J. H. KLIEGL.

PLUG SWITCH.

APPLICATION FILED JULY 22, 1907.

963,733.

Patented July 5, 1910.

Fig. 1

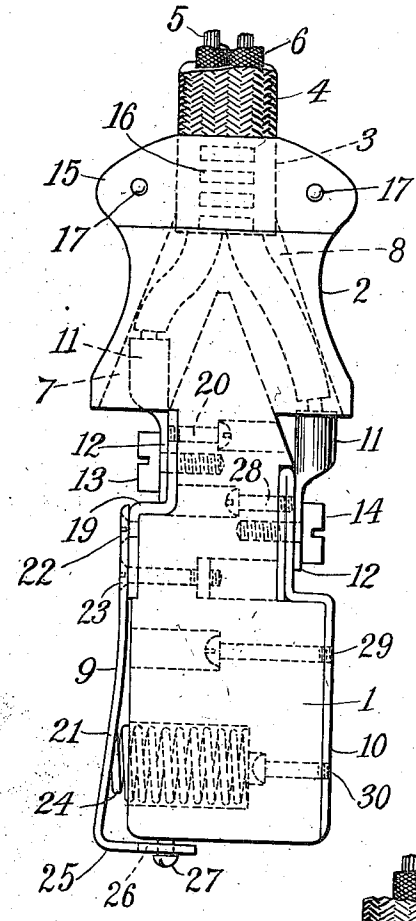


Fig. 2

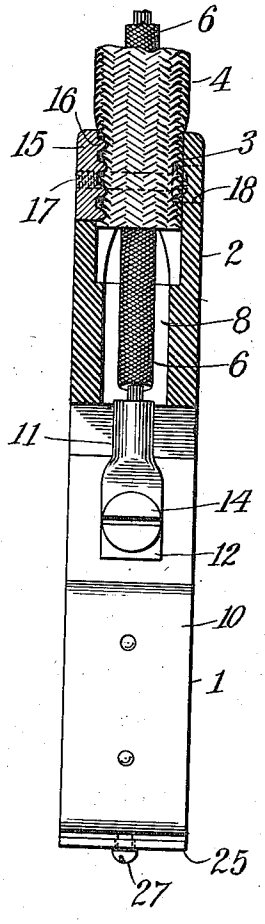
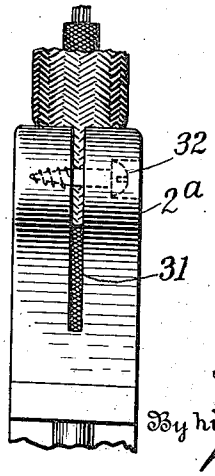


Fig. 3



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UNITED STATES PATENT OFFICE.

JOHN H. KLIEGL, OF NEW YORK, N. Y.

PLUG-SWITCH.

963,733. Specification of Letters Patent. Patented July 5, 1910.

Application filed July 22, 1907. Serial No. 384,853.

To all whom it may concern:

Be it known that I, JOHN H. KLIEGL, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Plug-Switches, of which the following is a specification, reference being had to the drawing accompanying and forming part of the same.

My invention relates to plug-switches or "cut-out plugs," carrying one or more contacts adapted to make electrical connection with a corresponding contact or contacts carried by a device into which the plug is inserted. The contacts of a plug of the kind referred to are electrically connected with the terminals of the electrical conductors through which a circuit is to be established.

One object of the invention is to provide a plug in which the insulation at the ends of the conductors shall be effectively protected, so as to prevent raveling, undue wear, or other injury thereto.

Another object is to provide a plug in which the connections of the conductors and plug contacts shall be relieved of substantially all strain, such, for example as might otherwise be exerted on such connections when the conductors are grasped and pulled to withdraw the plug from the device into which it had been inserted.

A still further object is to provide a plug of this character which shall be simple and compact, and capable of being easily and quickly attached to its conductors.

The invention itself, which consists in the novel features and combinations hereinafter described and more particularly set forth in the claims, will be more readily understood from a description of its preferred form. The latter is illustrated in the annexed drawing, and is designed especially for use with the "cut-out box" described in the prior patent of Anton T. Kliegl and myself, No. 782,857, dated February 21, 1905.

In the drawings, Figure 1 is a side view of the plug attached to a cable containing two conductors. Fig. 2 is an edge view of the plug with the head or top portion of the plug in section. Fig. 3 is an edge view of a modification.

The body, 1, and the head or top, 2, of the plug are of insulating material and are preferably integral with each other and of rectangular cross section, as shown. In the top or head is an aperture or socket 3 large enough to receive the end of the conductor to which the plug is to be attached, in the present instance a cable, 4, containing two conductors, 5, 6. The insulation of the cable at the end thereof is thus inclosed in the top of the plug and so protected from raveling or other injury.

