May 26, 1959 K. M. HAMMELL 2,888,662

ELECTRICAL CONNECTOR

Filed March 4, 1954

Fig. 1.

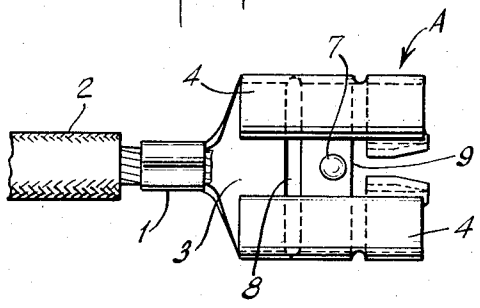


Fig. 2.

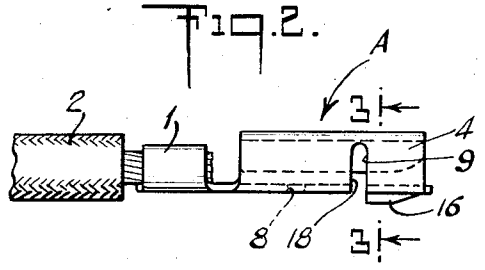


Fig. 4.

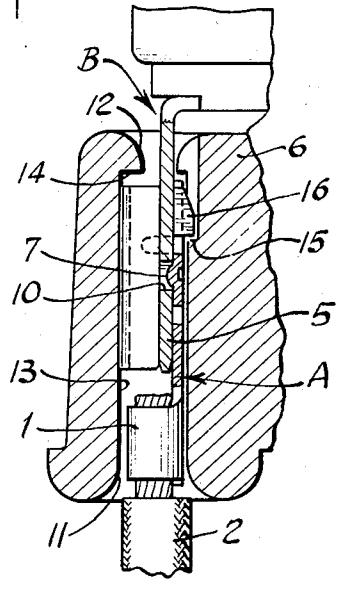
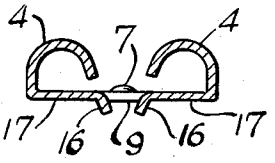


Fig. 3.



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ELECTRICAL CONNECTOR

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2 Claims. (Cl. 339—217)

The present invention relates to an improvement in electrical connectors. One object thereof has been to provide a connector or contact piece which can be economically produced from sheet metal stock having the requisite electrical and physical properties.

A further object of the invention has been to provide a connector in the form of a terminal capable of being securely attached to the end of a wire, or the like, and having means by which it may be quickly and easily assembled with a suitable insulating contact receptacle and releasably retained therein in position to be operatively engaged by the blade or prong of a lamp bulb or the like.

Another object of the invention has been to provide a connector having resilient locking means by which it is held in an insulating receptacle against displacement with minimum likelihood of separation or by drag of a lamp bulb prong, for example, when withdrawn from said receptacle by vibration or severe shocks. Another object is to provide receptacle type connector well adapted to facilitate replacement of contact elements. A connector having the advantageous features hereinabove noted is particularly well adapted for use with sealed beam three-prong head lamps commonly employed in automobiles, and therefore subject to severe shocks and vibration. For purposes of illustration the invention will be described hereinafter as it might be incorporated in such head lamps.

The present invention is embodied in an electrical connector of the type having a wire gripping portion or barrel and blade-receptacle portion adapted to engage a male terminal such as a blade prong of a lamp. This blade-receptacle includes a web portion and spring members arranged with their edges directed towards and spaced from said contact surface to yieldingly engage a terminal blade between them and said web. The web may be transversely slotted and the transverse band thus formed at the end of the web severed to form fingers extending from said web yieldingly to retain the connector in an insulating receptacle.

Other objects and important features of the invention to which reference has not been made hereinabove, will appear in the following description and claims.

Although in the accompanying drawings I have shown a preferred embodiment of my invention and have described the same and have suggested various modifications thereof in this specification, it is to be understood that these are not intended to be either exhaustive or limiting of the invention, but on the contrary, are chosen for the purposes of illustrating the invention in order that others skilled in the art may so fully understand the invention, its principles and the application thereof, that they may embody it and adapt it in numerous forms, each as may be best suited to the requirements of its particular use.

In the drawings:

Figure 1 is a top plan view;

Figure 2 is a side elevation;

Figure 3 is a transverse section on the line 3—3 of Figure 2; and

Figure 4 is a fragmentary view, partly in longitudinal section showing on line 4—4 of Figure 1, a connector operatively positioned in a recess of an insulating receptacle and engaging a prong of a lamp or the like.

