

(12) UK Patent Application (19) GB (11) 2 031 663 A

(21) Application No 7902028 (72) Inventor:
(22) Date of filing 19 Jan 1979 Hitoya Takahashi
(23) Claims filed 19 Jan 1979 (74) Agents:
(30) Priority data Marks & Clerk
(31) 53/028399U
(32) 8 Mar 1978
(33) Japan (JP)
(43) Application published
23 Apr 1980
(51) INT CL³
H01R 17/04
(52) Domestic classification
H2E 10B 3B2A 3C6C
3E15
(56) Documents cited
GB 1346884
GB 1132904
GB 942144
GB 811589
GB 695439
GB 366644
(58) Field of search
H2E
(71) Applicant:
Hitoya Takahashi, 14-11,
4-chome, Kuramae,
Taito-ku, Tokyo, Japan

(54) A connector plug

(57) A connector plug for a coaxial cable (2) comprises a member (7) providing a terminal for a contact member (6) disposed at the end of a second contact member (4). The member (7) has a portion (7a) having a hole (7c) extending axially, which accommodates a tip of one (2a) of the conductors of the cable (2) which is inserted and electrically connected, thereby providing a stable connection between the member (7) and the conductor (2a).

FIG. 1

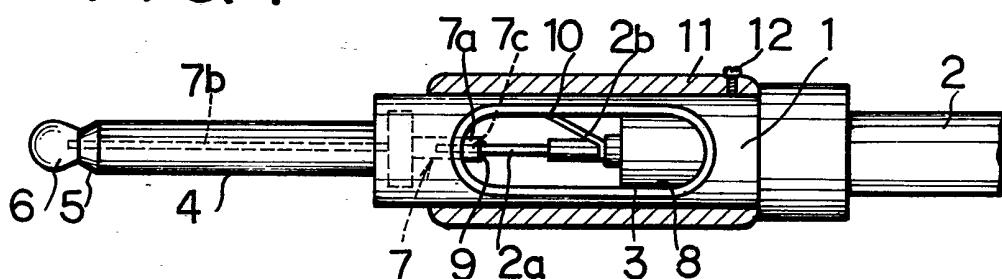


FIG. 1

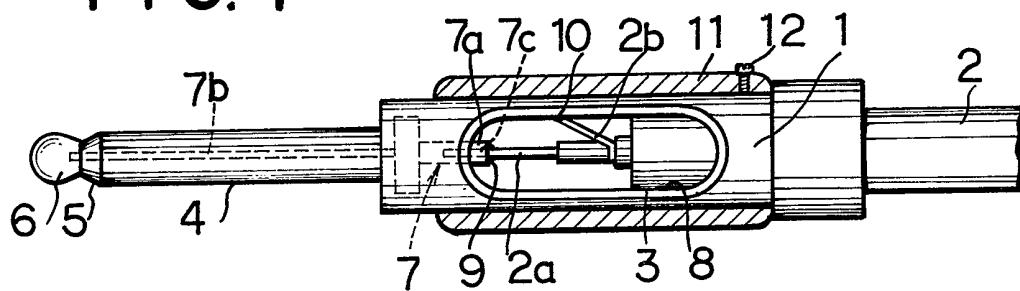


FIG. 2

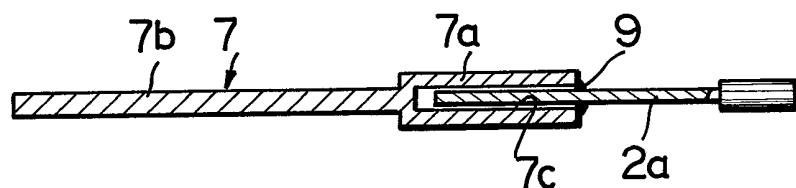


FIG. 3

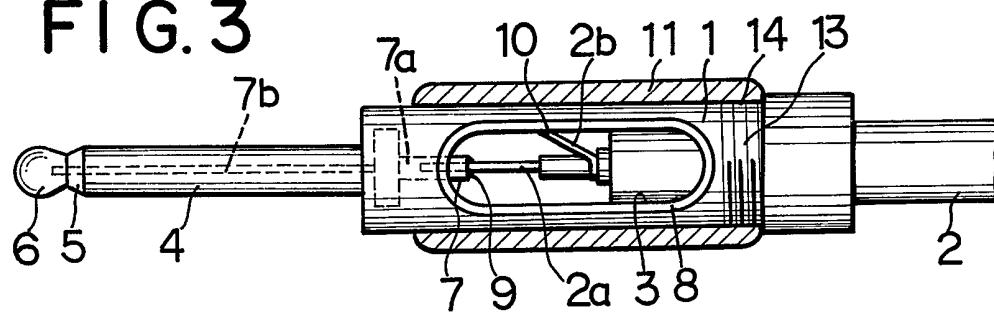


FIG. 4

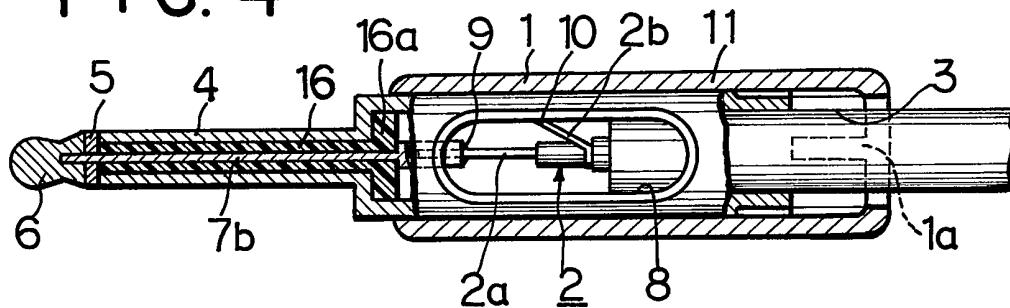


FIG. 5A

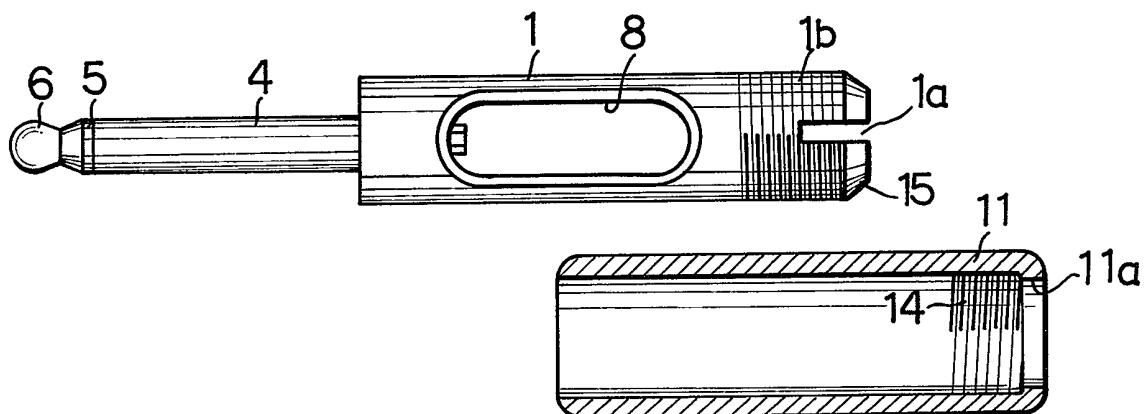


FIG. 5B

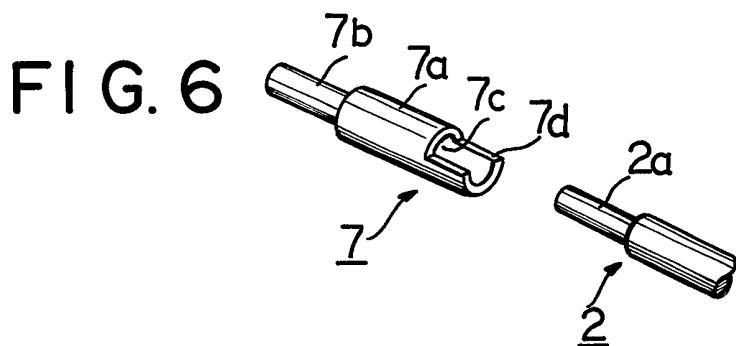


FIG. 7

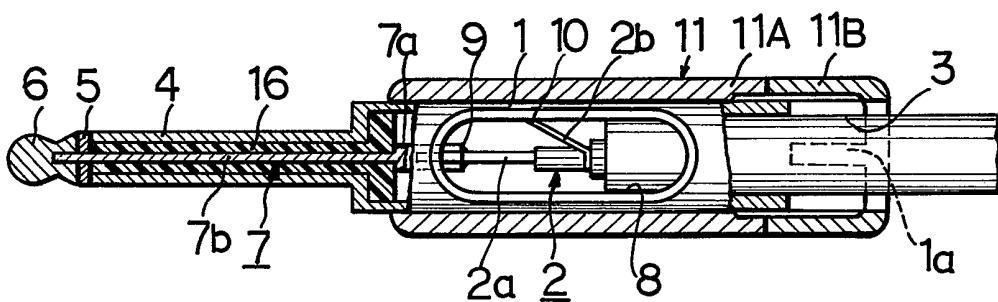
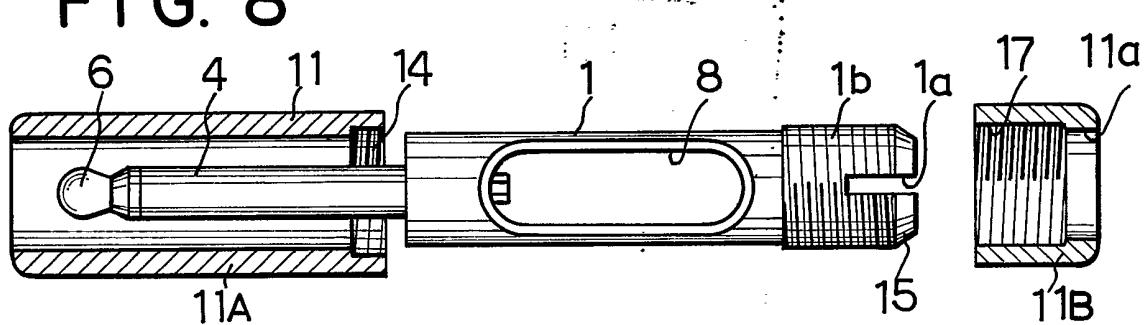


FIG. 8



SPECIFICATION

A connector plug

5 This invention relates to a connector plug for coaxial cables used for electric connection between pieces of electronic equipment such as components of audio systems.

10 A conventional connector plug attached to the end of a coaxial cable comprises a common contactor integrally formed at the top end of a plug body and a hot contactor fitted at the end of the common contactor and an insulating member placed between the contactors. A connecting member or rod penetrating

