March 28, 1950 F. G. ESKUCHEN 2,502,135

ELECTRIC LIGHTER

Filed March 14, 1946

Fig. 1

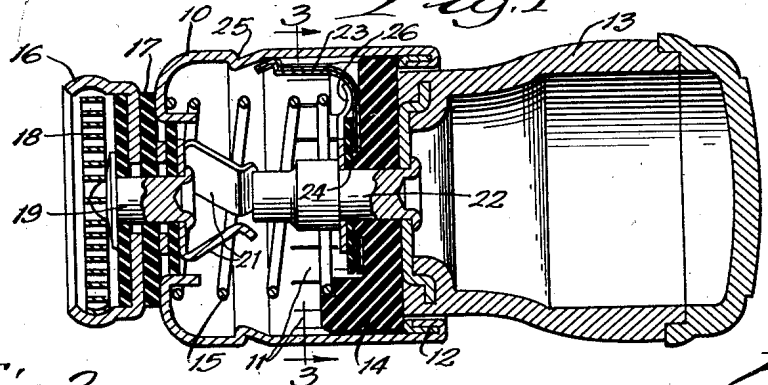


Fig. 2

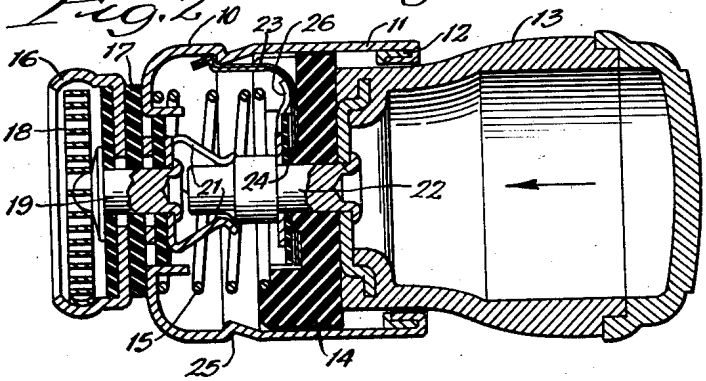


Fig. 3

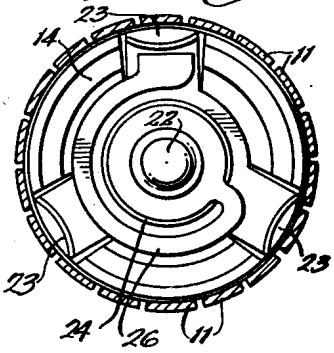


Fig. 4

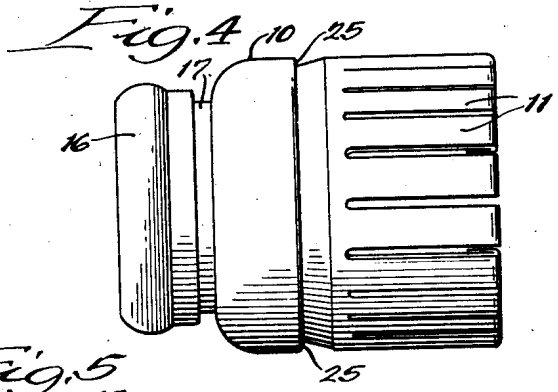
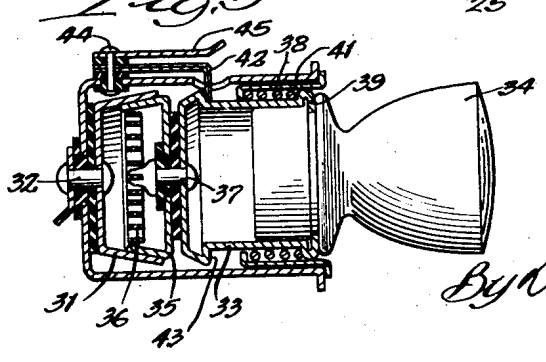


Fig. 5



Inventor:
Frank G. Eskuchen,
By Dawson, Brittingham & Spangenberg,
Attorneys.

Patented Mar. 28, 1950 2,502,135

UNITED STATES PATENT OFFICE

2,502,135

ELECTRIC LIGHTER

Frank G. Eskuchen, Chicago, Ill., assignor to Daniel Szantay

Application March 14, 1946, Serial No. 654,359

2 Claims. (Cl. 219—32)

1

This invention relates to electric lighters and more particularly to electric cigar and cigarette lighters of the wireless type as used in automobiles and the like.

