

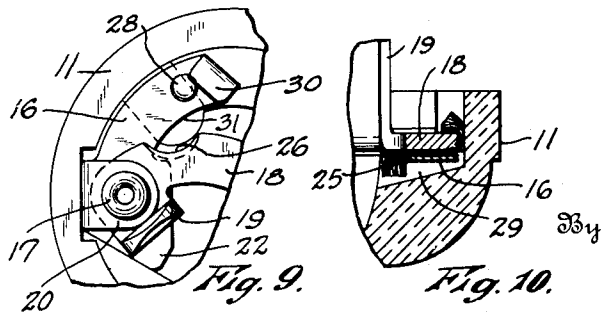
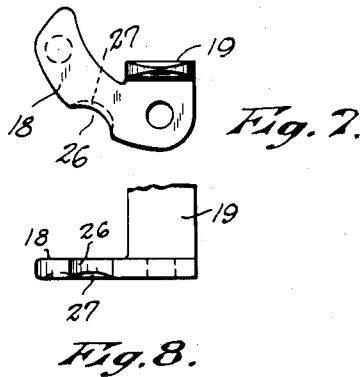
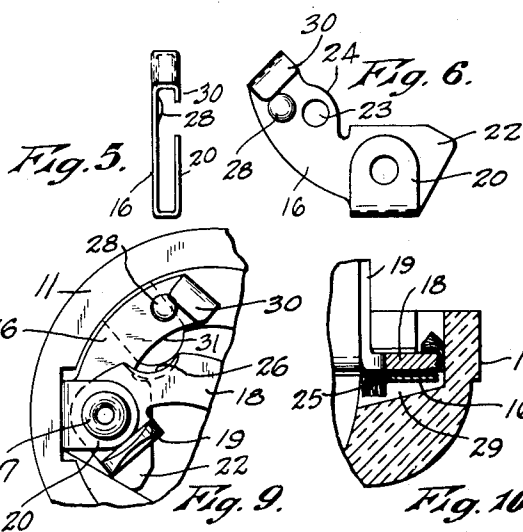
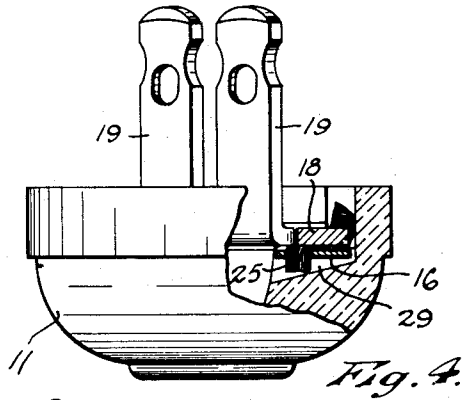
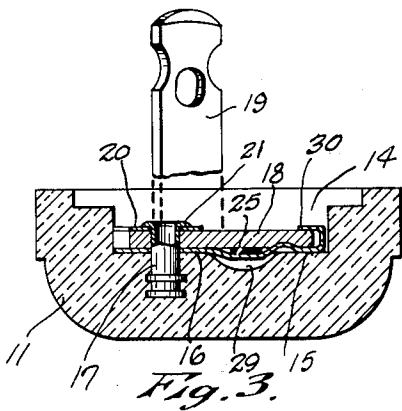
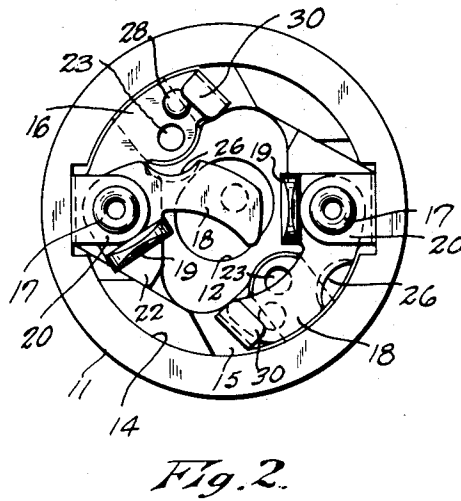
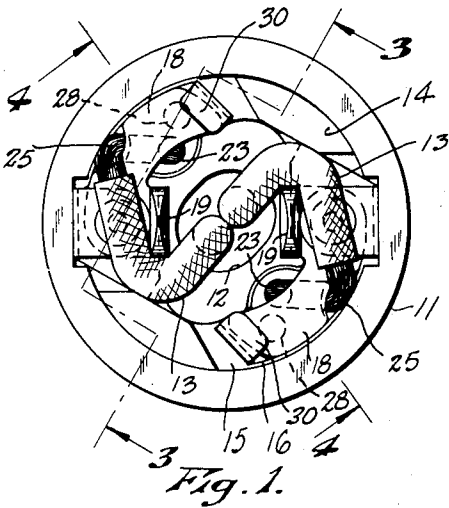
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H. HUBBELL, JR

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WIRE FASTENER FOR PLUG CAPS

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UNITED STATES PATENT OFFICE

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WIRE FASTENER FOR PLUG CAPS

Application filed July 15, 1927. Serial No. 205,860.

