

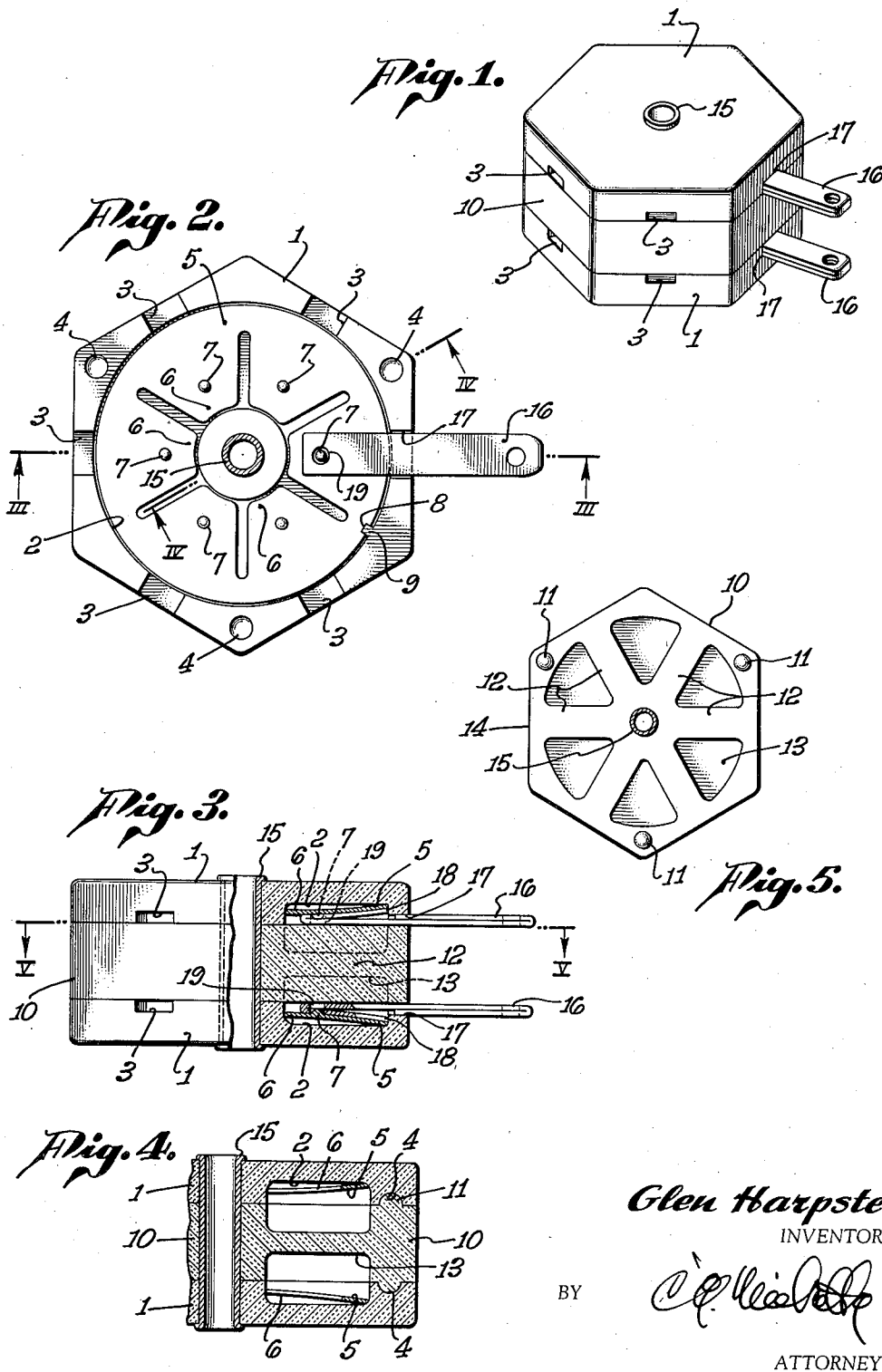
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MULTIPLE OUTLET ELECTRICAL CONNECTOR PLUG

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MULTIPLE OUTLET ELECTRICAL
CONNECTOR PLUG

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3 Claims. (Cl. 173—334)

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This invention relates generally to multiple outlet electrical plugs adapted to make electrical contact with one or more electrical plugs and more specifically to a multiple outlet electrical plug adapted to function as a plurality of male or female electrical outlets or a combination of both.

