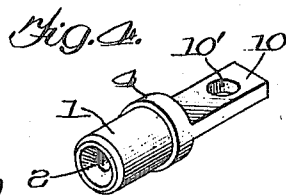
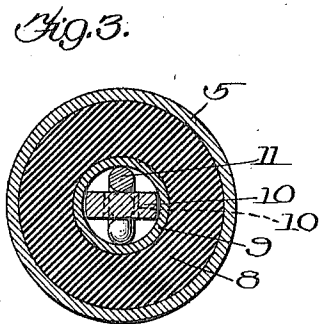
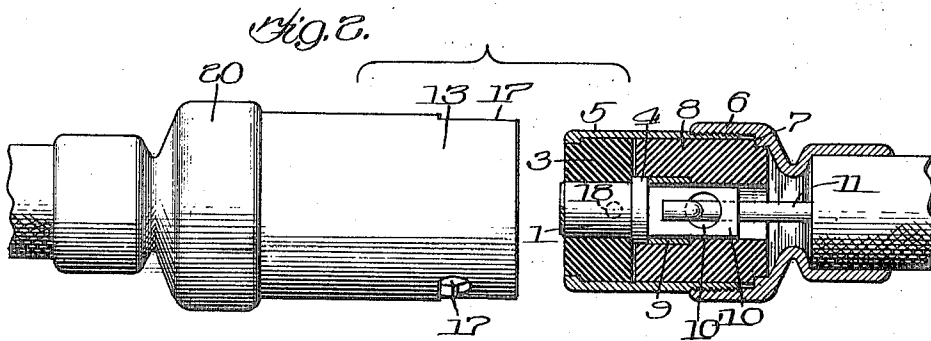
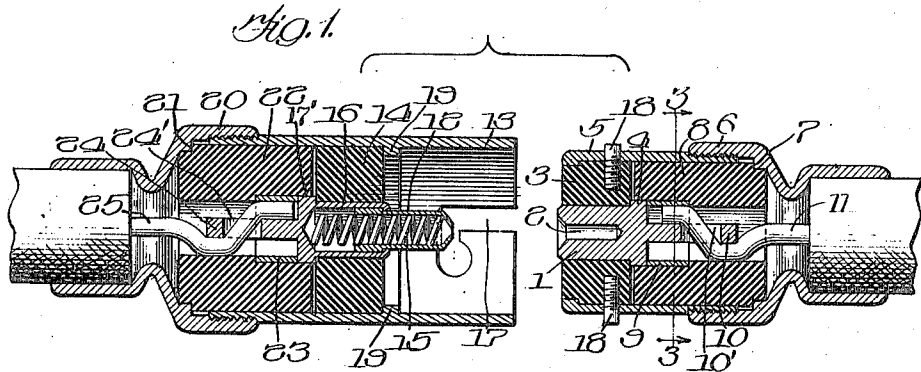


H. A. DOUGLAS.
 TERMINAL CONNECTOR.

APPLICATION FILED AUG. 5, 1913. RENEWED MAY 19, 1916.

1,190,525.

Patented July 11, 1916.



Witnesses:
 Jno. H. Nelson Jr.
 Edwin Nelson

Inventor:
 Harry A. Douglas:
 By L. H. Crapp, Att'y.

UNITED STATES PATENT OFFICE.

HARRY A. DOUGLAS, OF BRONSON, MICHIGAN, ASSIGNOR TO DOUGLAS & RUDD MANUFACTURING COMPANY, OF BRONSON, MICHIGAN, A CORPORATION OF MICHIGAN.

TERMINAL CONNECTOR.

1,190,525.

Specification of Letters Patent.

Patented July 11, 1916.

Application filed August 5, 1913, Serial No. 783,159. Renewed May 19, 1916. Serial No. 98,680.

To all whom it may concern:

Be it known that I, HARRY A. DOUGLAS, citizen of the United States, residing at Bronson, in the county of Branch and State of Michigan, have invented a certain new and useful Improvement in Terminal Connectors, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to terminal connectors useful in coupling sections of flexible connectors for conveying current to translating devices, such as electric lamps, though the invention is not to be limited to the interposition of flexible conductors between the terminal connectors and the translating devices.

The invention has for its general object the provision of a terminal connector whose parts are of simple construction readily assembled and disassembled and by which firm electrical connection is effected between conducting wires and the parts that are to be included in circuit therewith.

