whereupon the gap in the circuit controlled by the automatic switch will again be closed.

Preferably, the automatic switch is mounted on the igniting unit, still more preferably on the heating element, so that it is removed with the heating element from the holding devices and heats up and cools off practically simultaneously with the heating up and cooling off of the heating element. Besides having this advantage, when the automatic switch is mounted on the heating element, it can be calibrated and set for the particular heating element with which it is permanently associated. This cannot be done were the automatic switch mounted on the holding device, because a particular holding device may be used with any number of igniting units and heating elements.

In the broader aspects of this invention, particularly those parts thereof which are concerned with the mounting of the automatic switch on the igniting unit or heating element, the invention is applicable not only to quick-heating cigar lighters, but also to those heating at the normal rate, for even these may be held in too long.

Various other advantages and features will be apparent from the following description taken in connection with the drawing, in which:

Figure 1 is a section of the holding means showing the igniting unit in inoperative position.

Fig. 2 is a section of the lighter with the igniting unit in circuit-closing position and the switch means in its normal circuit-closing position.

Fig. 3 is a view similar to that shown in Fig. 2 with the switch means in open-circuit position.

Fig. 4 is a section taken along line 4—4 of Fig. 2.

Fig. 5 shows a section of a portion of the igniting unit with a modified form of switch arrangement.

Fig. 6 shows a section of the igniting unit with another modified form of switch.

Fig. 7 is a section taken along line 7—7 of Fig. 6.

According to the present invention, a holder 10 for the igniting unit has a tang 11 struck up from the body thereof near its open end. The tang is adapted to engage the back of a dashboard or the like 12 when the holder is inserted in an aperture of said dashboard. A collar 13 is threaded on the open end of the holder and is moved into engagement with the front of the dashboard or the like to grip the same between the tang 11 and the collar. The other end of the holder is closed by a wall 14 having an aperture in which is positioned an insulating

bushing 15. A bolt 16 is inserted through the insulating bushing. Carried in the holder adjacent to its closed end is a contact 17 secured therein by the head of the bolt pressing a portion of the contact into engagement with an insulating washer 18 positioned between the contact and the end wall 14 of the holder. A nut 19 is threaded on the bolt and locks the contact and insulating bushing and washer in position. A connector 20 for connecting the device to the source of energy carried by the automobile, such as the battery, is locked to the bolt by a nut 21.

A contact 22 is struck out from the holder 10 intermediate its length and is normally biased toward the interior of the holder to engage the igniting unit when the same is moved into energizing position.

The igniting unit of the present invention comprises a sleeve or body of insulating material 25. A handle or knob 26 of suitable material is threaded to a reduced portion 29 of the insulating body. A sleeve 27 is positioned around the insulating body and is provided with an inturned flange 28 engaging the reduced portion 29 of the insulating body to slide therealong. The sleeve 27 has an outwardly turned flange at its outer end which engages the collar 13 to stop the movement of the igniting unit when it is replaced into the holder after use. A spring 30 is positioned to surround the reduced portion of the body of insulating material between the inturned flange and the knob and normally holds the igniting unit in inoperative position but permits the same to be moved into circuit-closing position when desired. The sleeve has a resilient tang 31 struck from the body thereof for frictionally engaging the holder to prevent the igniting unit from being jarred out of the holder.

The inner end of the igniting unit has a conducting cap 32 threaded thereto which is adapted to engage the contact tang 22 when the igniting unit is pushed into circuit-closing position. A heating element 33 is mechanically connected to the conducting cap by a stud 34. One end of the heating element is secured in a slot in the end of the stud and the other end of the heating element is secured to a contact cup 35 which is mechanically connected to but electrically insulated from the conducting cap by washers 36. The contact cup is adapted to engage the contact 17 carried by the holder when the igniting unit is moved into its energizing position. The heating element and the contact cup are locked to the conducting cap by the stud being headed over. A washer of insulating material 37 is positioned under the head of the stud to insulate the stud from the cap.

