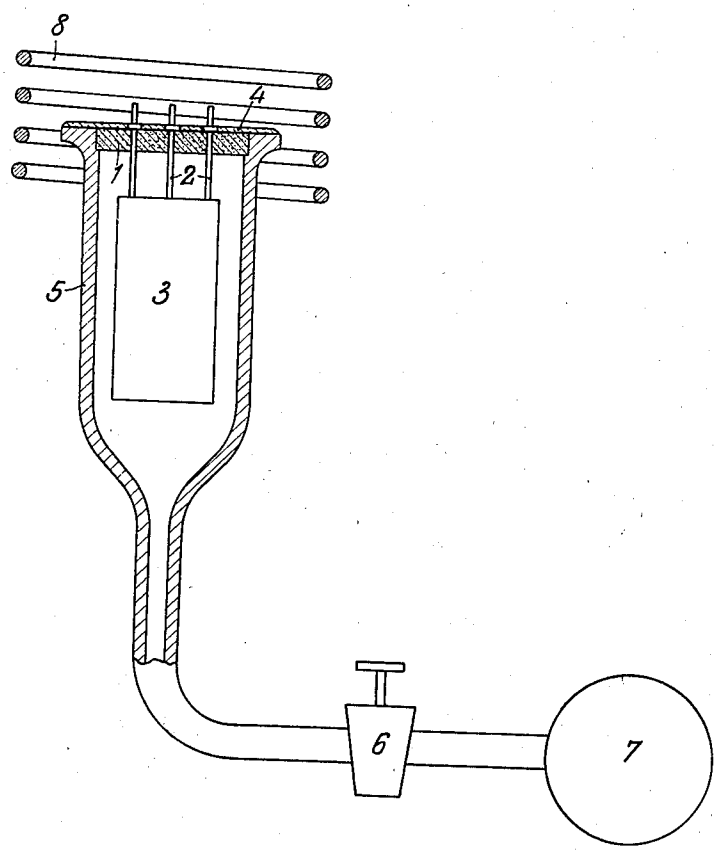
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METHOD OF MANUFACTURING ELECTRIC DISCHARGE VESSELS

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METHOD OF MANUFACTURING ELECTRIC DISCHARGE VESSELS

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3 Claims. (Cl. 250—27.5)

The invention relates to the manufacture of electric discharge vessels of the kind having an envelope or bulb difficult to soften, that is, a bulb which is of metal or a ceramic material. The invention is especially intended for the manufacture of those discharge tubes which have their electrode system fixed on a ceramic insulating body sealed into the bulb by means of a binding agent adapted to soften under the influence of heat. The bulb or envelope may at the same time serve as the anode in well known manner.

Under the invention the suction produced by the pump when exhausting the bulb is caused also to aid in sealing the carrier of the electrode system to the bulb. In this way the interconnection of the two and the exhaustion of the bulb are obtained in a single operation, the pressure of the outer air forcing the softening sealing material into the respective joints.

The accompanying drawing is a diagrammatic sectional view of an arrangement for effecting the novel method.

In the case of the arrangement here represented by way of example the invention may be effected as follows:

1 denotes a ceramic disc-shaped body which is provided with leads 2 sealed into it by means of a binding agent 4 arranged as a layer on body 1. The binding agent 4, which may be a suitable glass, is of a kind softening only at higher temperatures. After the electrode system 3 has been secured to the leads 2 the assembly 1, 2, 3 is inserted into the metal bulb 5, body 1 being calculated to fit into the bulb. The layer of binding agent 4 projects beyond the edge of body 1 so as to cover the joint between bulb 5 and body 1.

With the parts 1, 2, 3, 4 in the position represented in the drawing, the binding agent 4 is now preliminarily heated while at the same time a cock 6 is opened to connect a pump 7 to the bulb 5. The suction so produced in bulb 5 acts to force the softening binding agent into the joint between bulb 5 and body 1. As soon as this joint has been sealed in this way to insure vacuum tightness the pump will quickly exhaust the bulb to such extent that the electrode system and the interior of the bulb will not be subject to oxidation effects. The sealing operation is then finished by raising the temperature. To such end, preferably high frequency eddy currents are produced in the metal of the bulb 5 with the aid of a heating coil 8. As during this sealing period the electrode system is in a vacuum space the bulb may be subjected to very high temperatures without affecting the electrode system. Therefore, the bulb need not be cooled and high-melting sealing material may be employed. The novel method hence allows of using both temperature-sensitive electrode system and hard vitreous sealing material free of lead.

Instead of a binding agent 4 formed as a layer on the body 1, this body may be provided with a circumferential ring of glass or the like.

What is claimed is:

1. In the manufacture of electric discharge vessels having a bulb provided with an aperture and a cover for said aperture, the method which comprises covering said aperture with said cover and thereby producing a joint between said cover and said bulb, applying sealing material over said joint, heating said material to a temperature sufficient to soften it and to form a temporary seal and simultaneously exhausting said bulb, exhausting said bulb to substantially its final vacuum, and then raising the heating temperature to complete the seal.

2. The method of manufacturing a vacuum tube which comprises positioning a porous ceramic cover in the open portion of a tube envelope, covering said porous ceramic cover and a portion of said envelope with a layer of glass, creating a partial vacuum in said envelope and simultaneously heating said layer to seal said cover to said envelope and filling the pores of said cover, completing the exhaustion of said envelope and heating said layer and said envelope to a higher temperature than that of the previous heating to complete the sealing of said cover to said envelope.

3. The method of manufacturing a vacuum tube which comprises positioning a cover in the open portion of a tube envelope, covering at least a portion of said cover and a portion of said envelope with a layer of sealing material, creating a partial vacuum in said envelope and simultaneously heating said layer to seal said cover to said envelope, completing the exhaustion of said envelope and heating said layer and said envelope to a higher temperature than that of the previous heating to complete the sealing of said cover to said envelope.

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