April 25, 1950 A. F. JACKSON 2,505,326

CIGAR LIGHTER

Filed Sept. 30, 1944

Fig. 1

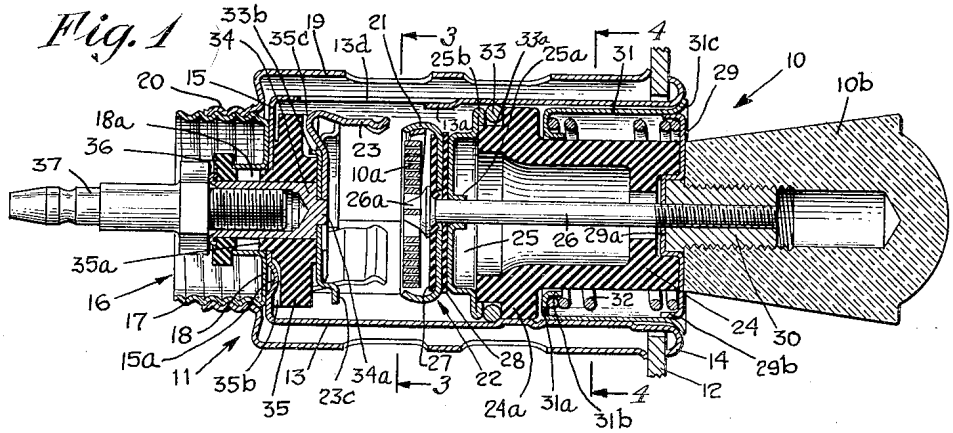


Fig. 2

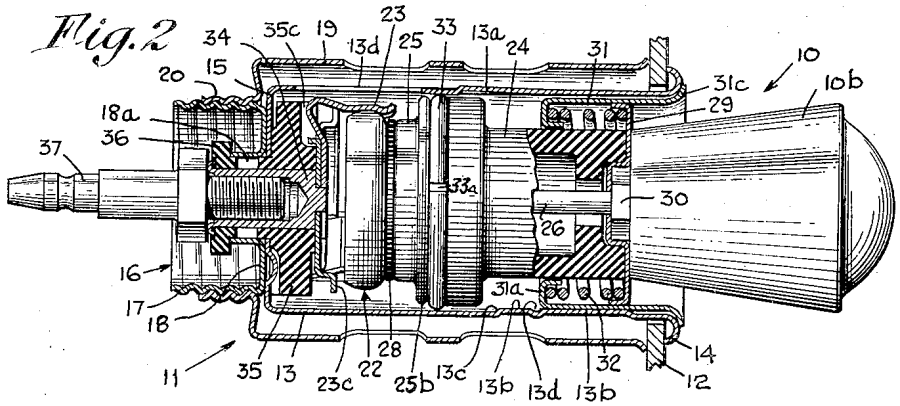


Fig. 3

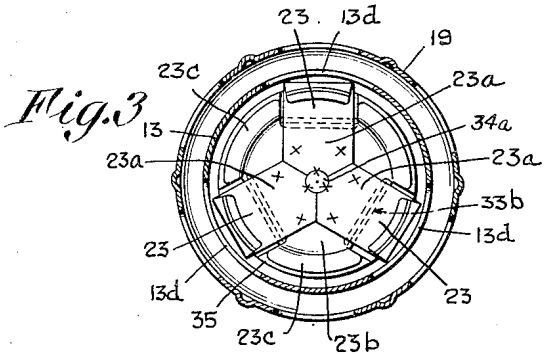
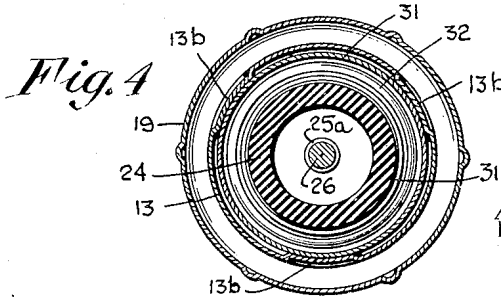


Fig. 4



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2,505,326

CIGAR LIGHTER

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8 Claims. (Cl. 219—32)

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This invention relates to electric cigar lighters, and more particularly to lighters of the removable igniting unit type such as are used in automobiles and the like. The subject matter of the present application is similar to that of applicant's copending applications numbered 731,033 and 731,034.

