July 24, 1928. 1,678,138

H. A. DOUGLAS

CIRCUIT CONNECTER

Filed Nov. 17, 1927

Fig. 1.

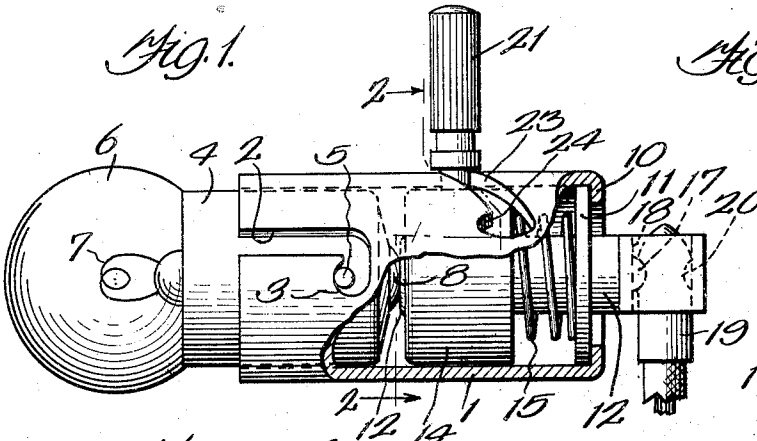


Fig. 2.

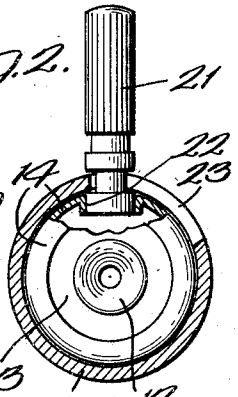


Fig. 3.

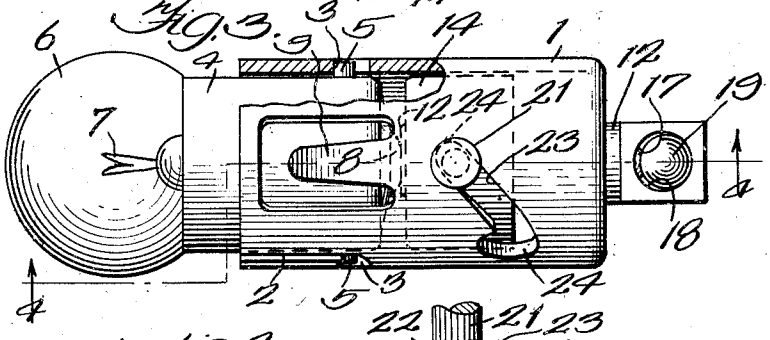


Fig. 4.

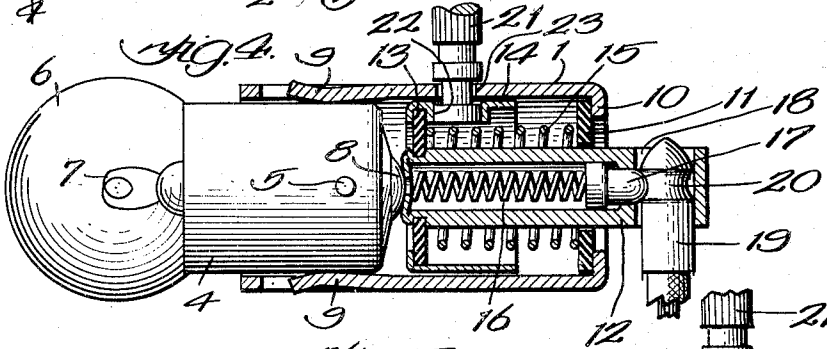
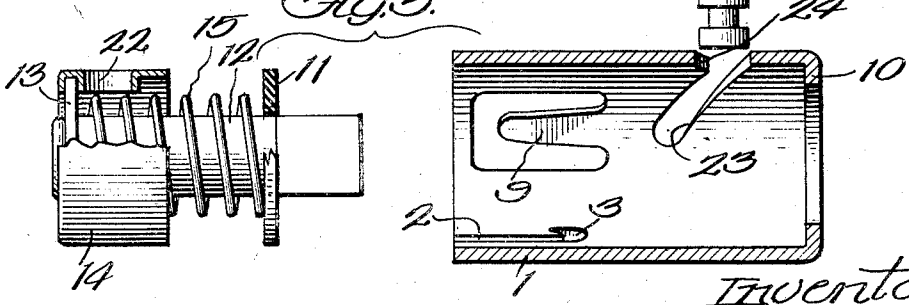


Fig. 5.



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By G. A. Gragg Atty.

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UNITED STATES PATENT OFFICE.

HARRY A. DOUGLAS, OF BRONSON, MICHIGAN.

CIRCUIT CONNECTER.

Application filed November 17, 1927. Serial No. 233,875.

