

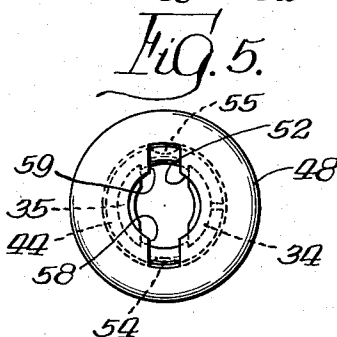
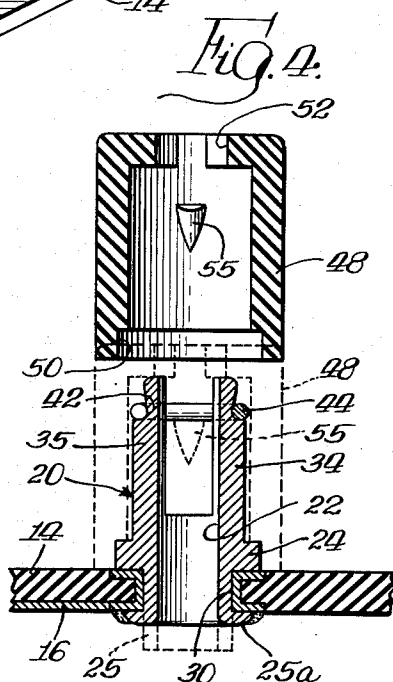
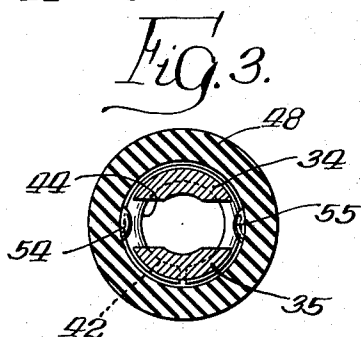
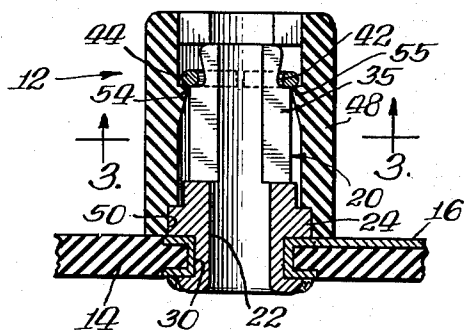
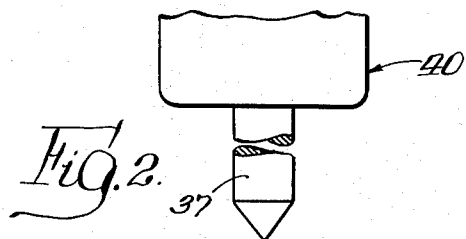
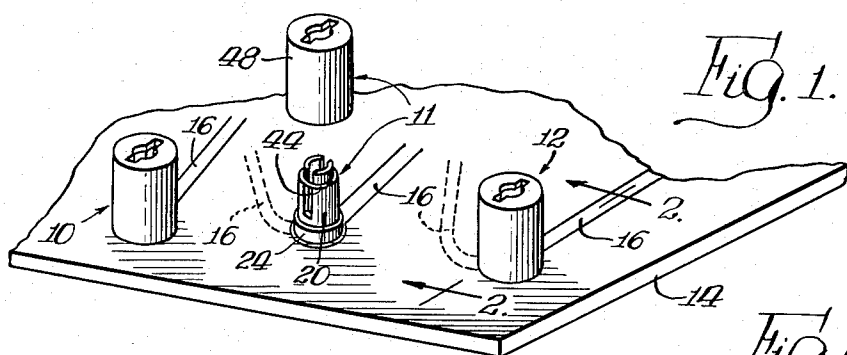
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ELECTRICAL JACK

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2,992,403

ELECTRICAL JACK

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1 Claim. (Cl. 339-213)

This invention relates generally to electrical connectors and more particularly to jacks of the type which receive electrical connector pins or tip plugs.

In present day electronic equipment of various types, circuits are applied in insulating panels by printing or plating in order to expedite production and generally render such equipment smaller and lighter. In some plated panel circuitry it is desirable to provide a form of separable connector such as a jack for test points, voltage application points, and the like.

It is an object of this invention to provide a jack of simple, inexpensive construction which may be easily mounted on a plated circuit panel and coupled into the circuit thereof.

Another object is to provide an electrical jack of small size and having good pin gripping characteristics for use in printed and plated circuits.

A feature of the invention is the provision of a jack with a body formed into a fastening rivet at one end, and a plurality of jaws at the other end, and an encircling spring to bias the jaws for firmly gripping a tip plug.

Another feature is the provision of such a jack and an apertured sleeve adapted to insulate the exposed parts thereof. The interior of the sleeve may include gripping portions to engage the above mentioned encircling spring and lock the insulating sleeve on the body of the jack.

Further objects, features and the attending advantages thereof will be apparent upon consideration of the following description when taken in conjunction with the accompanying drawing in which:

FIG. 1 is a perspective view of a plated circuit panel showing several jacks of the present invention;

FIG. 2 is a sectional view along the line 2-2 of FIG. 1;

FIG. 3 is a sectional view of the jack taken along the lines 3-3 of FIG. 2;

FIG. 4 is an exploded sectional view of the jack and insulating sleeve therefor; and

FIG. 5 is a top view of the assembled jack.

This invention provides an electrical connector or jack which provides a separable connection to a pin or tip plug. The jack includes a body with a central aperture and a shoulder adjacent one end to form a rivet for mechanically fastening the same to a plated circuit panel and to provide electrical connection for the jack. The wall of the other end of the jack is divided in order to form a plurality of jaws for gripping a pin disposed in the central aperture. An encircling spring about these jaws insures firm engagement with the pin plug. An insulating sleeve adapted to fit around the jaws provides insulation therefor and the interior of this sleeve includes projections which may be forced over the encircling spring as the sleeve is mounted in order to lock the sleeve in place.

