

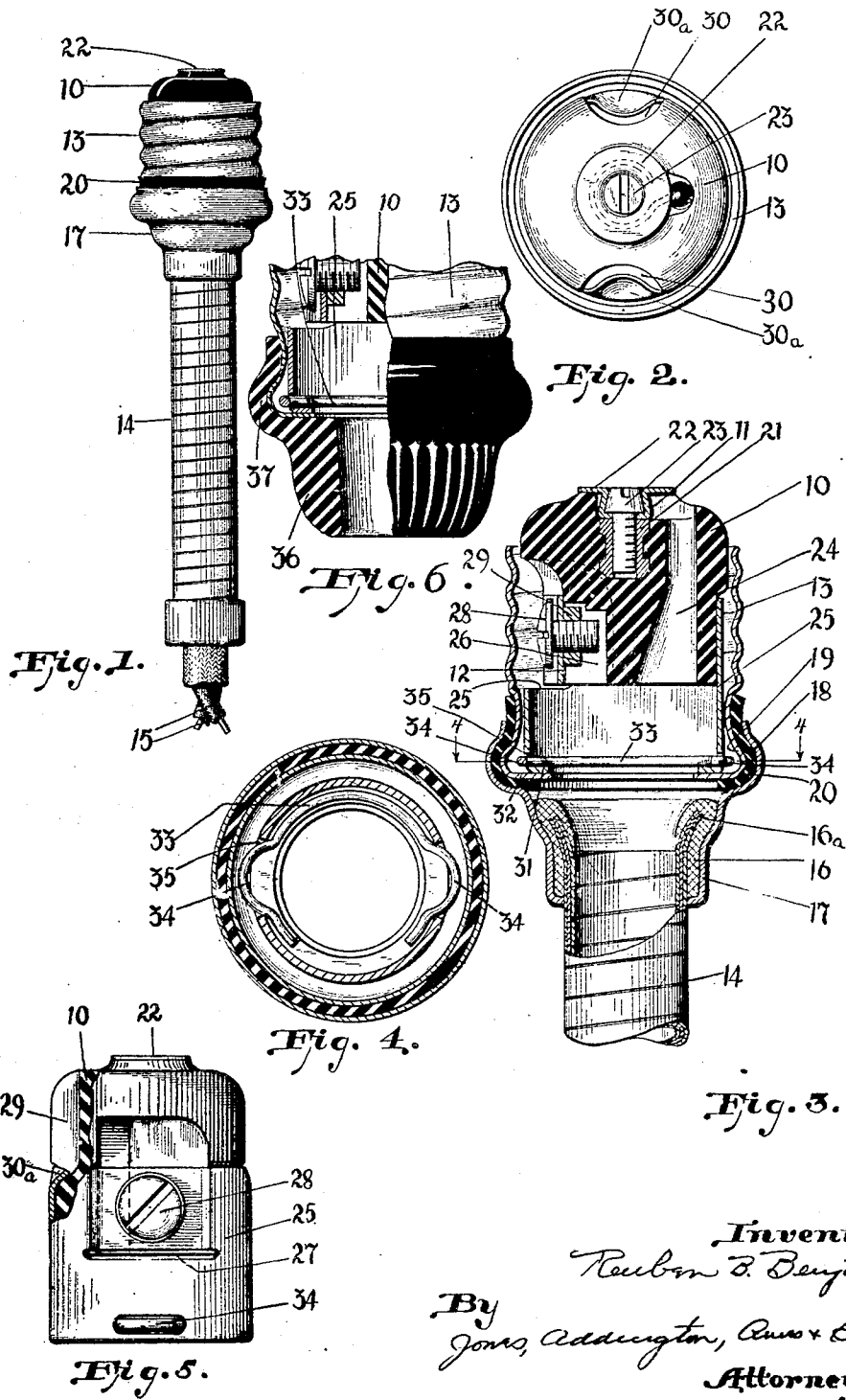
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R. B. BENJAMIN

ATTACHMENT PLUG

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UNITED STATES PATENT OFFICE.

REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BENJAMIN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ATTACHMENT PLUG.

Application filed February 6, 1920. Serial No. 356,673.

To all whom it may concern:

Be it known that I, REUBEN B. BENJAMIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Attachment Plugs, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to electrical connector devices, and more specifically to attachment plugs.

Among the objects of my invention is to provide an improved electrical connector device which shall be efficient and durable in use, simple in construction, easy to assemble and wire, and cheap to manufacture.

Further objects will appear from the detailed description to follow and from the appended claims.

In the drawings, in which two embodiments of my invention are shown:

Fig. 1 is a side elevation of an attachment plug having a swivel shell and a flexible extension handle;

Fig. 2 is a plan view of the plug;

Fig. 3 is an axial section of the plug;

Fig. 4 is a transverse section on the line 4-4 of Fig. 3;

Fig. 5 is a side elevation of a part of a plug; and

Fig. 6 is a view showing a modified form of plug.

Referring first to the construction shown in Figs. 1 to 5 inclusive, this comprises in a general way an insulating base 10, on which are mounted the combined center contact and binding terminal 11 and the binding terminal 12 for the shell contact, a threaded shell contact 13, surrounding the insulating base 10 and swiveled with respect thereto, and electrically connected with the binding terminal 12, and a flexible tubular extension handle 14 secured to the threaded shell contact 15, but insulated from said threaded shell contact. This flexible extension handle 14 forms a tubular passage for the feed wires

15, leading to the wiring terminals 11 and 12 respectively, and also forms a flexible handle for screwing the threaded shell contact 13 into the socket. This tubular flexible extension handle will permit the plug to be easily screwed into a socket, which would otherwise be difficult of access, such as sockets which are located in deep, narrow reflectors and the like. The flexibility of the handle permits the feed wires 15 to extend naturally in the direction in which it is desired they should extend, the handle 14 curving itself to accommodate itself to the direction in which the wires extend.

This flexible handle 14 may be formed of three concentric superimposed spiral metal coils, the intermediate coil being wound in the opposite direction from the inner and outer ones, the three being secured together by a metal casting 16 of lead or other suitable material, in which the upper ends of the coils are embedded, as indicated at 16^a.

The flexible tubular extension handle is secured to the threaded shell contact 13 by means of a cup-shaped sheet metal member 17, in which the lead casting 16 is seated, and in which it is secured by soldering or in any suitable manner, the upper edge of the cup-shaped member being secured to the lower edge of the threaded shell contact 13 by beading the two parts together as indicated at 18 and 19, an insulating fibre sleeve or ring 20 being interposed between the bushings 18 and 19, this ring 20 being pressed to shape in the beading together of the parts 18 and 19.

A flexible handle for an attachment plug is described and claimed in my copending application Serial No. 59,800, filed November 5, 1915, the claims in this case on the flexible handle being directed to features not shown in the earlier filed application.

The center contact and binding terminal construction 11 comprises a metal bushing 21, which may be molded into the insulating base 10, a clamping member 22, which may be a sheet metal stamping under which the bared ends of the feed wires are caught, and

a clamping screw 23 extending through an opening in the sheet metal stamping 22, and threaded into the bushing 21, for pressing the clamping member 22 against the bared ends of the feed wires. A passage 24 is provided in the insulating base for the feed wire leading to this binding terminal construction.

The wiring terminal 12 for the shell contact 13 is electrically connected therewith by means of a sheet metal sleeve member 25, secured to the insulating base 10, and swiveled in the threaded shell contact 13. The insulating base 10 is recessed at 26, to provide clearance for the side binding terminal construction, the material of the sheet metal shell being also pressed inwardly at this point, the sheet metal being slitted at 27 to permit of this pressing in, the binding screw 26 extending through an opening in this pressed in portion of the shell, and being threaded into a nut 29. To further secure the shell 25 in place on the insulating base, it is bumped into a recess 30 in the side of the insulating base as indicated at 30^a. The lower edge of this shell or sleeve 25 is provided with an intumed flange 31 which rests on the intumed flange 32 of the threaded shell contact 13, and is swiveled thereon to form a sliding swivel contact therewith.

