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N. A. IOFIS ET AL

3,504,220

CATHODE UNIT

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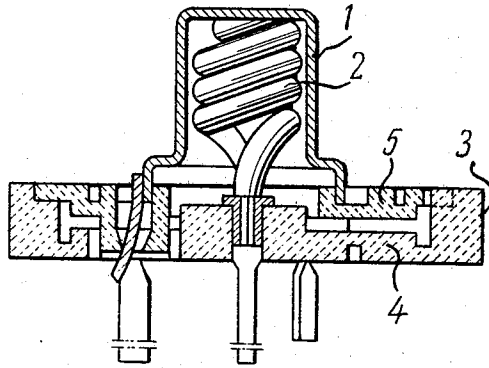


FIG. 1

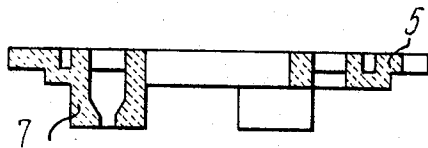


FIG. 2

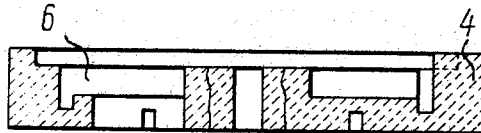


FIG. 3

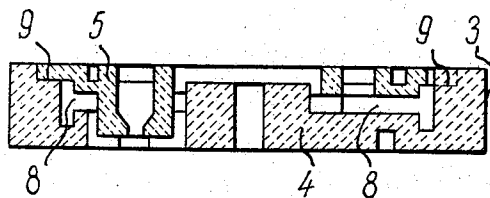


FIG. 4

1

2

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**CATHODE UNIT**

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3 Claims

**ABSTRACT OF THE DISCLOSURE**

A cathode unit for electrical vacuum instruments comprises a cathode with a preheater in respective parts of a ceramic insulator which include projections and slots to define heat and current insulative gaps between the regions where the cathode and preheater are secured.

The present invention relates to cathode units used in electric vacuum instruments.

There are known cathode units for electric vacuum instruments comprising a cathode, a preheater and an insulator wherein the cathode and the preheater are secured on one insulator (cf. Hungarian Patents Nos. 143,842 and 144,743).

A disadvantage of these constructions lies in current leakage in the cathode-preheater circuit which restricts the field of their application to only those instruments wherein the cathode is electrically connected to the preheater.

Another disadvantage of the known constructions of the above type when used for electronic instruments is their high thermal conductivity.

An object of the present invention is to eliminate these disadvantages.

Another object of the present invention is to provide a cathode unit for electronic instruments wherein current leakage in the preheater-cathode circuit is eliminated and insulator thermal conductivity is substantially reduced.

These and other objects are achieved in a cathode unit with a cathode and a preheater secured on an insulator wherein, according to the invention, a gap is provided between the areas intended for securing the cathode and the preheater on the insulator.

One of the possible embodiments of the invention is a cathode unit with an insulator made of two parts, one of which serves for securing the preheater, while the other serves for securing a cathode. The insulator parts are provided with slots and projections which, when the insulator is assembled, form a gap between the parts. Said parts are connected beyond the cathode and preheater attachment areas prior to mounting the cathode and the preheater.

Hereinbelow is given a detailed description of an exemplary embodiment of a cathode unit according to the invention in conjunction with the accompanying drawing, wherein:

FIG. 1 is a sectional view of the cathode unit;

FIGS. 2 and 3 show parts of the cathode unit insulator; and

FIG. 4 illustrates a cathode unit insulator assembly. The butt-type cathode unit consists of a cathode 1 (FIG. 1) and a preheater 2, secured in a ceramic insulator 3 made of two parts 4 and 5, the preheater 2 being secured in part 4 of a greater diameter, and the cathode 1 being secured in part 5 of a smaller diameter.

The parts are provided with respective slots 6 and projections 7 which, when assembled, form a gap 8 between the parts 4 and 5.

The attachment places of the parts 4 and 5 are outside the area intended for securing the cathode and the preheater in the insulator.

The parts are connected according to the well-known manufacturing method (by sintering) prior to assembling the cathode unit.

Such embodiment of the cathode unit ensures separation of the areas where the cathode 1 (FIG. 1) and the preheater 2 are secured.

What we claim is:

1. A cathode unit for electric vacuum instruments comprising a cathode, a preheater, an insulator, means securing said cathode and preheater on said insulator in specific regions thereof, and means defining heat and current insulative gaps in said insulator in the regions where said cathode and said preheater are secured to said insulator.

2. A cathode unit according to claim 1 in which the insulator comprises two parts respectively mounting said preheater and said cathode, said parts having respective projections and slots which constitute the means defining said gaps.

3. A cathode unit according to claim 2 wherein said cathode is engaged in said projections and said preheater is mounted within the cathode and secured in the part having the slots for receiving the projections.

**References Cited**

**UNITED STATES PATENTS**

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U.S. Cl. X.R.

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