Feb. 6, 1962 R. A. BLOOMSBURGH 3,020,434

SELF SHIELDING ELECTRON GUN AND CATHODE RAY TUBE SYSTEM INCLUDING SAME

Filed Dec. 8, 1958 2 Sheets-Sheet 1

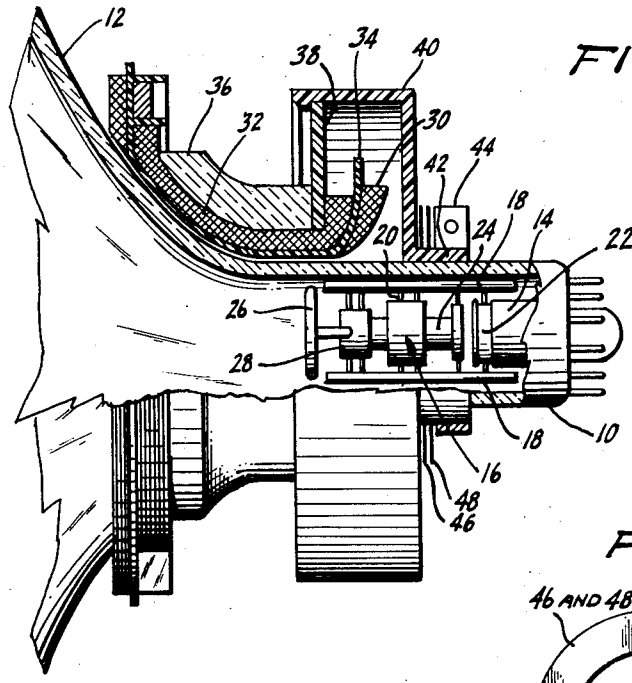
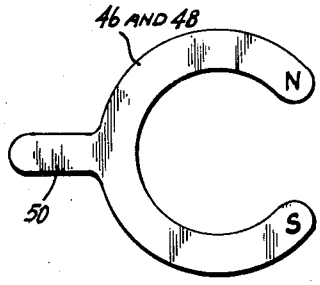


FIG. 1.

FIG. 1A.



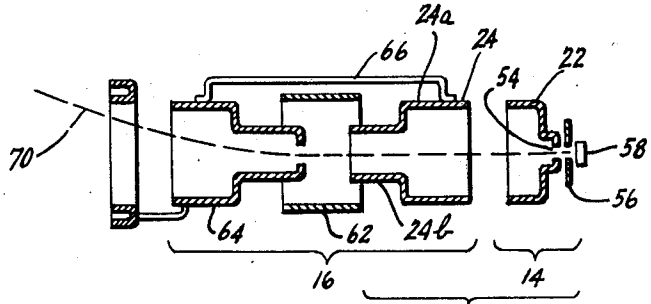


FIG. 2.

INVENTOR.
RALPH A. BLOOMSBURGH
BY
Robert D. Santon
ATTORNEY

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SELF SHIELDING ELECTRON GUN AND CATHODE RAY TUBE SYSTEM INCLUDING SAME

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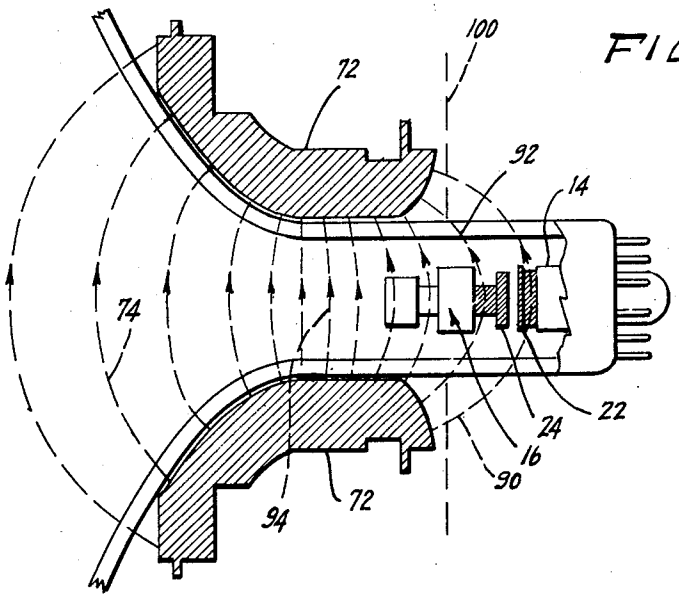


FIG. 3.

