

March 25, 1941.

G. F. BAHR

2,236,483

CIGAR LIGHTER

Filed April 21, 1937

Fig. 1

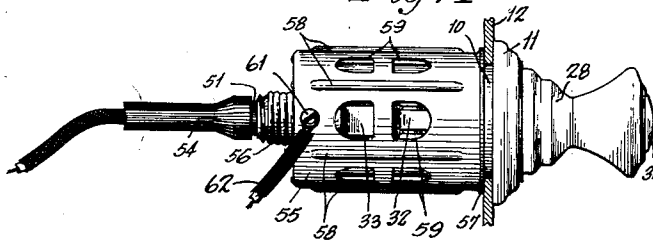


Fig. 6

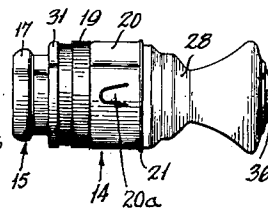


Fig. 2

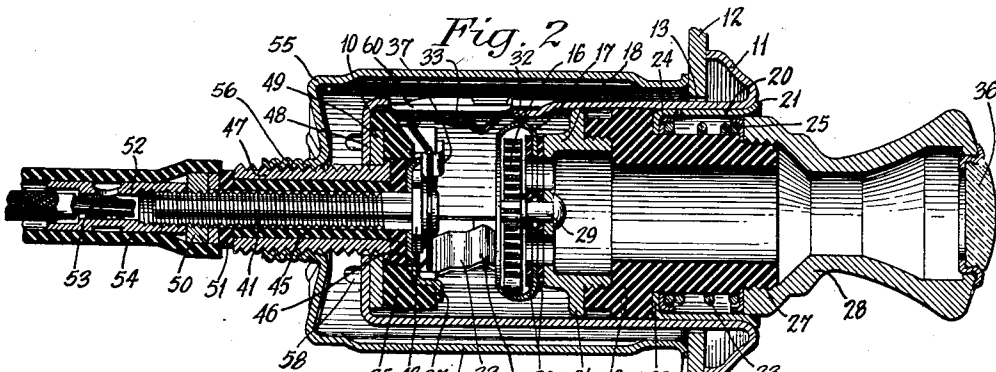


Fig. 3

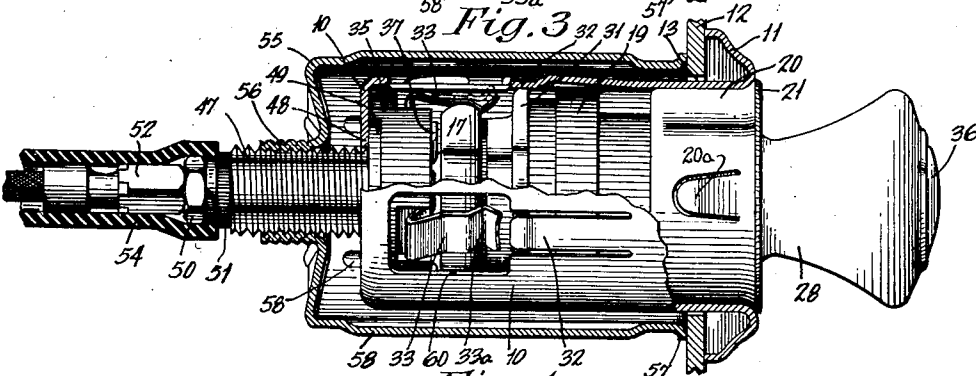


Fig. 4

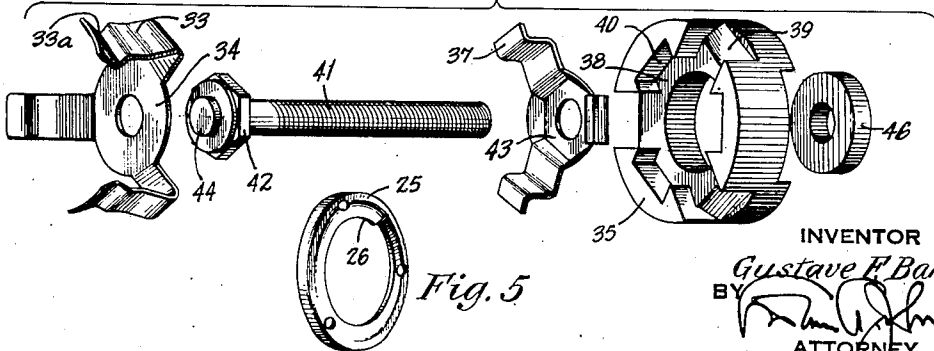


Fig. 5

INVENTOR
Gustave F. Bahr,
BY *Paul J. Schuman*
ATTORNEY

UNITED STATES PATENT OFFICE

2,236,483

CIGAR LIGHTER

Gustave F. Bahr, Fairfield, Conn., assignor to
Automatic Devices Corporation, Bridgeport,
Conn., a corporation of Connecticut

