

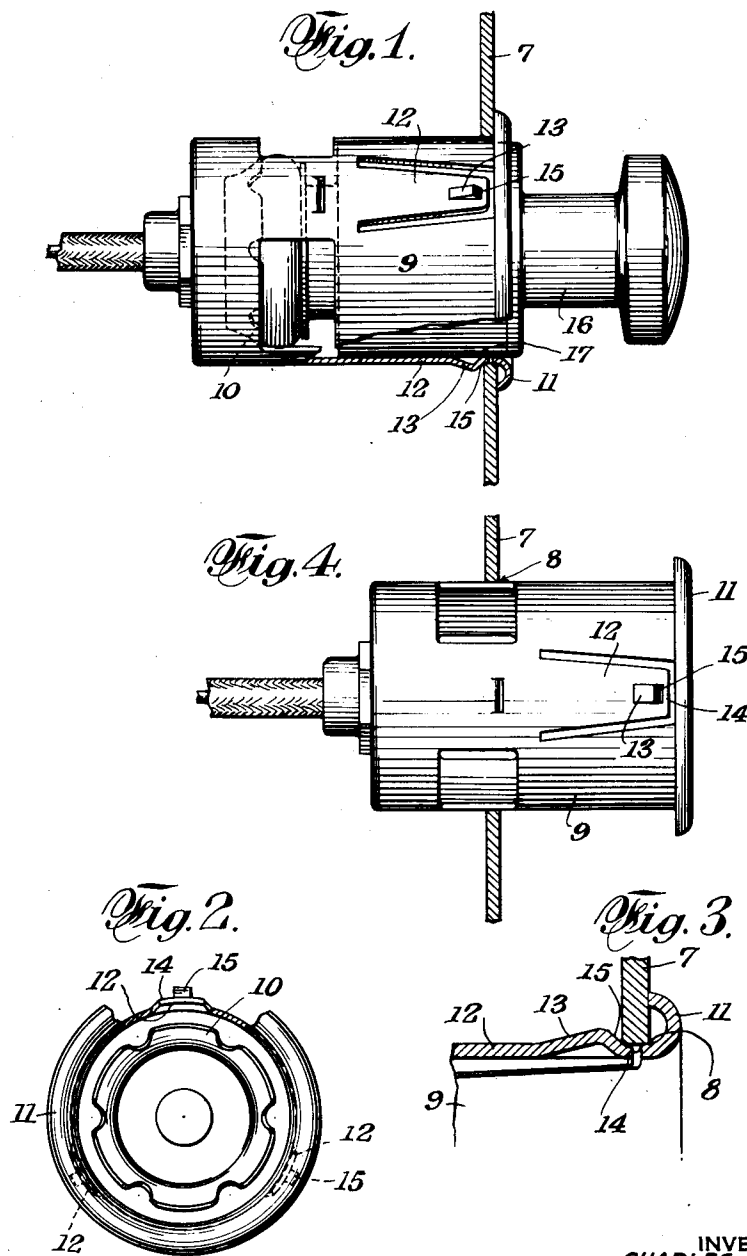
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SOCKET FOR CIGAR LIGHTERS, ETC

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SOCKET FOR CIGAR LIGHTERS, ETC.

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10 Claims. (Cl. 248-27)

Our invention relates to sockets which are especially adapted for mounting cigar lighters and the like in the instrument boards of automobiles, etc.

The main object is to provide a simple, effective and reliable form of socket which can be readily attached to or detached from an instrument board or panel when desired.

Another object is to provide a construction of this character which cannot be accidentally detached under ordinary circumstances.

Another object is to provide a construction in which there is an effective electrical connection between the socket and the panel.

Another object is to provide a construction of the foregoing type which will effectively fit in supports which may vary in thickness and in which the size of the opening may vary within ordinary commercial limits.