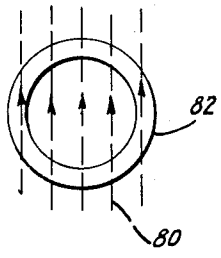


FIG. 4.

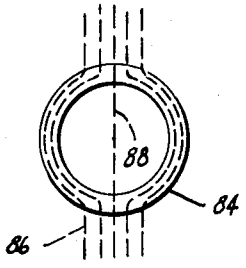


FIG. 5.

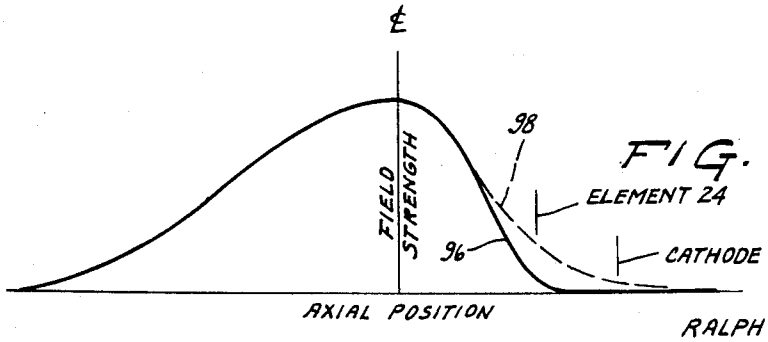


FIG. 6.

INVENTOR.
RALPH A. BLOOMSBURGH
BY
Robert D. Lanham
ATTORNEY

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3,020,434

SELF SHIELDING ELECTRON GUN AND CATHODE RAY TUBE SYSTEM INCLUDING SAME

Ralph A. Bloomsburgh, Lafayette Hill, Pa., assignor to Philco Corporation, Philadelphia, Pa., a corporation of Pennsylvania

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16 Claims. (Cl. 313—76)

The present invention relates to television type display systems and more particularly to improvements in the beam forming and shielding means for such systems.

Recent demands of the television industry for picture tubes having a minimum over-all length have made it necessary to shorten the neck portion of electrostatically focused picture tubes to the point where the electrostatic lens structure is partially within the deflection yoke. Reducing the length of the neck portion makes it necessary to move the cathode and first and second grids closer to the deflection yoke and the beam centering magnets. It is now well known that the presence of a stray magnetic field, either from the deflection means or the beam centering means or from some source not directly related to the picture tube, in the region between the cathode and the electrostatic focusing lens and more particularly between the cathode and the first or second grid will result in a defocusing of the beam and a resultant undesirable enlargement or misshapement of the spot on the screen of the picture tube. Therefore movement of the cathode-grid region closer to the deflection yoke and beam centering means has introduced the need for means for shielding the electron beam in the region between the cathode and the electrostatic focusing lens from the fringing field of the deflection yoke and the beam centering magnets.

The laminated shield means disclosed and claimed in the copending application of Thomas V. DiPaolo, Serial No. 696,840, filed November 15, 1957 and the improved combined shielding and centering means disclosed and claimed in the copending applications of Thomas V. DiPaolo et al., Serial No. 744,121, filed June 24, 1958 and Henry S. Vasilevskis, Serial No. 755,270, filed August 15, 1958 have proved to be highly satisfactory in commercial production. The shielding means shown in these copending applications are simpler and more effective than prior known shielding means but they still represent an appreciable expense in the manufacture of a television receiver since they are formed of several parts which must be assembled and fastened together. A beam shielding and centering means which provides the same effective shielding as provided by the means disclosed in the above-mentioned copending applications, but which requires fewer parts and less assembly time, would lower the over-all cost of manufacturing a television receiver with a resultant ultimate saving to the public.

Therefore it is an object of the present invention to provide inexpensive and highly effective beam shielding means for cathode ray tubes having the cathode-first grid region in the vicinity of the fringing field of the deflection yoke.

Another object of the present invention is to provide novel shielding structure for a cathode ray tube in which the beam forming elements serve also as shield elements with a resultant saving in production costs.

A further object of the present invention is to provide a beam deflection and beam shielding system for a cathode ray tube which minimizes the effect of stray residual magnetic effects in the beam shielding elements.

