Dec. 20, 1955 L. E. FENN 2,727,977

CIGAR LIGHTER

Filed Nov. 6, 1953

Fig. 1

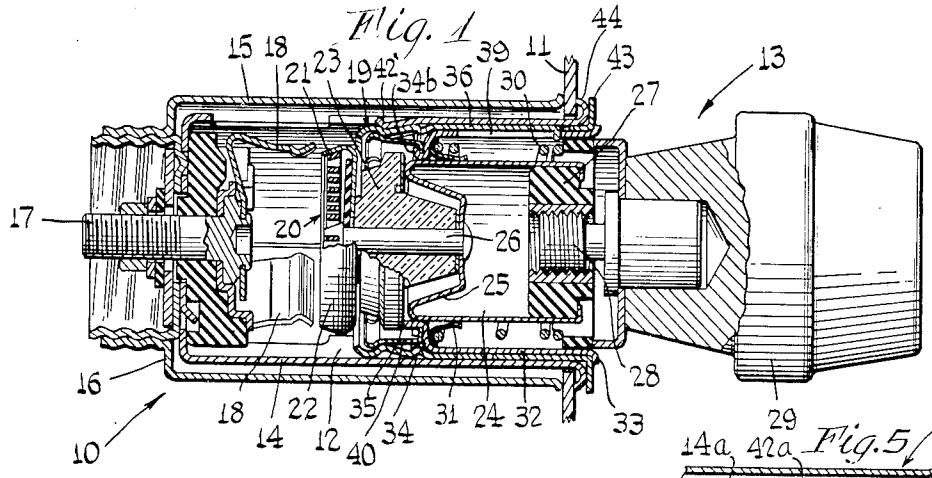


Fig. 2

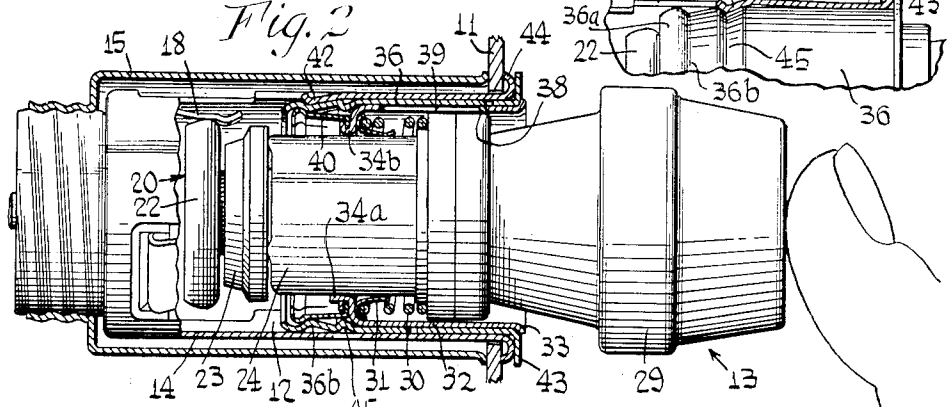


Fig. 3

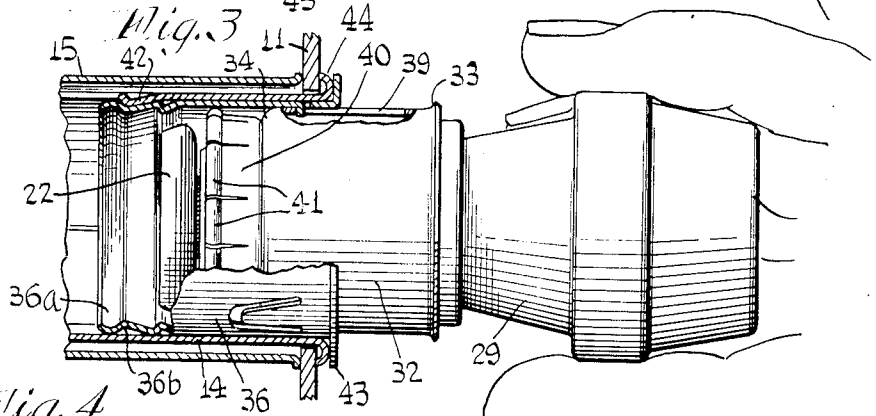


Fig. 4

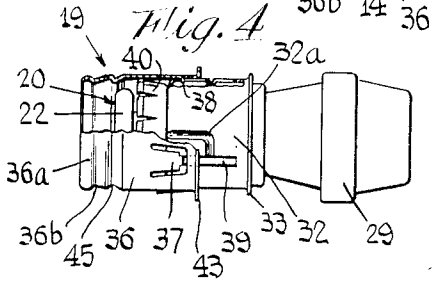


Fig. 5

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CIGAR LIGHTER

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16 Claims. (Cl. 219—32)

This invention relates to electric cigar and cigarette lighters, and more particularly to lighters having separable igniting units which are first energized in holding devices and then removed from the holding devices to expose an incandescent coil for application to the cigar or cigarette.

Electric cigar lighters of the separable igniting type are well known for their use in automobiles and other conveyances, and commonly comprise a holding device adapted to be mounted on the instrument panel of the car, having a recess or well in which a removable igniting unit is stored and also energized for removal and use. Such lighters have the heating element at the back end of the igniting unit, and have cooperable terminals or contacts on the igniting unit and the holding device by which a circuit is completed through the heating element from the automobile battery, to heat the element to incandescence. Virtually all present-day cigar lighters of the above type are automatic in their operation, in that a thermostatic latch is released in response to heat and permits the igniting unit to partially pop out when it is ready for use, under the action of a coil spring provided for the purpose.

The igniting units of these cigar lighters have been so constructed that the open-faced heating elements are fully exposed at the back end of the igniting unit at all times that the unit is being used to obtain a light. This has proved to be somewhat of a disadvantage in that the hot parts of the heating element sometimes come in contact with the skin or clothing of the user, resulting in more or less severe burns. Also, during the process of obtaining a light the act of drawing on the cigarette while the hot element is being applied to the end, together with the engagement of the cigarette by the element, causes ashes to drop from the cigarette and fall on clothing or upholstery, soiling the same.

