L. STEINBERGER.

INSULATED SUPPORT FOR ELECTRICAL CONDUCTORS.

APPLICATION FILED FEB. 1, 1919.

1,342,310.

Patented June 1, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

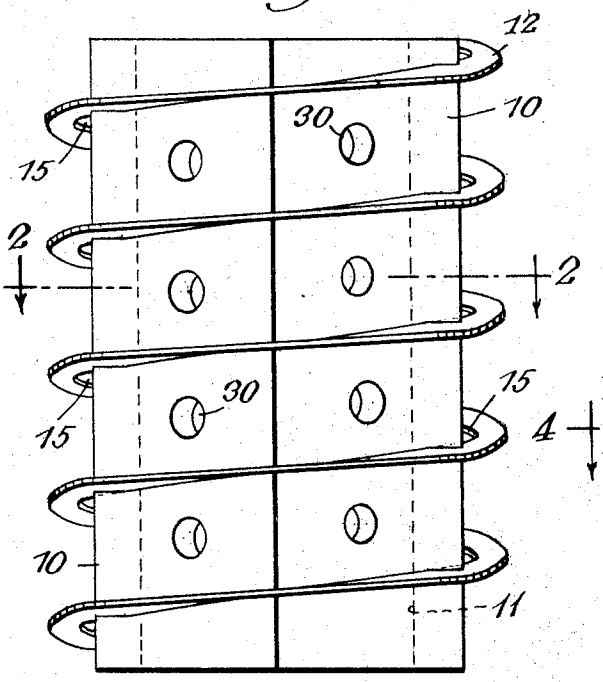


Fig. 3.

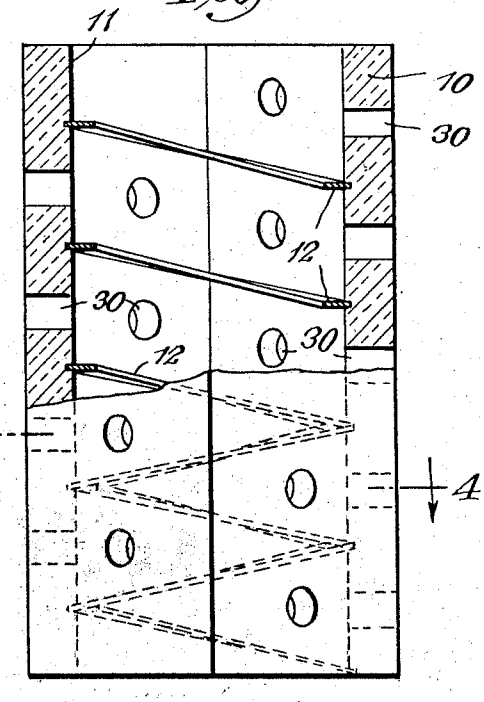


Fig. 2

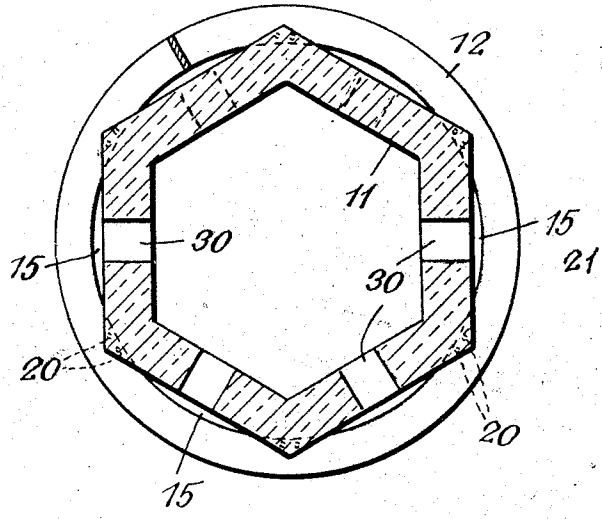
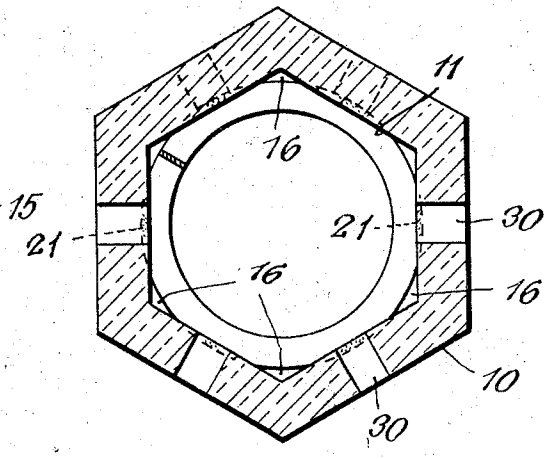


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 6.