I will explain my invention more fully by reference to the accompanying drawing showing the preferred embodiment thereof and in which—

Figure 1 is a view of the plug and socket portions of the connector in separated relation and in longitudinal section; Fig. 2 is a view of these parts in the same relation, partially in section and partially in plan but taken in a direction at right angles to that in which Fig. 1 is taken; Fig. 3 is a sectional view on line 3 3 of Fig. 1; and Fig. 4 is a perspective view of one of the parts illustrated in Fig. 3.

Like parts are indicated by similar characters of reference throughout the different figures.

In the drawing the invention is shown as being embodied in a wire terminal connector located between portions of a flexible conductor, though it is obvious that the terminal connector may be otherwise located, the invention not being limited to the interposition of the flexible conductor between the translating device and the terminal connector of my invention which is to furnish current to the translating device. The connector illustrated also includes plug and socket portions each having structural features embraced in my invention but the in-

vention is not to be limited to a connector in which both the plug and socket portions have the novel characteristics, the invention being embraceable within either such portion. The socket illustrated also includes structural characteristics which are set forth in my co-pending application Serial No. 776,217, filed June 28, 1913.

The plug terminal connector shown includes a metal plug 1 provided with an axial recess 2 formed in accordance with the invention disclosed in my co-pending application Serial No. 783,158, filed August 5, 1914. The metal plug 1 desirably has a smooth cylindrical portion which projects endwise through the insulating sleeve 3, this cylindrical portion of the plug 1 having a circular outsetting flange 4, the cylindrical portion of the plug 1 having snug sliding fit with the bore of the sleeve 3, the flange having butt engagement with the inner end of the sleeve 3. The sleeve 3 is desirably supplemented by a metallic sheath 5 that is inturned at the left hand end of the sleeve 3 and at its other end is threaded there to have threaded engagement with a metal sleeve 6. This latter metal sleeve has an internal shoulder 7 for butt engagement with a sleeve 8 preferably in the form of insulating material. A sleeve 9 is located within the bore of the sleeve 8, this sleeve 9 being received within a cylindrical enlargement of the bore of the sleeve 8 so that the latter sleeve may have butt engagement with the former.

The metal plug 1 includes an inner perforated stem 10 through the perforation 10^a of which an end portion of a circuit conducting wire 11 is passed so that the extreme end portion of this wire will lie upon one side of the stem and a continuing portion of this wire will lie upon the other side of the stem. The bore of the sleeve 9 is of a diameter sufficiently small to engage the wire 11 upon both sides of the stem 10 with sufficient frictional pressure to occasion very firm electrical contact of the wire 11 with the stem 10 and the sleeve 9 whereby the wire 11 is brought into and maintained in firm electrical connection with the plug 1 without the aid of solder or screw clamping means in threaded connection with the plug 1.

The invention being shown in the form of a coupler for joining portions of the flexible

conductor, the contact 12 complementary to the contact 1 (and here shown as being constructed in accordance with my co-pending application Serial No. 776,217, filed June 28, 1913) is inclosed by a shell 13 and is mounted upon a sleeve 14 of insulating material tightly received within the shell 13. The contact 12 is pressed forwardly by a coiled spring 15 bottomed in a metallic sleeve 16, current being carried through the sleeve 16 and the spring 15 to the terminal contact 12. The metal shell 13 projects from the insulating sleeve 14 and is provided with bayonet slots 17 which are adapted to receive bayonet pins 18 carried by the adjacent end of the insulating sleeve 3. When the pins 18 are home in the slots 17 the metal plug 1 presses the terminal 12 inwardly against the force of the spring 15, whereupon the circuit is completed, the connector shown being a single pole connector, though it is obvious that the invention is not to be limited to this single pole device.

The metal sleeve or spring barrel 16 has a smooth cylindrical portion which projects endwise into the insulating sleeve 14, this cylindrical portion of the sleeve 16 having a circular outsetting flange 17¹ in butt engagement with the adjacent end of the sleeve 14. The sleeve or shell 13 is provided with an internal flange 19 having butt engagement with the right hand end of the sleeve 14. The rear end of the sleeve 13 has threaded engagement with the metal sleeve 20. This latter metal sleeve has an internal shoulder 21 for butt engagement with a sleeve 22 preferably of insulating material. A sleeve 23 is located within the bore of the sleeve 22, this sleeve 23 being received within a cylindrical portion of the bore of the sleeve 22 so that the latter sleeve may have butt engagement with the former.

