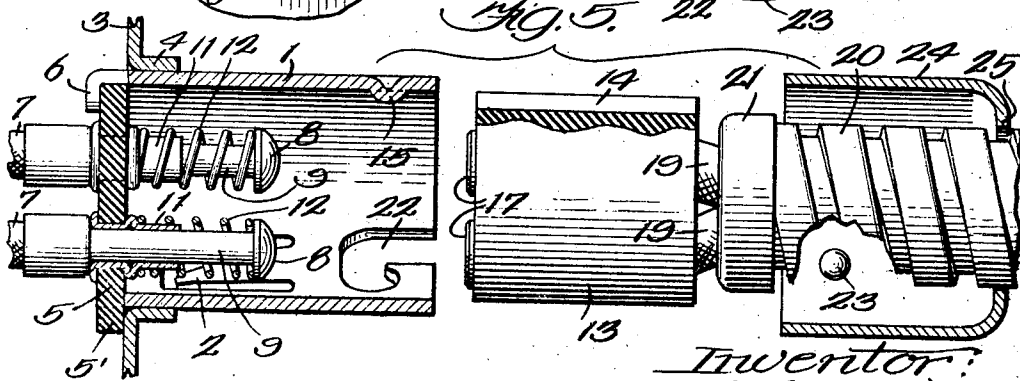
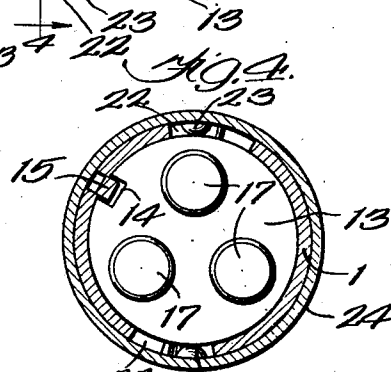
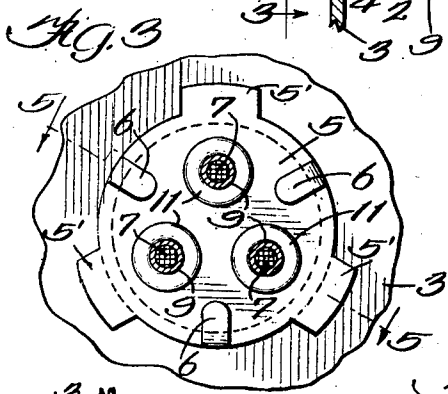
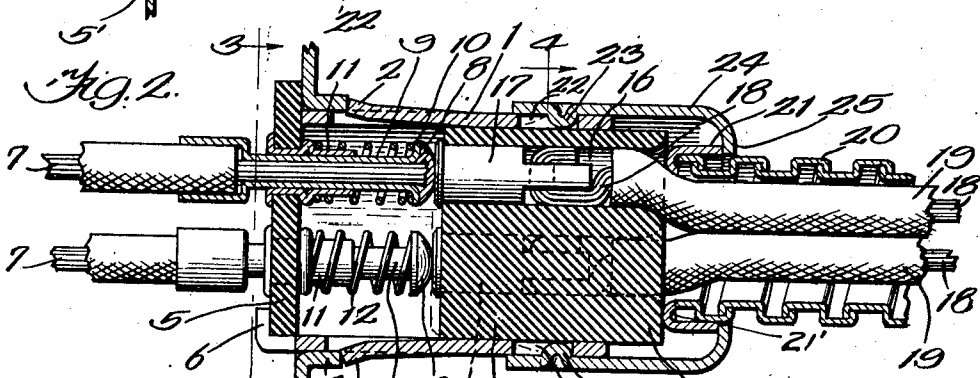
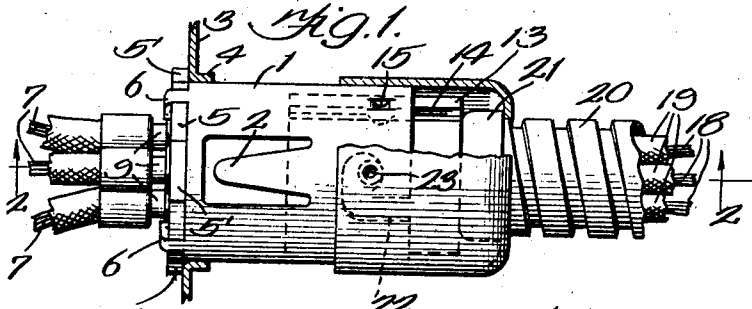


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H. A. DOUGLAS
CIRCUIT CONTINUING DEVICE

1,742,850

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UNITED STATES PATENT OFFICE

HARRY A. DOUGLAS, OF BRONSON, MICHIGAN

CIRCUIT-CONTINUING DEVICE

Application filed May 5, 1928. Serial No. 275,334.

My invention relates to circuit continuing devices and has for its general object the provision of improved means whereby wire enclosing conduits, flexible or otherwise, may be readily coupled with contact enclosing shells where circuit connections are effected.