Lighters of this type generally consist of a holder or well comprising a drawn metal shell adapted to be mounted on an instrument panel and to support for storage and for energization a plug-like igniting unit having a coiled heating element, the latter when heated being applied to a cigar or cigarette by removing the igniting unit from the holder. In automatically operative lighters, the igniting unit is usually stored in a shallow position in the well, and is manually moved for energization to a deep position wherein it is retained by heat-responsive clips, the latter automatically releasing the unit for return to shallow position when the element is heated.

An object of the present invention is to provide an automatic cigar lighter of the removable igniting unit type in which the energization and release of the igniting unit is positive and consistently reliable over an extensive period of use so that the lighter will have a long useful life.

This is accomplished by the provision of an improved supporting, contact and detent means associated with the igniting unit and holder whereby when the heat-responsive clips of the lighter are engaged the individual pressures they exert on the coengaging structure are substantially equalized at all times until the clips release the structure, and whereby repeated operation of the clips over an extended period of time consistently follows this performance.

In the illustrated preferred form of the invention the igniting unit body, which fits comparatively loosely in the holder, has a slidably mounted non-expansible sleeve supporting the unit and engaging portions of the holder adjacent its mouth, the mounting for the sleeve permitting the inner end of the unit to move an extent in any lateral direction. This inner end mounts a shallow metal contact and detent cup for engagement with the heat-responsive clips carried by the holder, a heating coil being nested in the cup. By thus mounting the igniting unit, the contact cup may readily assume a centralized position with respect to the clips when grasped by the latter during energization of the element, and the clips may thereby apply equal pressures on the cup, providing for uniform current distribution and consistently uniform release of the

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latter in response to heating of the element. Cooperating to accomplish this result is an improved contact means for the heating element, consisting of a contractible ring carried in a peripheral groove in the igniting unit, the ring frictionally engaging the inside of the holder. The ring is so mounted that it may "float" and at the same time exert pressure on an adjacent metal surface of the unit connected to the heating element, so that an effective electrical contact is established from the heating element to the holder while at the same time the inner end of the igniting unit and contact cup are not prevented from moving laterally as required for centralization of the cup in the detent clips. If during installation of the lighter on an instrument panel, the drawn shell of the holder should be deformed slightly, the above supporting and detent structure would still provide for centering of the contact cup, and therefore equalization of pressure thereon, and for free movement without sticking of the igniting unit so that the proper functioning of the lighter would be unaffected, and its useful life thereby not shortened.

Contributing to long, useful life of the lighter, a construction is provided on the shell of the holder for cooperation with the floating contractible ring of the igniting unit. This construction functions when the igniting unit is replaced in the holder after use, to obviate inadvertent useless reenergization of the heating element due to insertion of the igniting unit too deeply into the holder, as is often done in lighters prior to this invention. Such inadvertent reenergization needlessly reheats the heating element and operates the detent clips with accompanying arcing, thereby shortening the life span of the lighter to this extent.

To prevent such reenergization, in the form of the invention illustrated herein the contractible ring is sized to closely approximate the normal inside diameter of the shell of the holder, so that it exerts little if any pressure on the shell where the normal diameter exists. At a plurality of peripherally spaced points, however, the shell on its inside walls has raised portions arranged to be frictionally engaged by the ring, the raised portions being located so that a restraint is placed on the igniting unit while it is being reinserted, this restraint suddenly being discontinued at the point where the unit reaches its shallow non-energizing or storage position by the termination of said raised portions. When the contractible ring reaches this point of termination it expands suddenly and strikes the walls of the shell, pro-

ducing a loud and audible click. At the same time, the non-expansible supporting sleeve on the igniting unit, being substantially fully inserted in the shell, is stopped from further insertion by engagement of a flange on the sleeve with the mouth of the shell. The sleeve has a yieldable spring connection with the igniting unit, and a fairly substantial yieldable restraint, increasing the deeper the unit is moved in the holder, is thereby placed on the unit at the time that the constant or fixed restraint due to the contractible ring ceases. The shallow position of the igniting unit is spaced a comparatively substantial amount, by an improved shaping of the detent clips, from the point where it begins to be energized by engagement with the latter and as a result, although a slight overshooting of the shallow position of the igniting unit may occur, this is insufficient to cause inadvertent reenergization of the heating element even momentarily.

