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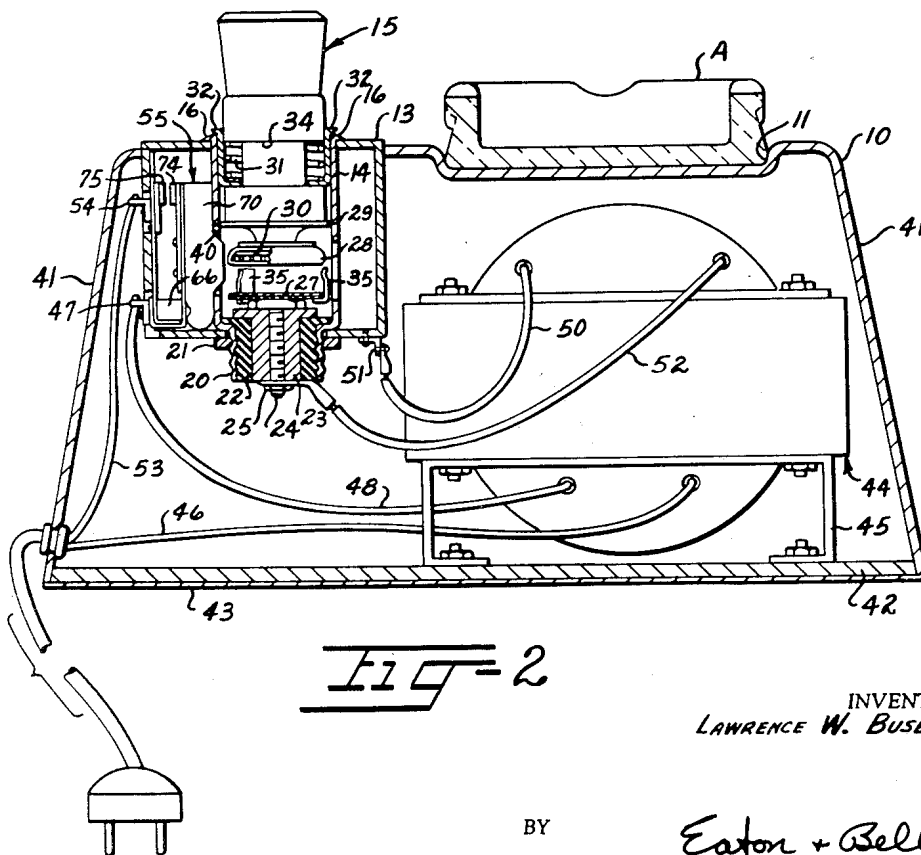
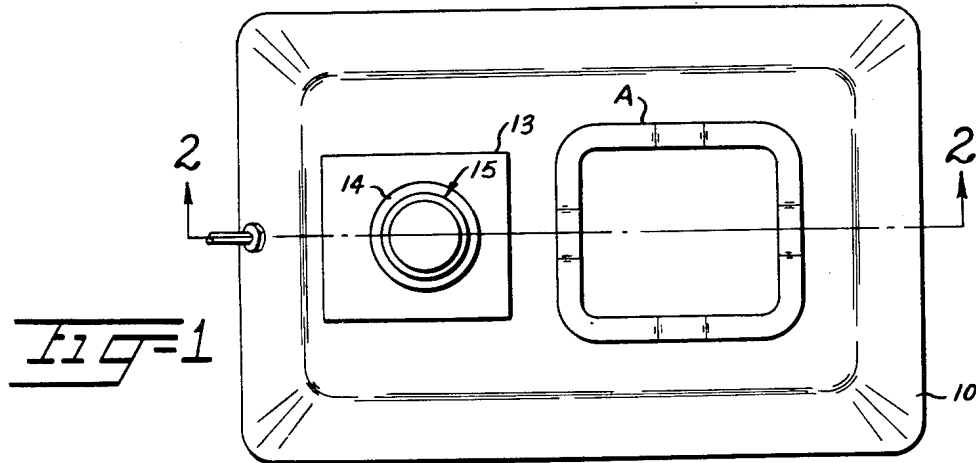
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CIGAR AND CIGARETTE LIGHTER

