

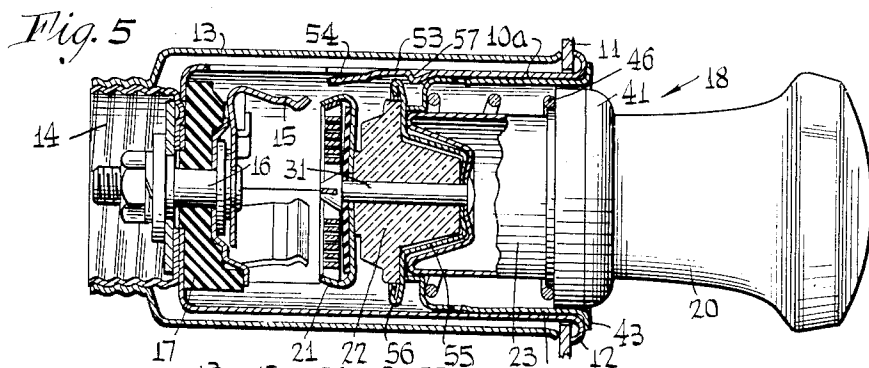
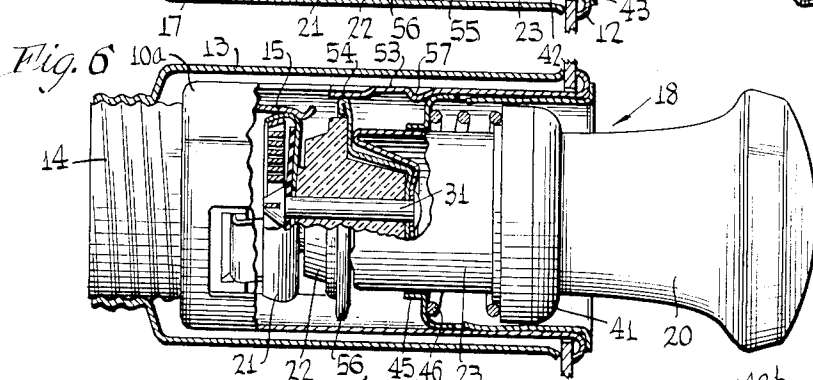
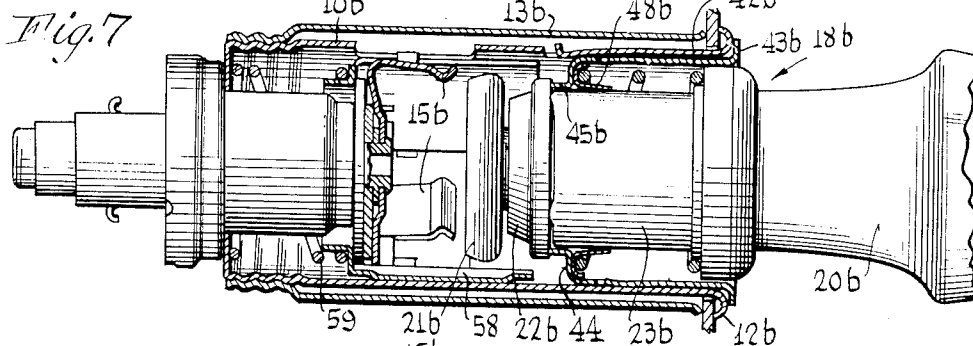
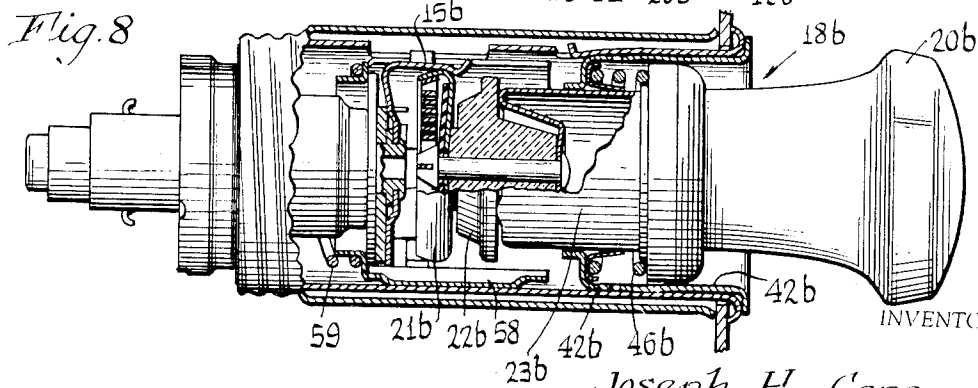
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CIGAR LIGHTERS

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CIGAR LIGHTERS

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This invention relates to cigar lighters and more particularly to manually-removable igniter plugs for wireless-type automobile cigar lighters. An object of the present invention is to provide an igniter plug which is simple and economical in construction, easily assembled and efficient in use.