In carrying out the invention the socket in its preferred form is drawn from sheet metal and has special locking fingers integrally formed in the side walls in such a way that the socket can be readily inserted into a preformed opening in the instrument board where it will snap into place but from which it may be removed when desired. The socket is so constructed that when the igniter element or plug of the lighter is in place in the socket the socket cannot be removed.

Fig. 1 is a side view and partial section showing a socket with an igniter plug in place.

Fig. 2 is a transverse sectional view on a larger scale showing the socket construction.

Fig. 3 is a longitudinal sectional view on an enlarged scale showing the construction and the interlocking parts of the socket and panel.

Fig. 4 is a side view showing the socket being inserted into the panel.

The panel 7 is ordinarily of metal and provides the electrical ground of the circuit. This panel has a circular opening 8 adapted to receive the socket.

The socket 9 is cylindrical and is usually closed at the rear end in which is mounted a contact terminal 10 to be engaged by the igniter unit. The tubular part 9 constitutes the other terminal of the socket. The outer end of the socket is curled or flared into a flange 11 which overlaps the outer surface of the panel and serves as a stop to limit the incursion of the socket into the panel.

The igniter unit or plug 16 may be of any suitable construction and fits snugly but removably in the socket.

The side wall of the socket is provided with a

number of spring fingers which are formed by stamping or cutting the metal. Each finger 12 lies in the general outline of the wall of the socket and is preferably biased outwardly slightly and has an outwardly pressed portion 13 serving as a cam which automatically bends the finger inwardly as the socket is inserted into the opening in the panel. The end of each cam 13 which is nearest the panel is formed into an inclined surface 15 facing toward the panel to engage the rear edge of the opening 8 and under the influence of the outward bias of the fingers draws the socket into the opening holding the flange contiguous the panel. Each finger also has a lip 14 which projects forwardly into the hole in the panel and, in the case of too thin a panel stops the fingers spreading beyond the diameter of the hole, thus locking and preventing removal without the aid of tools. The face 15 also acts to press the fingers inwardly when pressure is applied at the rear of the socket to extract it from the panel.

There are preferably three or more of these spring fingers with the cam surfaces above mentioned so as to exert a uniformly distributed interlocking pressure to hold the socket securely in place in the panel.

It will be noted that the plug or igniter has a cylindrical wall 17 which serves as an abutment for the fingers when the plug is in place, which abutment makes it impossible for the fingers to move inwardly sufficiently to release the socket. In other words, when the plug is in place in the socket, the socket cannot be withdrawn from the panel. Contrariwise of course the plug should be withdrawn from the socket before trying to insert the socket in the panel.

The cross sectional shape of the socket is preferably cylindrical so as to facilitate rotation of the socket within the panel and thus ensure the maintenance of a clean electrical connection between the socket and the panel.

It will be seen that the construction is extremely simple and relatively inexpensive. It also has the very great advantage of simplicity in installation inasmuch as it is merely necessary to insert the socket into the panel by a simple pressure from the front, no nuts, screws or washers being required. In case of the necessity of repair or inspection it is also easy to extract the socket from the panel provided, as above stated, the igniter plug is first removed. When the plug is in place within the socket in the panel there is no danger of the socket being detached.

Broadly considered, however, it should be

understood that the claims are not limited with respect to the foregoing details except as specified therein. It should also be understood that although the invention is peculiarly applicable to lighters for cigars and cigarettes, etc., that the invention in its broader aspect is applicable to electrical switches, lamps, etc.

The construction is such that the socket may be installed in a panel and removed without the necessity of any tools whatsoever.

The rear end wall containing the ungrounded connection need not necessarily be carried by the socket, but might for example be supported from the panel in other ways, in which case the socket need not have a closed rear end portion. The grounded socket contact which cooperates with the grounded plug contact may be integral and bent in from the socket surface where desired as shown in the Ashton application Serial Number 747,377, filed October 8th, 1934, for Cigar lighter.

The fingers 12 may be slightly biased inwardly and the lips 14 sufficiently rounded off so that when the igniter or plug is inserted it will wedge the fingers outwardly.