Lighters of this type have generally employed a thermostatic latch either in the socket or in the removable plug and heated by radiation or conduction from the heating element. In these constructions the latch must be accurately formed to obtain uniform results, and since the latch heats at substantially the same temperature as the surrounding material, it cools slowly. A substantial interval of time is therefore required before the heating element can be reheated.

It is one of the objects of the present invention to provide an electric lighter in which uniform results are obtained without requiring extremely accurate formation of the latch and its associated parts.

Another object is to provide an electric lighter in which the latch cools quickly upon removal of the lighter plug from the socket. According to the invention, the latch is heated to a higher temperature than the adjacent parts by a separate heating element so that when the supply of heat is interrupted the latch will cool rapidly.

The above and other objects and advantages of the invention will be more readily apparent from the following description when read in connection with the accompanying drawing in which—

Figure 1 is an axial section through a lighter plug embodying the invention with the parts in released position.

Figure 2 is a similar view showing the parts in latched position;

Figure 3 is a section on the line 3—3 of Figure 1;

Figure 4 is a side elevation of the plug body; and

Figure 5 is an axial section of an alternative construction.

The lighter plug, as shown in Figures 1 to 4 is adapted to be inserted in a socket mounted on the dashboard of an automobile or the like and containing a base contact insulated from the body of the socket, the body of the socket itself forming the other contact. The plug comprises a generally cupped shaped body 10 which is slit axially, as best seen in Figures 3 and 4, to provide a series of parallel flexible fingers 11. The fingers 11 are turned in at their ends, as indicated at 12, to form a stop to hold a handle 13 in the body. The handle, as shown, comprises a hollow grip portion to project beyond the body 10 and engageable with the turned in portions 12 to prevent removal of the handle from the body. A coil spring 15 normally urges the handle outward to the position shown in Figure 1.

At the end opposite the handle the body carries a heating element shown as comprising a

2

cupped shaped housing 16 secured to the end of the body through insulators 17. A spiral strip 18 of resistance heating material is wound within the housing 16, preferably being welded to the housing at one end. At its inner end the strip 18 is connected to a central post or rivet 19 which secures the housing 16 to the body 10 and which carries within the body 10 a plurality of resilient contact fingers 21.

The housing 16 in use is adapted to engage the base contact in the socket to connect the outer end of the spiral heating strip thereto. The inner end of the strip is connected through the spring contact fingers 21 with a post 22 secured centrally to the handle. When the parts are separated, as shown in Figure 1, the post is spaced from the contact fingers, but when the handle is pushed into the body, as shown in Figure 2, the post engages the contact fingers.

The post serves to support a thermostatic latch 23 which may be formed by an annular plate of bi-metallic material having three axially extending latch fingers thereon. The body or plate part of the thermostatic latch fits over an insulating hub on the handle and is riveted against the hub through an insulating disc 24 by the post 22. The latch fingers 23 are offset at their ends to engage a latch projection 25 formed in the body 10 to hold the handle in its innermost position in the body, as shown in Figure 2. The latch material is so formed that the fingers will move radially inward when heated to disengage the body so that the spring 15 can move the handle out of the body to the position shown in Figure 1.

Electrical contact is established between the post 22 and the latch 23 by a strip of resistance heating material 26. The heating material 26 may be formed with an annular hub portion to encircle and engage the post 22 and with a relatively narrow body portion spirally around the central portion. The end of the heating strip engages the thermostatic latch 23 and is preferably welded thereto.

With the parts in the position shown in Figure 1, even though the plug is inserted in a socket, no circuit will be established through either of the heating elements due to the fact that the post 22 is out of engagement with the contact fingers 21. To heat the heating elements for a lighting operation, the handle may be pressed in to the position shown in Figure 2 at which time the latch fingers 23 will engage the latch projection 25 to hold the parts in the heating position. At this time a circuit is completed from the base contact of the socket through the housing 16, the heating element 18, the rivet 19, the contacts 21, the post 22, the heating element 26, the thermostat latch 23, and the housing or body 10 to the socket. Under these conditions both heating elements 18 and 26 will be heated,

and they may be so proportioned that by the time the element 18 has reached the desired igniting temperature, the element 26 will have heated the thermostatic latch sufficiently to cause it to move away from the latch portion 25 on the body. When this occurs, the thermostatic latch will release, allowing the spring to return the handle to the position shown in Figure 1 thereby interrupting the circuit through the heating elements and calling the attention of the user to the fact that the element is in condition to be used for igniting cigars, cigarettes or the like.

