Jan. 2, 1923.

1,440,448

P. E. DEMMLER.

VARNISH FILM FOR INSULATING PURPOSES.

FILED JAN. 16, 1919.

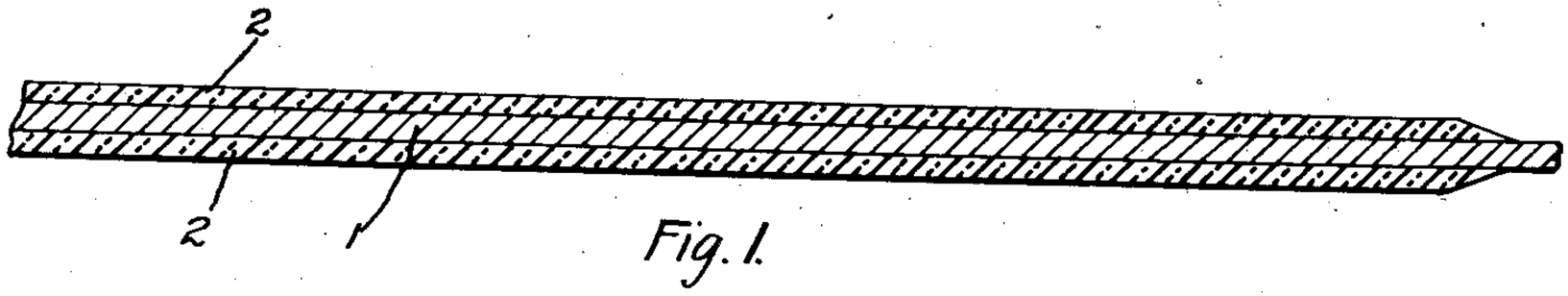

Fig. 1.

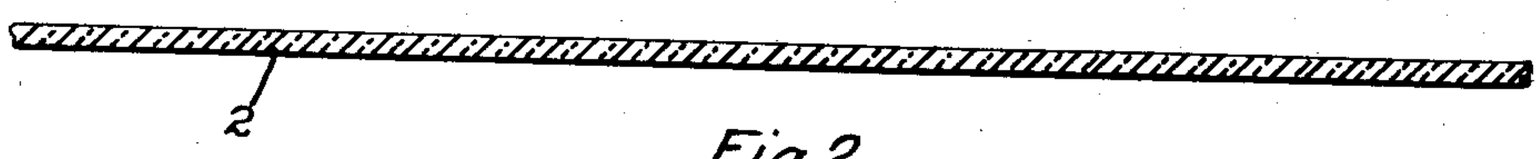

Fig. 2.