Application April 21, 1937, Serial No. 138,133

24 Claims. (Cl. 219—32)

This invention relates to electric cigar lighters of the type in which an igniting unit is mounted on a holding device for quick removal after a heating element carried by the unit has been brought to incandescence.

The invention relates, more particularly, to such cigar lighters of the kind wherein the holding device is in the form of a well and the igniting unit is in the form of a plug to be inserted in the well; and wherein the igniting unit is arranged to have a normal open-circuit position on the holding device, from which it is moved by hand to a closed-circuit position, where it is retained until means responsive to the heat from the heating element is caused to release it and permit it to be returned to normal position, preferably by a spring tensioned as a result of the movement of the igniting unit to closed-circuit position.

In the type of lighter to which the present invention pertains, the means for retaining the igniting unit in closed-circuit position which includes a detent adapted to engage and grip the unit to hold it in closed-circuit position until heat deformation of a bimetallic means, as a bimetallic finger shaped to constitute the detent, results in freeing the unit from the detent, to release the unit for its return movement. Desirably also, the arrangement is such that the detent is a contact separable from a cooperating contact carried by the igniting unit thereby to open the energizing circuit for the heating element by the movement of the detent which releases the unit for return of the same to normal position.

With the use of such a device, it might occur, especially when several people desire to light smokers' articles, that, upon return of the igniting unit to the holder and movement thereof to energizing position, the thermostatically controlled contact has not sufficiently cooled to return to circuit-closed position.

An object of the invention is to provide, in a lighter as above described, a circuit-making means for the heating element which becomes operative when the igniting unit is sent to closed-circuit position and there manually held, even though the automatically operating contacts are in open-circuit position. In its preferred form, each of the two circuit-making means includes a plurality of radially extended fingers carried by a common conductor-support near the bottom of a well-type holding device, with the thermostatically controlled fingers integral extensions of a bimetallic disk and with the other fingers integral extensions of a monometallic disk.

Another feature of the invention is the provision

of means for mounting the holding device on an instrument board or the like, which means are so designed that the fastening device thereof can be moved into place and fully tightened up by hand, without the use of tools. In its preferred form, this fastening device includes a shell fitting around the holding device and completely enclosing it, except for ventilating passages, and having a threaded neck to be screwed over a threaded part carried by the holding device.

Another object of the invention is to provide a cigar lighter of the kind above referred to wherein the parts, although capable of mass production, may be accurately and sturdily constructed so that the device will always work as intended and may not easily be tampered with and brought out of adjustment.

Other features and advantages will hereinafter appear.

In the accompanying drawing, illustrating a now favored embodiment of the invention:

Figure 1 is a side elevation of a cigar lighter according to the present invention, showing the same mounted on a plate.

Fig. 2 is an enlarged longitudinal section, showing the igniting unit in open-circuit position.

Fig. 3 is a similar view, but showing the igniting unit and part of the holder in elevation, with the igniting unit in closed-circuit position.

Fig. 4 is a disassembled perspective view of the contact means on the holder including a plurality of bimetallic heat-responsive contacts and also a plurality of monometallic contacts.

Fig. 5 is a perspective view of a spring-retaining ring employed on the igniting unit.

Fig. 6 is an elevation of the igniting unit by itself.

As shown in the accompanying drawing, the cigar lighter of the present invention comprises a holding device 10, in the form of a tube having at its front end a turned-out flange 11 adapted to engage the surface of a panel 12 when the holding device is inserted through a hole 13 in the panel.

The igniting unit is shown as in the form of a cylindrical plug 14, Fig. 6, and adapted to slidably fit in the tubular holding device 10.