This invention relates to a securing means for lead wires for attachment plug caps and the like, and has for an object to provide a simple and improved means for attaching these lead wires which does not require the use of binding screws, and by which the lead wires may be much more rapidly secured than by the use of binding screws.

It is also an object of the invention to provide securing means for these wires in which the pull on the wires will tend to hold the clamping means more securely in clamping position.

It is a still further object of the invention to provide a securing means for lead wires in which each individual strand of a fabricated wire will be securely and permanently held in position so that there is no danger of its working loose and causing a short circuit.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawings forming a part of this specification. In the drawings,

Fig. 1 is a top plan view of an attachment plug cap fitted with my improved lead wire securing means, and showing the lead wires secured in position.

Fig. 2 is a similar view of the cap with the lead wires omitted and showing one of the securing means in the open position to receive a wire.

Fig. 3 is a transverse section substantially on line 3—3 of Fig. 1.

Fig. 4 is a partial side elevation and partial section substantially on line 4—4 of Fig. 1.

Fig. 5 is a side elevation of the base member of the securing means.

Fig. 6 is a top plan view thereof.

Fig. 7 is a top plan view of the holding member and contact blade.

Fig. 8 is a side elevation thereof.

Fig. 9 is a top plan view of a portion of a cap showing the use of a slightly different construction of securing means, and

Fig. 10 is a transverse section thereof.

At the present time the common means for securing lead wires to contact blades of attachment plug caps and the like is by means

of binding post screws. The use of these screws requires considerable time in securing the wires especially where a large number is to be secured, and also great care is required in securing the wires where a fabricated wire is used to make sure that each and every strand of the wire is properly fastened. To overcome these objections I have devised a securing means which does away with the binding post screw and in which a single operation will quickly and positively secure each and every strand of a fabricated wire.

In the accompanying drawings, I have shown this attaching means as applied to an attachment plug cap comprising a body member 11 usually of molded insulated material. This cap has the usual opening 12 for passage of the lead wires 13 and is recessed on one side, as shown at 14, to form a wall 15 at one side of the opening on which the securing means and contacts are mounted. My improved securing means comprises a base member 16, in the present instance formed of resilient sheet metal, which is secured on the wall 15 and by the hollow rivet 17 molded in the body member. Associated with this base member is a holding member comprising a base portion 18 and a contact blade portion 19 arranged at an angle to each other so that the base portion is arranged in a plane transverse the axis of the cap while the contact blade may occupy the usual position and project from the cap substantially parallel with the axis thereof. The base portion of this holding member is pivoted to the base member 16, and to simplify the construction and reduce cost of manufacture the securing rivet 17 is passed through both the base member and holding member, as shown in Fig. 3, to form the pivotal connection between these two members. Both the base member 16 and the base portion 18 are preferably curved to substantially correspond with the curvature of the cap and assume the proper position within the recess 14. The pivot between the two members is located adjacent the connection between the base portion 18 and the end portion 19 and as indicated in Figs. 1 and 2, it is on the opposite side of the blade contact from the opening 12 in the body. To give a

better connection between the two members the base member is provided with an ear 20 passing up around the edge of the base portion 18 and onto the top thereof so that the rivet 17 passes through it and is rolled over, as shown at 21, to secure the two members together and also to secure them to the body. It will be noted that the base member has an extension 22 which engages a side wall of the recess to prevent turning of this member on the securing rivet, while the body portion of this member on the opposite side of the rivet will prevent it turning in the opposite direction. Adjacent its inner edge this member has an opening 23 for passage of the free end of the lead wire, and if desirable the inner edge of this member may be extended laterally, as shown at 24, to give plenty of room for this opening without weakening the body of the base member.

In securing the lead wire the ends of the wire strands 25 are uncovered by removing the insulation for the proper distance in the usual manner and the holding member 18—19 is turned to the position shown at the left of Fig. 2. A convenient way of turning this is by means of a pair of pliers gripping the blade portion 19, although it may, of course, be swung by any means available. The free ends of the exposed strands of the wire are then inserted downwardly through the opening 23. Then the holding member and particularly the base portion 18 is swung back counterclockwise, as viewed in the left hand portion of Fig. 2, to the position shown in Fig. 1. This movement will bend the strands of the wire over the edge of the opening 23 and will clamp these wires between the top of the base member 16 and the under side of the base portion 18, as shown in Figs. 3 and 4. The lead wire is passed over and around the opposite edge of the blade portion 19, as shown in Fig. 1, and it will, therefore, be apparent that a pull on the lead wire, as for instance if the plug be drawn from the receptacle by pulling on the lead wire, will hold the holding member from any tendency to turn inwardly to release the wire and in fact will tend to clamp it more tightly. The outer edge of the base portion 18 is preferably provided with a notch 26 to give room for passage of the wire and the lower edge of this notch is preferably rounded, as shown at 27, so that it will slide more easily onto the wire and will not have a tendency to cut it as the holding member is swung to the closed clamping position.