An object of the present invention is to provide an improved electric cigar lighter of the removable igniting unit type and guard extending around the heating element which, while providing full access for the cigar or cigarette, minimizes the likelihood of burns and effectively catches ashes which might fall from the ignited cigar or cigarette tip, preventing the ashes from inadvertently dropping where not desired.

Another object of the invention is to provide an improved removable igniting unit for an electric cigar lighter of the above type, having a novel and effective guard around the heating element to catch ashes which drop during the lighting of a cigarette, and to prevent accidental burns from the heating element.

Yet another object of the invention is to provide an improved cigar lighter and igniting unit as above set forth, having an automatically operative guard for the purposes stated, which guard is normally always extended and in operative position whenever the igniting unit is out of the holding device, and is retracted or held in a nonoperative, heat-insulated position whenever the igniting unit is supported by the holding device.

A still further object of the invention is to provide an improved cigar lighter with guarded heating element on the igniting unit as above set forth, wherein the guard is actuated as an incident to replacement or removal of the igniting unit on or from the holding device.

A still further object of the invention is to provide an improved cigar lighter with guarded heating element according to the foregoing, which is simple and economical in its construction, has few, relatively inexpensive parts, and is reliable at all times in its operation.

A feature of the invention resides in the provision of a novel and improved ash guard on a cigar lighter igniting unit, which may be easily manually retracted or advanced at any time by the user, and which may be readily cleaned.

Still another object of the invention is to provide an improved cigar lighter having an igniting unit with guarded heating element, wherein the operation and energization of the current-carrying parts are not adversely affected by the guard.

Yet another object of the present invention is to provide an improved removable igniting unit with guarded heating element, which is usable with the conventional holding devices without requiring any changes of the latter, especially extensive changes.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is an axial sectional view of an improved cigar lighter having an igniting unit with guarded heating element made in accordance with the invention, the parts being shown in open-circuit or storage position.

