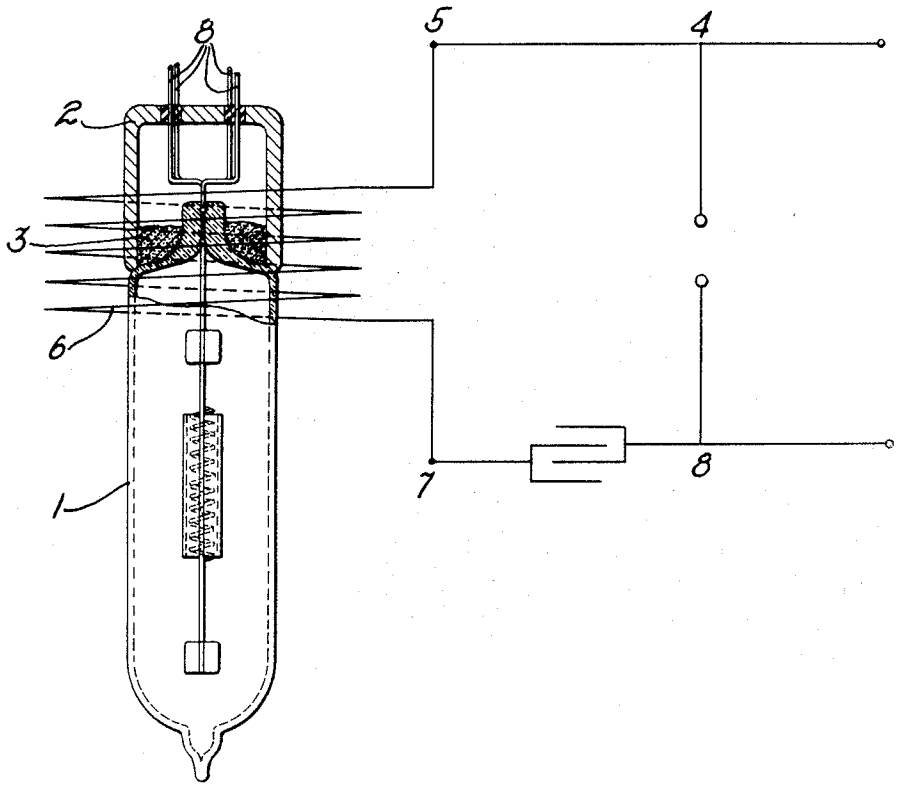
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METHOD OF HEATING AN ELECTRICAL AND THERMAL NONCONDUCTOR

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METHOD OF HEATING AN ELECTRICAL AND THERMAL NONCONDUCTOR

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This invention relates to a method of heating an electrical and thermal non-conductor and is especially well adapted to any process in which it is desirable to heat non-conductors as in baking, vulcanizing, fusing, etc.

The object of the invention is to provide a method for uniformly heating an electrical and thermal non-conductor by generating heat in the interior and throughout the entire mass of the non-conductor.

In practicing the invention, a quantity of electrically conducting particles is incorporated in a non-conducting or insulating material, and the article or body containing the electrically conducting particles is then subjected to an alternating magnetic field produced by a high frequency oscillating current. The variation of the magnetic field induces eddy currents in the conducting particles and causes them to become heated. By uniformly distributing these particles a uniform heating may be obtained.

A better understanding of the invention may be had from the following description, taken in conjunction with the accompanying drawing which illustrates one embodiment of the invention.

The drawing illustrates the application of the invention to the basing of a vacuum tube having a bulb 1 and a base 2 which are held together by a cementing material 3. A quantity of conducting particles such as copper or aluminum are incorporated in the cementing material for the purpose of baking the cementing material when the conducting particles become heated through the influence of the alternating magnetic field.

The alternating magnetic field is produced by a coil 6, which forms part of an oscillating circuit 4, 5, 6, 7 and 8 of any suitable type. The operation of the oscillating circuit is well understood by those skilled in the art and will not be described in detail since it forms no part of this invention.

The tube is based in the following manner: The bulb is placed in an inverted position and the wires 8 are threaded through openings formed in the base. A ring of cement consisting of a mixture of silica and shellac and containing a quantity of conducting particles uniformly dispersed therethrough is applied just above the shoulder of the tube. In the same manner a small quantity of the cement is applied to the inside of the base. The base is then pressed firmly against the glass and the wires protruding through the base are bent over sharply so as to hold the base securely in position. Keeping the tube in the inverted position it is subjected to the influence of the coil 6 and the temperature of the cementing material is raised to about 100° C. and held at that temperature for approximately two hours. At this time a firm bond has been formed between the cement and the adjacent material. The tube is removed from the coil and the wires 8 are soldered to contacts (not shown) to complete the tube.

By employing this method the bulb and the base of the tube are not appreciably heated as is the case when the cementing material is baked in an oven according to one practice followed in the manufacture of vacuum tubes.

It will be understood that the application of the method herein described and illustrated is merely a convenient and useful form of the invention, which is capable of many other applications without departing from the spirit and scope of the invention.

What is claimed is:

1. The method of heating an electrical and thermal non-conducting body, which consists in incorporating particles of conducting material in the non-conducting body and then subjecting the body to the influence of an alternating magnetic field.

2. The method of heating a non-conducting material, which consists in mixing conducting particles with the non-conducting material and inductively heating the conducting particles.

3. The method of heating a mixture of conducting and non-conducting materials, which consists in subjecting the mixture to an alternating magnetic field and heating the materials by the eddy currents induced in the conducting material by the magnetic field.

4. The method of basing a vacuum tube, which consists in incorporating conducting particles in a cementing material, applying

the cementing material between the bulb and the base, and inductively baking the cementing material.

5. The method of basing a vacuum tube by applying a mixture of cementing material and conducting particles between the bulb and the base, and inductively baking the mixture.

6. The method of basing a vacuum tube, which consists in applying a cementing material between the bulb and the base and inductively generating heat within the cementing material to bake the latter.

7. The method of heat treating a composition of matter which comprises including in the composition a metallic conductor and subjecting the same to high frequency induction heating.

8. The method of securing one body to another by a cement having as part thereof a conductive material which consists in baking the material by high frequency induction heating.

9. The method of securing a bulb to a non-conductive base which comprises employing a cement containing a conductor, positioning the cement in contact with and intermediate the bulb and base, and baking the cement by high frequency induction heating.

10. The method of uniting non-conductive bodies by a cement which comprises incorporating in the cement a material capable of being baked by high frequency induction heating and in disposing the cement when between the bodies in a high frequency field.

11. The method of manufacturing an electrical device having an evacuated envelope and a base, which comprises disposing a conductive adhesive material between the base and envelope and in baking the said material by high frequency induction heating.

12. The method of securing a mass of material of poor heat conductivity to a glass article which consists in interposing between said article and said mass a layer of basing cement in intimate thermal relation with metal and baking said cement by heat localized at said metal and applied otherwise than by conduction through said mass.

13. The method of affixing to a glass bulb a base composed of material of poor heat conductivity which consists in interposing between the bulb and the base a layer of cement adjoining metal and developing in said metal sufficient heat to bake said cement.

In witness whereof, I hereunto subscribe my name this 7th day of May, A. D. 1926.

ESME EUGENE ROSAIRE.