

May 19, 1931.

J. D. JORDAN

1,805,626

RADIO APPARATUS

Filed Feb. 5, 1930

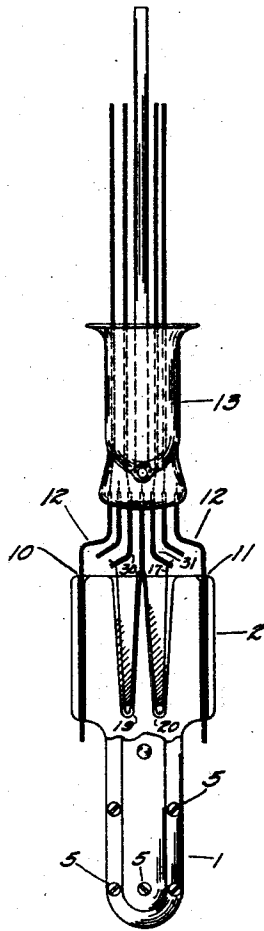


Fig-1

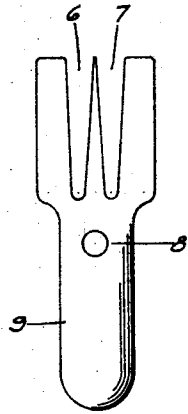


Fig-5

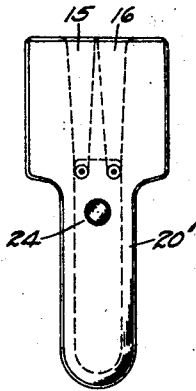


Fig-2

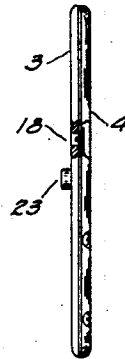


Fig-3

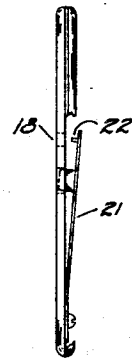


Fig-4

INVENTOR
JAMES D. JORDAN
BY

[Signature]
ATTORNEY

UNITED STATES PATENT OFFICE

JAMES D. JORDAN, OF ELMHURST, ILLINOIS, ASSIGNOR TO GRIGSBY GRUNOW COMPANY,
OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

RADIO APPARATUS

Application filed February 5, 1930. Serial No. 426,003.

This invention relates to devices for use in the manufacture of vacuum tubes, and particularly to a jig which will maintain a shaped filament and mount in welding position. In order to assemble a vacuum tube, care must be taken that the electrodes are properly centered with respect to each other. In the manufacture of tubes, in which a long length of cathode, folded to a predetermined shape, is used, it is necessary that the ends of the cathode be welded to the supporting wires in such a manner that there will be no tendency for the cathode to be bent transversely of the tube. In view of the delicate nature of the cathode, especially of that type having a coating of oxide over a metal core, it is essential that no strains be imposed upon the cathode such as would result if the material were forcibly distorted into a position different from that which it naturally tends to assume.

An object of this invention is to devise a simple jig, which will maintain the filament and mount in desired position so that the ends of the filament may be welded to its supporting wires.

Another object is to devise a jig which will anchor the filament, so that in the welding process there will be no tendency for the filament to slip out of the jig.

Referring to the drawings:

Figure 1 shows one side of the jig with a portion cut away, having the filament and mount in welding position;

Figure 2 is a plan view of the jig from the other side;

Figures 3 and 4 are side views of the jig with various portions cut away in closed and open positions respectively;

Figure 5 is a detailed view of the spacing member.

The jig comprises a handle portion 1 and a body portion 2 composed of a pair of flat plate members 3 and 4, securely locked together by a plurality of bolts 5. It will be

noted that plates 3 and 4 have substantially the same outline. Between these two plates is a spacing member 9 provided with two V-shaped spaces 6 and 7, out of which the metal has been cut. An aperture 8 is also provided, for a purpose to be hereafter explained. It will be noted that the body portion of spacer 9 is narrower than that of plates 3 and 4, with the result that a plurality of channels 10 and 11 are formed, into which arbors 12 of the mount 13 may be inserted. If desired, grooves may be cut into plates 3 and 4 along channels 10 and 11 to provide additional room for wires 12, in the event that spacing member 9 is too thin.

By virtue of cut-outs 6 and 7 of spacer 9, it is clear that internal channels 15 and 16 are formed within the jig and adapted to maintain a shaped filament 17.

In order to anchor the filament during the welding process, a plurality of apertures 18 are provided in plate 3 and disposed at bights 19 and 20 of the loops of the filament. An opening 20' is cut out in plate 4 and within this opening a spring 21 is fastened to the jig. Spring 21 carries a plurality of pins 22 that engage apertures 18, and is adapted to be deflected by a member 23 projecting through apertures 8 in the spacer 9 and a registering aperture 24 in plate 3.

