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H. KRAUTWALD ET AL

3,543,223

THIN ELECTRICAL SOCKET

Filed Jan. 3, 1968

Fig. 1

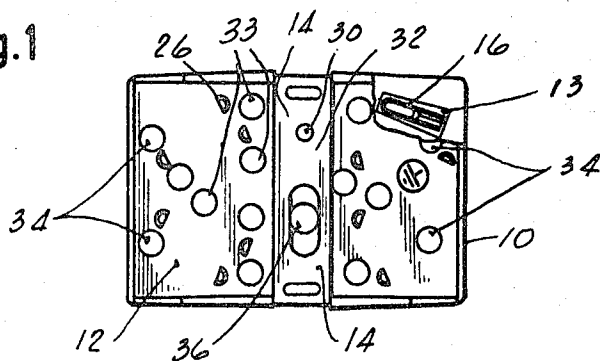


Fig. 2

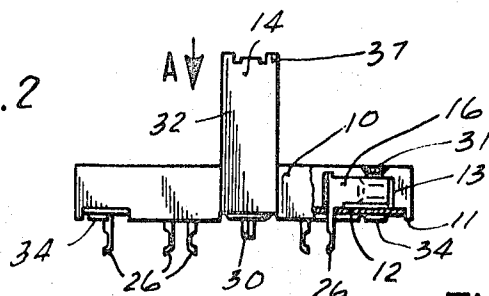


Fig. 3

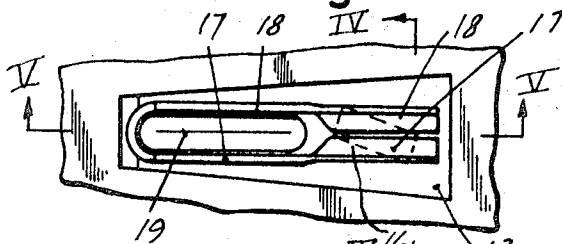


Fig. 4

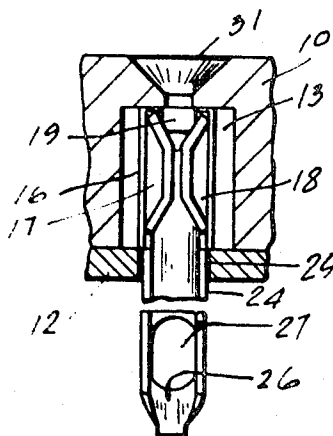
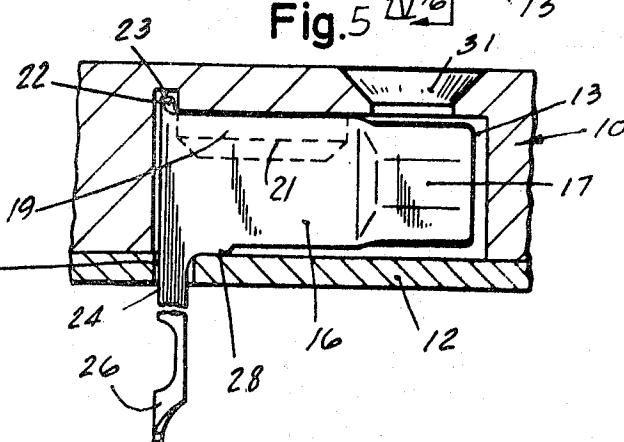


Fig. 5



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THIN ELECTRICAL SOCKET

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5 Claims

ABSTRACT OF THE DISCLOSURE

A thin electrical socket which has front and back covers with female sockets mounted between the front and back covers and formed with spring legs which are generally flat and lie along a plane which is normal to the front and back covers and adapted to receive a male prong which is inserted normal to the direction which the legs extend.

BACKGROUND OF THE INVENTION

Field of the invention

The invention comprises a multicontact electrical socket in which the female contacts has legs which lie along a plane normal to the front and back covers of the socket so as to produce an improved socket which is very thin.

Description of the prior art

Electrical sockets comprise body members in which female electrical contacts are mounted at right angles to the front and rear cover plates of the socket. Such structures are relatively thick because of the direction at which the female contacts extend.

BRIEF SUMMARY OF THE INVENTION

The present invention comprises an electrical socket with front and rear covers in which female contacts with legs are mounted so that the legs lie along a plane normal to the front and rear covers. This results in a much thinner socket and much space may be saved by the use of sockets according to this invention. Spring-type bifurcated female contacts are utilized which provide positive contact with the plug to be used and which self-center so that the electrical contact is uniform and which allows normal manufacturing tolerances to exist.

