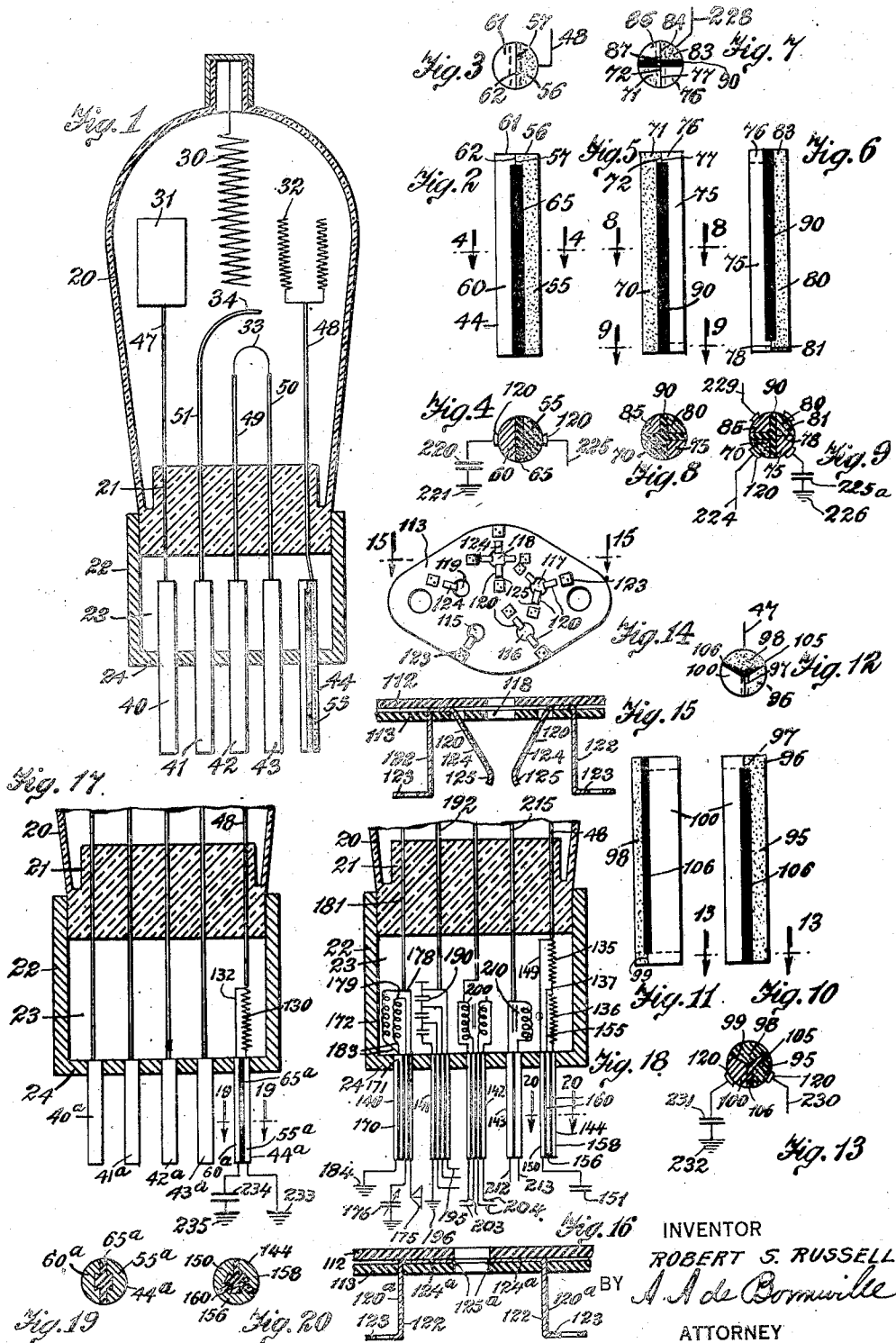


1,998,525

Filed Jan. 7, 1933



UNITED STATES PATENT OFFICE

1,998,525

PRONG FOR VACUUM TUBES

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Application January 7, 1933, Serial No. 650,652

4 Claims. (Cl. 250—27.5)

This invention relates to improved prongs for vacuum tubes.

The object of the invention is the production of improved prongs for a vacuum tube, by means of which resistance may be easily provided to properly bias the vacuum tube, to control the voltage and current supply and to provide means for properly by-passing or blocking certain frequencies.

The second object of the invention is the production of prongs with resistance members to avoid the necessity of locating the resistances in the apparatus for which they are used.

The third object of the invention is the positioning of resistance in the chamber of the base of a vacuum tube, to avoid the necessity of locating said resistance in the apparatus for which it is used.