FIG. 1 shows the electrical connectors in the form of assembled jacks 10, 11, 12 for use with connector pins or tip plugs. Jacks or connectors 10-12 are all of similar construction and may be supported on a panel 14 having plated circuitry or conductors 16. Jack 11 is shown with the insulating sleeve removed.

FIG. 2, illustrating a sectional view of jack 12, shows the cylindrical body 20, which may be formed of gold plated brass, for example, and has a central longitudinal aperture 22. There is a shoulder 24 near one end of the

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body 20 and this forms a rivet 25 (FIG. 4) at this end of the body which may be flattened or upset on one side of the panel 14 so that the shoulder 24 is drawn to the other side of the panel. Aperture 30 in panel 14, which is used to mount the body 20, may have sides which are composed of the same material of which the conductors 16 are formed. Furthermore, the conductors 16 may extend in a considerable area around the aperture 30 on the top and bottom surfaces of panel 14 so that the shoulder 24 and the formed rivet 25 engage this portion of the plated circuitry 16 as illustrated in FIGS. 2 and 4. In order to insure good electrical connection to the jack, however, the finished rivet 25a may be soldered to the plated circuitry on the bottom of panel 14.

The upper portion of body 20 is divided longitudinally by slots to form a pair of spaced jaws 34, 35. The jaws 34, 35 therefore will have some resilience so that a connector pin 37 of plug 40 may be received in the aperture 22. The upper end of the body 20 is reduced in outer diameter in order to form an annular ring or groove 42 in which split clamping ring 44 is disposed. The clamping ring tends to maintain the jaws in their original positions and insures resilient gripping of the plug 37 during repeated use of the jack. Clamping ring 44 may be inserted over the end of the body 20 in order to be carried in groove 42. Ring 44 is of greater outer diameter than that of the body 20.

A plastic insulating sleeve 48 having a central opening may be inserted over the body 20 for color coding or insulating purposes. As shown in the drawings, the central opening has a slightly larger diameter than the outer diameter of clamping ring 44 in order to receive the ring with a clearance fit. An enlarged opening 50 in the bottom of the sleeve 48 receives shoulder 24 of the body 20. An aperture 52 in the end of sleeve 48 is in alignment with the central aperture 22 of body 20 so that the pin 37 may be inserted in aperture 22.

Sleeve 48 is retained in position by a locking construction consisting of tapered projections 54, 55 on the interior of the sleeve which projections may be pushed beyond the clamping ring 44 as shown in FIG. 2. As previously mentioned clamping ring 44 has a diameter greater than that of circular body 20 so that sleeve 48 may be forced down over the body 20 until the ring 44 rides on the top of the projections 54, 55 thus locking the sleeve in place (FIG. 4).

The aperture 52 in the end of sleeve 48 includes enlarged portions 58, 59 which mark the positions of projections 54, 55 so that these projections may be aligned with the spaces between jaws 34, 35 as the sleeve is moved into position. Therefore, the jaws will not interfere with mounting of the sleeve and a maximum portion of the projections may engage a corresponding maximum portion of the clamping ring 44.

This invention provides, therefore, a simple, inexpensive electrical jack which may be easily mounted on a plated circuit panel. The jack is of small physical size and yet provides firm mechanical and electrical connection for a pin plug. It is possible to utilize the jack without the insulating sleeve and to obtain the benefit of the same gripping characteristics. However, the sleeve may be easily installed should it be desirable for insulating or color coding purposes and it may be firmly retained in position by engaging the clamping ring or circular spring which provides resilience for the clamping jaws of the jack.

I claim:

A small jack assembly for electrical connection to a pin plug and which may serve as an exposed terminal, and which jack is adapted to be mounted in an opening in an insulating panel which has a conductor about the open-

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ing, said jack assembly including in combination, a conducting body having a central aperture longitudinally therethrough, a shoulder portion shaped from one end of said body to form a rivet fastener at such end, said rivet fastener being adapted to secure said jack assembly on the panel and to electrically connect said conducting body to the conductor on the panel, said body being divided longitudinally at the other end to form a plurality of jaws adapted to grip a pin plug received in the aperture of said body, said jaws having a groove encircling the outer surfaces thereof, a circular spring clamping ring disposed in said groove to maintain said jaws in their original positions and to spring bias said jaws against a pin plug received in the aperture of said body, said ring having an outer diameter greater than the outer diameter of said body, and a plastic insulating sleeve having a central opening having a diameter sufficiently greater than the outer diameter of said ring to receive said clamping ring with a clearance fit when said jaws are in their original positions and to enclose and thereby insulate said jaws without contacting said jaws, said sleeve having an

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aperture in alignment with the aperture in said body to receive a pin plug therethrough, said insulating sleeve also including tapered projections which extend inwardly within the central opening thereof so that said clamping ring is compressed by said projections during insertion of said sleeve on said body, with said projections moving beyond said clamping ring to allow the jaws to return to their original positions whereby said projections abut said ring to lock said sleeve on said body.

References Cited in the file of this patent

UNITED STATES PATENTS

1,940,666	Diamond	Dec. 26, 1933
2,339,146	Carlisle	Jan. 11, 1944
2,366,747	Moody	Jan. 9, 1945
2,685,073	Damon	July 27, 1954
2,779,008	Quackenbush	Jan. 22, 1957
2,913,634	Scoville	Nov. 17, 1959

FOREIGN PATENTS

327,618	Great Britain	Apr. 10, 1930
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