April 1, 1941. A. A. JOHNSON 2,237,250

CIGAR LIGHTER

Filed March 15, 1937

Fig. 1

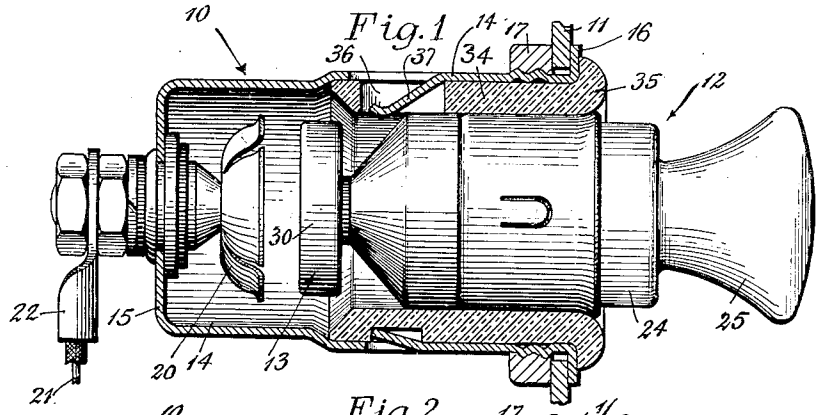



Fig. 2

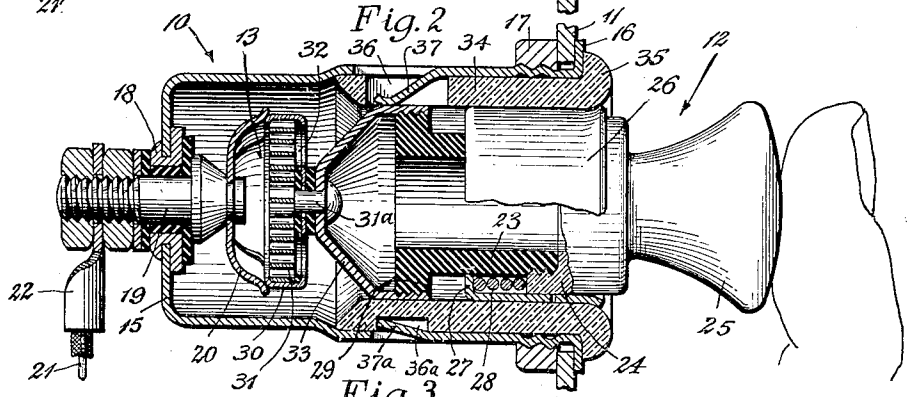



Fig. 3

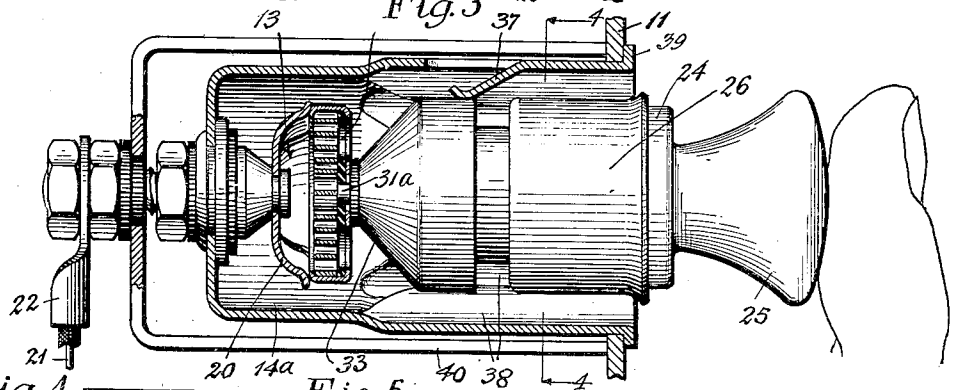



Fig. 4

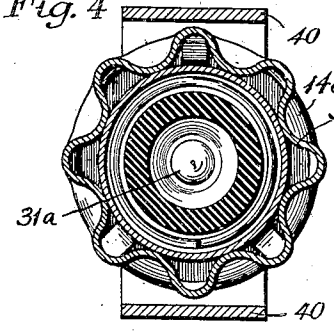
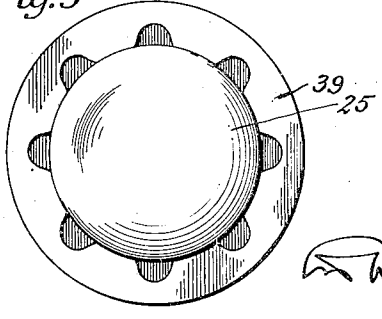
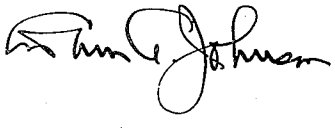



Fig. 5




INVENTOR



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# UNITED STATES PATENT OFFICE

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## CIGAR LIGHTER

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8 Claims. (Cl. 219—32)

This invention relates to electric cigar lighters as used in automobiles and other places, and more particularly to lighters wherein light from the incandescent heating element is utilized to inform a user when the lighter is ready for use.

There have been proposed in the past various lighters of the above referred-to type, these commonly comprising a holding device in the form of a well and an igniting unit carried in the well and removable therefrom for use, said unit having a heating element located at its inner end and a lens at its outer end, usually on the knob, and having a communicating passage between the lens and the unit so that light from the latter will illuminate the lens. In these lighters the illuminated lens is a small disk-like member set in the face of the knob carried by the igniting unit. According to this prior arrangement the lens illuminated only the center of the knob, and this was frequently covered by the operator's fingers in operating the lighter.

The present invention obviates this disadvantage in prior lighters by providing an improved lighter wherein the light from the incandescent element is directed forwardly past the outside of igniting unit carrying said element by being transmitted through the holding device, so as to be visible at the front thereof for an area surrounding or encircling the knob of the unit so that the light cannot be shut off by the fingers of a person grasping the knob.