The fourth object of the invention is the placing of inductance, capacity, a transformer, and a choke coil in the chamber of the base of a vacuum tube.

The fifth object of the invention is the production of prongs comprising two or more members, to make proper contact for biasing resistance, for by-passing resistance, for blocking a vacuum tube, for providing proper resistance, and for coacting with inductance, capacity, transformers, choke coils and resistances.

Fig. 1 represents a vertical section of the vacuum tube with its elements diagrammatically indicated therein and an exemplification of one of the improved forked shaped prongs of the invention; Fig. 2 shows a side elevation of one of the improved prongs; Fig. 3 is a top view of Fig. 2; Fig. 4 indicates a section of Fig. 2 on the line 4, 4 with additional appurtenances indicated diagrammatically; Fig. 5 shows an elevation of another form of the improved prong; Fig. 6 indicates a right hand side view of Fig. 5; Fig. 7 represents a top view of Fig. 5 with an additional appurtenance; Fig. 8 is a section on the line 8, 8 of Fig. 5; Fig. 9 represents a section of Fig. 5 on the line 9, 9 with some additional appurtenances; Fig. 10 shows an elevation of another form of prong; Fig. 11 indicates a left hand view of Fig. 10; Fig. 12 is a top view of Fig. 10; Fig. 13 shows a section of Fig. 10 on the line 13, 13 with additional appurtenances; Fig. 14 indicates a bottom view of a socket for the prongs of the tube; Fig. 15 is an enlarged section of Fig. 14 on the line 15, 15; Fig. 16 is a view similar to Fig. 15 with a modification; Fig. 17 represents a sectional elevation of the vacuum tube with a modification of the invention; Fig. 18 represents a sectional

elevation of a fragmentary portion of the tube with another modification of the invention; Fig. 19 shows an enlarged section of Fig. 17 on the line 19, 19 and Fig. 20 indicates a section of Fig. 18 on the line 20, 20.

Referring particularly to Fig. 1 the vacuum tube is indicated with the bulb 20, the press 21 and the base 22 with its chamber 23 and the bottom wall 24. In the bulb 20 is diagrammatically indicated the grid 30 suspended from the top of the bulb, the plate 31, the screen grid 32, the filament 33 and the cathode 34. The prongs are indicated in their entireties by the numerals 40, 41, 42, 43 and 44.

A wire 47 connects the plate 31 and the prong 40. A wire 48 connects the screen grid 32 and the prong 44. Wires 49 and 50 connect the filament 33 and the prongs 42 and 43. The wire 51 connects the cathode 34 and the prong 41. The prongs indicated in Fig. 1 are shown extending a considerable distance into the chamber 23 to obtain a maximum length of resistance material for the prongs if so desired to bias or to by-pass certain frequencies, to control the current or control the voltage of the elements. If less resistance is required the prongs can be made of a length to just extend through the bottom wall 24 of the base 22. One or a plurality of the elements of the tube may be biased, by-passed or have the voltage or current controlled as required, by the resistance of the improved prongs.

Referring particularly to Figs. 1, 2, 3 and 4 and the prong 44. The said prong is fork shaped and comprises the longitudinal member 55 of resistance material with the top end 56 having the flat end face 57; and the longitudinal member 60 of prong or conducting material having the top end 61 with the flat end face 62. The faces 57 and 62 are soldered to each other. In the space between longitudinal members 55 and 60 is positioned the longitudinal bar 65 of electric insulating material. The prong 44 having one resistance member can be used with any of the elements of the tube.

Referring to Figs. 5 to 9, the prong comprises two resistance members and two members of prong material. A longitudinal resistance member is indicated at 70, with the top end 71 having the flat end face 72. A longitudinal member of electric conducting material is indicated at 75 with the top end 76 having the flat end face 77. The faces 72 and 77 are soldered to each other. At the lower end of the member 75 is indicated the flat end face 78. A longitudinal member of resistance material is shown at 80 having

at its bottom portion the flat end face 81. The faces 78 and 81 are soldered to each other. At the top portion of the member 80 is indicated the top end 83 having the flat end face 84. A member 85 of prong material having the top end 86 is shown with the flat end face 87. The flat end faces 87 and 84 are soldered to each other. In the spaces between the members 70, 75, 80 and 85 is positioned the cross shaped longitudinal bar of insulating material 90. The prong just described which has two resistances can be used for any of the elements of the tube if desired.

Referring to Figs. 10, 11, 12 and 13, the improved prong comprises two resistance members and one prong material member. The prong is forked shaped and is shown to consist of the longitudinal member 95 of electric resistance material, having the top end 96 with the flat end 97. A second longitudinal member 98 of electric resistance material is indicated with the flat end 99. A longitudinal member of prong material is shown at 100. The flat end 97 at the top of the prong is soldered to the member 100 and the flat end 99 of the member 98 is soldered to the member 100 at its bottom end. A longitudinal bar of electric insulating material is indicated having the members 105 and 106. The member 105 is positioned between the members 95 and 98 and the member 106 is positioned between the members 95 and 100.

