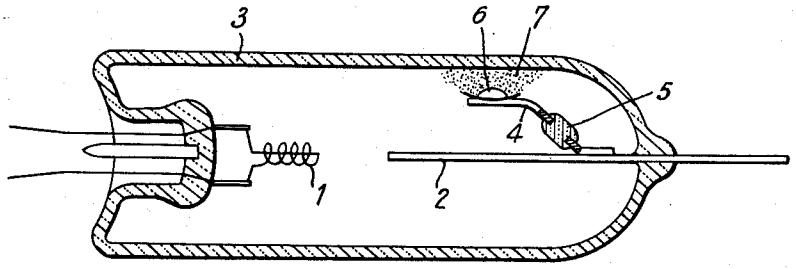
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GETTER ARRANGEMENT FOR REDUCING CATHODE-ANODE CAPACITY

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GETTER ARRANGEMENT FOR REDUCING CATHODE-ANODE CAPACITY

Henri Eicken, 5 Chemin Malombre, Geneva, Switzerland

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1 Claim. (Cl. 313—181)

This invention relates to electronic tubes.

In order to measure very high resistances (several thousands of megohms) with low frequency alternating currents, without the measurement being disturbed by the importance of the reactive impedance of the detector element and the bridge arms in which it is mounted, it is necessary to introduce in the bridge compensating elements and to proceed by successive equilibriums in order to obtain an exact measurement by a zero method.

It is therefore impossible to measure, in a continuance manner, essentially variable resistances. The action due to the capacity of the bridge arms (fixed or balanced), and in particular the capacity of the detector element, must be rendered negligible. For measurements at industrial frequencies, the factor $L\omega$ plays no role, on the other hand the factor $1/C\omega$ amounts to 3000 megohms at a frequency of 50 cycles per second for a capacity of only one picofarad.

An object of the invention is to provide an electronic tube designed for improved bridge measurements and the anode-cathode capacity of which is reduced to a minimum.

The invention proposes an electronic tube comprising an anode and a cathode, and is characterized in that the anode is constituted by a straight metallic wire remote from the cathode, and in that it comprises a getter support insulated from the electrodes and positioned to produce, during the manufacture of the tube, a metallic deposit on one side of the bulb at a distance from the spacing between the electrodes, so as to reduce the anode-cathode capacity of the tube.

The sole FIGURE of the accompanying drawing shows, by way of example and in axial cross section, an embodiment of the invention.

The tube shown in the drawing is a diode comprising a cathode 1 formed by a filament composed of a tungsten or nickel core covered by a layer of carbonates reduced to emissive oxides in a known manner. The tube further comprises an anode 2 constituted by a straight metallic wire, for example of molybdenum, having a diameter of several hundredths of an inch and the inner end of which is separated, for example, by 0.197 to 0.394 inch from the cathode 1. The anode 2 is sufficiently long to permit a length of bulb to reduce leakage.

The electrodes 1 and 2 are mounted in a known manner in glass bulb 3 in which is provided a high vacuum. The tube comprises, in the bulb 3, a getter support 4 mounted on the anode 2, but insulated therefrom by an insulator 5 which is, for example, a bead of glass. The getter 6 is directed in such a way that it produces, during the manufacture of the tube, a metallic deposit 7 on a side of the bulb remote from the cathode 1. As a result of the small deposit surface 7 with respect to the cathode 1, the shape of the anode 2 and its distance from the cathode 1, the tube described has an anode-cathode capacity reduced to a minimum as compared with known tubes. Furthermore, this low anode-cathode capacity is not appreciably altered during manufacture of the tube because the substantial space between the anode and cathode is not appreciably reduced by deposit of getter material on opposed surfaces of the electrodes.

The tube described above has a high internal resistance, which does not hinder resistance measurements carried out with bridges employing the said tube, since the latter is designed to work by peak detection on very high load resistances (static voltmeter or a voltmeter with an almost infinite admission impedance tube).

The advantage of the tube described resides in the possibility of measuring very high resistances at industrial frequencies. The detection is a measure of the peak value of the alternating voltage at the terminals of the unknown element and permits the production of a proportional continuous voltage whereby direct current measuring devices having a high capacity and an almost infinite resistance may be dealt with.

What is claimed is:

An electronic tube consisting of an evacuated glass bulb, said bulb being of elongated shape and having first and second ends, a cathode in said bulb at one end thereof, an anode in said bulb at the other end thereof, said cathode and anode defining a space therebetween, said anode consisting of an elongated rod extending toward said cathode, said cathode including a coil coaxial with said rod and axially spaced therefrom, a getter in said tube on and adjacent said anode, said getter being remote from said space and being adapted to flash on said bulb at a position remote from said space, and a getter support connecting said getter to said anode and including an insulating portion electrically isolating said getter and anode.

References Cited in the file of this patent

UNITED STATES PATENTS

1,679,449	Smith	Aug. 7, 1928
1,749,611	Schroter	Mar. 4, 1930
1,872,567	Beck	Aug. 16, 1932
2,071,849	Lowry	Feb. 23, 1937
2,209,870	Anderson	July 30, 1940
2,418,390	Atlee	Apr. 1, 1947
2,505,095	Burnside	Apr. 25, 1950
2,545,884	Isaacs et al.	Mar. 20, 1951
2,588,789	Zinn	Mar. 11, 1952
2,855,534	Moubis	Oct. 7, 1958
3,005,923	Beese	Oct. 24, 1961

FOREIGN PATENTS

198,847	Austria	July 25, 1958