J. Schade, Jr.

Spring Fastening Device.

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Fig. 1

Fig. 2

Fig. 3

Witnesses:

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JOHN SCHADE, JR., OF BROOKLYN, NEW YORK.

SPRING FASTENING DEVICE.

1,212,821.


Original application filed March 13, 1913, Serial No. 754,128. Divided and this application filed December 23, 1914. Serial No. 878,823.

To all whom it may concern:

Be it known that I, JOHN SCHADE, JR., a citizen of the United States, and a 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 fastening devices for electrical conductors.

The particular form of fastening device upon which the present invention is an improvement in several respects, is that form in which the device is made out of spring wire. It is highly desirable that such a device made out of wire be provided with attaching means for securing the device directly to a support and acting to maintain the device upright and restrain it, when fastened down to the support, from tipping sidewise under transverse strain.

The device should also enable the conductor to be firmly gripped and clamped in a defined position to permit the ready insertion and removal of the conductor and insure good electrical contact at all times between the conductor and the fastening device.

The present application is a division of my co-pending application Serial No. 754,128, filed March 13, 1913, said application being a renewal of my application Serial No. 247,737, filed December 13, 1906.

The invention is illustrated in the accompanying drawings, in which—

Figures 1, 2, 3, 4 and 5 are perspective views of different forms of fastening devices embodying the invention. My improved fastening device is preferably made from a single piece of resilient material, as for instance metallic spring wire, and it may be made out of a single piece of wire or several pieces, if desired. In each of the figures, the spring wire is looped on itself to form body and spring members A and B and as shown, each of said members is formed for substantially its length, of parallel wires. Both the body and spring members A and B are provided with angular retaining portions C and C' at points opposite each other, whereby a conductor may be firmly gripped when the body and spring members A and B are forced into cooperative relationship, and at least one of said angular retaining portions C or C' on the body and spring members A and B is shaped to form a right angle or less, as shown in all the figures. Preferably both the angular retaining portions C and C' of the device are shaped to form a right angle or less.

I have found that a substantially V-shaped retaining portion of 90° or less is most suitable for my purposes, because the conductor K makes contact at least two tangential points with the sides of the V, instead of lying in contact with the retaining portions over an extended surface on the conductor.

The wire of which the spring fastening device is formed may have any suitable shape in cross section and in Figs. 1, 3, 4 and 5, round wire is shown, while in Fig. 2 wire which is rectangular in cross section is shown. In Fig. 2 the area of contact between the conductor K and the fastening device is increased and the same effect can be obtained by flattening the round wire inside the bends of the retaining portions. Although in Figs. 4 and 5 the angular retaining portions C are formed of the ends of the wire, this construction is equivalent to that shown in Figs. 1, 2 and 3, in which the angular retaining portions C are formed by bending the body member A.

In all of the forms of the invention shown in the figures, the spring members B are provided with thumb pieces E which extend outwardly away from the loops D of the device and provide means for forcing the body and spring members into cooperative relationship.

In the forms of the invention shown in the drawings, I have preferred to illustrate the device as made out of a single piece of spring wire looped on itself at D to form opposing normally separated body and spring members A and B, each of said members being composed for substantially their length of parallel wires. Both body and spring members A and B are provided with 100 angular wire retaining portions C and C' at points opposite to each other, the respective wires of the retaining portions lying closely adjacent each other, side by side, so that the conductor K may be inserted transversely between all of the wires of the retaining portions C and C', when the body and spring members are forced into cooperative relationship. At least one of the angular retaining portions C or C' of the body and 110
spring members, is shaped to form a right angle or less, and each separate wire of the angular retaining portion which is equal to a right angle or less, has a pair of opposing points of contact with the conductor K at tangents to the conductor. It will be seen that such pairs of tangential contacts on separate wires lie in a plane nearer to the center of the conductor K than said plane is to the apex of the said angular retaining portion. This construction causes the conductor to become firmly wedged within the angle of the retaining portion so that it is gripped and held in defined position between the opposing points of contact on the separate wires of the said retaining portion. It is for this reason that one at least, and preferably both of the angular retaining portions C and C' are shaped to form a right angle or less. In the forms of the invention illustrated, both, or at least one of the ends H of the lengths of wire forming the devices, are bent to form a broadened foot adapted to lie flat upon a base or support I and capable of receiving a securing device J for securing the spring fastening device directly to the support I. The broadened foot formed by the portions H also acts to maintain the clip upright and restrain it, when fastened down to the support, from tipping sidewise under transverse strain.

The other terminal of the circuit L may be secured to the securing device J, as by means of the nut O.

In Fig. 1 the angular resistant or retaining portions C of the body member are enclosed by the angular retaining portion C' of the spring member and this same construction is true of Fig. 2.

In Fig. 3 the angular resistant or retaining portions C of the body member inclose the angular resistant or retaining portion C' of the spring member.

In Fig. 4 the projecting hooked ends forming the resistant or retaining portion C of the body member A are inclosed by the angular retaining portion C' of the spring member B, and in Fig. 5 the construction is similar to that shown in Fig. 4, except that the portions H of the free ends of the wires are brought together, instead of being separated, as in Fig. 4.

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

A spring fastening device for electrical conductors, made of spring wire looped on itself to form opposing body and spring members, each composed for substantially their length of parallel wires, and both having angular wire retaining portions at opposite points, the respective wires of said retaining portions lying closely adjacent each other, side by side, whereby the conductor may be inserted transversely between all of the wires of said retaining portions when said body and spring members are forced into cooperative relationship, at least one of said angular retaining portions being shaped to form a right angle or less, having opposing points of contact with the conductor at tangents to the conductor lying in a plane nearer to the center of the conductor than to the apex of the said angular retaining portion, thereby causing the conductor to become firmly wedged within the said angle of said retaining portion and gripped and held in defined position between the opposing points of contact on the separate wires of said retaining portion, one of said body or spring members extending beyond the angular wire retaining portion of said member and in a direction away from the loop of the fastening device, said extension having a broadened foot adapted to lie flat upon a base or support, and acting to maintain the device upright and restrain it, when fastened, from tipping sidewise under transverse strain, whereby the fastening device may be secured to a base or support.

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

JOHN SCHADE, Jr.

Witnesses:
E. B. FARNSTOCK,
S. E. FAUCETT.