Referring to Figs. 14 and 15 the socket for the tube is indicated with the plate having the usual members 112 and 113. A plurality of openings 115, 116, 117, 118, and 119, in this instance five, are indicated extending through the members 112 and 113 of the plate.

Referring to Fig. 15, the opening 118 has coacting therewith four contact brackets 120, each comprising the supporting member 122 with the foot 123 and the contact arm 124 with the contact end 125. The prong indicated in Figs. 5 to 9 is inserted through the opening 118 and the lower ends of the member 70, 75, 80 and 85, contact with the contact ends 125. The opening 117 has coacting therewith three contact brackets for a prong as indicated in Figs. 10 to 13. The contact ends 125 of these brackets bear against and contact with the lower ends of the members 95, 98 and 100. The opening 116 has coacting therewith two contact brackets for a prong as indicated in Figs. 2 to 4. The contact ends 125 of the brackets in this case bear against and contact with the lower ends of the members 55 and 60. The openings 115 and 119 have each coacting therewith a prong consisting only of prong material as indicated at 40, 41, 42 and 43. The contact end 125 of each bracket bears against and contacts with the lower end of each of the prongs in the latter case. Any of the openings as 115 to 119 may be provided with one or a plurality of the contact brackets 120 to coact with any of the prongs of the tube as desired.

Referring to Fig. 16, the plate of the socket is again indicated with the members 112 and 113. A pair of contact brackets are indicated at 120a, and each comprises the supporting member 122 with the foot 123 and the horizontal contact arm 124a. Each contact arm 124a has integral therewith the contact end 125a. It will be noted that the contact ends 125a are at the upper portions of the contact brackets 120a, while the contact ends 125 of the contact brackets 120 are located at the lower portions thereof.

Referring to Figs. 17 and 19, the bulb of the

tube is again shown at 20, the press at 21, the base at 22 with the chamber 23 and the bottom wall 24. The prongs are indicated at 40a, 41a, 42a, 43a and 44a. The wire 48 leads to one of the elements in the bulb 20 and has connected thereto the resistance 130, which in turn is connected to the member 55a of prong material of the prong 44a. A wire 132 connects one end of the resistance 130 and the member 60a of prong material of the prong 44a. The members 55a and 60a, have interposed between them the bar 65a of electric insulating material. The said bar interlocks with the said members 55a and 60a.

Referring to Figs. 18 and 20, the bulb is again shown at 20, the press at 21, the base at 22 with the chamber 23 and the bottom wall 24. The prongs are indicated at 140, 141, 142, 143, and 144. The wire 48 leads from a grid in the bulb 20 and has connected thereto the resistances 135 and 136, which have interposed between them a short wire 137 of electric conducting material. The upper end of the resistance 135 is connected to the member 150 of prong material of the prong 144 by the wire 149. The lower end of the member 150 is connected to the blocking condenser 151. A wire 155 leads from the short wire 137 to the upper end of the member 156 of prong material of the prong 144. The lower end of the resistance 136 is connected to the upper end of the third member 158 of the prong 144. The members 150, 156 and 158 of the prong 144 have interposed between them the Y shaped bar 160 of electric insulating material which is interlocked with the members of said prong 144.

Referring to Fig. 18 the prong 140 comprises four members of prong material one of which is indicated at 170. Two of the members are connected to each other at their top ends 171 by solder. An inductance is shown at 172.

The lower end of one of the members 170 is connected to the aerial 175. A second member 170 is connected to a tuning condenser 176. From the top ends of the latter members 170 extend the wires 178 and 179, which connect with the inductance 172. From the wire 178 extends the wire 181 which leads to any element of the tube desired. The inductance is connected to a pair of the members 170 at their top ends by the wires 183. The latter members of the prong are grounded as shown at 184.

The prongs 141, 142 comprises each four members of prong material insulated from each other.

A capacity is shown in the chamber 23 which comprises in this instance a plurality of condensers 190. Each of the condensers 190 is connected by a wire with one of the members of the prong. One of the said wires is connected to the wire 192, that in turn leads to any element desired in the tube. The wires 195 at the lower end of the prong 142 lead to an inductance, and one of the members of the prong is grounded as shown at 196.

A transformer is shown at 200, the lower ends of which are connected to the members of the prong 142. Two wires 203 extend from a pair of the members of the prong and lead to the power supply. Two wires 204 lead from a pair of the members of the prong to the filament of a tube, or the wires 204 can be connected to a filament in the base 22.