Fig. 2 is a view like Fig. 1, but showing the parts in operative or energizing position.

Fig. 3 is a fragmentary view like Figs. 1 and 2 but showing the igniting unit in its popped-out position, ready for removal and use.

Fig. 4 is a view partly in side elevation and partly in vertical section of the igniting unit of the cigar lighter, removed from the holding device.

Fig. 5 is a fragmentary axial sectional view showing the igniting unit in a differently constructed holding device.

As shown, the improved cigar lighter of the invention comprises a holding device generally designated by the numeral **10**, mounted on an instrument panel **11** and presenting a recess or well **12** in which a removable igniting unit **13** is normally carried. The holding device **10** includes a tubular body or shell **14** secured to the panel **11** by a clamping sleeve **15**, the shell **14** constituting the ground terminal or contact of an electrical energizing circuit and having, insulatedly mounted on a rear wall **16** thereof, a stud **17** supporting a bimetallic contact clip **18** constituting the second terminal or contact of the holding device.

In accordance with the present invention, in conjunction with the holding device **10** I provide on the igniting unit **13** a novel guard device **19** which is so arranged that when the igniting unit is being supported in the holding device **10** either for storage or energization the guard **19** is retracted from the heating element, exposing the latter, and when the igniting unit is removed from the holding device **10** the guard **19** is projected and extended around the heating element, providing an effective shield which prevents burns and which also collects ashes from the cigarette and keeps the ashes from dropping and soiling clothing or upholstery.

As shown, the igniting unit **13** carries at its back end a heating element **20** in the form of a spiral coil **21** of heating wire, said coil being contained in a shallow metal cup **22** secured to an insulating bushing **23** also located at the rear of the igniting unit **13**. Referring to Fig. 1, the igniting unit **13** comprises a plug-like body including a tubular metal member **24** having an inwardly dished

transverse rear wall 25 to which the bushing 23 is secured by a long rivet 26. At its front end the tubular member 24 mounts a bushing 27 receiving a threaded stud 28 carrying a finger-engageable knob 29.

Surrounding the tubular member 24 of the igniting unit body is a helical coil spring 30 engaging a portion of the bushing 26 which is disposed outside of the member 24, the spring 30 also engaging a slitted flanged ring 31 slidable on and frictionally engaging the member 24.

Surrounding the bushing 27 and spring 30 is a metal collar 32 having at its front end an outturned flange 33 and at its back end an inturned flange 34, the latter bearing on the tubular body member 24 and being engaged by the flanged ring 31. The collar 32 is slidable axially on the body member 24 and bushing 26, and is normally held in a rearwardly disposed position on the body member by the spring 30, against a stop constituted of a flat washer 35 engageable with an axially-extended lip 34*a* on the flange 34.

In accordance with the present invention the guard 19 for the igniting unit 13 comprises a sleeve 36 which extends around the collar 32 and is slidable axially thereon between limits. These limits are established by a plurality of lanced spring fingers 37 on the guard 19, having inturned lugs or extremities 38, the latter extending into longitudinal slots 39 in the collar 32 and holding the sleeve 36 captive on the collar.

Assembly of the sleeve 36 to collar 32 is facilitated by the provision of a plurality of embossed, L-shaped grooves 32*a* in the collar, communicating with the slots 39 thereof whereby the sleeve 36 may be slid over the collar by permitting the extremities 38 of the spring fingers 37 to reach the slots 39 by first passing along the grooves 32*a*.

For the purpose of establishing a predetermined friction and maintaining an effective electrical connection between the collar 32 and the sleeve 36 a slitted contact ring 40 is provided, secured to clinching fingers 34*b* of the flange 34 of the collar 32. The contact ring 40 has a slitted periphery providing a plurality of resilient fingers 41 engaging the inside of the sleeve 36 under continual pressure. Thus a frictional engagement is provided which will hold the sleeve 36 in any position in which it is placed on the collar 32, and at the same time effective electrical connection is established between the collar and the sleeve.

