June 8, 1943. A. M. DRAVING 2,321,470

PLUG-IN SOCKET DEVICES

Filed Aug. 2, 1939 2 Sheets-Sheet 1

Fig. 2

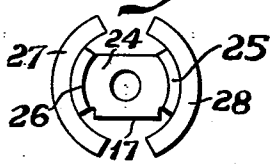


Fig. 1

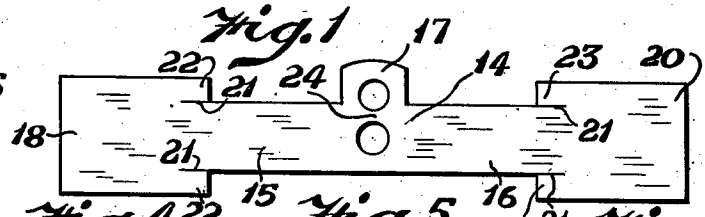


Fig. 3.

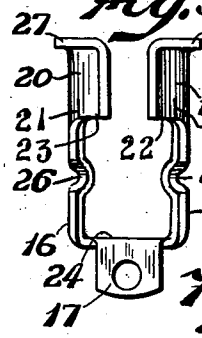


Fig. 4.

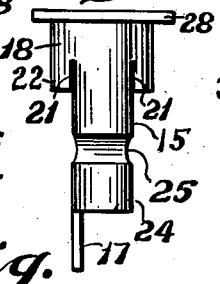


Fig. 5.

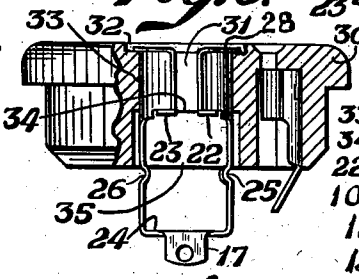


Fig. 6

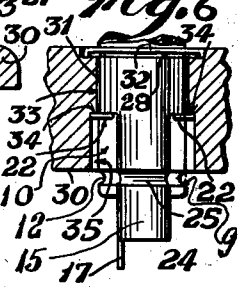


Fig. 7.

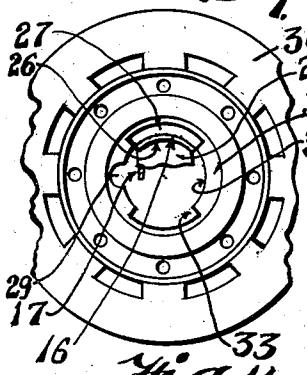


Fig. 8.

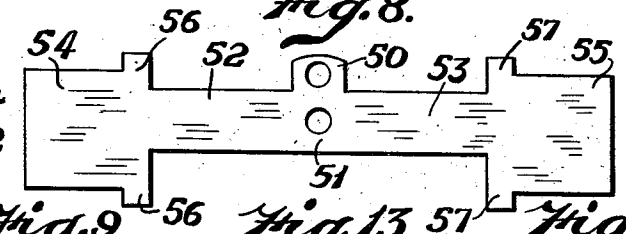


Fig. 9.

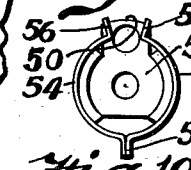


Fig. 13.

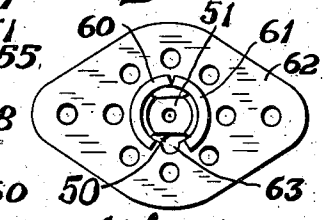


Fig. 17.

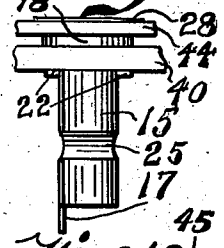


Fig. 11

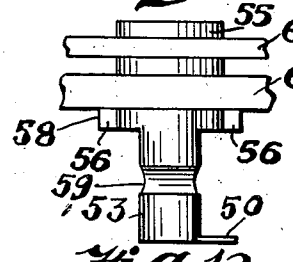


Fig. 10.

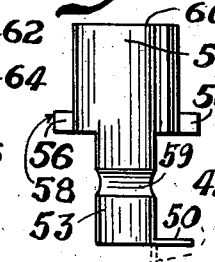


Fig. 15.

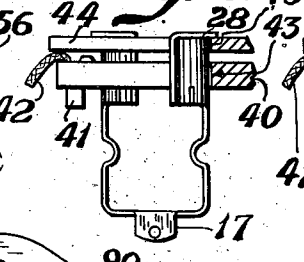


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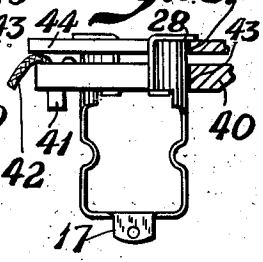


Fig. 12.