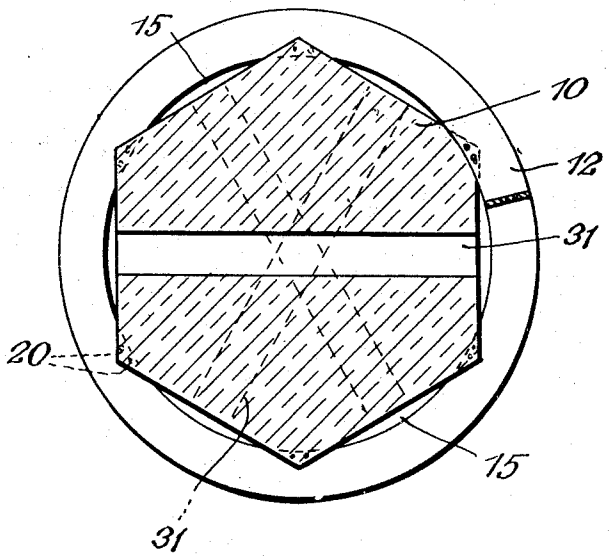


Fig. 5.

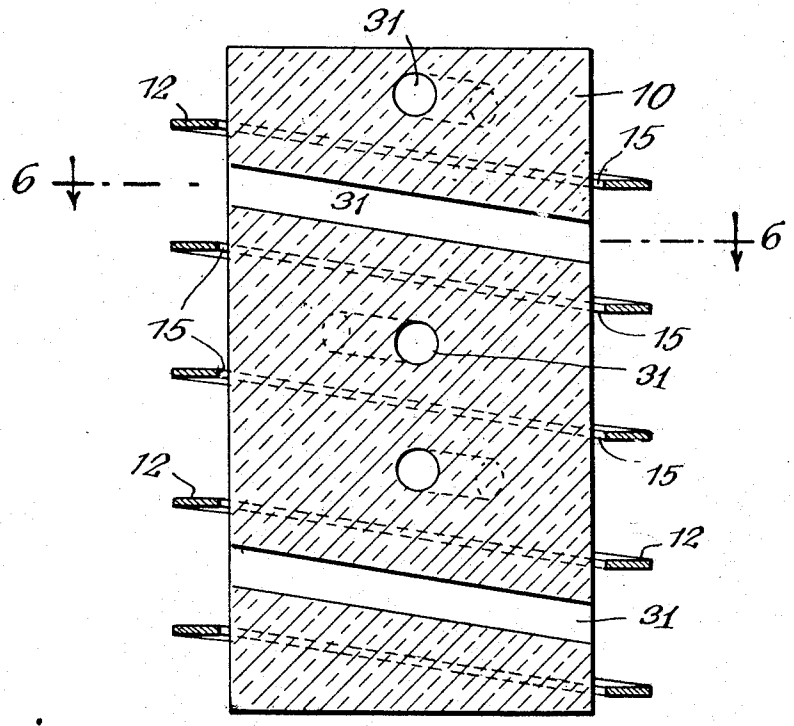


Fig. 7.

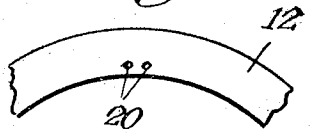
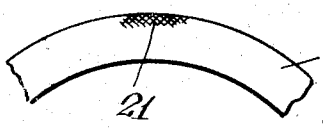


Fig. 8.



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UNITED STATES PATENT OFFICE.

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INSULATED SUPPORT FOR ELECTRICAL CONDUCTORS.

1,342,310. Specification of Letters Patent. Patented June 1, 1920.

Application filed February 1, 1919. Serial No. 274,416.

To all whom it may concern:

Be it known that I, LOUIS STEINBERGER, a citizen of the United States, and a resident of the borough of Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Insulated Supports for Electrical Conductors, of which the following is a specification.

My invention relates to an improved insulated support for electrical conductors for high frequency and high tension currents. It is especially adapted for use in radio apparatus wherein the contact or slider is mounted to have a mechanical and consequently an electrical connection with the conductor coil.

One of the objects of my invention is to provide an elongated body of insulating material having a helical coil, the metallic strip forming the coil being secured at intervals to a surface of the elongated body, the remainder of the metallic strip being exposed.

Another object of the invention is to provide an elongated body of insulating material having a conducting strip in the form of a helical coil secured at intervals to a side of the elongated body, exposed spaces being provided between the helical coil and the side of the elongated insulating body and between the securing points of the coil to the body.

Another object of my invention is to provide an elongated body of insulating material having a metallic helical coil molded at intervals to a side of the elongated body, the remainder of the metallic strip being exposed.