Electrical connection between the body member 24 and the collar 32 is effectively maintained by the slitted flanged ring 31 engaged by the coil spring 30. The spring fingers 37 effect a predetermined friction between the sleeve 36 and the holding device, and establish the electrical ground circuit, and also the tubular shell 14 of the holding device has lanced spring fingers 42 engaging the outside of the sleeve 36 for this purpose. Cooperable with the spring fingers 42 for detent purposes as will be later explained is an embossed bead 36*a* at the back end of the sleeve 36, formed in part by a portion 36*b* of reduced diameter of the sleeve.

It will be understood that by the above electrical structure the conducting rivet 26 which secures the heating element 20 in place is at all times effectively grounded to the instrument panel 11 when the igniting unit 13 is in storage position on the holding device 10.

As clearly seen in Figs. 3 and 4, the foremost end of the guard sleeve 36 is provided with an outturned flange 43 for engagement with an outturned curl 44 of the holding device shell 14 and for engagement with the outturned flange 33 of the collar 32.

I prefer to make the frictional restraint imposed on the guard sleeve 36 by the spring fingers 42 of the holding shell 14 appreciably greater than the restraint imposed on the guard sleeve 36 by the spring contact ring 40 of the igniting unit body, for purposes which will be shortly explained in detail below in the description of the operation of the device.

Operation of the improved cigar lighter of this invention is as follows:

Considering Fig. 4 showing the igniting unit 13 removed from the holding device 10, when a user replaces the igniting unit in the holding device the sleeve 36 is first engaged by the shell 14 of the holding device and enters the recess 12. As the inserting movement of the igniting unit is proceeded with and completed, the sleeve 36 will fully enter the well 12 until the forward flange 43 of the sleeve engages the outward curl 44 of the holder, the spring 30 being sufficiently stiff to effect this without requiring that the igniting unit body be so fully inserted as to energize the heating element 20 with the bimetal clips 18. The spring fingers 42 of the holding device shell 14 will be accommodated in the shallow groove 36*b* adjacent the bead 36*a* at the back end of the sleeve 36, and this will serve to yieldably hold the sleeve in its fully inserted position in the holding device. The parts will now be in the open-circuit or storage position shown in Fig. 1, since the spring 30 normally holds the collar 32 rearward with respect to the body member 24 of the igniting unit.

When the knob 29 of the igniting unit is depressed, as shown in Fig. 2, the spring 30 will be compressed, the body 24 moving to the left and extending the heating element 20 into engagement with the bimetallic spring clips 18. The ungrounded side of the electrical circuits is now established to the heating element 20 through the clips 18 and the shallow metal cup 22, which is insulated from the rivet 26. These clips when not fully heated will retain the igniting unit in this energizing position against the action of the spring 30. When the heating element becomes fully heated the bimetallic clips 18 will expand, releasing the element and the spring 30 will then return the igniting unit body to its original storage position as shown in Fig. 3. The user now removes the igniting unit from the holder for use, and since the spring fingers 42 of the holder will be stronger than the friction imposed on the sleeve 36 by the contact ring 40, the sleeve 36 will be initially held against movement and will be the last to leave the holding device. Thus the withdrawing movement of the igniting unit will result in the sleeve 36 being automatically extended to the position shown in Fig. 4, wherein it surrounds the heating element 20 and provides an effective guard therefor. The sleeve 36 is normally not hot enough to cause any severe burns to skin or clothing, and effectively functions to catch ashes which might drop from the tip of the cigarette being ignited. When the igniting unit 13 is replaced on the holder 10 the guard sleeve 36 will again be shifted to its retracted position shown in Fig. 1, as already explained.

