

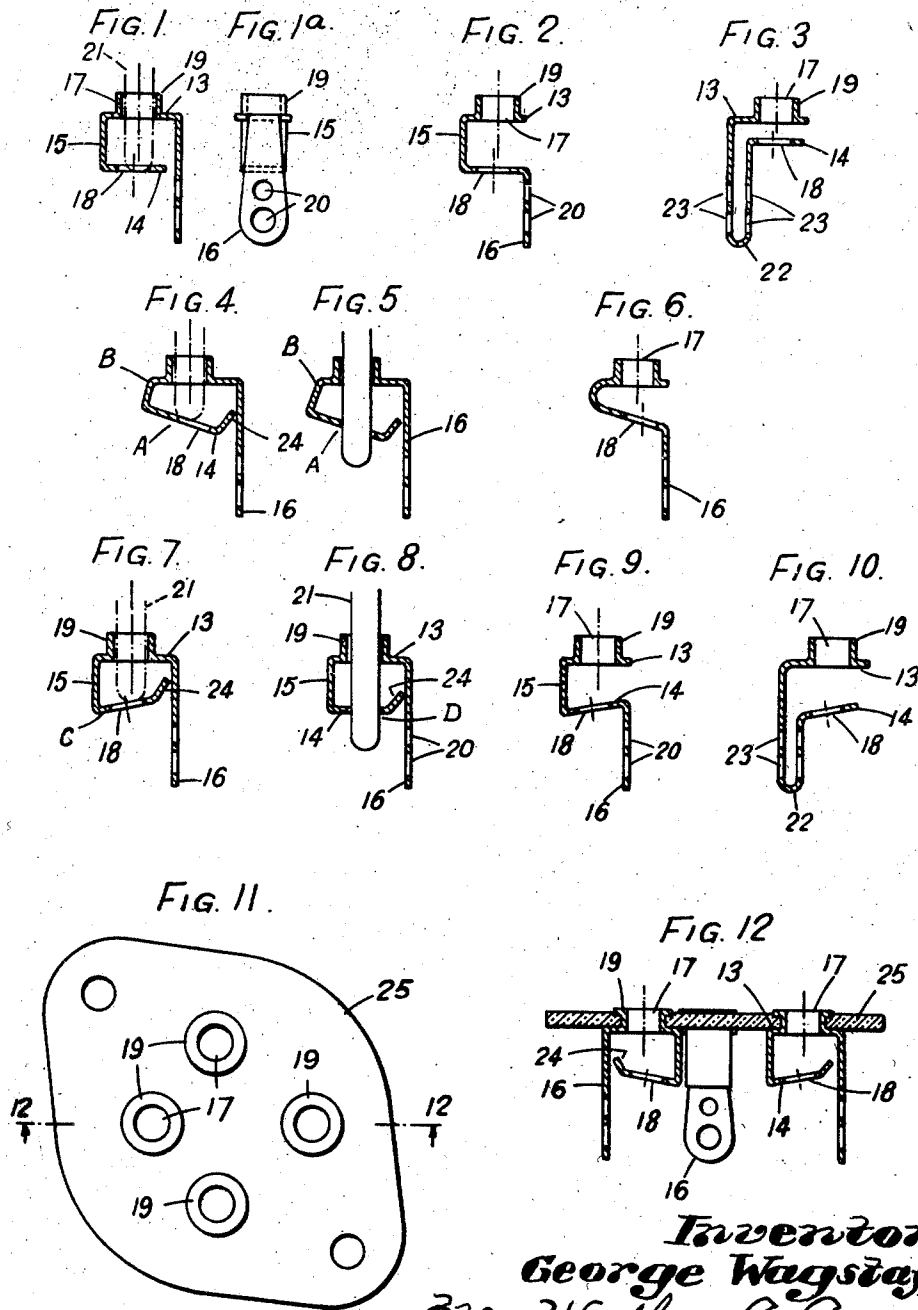
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SOCKET OR CONTACT FOR ELECTRIC PLUG OR PIN COUPLINGS

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SOCKET OR CONTACT FOR ELECTRIC PLUG
OR PIN COUPLINGSGeorge Wagstaff, Long-Eaton, England, assignor
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bridge, Mass., a company of MassachusettsApplication August 17, 1938, Serial No. 225,324
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This invention relates to an improved socket or contact for electric plug or pin couplings of the kind comprising a strip of resilient metal bent to form a trough or U-section and having apertures in the sides of the trough or section into which the plug or pin is introduced, the apertures being slightly out of alignment so that when the plug or pin is introduced the apertures are forced into alignment and grip the plug or pin by resilient action.

According to the present invention the improved socket or contact comprises a one-piece metal member having a wire-receiving lug or part extending therefrom and two prongs forming contacting portions, each prong having an aperture therein for receiving the plug or pin, the apertures being slightly out of register or alignment but being adapted owing to the resilience of the metal to be forced sufficiently into register or alignment when a plug or pin is inserted thus exerting a constant pressure thereon gripping it tightly. The apertures may lie in parallel planes or they may lie in planes at an angle one to the other. In this latter case the insertion of the plug or pin forces the apertures into approximately parallel planes and thus produces the required gripping action on the plug or pin. One part of the contact or socket may be provided with means such as a fixing eyelet for securing the socket to a holder plate or the like.

A series of sockets or contacts made according to the invention may be attached to a holder plate or the like to form an electric valve holder and they may be radially arranged as hereinafter described.

To enable the invention to be fully understood it will now be described by reference to the accompanying drawing in which:

Figs. 1-10 inclusive shew various forms of sockets or contacts made according to the invention in sectional elevation and Fig. 1a is a side elevation of the form shewn in Fig. 1.