The connector A illustrated in the drawing and embodying the present invention is in the form of a sheet metal contact piece including a wire-gripping portion 1 which, in this instance, is crimped to an end portion of a wire 2. Said contact also has a blade-receptacle portion comprising a web 3 and curled spring members 4 formed of extending opposite lateral edge portions of said web 3. The free edges of said spring members 4 are directed inwardly and downwardly toward said web 3 and are spaced therefrom sufficiently to yieldingly permit the passage of a blade 5, Figure 4, and to retain the same in operative position.

As seen more clearly in Figures 1 and 2, web 3 is transversely slotted at 8 and 9; and the middle band thus formed has a dimple deformation 7 positioned to engage a complementary deformation or hole 10 in the blade 5.

As shown in Figure 4, the insulating receptacle 6 has a contact-receiving recess 13 presenting a flared opening 11 at the end through which the female connector A is inserted and a restricted opening 12 at the opposite end through which the blade 5 of the male connector B is inserted. Adjacent said restricted opening 12, recess 13 is formed to provide a shoulder 14 which, when the parts are assembled is engaged by and limits endwise movement in one direction of the female connector A. Said recess 13 is also formed to provide an oppositely facing shoulder 15, which is engaged by a resiliently projecting detent portion on the female connector. In the embodiment shown the endmost band formed by slot 9 in the web 3, is severed and the severed ends canted out to form detents 16 to engage shoulder 15 and limit endwise movement of said female connector. The detents 16 are rendered more resilient by reason of slot 9 extending up into spring members 4, as shown at 18.

The transverse dimensions of the above described female connector are slightly less than the inside transverse dimensions of said recess 13, except to the extent that detents 16 normally project beyond the plane of the outer surface of adjacent portions of web 3. Said detents 16 are advantageously canted so that their edges are inclined to facilitate entry into and passage through the mouth 12 of recess 13. In this operation resilient arms 17 are cammed inwardly by the inclined edges of detents 16 until they pass beyond shoulder 15 where they snap out to their normal extended position under the shoulder.

It will be clear from the foregoing description that the present invention makes available in a single inexpensive piece an effective connecting element which can be easily and quickly assembled in a lamp receptacle or the like. When in place, as described, the connector cannot be withdrawn from the receptacle except by the use of a thin bladed tool by which detents 16 can be depressed to disengage from shoulder 15, and cannot be pushed or pulled through the end opening 12, and is thus secure against displacement when a lamp prong as 5, is withdrawn through opening 12. Also restricted opening 12 serves as an alignment guide for lamp prong 5 so that upon careless insertion of the lamp said detents 16 cannot be over-stressed allowing said contact to be pushed out at recess 13.

From the foregoing it is also apparent that the connectors described above are well suited to attain the ends and objects herein directly and indirectly set forth, and that they can be manufactured easily by conventional fabrication techniques, and that the various features and arrangements of parts can be modified readily so as best

to suit a particular use. Certain features of the disclosure may be used to advantage in particular applications without a corresponding use of other features, and the elimination or modification of such features is to be construed as within the scope of this invention unless specifically excluded by the following claims or required by the scope of the prior art.

I claim:

1. A sheet metal connector for receiving a contact blade and adapted for reception in a cavity of an insulating housing comprising a wire gripping portion and an integral spring clip portion for resiliently engaging the blade, said clip portion including a web forming a contact surface for the receptacle, opposed inwardly directed flanges extending from the sides of said web with the end portions thereof overlying and spaced from said contact surface yielding to engage therewith the contact blade, and integral locking detent means projecting resiliently downwardly from said web and extending transversely relative to the longitudinal axis of said clip portion for deflecting about a bending axis parallel to said longitudinal axis thereby to engage along a side edge thereof a lateral shoulder in the insulating housing, said detent means being carried by opposed resilient arms released from said web by transverse and longitudinal slots therein.

2. A sheet metal connector for receiving a contact blade and adapted for reception in a cavity of an insulating housing comprising a wire gripping portion and an integral spring clip portion for resiliently engaging the blade, said clip portion including a web forming a contact surface for the receptacle, opposed inwardly directed flanges extending from the sides of said web with the end portions thereof overlying and spaced from said contact surface yielding to engage therewith the contact blade, and integral locking detent means projecting resiliently downwardly from said web and extending transversely relative to the longitudinal axis of said clip portion for deflecting about a bending axis parallel to said longitudinal axis thereby to engage along a side edge thereof a lateral shoulder in the insulating housing, said detent means being carried by opposed resilient arms released from said web by transverse and longitudinal slots therein, the transverse slot extending beyond the web into opposed portions of said respective flanges.

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