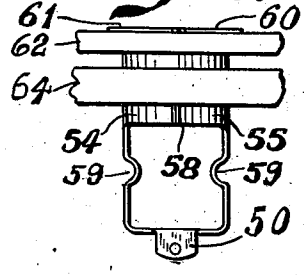
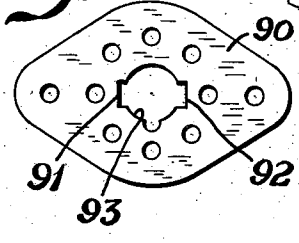


Fig. 14



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PLUG-IN SOCKET DEVICES

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Fig. 20.

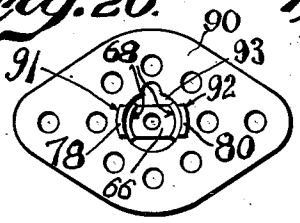


Fig. 19.

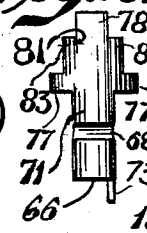


Fig. 18.

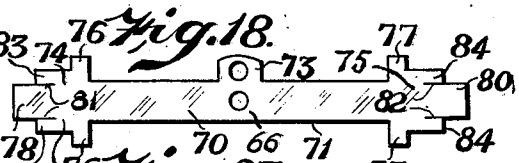


Fig. 23.

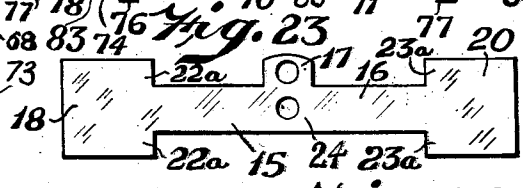


Fig. 21.

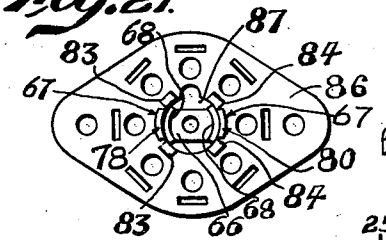


Fig. 24.

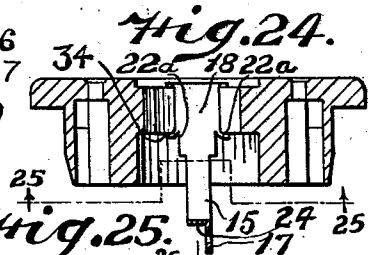


Fig. 26.

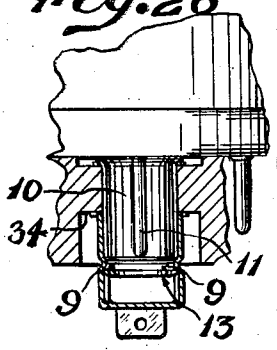


Fig. 22.

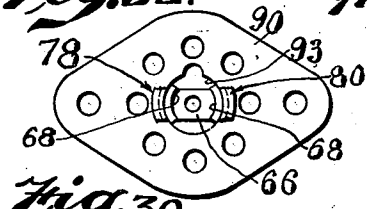


Fig. 25.

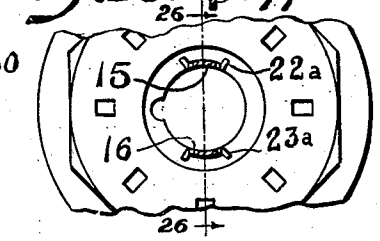


Fig. 30.

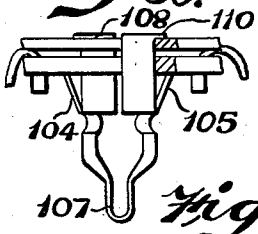


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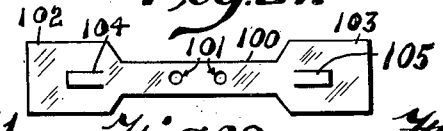


Fig. 36.

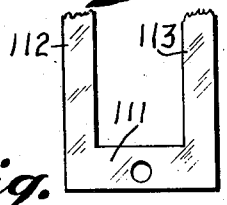


Fig. 31.

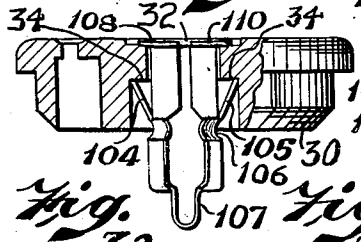


Fig. 28.

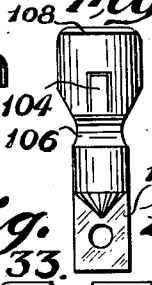


Fig. 29.

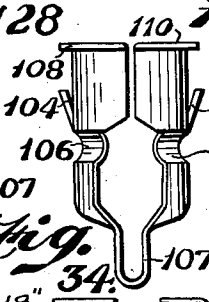


Fig. 37.

