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AUDION TUBE

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Fig. 1.

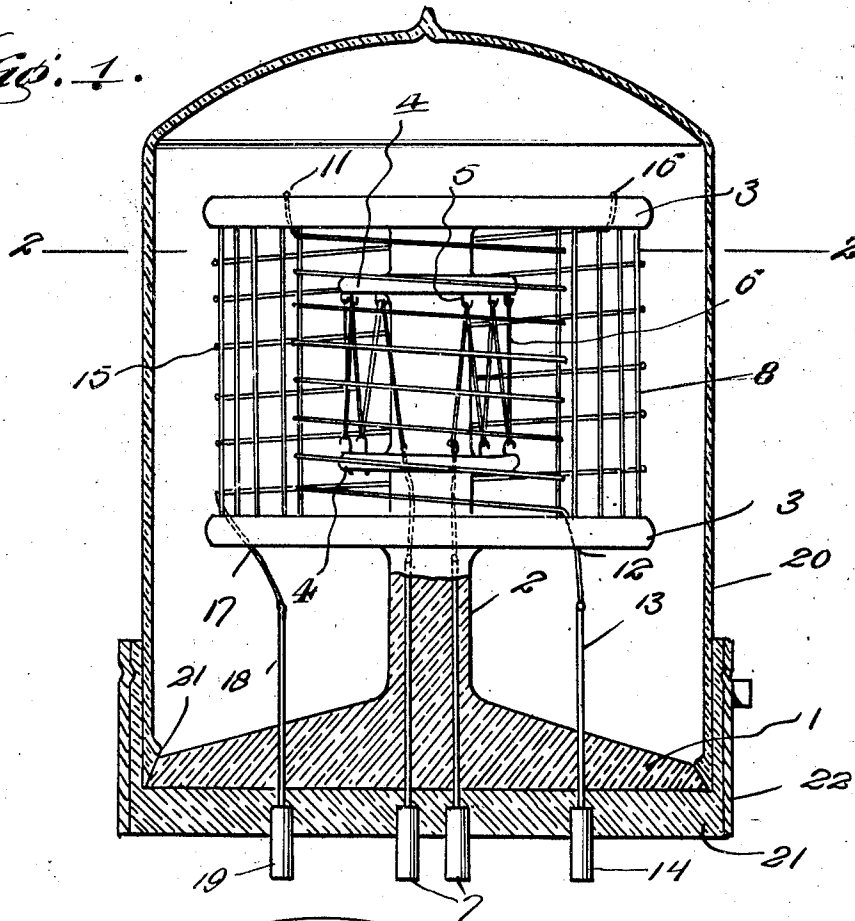
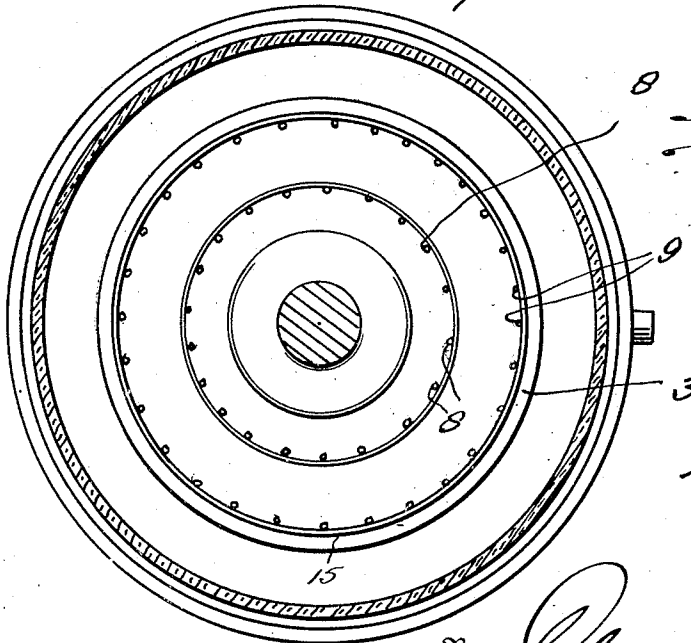


Fig. 2.



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AUDION TUBE.

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This invention relates to new improvements in the construction of audion tubes.

An object of the invention resides in providing an anode, grid, and cathode of a special form, arranged in a co-related manner for providing increased efficiency over other tubes of this type.

Another object of the invention resides in providing an audion wherein the anode and the grid are of helical form, arranged in concentric relation with similar points in each convolution in the same radial relation, and the filament cathode is arranged in cylindrical form with the filament wire extending in zig-zag relation forming the cylinder, so that the wires are arranged at substantially right angles to those of the helical grid and anode, for increasing the efficiency of a tube of this character, over similar tubes now in use, and at the same time providing a relation of elements wherein the current necessary to produce this increased efficiency is comparatively small in relation to the current consumption of tubes now in use.