The drawing shows a well-type lighter having a plug-like igniting unit which carries a heating element at its inner end in such a manner that the light from said element, when the latter is incandescent, will pass forwardly and outside of the body of the igniting unit. There is provided a holding device adapted to cause this light to pass forwardly past the sides of the igniting unit body so as to illuminate the front of the lighter in an area surrounding the knob of the removable unit.

In one embodiment of the invention the holder is provided with a sleeve-like light-conducting member which receives light from a position closely adjacent the heating element and transmits the light forwardly around the outside of the igniting unit body to the front of the holding device. In another embodiment the holding device is provided with ribs or corrugations which form channels having reflecting walls or surfaces, and light from the heating element is reflected forwardly by said surfaces to the front of the holding device.

Other features and advantages will hereinafter appear.

In the accompanying drawing:

Figure 1 is an axial section of a lighter embodying one form of the present invention, the igniting unit being shown in elevation in open-circuit position.

Fig. 2 is a similar view but with the igniting unit in closed-circuit position, and shown partially in section.

Fig. 3 is an axial section of a lighter embodying another form of the invention; the igniting unit, shown in elevation, is in energizing position in the holder.

Fig. 4 is a vertical transverse section taken on the line 4—4 of Fig. 3.

Fig. 5 is a front elevation of the lighter of Fig. 3.

Referring to Figs. 1 and 2, illustrating the preferred embodiment of the invention, the lighter shown comprises a holding device 10 the front end of which passes through an aperture in an instrument panel 11 and is supported thereon to provide a cylindrical cavity or well in which an igniting unit 12 is carried for storage and for energization, and from which it can be completely removed and transported for use.

The inner end of the igniting unit 12 carries a heating element 13 which when energized becomes incandescent for igniting cigarettes and the like.