Fig. 11 is a plan view of a holder having sockets or contacts according to the invention applied thereto and

Fig. 12 is a section on the line 12—12 of Fig. 11.

As shewn in Figs. 1 and 1a the socket or contact is formed from a single piece of metal bent to form a prong or base 13 and a prong 14 connected together by a resilient portion 15, the prong 13 having a depending lug 16. The prongs are formed with apertures 17, 18 slightly out of alignment as shewn, the aperture 17 having an upstanding flange 19 formed round it to act as a fixing eyelet to secure the contact in a holder

plate or the like. The lug 16 is formed with holes 20 for securing an electrical conductor in the known manner. In Fig. 1 an inserted pin 21 is indicated in dotted lines and it will be seen that on insertion the pin passes through the aperture 17 but meets the right hand edge of the aperture 18 and slides through said aperture forcing the two apertures into sufficient alignment the right hand inside edge of the aperture 18 bearing against the inserted pin and gripping it tightly as long as it is inserted in the socket. The pin can easily be removed by a side rocking motion. Figs. 2 and 3 shew sockets generally similar to Fig. 1 and operating in a similar manner thereto but with a different arrangement of the prongs. In Fig. 3 the prongs are connected by a loop 22 which gives resilience, the sides of the loop being provided with coincident holes 23 for the attachment of an electrical conductor. It will be noted that in Figs. 1 to 3 the apertures in the prongs lie in substantially parallel planes.

Figs. 4 to 10 inclusive shew examples wherein the apertures are out of alignment and also do not lie in parallel planes. These arrangements produce similar gripping effects on the inserted plug to those produced in the form shewn in Figs. 1 to 3 but the operation is slightly different.

Fig. 4 shews the plug 21 at the beginning of the insertion operation and the end of the plug strikes the prong contacting edge A of the aperture 18 and forces the prong 14 downwards causing it to bend about the point B until the pin slips into the aperture 18 when the parts take up the position shewn in Fig. 5 the prong 14 being resilient and the edge A of the aperture bearing tightly against the side of the pin. The free end of the prong 14 is turned up at 24 to form a stop to limit the upward movement of the prong by coming into contact with the lug 16 as shewn. It will be apparent that the plug displaces the apertured end of the prong 14 farther away from the base 13 or the aperture 17, to a point wherein the distance between the edge A and the point of flexure B is substantially greater than the distance between the point of flexure B and the nearest side of the plug or base aperture. Thus, withdrawal of the plug is resisted by the contacting edge due to the increased length of A to B over the distance from B to the nearest side of the plug. Fig. 6 shews a further form of socket operating similarly to that shewn in Figs. 4 and 5 but without a stop.

Figs. 7 and 8 shew a further form wherein the apertures are out of alignment and also do not lie in parallel planes and when the pin 21 is 55

inserted and meets the prong 14 the latter bends about the point C and the pin slips into the aperture 18 and holds the prong 14 in a plane substantially parallel to the plane of the prong 13 the side D of the aperture 18 bearing tightly against the pin as shewn in Fig. 8. The free end of the prong 14 is upturned at 24 to form a stop.

Figs. 9 and 10 shew further forms of socket wherein the apertures are out of alignment and also do not lie in parallel planes, the operation being similar to that described with reference to Figs. 7 and 8 but no stops are provided. Fig. 10 shews the prongs 13, 14 joined by a loop 22 as in Fig. 3. Figs. 11 and 12 shew a holder plate 25 having a series of four sockets each of which is of the kind shewn in Figs. 7 and 8 arranged radially to form a socket connector for a thermionic valve having four pin or plug contacts. The edges of the flanges 19 on each socket are turned down on to the plate to hold the sockets in position and the latter are arranged with their lugs 16 for the attachment of electrical conductors towards the periphery of the holder plate.

The sockets or contacts illustrated are examples only of the forms which are possible according to the invention.

Various other forms may be devised. While the socket is preferably made wholly of resilient metal, arrangements are possible wherein only that prong which has to be moved by the inserted pin is resilient or is resiliently connected to the other prong.

Having thus described the nature of the said invention and the best means I known of carrying the same into practical effect, I claim:

1. A one-piece sheet metal contact for electric plug couplings comprising a support-engaging base formed with a tubular attaching member for

attaching said contact to a support and providing a plug-receiving and contacting aperture in said base, a single spaced prong formed with a plug-receiving aperture presenting an arcuate thin contacting edge for engagement with said plug and normally disposed out of axial registry with the corresponding side of the plug-receiving base aperture, a connection between said prong and base including an angular bend providing a localized point about which said prong may resiliently flex, said prong-contacting edge being spaced from said point of flexure and from the base aperture a distance substantially greater than the distance between the point of flexure and nearest side portion of the plug, said plug when inserted through said base aperture engaging and flexing said prong under tension away from the base about said point of flexure, causing said thin contacting edge to be aligned with the corresponding side of said base aperture to receive and tightly grip said plug, the plug-receiving aperture of said prong being of a diameter slightly greater than the diameter of said plug to permit slight lateral movement of said plug in the aperture to permit release of said plug, said contact being provided with a wire-receiving portion.

2. A one-piece contact as defined in claim 1 further characterized in that the prong-contacting edge engages and grips the plug on the side opposite the point of flexure when the plug is in operative position in the contact.

3. A one-piece contact as defined in claim 1 further characterized in that the prong is normally disposed in divergent angular relation to said base and is displaced by the plug to an increased divergent angular position relative to the base.

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