Filed June 11, 1954

2 Sheets-Sheet 1



INVENTOR:
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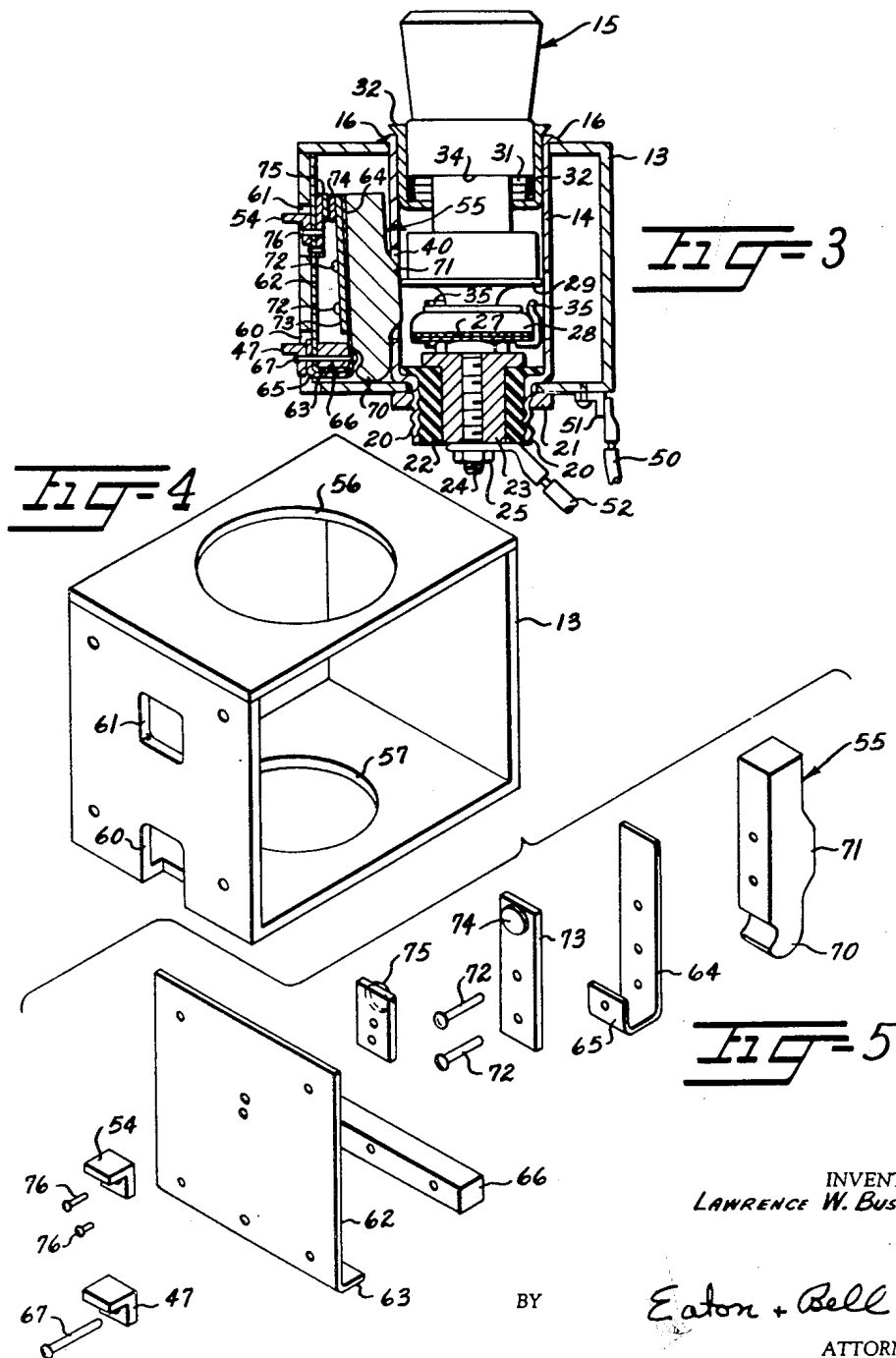
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CIGAR AND CIGARETTE LIGHTER

Lawrence W. Busbin, Charlotte, N. C.

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5 Claims. (Cl. 219—32)

This invention relates to cigar and cigarette lighters and, more especially, to an improved portable lighter receptacle for use with a conventional lighter unit of the low-voltage type usually provided in automotive vehicles.

It is an object of this invention to provide a cigar and cigarette lighter which may be mounted on a suitable base to serve as either a self-contained desk lighter or table top lighter or as a floor stand lighter, or may be mounted in a suitable article of furniture to function as an efficient lighter in the home, office or any other suitable place supplied with a standard line voltage circuit.