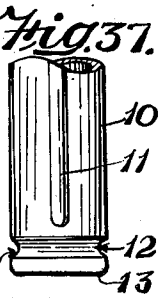


Fig. 32.

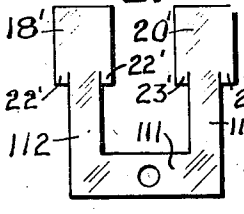


Fig. 33.

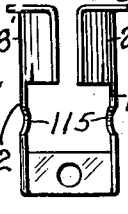


Fig. 34.

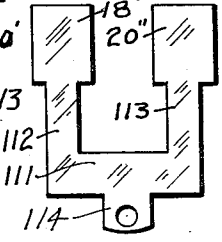
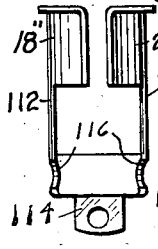


Fig. 35.



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Patented June 8, 1943

2,321,470

UNITED STATES PATENT OFFICE

2,321,470

PLUG-IN SOCKET DEVICE

Arthur M. Draving, Feasterville, Pa., assignor to Hugh H. Eby, Inc., Philadelphia, Pa., a corporation of Pennsylvania

Application August 2, 1939, Serial No. 287,924

10 Claims. (Cl. 173—328)

This invention relates to plug-in socket devices, and pertains particularly to such sockets as possess a center or other contact with lock-in means to hold the inserted device locked in intimate electrical engagement of the parts.

This invention constitutes an improvement on the device shown in application of Hugh H. Eby, No. 206,457 filed May 6, 1938, issued as Patent No. 2,290,172 on July 21, 1942.

It is among the objects of the invention: to provide an improved combined contact and lock-in device; to provide a female electrical contact member arranged for resilient interlocking engagement with an inserted male member having a protuberance or groove for such engagement; to provide a female electrical contact member having a prong receiving portion and a resilient inwardly protruding conformation in its wall, with a supporting means having an aperture with which the contact is substantially aligned and so arranged that a prong having a shoulder can be axially inserted by causing outward substantially radial flexing of the contact to permit the passage of the shoulder and to permit subsequent inward radial movement of the protuberance to locking engagement thereof upon the prong shoulder; to provide a unitary contact and resilient locking device formed of a single piece of metal; to provide a single piece of metal bent upon itself substantially to form spaced generally parallel walls connected by a cross strip, with an indentation on one wall near the cross strip so that lateral deflection of the protuberance and the wall upon which it is mounted is positively limited by the cross strip; to provide improvements in the art of socket devices; to provide improved contacts for plug-in devices; to provide a lock-in contact for plug-in socket devices in which the resilient lock is of great strength without the use of extraneous resilient devices; to provide a U shaped contact element with corners arranged for distortion to lock the contact in a supporting base; and many other objects and advantages will become more apparent as the description proceeds.

In the accompanying drawings forming part of this description:

Fig. 1 represents a sheet metal blank from which the contact of this invention, in one symmetrical form thereof, can be produced.

Figs. 2, 3, and 4, represent respectively a top plan, a front elevation, and a side elevation of the contact formed from the blank of Fig. 1.

Fig. 5 represents a vertical section, partially in elevation, of one form of molded support for the contact of Fig. 2 for instance, with the contact anchored thereto, showing in elevation a pin prong contact member collateral to the present invention.

Fig. 6 represents a fragmentary vertical section, transverse of the section shown in Fig. 5, with the center or locking contact in elevation, in locked position thereon.

Fig. 7 represents a fragmentary plan of the supporting socket, for reception of the contact of Fig. 2, with a fragment of such contact disposed in one longitudinal groove thereof.

Fig. 8 represents a plan of a modified form of contact making blank in an asymmetrical form thereof.

Fig. 9 represents a plan of the shaped contact formed from the blank of Fig. 8.

Fig. 10 represents a side elevation of the lock-in contact of Fig. 9.

Fig. 11 represents a fragmentary side elevation, of a laminated socket with the contact of Fig. 10 in operative association therewith prior to peening over the upper flanges.

Fig. 12 represents a similar fragmentary elevation of the socket and contact assembly of Fig. 11 in a transverse view thereof, after peening over of the flanges, to anchor the sheets between the flanges and ears.

Fig. 13 represents a plan of the contact and socket assembly of Fig. 12.

Fig. 14 represents a plan of a form of top plate of a laminated socket particularly adapted to receive the sheet metal contact of this invention to establish internally a substantially cylindrical bore having a guide recess.

Fig. 15 represents a fragmentary side elevation partially in section of the contact of Figs. 1, 2, 3 and 4, operatively associated with a pair of laminated plates as a support prior to bending of the lateral ears or lugs of the contact to engagement under the bottom plate.

Fig. 16 represents a similar view after the depending ears or lugs have been peened over to lock the plates together.

