J. SCHADE, JR.

SPRING FASTENING DEVICE.

APPLICATION FILED DEC. 13, 1906. RENEWED MAR. 13, 1913.

1,208,217. Patented Dec. 12, 1916.

Fig. 8

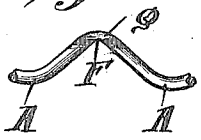


Fig. 9

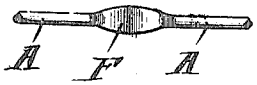


Fig. 1.

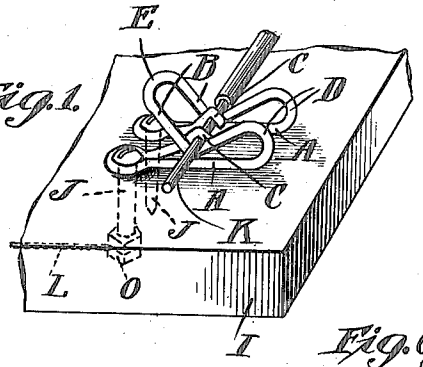


Fig. 2.

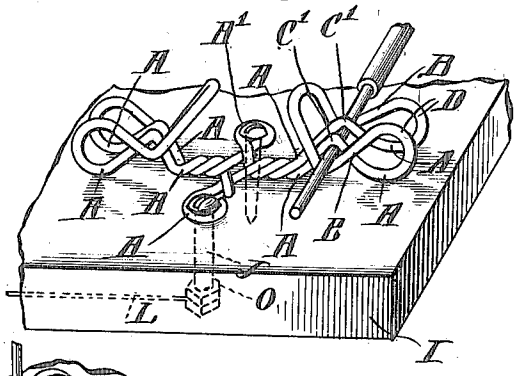


Fig. 6.

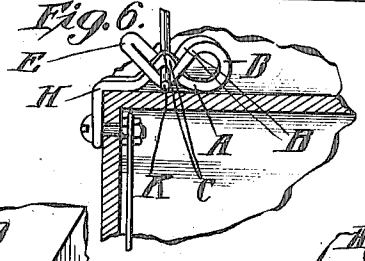


Fig. 3.

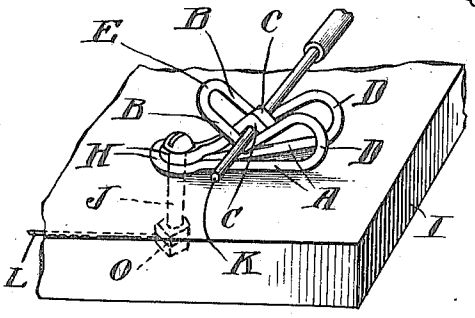


Fig. 4.

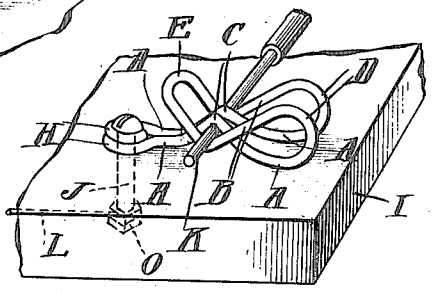


Fig. 7.

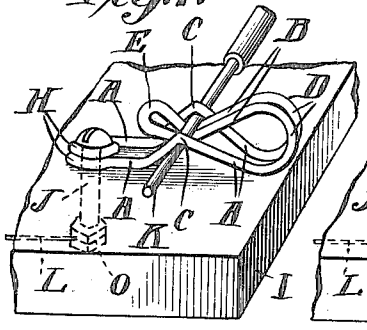
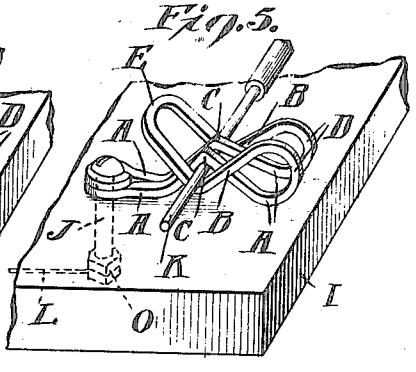


Fig. 5.



Attest:

A. L. O'Brien

Inventor:

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by Dickerson Brown, Ralgener & Binney Attys.

