Feb. 12, 1952 L. JOHNSON 2,585,249

CLIP FOR HOLDING ELECTRICAL CONDUCTING WIRES TO INSULATING SUPPORTS

Filed Nov. 15, 1948

Fig. 1.

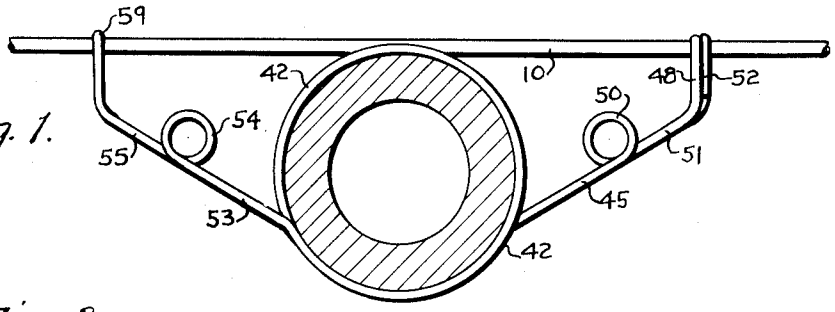


Fig. 2.

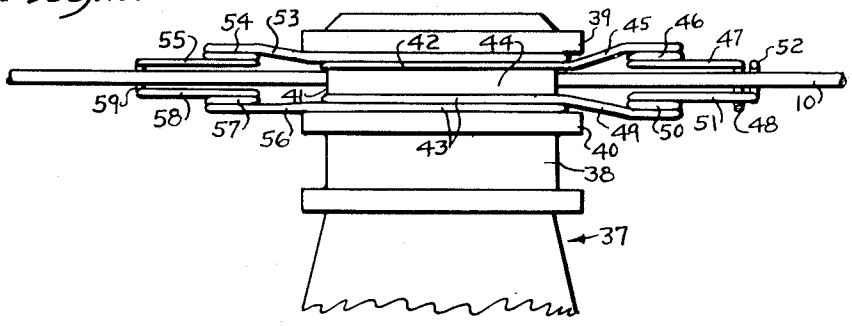


Fig. 3.

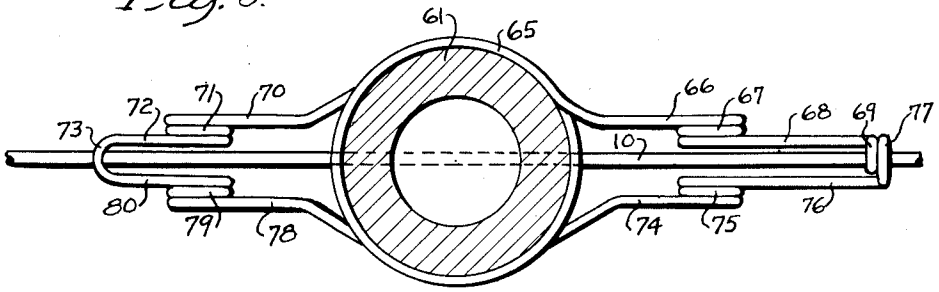
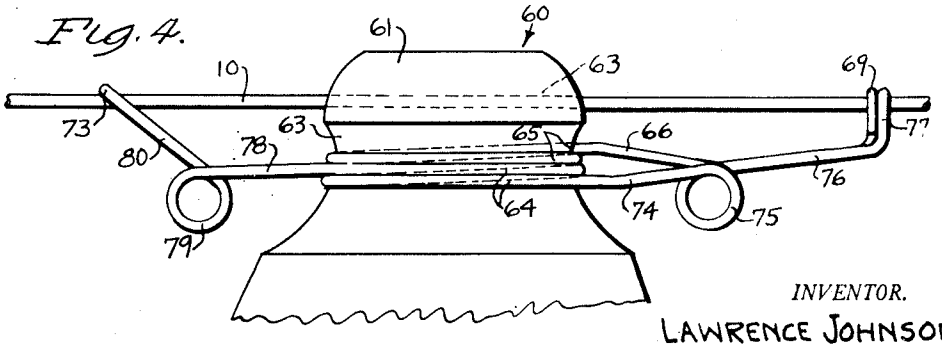


Fig. 4.