In the prior art there have been numerous multiple outlet electrical connector plugs. However, all of such prior art plugs have had numerous disadvantages, among these being complex and expensive construction, low current carrying capacity when all of said outlets are connected, and low heat dissipating capacity. Numerous other disadvantages are also inherent in said plugs.

It is desirable in a multiple outlet electrical plug to have a plurality of outlets, any one of which may at the time of assembly be selectively made either a female or male outlet. It can readily be seen that if the manufacture of both a male and female multiple outlet plug or a plug with part and part female outlets is exactly the same, with the only difference being the final assembly operation, standardization and low manufacturing cost will be achieved. This is extremely desirable since most of the prior multiple outlet plugs have not had such standardization and have been relatively expensive to manufacture.

It is also extremely desirable in a multiple outlet electrical connector plug to have the plug so designed as to be able to carry a heavy current such as, for example, when one outlet is connected to a source of electrical power and all of the other outlets are connected to various loads. This can best be achieved by having the portions of the electrical connector plug which carry the combined total current of all of the various individual outlets of sufficiently low resistance and with sufficiently high heat dissipation rate as to cause the plug to operate in a safe range. Most of the prior art multiple outlet connector plugs have been deficient in this very point, that is the portions of said plugs carrying the full maximum total current of each individual outlet were of fairly small cross-sectional area and therefore with high electrical resistance and with low heat dissipation.

Furthermore, most of the prior art multiple outlet electrical plugs were either manufactured as a plurality of male outlets or as a plurality of female outlets or a combination of both with different basic structures for the different plugs.

It is also extremely desirable to positively pre-

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vent the possibility of an arc-over or a short occurring between electrical terminals of opposite polarity. Most of the prior art multiple outlet electrical connector plugs did not positively prevent the possibility of such a short or arc-over.

Also, most prior art multiple outlet electrical connector plugs did not provide a large number of available outlets conveniently located for ready usage.

With the above points in mind, it is an object of this invention to provide a multiple outlet electrical connector plug wherein the various outlets may be either male or female and wherein at the time of assembly the various outlets may selectively be made male or female.

It is a further object of this invention to provide a multiple outlet electrical connector plug readily adapted for heavy current carrying capacity.

It is a further object of this invention to provide a multiple outlet electrical connector plug with a large heat dissipating capacity.

It is a further object of this invention to provide a multiple outlet electrical connector plug wherein the portion carrying a maximum current has an extremely low electrical resistance.

It is a further object of this invention to provide a multiple outlet electrical connector plug adapted to receive male prongs and wherein the contact resistance existing between said male prongs and the electrically conductive element contained in said plug is at a minimum because of a large surface area of contact between said members.

Referring to the drawings:

Fig. 1 is a perspective view of a preferred embodiment of my invention.

Fig. 2 is a top plan view of the bottom outer member portion of the plug of my invention with the metallic, electrical distributor and a prong in assembled position.

Fig. 3 is a front elevation, partly in section, of the assembled plug taken along the plane III—III of Fig. 2.

Fig. 4 is a front sectional elevation of half of an assembled plug taken along the plane IV—IV of Fig. 2.

Fig. 5 is a top plan view of the central prong-spacing core member of my invention taken along the plane V—V of Fig. 3.

The plug body comprising the outer members and the central core member may be made from Bakelite, rubber, plastic, or any other suitable insulating material. The central metallic dis-

tributor disc and the prongs may be made from spring brass or any other suitable electrically conductive resilient material. The hollow eyelet for joining the plug together may be made of any of the materials well known in the art utilized for such purposes.