A feature of this invention is the provision of heat-resisting means between the igniter coil and the body of the plug whereby the body may consist largely of metallic parts and yet avoid excessive heating of the knob at the outer end of the plug by means of which the plug is manipulated and held by hand for use. This is accomplished according to the present invention by providing heat insulating means of substantial mass between the igniting coil and the body of the plug and reducing the metallic contact between parts so that conduction of heat from the igniting coil to the body is reduced to a minimum.

Another feature of this invention is the provision of improved means for catching any tobacco particles or ash which may be dislodged from a cigar or cigarette in the act of applying it to or removing it from contact with the igniting coil, which is likely to occur when relighting the tobacco. This is accomplished according to the present invention by providing a shell or tube surrounding and projecting beyond the igniting coil and so arranged that the igniting coil may be projected beyond it to make electrical contact with cooperating contacts in the base of a well-like holder when the unit is to be energized. The ash receiver shell, according to the present invention, is united as by welding to the friction sleeve which surrounds the body of the igniter plug and assumes a stationary position when the plug is in the holder.

In use, to facilitate the lighting of a smoking pipe, the igniting coil may be projected to or beyond the edge of the ash-receiver by holding the friction sleeve with the thumb and middle finger of the hand while pressing on the knob with the index finger.

Other features and advantages will hereinafter appear.

In the accompanying drawings which show several embodiments of my invention:

Figure 1 is a longitudinal section through the igniter plug and well-like holder illustrating the various features of this invention including the ash receiving sleeve, the plug being in its normal open circuit position of rest in the well.

Fig. 2 is a similar view showing the plug moved to energized position.

Fig. 3 is an elevation, partly in section, of the plug shown in Figs. 1 and 2.

Fig. 4 is a perspective view of the flexible ring which assures good electrical contact between the body of the plug and the friction sleeve.

Fig. 5 is a view, similar to Fig. 1, showing a form of the invention in which the ash receiver is omitted and in which a special ground contact device is employed on the plug.

Fig. 6 is a view, similar to Fig. 5, showing the plug of Fig. 5 in energized position.

Fig. 7 is a view, similar to Fig. 5, showing another

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form of the invention in which the plug is adapted for use in a different type of well.

Fig. 8 is a view, similar to Fig. 7, but showing the plug of Fig. 7 in energized position.

As shown in the accompanying drawings, the cigar lighter illustrated is of the so-called wireless type designed for use in automobiles and comprises a socket 10 in the form of a deep-drawn well insertable in a hole in the instrument panel 11 and having a flange 12 engaging the face of the panel 11. A sleeve 13 threaded on a neck 14 on the socket engages the back side of the panel to secure the socket in position.

The socket also includes a set of bimetallic contact fingers 15 secured in position at the bottom of the well by a stud 16 passing through an insulator block 17 and to which the ungrounded side of the battery is connected. The well is connected to the grounded side of the battery through the instrument panel.

The device also includes a removable plug 18 comprising essentially a body, an igniting coil 19 of resistance wire and a knob 20 by means of which the plug is manipulated and carried by hand to a cigar, cigarette or pipe to apply the incandescent igniting coil to the tobacco. The coil 19 is carried in a cup 21 to which one end of the coil is welded. The other end of the coil is connected to a ground as explained below.

When the knob 20 is pushed inwardly of the well, the cup 21 is brought into contact with the bimetal fingers and the circuit to the igniting coil is closed to bring the coil to incandescence. In this process, considerable heat is developed and, to avoid conduction of the heat to the handle, it has been customary to form part of the body of "Bakelite" or other molded resinous insulating material.

It is desirable to form the body of the plug of metallic parts to reduce the cost of production, but it is also important to avoid transferring excessive heat from the coil to the knob.

This has been accomplished by the present invention by interposing between the igniting coil and the body of the plug a substantial mass of ceramic material such as porcelain or lava (which is less expensive than molded resins and much more heat conductive) and by reducing substantially the physical contact between the various parts to further limit the amount of heat which can be conducted from the coil to the knob.