INVENTOR.

LAWRENCE JOHNSON

BY

P. A. Whiteley

Attorney

Patented Feb. 12, 1952

2,585,249

UNITED STATES PATENT OFFICE

2,585,249

CLIP FOR HOLDING ELECTRICAL CONDUCTING WIRES TO INSULATING SUPPORTS

Lawrence Johnson, Princeton, Minn.

Application November 15, 1948, Serial No. 60,148

1 Claim. (Cl. 24—81)

1

My invention relates to a clip for holding electrical conducting wires to insulating supports, and has for its object to provide such a clip wherein a constant force, preferably a spring force, will be exerted upon the wire to take up slack due to increase in temperature and hold the wire at all times taut and substantially straight.

In mounting electrical conducting wires, particularly high tension line wires, upon insulating supports secured to poles or cross arms carried by the poles, a serious difficulty has been encountered because during hot weather the wire expands longitudinally and may sag between pairs of the poles and become loose at points of support so that strong winds can move the wire off of its insulating support and it then may contact a part of the cross-bar or pole, and a short circuit results.

I have discovered an effective means of remedying this difficulty, which consists in forming the holding clip with spring wire arms adapted to be easily brought about the line wire itself, in which arms there are formed spring means such as coiled springs. The coiled springs operate to put pressure upon the line wire on each side of its contact with the insulating support, tending to draw the wire at its opposite sides toward the support. It follows that as the wire expands from increase of temperature of the surrounding air, these spring means operate to take up the slack and not only hold the wire straight, but continue to hold it firmly in contact with the insulating support.

It is a principal object of my invention, therefore, to provide a clip for holding electrical conducting wires upon an insulating support wherein means are provided to exercise a laterally directed pressure upon the wire on each side of the support, thereby to take up slack from high temperatures, and to continuously hold the wire firmly in contact with and as clipped to the wire.

It is a further object of my invention to provide such a clip of spring wire which is formed and shaped so as to provide a closed loop at one end and overlapping hooks at the other end for being brought over the line wire, rendering the clip easy of attachment to the line wire and to the insulating support.

It is a further object of my invention to form the wire composing the clip in its entirety in two line-wire-contacting arms and with coiled springs formed on said arms which will exert force laterally upon the line wire in opposition

2

to its point of contact with the insulating support, tending thereby to draw the line wire toward said point of contact and to take up slack due to expansion of the wire from increased temperature of the air, and to hold the wire at all times and under all conditions of temperatures firmly upon and at its point of contact with the insulating support.

It is a further object of my invention to provide oppositely extending arms which have portions for contacting the line wire on opposite sides of its point of contact with the insulating support, so the pressure exerted upon the line wire and by coiled springs on each arm to take up slack holds the wire substantially in firm contact with the insulating support will be exerted on each side of said point of contact.

It is a further and important object of my invention to form the entire clip, including the coiled springs and the clip arms, loop and hooks, of one single piece of spring steel wire.

The full objects and advantages of my invention will appear in connection with the detailed description given in the following specification, and the novel features of the invention by which the aforesaid important and advantageous results are obtained will be particularly pointed out in the claim.

In the drawings illustrating my invention as applied to a line wire and to insulating supports of different types, some of the forms of my invention are shown.

Fig. 1 is a sectional or top plan view of one form of my clip applied to a conventional insulating device.

Fig. 2 is a side elevation view of the parts shown in Fig. 1.

Fig. 3 is a top plan view of another form showing my clip holding a line wire upon a different form of insulating support.

Fig. 4 is a side elevation view of what is shown in Fig. 3.

As illustrated in the drawings, the numeral 10 in each form thereof designates any line wire for conveying electric current, such as telephone, telegraph or electrical wires for conducting ordinary and high tension electricity, being held in position upon a common form of insulating support by application thereto of my clip.

Referring to the form of my invention shown in Figs. 1 and 2, a conventional form of insulating support, designated generally as 37, is provided.

