Dec. 14, 1954

S. M. DEL CAMP

2,697,210

SOCKET MEMBER AND CONTACT THEREFOR

Filed July 19, 1950

2 Sheets-Sheet 1

FIG. 1.

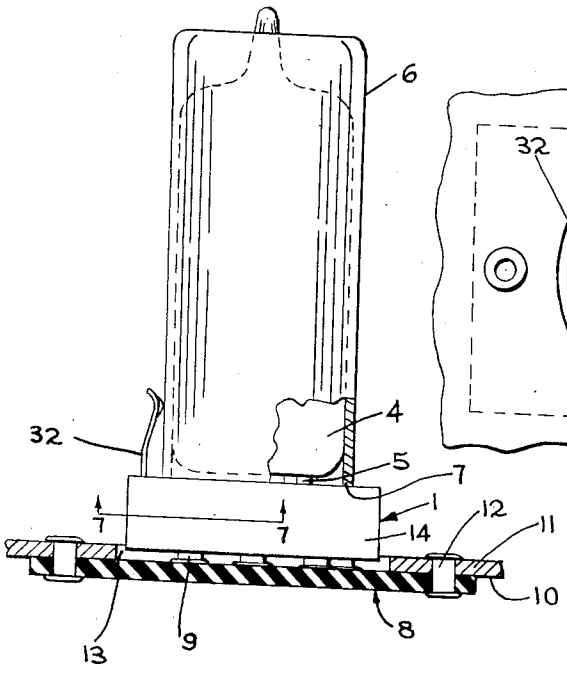


FIG. 2.

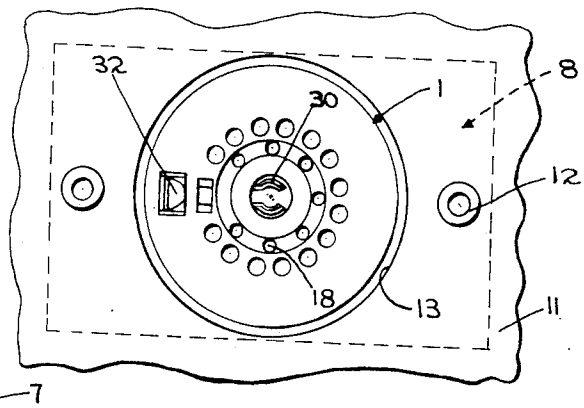


FIG. 4.

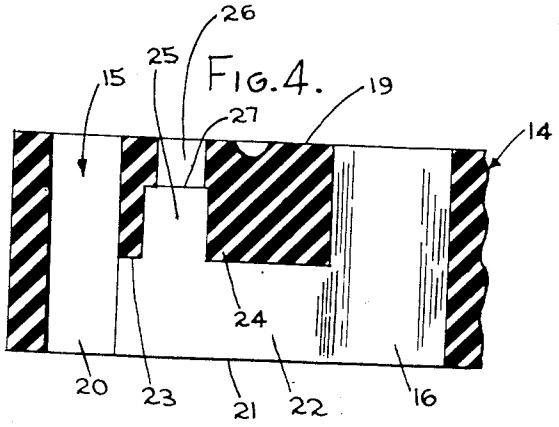
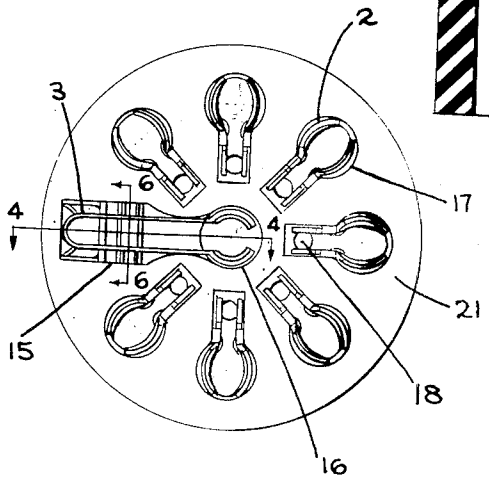


FIG. 3.



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FIG. 5.