These and other objects of the invention are achieved by forming certain selected electrodes of the electron gun, for example the second grid and/or the first element of the electrostatic lens, of a magnetic material having a high

permeability and a low coercive force and residual flux density. These selected electrodes are deliberately placed within the fringing field of the deflection yoke so that they are effectively continuously demagnetized by the alternating fringing field. High permeability material of which these members are formed conduct the magnetic flux around the area occupied by the electron beam and thus effectively shield the electron beam from the effects of the fringing field of the deflection yoke and the beam centering magnets.

For a better understanding of the present invention together with other and further objects thereof reference should now be made to the following detailed description which is to be read in conjunction with the accompanying drawings in which:

FIG. 1 is a pictorial view, partly in section, of one preferred embodiment of the invention;

FIG. 1A is a view showing one of the two beam centering magnets employed in the embodiment of FIG. 1;

FIG. 2 is an enlarged cross-sectional view of the electron gun structure of the embodiment of FIG. 1;

FIG. 3 is a diagrammatic view showing the relationship between the field of the deflection yoke and the high permeability beam shielding electrodes;

FIG. 4 is a diagrammatic view of the path of a magnetic field through a tubular element formed of non-magnetic material;

FIG. 5 is a view similar to FIG. 4 showing the path of the magnetic field through a tubular element formed of a high permeability material in accordance with the teachings of the present invention; and

FIG. 6 is a graph illustrating the reduction in stray magnetic filed in the space adjacent the cathode through which the cathode ray beam passes which is achieved by the present invention.

In FIG. 1 the glass neck portion of the cathode ray tube which forms a part of the present invention is shown at **10**. The neck flare of the cathode ray tube is shown at **12**. Disposed within the neck portion **10** of the envelope is an electron gun which comprises a cathode, control grid and screen grid assembly **14** and a three-element unipotential electrostatic focusing lens **16**. The general configuration of the cathode, control grid and screen grid assembly **14** employed in the embodiment of FIG. 1 is described and claimed in the copending application of Gordon R. Spencer, Serial No. 691,026, filed October 18, 1957, now Patent No. 2,905,848. The three-element unipotential electrostatic focusing lens **16** is shown in more detail in FIG. 2 of this application.

The cathode-grid assembly **14** is supported in line with and closely adjacent the electrostatic lens system **16** by means of insulating support members **18** which have imbedded therein studs **20** which extend from the various elements of the cathode-grid assembly and focusing lens. The second grid or screen grid **22** is disposed adjacent the first element **24** of the electrostatic focusing lens. The spacing between grid **22** and element **24** is only a small fraction of the diameter of the element **24**. For reasons which will be explained in more detail presently, at least second grid **22** and preferably both second grid **22** and element **24** are formed of a high permeability material having a low coercive force. A material such as stainless steel 430 is preferred because it is readily machinable, has satisfactory magnetic properties and is readily degassed.

A ring-shaped getter holder **26** is shown connected to the final anode **28** of the electrostatic lens **16**. This type of getter holder has proved to be very satisfactory in commercial practice but other forms may be employed.

The magnetic deflection yoke assembly associated with neck portion **10** of the cathode ray tube includes a pair of saddle shaped horizontal deflection coils. The end turns of the upper coil are shown at **30**. The lower coil

is not shown in FIG. 1. Disposed at right angles to the horizontal deflection coils are a pair of vertical deflection coils. A portion of one of the vertical deflection coils is shown in section at 32. The two pairs of deflection coils are separated by an insulating form member 34 which support the deflection coils in their proper position about the neck 10 of the cathode ray tube. The two pairs of deflection coils are surrounded by a yoke core 36 which may be held in position by a suitable clamping means not shown in FIG. 1.

An insulating terminal board 38 and a cooperating housing 40 are provided for enclosing the rearward ends of the deflection coils. Terminal board 38, housing 40, or both of these elements, may be provided with lugs or terminals (not shown in FIG. 1) to which the end connections of the deflection coils and the circuit leads associated therewith may be electrically connected. Certain circuit components associated with these deflection coils, such as resistors, capacitors or the like, may be mounted on the terminal board 38 or housing 40 if desired. The shape of terminal board 38 and housing 40 form no part of the present inventive concept and these elements may be modified or eliminated without in any way affecting the operation of this invention.