The above result is achieved in some measure by a combination of the change in forces acting on the igniting unit when it reaches its shallow storage position in the holder, and the audible click of and sensation produced by the contractible ring in suddenly expanding and striking the larger diameter walls of the shell.

Providing for effective electrical connection between the shell and contractible ring when the igniting unit is moved to deep, energizing position, the shell is formed with resilient inwardly biased fingers for yieldably engaging the ring at this position, the resiliency of the fingers functioning to aid the centering of the contact cup in the detent clips provided by the floating mounting of the ring.

The combination of contractible floating ring, spring-urged non-expansible supporting sleeve on the igniting unit, together with a holder shell having on its inside raised detent portions makes the lighter of the present invention more convenient to use, and this is an important feature of the invention. In operation, when the igniting unit is inserted in the shell of the holder, the restraint placed on the unit opposing such insertion is uniform and unvarying, and when the unit reaches its shallow storage position the effect of a definite stop is produced by the disengagement of the ring from the raised shell portions and by the simultaneously increased restraint placed on the unit by the spring-urged sleeve. While this action is not a positive stop, it has a definite stopping effect, since a comparatively unvarying restraint is replaced by a stronger restraint which increases if the unit is moved inwardly beyond this shallow position. Thus, reinsertion of the igniting unit may be quickly and conveniently accomplished without danger of undesired reenergization or uncertainty as to its position.

The raised portions of the shell, cooperating with the contractible floating ring of the igniting unit, function as a yieldable stop when the unit is automatically released from energizing position and automatically returned to shallow position preparatory to being removed for use. To doubly insure against the igniting unit inadvertently being ejected from the holder during its automatic release and return to shallow position, the raised portions of the shell are provided adjacent their innermost ends with grooves which provide abutting surfaces for engagement by the contractible ring. Thus, if the restraint placed on the igniting unit by engagement of the ring with the innermost ends of the raised portions of the shell is insufficient to stop the unit after it has been released and has reached the shallow or storage position, an additional restraint is provided when the walls of the grooves are engaged by the floating ring, since an abutting action takes place when this occurs because the ring expands suddenly and strikes the groove walls.

Reliability of operation of the lighter is further accomplished by means confining the space surrounding the heating element while the latter is being energized. The heat from the element is therefore prevented from being radiated directly into the surrounding atmosphere, and is caused to act on the heat-responsive detent clips which grasp the contact cup, thereby causing more reliable response of the clips to heat from the element.

The invention further provides a construction involving fewer component parts, the parts being interfitted to prevent shifting and being arranged to resist vibration by an assembly utilizing welding and riveting, as distinguished from an assembly involving screw threads. As a result, the parts of the lighter are accurately maintained in their originally placed positions, resulting in more uniform performance over a considerable period of time.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is an axial sectional view of the preferred form of lighter of the present invention, showing the igniting unit in shallow nonenergizing or storage position.

Fig. 2 is a substantially similar view but showing the igniting unit in deep energizing position.

Fig. 3 is a transverse section on the line 3—3 of Fig. 1, and

Fig. 4 is a transverse section taken on the line 4—4 of Fig. 1.

The lighter of this invention comprises an igniting unit 10 and attached heating element 10a slidably mounted in a holder 11, which may be secured to an instrument panel 12 of a vehicle or the like. The holder 11 comprises a drawn metal shell 13 having at its mouth an outturned circular flange 14 engaging the front face of the panel 12. Integral with the shell 13 is an end wall or closure 15 on which is mounted in axial alignment with the shell 13 a drawn metal cup 16 having screw threads 17 in its side walls. The shell 13 may be formed of brass, and the cup 16 of steel, the bottom 18 of the cup being securely welded at a plurality of points, preferably six, to the end wall 15 of the shell to provide a rigid and vibration-resistant composite structure.

In order to secure the shell 13 to the panel 12, a binding sleeve 19 is provided having a reduced threaded end 20 whereby it may be screwed on the cup 16 so that its large end engages the rear face of the panel 12 and securely holds the shell 13 to the panel.

The heating element 10a is wound in the form of a spiral the outer end of which is secured to the side wall 21 of a shallow metal contact cup 22 carrying the element, the cup being secured to the inner end of the igniting unit 10. An automatic detent and contact means comprising a plurality of heat-responsive bimetallic arms or clips 23 are insulatedly mounted on the end wall 15 of the shell 13 within the latter to act as wiper-type contacts, the clips being arranged to grasp between them with wiping engagement the wall 21 of the cup 22 when the igniting unit 10 is moved to a deep energizing position as shown in Fig. 2.