15 through the common contactor is connected at its one end to the hot contactor and has a connecting portion at the other end which is connected to one of the conductors of the cable. The other conductor is connected to the plug body directly.

20 In the known connector plug the connecting member has the shape of a simple rod so that it is difficult to determine the correct position on the member to which the conductor of the cable is connected by soldering. Further, it does not give a secure connection therebetween, resulting in occurrence of disconnection of the conductor from the rod owing to any shock or the like and of short circuiting between the two conductors of the cable.

30 This invention seeks to provide an improved connector plug which serves to prevent disconnection of the conductor of a cable and short circuiting of conductors of the cable.

35 Therefore, according to the present invention there is provided a connector plug for attachment to the end of a cable and to be electrically connected to the ends of conductors of the cable, comprising a plug body of conducting material which is integrally formed with a common contactor and which has a hole into which the cable may be inserted; a hot

40 contactor mechanically connected to the common contactor so that the two are electrically insulated with respect to one another; a connecting member disposed on the central hole of the common contactor, one end of which is electrically connected to the

45 hot contactor, whilst the other end extends into the interior of the plug body and has an axially extending hole to receive the tip of one of the conductors of the cable; and a cap of an insulating material to cover the plug body.

50 The invention will now be described further, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a side view, partly cut away, of a connector plug embodying this invention;