The igniting unit 14 has on its end a heating element 15 comprising a coil of resistance wire 16, see Fig. 2, enclosed within a ferrule 17, and mounted on a metal body 18 screw-threaded, or otherwise secured, in a body of insulation 19. A portion of the body 19 is of such diameter as to slidably engage the internal wall of the holding device 10, but another portion of it is reduced,

and on this portion there is a sleeve 20, the outer end of which has a flange 21 to engage the flange 11 on the holding device, and the other end of which has a flange 22 normally engaging a shoulder on the insulating body 11.

A space is provided between the sleeve 20 and the reduced portion of the insulating body 19, and in this space there is provided a spring 23, one end of which, through a washer 24, engages the flange 22 on the sleeve. The other end of the spring engages a ring 25, shown in perspective in Fig. 5, and this has a single thread 26 adapted to be screwed on the threaded end 27 of the insulating body 19 to retain the spring within the space between the sleeve and the insulating body. The threaded end 27 of the insulating body also has, in threaded engagement therewith, a handle 28 which engages and backs up the ring 25.

In the normal position of the igniting unit in the holding device, the flange 21 on this sleeve 20 engages the flange 11, as shown in Fig. 2. When, however, it is desired to move the igniting unit deeper in the socket of the holder to energizing position, manual pressure on the handle 28 causes the end of the spring engaged by the disk 25 to be moved to the left, as viewed in Fig. 2, while the sleeve 20 is held against movement by the engagement of the flange 21 thereof with the flange 11 of the holder. This causes the spring 23 to be compressed so that it tends normally to return the igniting unit to the position shown in Fig. 2.

The sleeve 20 is provided with tongues 20a preferably formed by lancing the material thereof, and these tongues are bent outwardly so that friction is produced between the sleeve and the holding device to hold the igniting unit on the holding device against casual or accidental removal even when the igniting unit is in normal or open-circuit position. It will be readily understood that the ring 25 may be dispensed with, in which case the end of the handle 28 will directly engage the spring. However, the ring 25 acts as a retainer for the spring, so that, even if the handle should be removed, the spring will not jump out of place. Frequently, it is desirable to remove one handle and substitute another of a different style or construction.

The outer convolution of the resistance coil 16 is, according to the present invention, secured to the ferrule 17 in electrical contact therewith, preferably by welding. The inner end of the coil is electrically secured to a pin 29 passing through the metal body 18 and riveted over so as to hold the coil, ferrule and insulating disks 30 as a single unitary structure.

It will thus be seen that current may be conducted to the heating coil by the ferrule 17 and a flange portion 31 on the metal body 18, and these portions constitute the contacts on the igniting unit which are engaged by suitable contacts on the holding device to conduct current to the heating element. The cooperating contacts on the holder have merely a sliding connection with the contacts 17 and 31, and hence, when the heating element is incandescent and ready for use, the entire igniting unit may be physically and electrically separated and removed from the holding device for the application of the incandescent resistance wire 16 to the end of a cigar or cigarette, or to the tobacco in a pipe.

The holding device preferably is connected to one side of the source of current. In case the panel 12 is metallic and is grounded on the chas-

sis of the vehicle, the contact of the flange 11 therewith is sufficient to complete the circuit for conducting current to the tubular member constituting the holding device. In case the panel 12 is not metallic or is not connected to the battery through a ground, any other suitable means for connecting the holding device to the battery may be employed. Since the holding device is electrically energized, the flange 31 at all times may engage it to close a circuit through both the holding device and the heating element of the igniting unit. However, it is preferable that special provision be made to insure a good electrical contact between the flange 31 and the holding device, and for this purpose the holding device has formed thereon by lancing tongues 32 having bent-down portions in position to be engaged by the flange 31 when the igniting unit is in deep energizing position, shown in Fig. 3.

The other side of the circuit is connected to the heating element and igniting unit when the latter is in energizing position, by contact springs 33, of which there are three, shown best in Fig. 4, and which are preferably formed integral with a disk portion 34. These are mounted on an insulating block 35, preferably of Bakelite, fitting in the bottom of the well-like holding device 10. The fingers 33 are resilient, and are preferably made of bimetallic material. They have their ends bent out so as to be cammed apart when the ferrule 17 attempts to enter between them, and they have depressed portions 33a adapted to engage over the front portion of the ferrule when the igniting unit reaches its energizing position. The resiliency of the fingers 33 is such that they grip and retain the ferrule against return movement under the influence of the spring 33 until the heating element has been brought to a predetermined temperature for use. While the element is being energized, the heat therefrom is conducted to the fingers 33 through the ferrule, and these begin to expand and continue to expand until a point is reached at which the ejecting spring 23 may overcome the friction between the fingers 33 and the ferrule, at which time the spring 23 ejects the igniting unit to the Fig. 2 position.