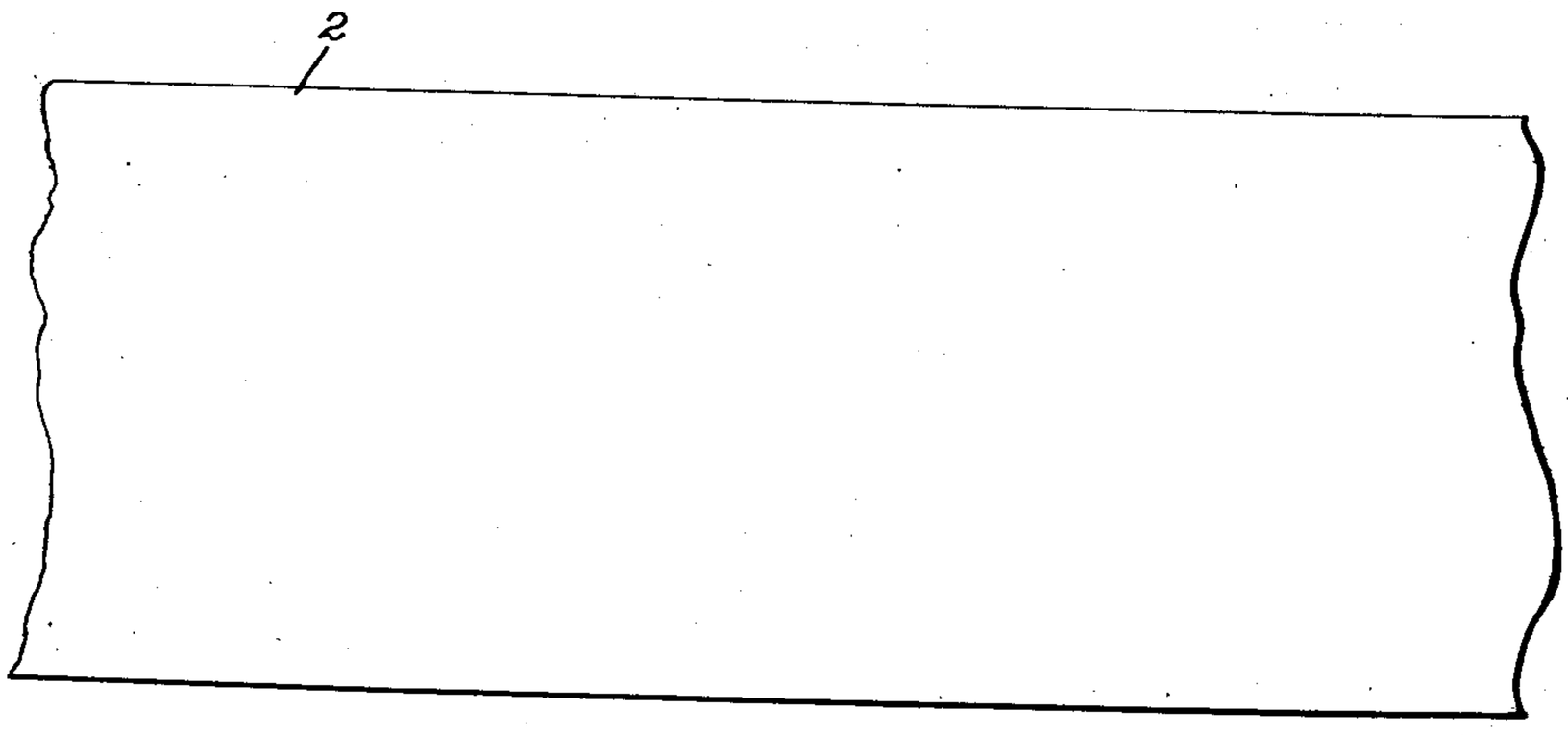

Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

PAUL E. DEMMLER, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

VARNISH FILM FOR INSULATING PURPOSES.

Application filed January 16, 1919. Serial No. 271,546.

To all whom it may concern:

Be it known that I, PAUL E. DEMMLER, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Varnish Films for Insulating Purposes, of which the following is a specification.

My invention relates to electrical insulating material and it has, for its primary object, the provision of a method by which relatively thin sheets of such material having a high dielectric strength may be formed.

One object of my invention is to provide an insulating material in the form of a relatively thin resilient sheet possessing great tensile strength, as well as high dielectric strength.

Another object of my invention is the provision of such insulating material by a method which shall promote rapid production thereof.

A still further object of my invention is the provision of relatively thin sheets which may be made any desired thickness and of any length convenient to handle.

With these and other objects in view, my invention will be more fully described, illustrated in the drawings, in the several views of which corresponding numerals indicate like parts, and then particularly pointed out in the claims.

In the drawings, Fig. 1 is a sectional view, parts being broken away, of a metal foil having a coating of insulating material; Fig. 2 is a sectional view, parts being broken away, of a film of insulating material, and Fig. 3 is a plan view, parts being broken away, of the film of insulating material shown in Fig. 2.

In practising my invention, I may provide insulating material by employing metal foil and subjecting it to treatment in a bath of insulating material sufficiently adhesive to coat the metal foil, after which the foil may be drawn through a drying tower to thoroughly dry the coating of insulating material. After the foil has been coated and the coating dried, the insulating material may be removed from the foil by stripping it from both sides thereof.

In Fig. 1 is shown a strip of metal foil 1 having a coating of insulating material 2. I have found by extensive tests that a metal foil, which may be employed to advantage, is composed of substantially 85% lead and 15% tin, and the insulating material 2 is preferably a baking varnish such as is employed in insulating electrical conductors. The metal foil may be drawn through a bath of such varnish and then subjected to heat in a drying tower and the operation may be repeated as often as desired to obtain the thickness of varnish coating desired. In order to dry the varnish on the foil thoroughly, it may be subjected to heat at substantially 200° to 210° C. so as to keep well below the possible softening point of the foil. The rate of movement of the film through a drying tower, where such heat is employed, will depend upon the length of the drying tower, care being taken to insure the varnish or coating on the foil being satisfactorily dried.

Obviously, the width and length of the foil and, consequently, the coating of varnish may be regulated as desired. After the foil has been subjected to the bath in the varnish and the varnish has been dried, the film of varnish covering either or both sides of the foil may be removed therefrom to provide relatively thin, tough sheets of material possessing a high dielectric strength. In some instances, the film may be removed more readily by subjecting the foil coated with the varnish to a bath in molten paraffine containing 10% carnauba wax, and allowing it to remain for several hours therein. This has a tendency to toughen the film and to reduce its adhesion to the foil to such an extent that it may be more readily removed therefrom.

On account of the characteristics possessed by a film of insulating material provided as above described, a wide variety of uses may be found therefor. Its inherent tensile strength, coupled with its resiliency, allows its application in many electrical devices. For example, it may be utilized in any device where mica or similar insulating material would be employed.

Although I have described, specifically, a method by which a relatively thin sheet of insulating material may be provided and specified material which may be employed in its production, it is obvious that many other materials and other slightly different methods may be employed within the scope of my invention and I desire, therefore, that

no limitations shall be imposed except such as are indicated in the appended claims.

I claim as my invention:

1. A method of making insulating material that comprises drawing a metal foil through a bath of baking varnish drying the varnish on the foil, removing the varnish from one side of the foil, disposing the foil in molten wax and removing the varnish from the other side of the foil.

2. A method of making insulating material that comprises drawing a metal foil through a bath of baking varnish, drying the varnish on the foil, disposing the foil in molten wax and removing the varnish by stripping a continuous film from each side of the foil.

3. A method of making insulating material that comprises drawing a metal foil through a bath of baking varnish, drying the varnish on the foil, disposing the foil in molten paraffine containing 10% carnauba wax and removing the varnish by stripping a continuous film from each side of the foil.

4. A method of making insulating material that comprises forming a film of baking varnish upon a metal foil comprising substantially 85% lead and 15% tin and removing the film therefrom.

5. Electrical insulating material comprising a self-sustaining film of baking varnish.

6. Electrical insulating material comprising a resilient self-sustaining sheet of baking varnish.

In testimony whereof, I have hereunto subscribed my name this 31st day of Dec. 1918.

PAUL E. DEMMLER.