It should be noted that the sleeve 36 is effective in guarding against burns for the reason that it normally remains quite cool during the period of use of the cigar lighter due to its remoteness from the element. Referring to Fig. 2, during the interval that the heating element 20 is being energized and supplied with heat, the sleeve 36 is in a retracted position with respect to the heating element, being located forward therefrom. This fact, together with the heat insulation provided by the relatively massive bushing 23 on which the heating element 20 is mounted, greatly limits the transmission of heat from the element to the guard sleeve. Therefore the sleeve is normally only very slightly warm to the touch when the igniting unit is removed from the holding device and used to ignite a cigar or a cigarette, the degree of warmth depending on the time which elapses before the user removes the igniting unit, and this is an advantageous feature of the invention. It is understood that the structure as above set forth operates in a manner such that the guard sleeve 36 is always in the said forward or retracted position during the period of energization of the heating element 20. This is because the friction on the sleeve 36 imposed by the contact ring 40 is always less than the friction imposed by the spring fingers 42 of the holding device shell 14. Also, by virtue of this,

whenever the igniting unit **13** is withdrawn from the holding device, the sleeve **36** will at first remain stationary, being securely gripped by the fingers **42**, until the collar **32** has been shifted forward inside of the sleeve, and only then will the sleeve be pulled out of the holder. When this has occurred, the sleeve will be in its fully extended rearward position surrounding the heating element **20**.

Fig. 5 shows the removable igniting unit of the present invention in storage position in a holding device **10***a* which is slightly different in construction from the holding device **10** described above.

The holding device **10***a*, carried by panel **11** has a tubular shell **14***a* provided with a relatively short inwardly biased lanced spring finger **42***a*. The spring finger **42***a* is accommodated in a groove **45** in the sleeve **36** of the igniting unit, and by the provision of this second groove **45** the igniting unit may be accommodated in holding devices having either the long spring fingers **42** or the short spring fingers **42***a*. In each case, the spring fingers **42** and **42***a* function similarly, acting as detents and also aiding in effecting the grounding connection from the panel **11** to the sleeve **36**.

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. A cigar-lighter igniting unit adapted to be received in the well of a holding device, comprising a plug-like body having a heating element at its back end; a sleeve extending around said body and slidable axially with respect thereto between a rearwardly extended, ash-catching position enclosing the sides and projecting rearward beyond the face of the heating element and a position forwardly thereof, exposing said element; stop means operable on said sleeve and body, limiting movement of the sleeve to said positions; and yieldable friction means operable on said body and sleeve, yieldably holding the sleeve in either of said positions in which it is put, both the said stop means and friction means enabling the sleeve to be moved between said positions in response to solely axial force applied to the sleeve.

2. The invention as defined in claim 1 in which the stop means includes an inturned lug on the sleeve and includes a member on the igniting unit body, having a slot extending longitudinally of the body and receiving said lug.

3. The invention as defined in claim 1 in which the sleeve has a lanced spring finger bent out slightly and engageable with the well of the holding device to effect a predetermined friction between the sleeve and well, and in which the stop means includes an inturned lug on the end of the said lanced spring finger and includes a member on the igniting unit body, having a slot extending longitudinally of the body and receiving said lug.

4. A cigar-lighter igniting unit adapted to be received in the well of a holding device, comprising a plug-like body having a heating element at its back end; a collar extending around said body and slidable axially thereon between limits; a spring normally yieldably holding said collar in a rearwardly disposed position on said body; a sleeve extending around said collar and slidable axially thereon between a rearwardly extended position enclosing the sides and projecting rearward beyond the face of the heating element when the collar is in said rearward position and a position forwardly thereof, exposing said element; cooperable stop means on said sleeve and collar, limiting movement of the sleeve to said positions when the collar is in its rearward position; and yieldable friction means operable on said collar and sleeve, yieldably holding the sleeve on the collar in either of the positions in which it is placed, both said friction means and said stop means enabling the sleeve to be moved between said positions in response to solely axial force applied to the sleeve.

5. The invention as defined in claim 4 in which the plug-like body includes a tubular metal member electrically connected to the heating element, in which there is a spring ring between the said member and collar to effect an electrical connection, and in which there is a second spring ring fastened to the collar and contacting the sleeve to effect an electrical connection.

