May 5, 1953 J. E. WOOD 2,637,799

PLUG TYPE LIGHTER

Filed Sept. 8, 1950

Fig. 1

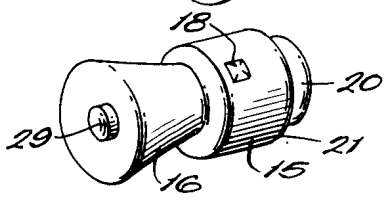


Fig. 2

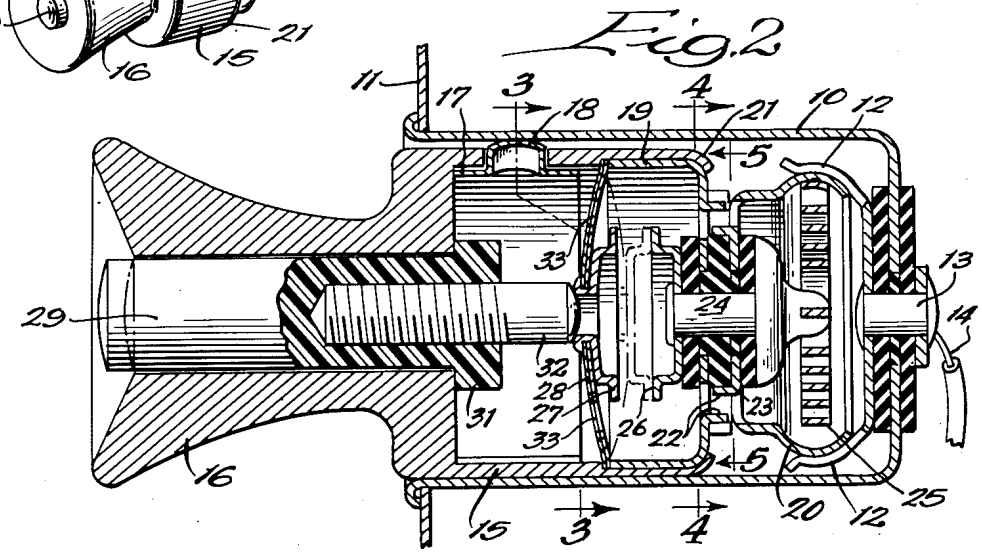


Fig. 3

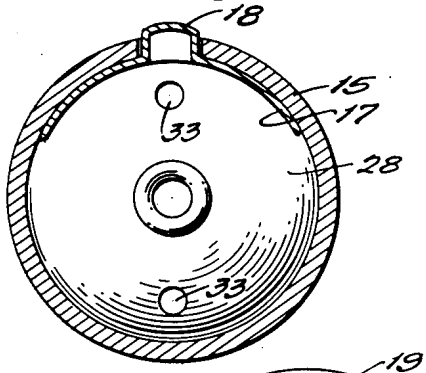


Fig. 4

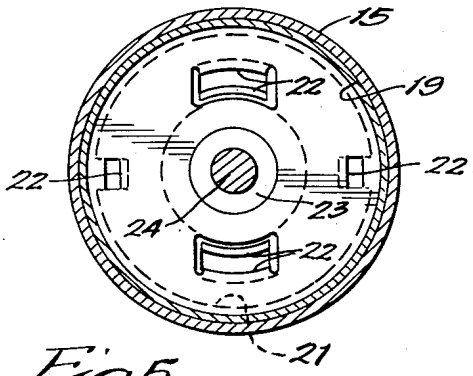
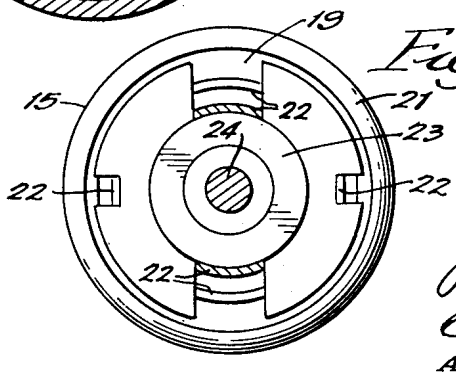


Fig. 5



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PLUG TYPE LIGHTER

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2 Claims. (Cl. 219—32)

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This invention relates to plug type lighters and particularly to electric cigar lighters of the removable plug type as used in automotive vehicles.

Plug type lighters as heretofore constructed fall into two general classes. In the first, the plug is held in its socket by a thermostatic latch during heating and when the latch releases a spring pushes the plug part way out of the socket. In the second class the plug includes two slidably interfitting parts which are held together by a thermostatic latch during heating and are separated by a spring when the latch releases. Both of these classes of lighters are relatively expensive to manufacture, have moving parts which are subject to maladjustment and wear, and rely almost entirely on the sound produced by movement of the parts when the latch releases to indicate that they are in condition for use.

It is one of the objects of the present invention to provide a plug type lighter which is extremely simple and inexpensive to manufacture, which has no moving parts subject to maladjustment or wear, and which produces both an audible and a visual indication that it is in condition for use.

Another object is to provide a lighter in which no springs are required.

