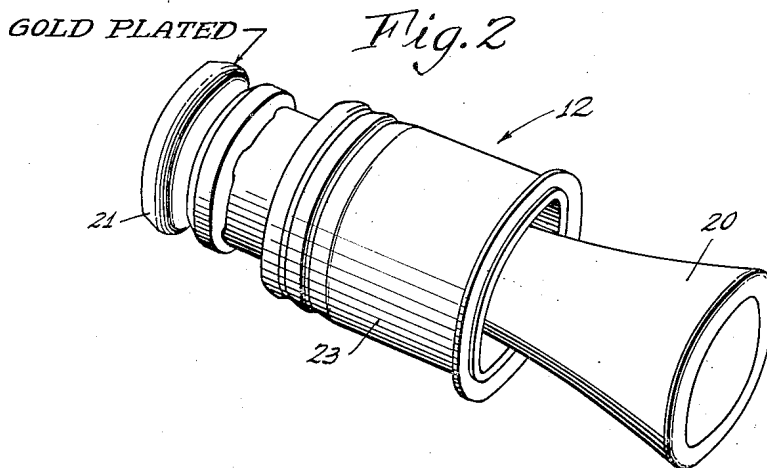
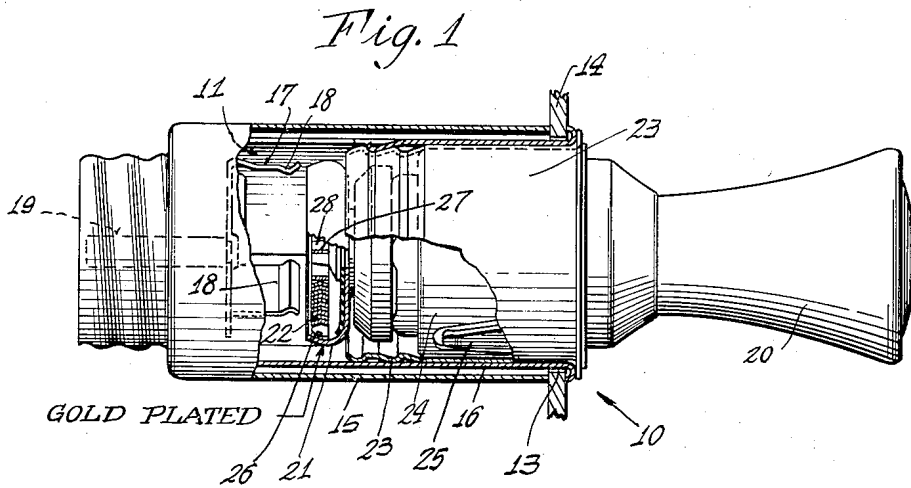


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CIGAR LIGHTER

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**CIGAR LIGHTER**

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2 Claims. (Cl. 219—32)

The present invention relates to cigar lighters and more particularly to lighters in which the tobacco igniting element is heated to incandescence by electricity.

In cigar lighters of the above type, the tobacco igniting element consists of a coil of electrical resistance wire which is mounted within a retainer cup. The cup is mounted on a plug which is removable from a socket for use and the latter may be mounted on any convenient device such as an automobile dashboard, a radio or in its own base. To cause incandescence of the coil, the plug is positioned in the socket so that the retainer cup is frictionally engaged by at least one bimetallic current-carrying leg and electric current is passed from the leg to the cup and through the coil. After a lapse of time, for example 10 or 11 seconds, the coil becomes incandescent and heats the bimetallic legs which expands them to release the frictional engagement with the cup and spring means causes the plug to be retracted to a normal position wherein the cup is not in contact with the leg.

In this type of cigar lighter, the bimetallic legs and the retainer cup each constitute one portion of an electrical switch and thus the current through the coil makes and breaks between these two elements. Accordingly, in order to have a satisfactory performing lighter, it is essential that good electrical contact between the cup and leg be assured. Good electrical contact has heretofore not been assured after a limited usage of the lighter by oxidation pitting and wearing of the surface of the cup. The deterioration of the cup surface has occurred from a plurality of environmental factors which include the heating of the cup by the coil when the latter is incandescent which causes oxidation of the cup, the current when making and breaking pitting the surface of the cup, and the frictional wear between the legs and the cup. In addition to the necessity of having good electrical contact between the cup and the legs, a substantially constant coefficient of friction must also be maintained during the life of the lighter, otherwise the frictional lock between the cup and legs will decrease causing the lighter to pop out before the coil reaches incandescence or, on the other hand will increase causing overheating of the coil. Thus, after a limited period of use, the lighter fails to function properly because of poor electrical mechanical connection between the legs and cup which can be traced to changes in the surface of the retainer cup.

It is an object of the present invention to provide a retainer cup for a cigar lighter of the above-disclosed type which is more capable than presently existing lighters of withstanding the detrimental factors above mentioned.

Another object of the present invention is to provide a plating for the retainer cup which provides assurance of good electrical contact between the cup and bimetallic leg for a longer period of service than heretofore possible.

