

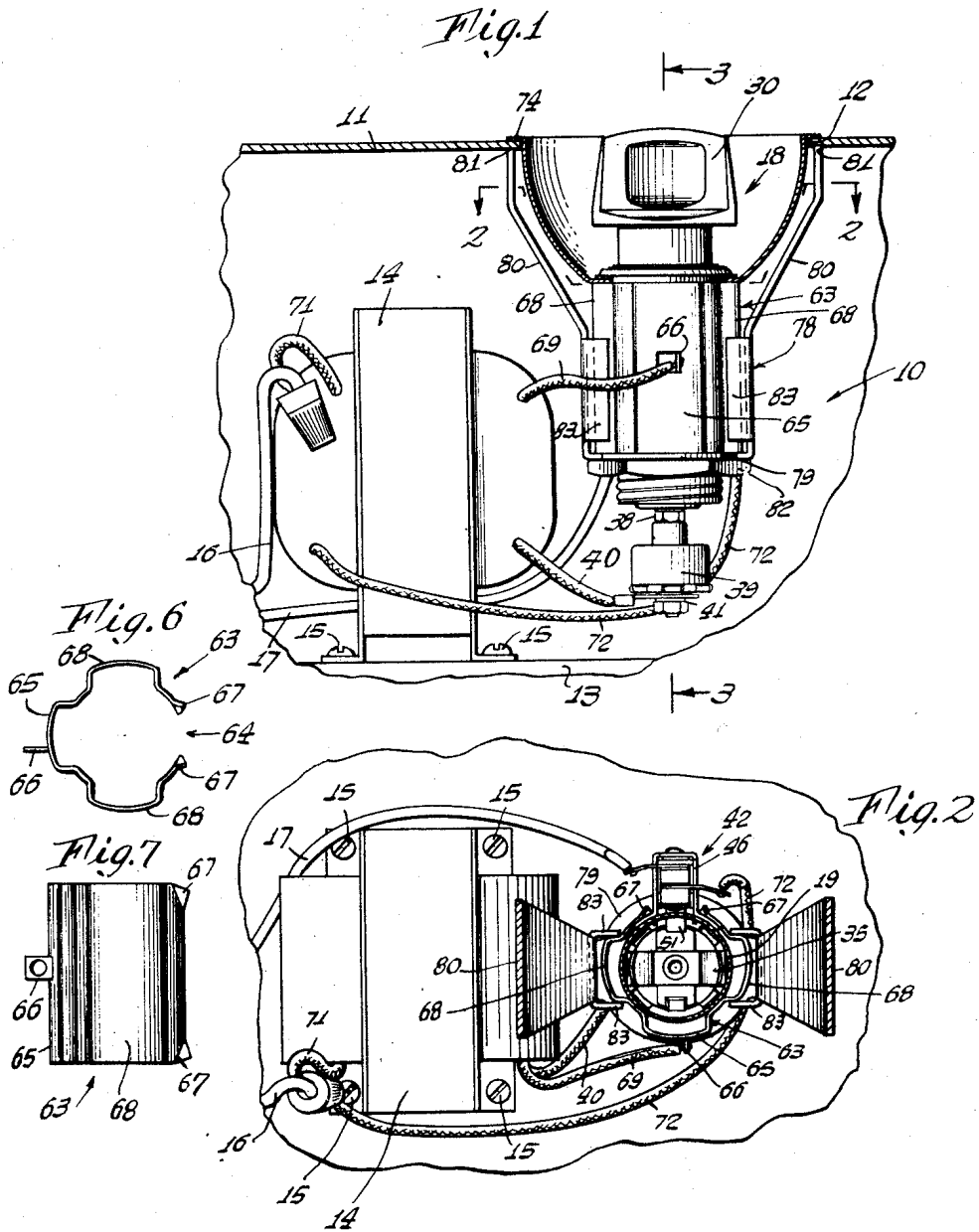
Aug. 9, 1960

L. E. FENN  
CIGAR LIGHTER

2,948,800

Filed Oct. 11, 1957

2 Sheets-Sheet 1



INVENTOR.  
*Lawrence E. Fenn*

BY  
*Johnson and Kline*  
ATTORNEYS

Aug. 9, 1960

L. E. FENN  
CIGAR LIGHTER

2,948,800

Filed Oct. 11, 1957

2 Sheets-Sheet 2

Fig. 3

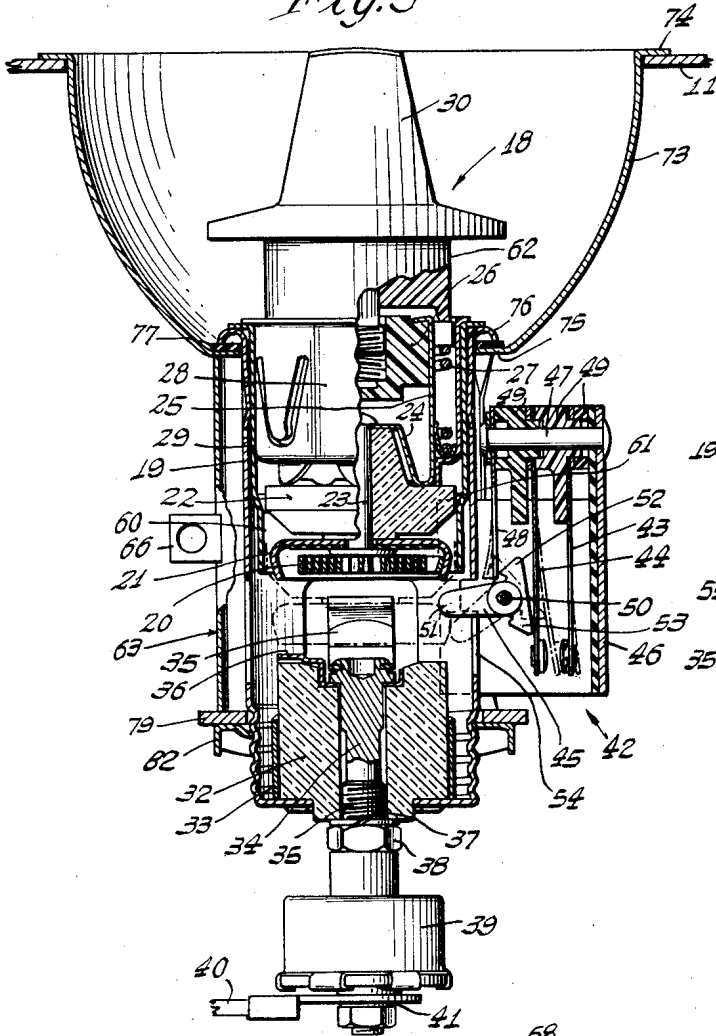


Fig. 5

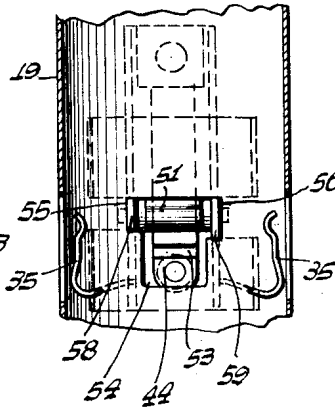
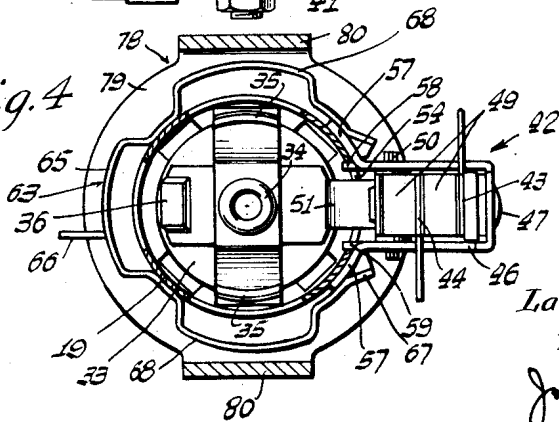


Fig. 4



INVENTOR.  
*Lawrence E. Fenn*  
BY  
*Johnson and Kline*  
ATTORNEYS

1

2,948,800

**CIGAR LIGHTER**

Lawrence E. Fenn, Anchorage Drive, Bridgeport, Conn.

Filed Oct. 11, 1957, Ser. No. 689,640

21 Claims. (Cl. 219—32)

The present invention relates to a cigar lighter and more particularly to a new and improved wireless type lighter which is energizable by normal household electricity.

The wireless type of cigar lighter has been and is generally utilized in motor vehicles and over a period of years there has been developed for such use an exceedingly satisfactory, economical and trouble-free electric lighter. As it became more apparent than an electric cigar lighter could be advantageously utilized in a household, mounted either in its own cabinet or in an appliance such as a stove, radio, etc., and energized by normal household electricity, it had been proposed to adopt the wireless type automotive lighter for such purposes. This had decided advantages in that such a lighter had the above mentioned desirable characteristics and also it obviates the redesigning of a new lighter and the tooling of manufacturing machines to produce a new type of lighter. There have heretofore been several factors which negated the use of the wireless lighter in household applications, as for example the large differences in voltages, the possibility of short-circuiting of the lighter when using normal household voltage, the possibility of an electric shock to a user and other obvious deterrents. According to the present invention, however, these detrimental factors have been overcome to provide a wireless type lighter of substantially standard automotive design which is utilizable in household applications.

