

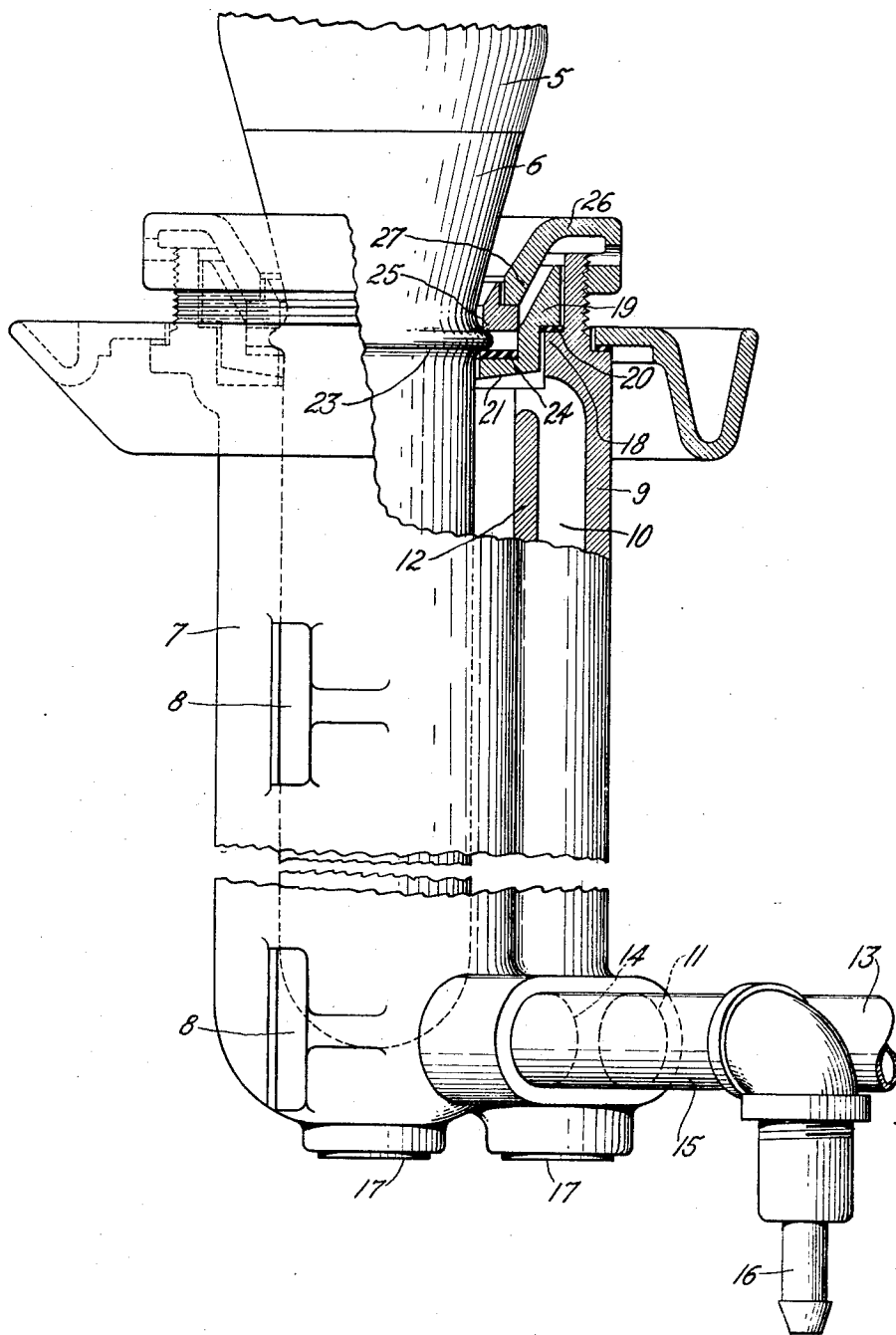
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ELECTRON DISCHARGE DEVICE

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UNITED STATES PATENT OFFICE

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ELECTRON DISCHARGE DEVICE

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This invention relates to electron discharge devices and more especially to a cooling container for such devices of the external anode type.

In high power radio systems in which such devices are used, it frequently happens that trouble is experienced in the removal of a discharge device from its water jacket because of a heavy mineral deposit on the surface of the anode. Since the discharge devices are very often maintained in use for a considerable length of time, the impurities in the water cooling system form a mineral deposit on the surface of the anode, and due to the excessive heat generated in the discharge device this deposit is vitrified on the anode surface and soon becomes of such dimensions that when a breakdown occurs in the discharge device it cannot be removed from the water jacket and a complete removal of the water jacket and anode is necessary. Furthermore, it is highly important that the removal and replacement of the external anode discharge device be accomplished without unnecessary delay.