A pair of switch elements 38 are locked to the cap by the head of the stud and are normally biased into contact with the cup to form an electrical connection between the stud and the cap. When the elements are heated they will flex inwardly and open the circuit. The circuit for energizing the heating element when the same has been moved to energizing position extends from the connector 20 through the stud 16 to contact 17; through the contact cup to the heating element 33; through the heating element to the stud 34; through the stud to the switch elements 38; through the switch elements to the conducting cap 32; through the conducting cap to the contact tang 22 of the holder and thus to ground.

The heating element, according to the present invention, is one of low resistance although any heating element which will heat rapidly, may be used. When the normal voltage is impressed on the heating element, an abnormal current will flow which will cause the same to heat very rapidly. Some means must be provided for preventing the element from overheating and burning out. Accordingly, the switch elements of the present invention are made of bimetallic material and are positioned so that they will open the circuit to the heating element when the same has attained its desired temperature. This will effectively prevent the heating element from burning out.

Also, according to the present invention, the bimetallic switch element is mounted on the igniting unit so that when the igniting unit is withdrawn for use, the switch elements will also be removed from the holding means. This will permit the switch elements to cool more rapidly and move into closed position so that the lighter will be ready to be reenergized upon being inserted into the holder.

In another form of the invention, as shown in Fig. 5, the body of insulating material has a sleeve 40 threaded in one end thereof. The heating element is secured to but spaced from the sleeve by a connector sleeve or spacing collar 41 of conducting material. Positioned between the spacing collar and the sleeve and outwardly extending therefrom is a bimetallic switch element. The bimetallic switch element 38*a*, spacing collar and sleeve are mechanically and electrically connected to the heating element by the stud 34*a*.

A contact band 42 is positioned around the insulating body and is insulated from sleeve 40. It is mounted on the insulating body so as to engage the contact tang 22 when the igniting unit is moved into energizing position. The outwardly-extending switch element normally closes a circuit from the heating element to the contact band 42. It also is short enough not to engage the holder. When the heating element has reached its desired heat, the bimetallic switch element will flex and open the circuit between the heating element and the contact band 42 and thus prevent the heating element from becoming overheated or burning out.

In another form of the invention, as shown in Figs. 6 and 7, a stud 34*b* is adapted to mechanically connect the heating element to the conducting cap by being headed over against an insulating washer on the inside of the cap. A bimetallic switch element 38*b* in this form of the invention comprises a spirally-shaped bimetallic member normally biased, as shown in Fig. 7, into contact with the conductor cap. The inner end of the switch has an anchoring means comprising a short stud 39 having a reduced end provided with longitudinal scoring and adapted to be driven into an opening in the end of the stud 34*b*, as shown in Fig. 6, to electrically connect the switch to the stud 34*b* and at the same time prevent any rotary movement of the anchoring stud and the spiral switch element. Upon the heating of the element to its desired temperature, the spiral bimetallic element will contract and move the contact away from the conducting cap and open the circuit to the heating element thus preventing overheating of the heating element.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. In an electric cigar lighter, a holding device;

an igniting unit mounted in the holding device and removable therefrom for use; the igniting unit having a conducting cap thereon; a heating element mounted on the conducting cap but electrically insulated therefrom; means for energizing the heating element operative by solely manual movement of the igniting unit on the holding device; and switch means for connecting the heating element to the conducting cap, said switch means comprising a bimetallic element connected to the heating element and normally biased into contact with the conducting cap.

2. In an electric cigar lighter, a holding device; an igniting unit mounted in the holding device and removable therefrom for use; the igniting unit having a conducting cap thereon; a heating element mounted on the conducting cap but electrically insulated therefrom; means for energizing the heating element operative by solely manual movement of the igniting unit on the holding device; and switch means for connecting the heating element to the conducting cap, said switch means comprising a bimetallic element of spiral formation connected to the heating element and biased into contact with the conducting cap.