It is an object of the present invention to provide a new and improved wireless type of cigar lighter which may be safely energized by normal household electricity.

Another object of the present invention is to provide in a cigar lighter of the above type for the utilization of components, which have been substantially standardized for automotive use in a household lighter.

A further object of the present invention is to provide a cigar lighter of the above type which is economical to manufacture, is easily and simply mounted in household appliances or in its own cabinet and which is substantially trouble-free in operation.

In attaining the above objects there is provided a substantially standard cigar lighter plug which carries at one end a heating coil which is brought to incandescence by energization from a 6 or 12 volt electrical source. The plug is normally stored and energized within a retainer well which is secured to a household appliance and the plug is removable therefrom for use. Also provided is a transformer for reducing the household voltage to a value which may be safely utilized by the heating element. In addition to the usual switch between the plug and the well, there is further provided in the primary circuit of the transformer a switch which is actuated by the plug after the previous switch is closed so that the latter switch absorbs the effects of the making and breaking of the circuit. This switch when actuated by the plug, exerts an eccentric force on the plug which tends to make the plug eccentric in the well but the present

2

invention provides for preventing eccentricity and any malfunctioning which may be caused thereby.

In addition to a new and improved type of plug and switching means, the present invention employs economical parts which are easily and inexpensively assembled. These parts include a clamping shell for holding the switch in position on the well to be actuated by the plug and a mounting bracket for maintaining the lighter secured in an aperture in a household appliance.

Other features and advantages will hereinafter appear.

In the drawing:

Figure 1 is an elevation of the cigar lighter of the present invention with a portion of the appliance in which the lighter is mounted being shown.

Fig. 2 is a view taken on the line 2—2 of Fig. 1.

Fig. 3 is a view somewhat enlarged taken on the line 3—3 of Fig. 1.

Fig. 4 is a view partly in section of the well looking down thereinto.

Fig. 5 is an axial section of the well looking outward with a portion of the bimetallic arms being shown in dotted lines.

Fig. 6 is an end view of the clamping shell.

Fig. 7 is a side view of the clamping shell.

A cigar lighter of the instant invention has particular utility when it is mounted within an appliance such as a radio or stove or in its own cabinet and hence in Fig. 1, it is shown as it would be in a household appliance or its own cabinet 10 in which a side 11 of the appliance is provided with an opening 12 to provide access to the lighter. The appliance further has a base 13 on which is mounted a step-down transformer 14 for reducing the normal household voltage of 110-120 volts to either 6 or 12 volts, depending upon the resistance of the lighter. Screws 15 secure the transformer to the base 13 and a pair of leads 16 and 17 extend from the lighter to be connected to a source of normal household current. This may be accomplished within the appliance or else by having a separate plug on the end of the leads suitable for engagement within a household electric socket.

The transformer 14 is of the type which prevents, in case of malfunctioning, any short-circuiting between the primary and its secondary and hence prevents the secondary from having the household voltage impressed thereacross. In addition, since electric power is only intermittently transformed by the transformer, the transformer rating is less than would be required if power were being continuously transformed, and hence a more economical transformer may be safely employed.

As shown in Fig. 3, the lighter comprises a removable plug generally referred to by reference numeral 18 and a retainer well 19 into which the plug is positioned for storage and energization with the plug being removable therefrom for lighting tobacco. The plug has a spiral igniting coil 20 at its inner end contained within a cup 21. A circular ceramic plug 22 having an axial radial sectional shape as shown is mounted on the other side of the cup 21 and held in place by a rivet 23 which also connects one end 24 of a substantially cylindrical interconnecting member 25 to the cup 21.

It will be appreciated that one end of the spiral igniting coil 20 is connected to the rivet 23 while its other end is welded to the cup 21. A plastic plug 26 is connected to the other end of the interconnecting member 25 while a spiral spring 27 surrounds a substantial length of the interconnecting member and is held thereagainst by a spring retainer cup 28. Surrounding the exterior of the retainer cup is a cylindrical friction sleeve 29 having the shape shown. The sleeve 29 is adapted to move frictionally within limits on the retainer cup 28 while the interconnecting member 25 and the two plugs

22 and 26 are capable of moving inwardly with respect to the spring retainer cup 28 against the action of the spring 27. A knob 30 is threadedly secured to the plastic plug 26 to form a handle for the complete plug 18. The knob 30, interconnecting member 25, plugs 22 and 26 and cup 21 form an integral unit which is axially movable as a unit with respect to the sleeve 29 and retainer cup 28.