According to the present invention, the igniting unit 10 is provided with an improved supporting structure for engagement with the shell 13, and an improved contact means for connecting the shell 13 to the heating element 10a whereby current may be brought to the latter, and whereby when the igniting unit is in deep energizing position the cup 22 may be centralized with respect to the clips 23 so that the latter exert substantially equalized pressures on the cup, thereby providing substantially uniform current distribution to the clips.

As shown in Figs. 1 and 2 the igniting unit 10 has a tubular body 24 which may be molded of insulating material, the body adjacent its inner end having a peripherally extending shoulder 24a of a diameter to enable the body to loosely fit within the shell 13. At the inner end of the body 24 a shallow cup 25 formed of sheet metal is mounted. The bottom of the cup 25 is apertured and extruded at 25a to provide a sleeve for receiving a stud 26 extending through a central aperture in the bottom of the cup 22 and having a slotted head 26a secured to the inner end of the heating coil 10a, as by pinching and welding, or other suitable means.

As shown in Fig. 1, disks of insulation 27 and 28 are disposed respectively between the heating element 10a and the bottom of the cup 22, and between the bottoms of the cups 22 and 25. At the outer end of the tubular body 24 of the igniting unit a sheet metal disk 29 is provided having a cupped central portion 29a extending into a central counterbore of the body 24. The outer end of the stud 26 is threaded and provided with a nut 30 carrying a knob 10b, the nut being screwed tightly on the stud to clamp the tubular body 24 between the disk 29 and cup 25, thereby holding these parts securely together. Preferably after this assembly, the end of the stud 26 is welded to the nut 30 to prevent inadvertent loosening of the parts.

For supporting the igniting unit 10 in the shell 13 a drawn metal sleeve 31 is provided having an outside diameter enabling the sleeve to loosely fit the inside of the shell, one end of the sleeve 31 having an inturned flange 31a provided with a cylindrical edge portion 31b forming a bearing sleeve loosely fitting about the outer cylindrical surface of the body 24. Also the disk 29 has a drawn cylindrical edge portion 29b at its periphery to function as a bearing surface for the inside of the sleeve 31 and to permit the latter to slide freely axially of the body 24. The outer end of the sleeve 31 is flared outwardly to provide a flange 31c for engagement with the flange 14 of the holder when the igniting unit is being supported in the latter.

For yieldably holding the sleeve 31 in a predetermined axial position, shown in Fig. 1, on the igniting unit 10, a helical compression spring 32 is provided, one end of the spring engaging the inside of the disk 29 and the other end engaging the flange 31a of the sleeve 31.

According to this construction when the igniting unit 10 is being supported either in its shallow storage position or its deep energizing position in the holder 11, the body 24 will be carried by the bearing surfaces of the portions 31b and 29b respectively of the sleeve 31 and disk 29 in a manner that the cup 22 is permitted a limited movement in all directions laterally of its axis. This limited movement is made possible due to the loose or sliding fits of the aforementioned bearing surfaces between the sleeve 31 and inside of the shell 13 and between the sleeve and body 24, and also because of the clearance provided between the periphery of the shoulder 24a of the body and the shell. As a result, when the igniting unit 10 is moved to the deep energizing position shown in Fig. 2 wherein the cup 22 is grasped between the bimetallic clips 23, the cup may be centralized in response to pressure exerted on it by said clips so that each of the latter will exert substantially the same pressure.

As provided by this invention, an improved contact means is carried by the igniting unit 10 for connecting one end of the heating element 10a to the shell 13 when the unit is in energizing position, without materially disturbing or altering the equalized pressures of the bimetallic clips 23. This means comprises, in the embodiment shown, a contractible wire metal spring 33 carried in a groove 33a provided between the shoulder 24a of the body and the lip 25b of the cup 25. As shown in Fig. 1, the lip 25b of the cup 25 is folded inwardly back on itself to provide a double thickness, the inner edge of the folded portion engaging the outer surface of the body 24 at its end so that the cup is thereby securely positioned on the body. The contractible ring 33 is preferably formed with a slightly helical shape so that when it is confined in the groove 33a it continually presses against the lip 25b of the cup, forming an efficient electrical connection thereto. Preferably, the sleeve portion 25a of the cup is welded to the stud 26 so that a secure electrical connection is thereby established between the cup 25 and the inner end of the heating element 10a.