As shown in the accompanying drawings the mass of ceramic material is in the form of a block 22, and the body of the plug comprises a metallic tube 23. The inner end wall 24 of the tube 23 is depressed to produce a cup-like cavity 25, and the block 22 has a neck 26, frusto-conical as shown, fitting into said cavity 25 and engaging the bottom of the end wall 24, while a flange 27 on the block 22 engages the edge 28 formed by the junction of the tube 23 with the end wall 24.

The other end of the ceramic block 22 has a reduced portion 30 engaging the coil-carrying metal cup 21. An elongated stud 31, to which the inner end of the coil 19 is connected, passes through holes in an insulating disk 32, the cup 21, the block 22 and the bottom of the wall 24, and is there headed over to secure the parts together.

The neck 26 on the block 22 is spaced from the wall of the cavity 25 so as not to contact it, thus leaving an air space to heat-insulate the block from the wall. The bottom of the wall 24 is bowed to further reduce contact between it and the end of the block 22. In addition, the edge 28 of the tube 23 which engages the flange 27 is provided with a series of bumps 33 to reduce the physical contact between the tube and the block and thereby reduce the conduction of heat between them.

Thus it will be seen that heat from the coil 19 has little opportunity of being conducted to the tube 23 and

that a substantial part of the heat is absorbed by the ceramic block 22. The igniting coil is brought to incandescence in a matter of seconds, whereupon the circuit is broken and the plug is removed for use; hence, the cooling off of the parts begins before the heat absorbed by the block 22 has time to pass to the tube 23. Before the plug is to be used again the parts have, as a rule, reached ambient temperature so there is no build-up or accumulation of excessive heat in the ceramic block or other parts of the removable plug.

To further reduce the opportunity of heat conduction from the coil 19 to the knob 20, the outer end of the tube 23 has a non-metallic connection to the knob. As shown it is an insulating disk 34 provided with a neck 35 extending into the tube 23 and having a threaded hole 36 to receive a threaded stud 37 on the knob 20.

The disk 34 has openings 38 through which tabs 39 on the end of the tube 23 extend and are bent over while the end of the tube engages a flange 40 on the disk 34. A plate 41 interposed between the knob 20 and the tube 23 engages the flange 40 and covers the end of the tube.

The removable plug of a wireless cigar lighter has a cylindrical member slidably fitting the well to support the plug therein.

In the forms of the invention herein illustrated, this member is in the form of a sleeve 42 surrounding the plug and having sliding engagement with the plug body and acting as an ejector to hold the plug in open circuit position in the well and return it to that position when the igniting coil is heated ready for use.

As shown the ejector sleeve 42 has an outwardly extending flange 43 adapted to engage the flange 12 of the well, and an inturned portion 44 at its other end terminating in a neck 45 slidably engaging the outside surface of the tube 23 and normally engaging the flange 27 on the ceramic block 22. The edge of the neck 45 engaging the ceramic block is scalloped as at 45a, Fig. 3, to reduce the physical contact between the said parts and thereby reduce the opportunity of conduction of heat to the knob 20. The outer end of the sleeve 42 slidably fits over the periphery of the flange 40 of the insulating disk 34. A coil spring 46 is located in the space between the tube 23 and the sleeve 42 and its ends engage the flange 40 and the inturned portion 44 on the sleeve. The spring 46 is an expansion spring and normally holds the plug 18 in the position shown in Fig. 1 and is further compressed when the plug is pushed into the well to bring the coil-cup 21 into the grasp of the bi-metallic finger 15 as shown in Fig. 2. When the coil is heated, the fingers 15 expand and release their grip on the cup permitting the spring 46 to return the plug to the open circuit position shown in Fig. 1.

The sleeve 42 is lanced to provide spring fingers 47 which frictionally hold the sleeve in the socket and which also serve to make electrical contact between the grounded socket and the sleeve. To assure good electrical connection between the sleeve and the tube 23, a ring 48, shown in perspective in Fig. 4, is inserted between the end of the spring 46 and the inturned portion 44 of the sleeve. This ring has spring fingers 49 for sliding frictional engagement with the tube 23. Thus, good electrical connection is established between the inner end of the coil 19 and the grounded socket 10 through the stud 31, sleeve 23, ring 48, and sleeve 42.