We claim:

1. A socket construction for cigar lighters, etc., comprising a metallic tubular member adapted to be inserted in a panel and having an outer flange serving as a limiting stop against the panel and having a number of yieldable fingers disposed around the periphery of the socket with forward end portions located in a position with respect to the flange so that they will engage the wall around the opening in the panel against which the flange is seated, each finger having a rear inclined shoulder facing away from the flange to serve as an automatic retracting means and having an inclined shoulder in front of the rear shoulder facing toward the flange to engage the rear edge of the opening in the panel, the forward ends of said fingers being radially movable through the sides of said tubular member and capable of being moved radially outward on insertion of a plug fitting within the socket and capable of tightly wedging the front inclined shoulders against the rear edge of the panel opening and holding the socket in place.

2. A one piece socket for a cigar lighter etc. comprising a metallic cup-like member having spring fingers formed integrally with the side walls thereof, said fingers having laterally biased tips extending forwardly in substantially the same plane as the adjacent stationary portions of the walls so that the cup-like member and its fingers can be thrust longitudinally into an opening in a panel and withdrawn when there is no plug in the socket to prevent movement of the fingers, each finger having a laterally projecting locking cam member for coacting with the edge of the panel opening to hold the socket in place.

3. A detachable socket for holding a removable plug comprising a cup-like member formed of metal and adapted to be inserted into an opening in a supporting panel and having an outwardly flaring flange at its outer end adapted to abut against the front surface of a supporting panel and having spring fingers at the sides with movable tips biased outwardly adjacent said flange, each finger having a locking member projecting outwardly adjacent its tip and engaging the rear edge of the opening in the panel when the flange engages the front face of the panel around the opening, the inner wall of at least a part of each finger adjacent its movable

tip being at substantially the same distance from the axis of the socket as the adjacent stationary wall of the socket so that the fingers can not be retracted when a plug is held in the socket.

4. A socket for receiving and supporting a plug-like member and comprising a metallic cup-like member having spring fingers and an outwardly flaring stop flange at the open end of the cup-like member, each finger being connected to a side wall of the cup-like member and extending forwardly and having a movable tip near said flange, each finger being biased outwardly and provided with a laterally projecting locking lug adapted to be automatically retracted as the cup-like member is inserted in an opening in a panel, each finger springing outwardly when its lug passes through the opening so that the lug engages automatically behind the edge of the panel and holds the socket in place in the panel, the forward ends of said fingers being radially movable through the sides of said tubular member and capable of being moved radially outward on insertion of a plug fitting within the socket and capable of tightly wedging the front inclined shoulders against the rear edge of the panel opening and holding the socket in place.

5. A panel socket combination for a cigar lighter comprising a metallic panel having a substantially circular opening, a cylindrical metallic socket of only slightly smaller diameter than the diameter of the opening and inserted in the opening, said socket having an outwardly turned flange abutting against the outer face of the panel around said opening and a number of spring fingers, each finger being formed by cutting the side wall of the socket longitudinally thereof and leaving the front end of the finger movable, the tip of the front end of each finger being wedged against the inner edge of the opening and lying in the general plane of the socket side walls so that the edge of the opening limits the outward movement of the finger, each of said fingers having a laterally projecting locking lug near its movable end engaging behind the inner edge of the opening in said panel, said socket having a recess open at the front to receive a cigar lighter plug inserted into and removable from the front of the socket, the movable front ends of the fingers being movable through the sides of the socket and capable of being moved radially outward when a plug is inserted in the socket, the plug when in place preventing the spring fingers from being retracted sufficiently to permit removal of the socket from the panel.