The holder 10 comprises a tubular metal shell 14 having an integral transverse rear wall 15 and, at its front end, having a circular outwardly turned flange 16 adapted to engage the front face of the panel 11. The walls of the shell 14 directly adjacent the flange 16 are provided with external threads for carrying a nut 17 by means of which the shell is securely attached to the panel. The rear wall 15 of the shell is centrally apertured and carries a metal bushing 18 in which is insulatedly mounted a threaded terminal stud 19 secured in place by a nut as shown. The head of the stud 19 has fastened thereto a dish-shaped contact member 20 adapted to engage and contact with a contact of the heating element 13, and electrical connection is made from a source of supply to said stud by a wire 21 and lug 22 in the conventional manner. The contact member 20 is preferably slotted, as shown, to provide for greater resiliency.

The igniting unit 12 includes a cylindrical body portion 23 of insulating material, the front end of which is externally threaded to carry a cap 24 which has integral therewith a knob 25. For

the purpose of yieldingly holding the igniting unit in open-circuit position there is provided a cylindrical metal sleeve **26** adapted to slidably receive the cap **24**, the rear edge of said sleeve being turned inwardly to form a flange **27** riding on the outside of the body **23**. A helical compression spring **28** is carried by the body to engage the flange **27** of the sleeve and the rear edge of the cap **24** to yieldingly urge the cap and body forwardly of the sleeve, and movement in this direction is limited by an external shoulder **29** at the rear end of the body **23**, engaging the flange **27**.

The heating element **13** comprises an outer metal contact cup **30** in which is carried a spiral heating coil **31** having its outer end joined to the cup. The inner end of the coil **31** is secured in the slotted head of a metal pin **31***a* for securing the element to the igniting unit. The bottom of the cup **30** and the insulating washer carried therein are provided with a plurality of apertures **32** to permit light from the incandescent element **31** to pass forwardly toward the front of the lighter.

According to the present invention the heating element **13** is mounted on the igniting unit body **23** so that the light passing through the apertures **32** from the heating coil will pass forwardly at an angle past the outside of said body. For this purpose the rear end of the body **23** is provided with a conically shaped metal cap **33** having a cylindrical base internally threaded to screw over the external shoulder **29** of the body, which latter is externally threaded for this purpose.

The apex of the cap **33** is flattened and centrally apertured to receive the pin **31***a*, which is headed over inside the cap, and which electrically connects the inner end of the heating coil **31** with the cap. As shown, an insulating washer is provided between the cap **33** and the cup **30** to insulate the latter so that it can serve as a second electrical contact for the coil **31**. It will be seen that, by this organization, light from the heating coil **31** will pass through the apertures **32** and forwardly at an angle past the conical surface of the cap **33**.

Further, according to the invention, the holding device **10** is provided with means encircling the igniting unit **12** for causing said light from the heating coil to pass forwardly past the body of the igniting unit and manifest itself at the front of the lighter so that a user will be apprised of the condition of the coil. This means comprises a tubular or sleeve-like light-conducting member **34** fitting within the shell **14**, said member being of a size to permit the cylindrical base of the cap **33** and the metal sleeve **26** to slide easily therein. The front edge of the light-conducting sleeve **34** is provided with a rim or bead **35** for engagement with the flange **16** of the holder, and the rear edge of said member is provided with an inner bevel so that a conical face is presented to the heating element **30**. Thus, when the heating element is being energized and becomes incandescent, light therefrom will pass through the apertured bottom of the cup **30** and strike the rear bevelled edge of the light-conducting member **34**, which will transmit the light forwardly past the outside of the igniting unit so that the bead **35** will appear as a luminous ring.

Preferably the outer cylindrical surfaces of the cap **33** and sleeve **26** are made bright and shiny to reflect forwardly any light which would strike the surface from the light-conducting sleeve **34**.

For the purpose of effecting electrical connection between the conical cap **33** and shell **14** of the holder the light-conducting sleeve **34** is provided with an aperture **36** through which extends a resilient contact finger **37** lanced from said shell to engage the cylindrical base of the cap when the unit is in the energizing position of Fig. 2. For this position the cup **30** will engage the dish-shaped contact **20** and the circuit through the heating element will be complete. Current will flow through the wire **21**, lug **22**, stud **19**, contact member **20**, cup **30**, heating coil **31**, pin **31***a*, cap **33**, finger **37**, shell **14**, and through the panel **11** to the ground circuit.