6. The invention as defined in claim 5 in which the sleeve has a spring finger engageable with the well of the holding device to effect an electrical connection thereto.

7. The invention as defined in claim 4 in which the stop means includes an inturned lug on the sleeve, said collar having a longitudinal slot receiving the said lug.

8. The invention as defined in claim 4 in which the plug-like body includes a tubular metal member electrically connected to the heating element, in which there are means electrically connecting the member with the collar, and in which the said yieldable friction means includes a spring metal ring engaging the collar and sleeve to effect an electrical connection therebetween.

9. A cigar lighter comprising an igniting unit having a plug-like body provided with a heating element at its back end; a sleeve extending around said body and slidable axially with respect thereto between a rearwardly extended, ash-catching position enclosing the sides and projecting rearward beyond the face of the heating element and a position forwardly thereof, exposing said element; stop means operable on said sleeve and body, limiting movement of the sleeve to said positions; yieldable friction means operable on said body and sleeve, yieldably holding the sleeve in either of said positions in which it is put, both the said stop means and friction means enabling the sleeve to be moved between said positions in response to solely axial force applied to the sleeve; a holding device having a well slidably receiving said sleeve; and cooperable friction means less-yielding than said first-named friction means, operable on said sleeve and holding device and automatically shifting the sleeve either from said rearward extended to said forward positions or from said forward to said rearward extended positions in response to either insertion or removal respectively of the igniting unit in or from the holding device.

10. The invention as defined in claim 9 in which the igniting unit body has both storage and energizing positions in the holding device, and in which there are spring means extending within said sleeve and cooperable with the holding device and igniting unit body for moving the body from energizing to storage position and for yieldably holding the body in said storage position, said spring means being under stress when the body is in energizing position.

11. The invention as defined in claim 9 in which the stop means includes an inturned lug on the sleeve, and includes a member on the igniting unit body having a slot extending longitudinally of the body and receiving said lug, and in which the first-named friction means includes spring fingers lanced from the sleeve and carrying said lugs, said spring fingers being engageable with the well of the holding device.

12. A cigar lighter comprising an igniting unit having a plug-like body provided with a heating element at its back end; a collar extending around said body and slidable axially thereon between limits; a spring normally yieldably holding said collar in a rearwardly disposed position on said body; a sleeve extending around said collar and slidable axially thereon between a rearwardly extended position enclosing the sides and projecting rearward beyond the face of the heating element when the collar is in said rearward position and a position forwardly thereof, exposing said element; cooperable stop means on said sleeve and collar limiting movement of the sleeve to said positions when the collar is in its rearward position and enabling the sleeve to be moved between said positions in response to solely axial force applied to the sleeve; yieldable friction means operable

on said collar and sleeve, yieldably holding the sleeve on the collar in either of the positions in which it is placed; a holding device having a well slidably receiving said sleeve; and cooperable friction means less-yielding than said first-named friction means, operable on said sleeve and holding device and automatically shifting the sleeve either from said rearward extended to said forward positions or from said forward to said rearward extended positions in response to either insertion or removal respectively of the igniting unit in or from the holding device.

13. The invention as defined in claim 12 in which the first-named friction means comprises a spring metal ring engaging the collar and the sleeve, and in which the second-named friction means includes a spring finger on the sleeve, engaging the well of the holding device.

14. The invention as defined in claim 12 in which the first-named means comprises a spring metal ring engaging the collar and the sleeve, and in which the second-named friction means includes a spring finger on the well of the holding device, engaging the said sleeve.

15. The invention as defined in claim 12 in which the second-named friction means comprises a spring finger on the holding device, engageable with the said sleeve, and in which the sleeve has a depression receiving the said spring finger of the holding device when the sleeve is received in the holding device.

16. The invention as defined in claim 12 in which the second-named friction means comprises a spring finger on the holding device, engaging the said sleeve, and comprises a spring finger on the sleeve, engaging the holding device, said sleeve having a shallow depression receiving the spring finger of the holding device when the sleeve is received in the latter.

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