My invention relates to circuit connecters of the type employing a shell which is formed at its front end for the reception of a contact carrying plug and which encloses contacting mechanism whereby the plug and the translating device in connection with the plug may be included in circuit. Such translating device may, for example, be an incandescent lamp carried by the plug.

My invention relates, in particular, to the contacting mechanism in the shell and the association thereof with the shell. In accordance with one feature of my invention, such contacting mechanism includes a tubular contact member which extends from the interior of the shell to the exterior of the shell, this member being provided with a lateral plug receiving opening in the part thereof that is upon the exterior of the shell for receiving a connecting plug which is engageable with a plunger contact that projects from the bore of the tubular contact member into said plug receiving opening whereby the rear end of said plunger contact is engageable by such plug, there being a spring within the bore of said tubular contact member which presses rearwardly upon the plunger contact.

A rearwardly extending skirt member is supported upon the front end of the tubular contact member and surrounds this member, a spring being interposed between the skirt member and an abutment upon the rear end of the shell for urging the tubular contact member forwardly to bring its front end into engagement with a contact upon the plug that is inserted within the shell. A handle is provided upon the side of the skirt and preferably projects through an oblique cam slot that is formed through the shell, the ends of said cam slot constituting seats, the rear seat serving to hold the contact member in a rear and circuit opening position when the handle is caught therein and the front seat serving to limit the forward movement of the tubular contact member in the absence of the contact carrying plug from the shell. When the contact carrying plug is within the shell, the tubular contact member is rearwardly pressed to maintain good contact, the handle being then slightly clear of the forward end of the cam slot.

The invention will be more fully explained by reference to the accompanying drawing in which Fig. 1 is a side elevation, partially in section, showing the preferred form of structure of my invention, the front end of the shell receiving the contact carrying base, of plug form, of an incandescent lamp, a circuit connecting plug being also shown inserted within the lateral opening in the tubular contact member; Fig. 2 is a sectional view taken generally on line 2—2 of Fig. 1; Fig. 3 is a side view, with parts broken away, taken at right angles to the direction in which Fig. 1 is taken; Fig. 4 is a sectional view on line 4—4 of Fig. 1, with parts shown in elevation; and Fig. 5 is a view showing parts in elevation and parts in section, some of these parts being illustrated in separated relation prior to their assembly.

The shell 1 is preferably metallic. It is formed at its front end with bayonet slots 2 having bayonet seats 3. The plug 4 carries bayonet pins 5 which may be passed through the bayonet slots into engagement with the bayonet seats. The plug 4 illustrated happens to be the base of an incandescent lamp 6, one end of the filament 7 of this lamp being connected with the metallic contact button 8 upon the rear end of the base, the other end of the filament being connected with the usual metal sheath which is provided upon the plug. An incandescent lamp provided with such contact carrying base is commonly termed a single pole lamp. The shell is formed with tongues 9 displaced substantially 90 degrees from the slots 2 and pressing inwardly upon the base of the lamp to hold the same substantially stationary with respect to the shell. The rear end of the shell is formed with an annular abutment or insetting shoulder 10 with which a ring 11 of insulating material is in engagement. A metallic tubular contact member 12 extends from the interior of the shell to its exterior, this contact member and the hole of the ring being sustantially coaxial with the contact carrying plug 4 and the contact 8 thereon. The contact member 12 closely approaches the border of the hole in the ring 11 whereby the contact member is substantially maintained coaxial with the ring and plug and guided in its movements along the axis of the structure. Another ring 13 of insulating material is assembled with the front end of the contact member 12 and a metallic tubular member 14

is assembled with the periphery of the ring 13, the elements 13 and 14 thus constituting a skirt member which is carried by the front end of the contact member 12. A coiled spring 15 is interposed between the rings 11 and 13, this spring pressing the front end of the contact member 12 against the contact 8 and also pressing the ring 11 against the abutment 10. A coiled spring 16 is contained within the bore of the contact member 12 and presses rearwardly upon the metallic plunger contact 17 whose rear end extends into a plug receiving opening 18 which is formed laterally in the rear end of the contact member 12 that projects rearwardly beyond the shell 1. A metallic connecting plug 19 is insertable within the opening 18 into engagement with the rear end of the plunger contact 17, said plug having an annular groove 20 which receives the rear end of the contact 17 to hold the plug and this contact in assembly.

The unit that includes the tubular contact member 12 and the skirted members 13 and 14 is movable longitudinally of the shell 1 for the purpose of bringing the front end of the member 12 into and out of engagement with the plug contact 8. I employ a handle 21 for the purpose of effecting the circuit opening and closing movements of the member 12. The inner end of this handle is received within a socket opening 22 formed laterally through the skirt membe. 14. The handle passes through a cam shaped slot 23 which is formed obliquely through the shell 1 whereby the contact member 12 is suitably guided at its front end. When the handle is exactly coaxial with seat 24, it may be withdrawn.

Changes may be made without departing from the invention.