This has a central core piece 38 and a pair of flanges 39 and 40 with an annular groove 41 be-

tween them. As clearly indicated, the clip member includes a pair of spaced-apart arms formed into loops 42 and 43 which surround the core piece 44 in the annular groove 41. These loops are readily expansible to a diameter large enough easily to slip over the top of flange 39.

From loop 42 is a single wire extension 45 which is connected by a spring coil 46 with a second extension 47. The extension 47 is formed into a hook-like loop 48.

Similarly the wire loop 43 is provided with an extension 49 which is connected by a coil spring 50 with a second extension 51 and that in turn with a second loop 52. As clearly indicated in Fig. 1, the two hook members 48 and 52 can be separated so as to bring the wire 10 within the loop formed by the hook members 48 and 52.

Similarly the loop 42 at its other end is provided with an extension 53 which is connected by a coiled spring 54 with a second extension 55. And loop 43 is provided with a corresponding extension 56 which is connected by a coiled spring 57 with a second extension 58. And a recurrent bend 59 connects the ends of the extensions 55 and 58 to receive the line wire 10 when the hook parts of the clip are separated before loops 42 and 43 are passed about the core portion 44.

The final assembly of the clip and the line wire 10 can then be effected by separating the hook loops 48 and 52 laterally to pass the line wire 10 between these loops and so as thereafter to be held in contact with the insulating support by them.

Referring now to Figs. 3 and 4 a second type of insulating support is indicated generally by the reference numeral 60. This support has a cap piece 61 which has a transverse groove 62 across its top. The line wire 10 lies in the groove 62 as shown in full lines in Fig. 3 and in dotted lines in Fig. 4.

Below the cap piece 61 is a groove portion 63 with a curved bottom. Within this groove, loops of wire 64 and 65 are introduced over cap 61 and lie in groove 63.

Having reference to Fig. 3, one end of loop 64 has an extension 66 which is connected by a coil spring 67 with a second extension 68 and that in turn has formed at its end a loop 69. The other end of coil 64 has an extension 70 which is connected by a coil spring 71 with a second extension 72 and that in turn is connected by loop 73 with the parts connected with the other and parallel part of the clip.

Loop 65 is formed with the extension 74 in one direction. A coil spring 75 connects extension 74 with a second extension 76 which in turn carries at its end the open loop 77.

In similar manner loop 64 has an extension 78 which is connected through coil spring 79 with a second extension 80. The extension 80 in turn forms the other leg of the loop 73.

In each of the types shown in Figs. 1 and 2 and Figs. 3 and 4 respectively, the extensions 51, 47, and 53, 56 beyond the spring members 50 and 46, and 57 and 54 are turned upwardly so that in applying the clip to the line wire 10 on either support 37 or the support 60 the above noted arms will have to be moved to the position shown, against the force of the several springs so that they will hold the wire 10 in the form of Fig. 1 firmly within the annular groove 44 or in the form of Figs. 3 and 4, firmly held in the slot 62.

The advantages of my invention will clearly appear from the foregoing description. A primary and principal advantage resides in the fact that in each of the forms of the clip heretofore described, the wire 10 is always constrained to hold the various coil springs referred to under tension, so that the wire is forced toward the point where it contacts the insulating holder and thus when expansion slack takes place from a warmer atmospheric temperature, the slack in the line wire is taken up, and it is constantly held firmly in position to the insulating support.

I claim:

A clamp for attaching a line wire to an insulator, consisting of a single piece of spring wire which is bent at its center to engage the line wire at the center bend and on one side of the insulator, the free ends of the spring wire formed into opposing overlapping hooks which engage the line wire on the opposite side of the insulator, each portion of the spring wire between the center bend and the free ends having a central coil formed therein which is adapted to resiliently encircle the insulator and hold the line wire in contact with the insulator, each of said portions of the spring wire having an additional coil formed on either side of the central coil, said last named coils placing additional tension on the line wire on either side of the insulator to take up slack in the line wire.

LAWRENCE JOHNSON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
882,095	Callane	Mar. 17, 1908
2,234,656	Schmalz	Mar. 11, 1941

FOREIGN PATENTS

Number	Country	Date
12,694	Netherlands	Feb. 16, 1925