The metal sleeve 16 is provided with an inner perforated stem 24 through the perforations 24¹ of which an end portion of a circuit conducting wire 25 is passed so that the extreme end portion of this wire will lie upon one side of the stem and a continuing portion of this wire will lie upon the other side of the stem. The bore of the sleeve 23 is of a diameter sufficiently small to engage the wire 25 upon both sides of the bore 24 with sufficient frictional pressure to occasion very firm electrical contact of the wire 25 with the stem 24 and the sleeve 23 whereby the wire 25 is brought into and maintained in firm electrical connection with the sleeve 16 without the aid of solder or screw clamping means in threaded connection with the sleeve 16.

In the case of both the plug and socket, where the elements 9 and 23 are made of metal, an electrical connection between the wires and the conducting portions 1 and 16 is further insured by the engagement of the

flanges 4 and 17¹ respectively with the sleeves 9 and 23.

It will be observed that the parts are of simple construction and readily assembled without impairing the desired thorough electrical connection. The parts are also very readily separated for the purpose of repair and replacement. Reference may be had to my co-pending applications as follows: Serial No. 713,317, filed August 5, 1912, Serial No. 714,207, filed August 9, 1912, and Serial No. 776,217, filed June 28, 1913.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but

Having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A terminal connector including a flanged portion through which circuit is to be extended, which portion includes an apertured stem; a conducting wire having an end projected through the aperture of said stem so as to have parts thereof lie upon opposite sides of the stem; a sleeve, which is of insulating material, having a bore in which said portion may slide and shaped to engage the flange of said flanged portion to limit the extent of relative movement of the sleeve and flanged portion; a metal sheath for said sleeve of insulating material; a second sleeve for engaging the flange; and a clamping device in threaded engagement with said sheath and operating upon the second sleeve to force it into engagement with said flange.

2. A terminal connector including a flanged portion through which circuit is to be extended, which portion includes an apertured stem; a conducting wire having an end projected through the aperture of said stem so as to have parts thereof lie upon opposite sides of the stem; a sleeve having a bore in which said portion may slide and shaped to engage the flange of said flanged portion to limit the extent of relative movement of the sleeve and flanged portion; a second sleeve, which is of metal, for engaging the flange; a clamping device co-acting with the first sleeve to force the second sleeve into engagement with said flange, the bore of the second sleeve receiving the wire and stem and being of such diameter as to enable the second sleeve to maintain the wire in firm electrical connection with the stem; and a sleeve of insulating material interposed between said metal sleeve and the clamping means through which interposed sleeve the clamping means operates to press the metal sleeve against the flange.

3. A terminal connector including a

flanged portion through which circuit is to be extended, which portion includes an apertured stem; a conducting wire having an end projected through the aperture of said stem so as to have parts thereof lie upon opposite sides of the stem; a sleeve, which is of insulating material, having a bore in which said portion may slide and shaped to engage the flange of said flanged portion to limit the extent of relative movement of the sleeve and flanged portion; a metal sheath for said sleeve of insulating material, a second sleeve, which is of metal, for engaging the flange; a clamping device in threaded engagement with said sheath and operating upon the second sleeve to force it into engagement with said flange; and a sleeve of insulating material interposed between said metal sleeve and the clamping means through which interposed sleeve the clamping means operates to press the metal sleeve against the flange.

4. A terminal connector including a flanged portion through which circuit is to be extended, which portion includes an apertured stem; a conducting wire having an end projected through the aperture of said stem so as to have parts thereof lie upon opposite sides of the stem; a sleeve having a bore in which said portion may slide and shaped to engage the flange of said flanged

portion to limit the extent of relative movement of the sleeve and flanged portion; a second sleeve for engaging the flange; and a clamping device co-acting with the first sleeve to force the second sleeve into engagement with said flange.

5. A terminal connector including a flanged portion through which circuit is to be extended, which portion includes an apertured stem; a conducting wire having an end projected through the aperture of said stem so as to have parts thereof lie upon opposite sides of the stem; a sleeve having a bore in which said portion may slide and shaped to engage the flange of said flanged portion to limit the extent of relative movement of the sleeve and flanged portion; a second sleeve for engaging the flange; and a clamping device co-acting with the first sleeve to force the second sleeve into engagement with said flange, the bore of one of said sleeves receiving the wire and stem and being of such diameter as to engage the wire and maintain it in firm electrical connection with the stem.

In witness whereof, I hereunto subscribe my name this 30th day of July, A. D. 1913.

HARRY A. DOUGLAS.

Witnesses:

C. H. POWLEY,
LULU B. DAVIS.