Housing 40 is provided with a resiliently formed flange portion 42 which extends generally in contact with the neck portion 10 of the cathode ray tube. A clamp means 44 is provided for clamping portion 42 into fixed engagement with the neck portion 10, thereby securing the deflection coils 30 and 32, the yoke means 36, terminal board 38 and housing 40 in their proper positions on the cathode ray tube.

To beam centering magnets 46 and 48 are supported between clamp member 44 and housing 40. One preferred shape for the beam centering magnets 46 and 48 is shown in FIG. 1A. As shown in FIG. 1A, the beam centering magnets 46 and 48 comprise C-shaped members having a projection 50 formed integrally therewith to facilitate the adjustment of members 46 and 48. Members 46 and 48 may be stamped or otherwise formed from sheet stock and are permanently magnetized as indicated by the letters N and S in FIG. 1A. Members 46 and 48 may be warped slightly so that they frictionally engage each other and clamp means 44 and housing 40. The engagement should be such that members 46 and 48 will maintain an adjusted position on the neck 10. The magnetic centering means shown in FIG. 1A is preferred because it is inexpensive to manufacture, easy to assemble, easy to adjust and occupies very little space on the neck portion 10 of the cathode ray tube. However other forms of centering means may be substituted therefor.

FIG. 2 is a cross-sectional view which shows in more detail the elements which comprise the cathode-grid assembly 14 and the electrostatic lens 16 of FIG. 1. As shown in FIG. 2 the second grid 22 is a cup-shaped member formed with an opening 54 in the closed end thereof through which the electron beam passes. The control grid 56 is an apertured plate which is insulated from second grid 22 and cathode 58. The unipotential electrostatic lens system 16 comprises three generally tubular elements 24, 62 and 64. Elements 24 and 64 are maintained at the same potential by means of a conductive strap 66. In its preferred form first element 24 has a relatively large end portion 24^a which confronts the second grid 22 and a smaller portion 24^b on the end remote from the second grid 22. The operation of a three-element unipotential electrostatic lens system is well known and therefore this lens will not be described in further detail.

As mentioned above, second grid 22 and preferably both grid 22 and first element 24 of electrostatic lens 16 are formed of a material having a high magnetic permeability. Since grid 22 is much larger than the active regions of grid 56 and cathode 58 and is disposed in close proximity to grid 56 and cathode 58 and between these elements and the deflection yoke, the beam is effectively shielded by grid 22 from external magnetic fields from the point at which it leaves the cathode 58 until after it passes through the opening 54. If element 24 is formed of a material of high permeability the electron beam will be further shielded from external magnetic fields until it emerges from the smaller end 24^b of element 24. The gap between second grid 22 and first element 24 is small compared to the diameter of these electrodes so that any magnetic flux in this region finds a lower reluctance path to one of the electrodes than directly through the gap.

Elements 62 and 64 are preferably formed of non-magnetic material so that the beam centering and deflection fields pass therethrough without interference. As shown in FIG. 1 these elements 62 and 64 lie adjacent to or within the deflection yoke. If elements 62 and 64 were formed of a magnetic material, a considerable portion of the deflection field would be shunted around the electron beam with a resultant reduction in the yoke sensitivity. Forming elements 62 and 64 of a magnetic material would also render the beam centering means 46 and 48 ineffective since the electron beam would be effectively shielded from this centering flux as well as from the deflection flux.

It has been proposed in the past to form certain beam forming elements of an electron gun structure of a magnetic material for the purpose of shielding the cathode ray beam from certain external fields. The systems proposed in the past have not proved to be satisfactory for the reason that the elements formed of magnetic material tend to become permanently magnetized with a resultant deleterious effect on shaping of the electron beam. The system of the present invention avoids this difficulty of the prior art by so positioning the elements of high permeability with respect to the deflection yoke that these elements of high permeability are effectively continuously demagnetized by the alternating beam deflection fields. For a more detailed description of this feature of the invention reference should be made to FIGS. 3–6 of the drawings.