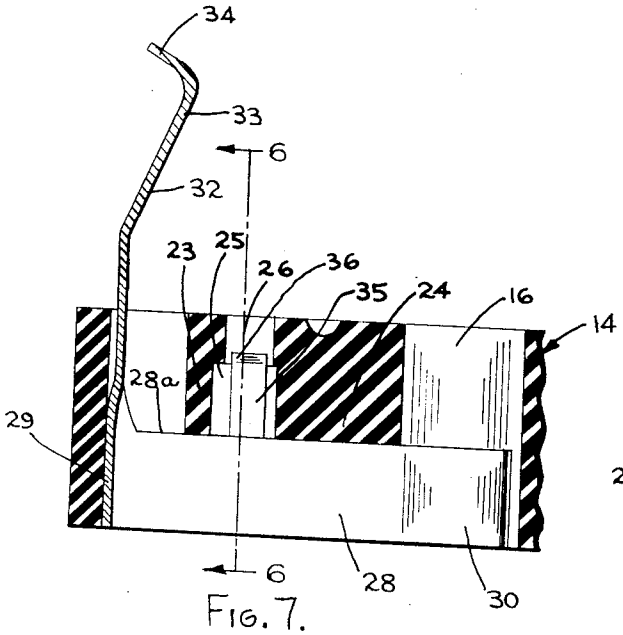
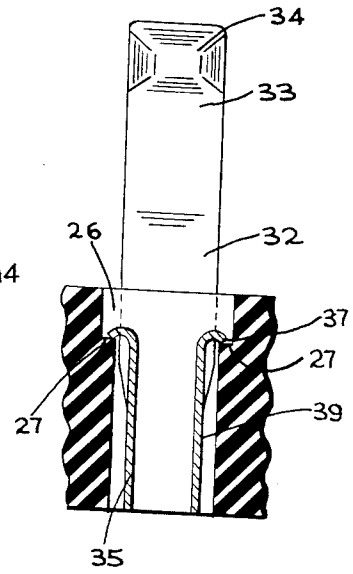


FIG. 7.

FIG. 6.



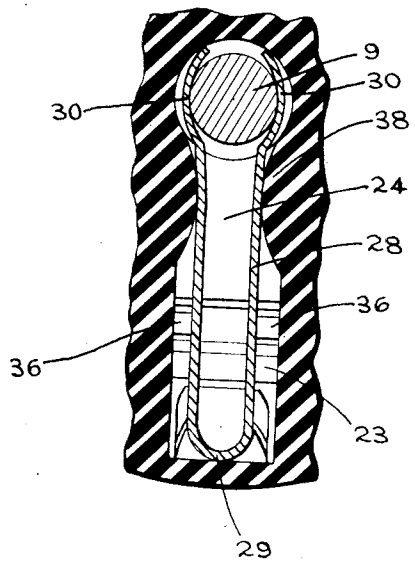
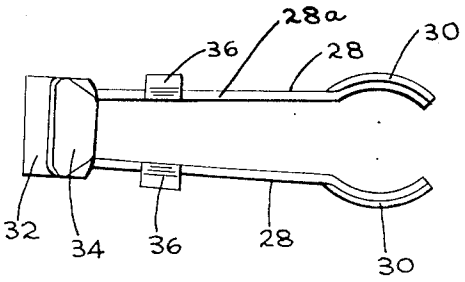


FIG. 8.



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2,697,210

SOCKET MEMBER AND CONTACT THEREFOR

Scipione M. Del Camp, Maywood, Ill., assignor to Cinch Manufacturing Corporation, Chicago, Ill., a corporation of Illinois

Application July 19, 1950, Serial No. 174,609

2 Claims. (Cl. 339—14)

This invention relates to improvements in socket devices and a contact therefor for use in combination with electrical units providing prong-like terminals with one of the units shielded by a metal shield device.

One object of my invention is the provision of a socket body carrying a grounding contact which provides a spring arm for electrical engagement with a metal shield surrounding a plug unit inserted into the socket body from one side thereof and which also provides a contact portion for electrical engagement with a prong terminal of a plug unit inserted into the socket body from an opposite side thereof, thereby grounding the shield.

Another object of my invention is the provision of a grounding contact which is constructed to be snapped into engagement with a socket body by movement of the contact member into an opening of the socket body.

Other objects of my invention will be apparent from inspection of the drawings and specification hereinbelow set forth.