Fig. 17 represents a fragmentary side elevation of the assembly of Figs. 15 and 16 in anchored relation.

Fig. 18 represents a plan of a modified form of blank for the formation of a locking contact which also acts as a lamination spacer, as arranged for association with a sheet of insulation such as is shown in Fig. 14.

Fig. 19 represents a side elevation of the contact provided by the blank of Fig. 18, showing the

reduced axial median extensions arranged to be seated in the notches of Fig. 14.

Fig. 20 represents a plan of the assembly of the contact of Fig. 19 with the plate of Fig. 14 prior to forming the flanges on the ends of the contact.

Fig. 21 represents a plan of the contact of Fig. 19 in operative locked engagement with the lower plate of a pair of spaced plates or laminations, with tabs turned over to hold the plate against the lowermost ears, with the axial extensions rising to engage a subsequently superposed top plate.

Fig. 22 represents a plan of the assembly of contact of Fig. 19 with the plate of Fig. 14, after the contact ends are flanged over for anchoring of the top plate to the assembly of the contact and lower plate of Fig. 21.

Fig. 23 represents a plan of a modified form of blank for the formation of a locking contact.

Fig. 24 represents a vertical section through a base supporting the contact formed from the blank of Fig. 23 and showing the contact partially in section.

Fig. 25 represents a bottom or reflected plan partially in section of the contact of Figs. 23 and 24 on line 25—25 of Fig. 24.

Fig. 26 represents a vertical section through the base and contact of Fig. 25 on line 26—26 thereof, but with a fragment of the interlocking prong or male contact shown in locking engagement with the female contact.

Fig. 27 represents a plan of a still further modified form of blank, from which contacts applicable either to molded or laminated supports may be derived.

Figs. 28 and 29 represent respectively side and front elevations of the contact formed from the blank of Fig. 27.

Fig. 30 represents an elevation, partially in section, of a laminated socket assembly with the contact of Figs. 28 and 29.

Fig. 31 represents a vertical section, partially in elevation, of the contact of Figs. 28 and 29 operatively locked in position in a molded socket base.

Fig. 32 represents a still further modified form of blank for providing a contact the cross piece of which is not a floor, but a wall substantially parallel to the axis of the contact.

Fig. 33 represents a side elevation of the contact formed from the blank of Fig. 32.

Fig. 34 represents a still further modified form of blank for providing a contact according to the invention with an improved soldering tail.

Fig. 35 represents a side elevation of a contact formed from the blank of Fig. 34.

Fig. 36 represents a fragmentary plan of a portion of a blank upon the parallel legs of which the head ends of any of the blanks of the earlier figures may be integrally formed, to effect a similar contact making mechanism or structure, while avoiding the formation of the transverse floor of the earlier figures.

Fig. 37 represents a fragmentary elevation of the form of prong contact with which the contacts disclosed, may, illustratively, be operably associated.

Referring to Fig. 37 it will be observed that in the illustrative form of prong or male contact disclosed, a cylindrical shank 10 is provided having a longitudinally extending guide rib on one side, as at 11, and having a peripheral recess or locking groove 12 extending about the shank close to the lower end 13. The groove provides a locking shoulder 9 with which the locking protuberances of the several contacts illustrated may be frictionally engaged.

Referring to Fig. 1, a blank 14 is shown comprising a pair of aligned shank members respectively 15 and 16 extending away from a median or central divergent apertured soldering tail 17. The extremities of the shanks 15 and 16 respectively merge into symmetrical enlargements 18 and 20, each having short longitudinal slits 21 aligned with the shank edges, to define the respective pairs of tabs, or lugs or ears 22—22 and 23—23. When the blank is properly bent to shape, which obviously can be a dieing operation, as in the formation of the blank, the area 24 adjacent to and attached to the soldering tail 17, forms a floor or platform transverse of and preferably substantially normal to the axial extent of the contact. From each side of the floor thus formed the shanks 15 and 16 extend generally parallel in a substantially U shaped contact, and each leg is preferably slightly curved transversely about the axis of the contact. The shank 15 has an inward protuberance 25 formed in it in transverse lateral registration preferably with a companion or complemental protuberance 26 in the leg or shank 16. It will be understood, at this point, that although it is preferred to provide a pair of spaced protuberances, one may be omitted without affecting the broader objectives of the invention. The enlarged head ends 18 and 20 of the blank are preferably bent into arcuate form about the longitudinal axis of the contact and the extreme end edges thereof are bent laterally to form flanges respectively 27 and 28. The flanges obviously may be formed at any stage of the proceedings whether before or after association of the contact with the support, depending upon the conditions under which the support and contact are associated.

