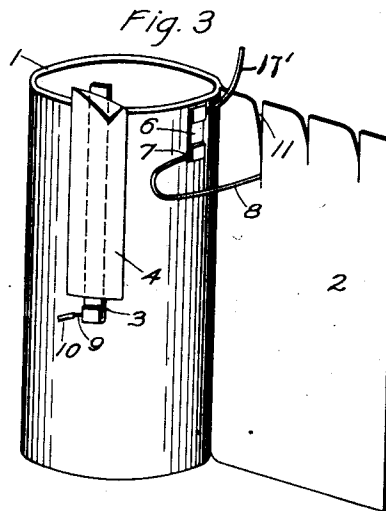
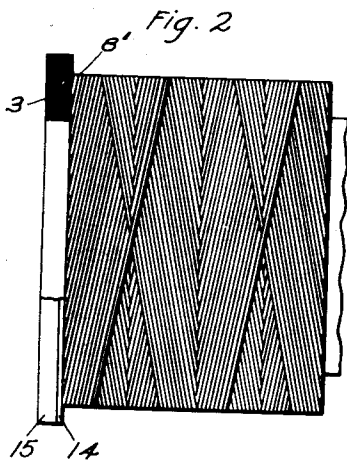
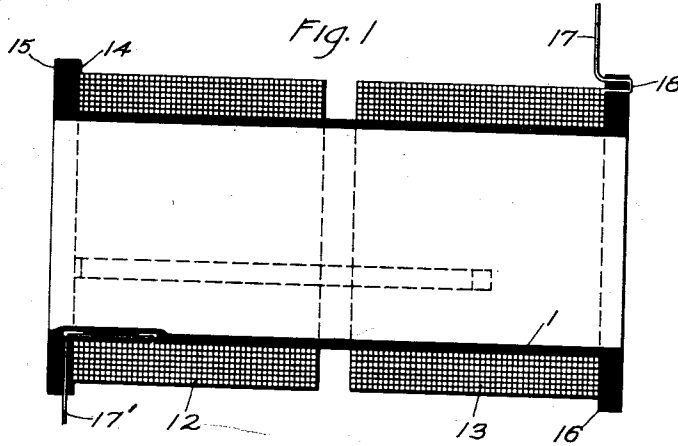


No. 865,907.

PATENTED SEPT. 10, 1907.

E. W. JODREY.
COIL FOR ELECTRICAL PURPOSES.
APPLICATION FILED OCT. 26, 1905.



Witnesses;

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UNITED STATES PATENT OFFICE.

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COIL FOR ELECTRICAL PURPOSES.

No. 865,907.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed October 26, 1905. Serial No. 284,555.

To all whom it may concern:

Be it known that I, ELBERT W. JODREY, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Coils for Electrical Purposes, of which the following is a specification.

My present invention relates to a construction and arrangement of coils or windings for electrical purposes.

One of the objects of my invention is the better utilization for electrical purposes of conductors wound to form cops such as the well known Wardwell cop shown for instance in the patent to Simon W. Wardwell, Jr., #486,756, December 19, 1891, or cops similar thereto in character.

Machines are now in use by means of which such cops may be rapidly and economically produced. One of the distinguishing characteristics of cops of this type is that the turns composing the cop are in the form of spirals having a pitch much greater than the diameter of the material of which the cop is wound. In forming these cops the material is wound spirally from one end of the cop to the other in a regular manner. As a result of the manner in which the cop is formed the cop when wholly or partially completed does not present an exterior surface which is truly smooth since a portion of each exposed turn crosses and is crossed by other exposed turns. As a result different portions of the conductor wound to form an electrical coil or cop of the character described cannot be insulated from each other in a simple manner by merely placing a layer of insulating material between adjacent layers of turns as can a coil formed of layers of spiral turns in which the pitch is such that successive turns are in contact with each other throughout their entire lengths. Each turn of a Wardwell or similar cop is not only in contact with the turns extending alongside of it but crosses and is crossed by a large number of other turns. Prior to my invention such coils could not be readily utilized for electrical purposes where the circumstances were such that different portions of each coil or winding required more insulation between them than was given by the insulating jacket surrounding the conductor forming the coil. I have found, however, that I can overcome this objection in a large measure by dividing the winding into several sections, each of which may consist of a cop of the character hereinbefore described. These cop sections may all be wound at the same time and on a single support. As the ends of these cops are self sustaining it is not necessary to provide end members between which the opposite ends of each cop section are supported.

Other objects of my invention relate to improvements in construction and arrangement of coils or windings for electrical purposes not all of which are limited

to use with Wardwell or similar cops, which cops I shall hereinafter designate as cops with self sustaining ends.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of my invention, however, reference may be had to the accompanying drawings and descriptive matter in which I have illustrated and described an embodiment of my invention.

Of the drawings, Figure 1 is a sectional elevation of a finished coil; Fig. 3 is a perspective view of a coil support at an early stage in the manufacture of the coil; and Fig. 2 is an elevation partly broken away and in section of the coil shown in Fig. 1.

Referring to the drawings, 1 represents a coil support, the body portion of which may advantageously be formed of a strip of insulating material, such as paper rolled into the form of a tube. Ordinarily the strip from which the support is formed is of such a length that the tube is composed of several layers. The layers forming the body portion of the support are glued or gummed together to form a substantially rigid tubular body.

To the body portion of the support is secured a flap 2. The outer end of the strip forming the body portion of the support is ordinarily left ungummed to form the flap 2.

To the body of the support 1 an elongated terminal formed of conducting material 3, which may be advantageously formed of a strip of tinned copper, is secured in any suitable manner as by placing over it a strip 4 of oiled fabric or the like, the edges of which are gummed to the body of the support. One end of the strip 3 which extends longitudinally of the support projects by the upper end of the coil support as seen in Fig. 3, and the strip 3 is of such a length that the other end extends considerably more than half way along the length of the support.