Referring to the drawings in which I have illustrated a preferred embodiment of my invention;

Fig. 1 is a side elevation of a socket member carrying my improved grounding contact in combination with a vacuum tube having a metal shield and a second plug unit;

Fig. 2 is a top view of the installation shown in Fig. 1 with the tube and shield omitted;

Fig. 3 is an enlarged bottom view of the socket member per se;

Fig. 4 is an enlarged section taken along the line 4—4 of Fig. 3, the grounding contact being omitted;

Fig. 5 is an enlarged section taken along the line 4—4 of Fig. 3 with the grounding contact included;

Fig. 6 is an enlarged section taken along the line 6—6 of Fig. 5;

Fig. 7 is an enlarged section taken on the line 7—7 of Fig. 1; and

Fig. 8 is a top view of the grounding contact per se.

Referring to the preferred socket installation illustrated in Fig. 1, I have shown a socket unit 1 carrying a series of prong-receiving contacts 2 (Fig. 3) and a grounding contact 3 (Fig. 3). A vacuum tube 4 is disposed on the upper side of the socket body 1 and provides prong terminals 5 in electrical engagement with the contact members 2 through the upper side of the socket body. A cylindrical metal shield 6 encloses the tube 4 and preferably is disposed with its lower end 7 adjacent the upper surface of the socket body 1. A second plug unit 8 carries prong terminals 9 which engage electrically the contact members 2 and the grounding contact 3. Lead wires (not shown) are soldered to the terminals 9. In my preferred installation the plug unit 8 is secured to the under surface 10 of a metal supporting plate 11 by means of the rivets 12. An opening 13 is provided in the plate 11 into which the prong terminals 9 project and which receives the socket unit 1 when the plug unit 8 and socket unit 1 are in electrical engagement.

Referring in detail to the construction of the socket unit 1, I have provided a socket body 14 which is preferably made of one piece of insulating material. The body 14 provides a radially disposed opening 15 in its lower surface for receiving the grounding contact 3. The opening 15 is elongated in shape and terminates at its inner end in a generally circular aperture 16 which, in my preferred construction, is disposed in the center of the socket body. The socket body provides a series of contact-receiving openings 17 disposed annually around

the aperture 16 and receiving the contact members 2 which may be of the type illustrated and described in connection with my co-pending application, serial number 171,430. Each of the openings 17 has an aperture 18 leading to the upper surface 19 of the socket body for receiving a prong terminal 5 which electrically engages a contact member 2 when the units are in connection.

Referring in detail to the construction of the opening 15, it provides on its side nearest the periphery of the socket body a passage 20 which extends axially of the body from the lower surface 21 of the body to the upper surface 19. An aperture 16 is disposed at the opposite side of the opening 15 and this aperture also extends from the lower surface 21 to the upper surface 19. The passages 20 and 16 are connected by a radially-disposed recess 22 which extends from the lower surface 21 toward the upper surface 19 and terminates adjacent abutments 23 and 24. The abutments 23 and 24 are separated by an aperture 25 which extends from the upper surface 19 downwardly into intersecting relation with the recess 22. Axial passages 26 are provided on opposite sides of the aperture 25, as most clearly shown in Fig. 6, which extend from the upper surface 19 downwardly and terminate at shoulders 27—27.

Referring particularly to the construction of the ground contact 3, the contact is preferably made from one piece of spring metal and provides, as most clearly shown in Figs. 5, 7 and 8, a pair of oppositely-facing yieldable arm portions 28—28 which are joined on one side of the contact by a connecting portion 29 (Figs. 5 and 7). The arms 28—28 diverge slightly prior to assembly with the socket body as shown in Fig. 8. The free ends of the arms 28—28 provide bowed portions 30—30 for receiving between them a prong terminal 9 (Fig. 7) of the plug unit 8. The portions 30—30 may be flared outwardly slightly at their lower edges to provide a lead for entrance of a prong terminal between the portions. A spring arm 32 integrally joined to the contact 3 adjacent the connecting portion 29 extends upwardly from the contact 3 in a direction substantially perpendicular to that taken by the arms 28—28. The arm 32 has a portion 33 extending inwardly from its normal plane in the direction of the axis of the socket body and then outwardly to provide at its free end a cam-like portion 34. The angle taken by the portion 33 is predetermined to enable the arm 32 to engage the shield 6 under tension when the parts of the installation are in assembly. The contact provides legs 35—35 which are integrally joined to the upper edges 28a of the arms 28—28 intermediate the arm 32 and the prong-engaging portions 30—30 and project upwardly from the arms 28—28. Each of the legs 35—35 has an outwardly turned hook-like portion 36 adjacent its free end effecting a substantially downwardly facing end edge 37 for a purpose to be described.