During this ejecting movement, there is a slight noise or click which apprises the user that the heating element is ready for use. Besides this, the support for the resistance wire 16 is apertured and so is the metal body 18, the insulating body 19 and the handle, permitting light from the heating element to pass to the end of the handle where it impinges upon a lens 36 causing the latter to glow.

On occasion, the heating element itself may cool off in use so that others may not be able to use it without reheating. When it is desired to reheat the heating element, it may be found that the heat-responsive fingers 33 have not yet returned to circuit-engaging position because of the heat retained by the holding device in its rather protected position against drafts of cool air.

According to the present invention, however, when it is desired to reheat the heating element under such conditions, it is merely necessary to press and hold inwardly the igniting unit in energizing position by hand. For this purpose, and to act as a definite inner stop for the igniting unit, the holding device has a plurality of combined stop and contact fingers 37, preferably three in number, and interspersed between the contact fingers 33. As shown, the fingers 37 are

alternated with the fingers 33 around the insulating block 35.

In the broader aspects of this invention, any suitable form of mounting means for the contacts 33 may be employed. However, it is found very convenient and satisfactory to mount the contacts as shown in the accompanying drawing, so that they are supported and spaced by the insulating block 35. This insulating block has a recess 38 for the disk 34 of the contact fingers, recesses 39 for the contact fingers 33, and recesses 40 for the contact fingers 37. A central stud 41 holds all these parts together, the stud having a head 42 overlying the base or disk portion 43 of the contact fingers 37 and underlying the disk 34 of the contact fingers 33. The end 44 of the stud extends through a hole in the disk 34 and is spun or riveted over to permanently unite the contact fingers 33 thereto. As thus assembled, the stud 41, the contact fingers 37, and the contact fingers 33 are locked to and on the insulating body 35.

The stud 41, with an insulating sleeve 45 and washer 46 which surround it, extends rearwardly through a threaded sleeve 47 secured to the bottom wall 48 of the holding device and a reinforcing member 49 therefor. The stud 41 has an end portion extending beyond the sleeve 47, receiving nut 50 and a washer 51 to insulate the nut 50 from the sleeve 47. When the nut 50 is tightened up, the contact assembly is held in the bottom of the holding device. The other end of the stud 41 is adapted to receive a coupling device 52 to which the end 53 of a circuit supply wire may be soldered or otherwise electrically connected. The coupling 52 and nut 50 may be covered against accidental contact by a rubber sleeve 54.

In the form of the invention shown, the holding device is secured to the panel 12 by a tubular clamping device 55 having a neck 56 threaded to be received on the threaded sleeve 47 while the forward end 57 of the tubular clamping device engages the inside surface of the panel 12. The tubular clamping device is stiffened by longitudinal ribs 58 and has apertures 59 providing suitable ventilation.

The tubular clamping device is put in place simply by screwing it on the holding device by hand, and thus any damage done by the use of tools is avoided. The tubular holding device protects the contacts 33 against being intentionally bent out of shape which would otherwise easily happen because the holding device has large cut-out portions 60 in the vicinity of the contact arms 33, so that there is no possibility of the contact arms engaging the holding device when they move out after being heated. It will thus be seen that the tubular clamp performs the double function of a grip as well as a securing device.

In case the panel 12 is not metallic or is not connected to the battery through the ground, a grounding screw 61 may be provided on the clamp to receive a grounding wire 62.

Some of the features may be advantageously enlarged without employing the thermostatic feature, and other variations and modifications may be made within the scope of the invention.

I claim:

1. An electric cigar lighter, comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; a pair of normally spaced

contacts; heat-responsive means for causing said contacts to engage to close an energizing circuit for the heating element when said means is below a certain temperature and when the igniting unit is moved to closed-circuit position, said heat-responsive means separating said contacts to open said circuit when said heating element has attained a predetermined temperature; and auxiliary circuit-closing means rendered operative by movement of the igniting unit to said closed-circuit position regardless of the temperature of said heat-responsive means, said auxiliary means being physically separate from said heat-responsive means.

