

M. E. BARNHART ET AL

REINFORCED INSULATION ASSEMBLY

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Fig. II

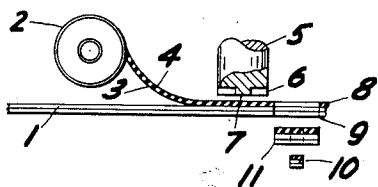
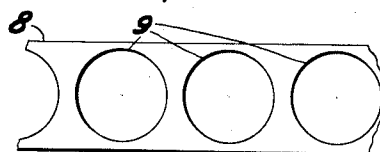
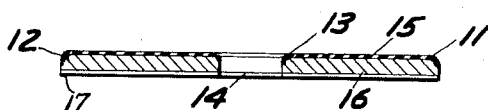


Fig. III

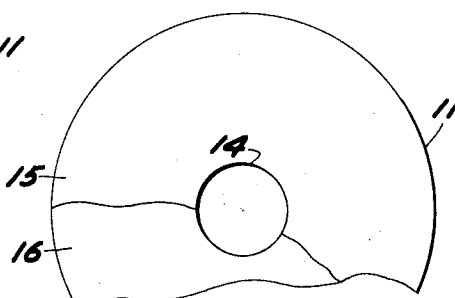


Fig. IV

Fig. VI

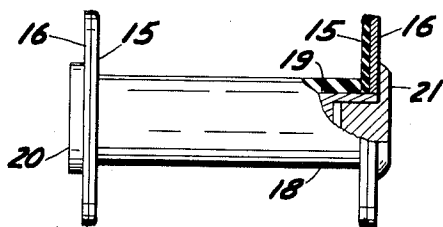


Fig. V

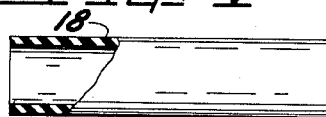


Fig. VII

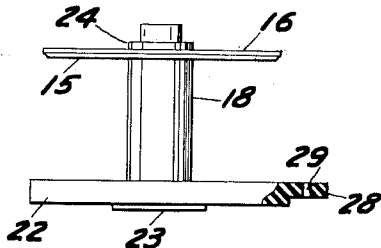
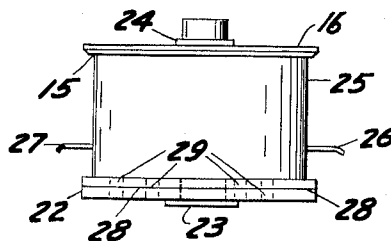


Fig. VIII



Merle E. Barnhart
Lee J. Miller

INVENTOR 

BY

UNITED STATES PATENT OFFICE

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REINFORCED INSULATION ASSEMBLY

Merle E. Barnhart and Lee F. Miller, Frederick, Md., assignors to Price Electric Corporation, Frederick, Md., a corporation of Maryland

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2 Claims. (Cl. 242-118)

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This invention has to do with the reduction of the number of parts to be put together in the final groupings, while contributing to the hold-up properties or physical strength of the elements in the handling, as well as the final groupings thereof.

This invention has utility when incorporated in insulation for electrical devices, as for wiring coil mountings or bobbins, more particularly wherein the spool ends or disks comprise insulation faced metal.

Referring to the drawings:

Fig. I is a fragmentary, somewhat schematic showing, the plies being somewhat out-of-proportion in thickness, of the bonding, effected simultaneously with the forming, of spool end washers or disks with insulation facing therefor;

Fig. II is a plan view of a bonded strip as excess from the articles produced by the punching operation of Fig. I;

Fig. III is an enlarged detail, partly in section of a metal body, faced with a pressure sensitive adhesive insulation;

Fig. IV is a plan view of the disk of Fig. III, parts being broken away;

Fig. V is a detail, with a portion broken away, of a spool body insulation tube or straw, say of acetate, or acetate coated;

Fig. VI is a completed bobbin, partly in section, of a magnetic core thru the straw, assembling the washers thereon to complete the spool to receive an electric winding;

Fig. VII is a side elevation of an insulation body for receiving a coil, having the disk feature at one end and a more heavy insulation base at the other; and

Fig. VIII is a view from the right of the body of Fig. VII, with a winding thereon, in readiness for lead connections thereto.