UNITED STATES PATENT OFFICE.

JOHN SCHADE, JR., OF NEW YORK, N. Y., ASSIGNOR TO FAHNESTOCK ELECTRIC COMPANY, A CORPORATION OF WEST VIRGINIA.

SPRING FASTENING DEVICE.

1,208,217. Specification of Letters Patent. Patented Dec. 12, 1916.

Application filed December 13, 1906, Serial No. 347,577. Renewed March 13, 1913. Serial No. 754,128.

To all whom it may concern:

Be it known that I, JOHN SCHADE, Jr., a citizen of the United States, and resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Spring Fastening Devices, of which the following is a specification, accompanied by drawings.

This invention relates to spring terminal clips or fastening devices for the terminals of electrical conductors, and the objects of the invention are to enable the conductor to be firmly gripped and clamped in defined position, permit the ready insertion and removal of the conductor, and insure good electrical contact at all times between the conductor and the fastening device.

This application is a continuation in part of my copending application No. 257,948, filed April 28, 1905, which application resulted in U. S. Patent Reissue No. 12,642, granted April 23, 1907.

Further objects of the invention will hereinafter appear, and to these ends the invention consists of a fastening device for carrying out the above objects embodying the features of construction, combinations of elements and arrangement of parts having the general mode of operation substantially as hereinafter fully described and claimed in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a fastening device embodying the invention and provided with a hooked resistant member; Fig. 2 is a perspective view of a double form of the invention; Fig. 3 is a perspective view of a device like Fig. 1, but requiring but one screw or other device to secure it to the base; Fig. 4 is a perspective view of one half of the double fastening device shown in Fig. 2 and requiring but one screw or other device to secure it to the base; Fig. 5 is a perspective view of a device like Fig. 4, constructed out of wire having an angular cross section as for instance rectangular wire; Fig. 6 is a modification of Fig. 4; Fig. 7 is a modification of the spring fastening device, in which the spring member passes between the portions which form the resistant member; Fig. 8 is a detail side view of the metal at one of the bends of my improved fastening device; Fig. 9 is an inside plan view of the metal at the bend showing the flattening of the wire.

My improved fastening device is preferably made from a single piece of resilient material, as for instance metallic wire, although I am not to be understood as limiting the invention to this particular form of material, for other forms of resilient metal may be found suitable for carrying out the invention. Obviously the device may be made out of a single piece of material, or it may be made out of several pieces if desired, and I am not to be understood as limiting the invention to a fastening device comprised of a single piece of wire.

The fastening device comprises broadly two opposing normally separated members, and a retaining resistant portion of suitable shape projecting toward the opposite member and adapted to co-act therewith to firmly clamp a conductor in defined position when said members are forced into operative relationship.

In order to construct two opposing normally separated members, the piece of wire, if the device is made from one piece, is bent upon itself to bring one member opposite the other and the two legs A may be termed the body member. Both of these legs A are adapted to be secured to a base or support I in any suitable manner as by means of the screws J passing through holes provided therefor by bends of the wire.

In Fig. 1, the construction is such that two screws J are adapted to be used, while in Fig. 3 the construction is such that but one screw is necessary. The body member is thus fixed stationary upon the base or support I, while the opposing member comprising the legs B is adapted to be forced out of its normal position toward the body member, from which it tends to separate under the retractive force of the spring, thus enabling a conductor K to be firmly gripped and clamped in defined position between the spring member B and the stationary resistant or retaining portion comprising the hooked shaped members C shown in Figs. 1 and 3 as extending upwardly from the legs A comprising the body member. The retaining portion C of the body members forms a stationary resistant member,

and these hooks are so constructed and shaped that a conductor is held therein and firmly gripped in defined position in such manner that it cannot be easily withdrawn in a transverse direction while under the influence of the pressure of the spring. Furthermore the hooked ends of the resistant members C are so shaped as to provide a good electrical contact for the conductor. I have found that a substantially V-shaped retaining portion C, forming the resistant member fulfils the object sought when combined with the other coöperating elements of my improved fastening device. I mean by a V-shaped portion, a part having diverging sides and having the general conformation of a V so that a conductor of suitable size when inserted in the angle of the V will make contact at at least two tangential points in the V The wire, as shown is looped on itself to form a spring at D and one end E of the spring member is bent in the reverse direction to the loop D to form with the bend of the loop an angular retaining portion. Preferably, if round wire is used to make the fastening device, it should be flattened on the inside surface of the bends which form the retaining portions of the wire, thereby increasing the area of contact between the fastening device and the electric conductor. In Figs. 8 and 9 this flattening of the wire is illustrated, showing that the interior surface F of the bend is flattened, while the exterior surface G is rounded.