In FIG. 3 the yoke structure is shown diagrammatically at 72. The deflection field set up by yoke structure 72 is represented by the broken lines 74. Cathode grid structure 14 and electrostatic lens 16 have been shown in FIG. 3 but the supporting structure therefor have been omitted. Grid 22 and the first element 24 of focusing means 16 have been shaded in FIG. 3 to indicate that they are constructed of a high permeability material. As shown in FIG. 3 the distance from the cathode to the end turns of the yoke is approximately equal to the mean radius of the end turns. Elements 22 and 24 are even closer to the deflection yoke. Thus elements 22 and 24 intercept the portion of magnetic flux 72 which is represented by broken lines 90 and 92. One component of this field alternates at the vertical scanning frequency while a second component of the field alternates at the much higher horizontal scanning frequency. The magnetic field in the regions occupied by grid 22 and element 24 is of such strength that the flux through grid 22 and element 24 changes appreciably with alternations in the deflection field. It has been demonstrated experimentally that, even if members 22 and 24 are caused to have a relatively high residual magnetism, this magnetism is removed rapidly and almost entirely by the alternating deflection fields.

FIGS. 4 and 5 illustrate the manner in which the high permeability members 22 and 24 shield the cathode ray beam from the deflection field even though these elements are deliberately positioned to intercept a portion of the field. FIG. 4 shows the path of a magnetic field 80 through a non-magnetic cylinder 82. Since the permeability of the cylinder 82 is substantially the same as that of air, the field 80 passes through member 82 with

a negligible amount of distortion. FIG. 5 shows the effect of placing a magnetic cylinder 84 in the path of a magnetic field 86. Most of the flux 86 will travel through the wall of cylinder 84 and emerge on the far side thereof. A very slight amount may continue through the space within the cylinder 84 as represented by the line 88. The amount of this residual flux 88 may be made negligibly small by providing suitably high permeability material for cylinder 84.

The solid line 96 in FIG. 6 represents the distribution of the deflection flux along the axis of an electron gun in which both element 24 and grid 22 are formed of a material having a high magnetic permeability. The positions of cathode 58 and element 24 are shown for reference. It should be noted that the region between cathode 58 to element 24 is relatively free of any magnetic field. Broken line 98 represents the field distribution which could be expected if element 24 and grid 22 were formed of a non-magnetic material. The flux represented by broken line 98 is sufficient to produce an intolerable distortion of the electron beam.

FIG. 6 also illustrates a further advantage of the present invention. It will be noted that lines 98 and 96 coincide except for the extreme right hand portions thereof. This is explained by the fact that the magnetic path through element 24 or grid 22 represents only a small fraction of the paths 90 or 92. Thus the shortening of the magnetic path by a small amount in the fringe region of the field produces a negligible effect on distribution in the main portion of the deflection field. However, as mentioned above, forming grid 22 and element 24 of a magnetic material does produce a local distortion of the magnetic field between the paths 90 and 92. Any flux tending to fringe through the air gap between these members 22 and 24 finds a lower reluctance path in one of the two members and hence is shunted around the electron beam rather than passing through the gap between element 24 and grid 22 and adversely influencing the direction of the cathode beam therewithin.

The action of the beam centering means 46—48 requires no detailed explanation. The position of the centering means is represented by the broken line 100 of FIG. 3. It occupies approximately the same longitudinal position as the first element 24 of the electrostatic lens. The shielding effect of element 24 and grid 22 on the centering flux is essentially the same as that provided by the deflection flux. As is well known, centering of the beam is accomplished by varying the positions of members 46 and 48 until the desired strength and direction of the centering field is obtained. The presence of the shielding members 24 and 22 causes the centering action to take place in the forward end of the electron lens, thereby minimizing the total deflection of the beam from the axis while within the lens. As a result the beam is not deflected outside the region of best focus which exists along the axis.

In some instances it may be necessary to form the second grid 22 of non-magnetic material. If production tolerances are such that the beam passing through control grid 56 and opening 54 in second grid 22 may be misaligned with the axis of the focusing lens, it may be necessary to provide a beam aligning field in the region of grid 22. This is greatly facilitated if grid 22 is formed of a non-magnetic material. It has been found that forming only the first element 24 of the electrostatic focus lens of a high permeability material provides a substantial degree of shielding so that external shielding means are generally unnecessary.

The embodiment chosen for illustration in the drawings employs a preferred form of grid-cathode structure and a three-element electrostatic focus lens. It will be obvious however that the invention is applicable to other forms of grid-cathode structures and other forms of focusing means provided that the beam surrounding electrodes of magnetic material lie within the alternating deflection field of the deflection yoke.

The shielding electrodes of the present invention have been described as being formed of a magnetic material since this is believed to be preferred from the standpoint of minimum production costs. However it lies within the scope of the invention to employ non-magnetic electrodes which have been treated to provide a low reluctance path around the periphery thereof such as might be provided by a coating or overlay of a magnetic material.

