May 8, 1923. 1,454,166

J. A. HEANY

INSULATION SMOOTHING DEVICE

Filed April 10, 1919

Fig. 1

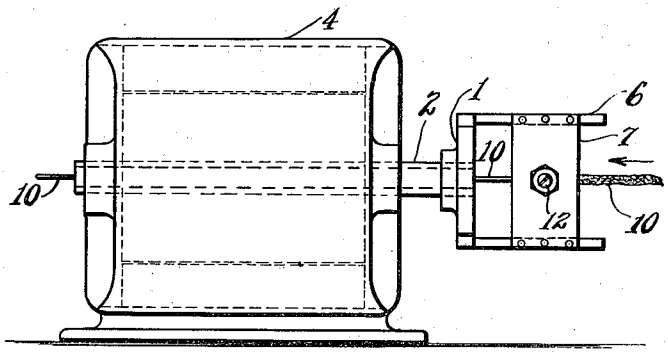


Fig. 2

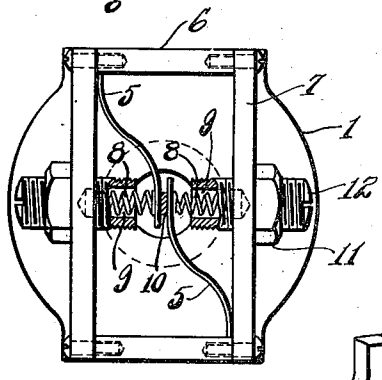
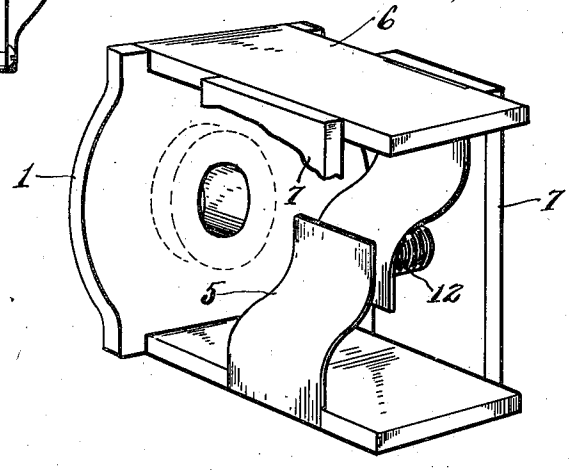


Fig. 3



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UNITED STATES PATENT OFFICE.

JOHN ALLEN HEANY, OF NEW HAVEN, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ROCKBESTOS PRODUCTS CORPORATION, A CORPORATION OF DELAWARE.

INSULATION-SMOOTHING DEVICE.

Application filed April 10, 1919. Serial No. 289,123.

To all whom it may concern:

Be it known that I, JOHN ALLEN HEANY, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Insulation-Smoothing Devices, of which the following is a specification.

This invention relates to smoothing and finishing devices for insulated wire and particularly for wire having a substantially rectangular cross-section, although it is equally well adapted for use with insulated wire having a round or circular cross-section.

In a co-pending application Serial No. 262,873, filed November 16, 1918, I have disclosed a method and means for insulating flat-wire conductors including a smoothing and finishing device, which comprises means for engaging and supporting one face of the wire while the opposite face is being transversely smoothed. This device has proven very successful in practice, particularly in cases where the conductor being operated upon has possessed a very substantial width in proportion to its thickness. I have discovered, however, that especially in cases where wire is being covered whose thickness is greater in proportion to its width, although the device is also adapted to perform the smoothing and polishing operation on wire of greater width, means can be provided for transversely smoothing both of the opposite faces of the wire at the same time and without providing a supporting structure for engaging one face of the wire. In order to accomplish this, I provide wiping members of a light and resilient character, such as thin flat strips of spring-metal, which are supplemented in their pressure-exerting action by compression-springs whose effective pressure is brought to bear on the wiping members immediately opposite their points of contact with the interposed conductor. In order to produce an efficient device in which the wiping members are driven at a comparatively high speed, the wiping members are mounted on a rotatable carrier which is preferably directly attached to the rotor of an electric motor through the axis and armature of which the conductor undergoing the finishing operation is preferably directly led. By this arrangement the conductor covered by insulating material, such as fibrous asbestos in the form of strands such as are obtained by the process disclosed in my companion application Serial No. 273,045, filed January 25, 1919, and freshly treated with a suitable binding liquid, is drawn through the smoothing device, in which the wiping members are caused to engage the surface of the conductor and, in their rotation transversely about the conductor as a center, are adapted to reduce the binder-impregnated fibrous coating to a smooth and uniform insulating layer.