A further object of the invention resides in providing a convenient supporting element adapted to mount all of the tube elements.

The invention also comprehends other objects and improvements in the details of construction and arrangement of parts which is described in the following description and claims, directed to a preferred form of the invention, it being understood, however, that variations may be made from this structure within the scope of the claims.

In the drawing:

Figure 1 is a sectional view through a tube constructed according to the invention showing the coils in elevation.

Figure 2 is a transverse sectional view taken on the line 2—2 of Figure 1.

1 indicates the base of a supporting member having a stem 2 extending from the central portion thereof and provided with a pair of spaced annular flanges 3 above the base as clearly shown in Figure 1 of the drawings, between which are a pair of smaller annular flanges 4, which are also arranged in spaced relation with each other and from the flanges 3. The smaller annular flanges are provided adjacent the edge thereof with a plurality of spaced hooks 5 adapted to receive and support the filament cathode 6, which it will be noted extends around the edges of the flanges 4 and be-

tween said flanges in a zigzag relation to form a cylindrical shaped filament element, the terminals of which extend through the stem 2 and the base 1 for attachment to the contact 7 through which the source of energy is supplied to the filament for heating it to incandescence.

Arranged in concentric relation with the cylindrical cathode and the periphery of the flanges 4, are a plurality of vertical supporting rods 8, which extend and are embedded in the spaced flanges 3. Another set of supporting rods indicated at 9 are arranged in concentric relation with the supporting rods 8 adjacent the outer edge of the flanges 3, as clearly shown in Figure 2 of the drawings, the free ends of the supporting rods 9 being also embedded in the flanges 3, the supporting rods 8 and 9 being of a suitable insulating material, the reason for which will follow:

A grid is mounted on the supporting rods 8 between the flanges 3 and is composed of a wire member arranged in helical form, the convolutions of which are equally spaced throughout the length of the wire, one end of the same being secured in the uppermost flange 3 as indicated at 11, while the other end extends through the lower flange 3 as indicated at 12 and is secured to a terminal wire 13 connected with the contacts 14 with which the proper circuit connection may be made.

The anode indicated at 15 is of helical form, being formed of a wire member, having one end embedded in the upper flange 3 as indicated at 16 and wound helically on the outer supporting rod 9 with the convolutions in equal spaced relation corresponding to the convolutions of the grid 10, and having the lower ends extending through the lower flange 3 as indicated at 17 and connected with a terminal member 18, providing a circuit connection with the contact 19, so that the anode may be interconnected at a desired point in a circuit.

It will be noted from the description of Figure 1, that the convolutions of the anode and grid are arranged to form cylindrical elements arranged in concentric relation with corresponding points of each convolution arranged in the same radial relation.

It will be noted from an inspection of Figure 1, that the filament extends substantially at right angles to the direction of the

helical grid and anode, so that a thorough penetration of the grid and anode will result from the electrons discharged by the cathode.

5 By the arrangement of the cathode, the grid, and the anode as above described, a more efficient cooperation between these elements will result so that amplification will be increased as well as the range of effective-
10 ness of the tube as compared with other tubes of this character now in use.

The construction of the support with the base 1 also provides for the convenient mounting of the tube 20 on the annular inclined edge thereof as indicated at 21, so
15 that a strong joint will be provided, which will withstand the pressure after the tube or container 20 is evacuated. A suitable protecting element 21 is provided on the
20 lower end of the tube 20 and the base 1, which also mounts the usual ring member 22 for fitting and holding the tube in a socket.

What I claim as new is:

25 1. An audion tube, including a supporting element having a base member of annular form, a stem extending upwardly from the central portion of said base member and formed with a pair of spaced disc-like
30 flanges above the base, a cylindrical anode carried by the flanges, a cylindrical grid arranged in concentric relation to said anode and carried by the flanges, supporting means

on said stem between the flanges, and a cylindrically arranged filament cathode
35 mounted on said means in concentric relation with the grid and anode between the flanges, leads extending through the base of the support for the anode, grid and the cathode, and an evacuated container mounted
40 on the periphery of the base and cooperating therewith to house the supporting member and the elements carried thereby.

2. An audion tube, including an evacuated container, a supporting member mounted
45 in said container and having a stem extending axially thereof, a pair of substantially large annular integral flanges mounted in spaced relation on said stem, a pair
50 of small annular integral flanges mounted on said stem between said large flanges, and in spaced relation with respect to each other and said large flanges, an anode of cylindrical form and a grid of cylindrical form
55 mounted in concentric relation on said large annular flanges, and a cylindrically arranged filamentary cathode mounted on the small annular flanges having a filament wire
60 extending in zig-zag relation throughout the cylinder from end to end thereof, and directly connected to said small flanges.

In testimony whereof I affix my signature.

ANDREW LUCKASH.