More specifically, substantially hexagonal-shaped, outer members 1 are each provided with an annular recess 2. Each hexagonal face of each outer member 1 is provided with a radially directed, prong-receiving aperture 3 extending into said annular recess 2. Each of the outer members 1 is provided with cooperating locating means 4 which, in the example shown, comprise holes or indentations in the inner surfaces of each of said outer members 1.

Mounted in the annular recess 2 of each outer member 1 is a unitary metallic electrical distributor disc 5 provided with six inwardly extending, resilient fingers 6, each of said resilient fingers 6 being provided with prong-engaging means 7 or dimpled protuberances as shown in the example illustrated, on the convex or inward side thereof. Each of said distributor discs is also provided with suitable locating means or cooperating locating means 8 cooperating with like means 9 on each outer member 1 for fixing each of the disc members 5 with respect to the outer members 1.

A central, substantially hexagonal-shaped, prong-spacing, core member 10 is provided with suitable cooperating locating means 11, which in the example shown, are buttons or protuberances, and is mounted between the two outer members 1 so that the cooperating locating means 4 and 11 cooperate to fix the relative position of the outer members 1 and the central core member 10. The relative position of said central core member 10 and the outer members 1 is such that thick, radially extending portions 12 of core member 10 are placed opposite the prong-receiving apertures 3 in the outer members 1. The relative position of the central distributor disc 5 with respect to the core member 10 and outer members 1 is such that each of the six resilient fingers 6 is opposite the prong-receiving apertures 3 in the outer members 1.

The central, prong-spacing, core member 10 in the example shown is provided with recessed portions 13 between the thick, radially extending spokes 12 and a thick, outer, circumferential portion 14. Said recessed portions 13 are recessed on each side of core member 10 so that only a web of material remains separating the two sides of the plug at the recessed portion 13. The outer body members 1 and the central core member 10 are centrally apertured and are joined together through said central aperture by means of hollow eyelet 15, said eyelet 15 being peened over on each end so as to rigidly join the plug assembly together.

If it is desired to have a multiple outlet plug having five female outlets and one male terminal for connecting to a suitable female outlet operatively connected to a source of electrical power, prongs 16 are inserted into the two opposing, prong-receiving apertures 17 in one hexagonal face of said plug on opposite sides of the thick, radially extending portion 12 of central core member 10. Each of said prongs 16 in the example shown comprises half hard brass in strip form, the outer end of which is bent back upon itself and which is perforated or partially perforated so as to engage the usual prong-engaging means generally found in a female electrical outlet. The

inner end of each prong 16 is also bent back so as to diverge from the longitudinal axis of the prong 16. The diverging portion or resilient retaining means 18 acts to lock or retain the prong 16 within the recess 2. The inner end of the prong 16 is also provided with a hole or indentation 19 which cooperates with the dimpled protuberance 7 on the resilient finger 6 of the metallic distributor disc 5, thus causing a firm engagement and electrical contact to take place.

It can readily be understood that when the male prongs of other male electrical terminals are inserted in the prong-receiving apertures of the other five faces of the plug, the holes generally provided in the ends of the prongs will also engage the dimpled protuberances 7 on the resilient fingers 6 of the disc member 5, thus making firm electrical contact with said male plugs.