As shown in Figs. 1, 2 and 3, the removable plug 18 may be provided with an ash catcher, and this is shown in the form of an ash guard 50 which surrounds the coil-cup 21 and extends beyond it, having an open end 51 through which a cigar or cigarette to be lighted or relighted may pass to be brought into contact with the igniting coil 19. Ash or tobacco particles falling off the cigar or cigarette or falling off the coil 19 will

be caught by the ash guard. The outer end of the ash guard 50 has an inturned flange 52 which is welded or otherwise secured to the inturned portion 44 on the sleeve 42. The inner end of the ash guard has an inturned rim to keep the ashes or tobacco particles from falling out unless the knob end of the plug be tipped up beyond the horizontal position. When the sleeve 42 reaches its home position in the socket as controlled by the flange 43, further inward movement of the ash guard is prevented and the ash guard can never reach or contact the bi-metallic fingers 15. When the coil is to be heated, pressure on the knob 20 pushes the coil cup and coil through the open end of the ash guard into engagement with the bi-metallic fingers, as shown in Fig. 2.

When the plug is removed for use, if it is desired to light a pipe, the sleeve 42 may be held between the fingers and thumb of the hand while the index finger presses on the knob 20 to eject the igniting coil to the open end 51 of the ash guard and beyond into the pipe, if desired. As soon as such pressure on the knob is released, the heating coil moves back into the ash guard and any tobacco particles or ashes falling off the igniting coil will be caught within the ash guard.

The ash guard performs the additional function of tending to avoid accidental contact of the fingers with the igniter coil in handling the plug.

In Figs. 5 and 6 a slightly modified form of the invention is illustrated. In this form the plug is designed for use with a well 10a of a type already in use on many automobiles and which is characterized by the fact that the well is provided with lancings forming fingers 53 which are biased inwardly and having inwardly extending ends 54 to be engaged by a contact member associated with the coil cup. This contact member, in the form of the invention shown, comprises a frusto-conical metal plate 55 inserted between the frusto-conical end of the insulating block 22 and the recessed end of the tube 23 and connected to the current-conducting stud 31. The end of the plate 55 is in the form of a doubled-over flange 56 which is in position to be engaged by the ends 54 of the fingers 53 to directly connect the plug with the grounded well. The fingers 53 perform the additional function of acting as a snubber to avoid the popping out of the plug when the coil-cup is released by the bi-metallic fingers. For this purpose, the fingers 53 are provided with a nib 57 which, as shown in Fig. 1, is in the path of the flange 53. Hence, if the body of the plug tends to move too far when released by the bi-metallic fingers, the flange 53 will strike the nibs 57 and be arrested.

The plug of the present invention is illustrated as applied to a different type of well in Figs. 7 and 8. In this type of well there are the usual bi-metallic fingers 15b located near the bottom of the socket 10b. However, in this type of well, an ejector for the plug is carried within the well or socket. As shown, this comprises a sleeve 58 energized by a spring 59. When used with the plug for which it is designed, the sleeve is depressed by contact with the plug when the latter is moved to circuit-closing position and ejects the plug when the grip of the fingers 15b on the coil cup is relieved by their expansion.

The plug of the present invention, however, does not employ the ejector sleeve 58, but supplies its own ejector in the form of a sleeve 42b energized by a spring 46b, like the sleeve and spring in the form of the invention shown in Fig. 1, and otherwise is constructed as shown in Fig. 1, the corresponding parts being indicated by their reference numerals applied in Figs. 1 to 4 with the exponent b.

It will be observed that the plug 18b illustrated in Figs. 7 and 8 may be used in the type of socket shown in Fig. 5 or that shown in Fig. 7, since no part of the plug is in position to engage the ejector shell 58, and that therefore this plug may serve as a replacement for both kinds of sockets.

