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Edwards

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[54] **LIGHTER SOCKET AND SCREW THREADS MOUNTING**

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Related U.S. Application Data

[62] Division of Ser. No. 51,454, July 1, 1970, Pat. No. 3,697,025.

[52] **U.S. Cl.** **248/27,** 219/264, 219/267, 339/128, 151/7, 151/14

[51] **Int. Cl.** **G12b 9/02,** F23q 7/22

[58] **Field of Search** 219/263, 264, 265, 267, 219/268; 248/27; 339/128; 151/14, 7; 285/92

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Primary Examiner—Volodymyr Y. Mayewsky

[57] **ABSTRACT**

An improved and economical mounting structure in a socket or holding device with a thermostatic latch, comprising screw-type mounting means located entirely at the top end of said socket, for an electric pop-out cigarette lighter, in which a cordless lighter plug unit is received and stored, and generally used in automobiles.

1 Claim, 3 Drawing Figures

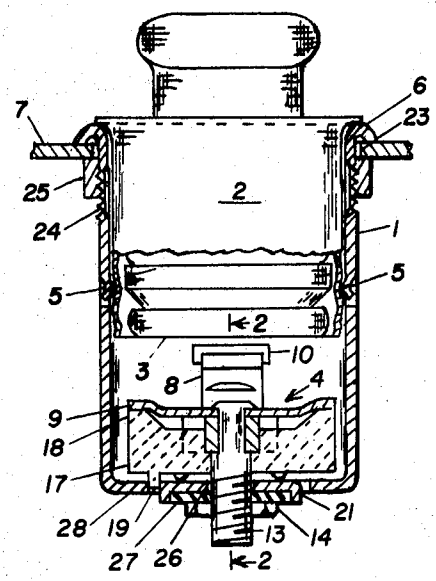


Fig. 1

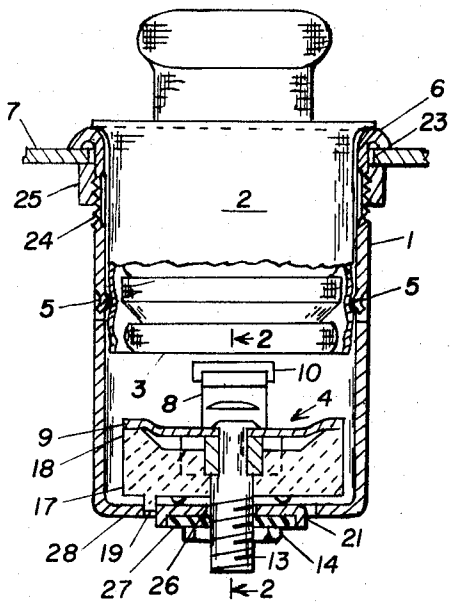


Fig. 2

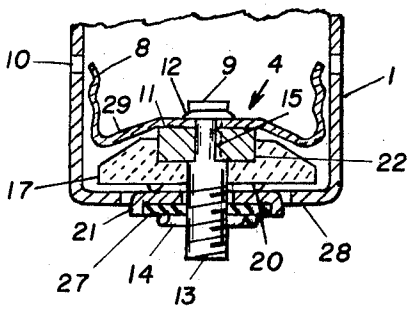
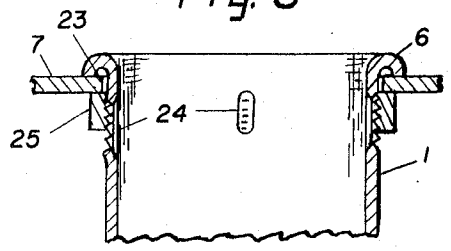


Fig. 3



LIGHTER SOCKET AND SCREW THREADS MOUNTING

This is a divisional application, and relates to subject matter shown, described and or referred to in my co-pending application, Ser. No. 51,454, filed July 1, 1970, an elected species FIG. 5 of which has been allowed, and issued Oct. 10, 1972, as U.S. Pat. No. 3,697,025.

This invention relates to electric cigarette lighters, commonly used in automobiles, having a socket with a thermostatic latch, fastened to an instrument panel, and in which a cordless igniter plug unit is stored and may be energized therein and removed therefrom for use in igniting cigars or cigarettes.

Current pop-out lighters have base-mounted sockets, that is, they have threads at the bottom, and are fastened to mounts or panels by outer clamping sleeves with thread means at the bottom of the sleeves engaging the threads at bottom of the sockets. The two principal conventional lighters presently in use in this category are represented in U.S. Pat. No. 2,495,657 issued Jan. 24, 1950, and U.S. Pat. No. 2,727,977 issued Dec. 20, 1955, to which reference is made. Current lighters have thermostatic latches with provisions for interlocking the parts against rotation, and centering the parts accurately during assembly. They also have comprehensive openings in the lower sidewall of the socket opposite upward turned fingers of the thermostatic latch to provide electrical clearance between them and the socket wall. The clamping sleeve of said lighters is of larger diameter than the socket tube, providing an air space between these two parts when assembled.

A principal purpose of the present invention is to eliminate the current bottom-secured clamping sleeve by supplying effective means at the top end of the socket for securely fastening it to the panel.

A main object of the present invention is to appreciably reduce the cost of manufacturing and assemblying a pop-out lighter complete with thermostatic latch.

A further object of this invention, in its simplest form, is to eliminate the necessity for interlocking the parts of the thermostatic latch against rotation.

Still another object of this invention, in a modified form, is to provide abbreviated clearance openings in the lower sidewall of the socket opposite the tips of upward turned fingers of the thermostatic latch to provide electrical clearance between them and the socket wall, when this type of construction is preferred.

Other purposes, objects and advantages will become apparent from the detail descriptions hereinafter set forth.