While the invention has been described with reference to a single embodiment thereof, it will be apparent that various modifications and other embodiments thereof will occur to those skilled in the art within the scope of the invention. Accordingly I desire the scope of my invention to be limited only by the appended claims.

What is claimed is:

1. An electron gun structure for a cathode ray tube comprising a cathode and first and second grids, said second grid having a generally cup-shaped form with a central opening in the closed end thereof for the passage of an electron beam, the open end of said second grid being directed away from said cathode, and an electrostatic lens structure comprising a plurality of axially aligned, generally tubular elements, said second grid being formed of a material having a high permeability and low residual magnetism.

2. An electron gun structure for a cathode ray tube comprising a cathode and first and second grids, said second grid having a generally cup-shaped form with a central opening in the closed end thereof for the passage of an electron beam, the open end of said second grid being directed away from said cathode, and an electrostatic lens structure comprising a plurality of axially aligned, generally tubular elements, the first element of said lens structure being adjacent said second grid and spaced therefrom by a small fraction of the diameter of said first element, said second grid and said first element being formed of a material having a high permeability and a low coercive force.

3. An electron gun structure for a cathode ray tube comprising a cathode and first and second grids, said second grid being generally cup-shaped with the open end thereof directed away from said cathode, the closed end thereof being disposed in a closely adjacent, non-contacting relationship with said first grid and said cathode, and a unipotential electrostatic lens structure comprising first, second and third generally tubular elements, said first element being adjacent said second grid, said first element having a relatively large cylindrical end portion adjacent said second grid, said relatively large end portion having a diameter approximately equal to the confronting open end of said second grid, the spacing between said first element and said second grid being a small fraction of the diameter of said confronting open end of said second grid, said first element further including an integrally formed smaller cylindrical end portion more remote from said second grid than said larger end portion, said second grid being formed of a material having a high permeability and a low coercive force.

4. An electron gun structure for a cathode ray tube comprising a cathode and first and second grids, said second grid being generally cup-shaped with the open end thereof directed away from said cathode, the closed end thereof being disposed in a closely adjacent, non-contacting relationship with said first grid and said cathode, and a unipotential electrostatic lens structure comprising first, second and third generally tubular elements, said first element being adjacent said second grid, said first element having a relatively large cylindrical end portion adjacent said second grid, said relatively large end portion having a diameter approximately equal to

the confronting open end of said second grid, the spacing between said first element and said second grid being a small fraction of the diameter of said confronting open end of said second grid, said first element further including an integrally formed smaller cylindrical end portion more remote from said second grid than said larger end portion, said second grid and said first element being formed of a material having a high permeability and a low coercive force.

5. A electron gun structure according to claim 4 wherein said second and third elements are formed of a non-magnetic material.

6. In a cathode ray tube system, the combination of a magnetic deflection means for creating an alternating magnetic deflection field and a self-shielded electron gun structure, said gun structure comprising a plurality of beam-surrounding beam-forming and control electrodes each lying within the field of said magnetic deflection means, at least one of said electrodes being formed to provide a low reluctance path around the periphery thereof, thereby to shield the cathode ray beam passing therethrough from the influence of external magnetic fields, the material providing said low reluctance path having a coercive force such that it is effectively demagnetized by the alternating deflection field to which it is subjected.

7. In a cathode ray tube system, the combination of a magnetic deflection means for creating an alternating magnetic deflection field and a self-shielded electron gun structure disposed within the region normally permeated by the field of said magnetic deflection means, said gun structure comprising a cathode-grid assembly which includes a grid having a portion which closely surrounds the cathode ray beam in a region adjacent the cathode and a relatively larger beam surrounding portion, said gun structure further including an electrostatic lens structure comprising a plurality of axially aligned, generally tubular beam surrounding elements, the rearmost one of said plurality of elements being disposed adjacent the forward element of said cathode-grid assembly, at least one of said elements of the group comprising said grid and said tubular beam surrounding elements being formed to provide a low reluctance path around the periphery thereof, thereby to shield the cathode ray beam passing therethrough from the influence of external magnetic fields, the material providing said low reluctance path having a coercive force such that it is effectively demagnetized by the alternating deflection field to which it is subjected.