As the base member 16 is of resilient sheet metal it will yield downwardly to accommodate different sized wires. It is also preferred to strike up a bump 28 in this member to project into a corresponding recess in the under side of the holding member 18 when it is in the clamping position so as to yieldingly hold this member in this position. The

wall of the body 11 is also recessed under the clamping portion of the member 18, as shown at 29, to allow this member to yield downwardly. To insure that the two members 16 and 18 retain their proper relation and also to prevent undue separation thereof by the pressure of the wire, the free end of the member 16 is extended upwardly and over the free end of the member 18 in the shape of a lug 30 so that when the member 18 is swung to the clamping position it will slide under this lug and will be held thereby against lateral movement away from the base member 16.

The form shown in Figs. 9 and 10 is practically the same as that just described, the only difference being that in this form the opening 23 in the base member is omitted and the wire is bent directly over the inner edge 31 of the base member 32, this member corresponding to the member 16 in the first form. The form shown in Fig. 1 with the opening 23, however, is preferred as it gives an extra edge over which the wires are bent giving a greater clamping or holding effect, and also the free ends of the individual strands are retained by the opening 23 so that they cannot separate and possibly come in contact with any element of opposite polarity to form a short circuit. This sliding clamping effect between the member 18 and the wire produces a very good electrical contact and securely clamps the wire without the necessity of setting up screws or the like. The member 18 may be easily and quickly turned to the clamping position by means of a pair of pliers gripping the blade portion 19. Still further the wire if desired may be easily released by merely turning the portion 18 inwardly toward the center of the plug.

Having thus set forth the nature of my invention, what I claim is:

1. A plug cap comprising a body member having an opening for lead wires and a wall at one side of said opening, a base member secured on said wall, a holding member including a base portion and a contact blade portion arranged at an angle to each other, the said base portion being pivoted to the base member to swing toward and from said member in a plane substantially parallel to and closely adjacent the member to clamp a lead wire between said base portion and the base member or to release it.

2. A plug cap comprising a body member having an opening for lead wires and a wall at one side of said opening, a base member of resilient sheet metal mounted on said wall, a holding member including a base portion and a contact blade portion arranged at an angle to each other, means carried by the body for securing the base member thereto and forming a pivotal connection between the base member and said base portion to permit said portion to swing laterally in a plane sub-

stantially parallel to and closely adjacent the base member.

3. A plug cap comprising a body member having an opening for lead wires and a wall at one side of said opening, a base member secured on said wall, a lead wire securing means comprising a holding member including a base portion and a contact blade portion, said base portion being pivoted to the base member to swing in a plane substantially parallel to and closely adjacent the base member and clamp the lead wire between said members, said base member having a laterally extending lug to project over said base portion to prevent it moving laterally away from the base member when in securing position.

4. A plug cap comprising a body member having an opening for lead wires and a wall at one side of said opening, a base member secured on said wall and having an opening therethrough for the free end of a lead wire, a holding member including a base portion and a contact blade portion arranged at an angle to each other, means for securing said members to the body and forming a pivot for the said base portion to permit it to swing in a plane substantially parallel to and closely adjacent the base member and clamp the lead wire between said members.

5. A plug cap comprising a body member having an opening for lead wires and a wall at one side of said opening, a base member of resilient sheet metal mounted on said wall, a holding member comprising a base portion and a contact blade portion arranged at an angle to each other, said base portion being pivoted to the base member at a point adjacent the contact blade on the opposite side of the blade from said opening and arranged to clamp the lead wire against said base member to secure it.

6. A plug cap comprising a body member having an opening for lead wires and a wall at one side of said opening, a base member of resilient sheet metal mounted on said wall and provided with an opening for the free end of a lead wire, a holding member comprising a base portion and a contact portion arranged at an angle to each other, said base portion being pivoted to the base member at a point adjacent the contact blade and arranged to clamp the lead wire against said base member, said base member having a lug extending over the base portion adjacent its free end when it is in holding position to prevent lateral relative movement between the base member and said portion, and cooperating means on said members to yieldingly retain the holding member in wire holding position.

In testimony whereof I affix my signature.
HARVEY HUBBELL, JR.