Nov. 8, 1938. N. OLSHANSKY 2,136,057

CONTACT PLUG

Filed Jan. 17, 1936

Fig 1

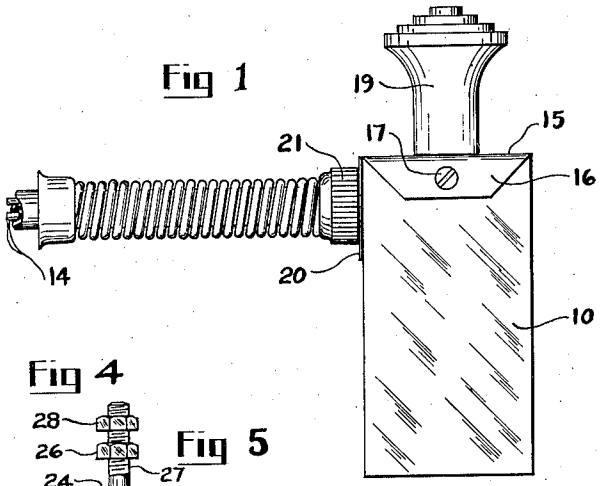


Fig 2

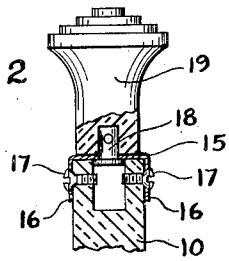


Fig 4

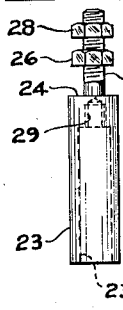


Fig 5

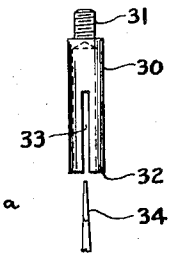


Fig 3

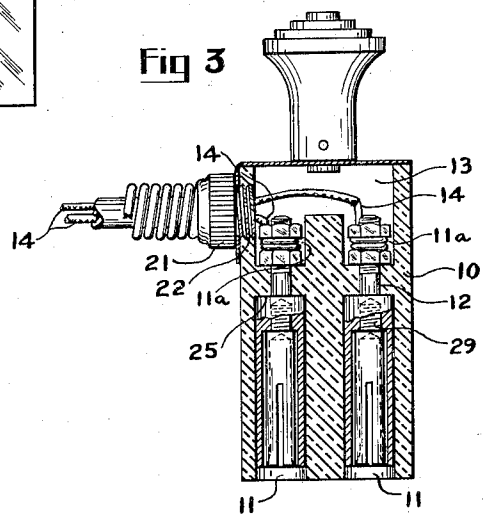


Fig 6

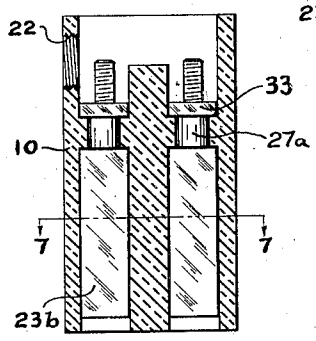
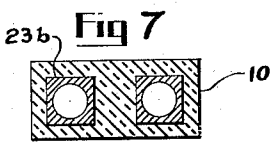


Fig 7



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CONTACT PLUG

Nathan Olshansky, Stamford, Conn.

Application January 17, 1936, Serial No. 59,481

4 Claims. (Cl. 173—332)

This invention relates to a connector or plug adapted for heavy duty use in electric irons, toasters and similar electric appliances.

Electric connectors and plugs similar to the connector or plug of my invention have been developed in this art over a period of many years. Nevertheless, there has never, to my knowledge, been produced a commercial plug or connector adapted for heavy duty work, and having the features of my invention, which could be manufactured to be sold for a satisfactory price.

Most commercial plugs comprise two insulation bodies held together by a screw. This form of construction has been found necessary in order to produce an economical device to meet the public demand. Naturally, such two piece connectors quickly become loosened, the contacts cannot be held firmly, and many troubles develop. Some connectors have been made of but one insulation body, but such connectors have generally been extremely expensive, or because a one piece body is used, when the contact elements per se are injured or become worn, it becomes impossible or relatively expensive to replace them.

