

No. 752,592.

PATENTED FEB. 16, 1904.

G. H. RUPLEY.
COATING MACHINE.

APPLICATION FILED JULY 15, 1903.

NO MODEL.

Fig. 1.

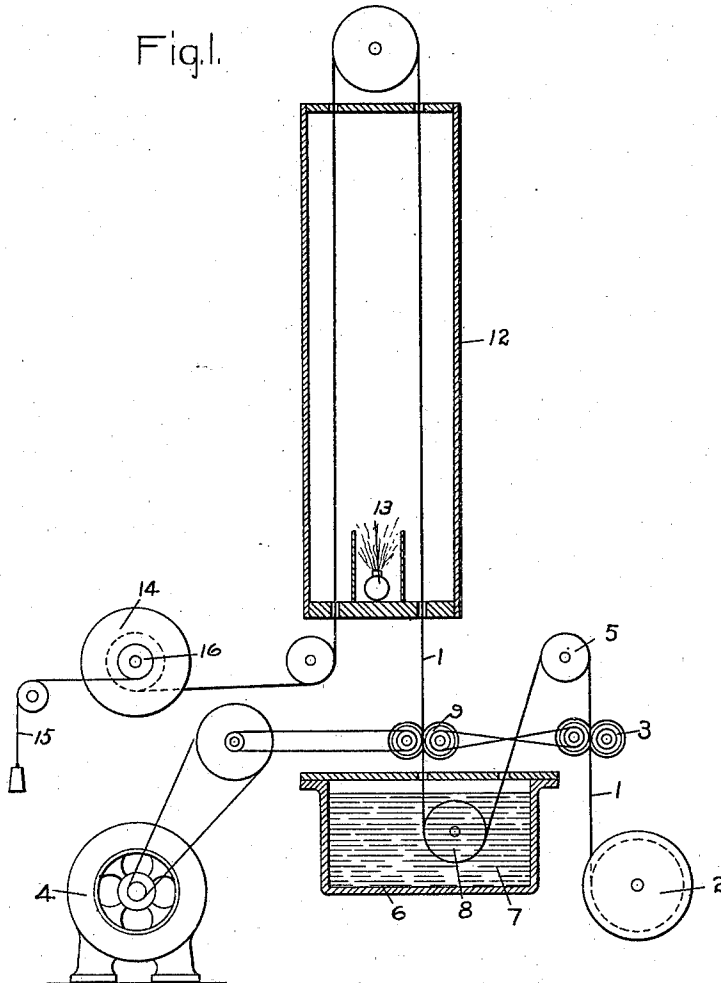
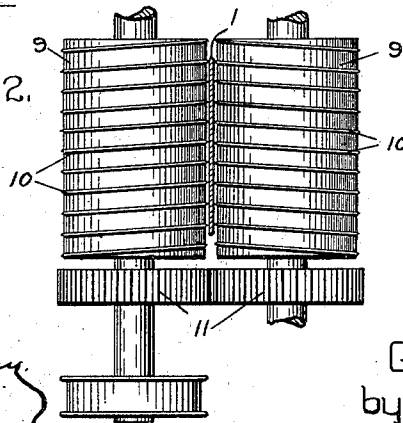


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE H. RUPLEY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

COATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 752,592, dated February 16, 1904.

Application filed July 15, 1903. Serial No. 165,609. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. RUPLEY, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Coating-Machines, of which the following is a specification.

This invention relates to machines for applying an insulating-coating to metallic conductors, especially a coating of adhesive elastic varnish, such as is set forth in the patent to Clark and Rupley, November 26, 1901, No. 687,517. In the companion patent, No. 687,518, is shown a machine for applying this material to a round wire by running the wire tangentially over the top of a grooved wheel and submerging it in the mass of insulation carried up by said wheel from a reservoir below, the thick fluid spreading over the top of the wire and covering the entire surface with a uniform coating; but this machine cannot be commercially used to coat flat ribbon-conductors of, say, an inch in width, because the insulating fluid is too thick to flow over the upper surface of the strip unless it is run at so slow a speed as to be prohibitive.

The machine which forms the subject of the present invention is designed to coat flat conductors of any width with a viscous insulating material, such as the compound of amorphous cellulose described in the aforesaid patents. The flat conductor is led from a reel to some means for applying the insulating material, such as a vessel containing a bath of the same, and up through feeding, stripping, and engaging devices to a drying-chamber and a winding-reel. The feeding is preferably effected by rolls, which serve also to remove the surplus material, spread the coating evenly on both sides of the strip, and reduce it to a uniform thickness, as determined by projections on the rolls, preferably ribs, which run in contact with the strip. The viscous compound spreads after leaving the rolls and fills the various grooves made by the ribs.