The lower end of the retainer well 19 has mounted therein a ceramic plug 32 and secured thereto by an annular plug retainer 33. A rivet 34 extends axially of the plug 32 to fasten a pair of oppositely disposed bimetallic arms 35 thereto in addition to a safety stop element 36 which prevents contact between the rivet 23 and the rivet 34. The other end of the rivet 34 is threaded as at 35 and a nut 38 secures the rivet onto the plug 32. The end 37 extends beyond the nut 38 and threaded thereon is a replaceable fuse 39 of the type which blows under an extended heavy load. A lead 40 connects to an input terminal 41 of the fuse.

In the operation of the lighter, inward axial force on the knob 30 causes the parts to assume the dotted line position shown in Fig. 3 in which the cup 21 engages and is clasped by the bimetallic arms 35. Upon passage of sufficient current through the igniting coil, to cause the coil to reach incandescence, the arms 35 expand outwardly releasing the cup 21 and permitting the spring 27 to cause the plug 18 to protrude out of the well 19 a short distance to the normal storage position shown in full lines. The plug is removable from the well when the coil is incandescent for use to ignite tobacco.

It will be appreciated that the relative dimensioning between the cup 21 and the bimetallic arms 35 is critical and must be maintained in order to assure that the plug will be released when it has reached the desired degree of incandescence without being underheated or overheated. In order to prevent the making and breaking between these elements, there is provided a normally open switch 42 which is connected in the primary circuit of the transformer 14 and serves to make and break the electrical current to the lighter while the cup 21 is in engagement with the arms 35. The switch 42 also serves to prevent energization of the primary of the transformer except when the coil is being energized. To this end, the switch 42 contains a stationary contact arm 43 and a flexible contact arm 44, both of which are formed from resilient material. A pivoted switch actuator 45, formed of insulating material such as ceramic, is utilized to force the arm 44 against the arm 43 to close the switch.

The arms 43 and 44 and actuator 45 are mounted on a U-shaped switch support member 46. To this end, there is provided on the upper end of the member 46 a rivet 47 for connecting together the two arms and a flat spring 48 together with insulating segments 49 positioned therebetween. In addition, a pivot pin 50 on which the actuator 45 is pivoted extends between the legs of the member 46. The actuator 45 includes a cup engaging portion 51, a spring engaging portion 52 and a contact arm engaging portion 53. The cup engaging portion extends through an aperture 54 in the well 19 which is substantially T-shaped and has ends 55 and 56 of the crossarm. The legs of the member 46 are outwardly curved as at 57 to conform to the exterior of the well about the aperture 54 and in addition have straight projecting lugs 58 and 59. These lugs are of unequal dimension as are the ends 55 and 56 of the T aperture 54 and hence they serve to prevent placement of the switch support member 46 on the well at none but the correct position. In addition by maintaining substantially closed tolerances in the lugs 58 and 59 and the aperture 54, accurate positions of the cup engaging portion of the actuator 45 with respect to the bimetallic arms are simply and easily effectuated.

In the above structure, movement of the cup 21 to-

ward the bimetallic arms 35 first causes contact with the arms, then additional movement of the cup causes it to engage and move the cup engaging portion 51 to counterclockwise pivot the actuator 45 to close the switch 42 and final movement of the cup causes latching by the arms 35. The pivoting of the actuator 45 causes the spring engaging portion 52 to engage the spring and also causes the contact engaging portion 53 to engage the movable contact 44 to close the circuit. The relative position of the parts when the switch is closed is shown in dotted lines in Fig. 3. Upon release of the cup 21 by the arms 35, the plug moves outwardly and prior to its disengagement between itself and the arms 35, it allows the actuator 45 to reversely pivot under the force of the spring 48 to permit opening of the contacts.

The cup engaging portion 51 exerts an eccentric force on the cup 21 and to prevent the cup from being forced to one side, which would tend to cause malfunctioning between the cup and the bimetallic arms, the plug 18 of the present invention provides for maintaining the cup in axial alignment with the well. In accomplishing this, the friction sleeve 29 has an inner end portion 60 of reduced diameter which has a close sliding fit with the cylindrical surface portion 61 of the ceramic plug 22 having the largest diameter. In addition, the knob 30 has a shoulder 62 which has a close sliding fit with the inside surface of the spring retainer cup 28. As the cup 21, as part of the hereinbefore mentioned integral unit, moves inwardly the portion 61 of the plug 22 engages the portion 60 of the sleeve 29 to provide concentricity therebetween while the shoulder 62 of the knob engages the inside of the spring retainer cup 28 to also provide for concentricity. The sleeve 29 has a close sliding fit with the well and is maintained thus by the well concentric therewith and it in turn maintains the spring retaining cup 28 concentric with the well. Accordingly, the cup 21 is maintained concentric with the well irrespective of the eccentric force of the actuator.