2. An electric cigar lighter, comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; a pair of normally spaced contacts; heat-responsive means for causing said contacts to engage to close an energizing circuit for the heating element when said means is below a certain temperature and when the igniting unit is moved to closed-circuit position, said heat-responsive means separating said contacts to open said circuit when said heating element has attained a predetermined temperature; and auxiliary circuit-closing means including a plurality of normally spaced contacts one of which is a contact other than either of the contacts first-mentioned, one of the two contacts of said auxiliary circuit-closing means being carried by the igniting unit and the other being carried by the holder and these two contacts being so placed that the energizing circuit for the heating element may be closed by way of said auxiliary circuit-closing means regardless of the temperature of said heat-responsive means when the igniting unit is moved to said closed-circuit position.

3. An electric cigar lighter, comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; yielding means for urging the igniting unit to return to open-circuit position; a pair of normally spaced contacts one on the holder and the other on the igniting unit and one constituting a detent and the other a part grippable by the detent to hold the unit in closed-circuit position for energization of the heating element when the unit is moved to that position; heat-responsive means operating on the attainment by the heating element of a prevised temperature to cause said contacts to separate and such grip to be released, thereby to open the energizing circuit for said heating element and permit return of the unit to open-circuit position by said yielding means; and means including a monometallic contact at a normally open gap in said circuit and operable on movement of the igniting unit toward closed-circuit position to close said gap, thereby to cause energization of the heating element while the unit is manually held in closed-circuit position regardless of the temperature of said heat-responsive means.

4. An electric cigar lighter, comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; two separate contacts for independently closing a normally open circuit between the holder and the igniting unit and

for energizing the heating element, each of said contacts being normally operable to close the circuit on moving the igniting unit to closed-circuit position, there being heat-responsive means associated with one of said contacts for moving the same to a position such that it is not engaged by the igniting unit while said heat-responsive means has a temperature higher than one predetermined, the other contact always being in position to be engaged to close said circuit by movement of the unit to closed-circuit position.

5. An electric cigar lighter of the kind having a plug-like igniting unit mounted on a tubular holding device for quick and complete removal for use after a heating element on the igniting unit is brought to incandescence as the result of manual movement of the igniting unit from a normal shallow open-circuit position in the holder to a deeper closed-circuit energizing position, comprising, in combination with a normally open circuit for energizing said element, said circuit having subdivisions carried by the holding device and by the igniting unit, cooperating contacts carried by the holding device and by said unit for closing said circuit when the unit is moved to closed-circuit position; and a spring carried by the igniting unit for urging its return to open-circuit position, said heating element being carried by the unit near its inner end, the unit having a removable knob near its outer end, said spring being a coil spring sleeved on the unit with its outer end in rear of the knob, and a removable part carried by the unit in rear of the knob to retain the spring on the unit on removal of the knob.

6. A lighter as in claim 5, in which the knob is in threaded engagement with the unit, and said removable part is a disk carrying a thread adapted to take the thread on the unit by which the knob is threadedly coupled with the unit.

7. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use; a circuit between the holder and the unit for energizing the heating element, which circuit is open when the unit is on one position on the holder; and a device operative to close the circuit when the unit is moved to another position on the holder, said device including a plurality of circuit-closing means on the holder one having a plurality of circuit-closing thermo-responsive contacts and the other having a plurality of circuit-closing substantially thermo-unresponsive contacts, the first-named contacts being in interspersed relation with the last-named contacts, and means on the holder for maintaining the contacts in said relation.

8. A lighter as in claim 7, in which each of said circuit-closing means is a disk having a plurality of integral substantially radially extended fingers constituting its plurality of contacts.

9. A lighter as in claim 1, in which said auxiliary circuit-closing means includes a monometallic contact secured on the holder, and one of said pair of normally spaced contacts is a bimetallic contact secured on the holder, there being a common conductor-support for said monometallic contact and for said bimetallic contact.

10. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use; a circuit between the holder and the unit for energizing the heating element, which circuit is open when the unit is on one position on the holder; and a device operative to close the circuit when the unit is moved to another position

on the holder, said device including a plurality of circuit-closing means on the holder each of which is a disk having a plurality of integral projections each presenting a circuit-closing contact, at least one disk being thermo-responsive and not operative to close said circuit when the same has a temperature higher than one predetermined.

11. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use; a circuit between the holder and the unit for energizing the heating element, which circuit is opened when the unit is in one position on the holder; and a device operative to close the circuit when the unit is moved to another position on the holder, said device including a plurality of circuit-closing means on the holder, each of which is a disk having a plurality of integral projections each presenting a circuit-closing contact, at least one disk being thermo-responsive, said disks being arranged so that a projection on one of the disks is located between two of the projections on the other disk.

12. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use; a circuit between the holder and the unit for energizing the heating element, which circuit is opened when the unit is in one position on the holder; a device operative to close the circuit when the unit is moved to another position on the holder, said device including a plurality of circuit-closing means on the holder, each of which is a disk having a plurality of integral projections each presenting a circuit-closing contact, at least one disk being thermo-responsive, said disks being arranged so that a projection on one of the disks is located between two of the projections on the other disk; and a common conductor support for said disks in mechanical and electrical connection with the holder, said support including a stud passing substantially centrally through both disks.

13. A lighter as in claim 10, in which one disk is bimetallic, and there is a common conductor-support for said disks and means for holding the projections on one disk spaced from the projections on the other disk as predetermined, said means including a structure mounted on said conductor-support and having recesses and projections for locking the disks against relative movement while permitting the projections on the bimetallic disk to move relative to that disk in response to temperature changes.

14. An electric cigar lighter, comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; a pair of normally spaced contacts for closing a normally open energizing circuit for the heating element when the igniting unit is moved to said closed-circuit position; means for securing one of said contacts on the holder including a threaded metal stud a part of the thread of which is projected beyond the holder; means for connecting said stud to a source of current including a metal sleeve having a thread engaging said part of the stud thread and presenting a recess beyond the outer end of the stud for receiving a bare wire end, said sleeve having an aperture in its wall leading to said recess and through which solder material may be passed to

solder said wire end inside said sleeve; a sleeve having an external thread mounted on said intermediate the ends thereof and insulated therefrom and secured to said holder; and a shell enclosing said holder having a thread engaging the thread of the last-named sleeve whereby the holder may be clamped to a support.

15. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; a pair of normally spaced contacts for closing a normally open energizing circuit for the heating element when the igniting unit is moved to said closed-circuit position; means for securing one of said contacts on the holder including a threaded metal stud, a part of the thread of which is projected beyond the holder; means for connecting said stud to a source of current including a metal sleeve having a thread engaging said part of the stud thread and presenting a recess beyond the outer end of the stud for receiving a bare wire end, said sleeve having an aperture in its wall leading to said recess and through which solder material may be passed to solder said wire end inside said sleeve; a sleeve of insulating material mounted on said metal sleeve to cover said aperture; a sleeve having an external thread mounted on said stud intermediate the ends thereof and insulated therefrom and secured to said holder; and a shell enclosing said holder having a thread engaging the thread of the last-named sleeve whereby the holder may be clamped to a support.

16. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use; a circuit between the holder and the unit for energizing the heating element, which circuit is open when the unit is on one position on the holder; a device operating to close the circuit when the unit is moved to another position on the holder, said device including a plurality of circuit-closing means on the holder each of which is a disk having a plurality of integral projections each presenting a circuit-closing contact, at least one disk being thermo-responsive; and means for preventing relative movement between said disk, said means including a block of insulation carrying shouldered portions engaging an edge portion of one disk and an edge portion of the other disk.

17. A lighter as in claim 1, in which said auxiliary circuit-closing means includes a monometallic contact secured on the holder, and one of said pair of normally spaced contacts is a bimetallic contact secured on the holder, and in which there is a metal ferrule around the heating element on the igniting unit and providing an annular contact cooperant with said bimetallic contact to close said circuit and also with said monometallic contact to close said circuit, said bimetallic contact having a bend therein for interlocking with said annular contact when the unit is moved to closed-circuit position and when said bimetallic contact is at a temperature lower than a predetermined one, and said monometallic contact being positioned on the holder and said annular contact being shaped so that the monometallic contact acts as a stop to halt the unit by engaging the annular contact when the unit is moved to closed-circuit position.

18. An electric cigar lighter comprising a holder; an igniting unit having a heating ele-

ment and supported by the holder and removable therefrom for use; a circuit between the holder and the unit for energizing the heating element, which circuit is open when the unit is on one position on the holder; and a device operating to close the circuit when the unit is moved to another position on the holder, said device including a plurality of circuit-closing means on the holder each of which is a disk having a plurality of integral projections each presenting a circuit-closing contact, one of said disks being monometallic and the other being bimetallic.

19. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; and two separate contacts for independently closing a normally open circuit between the holder and the igniting unit and for energizing the heating element, each of said contacts being normally operable to close the circuit on moving the igniting unit to closed-circuit position, there being heat-responsive means associated with one of said contacts for moving the same to a position such that it is not engaged by the igniting unit while said heat-responsive means has a temperature higher than one predetermined, the other contact always being in position to be engaged to close said circuit by movement of the unit to closed-circuit position, the contacts including a plurality of disks each carrying a plurality of integral substantially radially extended fingers, said disks being arranged substantially concentric and with each of the fingers of one disk disposed between two of the fingers of the other disk circumferentially of the disks.

20. In an electric cigar lighter of the kind having a plug-like igniting unit mounted on a tubular holder for complete removal for use after a heating element on the igniting unit has been brought to incandescence, and of the kind having means operative when the unit is manually moved on the holder to a predetermined position thereon to close a normally open energizing circuit for said heating element between the holder and the unit; a structure for said circuit-closing means comprising an annular contact on the unit near the inner end thereof, a disk fixed in the holder, said disk having a plurality of integral substantially radially extended fingers spaced circumferentially of the disk; an insulating mount for the disk having shouldered portions for keyingly engaging said disk; and means for securing said structure to the holder to insulate the disk from the holder, said annular contact presenting an annular contact surface at the inner end of the igniting unit and extending substantially at right angles to the axis of the unit, and each of said fingers having angularly offset lengths, one of which is a terminal finger length extended so as to have substantially flatwise engagement with said annular contact upon manually moving the unit to circuit-closing position.

21. In an electric cigar lighter of the kind having a plug-like igniting unit mounted on a tubular holder for complete removal for use after a heating element on the igniting unit has been brought to incandescence, and of the kind having means operative when the unit is manually moved on the holder to a predetermined position thereon to close a normally open energizing circuit for said heating element between the holder and the unit; a contact assembly on the holder comprising a

plurality of disks, including a bimetallic disk and a monometallic disk, each having a plurality of integral substantially radially extended fingers; and an insulation structure having a recess within which the main central portions of both disks are received with the disks in contact one with another, said structure having spaced marginal recesses for receiving said fingers and holding the same in spaced relationship.

22. In an electric cigar lighter of the kind having a plug-like igniting unit mounted on a tubular holder for complete removal for use after a heating element on the igniting unit has been brought to incandescence, and of the kind having means operative when the unit is manually moved on the holder to a predetermined position thereon to close a normally open energizing circuit for said heating element between the holder and the unit; a contact assembly on the holder comprising a plurality of disks, one being a bimetallic disk and the other a monometallic disk, each having a plurality of integral substantially radially extended fingers; an insulation structure having projections and recesses constituting means for positioning the two disks on the insulation structure with one disk in contact with the other but with each finger of one disk spaced from a finger of the other disk circumferentially of the disks; and draft means including a threaded member passing through the disks, said insulation structure, and a wall of the holder, and insulated from the holder, for securing said assembly as a unit on the holder.

23. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; resilient means normally urging said unit to the open-circuit position; a contact means carried by said unit; and two separate means for independently closing the circuit between the holder and the igniting unit for ener-

gizing the heating element, said means including a plurality of disks carrying a plurality of integral substantially radially extended fingers and at least one of said disks being thermo-responsive, the fingers of said thermo-responsive disk, while said disk is below a predetermined temperature, adapted to releasably engage the contact means of said igniting unit and hold said unit in closed-circuit position, said fingers adapted to release the contact means of said unit after said predetermined temperature has been reached, for movement of the unit to open-circuit position, the other contact always being in position to be engaged to close said circuit by movement of the unit to closed-circuit position regardless of the temperature of the first-mentioned contact means.

24. An electric cigar lighter comprising a holder; an igniting unit having a heating element and supported by the holder and removable therefrom for use, said unit being manually movable on the holder from an open-circuit position to a closed-circuit position; resilient means normally urging said unit to the open-circuit position; a contact means carried by said unit; and two separate means for independently closing the circuit between the holder and the igniting unit for energizing the heating element, said means including a plurality of disks carrying a plurality of integral substantially radially extended fingers and at least one of said disks being thermo-responsive, the fingers of said thermo-responsive disk, while said disk is below a predetermined temperature, adapted to releasably engage the contact means of said igniting unit so that said disk is inoperative to close said circuit while said disk has a temperature higher than said predetermined one, the other contact always being in position to be engaged to close said circuit by movement of the unit to closed-circuit position, the last-named contact including a substantially thermo-unresponsive monometallic disk.

GUSTAVE F. BAHR.