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. An ignitor plug for a wireless cigar lighter comprising a metal tube having an open end and the other end having a depressed end wall portion forming a deep cavity; a handling knob; means attaching the knob to the open end of the metal tube; an igniting unit located at the closed end of the tube and comprising a spiral resistance coil, a cup within which the coil is contained, and a block of ceramic insulating material between the tubular body and the coil-cup, said block having a flange engaging the adjacent end portion of the metal tube, having a neck extending into and spaced at its sides from the depressed end wall portion of the metal tube, the end of the neck engaging said end wall portion and said block having at the other side of the flange a portion engaging the coil-cup and having a central passage extending entirely through it; and an elongate metal stud extending through said coil-cup, the passage of the ceramic block, and the depressed end wall portion of the metal tube to secure the tube, block and cup together as a unit, said stud engaging said end wall and being connected to one end of the coil, thereby to conduct current between the coil and said metal tube.
2. An ignitor plug for a wireless cigar lighter comprising a metal tube having an open end and the other end having a depressed end wall portion forming a deep cavity; a handling knob; means attaching the knob to the open end of the metal tube; an igniting unit located at the closed end of the tube and comprising a spiral resistance coil, a cup within which the coil is contained, and a block of ceramic insulating material between the tubular body and the coil-cup, said block having a flange engaging the adjacent end portion of the metal tube, a neck extending into and engaging the depressed end wall portion of the metal tube and at the other side of the flange a portion engaging the coil-cup, said block having a central passage therethrough; and an elongate metal stud extending through said coil-cup, ceramic body, and depressed end wall portion of the metal tube to secure the tube, block and cup together as a unit, said stud being connected to one end of the coil and conducting current between the coil and said metal tube, said other end of the metal tube having protuberances making limited contact with the flange of the ceramic body to reduce heat conduction between the body and tube.
3. An ignitor plug for a wireless cigar lighter comprising a metal tube having an open end and the other end having a depressed end wall portion forming a deep cavity; a handling knob; means attaching the knob to the open end of the metal tube; an igniting unit located at the closed end of the tube and comprising a spiral resistance coil, a cup within which the coil is contained, and a block of ceramic insulating material between the tubular body and the coil-cup, said block having a flange engaging the adjacent end portion of the metal tube, a neck extending into and engaging the depressed end wall portion of the metal tube and at the other side of the flange an end portion engaging the coil-cup, said block having a central passage therethrough; and an elongate metal stud extending through said coil-cup, ceramic body, and the depressed end wall portion of the metal tube to secure the tube, block and cup together as a unit, said stud being connected to one end of the coil and conducting current between the coil and said metal tube, said end portion of the ceramic block being reduced and making contact with coil-cup.
4. An ignitor plug for a wireless cigar lighter comprising a metal tube having an open end and the other end having a depressed end wall portion forming a deep cavity; a handling knob; means attaching the knob to the open end of the metal tube; an igniting unit located at the closed end of the tube and comprising a spiral

- resistance coil, a cup within which the coil is contained, and a block of ceramic insulating material between the tubular body and the coil-cup, said block having a flange engaging the adjacent end portion of the metal tube, a neck extending into and engaging the depressed end wall portion of the metal tube and at the other side of the flange an end portion engaging the coil-cup, said block having a central passage therethrough; and an elongate metal stud extending through said coil-cup, ceramic body, and depressed end wall portion of the metal tube to secure the tube, block and cup together as a unit, said stud being connected to one end of the coil and conducting current between the coil and said metal tube, the sides of the neck of the ceramic block being spaced from the adjacent depressed end-wall portion of the tube.
5. An ignitor plug for a wireless cigar lighter comprising a metal tube having an open end and the other end having a depressed end wall portion forming a deep cavity; a handling knob; means attaching the knob to the open end of the metal tube; an igniting unit located at the closed end of the tube and comprising a spiral resistance coil, a cup within which the coil is contained, and a block of ceramic insulating material between the tubular body and the coil-cup, said block having a flange engaging the adjacent end portion of the metal tube, a neck extending into and engaging the depressed end wall portion of the metal tube and at the other side of the flange an end portion engaging the coil-cup, said block having a central passage therethrough; and an elongate metal stud extending through said coil-cup, ceramic body, and depressed end wall portion of the metal tube to secure the tube, block and cup together as a unit, said stud being connected to one end of the coil and conducting current between the coil and said metal tube, the end of the neck of the ceramic block being reduced to make limited contact with the depressed end-wall portion of the tube to reduce said conduction between the block and the tube.
6. The invention as defined in claim 1 in which there is a sleeve surrounding said tube and having a reduced neck portion forming a bearing in which said tube slides and forming an abutment to be engaged by the flange on said ceramic body.
7. The invention as defined in claim 6 in which the means for attaching the knob to the tube comprises a disk of insulating material having neck portion extending into and fitting the inside of the tube and a flange fitting the inside of the sleeve forming a bearing for the other end of the sleeve.
8. The invention as defined in claim 7 in which a coil spring surrounding the tube is located between the reduced neck portion of the sleeve and said insulating disk on the tube.
9. The invention as defined in claim 8 in which a member having contact fingers engaging the tube and a flange engaging the reduced neck portion of the sleeve and located between the latter and the adjacent end of said coil spring insure good sliding electrical contact between the tube and the sleeve.
10. The invention as defined in claim 6 in which another sleeve is secured to the reduced neck portion of the first-named sleeve and extends over and beyond the resistance coil in spaced relation thereto to collect ash and tobacco particles which may be displaced from a cigar or cigarette in lighting or relighting the same.

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