In order to detachably hold the insulating base 10 and shell 25 in place in the threaded shell contact 13, a bent wire spring 33 is provided which is slipped inside the shell 25, and has outwardly extending projections 34, which extend through slots 35 in the side of the shell 25 and into the annular recess formed by the beaded portion 19 of the threaded shell contact 13. The insulating base 10 and shell 25 can thus be readily and quickly connected and disconnected with respect to the shell contact 13.

The construction shown in Fig. 6 is similar in all respects to that just described, except that in this form a tubular thumbpiece 36 of molded insulating material is substituted for the flexible tubular handle 14 and its connection. In the form shown in Fig. 6 the lower end of the threaded shell contact 13 is molded into the upper end of the thumbpiece 36 as indicated at 37, the connection between the insulating base 10 and the threaded shell contact 13 being by means of the shell 25 and the bent wire spring 33 as in the form just described.

In wiring the device the insulating base 10 with the shell 25 are slipped out of the threaded shell contact 13, and the wires are led up to the tubular flexible handle 14 and are secured to the binding terminals 11 and 12 respectively. The insulating base 10, with the shell 25 are then slipped back into place in the threaded shell contact 13, the outwardly extending portions 34 of the wire spring 33 snapping into place into the annu-

lar space formed by the outwardly beaded portion 19 of the threaded shell contact.

In screwing the plug into the socket, the threaded shell contact 13 is positioned so as to enter the threaded shell contact of the socket, and the tubular flexible handle 14 is then rotated to screw the threaded shell contact in place in the socket, the insulating base 10 and the feed wires 15, however, not being rotated with the threaded shell contact, as the swivel connection between the threaded shell contact and the insulating base permits the contacts to be screwed in without rotating the base and the feed wires connected therewith.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A swivel attachment plug comprising an insulating base, wiring terminals supported thereby, a threaded shell contact surrounding said insulating base, a cylindrical sleeve also surrounding said insulating base and located inside said threaded shell contact and secured to said insulating base and having a cylindrical portion extending beyond said insulating base and a spring supported by said extension and engaging said threaded shell contact to hold the parts together.

2. A swivel attachment plug comprising an insulating base, wiring terminals supported thereby, a threaded shell contact surrounding said insulating base and swiveled with respect thereto, a cylindrical sleeve also surrounding said insulating base, located inside said threaded shell contact, and secured to said insulating base and having a cylindrical portion extending beyond said insulating base, said cylindrical extension having a slot therein, and a circular spring inside said cylindrical extension and substantially concentric therewith and having a portion extending through said slot for engaging said threaded shell contact to hold the parts together.

3. A swivel attachment plug comprising an insulating base, wiring terminals supported thereby, a threaded shell contact surrounding said insulating base and swiveled with respect thereto, a cylindrical sleeve also surrounding said insulating base, located inside said threaded shell contact, and secured to said insulating base and having a cylindrical portion extending beyond said insulating base, said threaded shell contact having an internal annular channel therein, and a spring supported by said cylindrical extension and substantially concentric therewith and engaging said channel to hold the parts together.

4. A swivel attachment plug comprising an insulating base, wiring terminals supported thereby, a threaded shell contact surrounding said insulating base and swiveled

with respect thereto, a cylindrical sleeve also surrounding said insulating base, located inside said threaded shell contact and secured to said insulating base and having a cylindrical portion extending beyond said insulating base, said cylindrical extension having a slot therein, and a circular bow-spring located inside said extension and substantially concentric therewith and extending through said slot to engage said threaded shell contact to hold the parts together. 10

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.