It will be seen that with this construction the thermostatic latch may be designed to operate at a relatively high temperature, and since it is directly heated by the heating element 26, extremely uniform results can be obtained without requiring extreme accuracy in manufacture of the parts. Furthermore, since the heating element 26 and the thermostat are both raised to a temperature higher than the surrounding body and handle parts, they will cool very rapidly upon removal of the plug from the socket. This is due partially to the large radiating surface exposed on the exterior of the plug when it is removed but to perhaps a greater extent by flow of heat from the thermostat to the adjacent body and handle parts whose ambient temperature is lower than that of the thermostat. Therefore, the thermostat will cool quickly to a temperature at which it will again engage the latch part 25 so that the element 18 can be reheated after a minimum interval. This eliminates the necessity for relatively long waits between lighting operations, as required by the prior art constructions.

Figure 5 illustrates the invention applied to a lighter of the type in which the thermostatic latch is carried by the socket. As shown in this figure, the lighter comprises a cupped shaped socket 30 adapted to be mounted in the dashboard of an automobile or the like and carrying at its closed end a base contact tube 31 which is insulated from the socket body. The contact 31 may be secured to the body by a rivet 32 to which one side of the usual battery circuit may be connected.

The socket is adapted to receive a handle or plug including a general cylindrical shell 33 to which a handle 34 formed of plastic or the like may be secured. The sleeve 33 carries at its inner end a heating element comprising a cup shaped housing 35 secured to but insulated from the sleeve. A spiral strip of resistance heating material 36 is secured in the housing 35 with its outer end welded to the housing and its inner welded to a beam or rivet 37 which is in contact with the sleeve 33. The handle or plug part is adapted to be urged out of the socket by a compression spring 38 engaging a shoulder 39 at one end of the sleeve 33. The opposite end of the spring seats against an inturned flange on the inner end of a collar 41 slidable on the sleeve 33 and having an outwardly turned flange at its outer end to engage the socket 30.

The plug or handle is adapted to be held in the socket by a thermostatic latch 42 comprising a strip of bi-metallic thermostatic material mounted on but insulated from the socket 30. As shown, one end of the strip 42 extends through an opening in the socket 30 to engage an annular shoulder 43 on the sleeve 33 when the plug is pressed into the socket. The strip 42 establishes electrical contact at one end with the sleeve 33, and its opposite end is electrically connected through a rivet 44 with a heating strip 45. As shown, the strip 45 is mounted closely adjacent the thermostat 42 to heat it and may be connected at its free end to the other side of the usual battery circuit.

In operation of this construction, when the plug or handle is pushed into the socket body, as shown, the latch 42 will engage the shoulder 43 to hold the plug in the socket. At this time a circuit is completed from the base contact 31 through the heating element 36, rivet 37, sleeve 33, thermostatic latch 42 and heating element 45. Both of the heating elements will, therefore, be heated simultaneously. As the element 45 heats the latch 42 it moves away from the sleeve 33 to release the plug and permit it to pop out of the socket under the influence of the spring 38. This interrupts the circuit between the base contact 31 and housing 35 and indicates to the operator that the lighter is in the desired igniting condition. As soon as the circuit is interrupted, the thermostat 42 and heating element 45 will cool rapidly since they are at a temperature higher than the surrounding material and since they are exposed for maximum cooling. Therefore, by the time the element 36 has cooled below igniting temperature, the latch has cooled to the point where it is again ready to engage the shoulder 43 for another lighting operation.

While two embodiments of the invention have been shown and described in detail it is to be understood that they are illustrative only and are not to be taken as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. An electric lighter comprising a hollow body, a handle slidable in one end of the body, a heating element carried by the other end of the body and insulated therefrom, a contact on the handle to contact the heating element when the handle is pushed into the body, a spring urging the handle out of the body, a thermostatic latch carried by the handle to engage the body and hold the handle therein, means insulating the thermostat from the contact, and a second heating element carried by the handle adjacent the latch and electrically connecting the latch and the contact.

2. An electric lighter comprising a hollow body, a handle slidable in one end of the body, a heating element carried by the other end of the body and insulated therefrom, a central post carried by the handle to contact the heating element when the handle is pushed into the body, a spring urging the handle out of the body, a thermostatic latch carried by the handle insulated from the post to engage the body and hold the handle therein, and a second heating element on the handle adjacent the latch electrically connecting the post and latch, the latch and the second heating element being held on the handle by the post.

FRANK G. ESKUCHEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,084,966	Ashton	June 22, 1937
2,180,069	Sinko	Nov. 14, 1939
2,223,654	Ashton	Dec. 3, 1940
2,301,129	Lehmann	Nov. 3, 1942
2,310,029	Kline	Feb. 2, 1943