The replacement of defective units in a heavy duty device of this sort is a very important feature. I am able to obtain this feature without going to too great an expense in the construction of my device. Also, I arrange for easy replacement without the dismantling of my connector or plug, so that the average housekeeper may herself make the replacement.

Before describing in detail my invention, I should like to indicate generally the features of importance. The connector or plug comprises a single insulation body having a pair of parallel bores and a relatively open upper chamber. In each of these bores there is secured a contact tube. This contact tube may be united to the body by being inserted into the mold at the time of the forming of the insulation body. On the other hand, the bores may be formed by machining, and with restricted portions in each of them. The tubes are formed so as to cooperate with these restricted portions of the bores, whereby to be secured within the bores. Contact wires may be led through the relatively open upper chamber to the bores and be secured to the upper ends of the tubes.

The upper inner end of each of the tubes is drilled and tapped for union with a contact sleeve having resilient tongue portions and an upper threaded portion. Naturally, other means could be used to unite the tubes and sleeves. The spaces between the tongues permit the insertion of the blade of a tool or screw driver so that the sleeves may be rotated into cooperative relation with the tubes. Preferably, the outer periphery of the tongued portions of the sleeves is spaced from the inner periphery of the tubes, so that when a male contact member is inserted into the sleeves, the tongued portions will be spread and will be forced against the walls of the tubes to make a practically perfect contact, in addition to the upper end contact.

The wires are preferably led into the upper chamber through a side wall, and the upper chamber is covered by a metallic element which is secured through screws to the insulation body. The metallic element carries a handle whereby the entire body may be operated, and thus contributes not only a covering function but also a manipulating function.

For a detailed description of my invention, I shall now refer to the drawing, wherein Fig. 1 is a plan view of my connector or plug showing the wires leading into it. Fig. 2 is a partial section through the upper end of the plug showing the manner in which the handle is secured to the cover and the cover to the insulation body. Fig. 3 is a vertical section through my insulation body and through some of the parts. Fig. 4 is a plan view of a contact tube, while Fig. 5 is a similar view of a contact sleeve. Fig. 6 is a section through a modification of the plug of Fig. 1, while Fig. 7 is a section taken along lines 7—7 of Fig. 6.

Referring now more particularly to the drawing and especially to Figs. 3, 4 and 5, reference numeral **10** indicates the solid insulation body which is equipped with a pair of parallel bores **11**, each of which has a restricted portion **12**. The upper portions **11***a* of the bores **11** terminate in a relatively open chamber **13** into which the wires **14** may lead. The upper end of the insulation body **10** carries a metallic covering member **15** having side flap portions **16** secured by screws **17** to the sides of the insulation body, as is best seen in Fig. 2. The upper surface of the covering member **15** carries through lug **18** a handle **19** whereby the entire connector or plug may be manipulated.

The covering member **15** has also a front lap **20** through which traverses the knurled thumb screw member **21** supporting the wires **14** and adapted to be maintained in screw threaded relation at **22** with the insulation body **10**. At the time of the casting of the insulation body **10**, the contact tubes **23**, best shown in Fig. 4, may

be inserted into the molds so as to be permanently united with the insulation body 10.

In the modification of Fig. 3, I prefer, however, to bore the holes 11 and then insert the tubes 23 until their upper ends 24 abut the lower shoulder 24 of the material forming the restricted portion 12. A nut 26 maintained on the screw threaded rod-like portion 27 of each tube 23 then cooperates with the upper surface of the restricted bore portion to hold the tube 23 in position, as will be quite clear to those skilled in the art. The wires 14 may then be secured to the tubes 23 by means of a further nut 28 mounted on the screw threaded rod-like portion 27 of each tube 23.

Each of the tubes 23 is drilled and threaded at its upper end, as shown in Fig. 3, and designated by reference numeral 29. Contact sleeves 30 having upper threaded ends 31 are adapted to be screwed into the threaded bores 29. The sleeves 30 have resilient tongues 32 formed by slotting the sleeves as at 33. A narrow blade 34 of a screw driver, when inserted into the slots 33 may be used to unite the sleeves 30 firmly to the tubes 23 through means of the threaded bores 29 and the threaded portions 31 of the sleeves 30.

