

[54] METHOD AND DEVICE FOR DRYING  
ENAMEL SLIP ON INNER SURFACES OF  
PIPES

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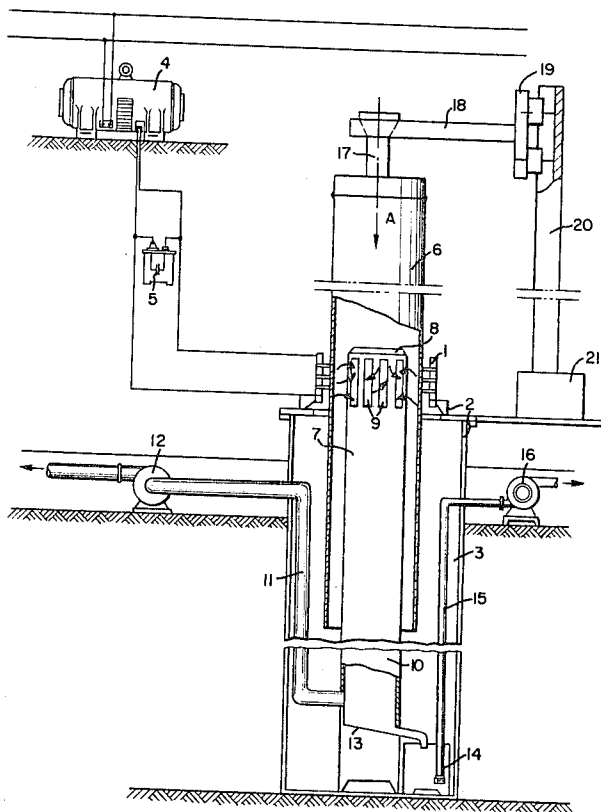
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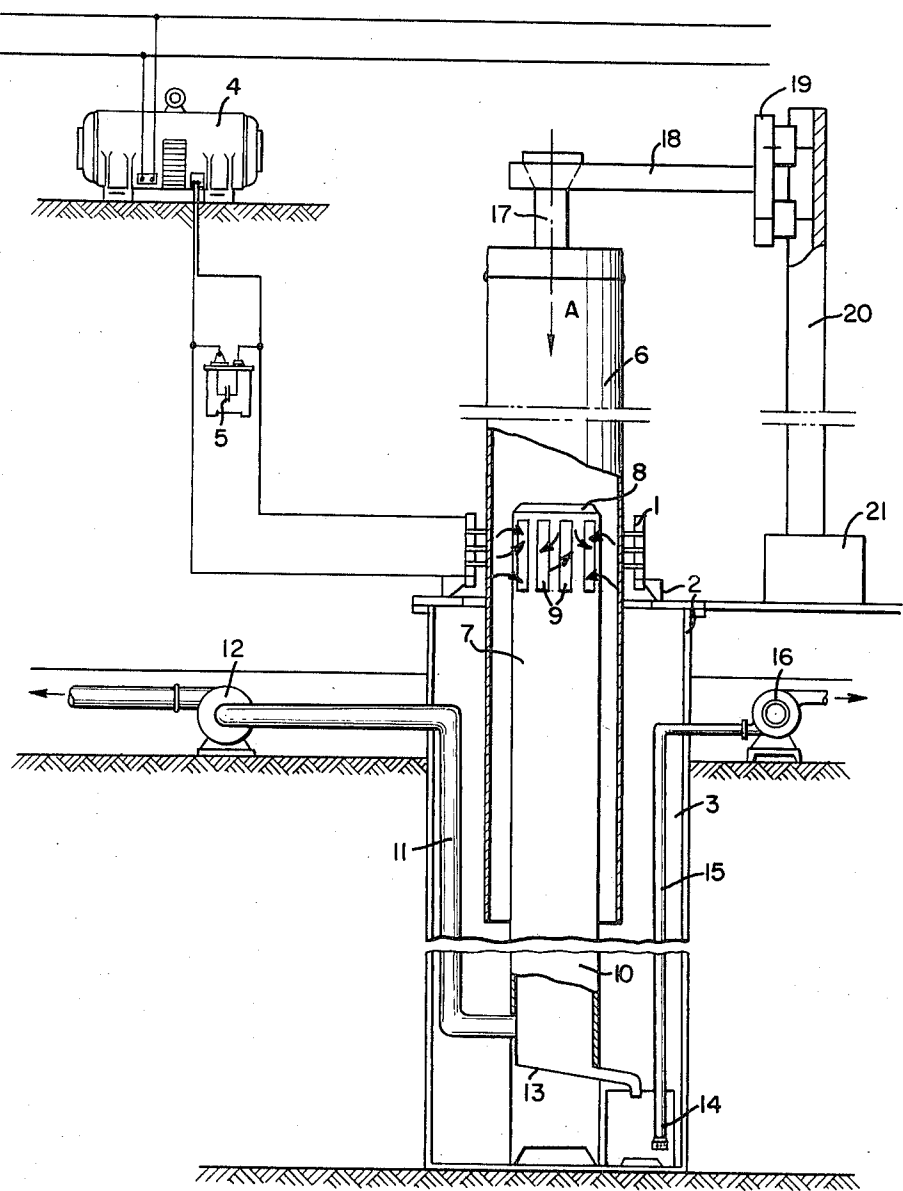
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#### [57] ABSTRACT

A method and device for drying enamel slip on the  
inner surface of pipes by induction heating wherein  
the vapours generated during drying of the slip are  
sucked out from inside the pipe.

