

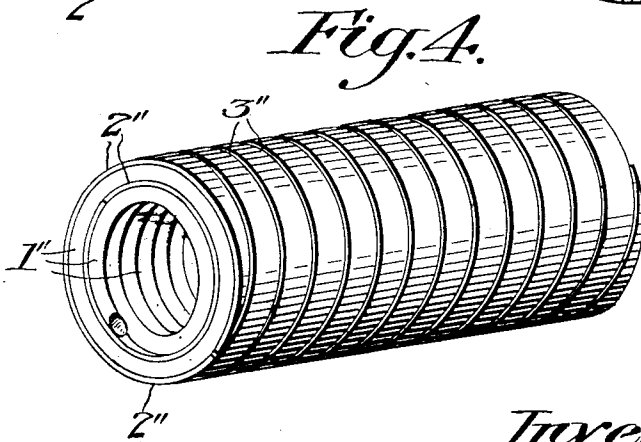
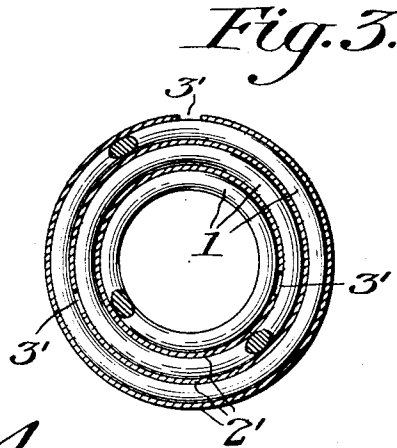
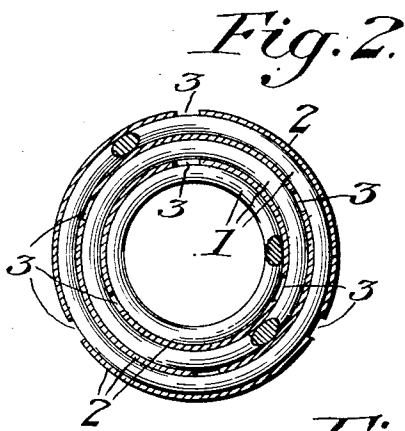
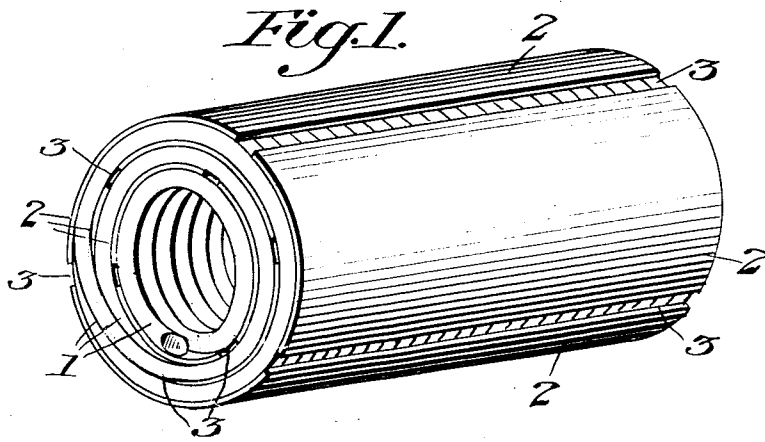
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C. R. UNDERHILL

ELECTRICAL COIL

Filed Jan. 14, 1921



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UNITED STATES PATENT OFFICE.

CHARLES R. UNDERHILL, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE ACME WIRE COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRICAL COIL.

Application filed January 14, 1921. Serial No. 437,302.

To all whom it may concern:

Be it known that I, CHARLES R. UNDERHILL, a citizen of the United States, and resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Electrical Coils, of which the following is a specification.

The invention relates to the construction of an electrical coil involving alternating layers of conductor windings and fabric, preferably of insulating sheet material, and has for its object to so provide and dispose the interposed fabric layers that each of said layers will be interrupted by one or more open slots formed between adjacent edges of the material, whereby the slots in successive fabric layers will constitute passages or openings to permit and facilitate the penetration of binding media throughout the coil structure.

