

C. D. LAKE.
CONNECTOR PLUG.
APPLICATION FILED JAN. 15, 1919.

1,342,819.

Patented June 8, 1920.

Fig. 1

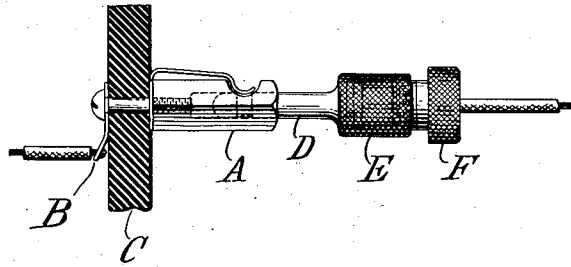


Fig. 2

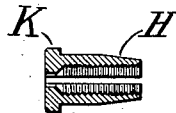
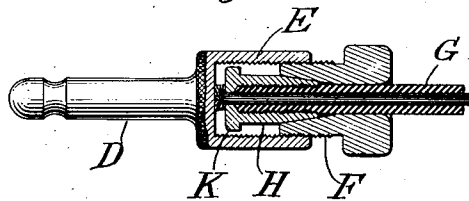


Fig. 3

Inventor
Clair D. Lake
by his Attorneys
Kerr, Page, Cooper & Hayward

UNITED STATES PATENT OFFICE.

CLAIR DENNISON LAKE, OF ENDICOTT, NEW YORK, ASSIGNOR TO THE TABULATING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CONNECTOR-PLUG.

1,342,819.

Specification of Letters Patent.

Patented June 8, 1920.

Application filed January 15, 1919. Serial No. 271,192.

To all whom it may concern:

Be it known that I, CLAIR D. LAKE, a citizen of the United States, residing at Endicott, in the county of Broome and State of New York, have invented certain new and useful Improvements in Connector-Plugs, of which the following is a full, clear, and exact description.

This invention is an improvement in switch or connector plugs for use generally for making temporary electrical connection to or from electric circuits and a switch-board, an electrically operated machine or any similar purpose.

I have been led to devise the plug hereinafter to be described not only from considerations essential to all such devices for securing and maintaining a good electrical connection, but from those which I have observed to be incident to the ordinary use of such devices by those unskilled in the manipulation of the same, due generally to unfamiliarity with their mode of construction. For instance, the ordinary user of a switch plug, in removing it from its socket, almost invariably seizes the insulated wire or cable, or perhaps a group of the same and pulls the plugs forcibly out. It is very difficult to connect up an insulated wire with a plug in such manner that this method of use does not impose an undue strain on either the wire or the insulation, and thereby tend to strip the latter or wear the wire and impair the connection. I have therefore sought to produce a plug which is proof against such misuse, and which retains its integrity even in spite of such severe strains and abuse.

For this purpose I construct the plug in virtually three parts, a plug portion provided in the rear with a screw socket; a connector portion adapted to screw into the socket and for connection with the wire or cable, and an interior collapsible contact sleeve which serves as the means for maintaining the end of the bared wire in contact with the plug socket, and which is of such character or conformation that as the connector is screwed home it is compressed upon the insulation of the wire and serves to bind and grip the entire wire or cable and thus to resist any tendency to separate it from the insulation or injure it in any way when the plug is pulled out of its socket.

This invention is illustrated in the annexed drawing in which—

Figure 1 is a view in elevation of my improved plug inserted in a socket which latter is typical of any suitable and proper device of this nature.

Fig. 2 is a longitudinal section of the plug proper, and

Fig. 3 is an enlarged view in elevation of a split and tapered contact sleeve which forms the above-described collapsible element of the device.

The socket for securing the plug as above intimated may be of any desired construction and is shown as composed of a socket A screwed to or in electrical union with a terminal B, which latter is set in an insulating board, or other support C.

The plug proper is composed of a plug D with an internally threaded socket E in the rear, and a screw connector F adapted to screw into the socket E.

The connector F is hollow and the end of an insulated wire G is passed through it. The entering end of the bore of the connector; i. e., that end which is inside the socket E when the parts are assembled, is conically tapered and into it fits a tapered or conically ended gripping member or sleeve H. This sleeve is hollow and interiorly threaded to clamp upon the insulated part of the wire. The aperture in the forward end of the gripping member is of such size as to permit the metallic conductors of the wire to pass therethrough but not so as to permit the insulation to pass therethrough. The forward end of the sleeve or gripping member H also has a flat head K which forms an abutment over which the conducting wires are spread or massed and by which the wire is forced into close contact with the bottom of socket E when the connector F is threaded into the socket E.

The sleeve or gripping member H is slotted so as to be collapsible when its tapered end is forced into the tapered recess in connector F. This collapsing action firmly clamps the threaded part of the gripping member upon the insulated part of the wire thereby binding same to the plug when connector F is threaded into socket E. At the same time the wires are firmly clamped

both around the small recess and between the end K and the bottom of socket E.

No strain upon the wire which it is capable of withstanding at all will thus tend to injure the plug or to impair the electrical connection which it affords. The wire may be removed or replaced or a worn or an oxidized connection may be repaired without trouble or expense, and a most serviceable plug, capable of all manner of use, is produced.

The specific means shown for causing the connector portion of the device to contract or collapse around the wire as it is screwed or forced home in the plug portion may obviously be greatly varied, and, while I prefer to use the special slotted contact sleeve for this purpose, the invention is not broadly dependent upon such use, as the connector itself might be made collapsible under the same conditions of engagement.

What I claim is:

1. In a switch plug in combination a plug having a socket and a connector fitting the same and receiving a wire therethrough and a combined wire-gripping and conductor-clamping member within the socket, said member having provisions for concurrently clamping itself to the insulated part of the wire and for clamping the conducting part of the wire against the plug.

2. A switch plug composed of a plug member and a connector member, a gripping member within the connector member adapted to be forced into engagement with the insulation of the wire to firmly bind the same to the plug upon the connection of the connector and plug, said gripping member having provision for concurrently forcing the conducting wires into close contact with the plug upon such connection.

3. A switch plug composed of a plug mem-

ber, a connector member and a collapsible gripping member surrounding the insulated part of the wire and adapted to be forced into close engagement with the insulated part of the wire and with the conductor part to firmly bend the wire to the plug.

4. In a switch plug in combination, a plug having an interiorly threaded socket portion, a connector having threads to engage the socket portion and having a tapered interior bore and a gripping member having a tapered end to engage said tapered bore of the connector, said member having an apertured head portion over which head portion the conducting wires are massed and clamped against the end of the socket when said connector and socket are threaded together.

5. In a switch plug in combination, a plug having an interiorly threaded socket portion, a connector threaded to engage the socket portion and having a bore tapered at the inner end, a hollow collapsible interiorly threaded gripping member having a tapered end to be engaged by the tapered end of the connector portion, and having a head end with a reduced aperture to engage the metallic conductors of the wire said gripping member when collapsed and moved longitudinally by the threaded engagement of socket and conductor serving to clamp the interior threads into the insulation of the wire to likewise clamp the reduced apertured end on the wire itself and to clamp the wires projecting through the apertured end firmly between the said end and the end of the plug socket.

In testimony whereof I hereunto affix my signature.

CLAIR DENNISON LAKE.