If the contact so formed is to be associated with a single supporting element, such for instance as the molded or otherwise formed base 30, it is preferred that the latter be provided with a central aperture 31 in communication with the shallow depression 32 and preferably having shallow longitudinally or axially extending arcuate recesses 33 to receive the arcuate portions of the heads, 18 and 20 substantially flush with the arcuate extent of aperture 31 and with shallow recesses 29 to receive the flanges 27 and 28 so that they will lie flush with the upper surface of the support. In one embodiment the contact is dropped in from the top with the floor portion 24 lowermost until the flanges are seated with the enlargements 18 and 20 of legs 15 and 16 guided in slots 33 in end recesses 32, pursuant to which the ears 22—22 and 23—23 are bent laterally into engagement with the shoulders 34 formed by the intersection of a larger aperture 35 extending from the lower surface of the base to the shoulders 34. It will be understood that if there is any particular difficulty in so anchoring the contact by the tabs or lugs, the latter may first be upset to form the lateral protuberance shown in Figs. 5 and 6 and the contact may be inserted from the bottom, with the extreme end edges of the arcuate portions in alignment therewith and serving as guides, to subsequent upsetting or peening over of the extreme ends as flanges 27 and 28, into the recess to receive them.

It will be observed that the lower opening 35 is sufficiently wide as to permit the lateral flexation of the shanks or legs 15 and 16, from a maximum about the level of the intermediate

tabs, lugs or ears 22—22, and 23—23, between the bottom floor or platform 24 and the shoulder 34. The insertion of the prong device shown in Fig. 37, finds the bottom end 13, of substantially the same diameter as the main portion of the barrel, passing downwardly through the spaced arcuate portions 18 and 20 in and flush with the aperture 31 guided slidably therein, after first securing proper angular positioning by registering the guide rib 11 with the lateral recess 29, if such rib is used. In the broader aspects of this invention the guide rib is not essential, nor is the guide recess therefore as the guide prong may secure angular positioning of the contacts by other means, such as by being eccentrically positioned on the plug-in device, for instance, and with the locking female contact similarly eccentrically positioned on the socket as will be evident from the disclosures of said application No. 206,457. The end 13 will move axially downwardly until it strikes one or both of the internal protuberances 25 or 26 of the respective legs or shanks, depending upon whether one or both are provided, which are thereby urged outwardly toward flexing separation of the legs. Although springing freely from the shoulder 34 substantially, the lower end of the contact is held against lateral motion by the integral floor, with a resultant stiffer and more symmetrical resistance to separation than maintains with any devices which rely for their resilience upon a single backing plate from which arms are sprung forwardly and embracingly, even when the latter are backed up by separate annular spring devices forcing the arms toward a given position. The passage of the end 13 past the protuberances finds the latter ready and automatically effective to snap into the peripheral groove 12 of the prong bearing against shoulder 9 as a detent as will be clear.

Mention might be made of the fact that any center or other locking contact that has arms supported from the side from a backing portion as in conventional contacts each bendable on axial lines only, have an uneven and unreliable engagement. To provide auxiliary devices such as rings and the like for supporting the arms relative to each other finds the rings practically necessarily located where the maximum bend takes place so that the resilience of the arms themselves is still axially on one side of the extreme bending point. The contact just described above, on the contrary, obviates the use of auxiliary reinforcing members, and provides a resilient prong-gripping contact comprising two legs supported with respect to each other at or near both extremities so that they spring resiliently away from each other substantially in a middle or median portion, and not at a free end. This effects a resilient section or member on two sides, substantially of the point of maximum resilient displacement in a contact leg. The practical result is an enhanced smoothness and certainty of action by which satisfactory tight gripping is secured without the over-tight relation of an auxiliary spring device.

It has been mentioned that the contact of Figs. 1, 2, 3 and 4, is applicable also to multiple plate support, and this is illustrated in Figs. 15, 16 and 17. In this assembly a lower plate, which may be relatively thick, as shown at 40, may support the auxiliary or supplemental contacts 41, of any desired form or construction, not forming a part of the instant application, and may have connectors 42 leading over the upper surface of the plate 40, or from soldering tails beneath as desired. The plate has a large central aperture 43 to receive the prong of the plug-in device, and preferably the contact has the tabs, lugs or ears 22 and 23, initially undeflected from their arcuate formation with the ends 18 and 20, but the flanges 27 and 28 are pre-bent. The lower plate may have a slightly thinner upper plate 44 suitably apertured as at 45, superimposed upon the lower plate, preferably as close as possible, to hold the contacts 41 in position, as well as the connector 42, if any, pursuant to which the contact is preferably pushed downwardly with the floor 24 lowermost, through both apertures in registration until the upper flange abuts the upper surface of the plate 44, pursuant to which the tabs, lugs or ears are bent laterally to engagement under the lower surface of the plate 40. Obviously the ears may be bent laterally first and the contact inserted from the bottom with subsequent peening of the end flanges for the said locked relation. This simultaneously secures the contact to the plates and also locks the plates together, and with suitable preforming of the respective apertures, with recesses (not shown) to receive the respective arcuate portions, the plates will also be substantially locked against relative angular motion. These are similar to the recesses in Fig. 7.