In order to use this jig, a shaped filament 17 is inserted while spring 21 is deflected outwardly as shown in Figure 4. When the bights 19 and 20 of the filament loops are at apertures 18, spring member 21 is released and comes to the position in Figure 3, with the pins disposed inside apertures 18. In this way, the loops of the filament are engaged by the pins. Mount 13 may then be disposed in position by slipping arbors 12 into channels 10 and 11, thus bringing support wires 30 and 31 in desired position to the ends of filament 17. In this position, the filament may be welded very easily to its supporting wires. Upon the removal of pins 18 from the aper-

ture, the entire assembly may be pulled out from the jig for further operation.

My invention is not to be restricted to the precise details shown. Thus the spacer may have a variety of shapes and in fact may be contracted down to a pin at the junction of cut-out portions 6 and 7 since only the bight anchors are necessary for supporting the filament. The spacer may be omitted if desired and be effectively replaced by suitably shaped opposing surfaces of plates 3 and 4. The jig may be changed to accommodate differently shaped filaments if occasion arises.

I claim:

1. A jig for maintaining a shaped filament and mount in welding position consisting of a plurality of complementary plates, means for maintaining said plates in locked relationship, said plates being provided with means for maintaining a filament in a V shape and being provided with other means adapted to receive certain of the supporting arbors in said mount, said plate also having an aperture located where the bight of the filament occurs, and a removable pin in said channel for engaging said filament bight.

2. A jig adapted to maintain a shaped filament and mount in welding position during the assembling of a vacuum tube consisting of a flat base plate provided with an aperture therethrough, a spacing member on the flat face of said base plate, a flat plate above said spacing member, means for securing said plates together so that the spacing member is rigidly maintained between said flat plates, said spacing member having a suitable shape so that internal channels accessible from an edge of the jig are formed, the aperture in said base plate occurring at an end of the filament channel where the bight of the filament is located, a pin in said channel adapted to engage the filament and serve as an anchor and means for displacing said pin from said channel.

3. A vacuum tube assembly jig comprising an apertured flat base plate, another flat plate over said base plate, a spacing member between said two flat plates, means for clamping said plates together, said spacing member having a V shaped portion cut-out forming an internal channel to permit a shaped filament to be inserted into the jig, the aperture in said base plate occurring at the bight of said V and a removable pin in said aperture adapted to engage the bight of a filament.

4. A jig for maintaining a shaped filament and mount in welding position, comprising two flat plates, a spacer member between said plates having a V-shaped notch cut out therefrom and defining an internal channel for a shaped filament, and a movable pin located at the bight of said V.

5. A jig for maintaining a filament and mount in welding position, comprising a flat plate having at least one aperture there-

through, a spacer member above said plate having a V-shaped notch cut out therefrom, the bight of said notch occurring at the aperture of said plate, another plate superimposed on said spacing member, means for clamping said plates and member together, a spring member mounted on said jig and carrying a pin at one end, said pin registering with said aperture, and means for deflecting said spring to remove said pin from said aperture.

6. A jig for maintaining a shaped filament and mount in welding position, comprising two plates separated by a spacing member, said spacing member having a W-shaped notch cut out therefrom, defining internal channels, pins passing through one of said pieces into the two adjacent bights of the W, and means for withdrawing said pins from the plane of said spacing member.

7. A jig for maintaining a shaped filament and mount in welding position, comprising a flat plate and having a plurality of apertures therethrough, a spacing member having a W-shaped portion cut out therefrom and defining a continuous channel from the edge of the jig inwardly, said apertures occurring at adjacent bights of the W, an additional plate superimposed on said spacing member, means for maintaining said plates and member together, a spring mounted on said jig and carrying a plurality of pins, said pins registering with said apertures, and means for deflecting said spring to withdraw said pins from said apertures.

8. A jig for maintaining a shaped filament and mount in welding position, comprising a plate having a plurality of apertures, a spacing member having a W-shaped portion cut out therefrom, the two adjacent bights of the W registering with two of the apertures in said plate, said spacing member having an additional aperture registering with an aperture in said plate, an additional flat plate, means for maintaining said plates and member together, a spring carrying a plurality of pins mounted on said jig, said pins adapted to lie within the bights of said W and registering apertures, and means in said apertures acting on said spring for withdrawing said pins from said bight.

9. A jig comprising a pair of flat plates in face to face relationship, said jig being provided with an internal channel for the reception of a filament, and a plurality of displaceable pins adapted to serve as anchors to maintain the filament in V-shape.

10. A jig for maintaining a shaped filament and mount in welding position comprising a pair of flat plates in face to face relationship, and defining an internal space for the reception of a filament, a plurality of pins adapted to engage the bights of filament loops and resilient means for displacing said pins from said internal space.

11. A jig for maintaining a shaped filament and mount in welding position comprising a pair of apertured flat plates in face to face relation, and defining an internal space for the reception of a filament, a spring strip
5 mounted on said jig and adapted to be deflected and a plurality of pins carried by said strip and adapted to enter said apertures to engage the bights of filament loops.

10 In testimony whereof he affixes his signature.

JAMES D. JORDAN.

15

20

25

30

35

40

45

50

55

60

65