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[54] **CATHODE RAY TUBE ANTENNA GETTER STRUCTURE COMPRISING PERMANENT PHASE TRANSFORMATION BIMETALLIC MATERIAL**

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[52] **U.S. Cl.** **313/481,** 313/174

[51] **Int. Cl.** **H01j 19/70,** H01j 29/00

[58] **Field of Search** 313/174, 178; 29/195.5

[56] **References Cited**

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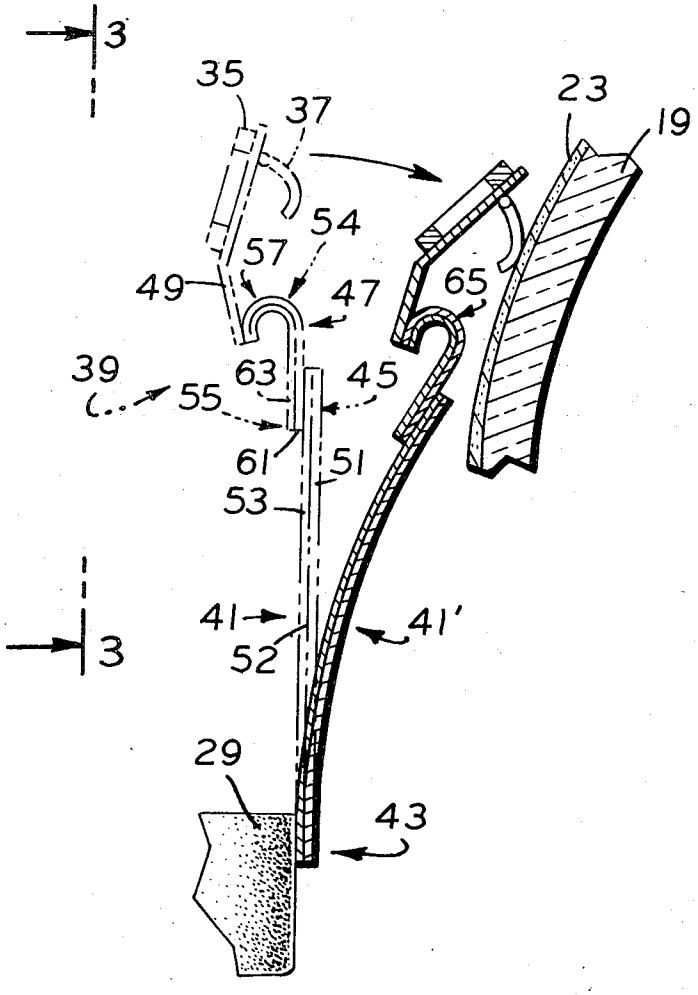
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[57] **ABSTRACT**

A cathode ray tube antenna getter is provided wherein related components of the structure are permanently positionally altered during tube processing. The longitudinal positioning member is formed of a substantially straight strip of alpha bilaminate metallic material comprised of a lamina of active alloy contiguously bonded to a lamina of passive alloy. At a predetermined temperature during tube processing the active lamina undergoes a permanent metallurgical phase transformation bending the positioning member thereby desirably modifying the location of the getter container within the tube. Attached to the terminal of the positioning member is the getter container orientation means formed of a shaped strip of a beta bilaminate material differing in phase transformation temperature response from that of the alpha material of the positioning means. During vaporization of the getter material, the temperature of process effects phase transformation of the beta active alloy lamina in the orientation means changing the shaping thereof thereby moving the getter container to provide broad coverage of the getter diffusion.