In the accompanying drawings, Figure 1 is a diagrammatic elevation, partly in section, of an apparatus embodying my invention.

Fig. 2 is a plan view of the gage-rolls on a larger scale.

The metallic conductor to be coated is a flat ribbon 1, wound on a supply-reel 2, from which it passes through straightening-rolls 3, driven by suitable gearing from a motor 4. Passing over a guide-roller 5 it dips into a vessel 6, containing the liquid insulating material 7, through which the strip 1 is drawn under a submerged guide-roller 8, and thence up through feeding, stripping, and gaging devices. These are preferably rotary and for convenience and simplicity are combined in one structure, though this is not essential, as the separate functions may be separately performed. In the drawings, however, the feeding of the ribbon, removal of surplus insulating material, and gaging of the thickness of the film thereof are all accomplished by the two rolls 9, which are cylindrical and somewhat longer than the width of the strip 1. Each roll has a plurality of ribs 10 surrounding it, preferably united in a continuous helix, the thread on one roll running right-handedly and on the other left-handedly, as shown in Fig. 2. The depth of each rib is such that as the rolls revolve with the ribs in firm contact with the ribbon the cylindrical surfaces of the rolls will be maintained at a uniform distance from the ribbon, corresponding with the thickness of the film to be deposited—say, .0005 of an inch.

The ribs are narrow with sharp edges, and the space between them is considerable, so that the insulation will be deposited on almost the entire surface of the ribbon. The narrow grooves made by the ribs are soon filled up by the spreading of the viscous fluid after it passes the rolls, and the helical arrangement of the ribs insures a diagonal distribution of the grooves on the ribbon, so that any possible variation in the insulation due to the grooving is not carried in continuous lines along the ribbon. The right and left hand arrangement of the threads insures the best gripping effect on the ribbon, and by connecting the two rolls with spur-gears 11 of equal diameter the rib on one roll will always be opposite to the rib on the other, and thus there

is no danger of buckling a thin ribbon, as might be liable if the ribs did not exactly oppose each other.

From the rolls 9 the coated ribbon passes 5 through a drying-chamber 12, heated in any suitable manner, as by a gas-jet 13, and thence to a winding-reel 14, driven by any suitable device, such as a weighted cord 15, wound on a drum 16.

10 It will be understood that suitable means are provided for guiding the strip laterally, regulating the tension, governing the speed, &c.; but as such devices are common in the art it has not been thought necessary to illustrate them.

15 In accordance with the patent statutes I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means.

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

1. A machine for insulating an electric conductor, comprising means for applying liquid insulating material to the conductor, and a film-gaging device having ribs maintained in contact with the conductor.

2. A machine for insulating an electric conductor, comprising means for applying liquid insulating material to the conductor, and a rotating film-gaging device having ribs maintained in contact with the conductor.

3. A machine for insulating an electric conductor, comprising means for applying liquid insulating material to the conductor, and a film-gaging device comprising a roll having a plurality of ribs in contact with the conductor.

4. A machine for insulating an electric con-

ductor, comprising means for applying insulating material to the conductor, and a film-gaging device comprising a roll having a helical rib making a plurality of turns in contact with the conductor. 45

5. A machine for insulating an electric conductor, comprising means for applying liquid insulating material to the conductor, and a film-gaging device comprising two cooperating rolls having oppositely-arranged ribs. 50

6. A machine for insulating an electric conductor, comprising means for applying insulating material to the conductor, and a film-gaging device comprising two geared rolls having respectively right-handed and left-handed helical ribs arranged opposite to each other. 55

7. A machine for insulating an electric conductor, comprising means for applying liquid insulating material to the conductor and a film-gaging device comprising two rolls having narrow ribs with sharp edges. 60

8. A machine for insulating an electric conductor, comprising means for applying liquid insulating material to the conductor, and a film-gaging device comprising two cylindrical rolls having widely-spaced narrow ribs. 65

9. A machine for insulating a ribbon-conductor, comprising means for applying the insulating material to both sides of said conductor, and a gaging device having surfaces parallel to the faces of said conductor, and projections in contact with said conductor and maintaining a uniform space between it and the surfaces of the gaging device. 70 75

In witness whereof I have hereunto set my hand this 14th day of July, 1903.

GEORGE H. RUPLEY.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.