Referring to Fig. 2, the shell 13 of the holder is provided with resilient lanced fingers 13a, so that when the igniting unit 10 is in its deep energizing position the said fingers will be engaged by the contractible ring 33, and the inside diameter of the latter is sufficiently large so that the ring may float on the igniting unit 10 or have lateral movement in the groove 33a, substantially without urging or restraint except for the fixed limits placed thereon by the dimensions of ring 33 and groove 33a. As seen in Fig. 1, a clearance exists between the inside diameter of the ring 33 and the outer surface of the body 24, and as a result of this clearance the ring may assume various positions as determined by the pressures exerted on it by the resilient fingers 13a, without disturbing the centering of the contact cup 22 in the bimetallic clips 23 and without introducing any side loads on the igniting unit to upset the force balance between the clips 23.

Thus the automatic release of the igniting unit 10 when the clips 23 respond to heat from the heating element 10a will occur consistently within a predetermined comparatively narrow temperature range of the element. The degree of heat of the element 10a is thereby closely controlled, and its life greatly extended as a result. Also, due to the uniform distribution of current in the bimetallic clips 23 because of the equalized pressure exerted by them on the cup 22, arcing will be reduced at the time of separation of the cup from the clips, and the efficiency of the electrical connection between the clips and cup will be maintained over a considerable period of time. Therefore, the performance of the lighter will generally be improved, and failures due to pitting of the clips or burning out of the heating element will be considerably reduced, if not eliminated entirely.

In some instances when the lighter is installed on an instrument panel and the binding sleeve 19

is screwed up tightly, a slight deformity of the drawn shell 13 is produced, which tends to throw out of line the igniting unit 10 and the bimetallic clips 23. Such deformity, however, will not adversely affect the operation of the lighter of this invention since substantial clearances are provided between the supporting parts of the igniting unit and holder, and since the floating contact ring 33 carried by the igniting unit permits self-alignment of the cup 22 without undesirable side loads in response to the pressures of the bimetallic clips 23.

According to the present invention, the contractible ring 33 and the supporting sleeve 31 of the igniting unit 10 are combined with a structure of the shell 13 to provide an improved detent means for holding the igniting unit in its shallow storage position in the holder while also permitting quick and convenient reinsertion of the unit after use, and also for preventing inadvertent ejection of the unit from the holder when, after energization, it is released by the clips 23 and automatically returned to shallow position.

Accordingly, as shown in Figs. 1, 2 and 4, the shell 13 is embossed to provide a plurality of raised portions 13*b* on its inside, extending longitudinally from a point adjacent the flange 14 toward the inside end of the shell and terminating, as shown in Fig. 1, just short of the position the contractible ring 33 assumes when the igniting unit 10 is in its shallow storage position. The outside diameter of the sleeve 31 is sufficiently small to permit it to loosely fit inside of the raised portions 13*b*, and the diameter of the contractible ring 33 is large enough so that the ring is compressed and frictionally engages the raised portions 13*b* during passage of the ring past said portions at the time of reinsertion of the igniting unit 10. This frictional engagement yieldably resists the reinsertion of the unit, the resistance however being comparatively slight so that a smooth replacing movement may be had. During reinsertion of the igniting unit, at the instant that the contractible ring 33 reaches the inner termination point of the raised portions 13*b*, the ring will expand quickly and strike the inner cylindrical wall of the shell 13, producing a distinctly audible click. The resistance offered by the ring 33 thereby ceases, but at this point the flange 31*c* of the sleeve 31 engages the flange 14 of the holder, thereby again providing a yielding resistance to further inserting movement of the igniting unit.

The resistance provided by engagement of the said flanges 31*c* and 14 is of a different nature from that offered by the ring 33, since if the igniting unit 10 is moved further into the holder after engagement of the flanges, the spring 32 will be compressed and the resistance to movement will correspondingly increase. As a result of this action the igniting unit is prevented from overshooting to any substantial extent its storage position at the time of reinsertion. Although the action is not that of a positive stop, a definite stopping effect is produced, so that reinsertion of the igniting unit may be quickly and conveniently effected without uncertainty as to undesirable overshooting.