11 Claims, 7 Drawing Figures



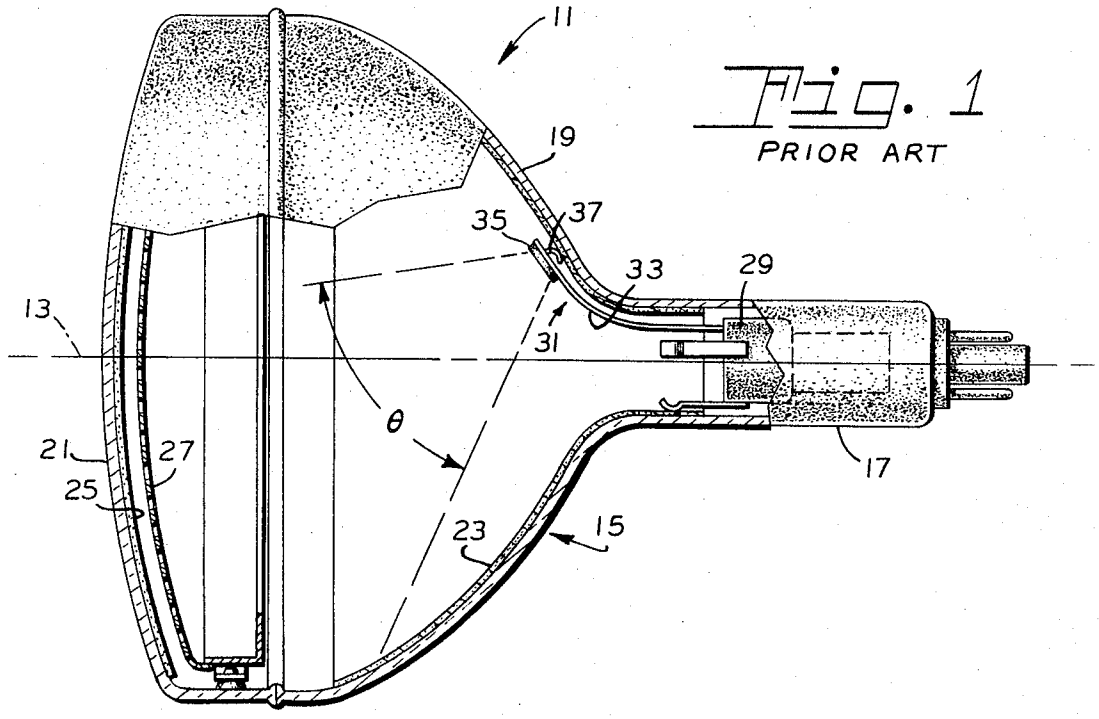


Fig. 1
PRIOR ART

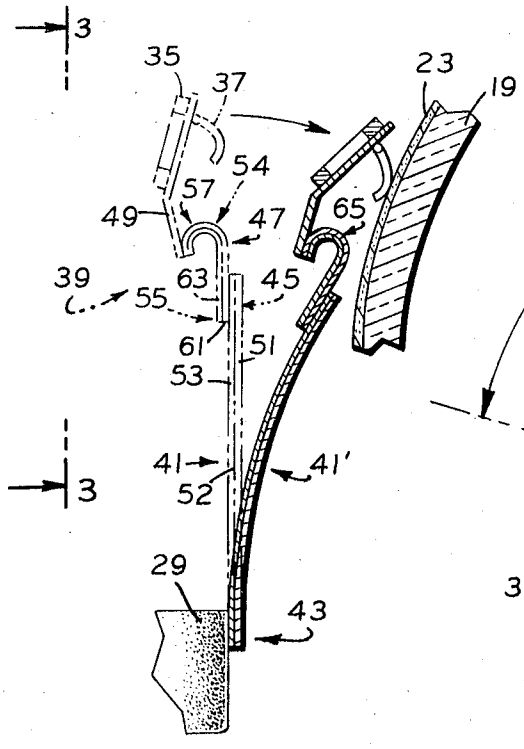
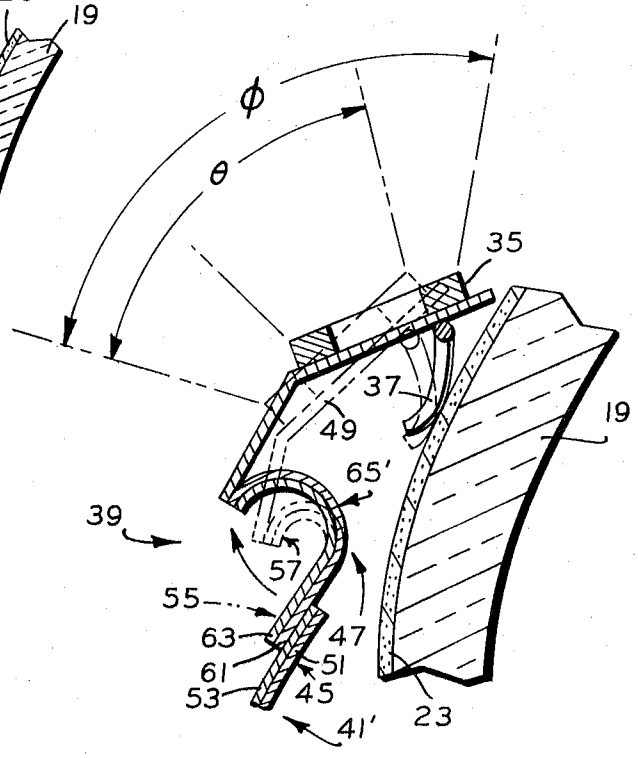