It is another object of this invention to provide a cigar and cigarette lighter of the type described suitably connected in an electric circuit with a unique make-and-break contact switch and a step-down transformer.

It is still another object of this invention to provide a device of the type described wherein the make-and-break contact switch remains open to shut off the current to the transformer when the lighter is not being heated, said switch being movable to close the circuit upon the lighter being moved to energizing position.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is a top plan view of the cigar and cigarette lighter assembly mounted in a suitable base;

Figure 2 is an enlarged vertical sectional view taken substantially along line 2—2 in Figure 1 and showing the lighter unit in de-energized position;

Figure 3 is an enlarged vertical sectional view of the cigar and cigarette lighter assembly removed from the base and showing the lighter unit in energized position;

Figure 4 is an enlarged isometric view of the receptacle casing removed from the base and with the lighter unit and switch removed therefrom;

Figure 5 is an exploded somewhat schematic view of the assembly of the make-and-break contact switch.

Referring more specially to the drawings, the numeral 10 designates a hollow base or housing which is shown as being substantially trapezoidal in cross section and which is provided with a depression 11 in the top thereof for the accommodation of a suitable ash tray A or the like. The top of the housing 10 is also provided with a well or opening for the reception of a suitable receptacle casing or bracket 13 in which a receptacle 14 is mounted for receiving a cigar and cigarette lighter unit of the usual type used in automotive vehicles and which is broadly designated at 15. It should be noted that the configuration of the base 10 is not critical. The casing 13 may be secured in the top wall of the base 10, by any suitable means such as welding.

The receptacle 14 is shown in the form of a tubular metal shell having an out-turned flange 16 at its mouth for engagement with the outer surface of the casing 13.

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The receptacle or shell 14 is provided with a reduced portion 20 at its inner end, remote from the flange 16. The reduced portion 20 loosely penetrates the inner or bottom wall of said casing 13 and is provided with rolled threads whereby the flange 16 of the shell 14 may be snugly engaged with the casing 13 by a nut 21 mounted on the reduced portion 20.

An insulating member 22 is threadably secured in the reduced portion 20. The insulating member 22 surrounds a metallic sleeve 23 longitudinally penetrated by a bolt 24 which is secured in sleeve 23 by a nut 25.

The head of the bolt 24 has a bi-metallic disk 27 suitably secured thereon. The lower end of a lighter unit 15 is normally spaced above the bi-metallic disk 27 and comprises a contact ring or cup 28 surrounding a heating element or resistor 30. The body portion of the lighter unit 15 is preferably provided with a peripheral flange 29, said flange 29 being spaced above the contact ring 28 and being of larger diameter than said body portion.

A coil spring 31 surrounds the reduced medial body portion of the lighter unit 15. The lower end of the spring 31 bears against an in-turned flange 32 forming the bottom of a cup-like member 33 fixedly secured to the inner surface of the shell and the upper surface of the spring 31 bears against a shoulder formed at 34 in the body portion of the lighter unit 15.

The bi-metallic disk 27 has secured to its peripheral portions monometallic latching-and-contact arms 35, said arms 35 being adapted to engage and grip between them the contact ring 30 when the lighter 15 is pushed to its inner position as shown in Figure 3.

The lighter assembly thus described may be of the type clearly shown in Patent No. 2,486,366 issued to Joseph Youhouse and dated October 25, 1949, and a further description thereof is thus deemed unnecessary. It is with a lighter unit of this type that the present invention is particularly adapted to be associated. This type of lighter unit is adapted for use in association with a low voltage electrical system, and the instant invention enables such a lighter to be used in households and the like served by relatively higher voltage electrical systems of, say, 110 volts, for example. The only modification required in the conventional lighter assembly is to form an opening or window 40 in the shell 14 of the lighter assembly 15.

As heretofore stated, the shell 14 is mounted in a casing or housing 13 which, in turn, is mounted in an opening in the upper surface or top of a base 10. The base 10 comprises a plurality of side walls 41 and a bottom 42 extending between the lower edges of said side walls 41. A thin felt cover 43 is preferably secured to the under surface of the bottom 42 to protect the surface upon which the base 10 may be positioned.