The form of invention shown in Fig. 23 and its related figures may be mentioned at this point as probably the preferred form. It is preferably exactly like the disclosure of Fig. 1 and its related figures and has all of the same reference characters, with the exception of the omission of the longitudinal slits 21 of Fig. 1. The arrangement is such that ears 22*a*—22*a* and 23*a*—23*a* are formed of shoulders on the blank which are ultimately split or bent from the blank by a peening operation at the same time that the upper edges are flanged, after inserting guidably the enlarged arcuately curved heads from the bottom. This simultaneously locks the legs against moving either up or down axially as well as laterally radially. The application of the same blank of Fig. 23 to laminated sockets will be obvious from the disclosure of Figs. 13, 14 and 15.

It will be clear that the contact blank shown in Figs. 1 and 23 creates a contact which is symmetrical relative to the shanks or legs, but certain advantages will be understood to pertain to the modification shown in Fig. 8, in which an asymmetrical relation is secured. Referring to this figure, the soldering tail 50 is preferably disposed in the middle of the blank, although this is not necessary as it may be bent laterally out of the edge of a leg as will be understood to attach a connector to the lugs at a point other than the center. This comment also attaches to the soldering tail 17 of Fig. 1. From the middle portion 51 to which the tail is attached, the shanks or legs 52 and 52 extend and at their respective ends they merge into asymmetrical head portions 54 and 55 separated from the shanks by the outstanding edge-perpendicular ears 56—56 and 57—57. It will be understood that when initially bent before being flanged, the parts will look like Fig. 9, with the adjacent ears 56 and 57 on one side in substantial physical contact forming the common radial ear 58, while the oppositely extendingly pair of ears 56 and 57 will be relatively spaced as indicated. The legs will have one or two indentations 59, as will be clear. As the ears mark the limits of the arcuate extents of the con-

tact, it will be clear that when the extremities of the arcuate extents are flanged over the upper laminated plate 62, as shown in Fig. 13, they will furnish a protecting flange, comprised of flanges 60 and 61, that will substantially meet at one end, and cover practically the entire edge of the aperture in which they are located, peripherally from the guide recess 63 to prevent the rib on the guide prong from digging into the relatively thin upper plate 62 in misguided efforts to seat the guide prong rib in misalignment with the guide recess. As shown in Fig. 11, the lower plate 64 may be moved downwardly upon the extension of the contact until it comes to rest upon the laterally extending ears 56 and 57 and the joint ear 58 as stops in a common plane. The head portions 54 and 55 may slide in recesses formed in the sides of the main guide recess, (not shown, but the equivalent of the recesses 91 and 92 in top plate 90) although the same result is secured as in the top plate 62 by providing slight internal radial lugs on each side of the guide recess 63 as shown in Fig. 13.

The upper plate 62 may then be threaded downwardly over the upper end extremities of the contact, and after attaining closely spaced relation to the lower plate 64, the flanges 60 and 61 are formed, to anchor the assembly together. It will be observed that the disposition of the respective arcuate portions in the notches or recesses to receive them in the respective plates 62 and 64 serves also to hold the plates against relative angular motion.

The blank shown in Fig. 18 has a shank comprised of legs 70 and 71 leading from the median portion 66 to which the soldering tail 73 is attached, and the respective enlarged heads 74 and 75 thereof are provided with lateral edge-perpendicular ears 76—76 and 77—77 and the longitudinal ends thereof are also provided with the respective central elongations 78 and 80, separated by the slots 81 and 82 from the intermediate ears or tabs 83—83 and 84—84. The blank therefore furnishes two sets of anchoring tabs, lugs or ears to both anchor the respective plates of the contact together and also to hold them in mutually spaced relation as well. The contact formed from the blank of Fig. 18 is shown in Fig. 19, and the disposition thereof in the lower plate 86 of the pair of laminated plates with which it is to be associated is indicated in Fig. 21. The central aperture 87 of plate 86 has lateral recesses 67—67 similar to recesses 91 and 92 of plate 90 of Fig. 14 to receive the extensions 78 and 80 as well as the intermediate ears 83—83 and 84—84 of the upper ends of the formed contact, with plate 86 resting upon the ears 76—76 and 77—77 as a supporting ring. The respective intermediate ears 83—83 and 84—84 are bent over to superposed engagement with the upper surface of the plate 86 and the plate and contacts are therefor securely anchored against relative axial or angular movements. After the contacts have been disposed in their respective apertures in lower plate 86, the upper plate 90 is placed in superposed relation to the lower plate, with the terminal extensions or ears 78 and 80 disposed in the respective recesses 91 and 92 in the sides of the main guide recess 93. Subsequent peening over of the ends of the ears 78 and 80 as in Fig. 22, anchors the assembly rigidly together in the center. Obviously the lower portion of the contact is shaped as has already been described, with the inward contact locking protuberances 68—68 analogous to those of the earlier figures, so disposed as to facilitate interlocking engagement with the inserted prong.