55 Figure 2 is a section showing the connecting portion between the connecting member of the plug and a conductor of a cable;

Figure 3 shows a side view, partly cut away, of another plug embodying this invention;

60 Figure 4 is a cross section of a further plug embodying this invention;

Figures 5A and 5B show a plug body and a cap

respectively of the plug shown in Figure 3;

Figure 6 is a perspective view of the connecting portion of the connecting member and a conductor to be connected thereto;

Figure 7 is a section of a still further plug embodying this invention; and

Figure 8 shows the plug of Figure 7 disassembled.

70 Referring now to Figure 1, the reference numeral 1 generally designates a tubular plug body of conductive material at one end of which is provided an opening 3 into which a coaxial cable 2 is inserted. The other end of the body 1 integrally forms a tubular portion or common contactor 4 which has a smaller diameter than the body 1. A hot contactor 6 is securely fitted at the further end of the common contactor 4, between which is positioned an insulating member 5 to provide an electrical insulation.

75 In the central hole of the plug body 1 and the common contactor 4 is placed an elongated connecting member 7 having portions 7a and 7b. The portion 7b penetrates through the central hole 3 of the contactor 4 and is electrically connected at one end to the hot contactor 6. The other portion 7a is positioned in the interior of the hollow body 1 and has at one end a hole into which the tip of conductor 2a of the cable 2 is inserted and electrically connected thereto by an amount of solder 9. Another

80 conductor 2b of the cable 2 is electrically connected to the body 1 by an amount of solder 10. As a result, the conductors 2a and 2b are electrically connected to the hot and common contactor 6 and 4, respectively. In order to facilitate the operation for the electrical connection, there is provided an opening 8 in the side wall of the plug body 1.