Having thus described my invention, I claim:

1. In a circuit connecter, the combination with a metallic shell formed, at its front end, to receive a contact carrying plug and having an abutment at its other end; of a ring of insulation engaging said abutment; a tubular metallic contact member surrounded by the shell and extending through the rear end thereof and through the hole in the ring close to the border of the hole to be guided thereby, said tubular contact member having a lateral plug receiving opening; a plunger contact within said contact member and which projects from the bore of this member into said plug receiving opening to have its rear end engageable by a plug inserted in said plug receiving opening; a spring within the bore of said contact member and pressing rearwardly upon said plunger contact; a ring of insulation carried upon the front end of said tubular contact; a spring interposed between said rings of insulation and urging the tubular contact member against a contact upon a plug received in the front end of the shell; a skirt secured to the second aforesaid ring and in close proximity to the interior surface of the bore of the shell; and a handle secured to said skirt and projecting through a slot formed through said shell and shaped to locate the handle in a circuit opening position and to permit the handle to have a circuit closing position.

2. In a circuit connecter, the combination with a metallic shell formed, at its front end, to receive a contact carrying plug and having an abutment at its other end; of a tubular contact member surrounded by the shell and extending through the rear end thereof, said tubular contact member having a lateral plug receiving opening; a plunger contact within said contact member and which projects from the bore of this member into said plug receiving opening to have its rear end engageable by a plug inserted in said plug receiving opening; a spring within the bore of said contact member and pressing rearwardly upon said plunger contact; a skirt member carried upon the front end of said tubular contact; a spring interposed between said skirt member and abutment and urging the tubular contact member against a contact upon a plug received in the front end of the shell, the skirt member being in close proximity to the shell; and a handle secured to said skirt and projecting through a slot formed through said shell and shaped to locate the handle in a circuit opening position and to permit the handle to have a circuit closing position.

3. In a circuit connecter, the combination with a shell formed, at its front end to receive a contact carrying plug and having an abutment at its other end; of a tubular contact member surrounded by the shell and extending through the rear end thereof, said tubular contact member having a lateral plug receiving opening; a plunger contact within said contact member and which projects from the bore of this member into said plug receiving opening to have its rear end engageable by a plug inserted in said plug receiving opening; a spring within the bore of said contact member and pressing rearwardly upon said plunger contact; a skirt member secured to the front end of said tubular contact member; a spring interposed between said skirt member and abutment and urging the tubular contact member against a contact upon a plug received in the front end of the shell, the skirt member being in close proximity to the interior surface of the bore of the shell; and a handle secured to said skirt member and projecting through a slot formed through said shell and shaped to locate the handle in a circuit opening position and permitting the handle to have a circuit closing position.

4. In a circuit connecter, the combination with a shell formed, at its front end, to receive a contact carrying plug and having an abutment at its other end; a contact member surrounded by the shell; a skirt member secured to the front end of said contact member; a spring interposed between said skirt member and abutment and urging said contact memer against a contact upon a plug received in the front end of the shell, the skirt member being in close proximity to the interior surface of the bore of the shell; and a handle secured to said skirt member and projecting through a slot formed through said shell and shaped to locate the handle in a circuit opening position and permitting the handle to have a circuit closing position.

5. In a circuit connecter, the combination with a metallic shell formed, at its front end to receive a contact carrying plug and having an abutment at its other end; of a ring of insulation engaging said abutment; a metallic contact member surrounded by the shell and extending through the hole in the ring close to the border of the hole to be guided thereby; a ring of insulation carried upon the front end of said contact member; a spring interposed between said rings of insulation and urging said contact member against a contact upon a plug received in the front end of the shell; a skirt secured to the second aforesaid ring and in close proximity to the interior surface of the bore of the shell; and a handle secured to said skirt and projecting through a slot formed through said shell and shaped to locate the handle in a circuit opening position and to permit the handle to have a circuit closing position.

6. In a circuit connecter, the combination with a metallic shell formed, at its front end, to receive a contact carrying plug and having an abutment at its other end; of a contact member surrounded by the shell; a skirt member carried upon the front end of said contact member; a spring interposed between said skirt member and abutment and urging said contact member against a contact upon a plug received in the front end of the shell, the skirt member being in close proximity to the shell; and a handle secured to said skirt and projecting through a slot formed through said shell and shaped to locate the handle in a circuit opening position and to permit the handle to have a circuit closing position.

7. The combination with a shell formed at its front end for the attachment of a contact carrying plug thereto; of a hollow contact member engageable with a contact upon the plug and projecting through the rear end of the shell, said contact member having a lateral plug receiving opening in its rear end and upon the exterior of the shell; a rearwardly spring pressed contact within said hollow contact member and having its rear end projecting into plug engaging position within said plug receiving opening; and means for moving said hollow contact member into and out of circuit closing position.

In witness whereof, I hereunto subscribe my name.

HARRY A. DOUGLAS.