

Feb. 23, 1971

R. HICKTON

3,564,709

PROCESS OF MAKING A CONNECTOR

Filed Dec. 5, 1967

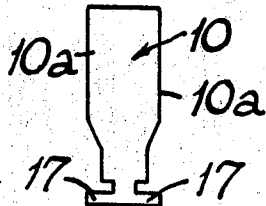


Fig. 1.

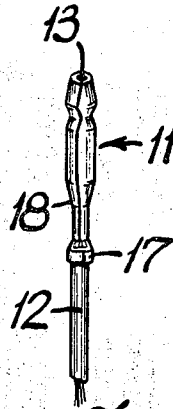


Fig. 2.

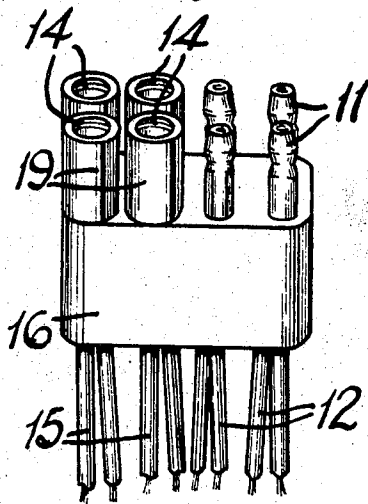


Fig. 3.

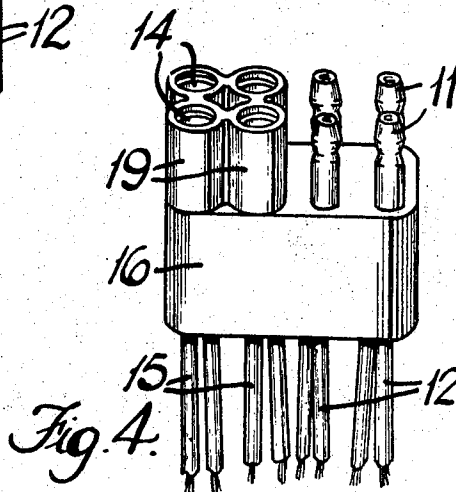


Fig. 4.

INVENTOR
BY R. Hickton
Blaschke, Downing & Seibold
ATTORNEYS

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PROCESS OF MAKING A CONNECTOR

Raymond Hickton, Halesowen, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England, a British company

Filed Dec. 5, 1967, Ser. No. 688,255

Claims priority, application England, Dec. 12, 1966, 55,490/66

Int. Cl. H02g 15/00

U.S. Cl. 29—629

3 Claims

ABSTRACT OF THE DISCLOSURE

A method of manufacturing a connector unit which in use constitutes one part of a plug and socket connector, including the steps of placing a plurality of conductive pins in a mould, injecting synthetic resin around the pins, and allowing the resin to set, is characterised in that each pin is formed by shaping a conductive blank so that the two opposite edges of the blank are in mutual contact, and the blank forms an open ended tube, inserting a lead into one end of the tube, and deforming said one end of the tube so as to simultaneously connect the tube to the lead, and close said one end of the tube, thereby minimising loss of synthetic resin through the pins during the moulding operation.

This invention relates to a method of manufacturing connector units which in use constitute one part of a plug and socket connector.

A method according to the invention comprises placing a plurality of pins in a mould, injecting synthetic resin around the pins, and allowing the resin to set, characterised in that each pin is formed by shaping a conductive blank so that two opposite edges of the blank are in mutual contact and the blank forms an open-ended tube, inserting a lead into one end of the tube, and deforming said one end of the tube so as to simultaneously connect the tube to the lead and close said one end of the tube, thereby minimising loss of synthetic resin through the pins.

In the accompanying drawings FIG. 1 is a plan view of a blank which is utilized to form a conductive pin in one example of a method according to the invention, FIG. 2 is a perspective view of a pin formed from the blank shown in FIG. 1, FIG. 3 is a perspective view of a connector unit manufactured in accordance with said one example of a method according to the invention, for use in a plug and socket connector, and FIG. 4 is a view similar to FIG. 3 showing a modified form of connector unit.

