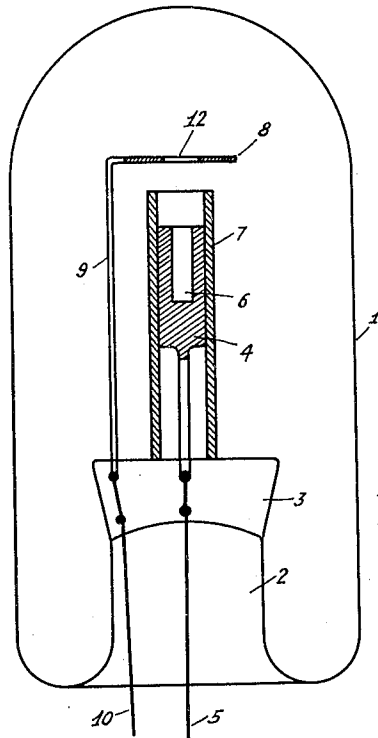


June 27, 1933.

G. HOLST ET AL
GLOW DISCHARGE TUBE
Filed April 16, 1930

1,915,934



INVENTORS
GILLES HOLST AND
HERRE RINJA
BY *H. P. Grover*
ATTORNEY

UNITED STATES PATENT OFFICE

GILLES HOLST AND HERRE RINIA, OF EINDHOVEN, NETHERLANDS, ASSIGNORS TO
RADIO CORPORATION OF AMERICA, A CORPORATION OF DELAWARE

GLOW DISCHARGE TUBE

Application filed April 16, 1930, Serial No. 444,680, and in the Netherlands June 22, 1929.

This invention has reference to gas-filled electric glow discharge tubes. Tubes of this kind are frequently used for transforming variations in electric current into variations in light, for example, in installations for receiving images transmitted by radio.

The glow discharge tube according to the invention comprises a cathode which has on its active surface a cylindrical recess, the depth of which is large as compared with its width. The glowing discharge occurring during the operation of the tube is primarily confined to this recess, which results in obtaining a very concentrated light-source.

The invention will be more clearly understood by reference to the accompanying drawing, in which, by way of example, an embodiment of the invention is illustrated.

The discharge tube shown in the figure comprises a bulb 1, having sealed to it a stem 2. The electrodes of the tube are mounted on the pinch 3. The cathode is constituted by a metal rod 4 mounted upon the pinch 3 and connected to the leading-in wire 5. The rod 4 has a cylindrical recess 6 the depth of which exceeds the dimensions of its cross-section. The longitudinal direction of the said recess is perpendicular to the surface of the upper end of the cathode and coincides with the direction in which the active rays of the glowing discharge are emitted. The section of the recess need not be circular but may, for example, be rectangular. Likewise, the rod 4 may be rectangular, cylindrical, or have any other shape in cross-section.

The cathode is surrounded by a little tube 7 of insulating material which prevents the lateral surface of the rod 4 from taking part in the discharge. Preferably the tube 7 slightly extends beyond the cathode.

The anode of the tube is constituted by a ring 8 which is mounted upon the pinch by means of a supporting wire 9 and connected to the leading-in wire 10. The anode 8 is apertured at 12 over the opening 6.

The tube contains a suitable gaseous filling which preferably consists of one or more rare gases and, in addition, may contain metal vapors. If the tube contains, for example, mercury vapor, the glowing discharge pro-

duced during the operation of the tube will yield ultra-violet rays which can emerge from the tube wall if the latter consists of material transparent to such rays, say quartz. If it is desired that the glow discharge should contain other rays, another metal vapor capable of generating the rays desired may be added to the gaseous filling.

During the operation of the discharge tube illustrated the glow discharge will be primarily confined to the recess 6. Since the light is radiated in the direction of the axis of the cylindrical recess the glow discharge constitutes a very concentrated light source which is very advantageous for many uses of the discharge tube.

What we claim is:

A gaseous conduction device comprising a sealed vessel containing a rarified atmosphere of good conductivity and having at one end a re-entrant stem with a press on the inner end, a cathode lead in said press, a solid cylindrical cathode having in one end a recess of a depth greater than its diameter and mounted on and supported by said cathode lead with its recessed end directed away from said stem, a tubular insulator surrounding said cathode and extending lengthwise of said vessel, with its open inner end projecting beyond the recessed end of said cathode, an anode lead projecting from said press outside of and parallel to said tubular insulator with its free end projecting beyond the open end of said insulator, and an annular anode mounted on the free projecting end of said anode lead and adjacent the open end of said insulator to extend transversely of said insulator with the central opening of said anode in registry with the recessed end of said cathode.

GILLES HOLST.
HERRE RINIA.