A step-down transformer broadly indicated at 44 is mounted within the base 10 and is secured to the bottom 42 as by a bracket 45. A wire 46 leads from one side of the primary coil of the transformer 44 to a suitable source of electrical energy, not shown. The other side of the primary coil is connected by a wire 48 to a terminal 47 secured to a make-and-break switch assembly broadly indicated at 55. One side of the secondary coil of the transformer 44 has a wire 50 leading therefrom which is grounded to the casing 13 at 51. The other side of the secondary coil is connected by a wire 52 to the bolt 24. The circuit is completed by a wire 53 extending from another terminal 54 of the make-and-break switch 55 to the source of electrical energy.

The essence of the instant invention resides in the make-and-break switch 55 which serves to break the circuit to the transformer 44 when the lighter unit 15 is not being energized. In the absence of the make-and-break

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switch 55, the primary coil of the transformer 44 remains energized even after the lighter unit 15 is removed from the receptacle 14 or is in retracted position as shown in Figure 2.

The casing or bracket 13 forms a part of the improved make-and-break switch assembly 55. The casing 13 preferably is open on opposite sides and its top and bottom walls in Figures 2, 3 and 4 are provided with respective bores 56 and 57 in which the lighter receptacle 14 is mounted in the manner heretofore described. The left-hand side wall of the casing 13 in Figures 2, 3 and 4 is provided with spaced openings 60 and 61 through which the respective terminals 47 and 54 loosely extend. A thin substantially rectangular insulation member or plate 62 having a lower in-turned edge 63 is suitably secured to the inner surface of the wall having the openings 60 and 61 therein.

A substantially J-shaped metallic leaf spring member 64 has an upturned lower end 65 which is secured, by means to be later described, to the lower portion of the insulation member 62. A rectangular block 66, formed from a suitable insulation material such as hard fiber or the like, is positioned between the portion of the insulation plate 62 and the body portion of the leaf spring member 64 to serve as a bearing for the leaf spring member 64.

The leaf spring member 64, its upturned edge 65, the insulation plate 62 and block 66 are suitably secured together as by a rivet 67 which also serves to secure the terminal 47 to the lower upturned end 65 of the leaf spring member 64.

A lever bumper or cam member 70 is suitably secured to the surface of the leaf spring member 64 remote from the insulating plate 62 and is provided with a projection 71 on its outer surface adapted to extend through the opening or window 40 in the shell or receptacle 14. The lever bumper 70 is preferably made from an insulation material and is held in place by a pair of rivets 72 which also extend through a suitable reinforcing member 73 having a first primary metallic contact 74 fixed to or integral with the upper end thereof. The member 73 and contact 74 are secured to the surface of the spring member 64 remote from the lever bumper 70. A second primary metallic contact 75 is suitably secured to the inner surface of the insulating member 62, as by metallic pins or rivets 76, at least one of which serves to secure terminal 54 to plate 62 and thereby serves as a conductor between contact 75 and terminal 54.

When the lighter unit 15 is in retracted or raised position as shown in Figure 2, the contacts 74 and 75 are in open or spaced relationship. Thus, current cannot flow to the transformer 44 whenever the lighter unit 15 is removed from energizing position.

The circuit to the heating element 30 and transformer 44 are closed substantially simultaneously by moving the lighter unit 15 downwardly to cause the body portion or flange 29 thereof to engage the protuberance 71 on the lever bumper 70. The frictional engagement of the lighter unit 15 with the protuberance 71 causes the leaf spring member 64 to move to the left from the position of Figure 2 to that of Figure 3 thereby moving the primary contact 74 into engagement with the contact 75 to close the circuit.

This causes current of standard or relatively high voltage to flow through the primary coil of the transformer 44 where it is reduced or stepped down to relatively low voltage and passes through the wire 52 and the bolt 24 to the bi-metallic disk 27, the contact arms 35 and the contact ring 28 to activate the heating element 30 in the lighter unit 15. As soon as the heating element 30 has reached a predetermined temperature the bi-metallic disk expands causing outward movement of the contact arms 35 thereby releasing the lighter unit 15 and allowing the spring 31 to move the same upwardly within the casing to the position shown in Figure 2 in the usual manner.

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This upward movement of the lighter unit 15 moves the flange 29 on the body portion of the lighter unit 15 out of engagement with the protuberance 71 thereby permitting the steel spring member 64 to move the lever bumper 70 to the right in Figures 2 and 3, thereby separating the contacts 74 and 75 to again break the circuit to the transformer 44. Of course, the lighter unit 15 can then be removed from the receptacle for use in the usual manner.