The prong 143 comprises a pair of members of prong material separated from each other by insulating material. A choke coil is shown at 210, the lower ends of which are connected to the members of the prong 143. A wire 212 at the

lower end of one of the members of the prong 143 leads to the plate or grid of the tube, and a wire 213 leads to the power or to the other end of a grid connection. The upper end of the choke coil 210 is connected by the wire 215 to an element of the tube.

Referring to Figs. 1, 2, 3 and 4 with the prong 44, the current lead 225 from the power supply is connected to one of the contact brackets 120. The current enters the lower end of the member 55 of resistance material, and is led to the screen grid 32 through the wire 48. The lower end of the member 60 also contacts with a contact bracket 120. The latter is connected to one side of a by-pass condenser 220 and the other side of the latter is grounded as indicated at 221.

Referring to Figs. 5, 6, 7, 8 and 9 which show a four part prong, the current is supplied to the lower end of the prong by the wire 224 which extends to one of the brackets 120. The current flows up through the resistance member 70 and then flows down the member 75 of prong material. The undesirable frequencies pass through one of the brackets 120 to the by-pass condenser 225a, and then to the ground 226.

The current flows from the lower end of the member 75 of prong material to the member 80 of resistance material. The upper end of the member 80 is connected to an element in the vacuum tube by the wire 228. The upper end of the member 80 is connected to the upper end of the member 85. The lower end of the member 85 is connected by means of one of the brackets 120 to the wire 229 and the latter leads to a blocking condenser not shown. The four part prong can be connected to any element of the tube desired.

Referring to Figs. 10 to 13, a three part prong is shown which can coat with any element of the tube. If the prong coats with the plate 31, the wire 230 leads from the power supply to one of the brackets 120 as shown in Fig. 13. The current flows up through the member 95 of resistance material and then down the member 100 of prong material. The lower end of the member 100 contacts with its coacting bracket 120. The latter is connected to one side of a by-pass condenser 231.

The other side of the condenser 231 is grounded as shown at 232. The lower end of the member 100 being connected to the lower end of the member 98 of electric resistance material, the current will flow up the said member 98 which latter is connected to the plate 31 by means of the wire 47.

Referring to Figs. 17 and 19 the wire 48 is supposed to lead to the cathode 34. The current flows through the wire 48 to the upper end of the resistance 130, which is connected to the upper end of the member 55a of the prong 44a. The lower end of the member 55a contacts with one of the brackets 120, not shown, and is grounded as shown at 233. The upper end of the resistance 130 is connected to the wire 132 which leads to the upper end of the prong member 60a. The lower end of the member 60a contacts with a contact bracket 120 not shown. The latter bracket is connected to one side of a by-

pass condenser 234, and the other side of the condenser 234 is grounded at 235. Attention is called to the fact that the prong 44a comprises a pair of members of prong material to adapt it for use with the resistance 130 located in the chamber 23.

Referring to Fig. 18 and particularly to the prong member 140, the inductance 172 is shown in the chamber 23 and is thereby eliminated from the body of the radio for simplicity and compactness. The capacity comprising the plurality of condensers 190, is placed in the chamber 23 also for simplicity and compactness. The choke coil 210 and the resistances 135 and 136 are also placed in the chamber 23 for simplicity and compactness.

Attention is called to the fact that all the prongs may be reversed when positioned in the chamber 23 of the base 22 to coat with the contact brackets 120a shown in Fig. 16.

It will be noted that with the socket indicated in Figs. 14 and 15, contact with the prongs is made at the lower portions thereof, while with the socket shown in Fig. 16 contact with the prongs is made at their upper portions, to permit contact with either ends of the prongs as desired.

Various modifications may be made in the invention and the present exemplification is to be taken as illustrative and not limitative thereof.

Having described my invention I claim:

1. A prong for a vacuum tube, comprising a member of electric conducting material and a member of electric resistance material, said members connected to each other at one end and a bar of electric insulating material interposed between said members.

2. A prong for a vacuum tube comprising a pair of members of electric resistance material and a pair of members of electric conducting material, the upper end of one resistance member connected to the upper end of one conducting member, the lower end of said last member connected to the lower end of the second resistance member the upper end of said last member connected to the upper end of the fourth member and electric insulating material interposed between the members of the prong.

3. In a prong for a vacuum tube the combination of a member of electric conducting material and a pair of members of electric resistance material, the upper end of the member of electric conducting material connected to the upper end of one of the members of electric resistance material and the lower end of said member of electric conducting material connected to the lower end of the other member of resistance material and electric insulating material interposed between said members.

4. In a prong for a vacuum tube the combination of a plurality of members of electric insulating material, a plurality of members of electric conducting material and a plurality of members of electric resistance material.

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