As shown in Figs. 6 and 7 there is provided a clamping shell 63 for holding the switch 42 on the well 19. This shell is formed from sheet metal and has a longitudinal slot 64 with a rib 65 opposite thereto and a bent out terminal 66 formed by bending out a portion of the rib 65. The end corners of the slot are bent outwardly as at 67. There is additionally provided a pair of opposite ribs 68 for reasons which will be hereinafter apparent.

With the clamping shell mounted on the well, the terminal 66 is utilized as a connection in the secondary circuit. To provide energization of the coil 21, there is provided a wire 69 connected between one side of the secondary circuit of the transformer and the terminal 66, the other side being a wire 40 connecting to the terminal 41. The primary circuit of the transformer 14 has a wire 71 connected to the lead 16 while the lead 17 connects to the stationary arm 43. A wire 72 connects the movable arm 44 to the other side of the primary. It will accordingly be appreciated that the switch 42 is in the primary while in the secondary there is provided in effect a switch between the cup 21 and bimetallic arms 35 and the fuse 39. The voltage in the primary circuit is insulated from the well or other user accessible portions of the lighter by the insulating segments 49 and by the actuator 45 being formed of insulating material. Accordingly, the lighter of the present invention effectively nullifies the possibility of electrical shocks occurring to a user by the voltage of the primary circuit.

The lighter of the present invention is mounted to have the knob 30 when in normal storage position to be flush with the outside of the appliance and yet be easily accessible and to this end there is provided a mounting cup 73, preferably decoratively plated, which has an upper outwardly directed flanged end portion 74 and a lower inwardly directed flanged end portion 75. The well 19 has its outer end portion 76 reversely bent for engage-

ment with the lower flanged end 75 with an insulating washer 77 preferably positioned therebetween. The outer flange 74 rests on the exterior of the appliance side 11 and in order to provide a clamping of the lighter to the side 11, a somewhat U-shaped mounting bracket 78 is provided. This bracket has an annular bight portion 79 and upstanding legs 80. The bracket is positioned with respect to the other elements with the lower end of the well 19 located within the bight portion 79 and the ends 81 of the legs positioned against the inner surface of the appliance side 11 adjacent the flanged edge 74 to clamp the edges of the appliance adjacent the opening therebetween. A nut 82 screwed onto the lower end of the well secures the parts in position and exerts the force to cause the clamping action. In addition the intermediate portions of legs 80 of the bracket 78 have inwardly bent flanges 83 which engage the ribs 68 of the shell 63 to prevent rotation therebetween while the slot 64 and switch 42 prevent rotation between the shell and well.

In assembling the lighter the cup 73 is first positioned in the aperture in the opening 12 of the appliance, the well 19 is inserted therein along with the washer 77. The switch 42 is positioned on the well with the lugs 58 and 59 located in the ends 55 and 56 of the aperture 54. The clamping shell 63 is then positioned on the well by telescoping it on the well from the lower end thereof with the switch 42 positioned in the slot 64. The outwardly bent ends 67 of the slot serve to facilitate the initial locating of the switch in the slot. The annular bight portion 79 of the bracket 78 is then passed over the lower end of the well and the nut 82 screwed thereupon to cause the ends 81 of the bracket and the flange 74 to compress the edges of the opening 12 therebetween. In addition, the nut 82 serves to cause a clamping action on the lower flange 75 of the cup between the upper edge of the shell 63 and the end portion 76 of the well. Thus only a single element clamps and maintains the parts together and to the appliance.

In some instances wherein the cup is normally secured to the appliance, either by molding a portion of the cup therein or by welding or other well known means, the mounting bracket 78 is not required. In this situation, merely screwing the nut 82 against the clamping shell 63 will serve to secure the lighter to the appliance. It will be appreciated that employment of the cup positions the plug, when in normal storage position, recessed below the face of the side 11 of the appliance. If desired, the cup may be completely eliminated and the lighter secured to the side of an aperture in the appliance merely by clamping the edge of the aperture between the clamping shell and the end portion 76.

It will thus be appreciated that there has been disclosed a new and improved wireless type of cigar lighter for use in home appliances and adapted to be energized by normal household electrical current. The lighter of the present invention utilizes parts which have become substantially standardized and known for their trouble-free performance and long life, in addition to being economical to manufacture. The parts of the lighter are simple and economical to fabricate and also they are capable of being easily and inexpensively assembled to produce a substantially trouble-free wireless type electric cigar lighter.