For the purpose of retaining the light-conducting sleeve **34** in the shell **14**, said sleeve is provided with a recess **36***a* in its outer wall adapted to be engaged by a resilient tongue **37***a* lanced from the shell. In assembling the lighter the sleeve **34** is pressed into the shell **14** so that the tongue **37***a* enters the recess **36***a*, whereupon the sleeve will be held securely against removal.

Another embodiment of the invention is shown in Figs. 3, 4 and 5, wherein the holding device is provided with reflecting means for causing the light from the incandescent element to pass forwardly past the outside of the igniting unit body. In these figures the igniting unit **12** is similar in all respects to that already described. However, the shell **14***a* of the holding device is provided with corrugations forming internal ribs **38** extending in an axial direction from the front of the shell to a point slightly past the center of the shell. Preferably the shell **14***a* is formed and drawn of sheet metal, and the ribs **38** are provided with bright light-reflecting surfaces. Also, the outer surfaces of the conical metal cap **33** and sleeve **26** are bright and light reflecting, so that when the heating coil becomes incandescent light therefrom will, in passing forwardly past the conical surface of the cap **33**, be reflected and directed forwardly so as to illuminate the front of the lighter and the ouside of the knob **25**.

The ribs **38** are formed to slidably receive the body of the igniting unit, as shown, and the latter is positioned in the holder by engagement of the outwardly flared front edge of the sleeve **26** with the front ends of the ribs.

The front end of the shell **14***a* is provided with an outwardly extending flange **39** adapted to engage the front face of the panel **11** and for the purpose of securing the shell to said panel there is provided a U-shaped bracket **40** carried by the stud **19** but insulated therefrom, as shown, the ends of said bracket pressing against the rear of the panel, as in the conventional manner.

Electrical connection is insured between the cap **33** and shell **14***a* by the resilient tongue **37** lanced inwardly from the shell to engage said cap when the igniting unit is in closed-circuit position.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. In a cigar lighter, an elongate plug-like igniting unit having a tapering rear end, said end being formed with a light-reflecting surface; a heating element carried at the rear tapering end of the unit, said element comprising a metal contact cup enclosing a heating coil, said cup opening rearwardly and having its bottom fastened to said tapering end, and having apertures

in its bottom so that light from the heating coil can pass forwardly past the outside of the tapering end of the unit; a holding device wherein the igniting unit is carried and energized, and from which the unit is removed for use; means for closing a circuit through the heating element when the igniting unit is in operative position in the holder, to bring said element to incandescence; and means carried by the holder to extend to a point adjacent the heating element and encircling the igniting unit when the latter is in the holder, for allowing light passing through the bottom of the cup from the heating element to pass forwardly past the igniting unit to be visible at the front of the unit to apprise a user when the lighter is ready for use.

2. In a cigar lighter, an elongate plug-like igniting unit having a tapering rear end constituting an electrical contact; a heating element carried at the rear tapering end of the unit, said element having an electrical contact insulated from the tapering contact of the unit, and having a resistance coil the ends of which are respectively connected to said contacts, and said elements when incandescent constituting a source of light directed forwardly past the outside of the tapering end; a holding device wherein the unit is carried and energized and from which the unit is removed for use, said device including a cylindrical shell forming a well for receiving the igniting unit; a light-conducting sleeve fitted into the shell of the holder and adapted to slidably receive the igniting unit, said sleeve conducting light from the heating element forwardly past the igniting unit to be visible at the front of the unit to apprise a user when the lighter is ready for use, and said sleeve having an aperture in its side wall; and means for closing a circuit through the heating element when the igniting unit is in operative position in the holder to bring said element to incandescence, said means including a tongue lanced from the shell to pass through the aperture in the sleeve for engagement with the tapering contact of the igniting unit.