It will be noted that, for the storage position of the igniting unit, a substantial clearance is provided between the ends of the clips 23 and the lip of the cup 22, as shown in Fig. 1 and slight unavoidable overshooting of the unit would not be sufficient to cause actual contact between the clips and the cup. Therefore arcing does not occur at these points during reinsertion of the igniting unit, and a clean condition of the clips is thereby maintained.

Referring to Fig. 2, at the time that the heating element 10*a* becomes hot and the clips 23 release the igniting unit, the spring 32 will automatically snap the unit back to the shallow position shown in Fig. 1. When the unit reaches this position the contractible ring 33 will strike the end walls 13*c* of the raised portions 13*b*, thereby restraining the unit and preventing it from being ejected from the holder.

To further insure against the spring 32 ejecting the igniting unit from the holder after release of the unit, the raised portions 13*b* of the shell are provided with transverse grooves 13*d*. Thus, if the force imparted to the igniting unit by the spring 32 should be sufficient to overcome the initial restraint caused by engagement of the ring 33 with the walls 13*c*, when the ring reaches the grooves 13*d*, it will forcibly expand and abut the walls of these grooves, providing added resistance which is in all cases sufficient to prevent further expulsion of the unit.

According to the present invention an improved and simplified means for insulating the stud 26 from the cup 22 is provided. Referring to Fig. 1 the insulating disk 27 is preferably made of deformable material such as mica, and the underside of the head 26*a* of the stud is provided with a taper for engaging the portions of the disk 27 adjacent the central aperture therein. Also, the central aperture in the bottom of the cup 22 is made larger than the aperture in the disk 27, which latter aperture preferably closely fits the diameter of the shank of the stud 26.

It may be seen that if the head 26*a* of the stud is forced against the insulating disk 27, it will cause portions of the latter adjacent the central aperture therein to be deformed and to enter the aperture in the bottom of the cup 22. This automatically centralizes the stud with respect to the cup and also insulates it therefrom. After the head of the stud has thus been forced against the disk 27 and seated, the welding of the sleeve portion 25*a* of the cup 25 to the stud 26 is performed, so that a rigid assembly of the cups, heating element and stud is obtained. There is thus prevented the likelihood of a short circuit occurring between the stud 26 and the cup 22, and the useful life of the lighter is thereby prolonged.

The invention also provides a novel and simplified assembly for mounting the bimetallic clips 23 inside the shell 13, this assembly comprising comparatively few parts rigidly secured together either by riveting or welding so that vibration and usage may not loosen or misalign the parts and adversely affect the operation of the lighter.

Referring to Fig. 3, the bimetallic clips 23 have base portions 23*a* extending radially toward the axis of the shell 13, the base portions being mitered so that adjacent edges may abut each other. Disposed adjacent the base portions of the clips 23 is a cupped supporting plate 23*b* having a plurality of outwardly extended flange portions 23*c* adapted to abut the lip of the cup 22 if the igniting unit is moved past deep energizing position. The base portions 23*a* of the clips are welded, preferably each at two points indicated by the *x*'s in Fig. 3, to the supporting plate 23*b*, the latter being in turn welded to a stud 34 extending through the end wall 15 of the shell 13. As seen in Figs. 1 and 2, the stud 34 is centralized in and insulated from the end

wall 15 by a molded insulating washer 35 having a shoulder 35a extending into a central aperture in the end wall.

To provide for accurate assembly of the stud 34, supporting plate 23b and clips 23, the stud is provided with a central projection 34a extending through a central aperture in the plate 23b and projecting slightly beyond the plate. Also, the base portions 23a of the bimetallic clips are cut away along a circle to fit against and abut the projection 34a of the stud. According to this construction, at the time that the supporting plate 23b is welded to the stud, the two pieces will be accurately positioned, as will also the bimetallic clips at the time they are welded to the supporting plate.