3 Claims, 1 Drawing Figure





# METHOD AND DEVICE FOR DRYING ENAMEL SLIP ON INNER SURFACES OF PIPES

The present invention relates to the methods of drying enamel slip on the inner surface of pipes by induction heating.

It is known that the enamel slip applied to the surface of the pipes contains a considerable percentage of moisture, up to 40 percent of the weight of enamel frit.

In the process of heating, the pipe is usually moved progressively by any kind of suitable mechanism along its axis with relation to the inductor which fits around said pipe so that the pipe is heated successively, i.e. at any given moment of time a part of the pipe located in the zone of the inductor is heated while its other part, located outside of the inductor, remains cold.

Therefore, when the slip coating is drying, the water vapours are generated in the heated part of the pipe; rising along the pipe towards its cold part, the water vapours are condensed on a principle of a reflux condenser. The accumulated condensate drips down and washes off the enamel slip applied to the inner surface of the pipe.

An object of the invention resides in eliminating the aforesaid disadvantages.

We hereby propose an improved method of drying enamel slip which prevents the formation of condensate, and a device for the realization of this method.

The present invention relates to the method of drying enamel slip applied to the inner surface of pipes utilizing induction heating. According to the invention, the improvement consists provides for the vapours generated during drying of the slip to be sucked from inside the pipe in order to prevent accumulation of condensate on the inner surface of the cold part of the pipe.

Simultaneously we propose a device for the realization of this method, said device comprising a stationary heating inductor and a mechanism for moving the pipe axially through said inductor.

According to the invention, the device comprises a standpipe inserted into the pipe being heated, one end of said standpipe being located in the zone of the inductor while the other end is located outside of the pipe and connected to a suction device.

It is practicable that the end of the standpipe located in the inductor zone be made in the form of a perforated head for better suction of the vapours.

This allows the enamel coating to be dried on the inner surface of the entire pipe because the water vapours are sucked out directly in the zone of the inductor without rising through the pipe so that there is no accumulation of condensate in the unheated part of the pipe.

Now the invention will be described in detail with reference to the accompanying drawing which shows the device for the realization of the method, comprising a standpipe with a suction device connected to it, said standpipe being inserted into the pipe being dried.

As can be seen in the drawing, the heating inductor 1 is rigidly secured on a bed 2 installed above a well 3, and connected to a current transformer 4. To improve the power load factor, a capacitance 5 is cut into the heating circuit. The pipe 6 with a layer of enamel slip (not shown) applied to its inner surface is moved axi-

ally by any suitable conventional mechanism through the inductor 1 in the direction shown by arrow A. One such mechanism could comprise a holder 17 attached to trolley 19 by arm 18, trolley 19 being movable in guide 20 through the action of a control means 21 therefor.

Secured vertically in the lower part of the well 3 is a hollow standpipe 7 inserted into the pipe 6 for sucking out the vapours generated while the slip is drying in the heated pipe. The suction head 8 (upper end) of the standpipe 7 is located in the zone of the inductor 1 and has a multitude of holes 9 for the passage of the vapours. The holes 9 are located around the entire circular zone of the inductor 1. Connected by a tube 11 to the lower end 10 of the standpipe 7 protruding from the pipe 6 is a suction device 12 (fan).

Somewhat below the tube 11, the standpipe 7 is closed by an inclined bottom plate 13 which takes the condensing water into the receiver 14 from which it is sucked out by the pump 16 through a pipe 15.

The method of drying according to the invention can be made more apparent by describing the principle of operation of the device.

As the pipe 6 becomes heated, it is moved in the direction shown by arrow A with relation to the inductor 1. The water vapours generated during drying of the slip applied to the inside surface of the pipe are sucked out through the standpipe 7 by the fan 12 so that these vapours do not penetrate into the unheated (upper) part of the pipe 6. The water condensing from the vapours flows over the inclined bottom plate 13 of the standpipe 7 into the receiver 14 and is removed therefrom by the pump 16.

As a result, the baked enamel coating has a uniform thickness and a structure noted for high physical and chemical properties.

What we claim is:

1. A method of drying enamel slip on the inner surface of a pipe by the induction method which comprises disposing a pipe with a layer of enamel slip coated on the inner surface thereof inside an inductor so that said inductor embraces the pipe on the outside; inserting a hollow standpipe inside said pipe to evacuate said pipe of vapors generated on slip drying as a result of pipe heating; energizing said inductor to heat said pipe; moving said pipe progressively in the course of heating axially with relation to said inductor embracing it on the outside, and connecting said standpipe to suction means to remove vapors generated on slip drying in order to prevent formation of condensate on the inner surface of the unheated end of the pipe.

2. A device for drying enamel slip on the inner surface of pipes by induction heating comprising: a heating inductor installed immovably around the pipe to be heated; a mechanism for moving the pipe during heating axially with relation to said inductor; a hollow standpipe one end of which is inserted into the pipe and located in the zone of said inductor while the other end protrudes from the pipe; and a suction device connected to the end of said standpipe protruding from the pipe.

3. A device according to claim 2 wherein the end of the hollow standpipe located in the zone of said inductor has a multitude of holes.

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