6. A socket adapted to be supported by and connected to a panel and including a metal tubular member for insertion through a snugly fitting opening in the panel of substantially the same cross sectional shape as said member, an outer abutment flange on said member for engagement against the outer side of said panel, a plurality of yieldable fingers extending longitudinally of said member and secured thereto well behind said panel, each finger having adjacent its forward end a lug extending radially outward and provided with oppositely inclined cam surfaces adapted to move the tips of said fingers radially inward as said socket is inserted in said opening in the panel, the tips of said fingers being radially movable through the sides of said tubular member whereby the socket may be inserted directly into said opening by moving the socket in a substantially straight axial direction, and each of said fingers having a tip portion in front of

said lugs to engage the wall of the panel opening and limit radial outward movement of the finger tip.

5 7. A socket adapted to be supported by and connected to a panel and including a metal tubular member for insertion through a snugly fitting opening in the panel of substantially the same cross sectional shape as said member, an outer
10 abutment flange on said member for engagement against the outer side of said panel, a plurality of yieldable fingers extending longitudinally of said member and secured thereto well behind said panel, each finger having adjacent its forward end a lug extending radially outward and
15 provided with oppositely inclined cam surfaces adapted to move said fingers radially inward as said socket is inserted in said opening in the panel, the forward ends of said fingers being radially movable through the sides of said member and capable of being moved radially outward
20 on insertion of a plug fitting within the socket and capable of tightly wedging the front inclined cam surfaces against the rear edge of the panel opening and holding the socket in place.

25 8. A socket adapted to be supported by and connected to a panel and including a metal tubular member for insertion through a snugly fitting opening in the panel of substantially the same cross sectional shape as said member, an outer
30 abutment flange on said member for engagement against the outer side of said panel, a plurality of yieldable fingers extending longitudinally of said member and secured thereto well behind said panel, each finger having adjacent its forward end a lug extending radially outward and
35 provided with oppositely inclined cam surfaces adapted to move the forward end of said fingers radially inward as said socket is inserted in said opening in the panel, the forward end of said fingers being radially movable through the sides
40 of said member, said fingers being locked against radial inward movement necessary to withdraw said socket while a plug fits within the socket, the forward cam surfaces on said fingers being
45 inclined sufficiently to hold the socket in position with these forward cam surfaces wedged against the rear edge of the panel opening.

50 9. A socket adapted to be supported by and connected to a panel and including a metal tubular member for insertion through a snugly fitting opening in the panel of substantially the same cross sectional shape as said member, an outer

abutment flange on said member for engagement against the outer side of said panel, a plurality of yieldable fingers extending longitudinally of said member and secured thereto well behind said panel, each finger having adjacent its forward end a lug extending radially outward and provided with oppositely inclined cam surfaces adapted to move the forward end of said fingers radially inward as said socket is inserted in said opening in the panel, the forward end of said fingers being radially movable through the sides of said member, said fingers being locked against radial inward movement necessary to withdraw said socket while a plug fits within the socket, the forward cam surfaces on said fingers being inclined sufficiently to hold the socket in position with these forward cam surfaces wedged against the rear edge of the panel opening, and the socket being capable of insertion directly into the panel opening by moving the socket in a substantially straight axial direction when there is no snugly fitting plug within the socket.

10: A socket adapted to be supported by and connected to a panel and including a metal tubular member for insertion through a snugly fitting opening in the panel of substantially the same cross sectional shape as said member, an outer abutment flange on said member for engagement against the outer side of said panel, a plurality of yieldable fingers extending longitudinally of said member and secured thereto well behind said panel each finger having adjacent its forward end a lug extending radially outward and provided with oppositely inclined cam surfaces adapted to move said fingers radially inward as said socket is inserted in said opening in the panel, the forward ends of said fingers being radially movable through the sides of said member and capable of being moved radially outward on insertion of a plug fitting within the socket and capable of tightly wedging the front inclined cam surfaces against the rear edge of the panel opening and holding the socket in place, at least some of the fingers having a tip portion in front of the front inclined cam surfaces to engage the wall of the panel opening and limit radial outward movement of the forward ends of said fingers and the wedging of the front inclined cam surfaces.

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