In order to provide a rigid mounting for the stud 34 on the end wall 15 of the shell, the bottom 18 of the threaded cup 16 is pierced and extruded to provide a sleeve portion 18a through which the stud 34 extends. A shouldered insulating washer 36 is provided on the outer end of the stud 34 and the latter laid over on the washer so as to securely hold the stud in place. The shoulder of the washer 36 extends into the sleeve portion 18a of the cup 16, thereby centralizing the stud 34 in the cup and insulating it therefrom. Electrical connection is made to the stud 34 by means of a threaded pin 37 screwed into the bore of the stud, which latter is also threaded for this purpose. By this construction the stud 34 is securely rigidly mounted on the end wall 15 and insulated by the washers 35 and 36, and since the end of the stud is laid over on the washer 36, the parts cannot become loosened due to vibration, severe handling and usage. Also, by welding the stud 34, supporting plate 23b and base portions 23a of the clips into a rigid unit, the likelihood of these parts becoming loosened and operating in a defective manner is considerably reduced. Preferably, the projection 34a of the stud 34 is also welded to the base portions 23a of the bimetallic clips to further reinforce the mounting of the latter. It will be noted that the periphery of the supporting plate 23b is cut away to provide clearance for the bimetallic clips 23, so that the latter may have free movement at all times.

To provide for correct positioning of the clips 23 in the shell 13 the end wall 15 of the latter is lanced to provide a projection 15a extending into a recess 35b in the insulating washer 35. Also, a lug 33b is formed on the supporting plate 23b, extending into a recess 35c in the washer 35. Further clearance for the bimetallic arms 23 is provided by punching apertures 13d in the shell 13.

To further provide for more reliable operation of the lighter over an extended period of time, the invention provides heat-confining means for enclosing the space about the mouth of the cup 22, to cause the bimetallic clips 23 to respond more reliably to heating of the element 10a. This means comprises the peripheral portions 23c of the supporting plate 23b, these portions being circularly extended as shown in Figs. 2 and 3 so that they serve to prevent direct radiation of heat from the element 10a into the surrounding atmosphere. The heat waves striking the portions 23c are reflected and also absorbed and conducted to the clips 23, resulting in more heat being applied to these latter and thereby causing them to more reliably respond to heating of the element 10a. As a result, there is avoided excessive lag in the response of the arms 23 to heating of the element 10a, so that the latter does not become overheated and suffer shortened life as a result.

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, the combination of a plug-type igniting unit having a heating element and a circular contact member at one end; a holder comprising a tubular shell slidably receiving and supporting the igniting unit with a loose sliding fit; a contractible ring floatably mounted on the igniting unit for frictionally engaging the inside of the shell to hold the unit against inadvertent removal from the holder; and a contact clip rigidly carried in said shell, embracing said circular contact member and laterally positioning the igniting unit thereby with the periphery of the igniting unit in the vicinity of said ring spaced from said shell over at least the major portion of its circumference, said floatable mounting for the ring preventing the latter from interfering with the lateral positioning of the unit by said contact clip.

2. In a cigar lighter, a plug-type igniting unit having a heating element; a holder comprising a tubular shell slidably receiving and supporting the igniting unit in a deep energizing position and in a shallow non-energizing position; and a contractible ring carried by the igniting unit for frictionally engaging the inside of the shell to hold the unit against inadvertent removal from the holder, said shell having on the inside thereof intermediate its ends and extending inwardly to a location short of that occupied by said ring when said unit is in deep position, a non-yielding raised portion for engaging and compressing the contractible ring whereby a yieldable detent action is provided by such engagement, a part of the shell between said location and the location of said ring when the unit is in deep position having inside cross-dimensions substantially equal in magnitude to the expanded outside diametric dimensions of the ring so that movement of the igniting unit is not restrained when the ring is located in said part of the shell.

3. In a cigar lighter, a plug-type igniting unit having a heating element; a holder comprising a tubular shell slidably receiving, and supporting the igniting unit; heat-responsive detent means comprising a clip rigidly carried in the shell in heat-receiving relation with the heating element and engaging the igniting unit when the latter is placed in a deep energizing position in the holder, for yieldably embracing and holding the unit in said position, said clip laterally positioning the igniting unit; means for conducting current to the heating element when the igniting unit is in said deep energizing position, said heat-responsive means releasing the igniting unit in response to heat from the heating element; means for automatically moving the igniting unit, when released, to a shallow non-energizing position in the holder; and a contractible ring floatably mounted on the igniting unit for frictional engagement with the holder, the inside of the latter having a raised portion for engagement with said ring when the igniting unit is moved to said shallow position whereby the unit is yieldably restrained from inadvertently leaving the holder; the floating mounting of the ring preventing the latter from interfering with the lateral positioning of the unit by said clip.

