

March 17, 1964

J. G. LONG

3,125,706

MULTIPLE ELECTRICAL CONNECTOR CONTROL ELEMENTS

Filed Dec. 14, 1959

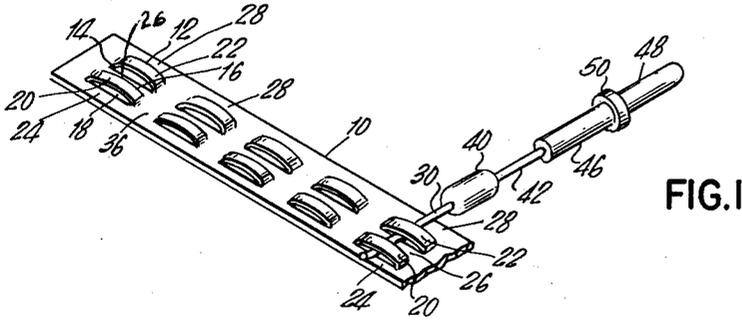


FIG. 1

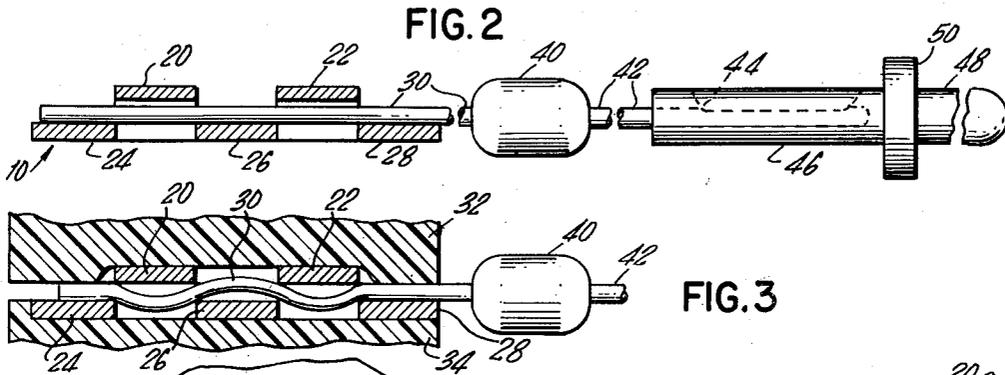


FIG. 2

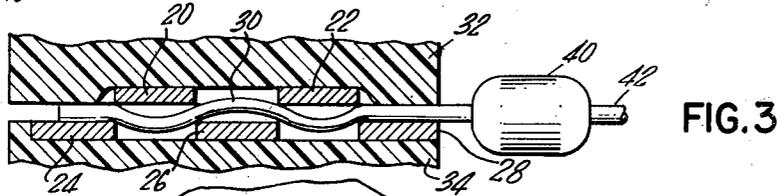


FIG. 3

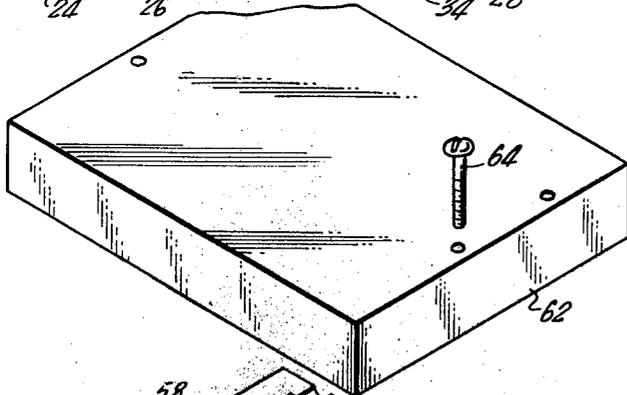


FIG. 4

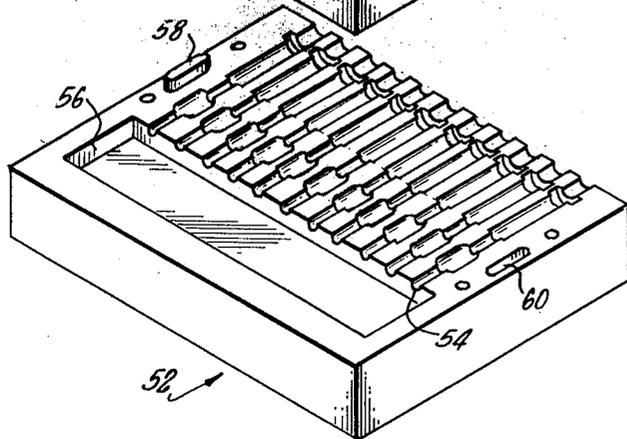
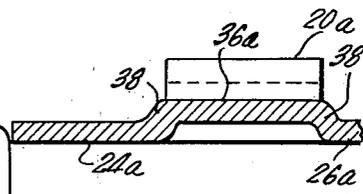


FIG. 5



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1

3,125,706

MULTIPLE ELECTRICAL CONNECTOR CONTROL ELEMENTS

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2 Claims. (Cl. 317-101)

My invention relates to a multiple electrical connector for joining a plurality of conductors thereto.

Such connectors have hitherto been expensive to form. They require individual gripping means which have been separately clamped to the conductors entailing considerable manual labor during installation.

The principal object of my invention is to provide a single panel containing a plurality of outlets that are simultaneously formed and which may be simultaneously clamped to electrical conductors to complete the connections.