85 The structure of the connection of the member 7 and the conductor 2a is illustrated in Figure 2 in more detail.

90 One of the major advantages of the construction of this invention is to facilitate the operation for the connection between connecting member 7 and the conductor 2a of the cable 2. Such connection can be made by inserting the tip of the conductor 2a into the hole 7c of the receiving portion 7a and then soldering them to make an electrical and mechanical connection. The hole 7c will serve as a guide to insert the tip of the conductor 2a. Preferably, a portion of the member 7a may be cut out, as shown in Figure 6,

95 to form a lip 7d which helps to easily insert the tip of the conductor 2a of the cable 2 as well as facilitating the flow of an amount of molten solder into the hole 7c.

100 Furthermore, a tubular cap 11 of an insulating material is attached so as to cover the peripheral surface of the body 1 and may be securely fixed in position by means of a screw 12. Alternatively, the cap 11, as shown in Figure 3, may be secured by means of threads 13 and 14 formed on the body 1

105 and the cap 11, respectively. The latter arrangement is convenient in the sense that the attaching and detaching operation of the cap can easily be performed and there is no fear of losing a fitting screw.

110 Figures 4, 5A and 5B illustrate a modified connec-

tor plug embodying this invention. As clearly shown in Figure 5A, the plug body 1 is provided with an end portion having a plurality of slits 1a each of which extends axially from the end of the body 1 to form 5 flexible portions movable inwards. A thread 1b formed on the peripheral surface of the end portion is provided to engage with a thread 14 formed on the inner surface of the cap 11 by inserting the body 1 into the central hole of the cap and turning it in the 10 predetermined direction. The cap 11 also has at its rearmost end a flange 11a extending inwards towards the axis of the plug. The flange 11a will 15 press the flexible portions at tapered surfaces 15 formed at the rearmost end of the body 1 when the body 1 is forcedly screwed into the cap, resulting in a decrease in the diameter of the end of the body 1 to grip the cable penetrating through that portion of the body. In this state the cable 2 cannot move along the 20 axial direction and also cannot rotate around its axis against the plug.

In the embodiment shown in Figure 4, an insulator tube 16 is placed in the space formed between the common contactor 4 and the connecting member 7. The tube 16 has at its end a flange portion 16a which 25 is disposed in the interior of the body 1 and holds the free end of the member 7 in position.

In Figures 7 and 8 is shown another connector plug embodying this invention, which has a modified cap. Namely, the cap 11 utilized in this 30 embodiment comprises two parts 11A and 11B. The part 11A is shaped in tubular form and has a thread at its one end for engagement with the thread 1b of the body 1. The second part 11B is also shaped in a tube having a thread 17 on the inner surface thereof 35 and a flange 11a of the same type as that used in the embodiment shown in Figures 4 and 5. The first and second parts 11A and 11B are screwed from the opposite sides of the body so as to cause the threads 14 and 17 to engage with the same thread 1b. 40 According to the embodiment shown in Figures 7 and 8, the operation for connecting the cable to the plug can be done in such manner that the cable 2 is secured in position by screwing the part 11B to the body 1 and then the part 11A is attached after the 45 connection of the conductors 2a and 2b to the member 7 and body 1 has been made. Therefore, the cable will not be twisted during the operation for attaching the cap 11 to the body 1.

CLAIMS

50 1. A connector plug for attachment to the end of a cable and to be electrically connected to the ends of conductors of the cable, comprising a plug body of conducting material which has a hole into which the cable may be inserted; a hot contactor mechanically connected to the common contactor so that the 55 two are electrically insulated with respect to one another; a connecting member disposed on the central hole of the common contactor, one end of which is electrically connected to the hot contactor, whilst 60 the other end extends into the interior of the plug body and has an axially extending hole to receive the tip of one of the conductors of the cable; and a cap of an insulating material to cover the plug body.

65 2. A connector plug as claimed in Claim 1, 65 wherein there is provided a tip extending from the

end of the receiving portion of the connecting member.

3. A connector plug as claimed in any preceding Claim, wherein the plug body is provided with an opening providing access to enable the operation of connecting the tips of the conductor to the receiver portion to be carried out.
4. A connector plug as claimed in any preceding Claim, wherein an insulating tube is inserted between the common contactor and the connecting member.
5. A connector plug as claimed in any preceding Claim, wherein a plurality of slots extend axially from the end of the plug body opposite the common contactor to form flexible portions movable inwards and wherein the cap may be attached to the plug body so as to apply inward pressure on the flexible portion of the plug body.
6. A connector plug as claimed in any preceding Claim, wherein the cap is screw-threadedly attached to the plug body.
7. A connector plug as claimed in Claim 6, wherein the cap is in two parts.
8. A connector plug substantially as herein described, with reference to and as illustrated in the accompanying drawings.

Printed for Her Majesty's Stationery Office by The Tweeddale Press Ltd., Berwick-upon-Tweed, 1980.
Published at the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.