

UNITED STATES PATENT OFFICE.

MINDELIN McGERRY, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO BERT E. McDONALD, OF CHICAGO, ILLINOIS.

INSULATING COMPOSITION.

No. 931,015.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed October 5, 1908. Serial No. 456,255.

To all whom it may concern:

Be it known that I, MINDELIN McGERRY, a citizen of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented new and useful Improvements in Insulating Compositions, of which the following is a specification.

The purpose of this invention is to provide an improved composition for coating insulated wire for electrical purposes, which is particularly adapted for resisting the heat, thereby rendering the wire especially useful for winding the armatures of electric motors and generators.

A specific purpose of the invention is to provide insulated wire with such improved composition without materially increasing the thickness of the insulating covering beyond what is now commonly used, and therefore without sacrificing any of the advantage of close winding of such armatures.

The invention consists in the composition of the insulating covering hereinafter described.

The improved insulating wire which constitutes this invention consists of a core of electrically conducting wire, wound or otherwise covered with any customary insulating thread of textile fabric sheath, and additionally provided with composition to be hereinafter described, with which such sheath is saturated and may be also overlaid. Preferably, the composition hereinafter described is applied to the usual silk-wound wire, whether with or without an interior insulating layer of rubber; and such textile fabric covering is useful in connection with the composition to be described without regard to the insulating character of such textile fabric, but merely by virtue of its capacity for being saturated with the composition and retaining the same incorporated with it and so constituting an inclosing sheath about the wire.

The composition which I employ comprises the following elements: (1) finely ground asbestos pulp; (2) pulverized slippery elm; (3) a vegetable acid, as vinegar; (4) glue; (5) a starchy substance, as corn starch or wheat flour.

The asbestos contributes to the composition non-conductivity of heat. The glue constitutes the principal binder. The slippery elm modifies the hardness and inflexi-

bility of the glue and increases the flexibility and somewhat the tenacity of the composition when dry, as in service on the wire. The starchy element, whether corn starch or wheat flour, also tends to modify the hardness of the composition, but its more distinctive function is to render the composition smoother and adapt it to produce a smooth surface covering for the wire. The vegetable acid, as vinegar, to some extent digests or dissolves the dry elements, and tends to render the composition pulpy even before it is cooked as hereinafter explained.

The mode of preparation which I have employed with the best success is as follows:— I thoroughly mix the ground asbestos pulp and the ground slippery elm about in the proportions of 3 to 2, and add enough vinegar to thoroughly moisten the mixture, but not so as to render it in the least fluid in character. The quantity of vinegar requisite for a mixture consisting of 12 ounces of asbestos and 8 ounces of slippery elm will be usually about 1 pint or 16 ounces. The mass thus prepared is allowed to stand for two or three days without exposure to any more than ordinary atmospheric temperature. The time will vary according to the strength of the acid employed, but this step of the process will be completed when the mass attains to a jelly-like condition if the minimum of vinegar was used, or a ropy condition if a larger amount has been used. I then thoroughly intermix with it about 14 ounces of glue, which has first been thoroughly dissolved in water. I use the term "glue" in its most generic sense, indicating any glutinous material, whether the finer or coarser sorts. Common carpenters' or cabinet-makers' glue, gum arabic or coarser varieties can be used, the quantity necessary varying somewhat according to the quality. The mixture with the glue added is then cooked slowly until it begins to thicken with the cooking somewhat after the manner of flour paste; and at this stage preferably a comparatively small amount of the starchy material, corn starch or wheat flour, is added, being thoroughly stirred in, the cooking being continued long enough to cook the starch or flour to a pasty condition. About 2 ounces of corn starch for each 12 ounces of asbestos I have found to produce a satisfactory result. When thoroughly

cooled the mass is then strained through a fine sieve to take out all lumps and all fibers of the asbestos so as to produce a perfectly smooth-grained mass which can
5 be applied to the wire in an even coating which will assume a smooth surface in drying.

The proportions of the several materials used may be varied considerably without
10 defeating the results. The glue, as already indicated, may vary according to the quality, and the variation of the quantity of the starchy element will affect the smoothness
15 of the product without substantially defeating its essential qualities. The quantity of vinegar may vary according to its strength. The variation of the relative proportions of the slippery elm and glue will affect the
20 hardness and flexibility, any considerable excess of slippery elm above the proportion named having the effect to render the coating liable to scale, and any considerable
diminution of the proportion of the slippery elm causing the mixture to be harder than
25 desirable, preventing the flexibility of the wire when coated therewith; but variations amounting to not more than 25% from the relative proportions of these elements will
not defeat the efficiency of the composition
30 for its purpose, but will only modify its

properties, such modification being permissible upon different grades of wire, the larger sizes which are to be wound with a larger radius requiring less flexibility and permitting greater hardness in the coating than the
35 finer wires which are to be wound with a small radius.

I claim:—

1. A composition for coating wire for insulation consisting of asbestos pulp, slippery
40 elm, a vegetable acid, glue, starch and water.

2. A composition for coating wire for insulation consisting of asbestos pulp, slippery
elm, a vegetable acid, glue and starch dissolved in water and cooked to a paste. 45

3. A composition for coating wire for insulation consisting of asbestos pulp and slippery elm digested to a jelly in a vegetable
acid, and mixed with an aqueous solution of
50 glutinous and starchy material.

In testimony whereof, I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 2d day of October, 1908.

MINDELIN McGERRY.

In the presence of—

M. GERTRUDE ADY,
G. S. ABBOTT.