It is to be clearly and distinctly understood that the embodiment of my invention illustrated and described herein is exemplary only. The plug, for example, need not be hexagonal; it may be polygonal or any other desired shape. The central, prong-spacing core need not have recesses 13 therein. The locating means and cooperating locating means 4, 11, 8, and 9 may take numerous forms. As an example, the cooperating locating means 8 and 9 may be so placed as to cause cooperation between metallic disc member 5 and central, prong-spacing, core member 10, rather than between disc member 5 and outer members 1. The central, metallic, distributor disc need not be of disc form but may take any one of numerous forms. The retained prongs 16 may be any one of numerous types of construction well known in the art. For example, they may be single strips of metal with or without perforations or partial perforations therein and not bent back upon themselves as in the example illustrated and described herein. Furthermore, said prongs and prong-receiving apertures into which they are fitted may be larger than usual since they will be required to carry the total current being distributed through a plurality of outlets. Electrical supply line wires may be connected in any suitable manner directly to the retained prongs prior to the insertion of said prongs into the prong-receiving apertures. Said connections between said electrical supply line wires and said retained prongs may be covered with any suitable insulating material which will snugly engage said prong-receiving apertures. Many other variations are possible also. The hollow eyelet member 15 may be a hollow rivet having a head at one end and having the other end peened over or it may take numerous other forms. The outer member may be recessed so that said eyelet member 15 will fit flush. The center core member might have recesses in each side thereof for mounting the electrical distributor members with their convex sides outward. In such case, the outer members could either be of uniform thickness throughout or could be provided with spaced webs and radial spokes similar to those shown in the center core member in the attached drawings.

It can be seen that I have provided a unique plug having an extremely low inherent electrical resistance, having a large contact area, one which is capable of dissipating heat rapidly because of the large area and numerous apertures which also act as ventilating means, and one which is of very simple, light, cheap construction readily adapted to mass production methods.

It is to be clearly and distinctly understood

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that my invention is not to be construed as limited by the specific examples and illustrations given herein but is to be limited only by the scope of the appended claims.

I claim:

1. A multiple outlet electrical plug comprising: a body provided with a plurality of angularly related sides, each side being provided with prong-receiving apertures, all of said apertures lying in a pair of spaced, parallel planes, said body comprising a central, prong-spacing core and a pair of outer members connected thereto, edges of said core and said outer members forming said angularly related sides; a recess between the prong-spacing core and each of said outer members; a convex, disc-shaped, unitary, metallic, electrical distributor having a plurality of inwardly directed, resilient fingers formed in the distributor mounted in each recess, said resilient fingers being provided with prong-engaging means; and a plurality of prongs mounted in two or more of said prong-receiving apertures, the inner ends of said prongs being provided with resilient retaining means for retaining the inner ends of said prongs in said recesses in engagement with said fingers.

2. A multiple outlet electrical plug comprising: a polygonal body provided with a plurality of prong-receiving apertures lying in a pair of spaced, parallel planes, said body comprising a central, prong-spacing core and a pair of outer members connected thereto; a recess between the prong-spacing core and each of said outer members; a convex, disc-shaped, unitary, metallic, electrical distributor having a plurality of inwardly directed, resilient fingers formed in the convex distributor mounted in each recess; locating means formed integral with the core; cooperating locating means formed integral with the outer members and cooperating with said locating means formed integral with the core; distributor locating means formed integral with said distributor; cooperating distributor locating means formed integral with the outer members and cooperating with said distributor locating means; and a plurality of prongs mounted in two or more of said prong-receiving apertures, the inner ends of said prongs being provided with resilient retaining means for retaining the inner ends of said prongs in said recesses in engagement with said resilient fingers.

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3. A multiple outlet electrical plug comprising: a body provided with a plurality of angularly related sides, each side being provided with prong-receiving apertures, all of said apertures lying in a pair of parallel, spaced planes, said body comprising a central, prong-spacing core and a pair of outer members connected thereto, the edges of said core and outer members forming said angularly related sides; a recess between the prong-spacing core and each of said outer members; a convex, disc-shaped, unitary, centrally apertured, metallic, electrical distributor having six inwardly directed, resilient fingers formed integrally in the convex distributor mounted in each recess, each of said resilient fingers being provided with a prong-engaging, protruding dimple; locating means formed integral with the core; cooperating locating means formed integral with the outer members and cooperating with said locating means formed integral with the core; distributor locating means formed integral with the distributors; cooperating distributor locating means formed integral with the outer members and cooperating with said distributor locating means; and a plurality of prongs mounted in two or more of said prong-receiving apertures, the inner ends of said prongs being provided with holes cooperating with said prong-engaging dimples and being provided with resilient retaining means for retaining the inner ends of said prongs within said recesses.

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