(No Model.)

T. E. MORFORD.

METHOD OF INSULATING ELECTRIC CONDUCTORS.

No. 457,828. Patented Aug. 18, 1891.

Fig. 1

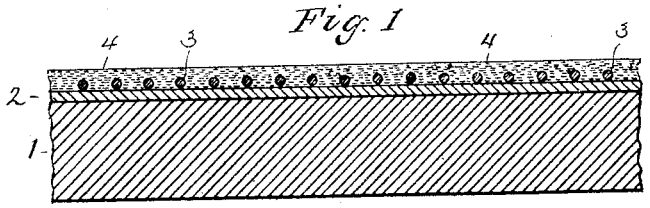


Fig. 2

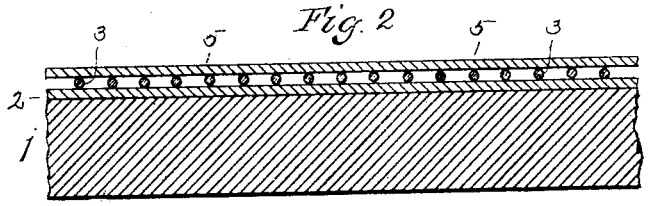
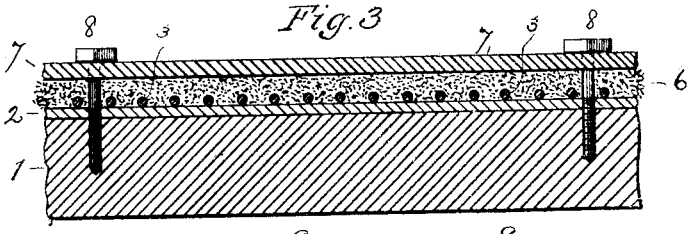


Fig. 3



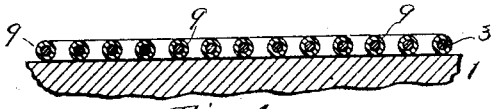


Fig. 4

Witnesses
A. L. Jones,
Kate Inman.

Inventor
Thomas E. Morford
By his Attorney
P. H. Gunckel

UNITED STATES PATENT OFFICE.

THOMAS E. MORFORD, OF MINNEAPOLIS, MINNESOTA.

METHOD OF INSULATING ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 457,828, dated August 18, 1891.

Application filed December 26, 1890. Serial No. 375,808. (No model.)

To all whom it may concern:

Be it known that I, THOMAS E. MORFORD, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in the Method of Insulating Electric Conductors, of which the following is a specification.

The primary object of my invention is the insulation of electric conductors from devices that are to be heated by means of the electric current—such devices, for example, as sad-irons, cooking utensils, &c; but the invention is also applicable, as will be obvious, to other devices than such as are required to be heated to be fitted to perform their functions.

My method, stated in a general way, of insulating an electric conductor from an object on which it is supported or carried consists in separating the conductor from the object by means of a non-conducting enamel or glaze or film that is made to adhere either to the object or to the conductor. According to the usual methods of insulation of conductors, especially of fine wires that are placed in close proximity to some body by which they are supported, the insulation is effected by interposing some non-conducting substance that is not effective in excluding air from the conductor, and hence oxidation follows and the life of the conductor is shortened. It is sought by my method to obviate this objection by incasing and hermetically sealing the conductor in an insulator which serves to separate it from the body on which it is supported.

In illustration of the manner of carrying out my method of insulation I have shown in the accompanying drawings, in Figure 1, a base or object coated with an enamel on which the electric conductor is supported and surrounded by a soft non-conducting substance in condition to be hardened and incase the conductor; in Fig. 2, a similar base coated with an enamel, on which is laid a conductor and over the conductor a non-conducting plate of fusible substance in position to incase the conductor when both enamel plates are fused; in Fig. 3, a like base, on which is an enamel supporting a conductor and a non-conducting packing compressed by a pressure-plate; and in Fig. 4, a base with a conductor thereon coated with enamel.

In the drawings, 1 designates the base or object on which the conductor is to be supported or carried, and 2 an enamel or glaze of any suitable non-conducting substance interposed between the base and the conductor 3 and adherent to the base.

In carrying out my process I prefer to coat the surface of the base or object 1 with an enamel, glaze, or film of any suitable non-conducting substance, which may be applied in plastic condition or in form of powder or otherwise, and which is preferably hardened before the coils of the conductor are laid upon it, in order that the conductor may not come in contact with the base or object. The preferable mode is to lay upon such enamel the conductor 3 in its desired position and spread over it a second coat 4 of a non-conducting substance similar to the enamel 2, either in form of powder or otherwise, in soft condition, in order that it may fill in the spaces between the several coils of the conductor. Afterward the second coat of the enamel is caused or allowed to harden and adhere to the first coat. This, as will be understood in the case of most enamels, should be done by heating, in a muffle or otherwise, to a degree sufficient to fuse both coats of the enamel and cause them to become an integral mass adherent to the base without subjecting the device to a heat sufficient to destroy the integrity of either the base or conductor.

Instead of applying a second coat of enamel in soft condition, my method may be carried out by first enameling the base and laying thereon the conductor and placing on this a second layer 5 of suitable non-conducting substance that need not necessarily be in a soft or plastic condition, as shown in Fig. 2, and afterward subjecting the whole to a degree of heat sufficient to cause the two enameled plates to fuse and run together to become a homogeneous mass, completely embedding the conductor and adhering to the base.

Again, my method may be carried out by coating the base with an enamel and laying thereon the conductor and over this placing some loose or soft non-conducting substance 6, such as asbestus, and over this placing a

pressure-plate 7 and compressing it by means of bolts 8 or otherwise, so as to cause the non-conducting substance to completely surround the coils of the conductor. Again, the conductor itself may be coated with an enamel 9, that is hardened before the conductor is laid on the object, as shown in Fig. 4. By the method described the electric conductor, while being perfectly insulated from the object it is to heat or upon which it is to be carried, is completely surrounded by the insulating substance, and is thus rendered durable.

While my method is designed primarily for the insulation of conductors designed to heat the bases upon which they are supported—such as sad-irons, hat-irons, cooking utensils, heaters, &c.—it will be obvious that the same method of insulation may be used in connection with many other devices and with such as are not required to be heated in order to adapt them to perform their functions—such, for example, as armatures, electric conduits, and many other devices.

Having described my invention, what I claim is—

The method of applying an insulated electric conductor, which consists in first applying a coat of enamel to the object, next placing upon this an electric conductor and a second coat of soft enamel, and afterward fusing both coats of enamel into an integral mass incasing the conductor.

THOMAS E. MORFORD.

Witnesses:
P. H. GUNCKEL,
F. W. NEVENS.