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 a perspective view of a lighter plug embodying the invention;

Figure 2 is an enlarged central section showing the plug in a socket, and

Figures 3, 4, and 5 are sections through the plug on the lines 3—3, 4—4, and 5—5 respectively of Figure 2.

In the construction shown, the plug is removably received in a conventional sheet metal socket 10 adapted to be mounted on and grounded to an automobile instrument panel or the like indicated at 11. At its inner end the socket carries a series of contact fingers 12 secured to the socket by a rivet 13 insulated from the socket. The rivet is connected through a wire 14 to the hot side of the battery circuit in the usual manner.

The plug comprises a hollow body 15 open at one end and preferably having an integral handle 16 at its other end. The plug fits slidably in the socket as shown in Figure 2 and may be frictionally held therein by a split resilient ring 17 having a projection 18 thereon to extend through an opening in the body wall and engage the socket. The ring and button may serve to establish electrical contact with the socket but in the preferred construction the body and handle are formed of

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metal such as aluminum and may be a screw machine part.

At its open end the body receives a cup shaped support 19 which carries an annular contact member 20. The support may be secured in place by spinning or crimping the end of the body over it as indicated at 21. As shown the support and contact member are of sheet metal and are formed with spaced lugs 72 fitting into openings in an insulating washer 23. The parts are secured together by a central staked or riveted post 24 which is insulated from both the support and the contact member. The openings into which lugs 22 extend provide passages around the post 24 through which light can pass for a purpose to appear more fully later.

A heater element shown as a spiral coil of resistance wire 25 has its outer end welded or otherwise secured to the contact member 21 and its inner end secured to the post 24. Thus the circuit through the heater element is from the annular contact to the post which is insulated from the contact and the plug body.

To complete the circuit through the heater the post carries a cup shaped contact 26 centrally within the plug body. A similar contact 27 is adapted to engage the contact 26 and to this end is mounted for axial movement in the body in conductive relation therewith.

The contact 27 is preferably carried by a bowed spring member extending transversely across the body. As shown, the spring member comprises a dished bimetal disc 28 having its edges secured between the support 19 and an internal shoulder in the plug body. The disc is normally bowed toward the handle as shown to separate the contacts 26 and 27. When the disc is bowed in the opposite direction the contacts engage to complete a circuit through the heating element and as the element heats the disc it will snap back to the illustrated position to interrupt the circuit. Thus, overheating and burn out of the element will be prevented and heating of the element to the desired temperature for use is insured.

To control the disc a plunger 29 fits slidably in the handle end of the body and is preferably formed of a light conducting material such as glass or a transparent or translucent plastic. An integral shoulder 31 on the plunger limits its movement out of the body and a reduced metal tip 32 may be carried thereby to engage the disc 28 at its center so that the plunger will be remote from the highly heated parts of the unit. Preferably the disc 28 is formed with openings 33 therethrough.

With the parts in the position shown, the heat-

ing element can be energized by pressing the plunger into the handle to bow the disc toward the heating element and engage the contacts 26 and 27 as indicated in dotted lines in Figure 2. At this time current will flow from the hot contact 12 to the contact 20, through the heating element 25 to the post 24, through contacts 26 and 27 to the disc 28 and through the disc to the body 15 and socket 10 to ground.

When the heating element reaches the desired temperature the disc 28 will snap back to the left to open the contacts 26 and 27 and move the plunger to the left. The snap of the disc resounding through the instrument panel will produce a sharp click to indicate audibly that the unit is ready for use. At the same time glow from the heating element will pass through the openings in the disc 23 and the disc 28 to illuminate the plunger 29 to indicate visually that the unit is ready for use.

The construction is extremely simple and inexpensive to manufacture with a minimum number of parts and of assembly operations. All latches and springs are eliminated since the simple thermostatic discs perform all their functions and the only moving part is the plunger. There are, therefore, no parts to get out of adjustment or to wear.

While one embodiment of the invention has been shown and described in detail herein, it will be understood that this is illustrative only and not inended as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. A plug type lighter comprising a hollow body, an annular contact member carried by the body at one end in insulated relation to the body, a heater element in the contact member secured at one end to the contact member, a contact post centrally carried by the body at said one end in insulated relation thereto and connected to the other end of the heater element, a bowed bimetallic thermostat within and extending transversely across the body between the ends thereof and having a contact portion thereon to engage the post, the thermostat normally being bowed away from the post, and a plunger formed of light conducting material slidable in the other end of the body and engageable with the thermostat there being openings around the post and the thermostat through which light can pass from the heating element to the plunger.

2. A plug type lighter comprising a hollow body, an annular contact member carried by the body at one end in insulated relation to the body, a heater element in the contact member secured at one end to the contact member, a contact post centrally carried by the body at said one end in insulated relation thereto and connected to the other end of the heater element, a dished bimetal disc within and extending transversely across the body between the ends thereof and having a contact portion thereon to engage the post, the disc normally being bowed away from the post, and a plunger slidable in the other end of the body and engageable with the central part of the disc to bow it toward the post, the plunger being formed of light conducting material and there being openings around the post and through the disc through which light can pass from the heating element to the plunger.

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