Other objects are to provide a multiple connector having tandem gripping means to insure maximum resistance to pull out; a connector that is simple to use and inexpensive to manufacture; and which may be mounted in an insulating housing and applied as a plug with multiple pin connections.

These and other objects of my invention are accomplished and new results obtained as will be apparent from the device described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing in which:

FIG. 1 is a perspective view of my multiple connector;
FIG. 2 is a transverse sectional view through a receptacle, prior to completion of the connection;

FIG. 3 is a similar view of the connector in the crimping dies;

FIG. 4 is a transverse sectional view of a modification; and

FIG. 5 is a perspective exploded view of an insulating housing for the multiple connector and extending pin connections.

Generally, the invention comprises a sheet metal connector body, the conductor gripping means being formed by stamping a plurality of parallel slits in the sheet metal, said slits being spaced apart sufficiently to form a strong bridge when the slit metal is stretched into the shape of an outlet.

Specifically, as shown in the drawing, the connector or panel 10 comprises a sheet of metal provided with tandem sets of parallel slits of two each; namely, slits 12, 14, 16, and 18.

The metal of the panel is malleable, such as copper or aluminum, permitting the material between slits to be upset or stretched to form bridge sections 20, and 22, and support sections; namely, 24, 26, and 28. Thus, for the conductor 30, we have side support sections 24 and 28, sectional support sections 26, and intermediate bridge sections 20 and 22.

The bridge and support sections form outlets for the conductors. The conductor ends are inserted under the two bridge sections 20 and 22. A compressing tool represented by jaws 32 and 34 collapses the bridge sections, and thus crimps the connector and conductor into the shape shown in FIG. 4. The conductor by this compression is offset or snubbed four times making accidental removal extremely difficult and insures a joint having a very low electrical resistance.

To avoid large slits the metal anchoring sections 36 between slits may be upset by being stretched upwardly, as at 38, shown in FIG. 4. This creates an elevated platform 36a enabling the bridging sections; such as, 20a to be elevated substantially above the level of the supporting sections; such as, 24a and 26a. Thus, larger conduc-

2

tors can be accommodated without elongating the slits excessively.

The panel may be used for assembling pin-diode leads in an electronic apparatus. In FIG. 2, the conductors 30 terminate in a diode 40 from which the lead 42 extends. This in turn is crimped, as at 44, to the hollow ferrule 46 of a pin connector 48, which may be provided with a shoulder 50.

The final assembly may be contained in an insulating housing base 52, as is shown in FIG. 5, provided with recesses 54 for containing the diode and pin assembly, and with recesses 56 for containing the connector 10. The housing may be provided with alignment key extensions 58 and corresponding recesses 60 for receiving in oriented position, the upper housing cap 62.

Bolts 64 secure the housing parts together about the connector and connections leaving the pin connectors 48 extending therefrom for engagement with mating socket connectors, not shown.

In the aforesaid connector, a plurality of conductor receiving outlets are simultaneously formed. The outlets may be simultaneously clamped about the conductor leads reducing manufacture and assembly costs to the minimum. Tandem outlets may be formed, if desired, to increase resistance to pullout. The bridge sections may be provided from elevated platforms for accommodating larger size conductors without loss of panel compactness. The whole may be mounted in an insulating housing, permitting use as a multiple plug connection.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which objects of my invention are attained and new results are accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

I claim:

1. An article of manufacture, comprising:

a longitudinally elongated flat strip of metal;

a plurality of transverse, conductor receiving sockets, longitudinally spaced apart, integrally formed into said flat strip, each said socket being open at both its ends;

each of said sockets being formed by a plurality of transverse spaced apart slits in said flat strip providing a plurality of slats, every other said slat being revised in the same direction above and beyond the level of said flat strip providing a first and a second level of slats;

a plurality of transversely spaced apart electrical control elements, each having a first and a second conductor extending therefrom;

one of each of said first conductors disposed in each of said sockets and secured therein by compressing said respective first and second levels of slats towards each other about said respective conductor, crimping said respective conductor in said respective socket;

a plurality of transversely spaced apart electrical connector contacts, each having a conductor receiving portion and a mating contact engaging portion, one of each said contact conductor receiving portions connected to a respective said second conductor;

and an insulating housing having a plurality of internal recesses substantially congruent with, enclosing individually and interlocking with said flat strip, each

3

said control element and its said first and second conductors, and said conductor receiving portion of each said contact; said mating contact engaging portion of each said contact extending beyond said housing.

2. An article of manufacture, comprising:
 a longitudinally elongated common conductor;
 a plurality of transversely spaced apart electronic control elements, each having a first and a second conductor extending therefrom;
 one of each of said first conductors secured to said common conductor;
 a plurality of transversely spaced apart electrical connector contacts, each having a conductor receiving portion and a mating contact engaging portion, one of each of said contact conductor receiving portions connected to a respective said second conductor;
 and an insulation housing having a plurality of internal recesses substantially congruent with, enclosing individually and interlocking with said common first and second conductors, and said conductor re-

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conductor, each said control element and its said ceiving portion of each said contact; said mating contact engaging portion of each said contact extending beyond said housing.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,125,706

March 17, 1964

James G. Long

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 21, beginning with "first and second" strike out all to and including "and its said" in column 4, line 1, and insert instead --- conductor, each said control element and its said first and second conductors, and said conductor re- --.

Signed and sealed this 14th day of July 1964.

(SEAL)

Attest:

ESTON G. JOHNSON
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents

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