8. In a cathode ray tube system, the combination of a magnetic deflection means for creating an alternating magnetic deflection field and a shielded, electrostatically-focused, electron gun structure, said gun structure comprising a cathode and first and second grids, said second grid having a generally cup-shaped form with a central opening in the closed end thereof for the passage of an electron beam, the open end of said second grid being directed away from said cathode, and an electrostatic lens structure comprising a plurality of axially aligned, generally tubular elements, said second grid and said electrostatic lens being disposed within the alternating field generated by said magnetic deflection means, at least one element of the group comprising said second grid and the first of said plurality of tubular elements being formed of a material having a high permeability and a low coercive force.

9. The combination in accordance with claim 8 wherein said first element of said electro-static lens is formed of a material having a high permeability and a low coercive force.

10. The combination in accordance with claim 8 wherein said second grid is formed of a material having a high permeability and a low coercive force.

11. The combination in accordance with claim 8, said combination further comprising a plurality of substantially sheet-like centering magnets disposed in a plane transverse to the beam axis of said electron gun in the longitudinal region occupied by said first element.

12. In a cathode ray tube system the combination comprising a magnetic deflection means for creating an alternating magnetic deflection field, and a shielded, electrostatically-focused, electron gun structure, said electron gun structure comprising a cathode, first and second grids, said second grid having a generally cup-shaped form with a central opening in the closed end thereof for the passage of an electron beam, the open end of said second grid being directed away from said cathode, and a unipotential electrostatic lens structure comprising first, second and third generally tubular elements, said first element being adjacent said second grid and spaced therefrom by a small fraction of the diameter of said first element, said second grid being formed of a material having a high permeability and a low coercive force, said electron gun structure being positioned so that at least a portion of said electrostatic lens means is physically within said magnetic deflection means and so that said second grid is within a region of the magnetic field of said magnetic deflection means which will produce appreciable changes in the flux therein with alternations in said deflection field.

13. In a cathode ray tube system the combination comprising a magnetic deflection means for creating an alternating magnetic deflection field, and a shielded, electrostatically-focused, electron gun structure, said electron gun structure comprising a cathode, first and second grids, said second grid having a generally cup-shaped form with a central opening in the closed end thereof for the passage of an electron beam, the open end of said second grid being directed away from said cathode, and a unipotential electrostatic lens structure comprising first, second and third generally tubular elements, said first element being adjacent said second grid and spaced therefrom by a small fraction of the diameter of said first element, said second grid and said first element of said electrostatic lens being formed of a material having a high permeability and a low coercive force, said second and third elements of said electrostatic lens being formed of a non-magnetic material, said electron gun structure being positioned so that at least a portion of said electrostatic lens means is physically within said magnetic deflection means and so that said second grid is within a region of the magnetic field of said magnetic deflection means which will produce appreciable changes in the flux therein with alternations in said deflection field.

14. The combination in accordance with claim 13, said combination further comprising a plurality of substantially sheet-like beam centering magnets disposed transversely to the beam axis of said electron gun in approximately the longitudinal region occupied by said first element.

15. The combination in accordance with claim 13, said combination further comprising a plurality of substantially sheet-like beam centering magnets disposed transversely to the beam axis of said gun and adjacent the rearmost end of said magnetic deflection means.

16. In combination with a cathode ray tube system having a magnetic deflection means for creating an alalternating magnetic deflection field, a self-shielded, electrostatically-focused, electron gun structure comprising a cathode, first and second grids, said second grid having a generally cup-shaped form with a central opening in the closed end thereof for the passage of an electron beam, the open end of said second grid being directed away from said cathode, and a unipotential electrostatic lens structure comprising first, second and third generally tubular elements, said first element being adjacent said second grid and spaced therefrom by a small fraction of the diameter of said first element, said sec-

ond grid being formed of a material having a high permeability and a low coercive force, said electron gun structure being positioned at least partially within said magnetic deflection means, said cathode being spaced from the closest end of said magnetic deflection means by a distance appreciably less than the mean radius of said deflection means at said adjacent end whereby said second grid is within a region of the field of said magnetic deflection means which will produce appreciable changes in the flux therein with alternations in said deflection field.

References Cited in the file of this patent

UNITED STATES PATENTS

2,719,243	Hoagland	Sept. 27, 1955
2,732,511	Dichter	Jan. 24, 1956
2,810,091	Harsh	Oct. 15, 1957
2,840,739	Lesovicz	June 24, 1958