Nov. 13, 1934. A. LOPPACKER 1,980,729

ELECTRIC FURNACE

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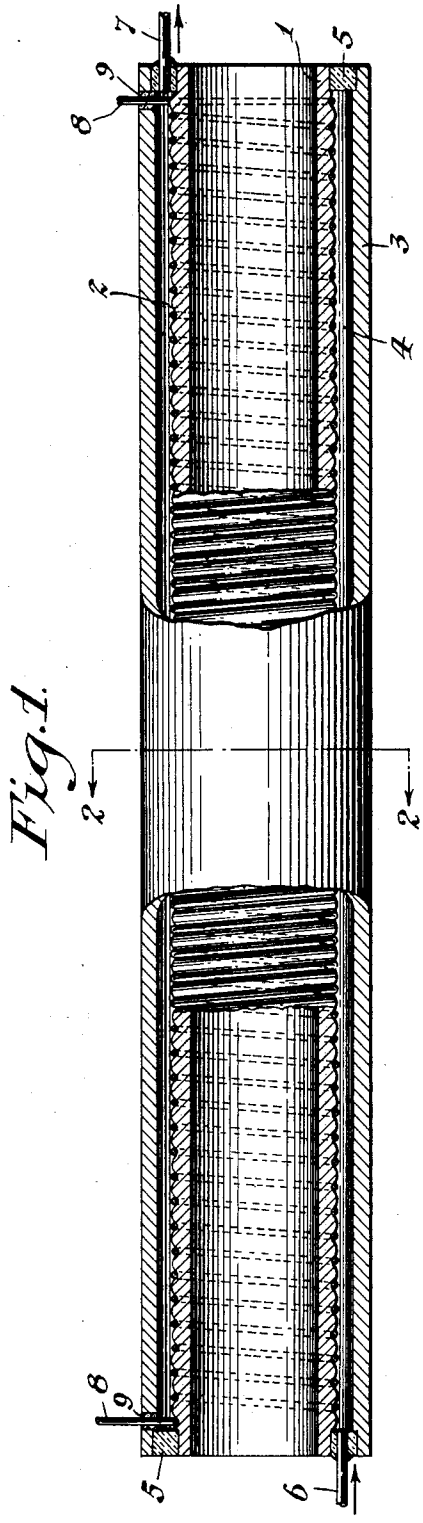


Fig. 1.

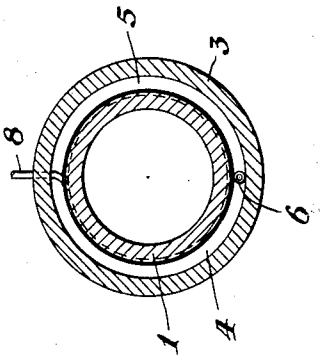


Fig. 2.

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ELECTRIC FURNACE

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9 Claims. (Cl. 219—36)

My invention relates to electrically heated furnaces of a type useful, for example, in degassifying metal parts, although, of course, not limited as to its uses.

A principal object is to provide a simple and economical furnace structure, and especially to provide means for preserving the heating coil by excluding oxygen (or air) and thus preventing oxidation. This is accomplished by enclosing the inner insulating tube which forms the furnace chamber and the nichrome wire wound thereon in an outer shell forming a gas chamber to which a suitable gas such as hydrogen is supplied, thus excluding air and preventing oxidation of the hot wire. The gas chamber surrounding the furnace tube also has a substantial heat-insulating effect.

The characteristics and advantages of the invention are further sufficiently explained in connection with the following detail description of the accompanying drawing, which shows one representative embodiment. After considering this example, skilled persons will understand that many variations may be made, and I contemplate the employment of any structures that are properly within the scope of the appended claims.

In the drawing:

Fig. 1 is a view partly in side elevation and partly in longitudinal section, of a furnace structure embodying the invention in one form.

Fig. 2 is a section at 2—2, Fig. 1.