3. In an electric cigar lighter, a holding device; an igniting unit mounted in the holding device and removable therefrom for use; the igniting unit having a band of conducting material at one end thereof; a heating element mounted on the igniting unit in spaced relation with the band of conducting material; means for energizing the heating element operative by solely manual movement of the igniting unit on the holding device; and means secured to the heating element for connecting the heating element to the band of conducting material, said means including a bimetallic element for opening the circuit upon the heating element attaining the desired heat.

4. In an electric cigar lighter, a holding device; an igniting unit mounted in the holding device and removable therefrom for use; the igniting unit having a conducting cap thereon; a heating element mounted on the conducting cap but electrically insulated therefrom; means for energizing the heating element operative by solely manual movement of the igniting unit on the holding device; and switch means for connecting the heating element to the conducting cap, said switch means comprising a bimetallic element of spiral formation connected to the heating element so as to lie in a plane parallel to the heating element and biased into contact with the conducting cap.

5. An igniting unit for an electric cigar lighter, comprising a body of insulating material; a conducting cap having a cavity therein threaded on the body of insulating material; a heating element mechanically connected to but electrically insulated from said conducting cap; means for energizing the heating element operative by solely manual movement of the igniting unit on the holding device; and metallic switch elements disposed in the cavity of the conducting cap for electrically connecting the heating element to the conducting cap.

6. An igniting unit for an electric cigar lighter, comprising a body of insulating material; a conducting cap having a cavity therein threaded on the body of insulating material; a heating element mechanically connected to but electrically insulated from said conducting cap; means for energizing the heating element operative by solely manual movement of the igniting unit on the holding device; and switch means having one end mechanically and electrically connected to the heating element and the other end normally biased into electrical connection with the conducting cap to electrically connect the heating element to the cap.

7. An igniting unit for an electric cigar lighter, comprising a body of insulating material; a conducting cap having a cavity therein threaded on the body of insulating material; a heating element mechanically connected to but electrically insulated from said conducting cap; means for energizing the heating element operative by solely manual movement of the igniting unit on the holding device; and a bimetallic switch element having one end mechanically and electrically connected to the heating element and the other end normally biased into electrical connection with the conducting cap to electrically connect the heating element to the cap, the bimetallic element having a spiral formation.

8. An igniting unit for an electric cigar lighter, comprising a body of insulating material; a conducting cap having a cavity therein threaded on the body of insulating material; a heating element mechanically connected to but electrically insulated from said conducting cap; means for energizing the heating element operative by solely manual movement of the igniting unit on the holding device; and a bimetallic switch element having one end mechanically and electrically connected to the heating element and the other end normally biased into electrical connection with the conducting cap to electrically connect the heating element to the cap, the bimetallic element having a spiral formation and positioned so as to lie in a plane parallel to the heating element.

9. An igniting unit for an electric cigar lighter, comprising a body of insluating material; a conducting band secured to the outer surface of the insulating material adjacent one end thereof; a heating element connected to the insulating body; and means carried by the heating element for normally electrically connecting the heating element with the conducting band, said means including a bimetallic switch element in heat-receiving relation with the heating element and adapted to flex and open the circuit at the conducting band upon the heating element reaching its desired heat.

10. A heating element unit for attachment to a removable igniting unit of a cigar lighter comprising a cap of conducting material having a cavity therein and threaded to be received by the body of the igniting unit; a heating element mechanically connected to but electrically insulated from the cap of conducting material; and bimetallic switch means disposed within the cavity of the cap of conducting material and having one end electrically connected to the heating element and the other end normally biased into electrical engagement with the conducting cap to form a heat-responsive switch carried by the conducting cap.

GUSTAVE F. BAHR.

CERTIFICATE OF CORRECTION.

Patent No. 2,269,507. January 13, 1942.

GUSTAVE F. BAHR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 64, claim 5, for "metallic" read --bimetallic--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of March, A. D. 1942.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

CERTIFICATE OF CORRECTION.

Patent No.2,269,507. January 13, 1942.

GUSTAVE F. BAHR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 64, claim 5, for "metallic" read --bimetallic--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of March, A. D. 1942.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.