My invention is of particular service in conjunction with flexible conduits which terminate in annular shoulders and through which circuit wires extend. I provide a coupler having a portion which is engageable with such a shoulder and which is also engageable with a contact enclosing shell whereby the shell and conduit are effectively assembled. In the preferred embodiment of the invention, there is a contact carrying plug within the shell, the plug and shell having engaging formations permitting the plug to move longitudinally and within the shell and obstructing turning movement of the plug with respect to the shell. The afore-said coupler preferably serves to engage the conduit, the shoulder of the conduit preferably, with the plug to hold the plug in a suitable position along the shell to enable the contact thereon to be readily engaged by a complementary contact which is also within the shell. One of these contacts, preferably the contact upon the plug, is desirably rigid and the other contact is preferably spring pressed into engagement therewith.

The invention will be more fully explained in connection with the accompanying drawing in which Fig. 1 illustrates the preferred embodiment thereof, partially in elevation and partially in section; Fig. 2 is a view, mainly in longitudinal section, on a larger scale than Fig. 1; Fig. 3 is a sectional view on line 3—3 of Fig. 2; Fig. 4 is a sectional view on line 4—4 of Fig. 2; and Fig. 5 is a sectional view on line 5—5 of Fig. 3, but with parts in separated relation.

The shell 1 is preferably cylindrical and made of spring metal. Spring tongues 2 are struck from the shell. A shell mounting 3 is provided with a circular hole in which the shell is snugly received, this hole being margined by a shoulder 4. The free ends of the tongues 2 are constrained to project beyond

the shell, these tongues being pressed inwardly as they pass through the opening in the mounting 3 and snapping into engagement with the shoulder 4 when they are moved beyond this shoulder. One end of the shell is closed by an insulating disc 5 which is received within notches at this end of the shell, there being prongs 6 upon the shell that are clinched over the disc. The disc and tongues 2 are so spaced apart that the mounting 3 together with its shoulder 4 are snugly received between said tongues and extended portions 5' of the disc.

Circuit conductors or wires 7 pass through the disc into the interior of the shell, the ends of the conductors that are within the shell being provided with circuit contacts 8 which may be in the form of solder. The conductors 7 pass through hollow metallic shanks 9 which are provided with flanges 10 at their inner ends, the solder 8 being also applied to said flanges. Said shanks pass through tubular guides 11 which, in turn, pass through the disc 5, said tubular guides being riveted against the flat faces of said disc. Coiled springs 12 surround the guides 11 and shanks 9 and press the shanks 9 and the contacts 8 forwardly or inwardly. A cylindrical contacting plug 13 of insulation is received within the unmounted end of the shell 1, this plug being formed with a longitudinal groove 14 which receives a lug 15 which is pressed inwardly from the side of the shell 1. The engaging formations 14 and 15 upon said plug and shell permit movement of the plug along the shell but prevent the plug from being turned with respect to the shell, this latter characteristic being important where the contacts are upon one side of the axis of the shell. Said plug is provided with passages 16 which extend therethrough from end to end, contacts 17 being located at the inner end of the plug and held in position by the lug 15 in alignment with the contacts 8 respectively. Circuit wires or conductors 18 extend into the passages 16 and into connection with the contacts 17, the conductors 7 and 18 being in electrical connection through the contacts 8 and 17 when these contacts are in engagement. The conductors 18 are provided with the usu-

al insulating coverings 19 and pass through a flexible conduit 20 and inwardly beyond this conduit into connection with the contacts 17. Said conduit is inclusive of an annular shoulder 21 which may be in the form of an added ring which is soldered to the contiguous portion of the conduit 20 to form a unitary structure therewith. A body portion of the ring surrounds the inner end of the flexible conduit. An internal annular shoulder 21' is interposed between the plug 13 and the conduit, this shoulder having abutting engagement with the adjacent end face of the conduit.

The shell is provided with bayonet slots or channels 22 which are adapted to receive the bayonet projections 23 which are struck inwardly from the tubular cap 24 which serves as a hollow coupler to hold the conduit 20 in assembly with the shell 1, said coupler being suitably turned for entering the projections 23 within the holding portions of the bayonet channels 22. The coupler has an end wall or portion 25 which engages the shoulder 21, this shoulder bearing upon the portion 25 and the plug 13. The parts are preferably so proportioned that the coupler will force the shoulder 21 of the conduit 20 against the plug 13 and sufficiently against the pressure of the springs 12 to maintain good contact between the contacts 8 and 17 respectively. The coupler may be turned not only with respect to the shell 1 into engagement with the shell, but also with respect to the conduit 20 so as not to twist this conduit.

Changes may be made without departing from the invention.

Having thus described my invention, I claim:

The combination with a shell; of a contact carrying plug within the shell, said plug and shell having engaging formations permitting the plug to move longitudinally of and within the shell and obstructing rotary movement thereof with respect to the shell; a circuit conductor terminating in a contact upon said plug; a conduit through which said conductor passes and beyond one termination of which the conductor extends into the shell; a ring surrounding and secured to said conduit termination and having an internal shoulder in abutting engagement with the adjacent end face of the conduit; and a hollow rotatable coupler through which said conductor extends into the shell and having a portion engaging said ring to hold it against the plug which ring is between this coupler portion and said plug and which coupler serves to hold the conduit in assembled relation with respect to the plug.

In witness whereof, I hereunto subscribe my name.

HARRY A. DOUGLAS.