Other objects, features and advantages of the present invention will be readily apparent from the following detailed description of certain preferred embodiments thereof taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a bottom plan view of the electrical socket; FIG. 2 is a side plan view of the socket; FIG. 3 is an elongated view of a female contact with the bottom cover removed;

FIG. 4 is an end sectional view of the contact structure taken on line IV—IV of FIG. 3; and

FIG. 5 is a sectional view taken on line V—V of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1 and 2 illustrate the socket of the invention which comprises a main body portion 10 which is formed with a lip 11 about its edge on one side. The main body portion is formed of an insulating material which may be a thermally deformable plastic, for example.

A bottom cover 12 of fibre or other suitable material is received in the body portion against lip 11 and is formed with openings which align with pins 34 which extend from

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body portion 10. The ends of pins 34 may be deformed by heating or otherwise after the cover 12 is in place to hold it to the body portion.

A plurality of contact receiving cavities 13 are formed in the body portion 10 and bifurcated electrical contacts 16 are mounted in the cavities 13.

The contacts 16 are formed with a pair of spring contact arms 17 and 18 which extend side by side from an enlarged junction portion which has an upwardly extending area 22 that fits within a mating depression 23 of the body portion 10.

A downwardly extending contact 24 passes through an opening 29 formed in cover member 12 and has an attaching lug 26 formed with an opening 27 for an electrical connection.

An aligned tapered opening 31 is formed in the body portion above each pair of arms 17 and 18 of each contact 16 to allow a plug (not shown) to be inserted between the legs to make electrical contact.

As best shown in FIG. 4, the legs 17 and 18 are tapered outwardly on either edge to allow a plug to cam them apart.

A holding ledge 19 with a downwardly extending tapered portion 21 is formed in each cavity 13 and fits between legs 17 and 18 to position the contacts.

The depression 23 and opening 29 also aid in holding the contacts 17 in place and to lock them in a proper position for the plug.

Identifying plugs 33 are associated with each contact 16 and its associated contact 26 to identify each contact. The openings 29 are generally crescent-shaped to mate with portions 24 to hold the contacts in place.

The ledge, projection 22 and downwardly extending portions 24 allow the contact legs 17 and 18 to center on a plug when inserted.

A generally U-shaped attaching member 32 fits into a recess of the body member and is attached to the body portion by a lug 30. An opening 36 is formed in member 32 to allow it to be attached to a suitable holding frame (not shown) for mounting the socket.

In operation, a number of sockets according to the invention may be mounted on a frame side by side and electrical connections may be made to contacts 26 and identified by marking plugs 33.

The contacts 16 fit loosely in openings 13 and center on a plug when it is inserted into the opening 31. Uniform bearing pressure will exist on each side of the plug.

Since the contacts 16 are mounted so that their legs lie along a plane normal to the cover member 12 and the male plug is inserted from the sides of the legs rather than the ends thereof, the socket may be very thin and many of them may be mounted in a small space.

The principles of the invention explained in connection with the specific exemplifications thereon will suggest many other applications and modifications of the same.

We claim:

1. A thin electrical socket comprising a thin body portion with front and back sides formed with a generally rectangular recess, a bifurcated female contact member formed with an enlarged junction portion and with two generally flat spring legs which lie along a plane which is normal to the front and back sides and extend axially from said junction portion received in said generally rectangular recess and said spring legs adapted to receive a male plug which may be inserted transversely between the legs through an opening formed in the body portion through the front side thereof, said enlarged junction portion received in a mating depression formed in the body portion within said rectangular recess, an extending portion of said junction portion extending outwardly through

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an opening in said back side to provide an electrical contact wherein said extending portion of said junction portion is crescent-shaped and the opening in said back side through which said extending portion of said junction extends is crescent-shaped.

2. A thin electrical socket according to claim 1 wherein said thin body portion is formed with a ledge about its outer edge into which a back cover forming said back side is receivable, and means for attaching said back cover to said thin body portion.

3. A thin electrical socket according to claim 2 comprising a thin positioning ledge formed in said body portion about said generally rectangular recess and engageable with the legs of said contact member to hold it in position.

4. A thin electrical socket according to claim 3 comprising a plurality of generally rectangular recesses formed in said body portion and a plurality of bifurcated female contact members mounted in said generally rectangular recesses.

5. Apparatus according to claim 4 comprising a U-

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shaped attaching member attached to the body portion with its legs extending outwardly from the body portion for attaching the electrical socket.

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