A terminal conductor comprising a piece of sheet metal 6 having its opposite ends looped about and soldered to the ends of wires 17' and 7 respectively is secured to the body of the support near its upper end in the position shown in Fig. 3. This terminal is secured to the body 1 between the conductor 3 and the place where the flap 2 leaves the body of the support. The conductor 6 may be secured in position in any suitable manner as by gluing it directly to the support by means of a fabric similar to that employed to secure the conductor 3 in place.

After the conductors 3 and 6 are secured to the body of the support 1 the bared end 7 of an insulated conductor 8 is secured to the conductor 6 by soldering.

Similarly the bared end 9 of an insulated conductor 10 is secured to the lower end of the conductor 4. The flap 2 is then brought down against the body of the support 1 covering the conductors 3 and 6, the conductor 8 being passed through an opening formed for the purpose in the flap 2. As shown this opening is in the form of a kerf or slit 11 which extends from the upper edge of the flap as shown in Fig. 3 down to the point where the conductor 8 leaves the conductor 6.

After the conductors 8 and 10 are secured to the terminals, the flap is brought against the body of the support in the manner described. Coils 12 and 13 in the form of cops with self sustaining ends are formed by winding the conductors 8 and 10 respectively about the support in any suitable manner. The winding operation may be advantageously carried out by means of a winding machine arranged to wind the coils 12 and 13 simultaneously. After the coils are wound a washer 14, which may be comparatively thin and formed of press-board, is slipped over the left hand end of the support as shown in Fig. 1. The end of the conductor 3 is then turned radially outward bearing against the outer end surface of the washer. The outer end 8' of the conductor 8 forming the coil 12 is passed through a hole in washer 14 and is then soldered to the outturned end of the terminal 3. A thicker end member 15 which may also be formed of press-board or other similar insulating material is then passed over the left hand end of the support as shown in Fig. 1, and is glued or gummed to the end of the support and to the washer 14. This finishes the left hand end of the coil.

A washer end member 16 which may be similar to the end member 15 is passed over the right hand end of the support body as shown in Fig. 1, to which it is secured by gumming or glue. The terminal 17 for this end of the winding is rigidly secured to the end member 16 by looping it through a pair of apertures formed for the purpose in the end members. The apertures are close together and the sharp turns given to the looped portion 18 is such that a pull exerted on the terminal conductor 17 will be taken up by the end member 15 and without pulling the conductor 17 through the aperture. The conductor 17 may be simply an extension of the conductor 10, but as the conductor 10, as well as the conductor 8, is usually a comparatively fine wire the terminal conductor 17 may advantageously be made of heavier stock than the conductor 10 and have its inner end electrically and mechanically connected to the outer end of the conductor 8.

By the construction described the coils 12 and 13 are connected in series. If, as is frequently the case, they are intended to form a single magnetizing winding, the coils will be wound in the same direction. If they are to form part of a single resistance conductor and it is desired to have such resistance non-inductive, the turns of one coil will either be applied reversely to those of the other coil or the connections will be altered.

The construction described is exceedingly simple and easily produced. The terminal conductors 17' and 17 of the winding are firmly connected to the support for the coils and force applied to them will not tend to disarrange the windings or to break the conductors 8 or 10. While the coil sections 12 and 13 may be regarded as forming a single winding it will be observed that by forming them in sections as shown, but half of the difference of potential existing between the terminals 17' and 17, assuming the coil sections to be similarly formed, is applied to either section.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In combination, a support, and a plurality of independent series connected cops with self-sustaining ends thereon, adjacent ends of the coils being separated by a space.

2. In combination, a support provided with a flap adapted to be bent down upon the body of the support, said flap being formed with an opening, a pair of cops or coils with self-sustaining ends wound about said support with adjacent ends of said coils out of contact with each other, one terminal of each coil being secured to the support beneath the flap, one of said terminals passing out from beneath the free end of said flap, and the other passing through said opening in the flap.

3. In combination, a tubular support formed of insulating material, a pair of coils wound upon said support with their adjacent ends separated by a space, and a conductor connecting terminals of said coils, said conductor being embedded in said support.

4. In combination, a support provided with a flap having an opening formed in it, terminal conductors secured to said support in position to be covered by said flap, a pair of coils wound upon said support with one terminal of one coil secured to one of said conductors, and one terminal of the other coil secured to the other of said conductors, one of said terminals passing out from under the free end of said flap and the other passing through the opening formed for the purpose in the flap.

5. In combination, a coil support provided with a flap having an aperture formed in it, a pair of conductors wound about said support so that each forms a coil or cop with self-sustaining end, the adjacent ends of said coils being out of contact with each other, an elongated terminal conductor secured to said support beneath said flap and extending from a point within one coil to a point at or adjacent the remote end of the other coil, a second terminal secured to said support beneath said flap and within said other coil, the conductor forming said one coil passing under the end of said flap and being secured to said elongated terminal, the one end of the conductor forming said other coil passing through said aperture in said flap and being secured to said second terminal.

6. In combination, a support, a plurality of cops having self-sustaining ends mounted upon said support and separated from each other, and means for connecting said cops together electrically.

7. In combination, a support, a plurality of independent separated coils mounted on said support, each consisting of a number of layers mounted directly one upon the other so as to form self-sustaining ends for the coils, and electrical connections between said coils.

In witness whereof, I have hereunto set my hand this twenty-fourth day of October, 1905.

ELBERT W. JODREY.

Witnesses:

JOHN A. McMANUS, Jr.,
HENRY O. WESTENDARF.