Another feature of the invention resides in the peculiar cooperative relation that exists between the smoothing device and the actuating motor therefor, by which I am enabled to utilize the heating and air-circulating effects produced in the operation of the motor for exerting a drying influence on the insulating covering for the conductor.

In the drawings,—

Fig. 1 is a view in side elevation of a smoothing device embodying a preferred form of the invention, together with the actuating motor which drives the device, and showing the path of travel of the conductor through the smoothing device and the motor;

Fig. 2 is an end view, partly in section, of the smoothing device; and

Fig. 3 is a perspective view, partly broken away, of the smoothing device.

In the drawings, a smoothing device having a base member 1 is rigidly connected through the tubular shaft 2 with the armature 3 of an electric motor 4. The smoothing device consists of a pair of flat wiping strips 5 anchored at one end in a framework carried by the base member 1 and having their free ends arranged in an adjacent relation to each other and in a position to make contact with opposite surfaces of an interposed insulated conductor 10 as it is drawn through the device.

The supporting framework for the wiping members 5 consists of the end pieces 6, mounted on the base member 1, and the side pieces 7 attached to the end pieces 6 so as to form a rectangular frame in which the wiping members are mounted at diagonally-opposite corners. It will be seen that the wiping members 5 have, in general, an S-shaped formation with their free ends brought into adjacent relation at substantially the central portion of the rectangular frame construction.

In order to make use of comparatively

light and resilient strips for the wiping members, to thereby secure the facility and quickness of movement that is necessary for causing the wiping members to make close contact with every portion of the perimeter of the conductor as the members rotate about the conductor as a center, I preferably make use of a pair of pressure-exerting compression-springs 8 which are seated in cavities 9 in the cored-out seats 10 and which directly engage the wiping members 5 at points on their surfaces directly opposite those portions of the wiper surfaces which make contact with the conductor undergoing the smoothing operation. The effect of this is to bring a pressure to bear on the wiper members at just the right point to cause them to most effectively engage the interposed conductor, so that in the rapid rotation of the smoothing devices about the wire the entire surface of that portion of the insulation passing between the wiper members will be acted upon. It will be seen that the effective pressure brought to bear by the members 5 on the conductor may be adjusted and regulated by turning the seats 12 in the frame pieces 7, the locking nuts 11 being used to hold the spring seats 12 at any desired adjustment.

In the operation of the device, the conductor 10 covered by a fibrous insulating layer in any desired manner and having a suitable liquid binder applied thereto, is drawn into the smoothing device and between the wiping members 5, as indicated in Fig. 1 of the drawing. The rapid rotation of the wiping members transversely about the insulated conductor as an axis has the effect of quickly smoothing and compressing the surface of the binder-treated fibrous mass and converting it into a homogenous insulating layer with a uniformly smooth and even surface.

I find that a very convenient arrangement of the smoothing device and the driving means therefor is to provide the driving motor with a hollow shaft coincident with the axis of the rotor shaft and through which the smoothly-wiped conductor is drawn as it emerges from the smoothing operation. This arrangement is not only a very convenient and simple one in that the direct driving relation between the motor and the smoothing device eliminates intermediate driving elements, but the passing of the conductor directly through the motor is productive of a certain drying action, not only because of the heat produced by the operation of the motor, but also because the rapidly-rotating rotor acts to a certain extent as a fan or blower and causes a flow of air into and out of the motor interior that aids in drying the moist insulating covering of the conductor passing therethrough.

What I claim is:—

1. An insulation-smoothing device comprising: a plurality of resilient sheet-metal wiping members supported at one end and having their free ends arranged to engage an interposed conductor, pressure-exerting springs arranged to engage the free ends of said members and hold them in operative engagement with the conductor, and means for rotating said wiping members about said conductor as a center.

2. An insulation smoothing device comprising: a framework, resilient wiping members carried by the framework, and pressure-exerting members carried by the framework in opposed relation to each other and arranged to engage the wiping members opposite their points of engagement with an interposed conductor.

3. An insulation smoothing device comprising: a framework, resilient wiping members carried by the framework, pressure-exerting members carried by the framework in opposed relation to each other and arranged to engage the wiping members opposite their points of engagement with an interposed conductor, and means accessible from the outside of said framework for regulating the pressure applied by said pressure-exerting members.

JOHN ALLEN HEANY.

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