Fig. 2

Fig. 4



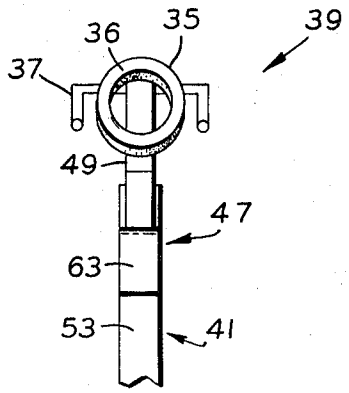


Fig. 3

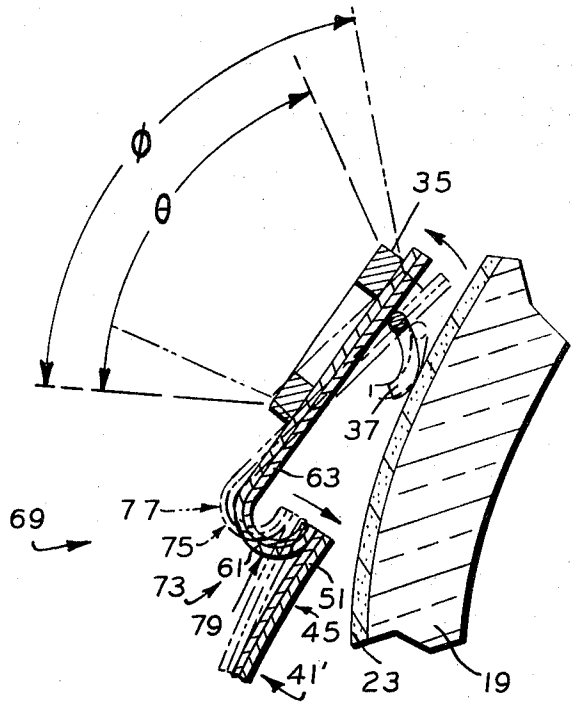


Fig. 5

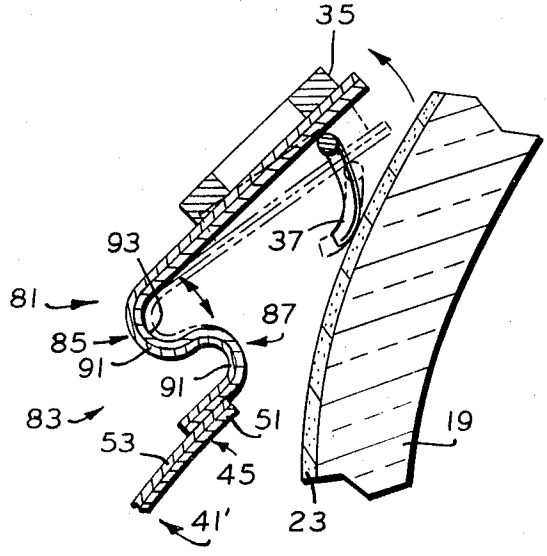


Fig. 6A

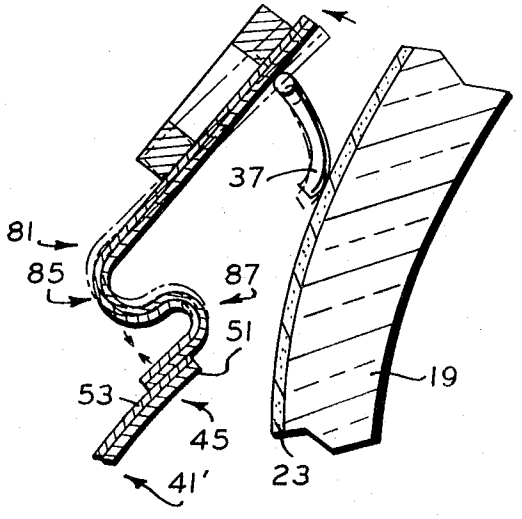


Fig. 6B

CATHODE RAY TUBE ANTENNA GETTER STRUCTURE COMPRISING PERMANENT PHASE TRANSFORMATION BIMETALLIC MATERIAL

BACKGROUND OF THE INVENTION

This invention relates to a cathode ray tube antenna-type container or getter positioning means and more particularly to an antenna getter structure that is permanently deformed during tube processing to effect predetermined positioning within the tube envelope.

In cathode ray tubes it is conventional practice to utilize a gas-absorptive gettering material within the hermetically sealed tube envelope to enhance the desired vacuum therein. Normally the gettering material is vaporized from a getter container, oriented within the tube envelope, by discrete heating during tube processing. This procedure disposes a film of gas-absorbing material on a restricted portion of the tube interior substantially facing the diffusion area of the getter container.

Usually, in cathode ray tubes of the type conventionally employed in television applications, at least one getter structure is affixed to the forward end of the electron generating means located within the neck portion of the tube envelope. This type of getter structure is commonly referenced within the art as an antenna getter, and is usually comprised of a resilient longitudinal positioning member or wand having a curvature therein and a getter container terminally mounted thereon. This getter structure is affixed in an outward curving manner to the electron gun or electron generating means before the gun is positioned within the restrictive neck portion of the envelope. The curved resilient positioning member permits insertion of the electron gun into the neck portion, while assuring sequential orientation of the forward-extending getter container in a position closely adjacent to the interior surface of the outwardly flared infundibular portion of the tube envelope, outside of the paths of the projected electron beams.