The outer periphery of each sleeve 30 is such that when a male element is inserted between the tongues 32, those tongues will be spread against the inner walls 23*a* of the tubes 23, there being provided the necessary space between the outer periphery of the sleeve 30 and the walls 23*a* to permit this expansion. It will be quite clear to those skilled in the art that the only replacement in the type of plug disclosed will probably be the sleeves 30, since those sleeves will naturally wear. The sleeves may be easily removed and replaced by new sleeves without any change in the remaining elements of the connector, and without the removal of any of the remaining parts of the connector, and without disturbing the contact parts and wiring. The method of changing has already been described.

In Figs. 6 and 7 I show a modification of my invention in which tubes 23*b* are used, and which tubes are square so that rotation of the tubes relatively to the insulation body 10 will be impossible. The tubes 23*b* have restricted portions 27*a* corresponding to the restricted rod-like portions 27 of the tubes 23 and 24. Above the portions 27*a*, the tubes have integral disc portions 33 whereby the tubes are maintained against endwise movement relatively to the insulation block 10. It will naturally be understood that the elements 23*b* are united with the insulation body 10 during the casting or forming of the insulation body 10.

While I have described a detailed form of my invention, it should be understood that I have made a relatively broad improvement in this highly developed art, and that I do not wish to be limited to the particular means herein set forth, but rather feel myself entitled to broad claims and a relatively broad interpretation of those claims.

I claim:

1. An electrical connector having a one piece insulation body, said body having a pair of bores terminating in an upper open chamber, each of said bores having a restricted portion, a conducting tube in each of said bores, each of said tubes having a lower portion of relatively large diameter below said restricted bore portions, and a screw threaded rod-like portion above said restricted bore portions, nuts on said screw threaded rod-like portions cooperable with said restricted bore portions to maintain said tubes in said bores, wires leading through said upper open chamber to said tubes and secured to the upper threaded rod-like portions of said tubes, screw threaded bores in the upper ends of said tubes, and sleeves having screw threaded upper ends adapted to enter said screw threaded bores to secure said sleeves in said tubes and coextensive with said tubes.

2. An electrical connector having an insulation body, said body having a pair of bores each having stop surfaces, a conducting tube inserted directly into each of said bores against said stop surfaces, means in screw threaded engagement with said tubes and in abutting relation to said stop surfaces for holding said tubes against outward movement from said bores, screw threaded portions in the upper inner ends of said tubes, resilient tongued sleeves in said tubes and having portions cooperable with said screw threaded portions whereby to be held in said tubes, wires leading through said insulation body to said tubes and secured thereto, and portions on said tubes and bores formed square to prevent rotation of said tubes in said bores.

3. An electrical connector having a one piece insulation body, said body having a pair of bores terminating in an upper open chamber, each of said bores having a restricted portion, a conducting tube in each of said bores, each of said tubes having a lower portion of relatively large diameter below said restricted bore portions, and a screw threaded rod-like portion above said restricted bore portons, nuts on said screw threaded rod-like portions cooperable with said restricted bore portions to maintain said tubes in said bores, wires leading through said upper open chamber to said bores and secured to the upper threaded rod-like portions of said tubes, screw threaded bores in the upper ends of said tubes, and sleeves having screw threaded upper ends adapted to enter said screw threaded bores to secure said sleeves in said tubes and coextensive with said tubes, and portions on said tubes and bores formed square to prevent rotation of said tubes in said bores.

4. An electrical connector having an insulation body, said body having a pair of parallel bores formed therein and leading from one of the surfaces of said body, a conducting tube inserted into each of said bores, means whereby said tubes are fixedly secured in each of said bores, wires leading through said insulation body to each of said tubes, a contact sleeve inserted into each of said tubes in said bores through the open ends of said bores, readily releasable means on said sleeves and tubes whereby said contact sleeves are held in said tubes and are maintained in electrical contact therewith, said sleeves being otherwise freely mounted in said tubes and therefore in said bores, said sleeves being adapted to receive electrodes and to make electrical contact with said electrodes while serving as part of an electric circuit between said electrodes and said tubes, said electrodes being maintained spaced from said tubes by said sleeves.

NATHAN OLSHANSKY.