Another object of the invention is to provide an elongated body of insulating material having a metallic helical coil molded at intervals to a side of the elongated body, exposed spaces being provided between the helical coil and the side of the elongated insulating body and between the securing points of the coil to the body.

Another object of the invention is to provide a hollow elongated body of insulating material with a strip of metal in the shape of a helical coil, the said strip of metal being secured to the insulating body either on its inner surface or its outer surface, the other portion of the strip being exposed so as to form a suitable contact with the slider, as well known in this art.

Another object of the invention is to provide an elongated body of insulating material, the outer surface of which is so shaped as to have a plurality of flat sides situated in angular positions with respect to each other in combination with a strip of metal having the shape of a helical coil, said strip being partially embedded into the insulating material at intervals at the point of juncture between two of the above specified flat sides, ventilating openings being formed between the flat sides and the inner edge of the metal coil.

Other objects will appear from the subjoined specification and claims.

Referring to the drawings,

Figure 1 is a side elevation of a structure embodying one form of my invention.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a view partly in vertical section and partly in side elevation of a structure embodying another form of my invention.

Fig. 4 is a section on line 4—4 of Fig. 3.

Fig. 5 is a vertical section of a structure embodying my invention similar to that shown in Figs. 1 and 2 with the exception that the elongated body of insulating material is solid.

Fig. 6 is a section on line 6—6 of Fig. 5.

Fig. 7 is a fragmentary portion of a metal strip forming the coil as shown in Figs. 1, 2, 5 and 6.

Fig. 8 is a fragmentary portion of a metal strip forming the coil as shown in Figs. 3 and 4.

The insulating material from which the body is formed may be any suitable material for that purpose but it is preferred to use the insulating material which is well known in the art as "electrose," and the conductor is made of any suitable conducting metallic material, preferably copper.

The elongated body is provided with a plurality of flat surfaces longitudinally arranged thereupon, each flat surface being angularly situated with respect to its adjacent flat surface, so that the horizontal cross section of the insulating body will be either triangular, rectangular, hexagonal, octagonal and so forth, or the flat surfaces constituting the side of the body will be either five, seven, nine, and so forth, in number, all as will be clearly understood.

When the body is hollow, as illustrated in Figs. 1 to 4, inclusive, the flat surfaces constituting the inner wall of the body will

equal in number the flat surfaces constituting the outer wall.

I have chosen to illustrate in the figure of the drawing an elongated body provided with six flat surfaces constituting respectively the outer surface and the inner wall of the body, and which in horizontal cross-section is hexagonal. This is deemed sufficient to clearly disclose my invention without unnecessarily multiplying the sheets of drawings.

Referring to the drawings, 10 is a body of insulating material, elongated in shape, and which may either be solid, as shown in Fig. 5, or hollow throughout the central longitudinal portion, as at 11, as shown in Figs. 1 to 4. The metallic strip 12 constituting the electrical conductor is coiled in the form of a helix, and one edge thereof is provided at intervals either with a hole or holes 20, as shown in Fig. 7, and as indicated in Fig. 2, or with roughened portions 21 at intervals, as shown in Fig. 8, and as indicated in Figs. 3 and 4, so as to form anchoring means for the strip to the body of insulating material when the metallic helical coil is molded or embedded to the surface of the body thereof. The other portion of the strip is exposed and extends radially toward or from the axis of the body of the insulating material, as illustrated either in Figs. 3 and 4, or Figs. 1, 2, 5 and 6.

In Figs. 1 and 2 is shown a hollow elongated body of insulating material, the outer surface of which is hexagonal in cross section formed by opposing flat sides or surfaces arranged at an angle to each other so that these sides or surfaces meet each other in a longitudinal line. To the points of juncture of the flat sides or surfaces is embedded or molded the coil strip 12, as clearly shown, thereby forming spaces 15 between the inner edge of the strip and the flat sides, which openings may be utilized for ventilating and cooling purposes, the other portion of the strip being exposed and projecting radially from the outer surface of the insulator body and is in a position to form a suitable contact with the slider, as will be readily understood in this art.

In Figs. 3 and 4 the outer edge of the helical metallic coil is molded or embedded to the central portions of the flat sides forming the wall of the longitudinal opening 11 which extends through the insulator body. Ventilating spaces 16 are also formed in this structure between the outer edge of the strip and the corners of the walls forming the inner surface of the central opening.