In assembling the contact 3 with the socket body, the contact is moved into the opening 15 from the lower surface 21 of the socket body with the arm 32 disposed in the passage 15 and the bowed portions 30 located in the passage 16. The hook-like portions 36—36 in the initial assembling action will be positioned in the opening 25. In view of the fact that free ends of the hook-like portions 36—36 are normally disposed apart a distance greater than the width of the opening 15, the arms 28—28 will be compressed until the end edges 37 of the legs 35—35 have passed by the shoulders 27 at which time the arms 28—28 will expand to move the end edges 37 of the hook-like portions behind the shoulders 27—27. Thus, the contact member is seated securely within the opening 15 with the bowed prong-engaging portions 30—30 disposed in alignment with the aperture 16 and the spring arm 32 extending through the passage 15 to position the inwardly-extending portion 33 in spaced superposed relation to the upper surface 19 of the socket body. Downward movement of the contact 3 is prevented by the aforesaid engagement of the edges 37—37 with the shoulders 27—27 and upward movement is limited by engagement of the upper edges 28a of the arms 28 with the downwardly facing surfaces of the abutments 23 and 24. It will be noticed that the lower surface 21

of the socket body provides portions 38 on opposite sides of the opening 15 which extend inwardly into the opening 15 adjacent the passage 16. The portions 38—38 are spaced apart a predetermined distance to engage the broad outer surface 39 of the arms 28—28 to hold the arms in proper spaced-apart relationship to enable the bowed portions 30—30 to engage and resiliently grip the prong terminal 9 inserted therebetween.

In assembling the socket unit 1 with the plug unit 8, the socket body is moved downwardly in the direction of the plug unit to engage the contact members 2 with an annular series of prong terminals 9 and the bowed portions 30—30 of the contact 3 with a prong terminal 9 disposed centrally of the plug unit. The tube 4 is moved into engagement with the socket unit by projecting the prong terminals 5 through the openings 18 into engagement with the contact members 2. Thereafter the shield 6 is moved downwardly over the tube 4 and as the lower end 7 of the shield contacts the camming portion 34 of the spring arm 32 the arm is forced outwardly. As a result of the inherent resiliency of the arm 32, it tends to return toward normal position thereby engaging the outer surface of the shield under firm tension. Thus, it will be seen that the contact 3 operates to ground the shield 6 by effecting an electrical circuit through the arm 32 to the bowed elements 30 which are in electrical connection with a lead-off terminal 9.

Although I have illustrated and described a preferred embodiment of my invention, I do not wish to be limited thereby as the scope of my invention is best defined by the following claims.

I claim:

1. An electrical socket installation comprising a one piece socket body having upper and lower surfaces, said body carrying a plurality of prong-receiving contact members and a grounding contact, said grounding contact having a terminal grounding element extending above said upper surface of said body and a prong-engaging portion,

a plug unit disposed adjacent the upper surface of said body having prong terminals in electrical engagement with said contact members through said upper surface, a metal shield member shielding said plug unit and electrically engaged with said grounding element, and a second plug unit having a prong terminal in electrical engagement with said prong-engaging portion of said grounding contact through said lower surface of said socket body.

2. An electrical socket installation comprising a one piece socket body having upper and lower surfaces, said body carrying a plurality of prong-receiving contact members and a grounding contact, said grounding contact having prong-engaging portions in alignment with an opening in the lower surface of said body and a spring grounding arm extending through an opening in the upper surface of said body, a vacuum tube disposed adjacent the upper surface of said body having prong terminals in electrical engagement with said contact members through said upper surface, a metal shield member surrounding said tube, said spring grounding arm resiliently engaging the outer surface of said shield member, and a plug unit disposed adjacent the lower surface of said socket body, said unit having a prong terminal in electrical engagement with said prong-engaging portion of said grounding contact through said lower surface of said socket body.

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