It is the object of this invention to overcome the aforementioned difficulties, that is, to enable a discharge device to be readily removed from its container even though a heavy mineral deposit adheres to the anode surface.

This object is attained, in accordance with a specific aspect of the invention, by providing a cylindrical container or jacket having a relatively wide mouth through which the anode extends. A removable reducing ring or flange fits into the mouth of the jacket and has an inner diameter substantially the diameter of the anode and an outer diameter substantially the inner diameter of the water jacket. A circumferential ridge on the anode, the outside diameter of which is substantially less than the interior diameter of the jacket, is seated on the reducing ring and forms a support for the anode. A clamping ring fits over the anode ridge and a cap member which is threaded to the jacket engages the clamping ring to rigidly support the anode in the container. This arrangement affords an efficient water-tight container

from which the discharge device may be easily removed even when coated with a vitreous mineral deposit. Furthermore, the improved container facilitates the removal of mineral substances and materially reduces maintenance costs.

In the accompanying drawing, the single figure illustrates an embodiment of the invention, with parts broken away to show the detailed construction.

Referring to this drawing, there is disclosed the combination of an electron discharge device 5 having a cylindrical cup-shaped anode 6, and a cylindrical cast metal container or water jacket 7, provided with offset mounting lugs 8 to support the jacket in a vertical position. An offset longitudinal portion 9 of the container is provided with a partition 12 which forms a passageway 10 to the outlet port 11. A pipe connection 13 is attached to the outlet port 11, whereby the water is carried away from the interior of the jacket. An inlet port 14 adjacent the outlet port communicates with the main portion of the jacket and is provided with a pipe connection 15 which carries a nipple 16 to which a flexible hose may be fastened. The lower end of the jacket is provided with removable plugs 17, so that the container may be cleaned of waste material and mineral deposits.

The upper end of the jacket 7 is provided with a relatively wide opening or mouth having substantially the same diameter as the interior of the jacket. A circular projection 18 within the jacket forms a seat for the reducing flange or ring 19, the gasket 20 being provided between the seat and flange to provide a water-tight connection. The flange or ring 19 is provided with a bevelled surface and an inwardly projecting shelf portion 21, to reduce the large diameter of the mouth of the jacket to approximately the diameter of the anode. A circumferential ridge 23 adjacent the flared end of the anode 6, is seated on a gasket 24 carried by the upper surface of the portion 21 of flange 19. A two-part clamping ring 25, engages the opposite surface of the ridge 23 and an apertured cap member 26, which is threaded to the exterior of the casing or jacket is provided with an in-

wardly projecting portion 27, which securely clamps the ring 25 to the anode and thereby provides a rigid support for the anode and a water-tight connection for the jacket 7.

5 The construction described above overcomes the difficulties heretofore experienced, since the only operation necessary to remove the anode from the jacket, even though it is encrusted with a heavy mineral deposit, is to
10 unscrew the threaded cap member 26. The anode can then be easily removed from the jacket, because the reducing flange or ring 19 will also be removed with the device, thereby providing an opening in the jacket through
15 which the encrusted anode will pass. This construction permits very rapid removal and assembly of the discharge device while providing a water-tight connection between the jacket and the anode.

20 What is claimed is:

1. In combination, an electron discharge device having a cup-shaped external anode with a circumferential ridge, a wide mouthed jacket surrounding said anode and having
25 an internal projection, a removable reducing flange closing said jacket between said projection and said anode ridge, and an apertured cap threaded to said jacket, said cap having an inner portion clamping said anode
30 ridge to provide a water-tight joint, said flange being slidably removable with said anode.

2. In combination, an electron discharge device having a cup-shaped external anode
35 with a circumferential ridge, a cup-shaped water jacket surrounding said anode, said jacket having an opening at one end substantially the same as the interior diameter of said jacket, a slidably removable reducing
40 flange closing the open end of said jacket and supporting said anode, a clamping ring in contact with said anode ridge, and an apertured cap member threaded to said jacket and exerting pressure on said clamping ring.

45 In witness whereof, I hereunto subscribe my name this 26th day of February, A. D. 1926.

HERBERT VADERSEN.

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