4. In a cigar lighter, a plug-type igniting unit

having a heating element; a holder comprising a tubular shell slidably receiving and supporting the igniting unit; heat-responsive detent means in heat-receiving relation with the heating element and engaging the igniting unit when the latter is placed in a deep energizing position in the holder, for yieldably holding the unit in said position; means for conducting current to the heating element when the igniting unit is in said deep energizing position, said heat-responsive means releasing the igniting unit in response to heat from the heating element; means for automatically moving the igniting unit, when released, to a shallow non-energizing position in the holder; and a contractible ring carried by the igniting unit for frictional engagement with the holder, the inside of the latter having a raised portion for engagement with said ring when the igniting unit is moved to said shallow position whereby the unit is yieldably restrained from inadvertently leaving the holder; said raised portion of the inside of said holder extending longitudinally of the latter and having intermediate its ends a depression providing an abutting surface for engagement with the ring, said surface when struck by the ring during movement of the igniting unit providing for additional restraint of the latter whereby it is more positively prevented from inadvertently leaving the holder after its return to said shallow position.

5. In a cigar lighter, a plug-type removable igniting unit having a heating element; a holder comprising a tubular shell slidably receiving and supporting the igniting unit in a shallow open-circuit position and in a deep closed-circuit position; and a contractible ring carried by the igniting unit for frictionally engaging the inside of the shell to yieldably hold the unit against inadvertent removal from its shallow position, said shell on its inside having a nonyielding raised portion extending inwardly to a location just short of that occupied by said ring when said unit is in shallow position for engaging and compressing the ring during insertion of the igniting unit to its shallow position, and said raised portion having an abrupt termination whereby the ring expands and strikes the shell with an audible click when the shallow position is reached.

6. In a cigar lighter, a cylindrical plug-type igniting unit having a heating element; a holder comprising a cylindrical tubular metal shell slidably receiving and supporting the igniting unit; inwardly biased electric contact means mounted on said shell; a contractible metal annulus extending around the periphery of the igniting unit, said igniting unit having a substantially rigid metallic ring connected to the heating element, and having a peripheral shoulder, the ring and shoulder being respectively located on opposite sides of the contractible annulus, portions of said annulus having an axial bias for continuously exerting a yieldable force axially on the ring and shoulder, said annulus having an outer diameter greater than said ring and shoulder for engagement with said inwardly biased contact means and for frictionally engaging the inside of the shell to hold the unit against inadvertent removal from the holder.

7. In a cigar lighter, a removable plug-type igniting unit having at one end a heating element, and connected to one end of the element a wiper-type electrical contact having opposed contacting surfaces; a holder comprising a tubular metal shell loosely and slidably receiving and supporting the igniting unit; an electrical contact carried by the shell for wiping force-exerting engagement with the opposed contacting surfaces of the contact on the igniting unit when the latter is slidably moved to an energizing position in the shell; contact means carried by the igniting unit comprising a current-conducting instrumentality and means for causing the instrumentality to frictionally engage the inside of the shell; and a floating mounting for the said instrumentality on said unit, including means for connecting said instrumentality to the other end of the heating element so that when the igniting unit is in energizing position the instrumentality will bear against the shell to close the circuit through the heating element while at the same time permitting limited lateral positioning of the igniting unit for equalizing the forces exerted on the opposed contacting surfaces of the said wiper-type contact of the unit.

8. In a cigar lighter, a plug-type removable igniting unit; a tubular metal holder loosely receiving and supporting the igniting unit in a shallow open-circuit position and in a deep closed-circuit position; a shallow metal cup mounted on one end of the igniting unit; a heating element mounted in the cup; heat-responsive spring clips carried by the holder, disposed in spaced relation adjacent the lip of the cup to engage and grip the sides of the latter for holding the igniting unit in its deep circuit-closing position in the holder, and for releasing the unit in response to heating of the element, said clips being located so that when gripping the sides of the cup they tend to centralize the latter between them so that each clip exerts substantially an equal pressure on the cup; contact means carried by the igniting unit, comprising a current-conducting member and means for causing the member to frictionally engage the inside of the holder to make electrical connection thereto; and a floating mounting for the current-conducting member, including means for connecting the member to the heating element so that when the igniting unit is in deep energizing position the member will connect the heating element to the holder while at the same time permitting limited lateral positioning of the igniting unit for centralizing the cup in the said spring clips.

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