It is thus clear that current will not flow to the transformer 44 any time the lighter unit 15 is not in operative position. It is equally clear that the flow of current will be supplied to the transformer 44 and to the heating element 30 in the lighter unit 15 whenever the lighter unit 15 is pushed inwardly to operative position.

It is thus seen that there is provided an improved make-and-break switch in association with a step-down transformer and a cigar and cigarette lighter wherein energization of the transformer is prevented when the lighter is in inoperative position.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a device comprising a base having a receptacle therein for the reception of a member removably mounted therein and said member having a heating element, a transformer having a primary coil and a secondary coil disposed within said base and said transformer being interposed in a wiring circuit between a source of electrical energy and said member having the heating element; the combination of a make-and-break switch disposed in said circuit between said source of energy and said transformer, said make-and-break switch comprising a casing, a lever bumper vertically positioned in said casing and frictionally engageable with said member having the heating element, a leaf spring member vertically positioned in said casing parallel to said lever bumper and to which said lever bumper is secured, a first contact secured to said spring member, a second contact secured to said casing, and said first contact being engageable with said second contact to close the circuit to said heating element upon the member having said heating element frictionally engaging said lever bumper.

2. In a device comprising a base having a well therein for the reception of a member having a heating element therein and said member being removably mounted in said well, a transformer having a primary coil and a secondary coil disposed within said base, the primary coil of said transformer being connected to a source of electrical energy and the secondary coil of said transformer being connectable to said member having the heating element therein, the combination of a make-and-break switch connected to said source of energy and to said transformer, said make-and-break switch comprising a lever bumper having a protuberance thereon frictionally engageable with said member having the heating element, a spring member fixed to said lever bumper and extending parallel thereto, a first contact secured to one end of said spring member, a bearing secured to the other end of said spring member, a casing substantially enclosing said make-and-break switch, and a second contact secured to said casing engageable with said first contact.

3. The combination with a member having a heating element therein, a receptacle for receiving said member and a transformer of means for substantially simultaneously closing the circuit to the secondary of said transformer and said heating element and closing the circuit to the primary of said transformer upon insertion of said member into said receptacle, said means for closing said primary circuit comprising a cam normally extending

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parallel to and in engagement with the outer surface of said receptacle, said receptacle having an opening there-through, a projection on said cam normally extending through said opening into the path of said member upon insertion of said member into the receptacle, a leaf spring member to which the cam is secured and normally urging said projection on the cam through said opening, a first contact carried by said leaf spring member, a second contact normally spaced closely adjacent the first contact, and said contacts being connected in series with said primary circuit whereby, upon insertion of said member into said receptacle, the member will engage the projection on said cam to move the contacts into engagement to close said primary circuit substantially simultaneously with the closing of the circuit to the secondary of said transformer.

4. In a structure according to claim 3, a bracket having spaced end walls penetrated by said receptacle and to which the receptacle is secured, said receptacle having at least one side wall extending between said end walls and spaced from the side of said receptacle having said opening therein, said side wall having a pair of spaced openings therein, an insulation member secured to the inner surface of said side wall and closing the openings in the side wall, a first and a second terminal disposed in the corresponding side wall openings, first conductor means securing the end of said leaf spring member remote from the first contact to the insulation member, second conductor means securing the second contact to said insulation member, said first conductor means also serving to secure the first terminal to the

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insulation member, said second conductor means also serving to secure the second terminal to the insulation member, and said first and second terminals being connected in series with said primary circuit whereby engagement of said first and second contacts will close said primary circuit.

5. In an electric lighter having a receptacle adapted to receive a lighter unit provided with a heating element and adapted to be moved into and out of energizing position, a switch associated with the lighter unit and arranged in circuit therewith, said switch comprising a lever bumper extending parallel to and in engagement with the outer surface of the receptacle, a projection on said lever bumper extending through the wall of the receptacle into the path of the lighter unit, a spring member normally maintaining the lever bumper projection in the path of the lighter unit, a pair of opposed contacts and one of said contacts being carried by said lever bumper adjacent one end thereof and responsive to movement of the lighter unit into and out of energizing position for engaging and disengaging the other contact point to close and open the circuit.

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