Several embodiments of the invention are illustrated in the accompanying drawings, in which:—

Fig. 1 is a perspective view of a coil having each of the fabric layers formed of sections having their longitudinal edges spaced apart;

Fig. 2 is a vertical sectional elevation of the same;

Fig. 3 is a similar view showing a modified form of the interposed fabric layers; and

Fig. 4 is a perspective view showing the interposed fabric layers in helical strip form with the convolutions of the helices spaced apart.

Referring to Figs. 1 and 2 of the drawings, 1 indicates the several layers of the continuous conductor windings, and 2 the interposed layers of fabric, such as paper or the like, which is usually superposed on the layers of the conductor windings to separate the same. According to the usual practice these interposed fabric layers were continuous so as to completely envelope the respective layers of the conductor windings, and the fabric layers being impervious to the usual impregnating medium which it was necessary to force into the entire structure of the coil to bind the elements thereof together, and also to constitute an electrical insulating medium in certain cases, it was found that thorough impregnation of the coil structure could not be effected unless

some special provision were made to admit and distribute the binding medium throughout the coil structure. The present invention is designed to accomplish the desired effect by a novel, form, arrangement and disposition of the interposed fabric layers, and, as illustrated in Figs. 1 and 2, each fabric layer is formed of short sections or incomplete wraps, which, when applied to the layers of the conductor windings, are separated along their longitudinal edges by gaps or slots 3, which extend longitudinally of the coil. In the particular exemplification of the invention shown in Figs. 1 and 2, each of the fabric layers consists of three cylindrical segments 2, each of which covers somewhat less than 120° of the circumference of the coil, thereby leaving three longitudinal gaps or slots 3 affording access to the subjacent conductor layers, so that the binding medium may pass freely into the interior of the coil and thoroughly coat or impregnate all of the elements thereof. Preferably the sections of the fabric layers, in successive layers, are arranged in staggered relation, as indicated, so as to insure the proper flow and distribution of the binding medium.

In the modification shown in Fig. 3, each fabric layer consists preferably of a single wrapping 2', which does not completely envelope the subjacent conductor layer, but leaves a longitudinal gap or slot 3', which is sufficient to admit the binding medium freely to the successive conductor layers.

In the modification shown in Fig. 4, each of the conductor layers 1 is separated from its neighbor by an interposed fabric layer 2'', which consists of a strip of fabric wound helically on the subjacent conductor layer, with the successive convolutions of the fabric spaced apart to leave a helical slot or groove 3'' extending from end to end of the coil, said helical slots 3'' in the several interposed fabric layers serving as passages to direct the binding medium to the innermost spaces and recesses of the coil, so that the latter will be thoroughly and completely impregnated and bound together in all of its component parts.

What I claim is:

1. An electrical coil comprising alternating layers of conductor windings and separating fabric, each fabric layer being interrupted by one or more open slots formed be-

tween adjacent edges of said material, said slots in successive layers constituting passageways to facilitate penetration of the binding media throughout the coil structure, and a binding medium distributed throughout and uniting the elements of the coil.

2. An electrical coil comprising alternating layers of conductor windings and separating fabric, each fabric layer having slot like openings therein formed between adjacent edges of the fabric to facilitate the penetration of binding media throughout the coil structure, and a binding medium distributed throughout and uniting the elements of the coil.

3. An electrical coil comprising alternating layers of conductor windings and separating fabric, each fabric layer including a helical strip, the adjacent edges of which are spaced to form an open slot.

4. An electrical coil comprising alternating layers of conductor windings and separating fabric, each fabric layer including one or more sections having the adjacent edges spaced apart to form an open slot or slots, and a binding medium distributed throughout the coil structure.

Signed at Hamden, Conn. in the county of New Haven and State of Connecticut this 13th day of December A. D. 1920.

CHARLES R. UNDERHILL.