3. In a cigar lighter, an elongate plug-like igniting unit having a knob at its front end and having a tapering rear end constituting an electrical contact; a heating element carried at the rear tapering end of the unit, said element having an electrical contact insulated from the tapering contact of the unit, and having a resistance coil the end of which are respectively connected to said contacts, and said element when incandescent constituting a source of light directed forwardly past the outside of the tapering end; a holding device wherein the unit is carried and energized and from which the unit is removed for use, said device including a shell having a plurality of ribs slidably receiving the igniting unit, said ribs forming channels having light-reflecting surfaces for allowing light to pass forwardly past the igniting unit; and means for closing a circuit through the heating element when the igniting unit is in operative position in the holder to bring said element to incandescence, said means including a tongue lanced from the ribs of the shell and engaging the tapering contact of the igniting unit.

4. In a cigar lighter, an elongate plug-like igniting unit; a heating element carried by the unit at the rear end thereof, said element, when incandescent, constituting a source of light directed forwardly around the outside of the unit; a holding device wherein the igniting unit is carried and energized, and from which the unit is removed for use; means for closing a circuit through the heating element when the igniting device is in operative position in the holder, to bring said element to incandescence; and means carried by the holder including a light-conductive sleeve adapted to slidably receive said unit, said sleeve at its rear having a bevelled edge, the surface of which is substantially normal to the rays of light from the heating element, for allowing light from the heating element to pass forwardly past the igniting unit to be visible at the front of the holding device to apprise a user when the lighter is ready for use.

5. In a cigar lighter, an elongate plug like igniting unit, the body of the igniting unit having external reflecting surfaces; a heating element carried by the unit at the rear end thereof, said element, when incandescent, constituting a source of light directed forwardly around the outside of the unit; a holding device wherein the igniting unit is carried and energized, and from which the unit is removed for use; means for closing a circuit through the heating element when the igniting device is in operative position in the holder, and bring said element to incandescense; and means carried by the holder comprising a light-conductive sleeve extending substantially to the position of the heating element to receive light therefrom and adapted to slidably receive said unit, for allowing light from the heating element and directed by said external reflecting surfaces to pass forwardly past the igniting unit to be visible at the front of the holding device to apprise a user when the lighter is ready for use.

6. In a cigar lighter, an elongate plug-like igniting unit; a heating element carried by the unit at the rear end thereof, said element, when incandescent, constituting a source of light directed forwardly around the outside of the unit; a holding device comprising a tubular casing; a sleeve of light-conductive material carried within the casing and adapted to surround said unit when in said holding device, the end of the sleeve being disposed adjacent the heating element and having a light-collecting surface for collecting the light from the heating element when incandescent and passing the collected light forwardly past the igniting unit to be visible at the front of the holding device to apprise a user when the lighter is ready for use, said tubular casing preventing dissipation of the light during passage to the front of the holding device.

7. In a cigar lighter, an elongate plug-like igniting unit; a heating element carried by the unit at the rear end thereof, said element, when incandescent, constituting a source of light directed forwardly around the outside of the unit; a holding device comprising a cylindrical shell forming a well in which the igniting unit is held; a light-conductive sleeve fitted in the shell and adapted to slidably receive said unit, said sleeve having a recess in its outer wall and said shell having a tongue lanced therefrom and extending into the recess to hold the sleeve in the shell, the light-conductive sleeve conducting light from the heating element forwardly past the igniting unit to be visible at the front of the holding device to apprise a user when the lighter is ready for use.

8. In a cigar lighter, an elongate plug-like igniting unit; an oblique reflecting surface formed adjacent the rear end of said unit; a heating element carried by said unit in prox-

imity to said reflecting surface, said element, when incandescent, constituting a source of light; a cylindrical holding device wherein the unit is carried; a light-conductive sleeve concentrically arranged with said holder and adapted to slidably receive the igniting unit, said sleeve at its rear having a bevelled edge, the surface of which is substantially normal to the reflecting surface so that light rays emanating from said element are projected by said reflecting surface to said bevel and thence forwardly past the unit to be visible at the front of the unit.

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