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 a wireless type cigar lighter having a removable plug adapted to be energized by normal household electricity and a transformer for transforming the household voltage to a voltage utilizable by the lighter, the improvement comprising a normally open switch electrically connected in the primary of the transformer and adapted to be actuated by the plug, said switch including a stationary contact arm, a movable contact arm and a flat spring, means mounting the arms and spring in aligned, insulated

relation, and a pivoted actuator adapted to be moved to a switch closing position by the plug wherein the two arms are in electrical engagement and the spring and movable arm exert a force tending to move the actuator to its normal switch open position.

2. In a wireless type cigar lighter having a removable plug adapted to be energized by normal household electricity and a transformer for transforming the household voltage to a voltage utilizable by the lighter, the improvement comprising a normally open switch electrically connected in the primary of the transformer and adapted to be actuated by the plug, said switch including a support member having a bight portion and substantially parallel legs extending therefrom, a stationary contact arm, a movable contact arm and a flat spring, means mounting the arms and spring in aligned, insulated relation on the member within the legs, and an actuator pivotally mounted on the member and adapted to be moved to a switch closing position by the plug wherein the two arms are in electrical engagement and the spring and movable arm exert a force tending to move the actuator to its normal switch open position.

3. The invention as defined in claim 1 in which the actuator is substantially T-shaped with the leg of the T contacted by the plug, an end of the crossarm being a spring contacting portion and the other end of the crossarm being the movable contact arm contacting portion.

4. In a wireless type cigar lighter having a removable plug adapted to be energized by normal household electricity and a transformer for transforming the household voltage to a voltage utilizable by the lighter, the improvement comprising a normally open switch electrically connected in the primary of the transformer and adapted to be actuated by the plug, said switch including a support member having a bight portion and substantially parallel legs extending therefrom, a stationary contact arm, a movable contact arm and a flat spring, means mounting the arms and spring in aligned, insulated relation on the member within the legs in parallel relation to the bight portion, and a T-shaped actuator pivoted on the member on a pivot pin extending between the legs and located between the longitudinal axis of the spring and movable arm and adapted to be moved to a switch closing position by the plug engaging the end portion of the leg of the actuator wherein the two arms are in electrical engagement with one end of the crossarm of the actuator causing flexing of the movable contact arm and the other end of the crossarm of the actuator causing flexing of the flat spring.

5. In a wireless type cigar lighter including a well, a plug adapted to be stored and to be energized by normal household electricity in the well and removable therefrom for use and a transformer for transforming the household voltage to a voltage utilizable by the lighter, the improvement comprising a normally open switch electrically connected in the primary of the transformer and adapted to be actuated by the plug, said switch including a support member having a bight portion and parallel legs extending outwardly therefrom, a stationary contact arm, a movable contact arm and a flat spring, means mounting the arms and spring in aligned, insulated relation on the member within the legs, an actuator pivoted on the member and having a portion extending beyond the legs, an aperture formed in the well, and means for securing the switch member on the well with the portion of the actuator extending through the aperture into the well, said actuator being adapted to be moved by the plug to a switch closing position wherein the two arms are in electrical engagement and the spring and movable arm exert a force tending to move the actuator to its normal switch open position.

6. In a wireless type cigar lighter comprising a well and a plug axially movable from a storage position inwardly to an energizing position in the well and removable therefrom for use, the improvement comprising form-

7

ing the plug to have a knob at one end and an igniting coil at the other end, means interconnecting the knob and coil to form an integral unit, a member mounted on the unit with the unit being axially movable relative there-  
 5 to when moved to the energizing position in the well, and a tubular sleeve mounted for limited movement on the member and having a close sliding fit with the well, the integral unit being dimensioned to have a close sliding fit at the knob end with the member and at the igniting coil end with the sleeve when the plug is moved to the energizing position whereby the plug is maintained substan-  
 10 tially concentric with the well while being energized.

7. In a wireless type cigar lighter comprising a substantially cylindrical well and a plug axially movable from a storage position inwardly to an energizing position in the well and removable therefrom for use, the improvement comprising forming the plug to have a knob having a shoulder at one end and an igniting coil at the other end, means interconnecting the plug and coil to form an integral unit having a cylindrical surface portion, a substantially cylindrical cup mounted adjacent the knob with the shoulder of the knob being movable into the cup when the plug is moved to the energizing position, and a hollow, substantially cylindrical friction sleeve circumscribing the cup and unit and having a close sliding fit with the well and having a reduced cylindrical portion at its end adjacent the cup, the cylindrical surface portion of the unit having a close sliding fit with the reduced cylindrical portion of the sleeve and the knob shoulder having a close sliding fit with the cup whereby when the plug is moved to energizing position, it is maintained substantially concentric with the well.