Referring first to FIGS. 1 and 2 a plurality of pins are formed from a sheet of metal by stamping from the sheet a series of generally rectangular blanks 10. The blanks 10 are then rolled and shaped to engage a pair of long sides 10a of the blank together along their whole length so that they constitute hollow substantially cylindrical pins 11. As the pins 11 are rolled, each has a respective lead 12 secured thereto. One end of each lead 12 is stripped of insulation and one end of the respective pin is crimped to electrically interconnect the pin 11 and lead 12, the stripped portion of the lead 12 extending through the crimped portion of the respective pin to ensure that the crimped portion of the pin 11 is sealed. Each pin is formed at said one with a pair of deformable tags 17 which in use are bent to grip the insulating cover of the lead 12. It will be appreciated that the pins so formed are hollow but are substantially closed with the exception of a small hole at the end of each pin remote from its respective lead 12. Between the tags 17 and the body of each pin there is defined a tapering portion 18. Prior to rolling

the pin the edges of the blank which constitute the portion 18 are chamfered so that when the pin is rolled the chamfered edges will overlap slightly thereby ensuring that the portion 18 is closed.

A plurality of pins so formed are then secured in a mould together with a plurality of hollow conductive socket members 14, the axial passages of the members 14 being closed by posts integral with the mould. The leads 12 of the pins and the leads 15 of the members 14 extend from one side of the mould while the free ends of the pins 11 extend from the opposite side of the mould. Synthetic resin is now introduced into the mould and allowed to solidify to form a flexible body 16, the mould being such that the pins 11 and the socket members 14 will be engaged in the mould body 16 (FIG. 3). The other ends of the pins 11 and socket members 14 extend from one end of the body 16 while their respective leads 12, 15 extend from the opposite end of the body, the exterior projecting parts of the socket members 14 being encased in respective synthetic resin sleeves 19. The posts integral with the mould are of sufficient axial length to close the passages of the members 14 throughout their length so that substantially no synthetic resin enters the members 14.

It will be appreciated that since each pin 11 is closed except for the hole 13 in its end remote from its respective lead 12, and the members 14 are closed by posts integral with the mould, there will be no loss of synthetic resin from the mould through the pins 11 or the members 14 during the moulding operation.

A suitable synthetic resin material for moulding the flexible body 16 is polyvinylchloride.

Since the socket members 14 project from the body 16 and are encased only by their respective individual synthetic resin sleeves 19, the members 14 can be moved relative to one another, which would not be possible if the socket members were set into a block of synthetic resin material. The freedom of movement of the socket members 14 relative to one another facilitates engagement with the connector unit of a corresponding connector unit wherein the pins of the corresponding unit, which engages the members 14, are misaligned with respect to one another.

In the modified form of connector unit shown in FIG. 4 the spacing between the socket members has been reduced to a level wherein the respective sleeves 19 of the members 14 are connected at points on their peripheries of the sleeves of adjacent members 14. It should be noted however that the members 14 can still be moved relative to one another as permitted by deformation of their respective synthetic resin sleeves.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a method of manufacturing a connector unit forming part of a plug and socket connector, comprising, placing a plurality of pins in a mould, injecting synthetic resin around the pins, and, allowing the resin to set, the improvements comprising forming each pin by, forming a conductive blank having two edges, at least a portion of each of which is chamfered, shaping said conductive blank so that said two edges of the blank are in mutual contact and the blank constitutes an open ended tube with said chamfered portions overlapping slightly, inserting a lead into one end of the tube, and, deforming said one end of the tube so as to simultaneously connect the tube to the lead and close said one end of the tube, thereby minimising loss of synthetic resin through pins during the moulding operation.

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2. A method as claimed in claim 1 including the step of placing at least one conductive socket member in the mould with the pins so that the resultant connector unit includes pins and at least one socket.

3. A method as claimed in claim 1 wherein said synthetic resin material is polyvinylchloride.

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JOHN F. CAMPBELL, JR., Primary Examiner

R. W. CHURCH, Assistant Examiner

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U.S. Cl. X.R.

18-5; 29-628, 517; 113-119; 174-74, 75, 77; 264-272; 339-218, 220