A further object of the present invention is to provide a retainer cup in a lighter of the above type which is capable of conducting higher current between the legs and the coil without any substantial decrease in the life

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of the lighter than heretofore possible thereby decreasing the time required to bring the coil to incandescence.

In attaining the above objects there is provided according to the present invention a retainer cup which has an exterior plate of a metal. The metal is gold. The cup is formed from cold rolled steel, case hardened, and has a base plating of nickel with the gold plating being applied over the nickel plate. It has been found that the above construction of the retainer cup having an exterior gold plating provides a cup which has good electrical contact over a longer period of use than present cups having only a nickel plate. Thus the use of gold plate on the retainer cup enables the construction of a cup which has the properties of being less affected by arcing of the current, has very little tendency to oxidize due to the heat of the coil, and is capable of withstanding for a longer service period the frictional wear with the bimetallic legs.

Other features and advantages will hereinafter appear. In the drawing:

Figure 1 is an elevation of a cigar lighter plug and socket, shown partly in section, and with the plug positioned at its normal position in the socket.

Fig. 2 is a perspective view of the plug removed from the socket.

Referring to the drawing, the cigar lighter of the present invention is generally indicated by the reference numeral 10 and consists of a socket 11 and a plug 12. The socket is shown mounted in an opening 13 of a structural member 14 by an outer shell 15 screwing on to an inner shell 16 so as to clamp the edges of the opening therebetween. The socket carries a bimetallic element 17 which has a plurality of legs 18, the latter having the shape shown. Connected to the bimetallic elements is a threaded conductor 19 which is connectible to one side of a source of electricity (not shown) which is used to heat the coil. The bimetallic elements are insulatingly mounted in the socket, as is well known in the art.

The plug 12 is provided with a knob 20 at one end and at its other end is provided with the retainer cup 21 and a tobacco igniting coil 22 mounted within the retainer cup. The plug further includes an ash guard sleeve 23 which frictionally engages the inner shell 16 of the socket and an inner sleeve 24 having lanced fingers 25 to cause frictional engagement between the sleeves 23 and 24. Within the inner sleeve of the plug there is mounted a spring member (not shown) for causing the plug to move to its normal position after being released by the bimetallic legs, though of course, as is well known in the art, the spring member may be mounted in the socket.

The heating coil consists of a spirally wound length of electrical resistance wire, such as "Kanthal," and has one end 26 attached to the retainer cup, as by spot welding, and its other end 27 fastened in the slot of a rivet 28. The rivet attaches the cup and coil to the plug.

In the operation of the lighter, the knob 20 is manually pushed inwardly until the periphery of the retainer cup is positioned within the end portions of the bimetallic legs 18 to be frictionally held thereby. Electric current then flows through the threaded conductor 19, the bimetallic legs 18, to the cup 21, the end 26 of the heating coil, through the heating coil to the rivet 28 and from the rivet to the sleeve 23, to the inner shell and to the structural member 14, which is connected to the other side of a source electricity. After sufficient passage of current to raise the temperature of the coil to incandescence, i. e. 10 or 11 seconds, the bimetallic legs are caused to expand primarily by the heat from the coil to release the frictional lock on the retainer cup. Then, the spring (not shown) causes the plug to be snapped back to the position shown in Fig. 1 which is the normal rest position of the plug. It will be appreciated that the only switching

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occurring in the lighter is between the bimetallic legs and the retainer cup and in the specific embodiment of the lighter shown this switching makes and breaks the circuit.

The retainer cup according to the present invention is initially formed in the cup-shape shown out of cold rolled steel. It is then plated with a minimum of .0002" nickel plating. Then the cup is plated again with gold and the gold plate has an approximate minimum thickness of .00001". Though of course gold is expensive, the minute amount used on a cup adds very little to the total cost of fabricating the lighter.

By tests it has been proven that the gold plate has good current-carrying capacity between the cup and the bimetallic legs. In addition, the gold plate is capable of withstanding the frictional wear between the cup and the legs without being worn away even during an extended service period. Moreover, the gold plate is highly resistant to the formation of oxide on the cup surface which is accelerated by the heat of the coil. Thus, gold plating of the cup enables a cigar lighter of the above disclosed type to have a longer life than heretofore possible. Another result obtained by the gold plating of the retainer cup is the ability without substantial decrease in the life of the lighter to use a higher electric current to heat the coil than with presently existing lighters. This permits the lighter to be heated up in a shorter time, which is particularly advantageous when the lighter is used in household applications such as in its own base, a radio, etc.

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

I claim:

1. In an electric cigar lighter having a socket having at least one electric current carrying leg, a plug removably positioned in said socket and having at one end a retaining cup in which is mounted a coil of resistance wire which upon being heated to incandescence is utilized to ignite tobacco, the cup engaging the leg to permit passage of electricity from the leg through the cup to the coil to heat the coil and the leg also serving to provide a frictional lock with the cup to maintain contact therewith until the coil is heated for use; the improvement which comprises the cup being formed of steel and having a base plating of nickel and a final plating of gold.

2. The invention as defined in claim 1 in which the nickel plate has an approximate minimum thickness of .0002 inch and the gold plate has an approximate minimum thickness of .00001 inch.

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