In Fig. 5 the fastening device formed of wire having rectangular cross section is shown, in this instance the wire being substantially square in cross section. By this means the object of increasing the area of contact is accomplished without previously flattening the wire, since said wire has flat surfaces already. Preferably, the angles at the bends of the retaining portions for the wire are less than a right angle or approach as nearly as possible to an acute angle, and this acute angle form of the retaining portions may be obtained by flattening the wire as indicated in Figs. 8 and 9, thus making the angles in which the wire is gripped substantially acute angles. The other conducting wire L, which completes the circuit may be suitably secured in electrical contact with the screw J as by means of the binding nuts O. As shown, the apex of the angle of the resistant member or members C projects upwardly from the body member A toward the spring member and is adapted to co-act with said spring member to clamp a conductor in defined position therein when said members are forced into operative relationship.

In Fig. 2, a double or compound form of the device is shown, in which the body member A is not provided with a separate resistant member C, but the body member itself is bent upwardly to form the resistant member or members C′ formed out of the length of the legs A. These angular resistant members project upwardly toward the spring member B and are adapted to hold and clamp a conductor as in Fig. 1. The single piece of wire is so bent and twisted together that fastening devices are provided opposite each other at each end of the body member A, while said body member formed of twisted wire is provided with loops A′ and adapted to lie upon and be secured to the base I as by means of the screws J. One of these screws is preferably provided with binding nuts O to enable the conducting wire L to be attached thereto and complete the circuit.

In Fig. 4, one half only of the double device shown in Fig. 2 is illustrated, and in this form the ends of the legs A are bent around to form loops H, through which the screw J may pass.

In Fig. 6 a modification of the device is shown in which both legs A of the body member are bent at an angle to the general direction of the body member and adapted to be secured to the side of any support desired. If desired, the ends of the legs A may be bent around into the form of loops H in order to enable the device to be secured to the support.

In Fig. 7 the spring member B, as shown, passes between the resistant members C instead of inclosing them as in the other figures.

I do not herein claim the combination of a dry battery and a spring fastening device having a portion of the body member bent to form an attaching leg, as this invention was made the subject matter of a separate application, Ser. No. 576,872, filed August 12, 1910, which application resulted in United States Patent No. 985,288, granted January 27, 1911. Nor do I herein specifically claim a fastening device for electrical conductors formed of bent spring wire and having at its securing end rings forming an eye, as this invention was made the subject matter of a separate application, Ser. No. 680,498, filed February 28, 1912, which application resulted in United States Patent No. 1,047,897, granted December 17, 1912. Furthermore, I do not herein claim that form of spring clip provided with a broadened foot, in which form there is a body member and a spring member, one of which is provided with an angular resistant portion, as that form of the invention has been made the subject matter of a separate application. Nor do I herein claim any form of spring fastening device having in combination attaching means and conductor engaging means, because such subject matter has been claimed in a separate application.

I claim and desire to obtain by Letters Patent the following:

1. A fastening device for electrical conductors, formed of bent spring wire provided with retaining portions, and having flat contact surfaces inside the bends of said retaining portions for the conductor.

2. A fastening device for electrical conductors comprising a piece of resilient metallic wire, having a body member, a spring member and a resistant member, said spring member and resistant member being bent to form retaining portions for the conductor, and the wire being flattened at the inside surface of said bends forming contact portions for the conductor.

3. A fastening device for electrical conductors comprising a piece of resilient metallic wire, having a body member, a spring member and a resistant member, said spring member and resistant member being bent to form retaining portions for the conductor, the wire having flat contact surfaces inside the bends of the said retaining portions.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN SCHADE, JR.

Witnesses:
CHARLES D. BRANDT,
ERNEST B. FAHNESTOCK.