A supply of strip stock 1 may be from a roll or in lengths. The stock 1 is desirably of nonmagnetic material and may be in the range of $\frac{1}{4}$ " thickness when say not exceeding 1" in width. A roll 2 of acetate film tape body, or coated with pressure sensitive adhesive 3 as the stock or tape 4 is unwound to have the adhesive 3 ride against a side of the metal body 1 in passing to a punch press 5 having a cutting rim 6 and concentric therewith a cutting stem 7.

The punch press effects bonding between the metal strip 1 and the tape 4 into a unit of two joined laminations 8 having openings 9 there-thru. The passing-along strip 8 may be considered as scrap, or stock excess from the cut-

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ting of the minor reject disk 10 and a ring product 11.

The punch press operation has peripherally squeezed the coated tape into an effective bonding rim 12, as well as a slightly less pronounced concentric inner region 13 about the opening 14. The product or disk 11 thus comprises an insulation face 15 having its coated inner face against an assembled-therewith reinforcing body 16, which may have an almost insignificant marginal burr or offset 17. Notwithstanding the thin metal sheet of the body 16, it is of flat form retaining rigidity, in fact somewhat stiffened.

The preassembly unit or disk 11 which forms the flanges of the spool may have its insulation faces 15 toward each other as concentric with a spool body or insulation straw 18 therebetween, of similar insulation characteristic. An electromagnet core 19 extends thru the openings 14 and the intermediate tube 18, has at one end an armature head 20, and at its opposite end a rivet 21. The bobbin or spool is thus grouped with few parts to be handled, and all in definite accuracy or alignment register. The product is of light weight and considerable physical strength, with a safety factor beyond demands to be met in normal service.

The assembled spool end or disk 11 on a tube 18 may be mounted on an insulation base 22 of rigid plastic or fiber. The assembly is by an electromagnet core 23 and a rivet rim 24. The more heavy base spool unit may have a winding 25 thereon with terminal 26, 27. The base 22 may have ledges 28 with openings 29 therethru for terminal screws, or coil mounting.

It is to be noted that the pre-assembly of the reinforcement with the insulation, besides reducing the number of parts to be handled in the final assembly, insures accuracy of register or alignment between the metal body or base and the insulation film or tape washers of the two-ply unit.

The pressure bonded unit may be generally characterized as a two-ply sheet, with electrical adaptation possibilities, not only for the washers or the spool ends but terminals having a conducting face and an opposite insulation face, as fixed or rigid, and as spring arms or contacts, and generally in switches and windings.

In the instance of acetate or like fungus resisting insulation material, there is adequate protective resistance to such attack, in the pressure-bonded two-ply unit herein. The reduction of the number of parts to be put together, reduces the assembly time, and thereby cheapens pro-

duction. The wafer-like body of the flange ply reinforcement also has importance in increasing the space available for winding with adequate physical strength for the assembly and use. This means that the windings proper may occupy the major volume and the space requirement for the insulation carrier therefor is an almost negligible minimum.

What is claimed and it is desired to secure by Letters Patent is:

1. A spool for an electric coil, said spool comprising a magnetic metal core, an insulation tube on said core, and flanges on said tube, at least one of said flanges comprising a metal annular disk and an annular insulation disk adhering to said metal disk by an adhesive layer, said insulation disk being beveled against the outer periphery of said metal disk to form a tight rim seal between said insulation disk and said metal disk.

2. The spool of claim 1 wherein said insulation disk comprises an acetate film.

MERLE E. BARNHART.
LEE F. MILLER.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
931,541	Wohl et al.	Aug. 17, 1909
1,208,577	Kraemer	Dec. 12, 1916
1,236,357	Reeve	Aug. 7, 1917
1,282,380	Cotterman	Oct. 22, 1918
1,659,062	Varley	Feb. 14, 1928
2,180,420	Larsen	Nov. 21, 1939
2,226,589	Smyers	Dec. 31, 1940
2,247,252	Price	June 24, 1941
2,264,628	Engert et al.	Dec. 2, 1941
2,300,072	Smyers	Oct. 27, 1942
2,375,330	Sperry	May 8, 1945