In the accompanying drawing:

FIG. 1 is an axial sectional view of a lighter socket according to the present invention, including the outline therein of a cordless plug unit.

FIG. 2 is a fragmentary sectional view of the lower part of the lighter socket along the line 2 — 2 of FIG. 1.

FIG. 3 is a fragmentary sectional view of the upper portion of the lighter socket as shown in FIG. 1, but without the cordless plug unit.

The current pop-out lighter design began possibly thirty-five or forty years ago with the advent of the "cordless" type lighter. At the time, electric wires behind panels of automobiles were rubber-insulated cotton-covered. It is presumed that the bottom fastening

outer clamping sleeve originated as a protection of such wires against direct contact with the socket tube or barrel, which attains somewhat higher temperature than the outer sleeve when the lighter is operated. The comprehensive openings in the lower part of the socket sidewall presumably have been provided to afford latch clearances with a socket tube of minimum diameter.

At present electric wires behind automobile instrument panels are insulated by plastic coatings which are heat-resistant. I have found by experiment that such plastic-coated wires in direct contact with the socket tube of a pop-out lighter are not melted, burned, or in any way damaged when the plug unit is energized and heated for considerably longer time than occurs during normal operation. This is the inventive idea behind my development of the top-mounting structure for a lighter socket embodied in the present invention.

The simplest and most economical form of my invention is a lighter socket in which there are no clearance openings at all in the lower portion of the socket sidewall. Clearance between the latch and socket sidewall may be provided by slight increase in diameter of the socket tube or slight decrease in some dimensions of the latch and plug units, or a combination of both such adjustments in dimensions comparable to current lighters. The thermostatic latch in a lighter socket utilizing this construction will not require means interlocking the parts against rotation.

A simple socket of the type just described is shown in FIG. 1. The tubular member 1 has an integral flange 6 at its open top end. Spaced rearward (that is, bottomward) from said flange 6 are indentations 24 formed at suitable intervals outward from the sidewall of tubular member 1. These indentations 24 are threaded on the outside as shown in FIGS. 1 and 3, and a collar 25 has inside threads for engaging said threaded indentations 24. The socket is inserted through hole 23 in panel 7, and threaded collar 25 is inserted on tubular member 1 from the bottom and screwed on threaded indentations 24, clamping the socket to the panel.

The indentations 24 may be elongated axially to accomodate variations in thickness of different panels. Reasonably fine and shallow cut threads may be used on indentations 24 and threaded collar 25 since the parts are subject to very little stress. The construction will even permit of a substantially coarse thread cutting through the wall of indentations 24.

The tubular member 1 has springy fingers 5 provided in the sidewall, similar to conventional pop-out lighters, to engage the plug unit 2. It is evident that a lighter socket of the simple type described may be dimensioned so as to be usable in panels with holes 23 of size currently provided on automobiles when manufactured.

Briefly, the lighter socket construction described, having no openings in the lower portion of the sidewall, permits latch construction without interlocked parts. An insulating disk 17, preferably of ceramic material, has a center-bore, and the bottom 28 of tubular member 1 has an enlarged hole 26. An insulating washer 27 of heat-resisting material similar to micarta (which has been satisfactory in experiments) is centered with relation to the socket sidewall by several lugs 21 projecting from the socket bottom 28. Stud 13 passes through latch spider 29, spacing washer 11, disk 17, the socket bottom 28, and the precisely fitting and centered hole

in insulating washer **27.** This latch assembly is secured together by a nut **14** on the threaded end of stud **13.**

The latch spider **29** has fingers **8** upward turned to engage heating cup **3** of plug unit **2,** and may have interspaced therewith contact arms **9** with radial ends to limit the travel of plug unit **2** and permit re-energizing contact with spider **29** when fingers **8** thermostatically release plug unit **2.** If desired the insulating disk **17** may have pillows integral therewith.

A modification of the simple lighter socket described provides abbreviated clearance openings **10** in the lower portion of the socket sidewall. These may be punched, sawed or ground. When these openings **10** are utilized the fingers **8** should be so formed at the base or upward bend that they will not contact the lighter socket sidewall when the lighter is operated. The openings **10** are radially elongated and opposite the upper tips of the thermostatic latch fingers **8,** and are dimensionally proportioned to provide only positive clearance, under all conditions when in use, between the sidewall of the lighter socket and the upper tips of the fingers **8.** When the abbreviated clearance openings **10** are used there is no danger from spark or ash droppings, or that other wires behind the instrument panel will be damaged.

To facilitate assembly when the openings **10** are used, the latch parts may be interlocked or keyed together and with the tubular member **1** (such as, the lighter socket bottom **28**). Interlocking means of this nature are well-known in the art, and should require no detailing here. However, complete details of such interlocking is supplied in my copending and allowed application, Ser. No. 51,454, filed July 1, 1970, to which reference is made.

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. An electric cigarette lighter socket usable with a thermostatic latch, and adapted to be mounted on a panel said socket comprising a tubular member having an open top end and a closed bottom end, springy fingers lanced substantially in the upper portion of the sidewall of said tubular member, an integral flange at said top end of said tubular member for bearing against the face of a panel on which said socket is mounted, short axially elongated narrow outward indentations at intervals in the sidewall of said tubular member, beginning near said top end of said tubular member and extending rearward of said flange, cut screw threads on the outside of said indentations, narrow threaded collar means encircling said tubular member and engageable with said cut screws threads on said indentations for clamping said socket to the panel, including radially elongated axially shallow openings substantially in the lower half of the sidewall of said tubular member opposite the upper tips of the thermostatic latch, the upper edges of said openings being substantially above said upper tips, said openings dimensionally proportioned to provide only positive clearance between the sidewall of said tubular member and the upper tips of the thermostatic latch under all conditions when in use, so as to minimize the area of each said opening.

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