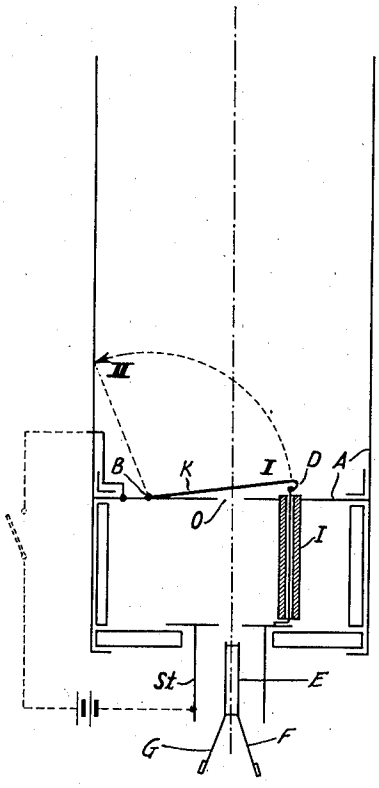
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CATHODE RAY TUBE APPARATUS

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INVENTOR
KURT DIELS
BY H. G. Brown
ATTORNEY

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CATHODE RAY TUBE APPARATUS

Kurt Diels, Berlin, Germany, assignor to Telefunken Gesellschaft für Drahtlose Telegraphie m. b. H., Berlin, Germany, a corporation of Germany

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2 Claims. (Cl. 250—141)

The invention relates broadly to cathode ray tube apparatus, and more particularly to an arrangement by which it is possible to protect the luminescent screen of the cathode ray tube during activation of the cathode. Reference should be had to the co-pending application of Max Knoll, Serial No. 68,969, filed March 14, 1936.

After the exhaustion of the glass envelope of the tube, it is necessary to heat the oxide cathode of the tube to a temperature of over a 1,000° C. in order to properly activate the cathode surface. The normally operating temperature however of the tube is only around 850° C., hence, during activation of the oxide cathode, the cathode itself is subject to stresses greatly in excess of those which it is normally subjected to during the operation of the tube. Accordingly, it is very easy to throw off from the cathode in the form of atomic or molecular rays, materials or forces which reach the luminescent screen, and due to the high acceleration involved, amongst other causes, the luminescent screen may be blackened or its reaction to the normal cathode ray may be changed at the particular point where the atomic or molecular rays strike the screen.

In the co-pending application above referred to, there was suggested the use of a rotating or swinging arrangement for closing the path between the cathode and the luminescent screen. This was accomplished by suitable movement of the tube, and after the closure, suitable movement of the tube removed the closure member from the path between the cathode and the screen. This arrangement is subject to the disadvantage that the closing device easily may be shut again after completion of the tube by movements incidental to the assembly of the tube in the television receiver or other forms of work which necessitate the handling of the tube.

To eliminate this disadvantage, I propose a closing device in the path between the cathode and the luminescent screen in the cathode ray tube which will retain an open position once it has been opened. As to when the path is open is a matter of convenience for the operator, and it is very easy to keep the arrangement in place during transportation of the tube, normal tests on the tube, or further activation of the cathode.

The invention will best be understood by reference to the accompanying drawing in which the single figure shows one embodiment of the arrangement.

According to the drawing, there is shown the lower neck of the cathode ray tube for the purposes of convenience, it being unnecessary for the purposes of this invention to show the frustro-conical section and screen arrangement. A closing shutter K is pivoted at a point B at which point is placed a spring which normally retains the closure member K in the position II. When the tube is first manufactured, the closure member K is forced down into the position I where it is joined by conducting wire at the point D. This wire piece not only retains the closure member K in this position but is adapted to be formed of a material which melts when a low voltage is passed therethrough and, hence, at any desired time, by passing a voltage through the arrangement as shown, the wire will melt and the spring placed at the pivot point B will cause the electrode member K to swing upwardly and be permanently retained in that position.

The connection is made through the battery, and thence through the conducting member St through the point D and the element K.

The relative position of the cathode E has been indicated and the energizing leads thereto G and F.

The path to be closed, of course, is the opening in the accelerating anode A which is designated as O. It will be appreciated that by pivoting the element K on one of the conducting arrangements, preferably the anode A, a complete circuit may be formed through the meltable wire D to the exterior of the tube through the normal leads therein.

What I claim is:

1. In a cathode ray tube, a cathode, an apertured anode, means mounted on said anode to completely close said anode aperture, spring means joining said latter means to said anode and normally adapted to hold said means in a position retracted with respect to said anode aperture, and an electrical conductor joined to said anode and to the extremity of said anode aperture closing means remote from the spring means to hold said aperture closing means in a position so as to close said anode aperture.

2. In a cathode ray tube, a cathode, an apertured anode, means mounted on said anode to completely close said anode aperture, spring means joining said latter means to said anode and normally adapted to hold said means in a position retracted with respect to said anode aperture and an electrical conductor having a low melting point joined to said anode and to the extremity of said anode aperture closing means remote from the spring means to hold said aperture closing means in a position so as to close said anode aperture.

KURT DIELS.