As shown in Figs. 7 and 8, and as also indicated in the other figures, holes 20 or roughened spaces 21 are formed on the metallic strips either on the inner edge or the outer edge, as the case may be, to function as anchoring means for the coiled strip or conductor to the body of the insulator. Of course, it is immaterial whether the anchoring is accomplished by means of perforations or holes 20, as shown in Fig. 7, or by the roughened portion 21, as shown in Fig. 8, or whether the roughened portion is on the outer edge of the coil, as illustrated in Fig. 8, or located at the points where the holes are illustrated in Fig. 7, and the same thing is true with respect to the position of the holes, that is, they may be utilized for anchoring means at the inner edge of the strip, as shown in Fig. 7, or at a point where the roughened portion is shown in Fig. 8.

As clearly illustrated in Figs. 1 to 4 of the drawings I provide ventilating holes 30 in the sides of the hollow insulating body, the said holes being situated substantially midway of each flat surface of the side, and also midway between the portions of the metal strip constituting the entire coil.

In Figs. 5 and 6 I show the ventilating holes or openings 31 extending entirely through the solid body, these holes or openings being situated in the same relative position as the ventilating holes or openings 30 in Figs. 1 to 4 with respect to the side surfaces of the insulator body and the helical coil.

As will be seen, the structure described may be so mounted that in use the contact or slider can revolve and travel up and down along the helix, the body of the insulator remaining stationary, or else the contact or slider can remain fixed and the elongated insulating body may rotate, so that the metallic strip will remain always in contact with the slider. In this latter case the elongated body of insulating material as it rotates will move in the direction of its axis.

As stated above, the insulating body may be made of any approved insulating material, and when made of insulating material which can be molded into the form desired, the helical coil is secured or embedded into the insulating material during the process of molding. When the insulating body is made of fire proof material, such as porcelain, the helical coil may be secured to the insulating body by means of cement or other securing material, all as well understood in the art.

As changes of construction could be made within the scope of my invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. As an article of manufacture, an elongated body of insulating material provided with flat sides extending longitudinally thereof, each side being angularly situated

with respect to its adjacent side, in combination with a helical conducting coil secured thereto at points uniformly spaced apart, the remaining portion of the coil being exposed to form an electrical contact.

2. As an article of manufacture, an elongated body of insulating material provided with flat sides extending longitudinally thereof, each side being angularly situated with respect to its adjacent side, in combination with a helical conducting coil molded thereto at points uniformly spaced apart, the remaining portion of the coil being exposed to form an electrical contact.

3. As an article of manufacture, a hollow elongated body of insulating material provided with flat sides extending longitudinally thereof, each side being angularly situated with respect to its adjacent side, in combination with a helical conducting coil secured thereto at points uniformly spaced apart providing ventilating apertures between the coil and the insulating body, the remaining portion of the coil being exposed to form an electrical contact.

4. In a device of the kind described, a hollow elongated body of insulating material provided with flat sides extending longitudinally thereof, each side being angularly situated with respect to its adjacent side, in combination with a helical conducting coil molded thereto at points uniformly spaced apart forming ventilating apertures between the coil and the insulating body, the remaining portion of the coil being exposed to form an electrical contact.

5. In a device of the kind described, an elongated body of insulating material having a helical metallic coil molded thereto at intervals throughout its length, the remaining portion of the coil being exposed to form an electrical contact, the outer wall of the body having longitudinal flat surfaces extending throughout its length, said flat surfaces meeting each other at an angle, the points of securement of the coil to the surface of the elongated body being at the aforesaid angle.

6. In a device of the kind described, an elongated body of insulating material provided with flat sides extending longitudinally thereof, each flat side being angularly situated with respect to its adjacent flat side, in combination with a helical conducting coil embedded therein at points uniformly distant apart, the remaining portion of the coil being exposed to form an electrical contact, the body having ventilating holes extending through the insulating material, said holes being arranged in angular relationship to each other and situated between the turns of the helical coil throughout the length of the insulator body.

7. In a device of the kind described, an elongated insulating body, the horizontal cross-section of which has a plurality of angularly disposed sides, in combination with a helical conducting coil secured to the elongated body throughout its length at each of the adjacent angles.

8. In a device of the kind described, an elongated insulating body, the horizontal cross-section of which has a plurality of angularly disposed sides, in combination with a helical conducting coil molded to the elongated body throughout its length at each of the adjacent angles.

9. In a device of the kind described, an elongated body of insulating material hexagonal in cross-section, in combination with a helical conducting coil molded throughout its length to the angular portions of the hexagon.

10. In a device of the kind described, an elongated body of insulating material hexagonal in cross-section, in combination with a helical conducting coil embedded throughout its length to the angular portions of the hexagon.

In witness whereof I have hereunto set my hand at the borough of Manhattan, city and State of New York, this 24th day of January, 1919.

LOUIS STEINBERGER.

In presence of—
ZITA M. GRAHAM.