Referring now to Fig. 27 a blank 100 is shown, having two apertures 101 at about the longitudinal center thereof, and the heads 102 and 103 are each provided with the outwardly extending narrow tongues respectively 104 and 105. The shank 100 is arranged to be doubled upon itself to form the pair of legs having each the inward interlocking protuberance 106, while the apertured median portion is bent into the U shaped soldering terminal 107. With the upper free ends of the respective heads provided with the flanges 108 and 110, and the tongues 104 and 105 given an initial resilient angular relation to the shank and head from which they are formed, and with the whole dropped into a base 30 as illustrated in Fig. 7 the flanges 108 and 110 will drop into the recess 32 as the spring tongues 104 and 105 expand under the shoulder 34 to lock the contact automatically in the base. This assembly is shown in Fig. 31.

Referring to the disclosure of Fig. 36, a planar device is illustrated having a cross piece base 111 from which arms 112 and 113 extend perpendicularly. It will be understood that for many purposes the legs and cross piece illustrated can replace the central shank portions of the blanks of Figs. 1, 8, 18, 23 and 27. In Fig. 32 the heads 18' and 20' of the blank of Fig. 1 having ears 22' and 23' have been provided on the U shaped blank of Fig. 36 and when shaped, it assumes the appearance of Fig. 33, as will be clear. In Fig. 34 the head portions of Fig. 23 have been similarly applied characterized as 18'' and 20'' respectively, plus a soldering tail 114. That the internal locking protuberance can be disposed longitudinally axially at whatever location is necessary is indicated by the provision of internal locking recesses or protuberances 115 of Fig. 33 at a high level, while in Fig. 35, the protuberances 116 are at a low level. Each will be predeterminedly located and applied, of course, in accordance with the length of the locking guide prong and the disposition of its locking shoulder thereon.

The many other changes that may be made in this invention without departing from its scope will be clear and all such are to be construed as within the preview of this invention, unless the appended claims should be otherwise specifically limited.

I claim:

1. In an electrical socket, an insulating base having an opening for the insertion of a prong therethrough, said opening having an axis, a metallic contact-making element mounted in said opening and integrally comprising two separate and independent facingly opposed semi-cylindrical terminal mounting enlargements of appreciable total peripheral extent, and a pair of resilient legs integral with and laterally relatively narrower than the respective enlargements and defining an elongated prong-receiving passage having an axis common with the axis of said opening, said enlargements including integral lug portions disposed substantially laterally of the respective side edges of each leg and spaced from the free end of the respective enlargement, said legs being joined by an integral transverse substantially planar member, at least one of said legs having an inward shouldered protuberance extending toward said axis to lockingly engage and hold against undesired withdrawal an axially inserted prong having a corresponding recess in the exterior surface to receive said protuberance,

said mounting enlargement disposed in the opening of the base to anchor the legs and to form a guide for an inserted prong at the mouth of said opening, the extension of an enlargement beyond its leg forming a locking ear extending laterally of the leg in spaced relation to the end of the leg to engage the base and anchor the element.

2. In an electrical socket, an insulating base having an opening for the insertion of a prong therethrough, said opening having an axis, a metallic contact-making element mounted in said opening and integrally comprising two facingly opposed spaced separate enlargements of appreciable total peripheral extent, a pair of facingly opposed spaced resilient legs integral with and laterally narrow relative to the width of said enlargements defining between them an elongated prong-receiving passage having an axis common with the axis of said opening, said legs being joined by an integral transverse substantially planar member, at least one of said legs having an inward protuberance extending toward said axis to lockingly engage and hold against undesired withdrawal an axially inserted prong having a corresponding recess in its exterior surface to receive said protuberance, a second base member overlying the first and having a prong orifice registering with said prong-receiving passage, at least one of said enlargements extending laterally beyond the narrow legs to lie in the registering orifices of both base members and form a guide for an inserted prong, and integral portions of said last mentioned lateral enlargement including lugs disposed beside the legs struck out of the enlargement and being bent to engage the respective base members to anchor the contact to the base.

3. In an electrical socket, an insulating base having an opening for the insertion of a prong therethrough, said opening having an axis, said base comprising upper and lower insulating sheets, a metallic contact-making element mounted in said opening and integrally comprising two facingly opposed separate semi-cylindrical terminal mounting enlargements of appreciable total peripheral extent, and a pair of facingly opposed spaced resilient legs integral with and laterally narrower than the respective enlargements and defining between them an elongated prong-receiving passage having an axis common with the axis of said opening, at least one of said legs having an inward protuberance extending toward said axis to lockingly engage and hold against undesired withdrawal an axially inserted prong having a corresponding recess in its exterior surface to receive said protuberance, each enlargement having lugs in three axial levels arranged to anchor the sheets together and anchor the contact-making element to the upper and lower surfaces of the sheets with the lugs in the intermediate level of the three axial levels disposed between the sheets.