8. In a wireless type cigar lighter comprising a well, a plug axially movable from a storage position inwardly to an energizing position in the well and removable therefrom for use and a switch having a spring urged actuator normally projecting into the well but pivoted outwardly therefrom against the spring urging by the plug when it is moved to the energizing position, the improvement comprising forming the plug to have a knob at one end and an igniting coil at the other end, means interconnecting the knob and coil to form an integral unit, a member mounted on the unit with the unit being axially movable relative thereto when moved to the energizing position in the well, and a tubular sleeve mounted for limited movement on the member and having a close sliding fit with the well, the integral unit being dimensioned to have a close sliding fit at the knob end with the member and at the igniting coil end with the sleeve when the plug is moved to the energizing position whereby the plug is maintained substantially concentric with the well and the action of the switch actuator against the plug is obviated.

9. In a wireless type cigar lighter comprising a substantially cylindrical well, a plug axially movable from a storage position inwardly to an energizing position in the well and removable therefrom for use and a switch having a spring urged actuator normally projecting into the well but pivoted outwardly therefrom against the spring urging by the plug when it is moved to the energizing position, the improvement comprising forming the plug to have a knob having a shoulder at one end and an igniting coil at the other end, means interconnecting the plug and coil to form an integral unit having a cylindrical surface portion, a substantially cylindrical cup mounted adjacent the knob with the shoulder of the knob being movable into the cup when the plug is moved to the energizing position, and a hollow, substantially cylindrical friction sleeve circumscribing the cup and unit and having a close sliding fit with the well and having a reduced cylindrical portion at its end adjacent the cup, the cylindrical surface portion of the unit having a close sliding fit with the reduced cylindrical portion of the sleeve and the knob shoulder having a close sliding fit with the cup whereby when the plug is moved to energizing position it is maintained substan-

8

tially concentric with the well and the action of the switch actuator against the plug is obviated.

10. In a wireless type electric cigar lighter comprising a well, a plug removable therefrom, and a switch secured on the well and operable by the plug when moved to energizing position, the improvement comprising forming the well to have an unsymmetrical aperture in a side thereof, and a switch support member having unsymmetrical lugs fittable into the aperture in only one position whereby said switch support member is capable of being secured on the well in only the one position.

11. In a wireless type electric cigar lighter comprising a well, a plug removable therefrom, and a switch secured on the well and operable by the plug when moved to energizing position, the improvement comprising forming an aperture in the side of the well having oppositely disposed corresponding lengths of unequal dimensions, and a switch support member having oppositely disposed lugs of unequal length fittable into the aperture in only one position whereby said switch support member is capable of being secured on the well in only the one position.

12. In a wireless type electric cigar lighter comprising a well, a plug removable therefrom, and a switch secured on the well and operable by the plug when moved to energizing position, the improvement comprising forming the well to have a T-shaped aperture in a side thereof with the width of the end portions of the arm of the T being unequal, and a switch support member having lugs of unequal length fittable into the end portions of the aperture in only one position whereby said switch support member is capable of being secured on the well in only the one position.

13. In a wireless type electric cigar lighter comprising a well, a plug removable therefrom, and a switch secured on the well and operable by the plug when moved to energizing position, the improvement comprising forming the well to have an unsymmetrical aperture in a side thereof, a switch support member having portions complementary with the exterior of the well adjacent the aperture and unsymmetrical lugs fittable into the aperture in only one position whereby said switch support member is capable of being secured on the well in only the one position, and a resilient clamping shell engaging the complementary portions to maintain them against the well.

14. In a wireless type electric cigar lighter comprising a well, a plug removable therefrom, and a switch secured on the well and operable by the plug when moved to energizing position, the improvement comprising forming the well to have a T-shaped aperture in a side thereof with the width of the end portions of the arm of the T being unequal, a switch support member having portions complementary with the exterior of the well adjacent the aperture and lugs of unequal length fittable into the end portions of the aperture in only one position whereby said switch support member is capable of being secured on the well in only the desired position, and a resilient clamping shell engaging the complementary portions to maintain them against the well.

15. In a wireless type cigar lighter having a well and a plug removable therefrom for use and adapted to be mounted within an opening in an appliance through which the plug is accessible, the improvement comprising a cup having an outer outwardly directed flange secured to the periphery of the appliance adjacent the opening and an inner inwardly directed flange defining an aperture, the well having a bent portion at its outer end overlying the inner flange, a clamping shell positioned on the well and bearing against the inner flange to clamp the flange between it and the outer end of the well, and means operable on the well for exerting an axial force to cause clamping of the well and shell on the inner flange.