The heating tube 1 is of any suitable insulating material, such, for example, as a silicate. It is formed with a helical groove 2 to receive the twins of the heating wire, which is usually nichrome. The heating tube and wire are placed within a tubular shell 3 of metal and of larger diameter, providing a cylindrical gas chamber 4. The ends of this chamber are sealed and the inner tube properly positioned by end rings 5 of glass. A small gas supply pipe 6 is fused into the glass sealing ring at one end, and a discharge pipe 7 is similarly sealed into the glass ring at the other end of the chamber.

A suitable gas, such as hydrogen, is supplied to the chamber to exclude air and prevent oxidation of the heating coil, whose life is thereby indefinitely prolonged.

The ends or terminals 8 of the heating coil are brought out through holes in the shell with glass insulation 9 therein which also seals the apertures.

I claim:

1. A furnace comprising a tube of insulating material, a heating coil wound thereon, an outer shell dimensioned to provide a gas chamber about the tube, and end sealing rings between the tube and shell, the rings also supporting the tube in concentric relation to the shell, and gas supply and discharge tubes passing through the respective sealing rings.

2. A furnace comprising a tube of insulating material, a heating coil wound thereon, an outer shell dimensioned to provide a gas chamber about the tube, and glass end sealing rings between the tube and shell, the rings also supporting the tube in concentric relation to the shell, and gas supply and discharge tubes passing through the respective sealing rings.

3. A furnace comprising a tube of insulating material, a heating coil wound thereon, an outer shell dimensioned to provide a gas chamber about the tube, the shell having holes through which terminals of the heating coil pass, and insulating and sealing material in the holes about the wire terminals, the gas chamber serving to hold a non-oxidizing gas in contact with the heating coil to prevent oxidation of the heating coil.

4. A furnace comprising a tube of insulating material, a heating coil wound thereon, an outer shell dimensioned to provide a gas chamber about the tube, the shell having holes through which terminals of the heating coil pass, and glass insulating and sealing plunger in the holes about the wire terminals.

5. A furnace comprising a tube of insulating material having an external helical channel, a heating coil wound in the channel, an outer shell dimensioned to provide a gas chamber about the tube, and glass end sealing rings between the tube and shell, the rings also supporting the tube in concentric relation to the shell.

6. A furnace comprising an open-ended tube of silicious material, an outer tube larger than the first tube, end sealing rings of glass located between the two tubes and sealing the space between the tubes to form a gas chamber, a coil of heating wire wound around the first tube, the ends of the heating wire passing through sealed openings in the walls of the gas chamber, and gas supply and discharge tubes communicating with the gas chamber, the gas tubes passing through sealed openings in the walls of the gas chamber.

7. A furnace comprising an open-ended tube of silicious material, an outer tube larger than the first tube, end sealing rings of glass located between the two tubes and sealing the space between the tubes to form a gas chamber, a coil of heating wire wound around the first tube, the

ends of the heating wire passing through sealed openings in the walls of the gas chamber, means to hold the turns of the heating wire spaced from each other, and gas supply and discharge tubes communicating with the gas chamber, the gas tubes passing through sealed openings in the walls of the gas chamber.

8. A furnace comprising a tube of silicious insulating material having an external helical channel, a heating coil wound in the channel, an outer shell surrounding and spaced from the tube, glass sealing members between the shell and tube, the tube, shell and sealing members forming a gas chamber, the ends of the heating coil passing through sealed openings in the walls of the gas chamber, and gas supply and discharge tubes communicating with the gas chamber, the gas tubes passing through sealed openings in the walls of the gas chamber.

9. A furnace comprising an open-ended tube of silicious material, an outer shell surrounding and spaced from the tube, glass sealing members between the shell and tube, the tube, shell and sealing members forming a gas chamber, a coil of heating wire wound around the tube, the ends of the heating wire passing through sealed openings in the walls of the gas chamber, and gas supply and discharge tubes communicating with the gas chamber, the gas tubes passing through sealed openings in the walls of the gas chamber.

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