Extending downwardly and laterally from the aperture or socket 3 are two passages, 7, 8, opening preferably at the shoulders at the base of the top or head portion, adjacent to the upper ends of the contacts 9 and 10 mounted on the body 1. Through these passages extend the conductors 5 and 6, as shown, to permit of their being connected to the contacts 9, 10. For the purpose of connecting the conductors to these contacts I prefer to employ terminal members, for example of the type illustrated, each comprising a socketed portion 11, in which the end of the conductor is secured, as by soldering, and a flat portion 12. The latter portions of the terminal members are bound to the upper ends of the contacts 9, 10, by suitable binding screws 13, 14. As shown, the passages 7, 8, are made large enough to permit the terminal members to be passed down through them from the aperture or socket 3, so that the terminal members may be attached to their conductors first, and the latter then inserted in the plug, as illustrated.

For the purpose of binding the cable firmly in the socket 3 the upper portion of the head of the plug is cut away, to a depth sufficient to expose the cable in the socket; and on this cut away portion is a plate 15, preferably provided with teeth or ribs 16 where it engages the cable. The plate is then brought down firmly on the cable by means of screws 17, extending through the plug. The screw holes in the plug are preferably countersunk to receive the screw heads, as indicated in dotted lines at 18 in Fig. 2. This binding plate, particularly when provided with ribs or teeth, as shown, binds the cable securely in its socket, thus effectively preventing any pull or other strain on the cable from being communicated to the connections of the conductors 5, 6, with the contacts 9, 10.

In order to locate the heads of the screws 13, 14, well below the surfaces of the contacts 9, 10, the body of the plug is constructed at the point where it joins the head, as shown. This construction permits the body of the

plug to be inserted full length into the device with which the plug is to be used, for example a socket of the cut-out box illustrated in the prior patent before referred to, so that the shoulders at the base of the head portion will abut against the end of the socket and the terminal members of the conductors, 5, 6, the screws, 13, 14 and other parts associated with the body of the plug will be entirely inclosed when the plug is in use.

The contacts 9, 10, are strips of metal secured to the edges of the body of the plug. The contact 9 is in two parts, one, indicated by 19, being bent to conform to the contracted portion of the body and secured thereto by a screw 20 entering from the opposite edge. The other part of contact 9 is a spring strip 21, secured to the lower portion of the part 19 by a short screw 22, and a bolt 23, the nut of which latter is let into the plug from the opposite edge as shown. The part 21 is pressed outward by a coil spring 24 in an opening in the body, and to limit the outward movement of the part its lower end 25 is bent over the end of the plug and is provided with a slot 26 through which extends a stop-screw 27. The other contact 10, is secured on the plug by screws 28, 29, extending from apertures in the opposite edges, and a screw 30 extending from an aperture in the bottom of the opening which holds the spring 24. Each of the apertures for the screws 28, 29, 30, and for the nut of bolt 23, is, after its screw or bolt is inserted, filled with insulating material, preferably in the nature of a cement, capable of hardening. The fastening devices 28, 29, 30 of the contact 10 are thus effectively concealed and are inaccessible, making the contact practically a permanent part of the body. The fastening devices of the spring portion of the other contact, however, are readily removable, thus permitting replacement of the contact and also the spring 24 if these parts should be damaged.

Instead of using the binding plate method of clamping the cable in its socket, I may use the construction shown in Fig. 3. In this construction the head or top portion 2^a is split longitudinally, as shown at 31. The cable having been inserted, the two parts of the head are brought firmly against the cable by means of screws, one on each side of the cable. One of these screws is shown in dotted lines at 32. In this construction the head of the plug must of course be made of material sufficiently flexible to prevent breakage under the strain produced by the binding screws.

As before stated, the plugs herein specifically described are merely the preferred embodiments of the invention, which may be embodied in various other specific forms without departure from its proper scope as defined by the following claims.

What I claim is:

1. A plug switch comprising a head and a body portion, the former having a socket to receive a conductor cable and having passages branching from the bottom of said socket to receive the conductors composing the cable; contacts on opposite sides of the body portion and extending adjacent to the said branch passages; means for connecting conductors in said passages to the contacts; a binding plate extending across one side of the socket and adapted to engage the side of the cable therein to secure the same in the socket; said binding plate enabling the plug to be withdrawn from its receptacle by pulling on the cable without transmitting the stress to the connections of the conductors and contacts.

2. In a plug switch, a body having in its end a socket to receive an insulated cable, said socket having an open side, a releasable binding plate extending across said open side of the socket to engage the insulated end of the cable and bind the same firmly in the socket, and contacts mounted on said body, for electrical connection with the conductors composing the cable; whereby the plug switch may be withdrawn from its receptacle by pulling on the cable without transmitting the stress to the connections of the conductors and contacts.

3. In a plug switch, a body portion, a contact on one side of the same, fastening devices extending through the body from the opposite side and engaging the said contact to secure the same rigidly in position, a flexible contact mounted on said opposite side and concealing the said fastening devices, detachable fastening devices rigidly securing one end of the flexible contact to the body portion, and a spring mounted in the body portion and engaging said flexible contact at the free end thereof to hold the same yieldingly outward from the body portion.

4. In a plug switch, a body portion, and a head portion, the latter having a conductor socket and branch passages leading therefrom and opening adjacent the body portion, removable contacts on opposite sides of said body portion, terminals resting on the contacts and located adjacent the openings of said passages, and fastening devices projected through the terminals and contacts and engaging the body portion to secure the same in position thereon.

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