16. In a wireless type cigar lighter having a well and a plug removable therefrom for use and adapted to be mounted within an opening in an appliance through which the plug is accessible, the improvement comprising a cup having an outer outwardly directed flange laying on the exterior periphery of the side of the appliance forming the opening and an inner inwardly directed flange defining an aperture, the well having a bent portion at its outer end overlying the inner flange, a clamping shell positioned on the well and bearing against the inner flange to clamp the flange between it and the outer end of the well, and a bracket slidably mounted on the inner end of the well and having leg portions extending toward the inner side of the appliance adjacent the aperture, and means operable on the well for exerting an axial force to cause clamping of the well and shell on the inner flange and clamping of the periphery of the opening between the leg portions of the bracket and the outwardly directed flange.

17. In a wireless type cigar lighter having a well and a plug removable therefrom for use and adapted to be mounted within an opening in an appliance through which the plug is accessible, the improvement comprising a cup having an outer outwardly directed flange secured to the periphery of the appliance adjacent the opening and an inner inwardly directed flange defining an aperture, the well having a bent portion at its outer end overlying the inner flange, a switch mounting member mounted on the well and having end portions complementary with the exterior of the well where there is engagement therebetween, a clamping shell positioned on the well and having portions overlying the complementary end portions and having an end bearing against the inner flange to clamp the flange between it and the outer end of the well, and means operable on the well for securing the shell on the well and exerting an axial force to cause clamping of the well and shell on the inner flange.

18. In a wireless type cigar lighter having a well and a plug removable therefrom for use and adapted to be mounted within an opening in an appliance through which the plug is accessible, the improvement comprising a cup having an outer outwardly directed flange laying on the exterior periphery of the side of the appliance forming the opening and an inner inwardly directed flange defining an aperture, the well having a bent portion at its outer end overlying the inner flange, a switch mounting member mounted on the well and having end portions complementary with the exterior of the well where there is engagement therebetween, a clamping shell positioned on the well and having portions overlying the complementary end portions and having an end bearing against the inner flange to clamp the flange between it and the outer end of the well, and a bracket slidably mounted on the inner end of the well and having leg portions extending toward the inner side of the appliance adjacent the aperture, and means operable on the well for securing the shell on the well and exerting an axial force to cause clamping of the well and shell on the inner flange and clamping the periphery of the opening between the leg portions of the bracket and the outwardly directed flange.

19. In a wireless type cigar lighter comprising a well

having a friction holder and a plug movable axially from a storage position in the well inwardly to an energizing position in the well where it is in engagement with the friction holder and removable from the holder for use, the improvement comprising forming the plug to have a knob at one end and an igniting coil at the other end, means interconnecting the knob and coil to form an integral unit and including a coil containing cup and an adjacent electrically non-conducting element having a diameter larger than the cup, and a tubular sleeve mounted for limited movement on the means and having a close sliding fit with the well, said tubular sleeve having an end portion overlying the ceramic plug and limiting eccentric movement of the unit by contact therebetween to assist in axially guiding the cup with respect to the friction holder.

20. In a wireless type cigar lighter comprising a well having a friction holder and a plug movable axially from a storage position in the well inwardly to an energizing position in the well where it is in engagement with the friction holder and removable from the holder for use, the improvement comprising forming the plug to have a knob at one end and an igniting coil at the other end, means interconnecting the knob and coil to form an integral unit and including a coil containing cup and an adjacent ceramic plug having a diameter larger than the cup, and a tubular sleeve mounted for limited movement on the means and having a close sliding fit with the well, said tubular sleeve having an end portion overlying the ceramic plug and limiting eccentric movement of the unit to assist in axially guiding the cup with respect to the friction holder.

21. In a wireless type cigar lighter comprising a well having a friction holder and a plug movable axially from a storage position in the well inwardly to an energizing position in the well where it is in engagement with the friction holder and removable from the holder for use, the improvement comprising forming the plug to have a knob at one end and an igniting coil at the other end, means interconnecting the knob and coil to form an integral unit and including a coil containing cup and an adjacent ceramic plug having a diameter larger than the cup, and a tubular sleeve mounted for limited movement on the means and having a close sliding fit with the well, said tubular sleeve having an end portion with a reduced diameter that overlies the ceramic plug in its movement from the storage to its energizing position and limiting eccentric movement by contact therebetween of the unit to assist in axially guiding the cup with respect to the friction holder.

References Cited in the file of this patent

UNITED STATES PATENTS

55	1,508,798	Klay	Sept. 16, 1924
	1,865,199	Martel	June 28, 1932
	2,248,409	Lehmann	July 8, 1941
	2,276,215	Lehmann	Mar. 10, 1942
	2,329,844	Lehmann	Sept. 21, 1943
60	2,386,168	Pattberg	Oct. 2, 1945
	2,727,977	Fenn	Dec. 20, 1955
	2,733,164	Busbin	Dec. 4, 1956