4. In an electrical socket, an insulating base having an opening for the insertion of a prong therethrough, said opening having an axis, a metallic contact-making element mounted in said opening and integrally comprising two facingly opposed separate semi-cylindrical terminal mounting enlargements of appreciable total peripheral extent, and a pair of facingly opposed spaced resilient legs integral with and laterally relatively narrower than the respective enlargements and laterally narrow relative to the periphery of the opening and defining between them an elongated prong-receiving passage having an axis common with the axis of said opening, at least one of said legs having an inward protuberance extending toward said axis to lockingly engage and hold against undesired withdrawal an axially inserted prong having a corresponding recess in its exterior surface to receive said protuberance, said legs arranged for resilient flexing away from the said axis to permit the axial passage of such prong and said legs being joined by an integral transverse member adjacent to said protuberance to limit the flexation of the legs, the enlargements being transversely curved so as to lie in the opening of the insulating base to form a prong guiding surface therein, said enlargements including integral portions extending on at least one side axially beyond the attachment of the leg and enlargement to form narrow integral lugs beside the narrow legs arranged to engage said base, and said enlargements also having supplemental integral lugs combining with the narrow lugs to anchor the element in the base against movement in either direction.

5. In electrical sockets, a metallic contact-making element integrally comprising two facingly opposed separate semi-cylindrical terminal mounting enlargements of appreciable total peripheral extent, and a pair of facingly opposed spaced resilient legs integral with and laterally relatively narrower than the respective enlargements and defining between them an elongated prong receiving passage having an axis, at least one of said legs having an inward protuberance extending toward said axis to lockingly engage and hold against undesired withdrawal an axially inserted prong having a corresponding recess in its exterior surface to receive said protuberance, the legs being joined opposite enlargements by an integral transverse continuation, the enlargements of each leg having a plurality of integral axially relatively spaced locking and supporting lug extensions at least one of which is disposed on the enlargement substantially laterally of the side edge of the leg contiguous to the enlargement to anchor and support the element.

6. In electrical sockets, a one piece metallic contact-making element comprising two separate semi-cylindrical terminal mounting enlargements of appreciable total peripheral extent, and a pair of facingly opposed resilient elongated legs integral with and laterally relatively narrower than the respective enlargements and defining between them a prong-receiving passage having an axis, said legs being integrally connected at the ends opposite to the enlargements so that their resiliency functions substantially in bending radially away from and toward said axis in their middle portions, at least one of said legs having an inward protuberance extending toward said axis to lockingly engage and hold against undesired withdrawal an axially inserted prong having a corresponding recess in its exterior surface to receive said protuberance, laterally enlarged free ends comprising tongues disposed substantially laterally of the side edges of the legs bendable as lugs to anchor the element.

7. In an electrical socket, an insulating base having an opening for the insertion of a prong therethrough, said opening having an axis, shallow recesses formed on opposite sides of the opening, a metallic contact element including two opposite supporting portions of such peripheral extent as to engage in said recesses, offset means on the respective supporting portions engaging the base to prevent relative axial movement of the contact and base, and a pair of opposing legs

integral with the respective supporting portions and defining a prong receiving channel.

8. In an electrical socket, an insulating base having an opening for the insertion of a prong therethrough, said opening having an axis, shallow arcuate recesses formed on opposite sides of the opening in the base, a metallic contact including two opposite supporting portions of such peripheral extent as to be slidably guidable axially in the respective recesses, offset means on the element engaging the base to prevent relative axial movement of said supporting portions and base, and a pair of opposing legs integral with the supporting portions to define a prong receiving channel.

9. In an electrical socket, an insulating base having an opening for the insertion of a prong therethrough, said opening having an axis, shallow arcuate recesses formed on opposite sides of the opening in the base, a metallic contact including two opposite supporting portions of such peripheral extent as to be slidably guidable axially in the respective recesses, offset means on the respective supporting portions engaging the base to prevent relative axial movement of said supporting portions and base, and a pair of opposing legs integral with the supporting portions to define a prong receiving channel, said supporting portions being peripherally wider than said legs.

10. In an electrical socket, an insulating base having an opening for the insertion of a prong therethrough, said opening having an axis, shallow recesses formed on opposite sides of the opening, a metallic contact element including two opposite supporting portions of such peripheral extent as to engage in said recesses, offset means on the respective supporting portions engaging the base to prevent relative axial movement of the contact and base, and a pair of opposing legs integral with supporting portions defining a prong receiving channel, said recesses and supporting portions being so proportioned that with the portions disposed in the recesses, a substantially continuous flush surface exists in said opening.

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