It is usual practice to coat the interior surface of the funnel or infundibular portion of the cathode ray tube envelope and the forward area of the integral neck portion with an electrical conductive coating such as Aquadag or graphite. Upon inserting the electron gun into the neck of the tube, the outwardly extending getter structure makes contact with the wall of the neck; and as the insertion-positioning of the electron gun progresses, the forward end of the getter structure scrapes along the interior surface of the neck portion continuing into the infundibular portion of the envelope. Such pressured contact is conducive for scraping off particles of the conductive coating, which being residual within the interior of the tube, become deleterious factors affecting the quality of the tube.

OBJECTS AND SUMMARY OF THE INVENTION

It is an object of the invention to reduce the aforementioned disadvantages of the prior art. Another object is to provide an improved cathode ray tube antenna getter structure that does not make contact with the neck and infundibular portions of the envelope during tube assembly. A further object is the provision of a getter structure that provides a broad expanse of vaporized getter deposition on the interior surface of the tube. An additional object is to provide a structure for

positioning a container of vaporizable material within a cathode ray tube envelope in a manner to markedly enhance the operational characteristics of the tube.

These and other objects and advantages are achieved in one aspect of the invention by the provision of an improved container positioning means such as an antenna getter structure which is positionally altered during tube processing. The exemplary antenna getter has a longitudinal positioning member formed of a substantially straight strip of alpha bilaminate metallic material having predetermined heat induced flexure performance. This alpha bilaminate material comprises a first lamina of an active alloy material which is contiguously bonded along a common interface to a second lamina of a passive alloy material. The active lamina portion of the material undergoes a metallurgical phase transformation at a predetermined alpha temperature during tube processing to effect a change in shape, thereby modifying or bending the bilaminate positioning member. Affixed to the fore end of the positioning member is a terminal getter orientation means which is formed of a shaped strip of a second or beta bilaminate metallic material which differs in phase transformation temperature response from that of the alpha bilaminate material comprising the positioning means. A getter container is associated with the terminal positioning means in a manner whereof the diffusion area of the container is oriented toward the interior of the tube envelope. When attached to the forward end of the electron gun, the longitudinal positioning member of the antenna getter is substantially straight, and being so initially formed, it supports the getter container in a manner that the container does not come in contact with the neck of the tube during insertion, nor does it scrape the infundibular portion of the envelope as it enters thereinto. During the tube processing with heat in the range of 300° C. to 400° C., the active lamina of the alpha bilaminate positioning member undergoes a metallurgical phase transformation which imparts an arcuate movement to the positioning member bending the same in a direction radially outward from the axis of the tube toward the surface of the infundibular portion of the envelope. Thus, a secondary structural shape of the positioning member is effected. During a subsequent step in tube processing, the getter material is vaporized at a discretely applied temperature in the range of 500° C. to 700° C. whereupon the active lamina of the beta bilaminate material forming the getter orientation means undergoes a metallurgical phase transformation. This phase transformation changes the shape of the getter orientation means and imparts an arcuate movement to the getter container during the vaporization process, which movement, provides a broad expanse of getter coverage on the interior surface and internal structure within the tube, thereby providing improved means for markedly enhancing the beneficial vacuum conditions within the tube. In addition, the new positioning structure of the invention promotes improved electrical quality of the tube by minimizing the presence of scraped-off conductive particles within the tube envelope.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a prior art view showing a partially sectioned cathode ray tube with a conventional antenna getter mounted therein;

FIG. 2 is a cross-sectional illustration of the getter structure of the invention depicting the initial shaping and location thereof in phantom;

FIG. 3 is a plan view of the getter structure taken along the line 3—3 of FIG. 2;

FIG. 4 is an enlarged sectional view of the terminal portions of the embodiment of the invention shown in FIGS. 2 and 3;

FIG. 5 is an enlarged view of the terminal portions of another embodiment of the invention; and

FIGS. 6*a* and 6*b* are cross-sectional views showing positionings of the terminal portions of a third embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

For a better understanding of the present invention, together with other and further objects, advantages and capabilities thereof, reference is made to the following specification and appended claims in connection with the aforedescribed drawings.

While the structure of the invention is described herein as an exemplary means for effecting the diffusion of a gas-absorbing getter material, the scope of the invention represents sufficient generic breadth to include the accommodation of any vaporizable material that may be desirably diffused within the tube.

With reference to the drawings, a prior art view of a cathode ray tube is illustrated in FIG. 1. In this instance, the cathode ray tube shown is a shadow mask color tube **11** having a longitudinal axis **13** extending therethrough. The envelope enclosure **15** is integrantly formed of a neck portion **17** joined to an infundibular or funnel-like portion **19** and capped with a face or viewing panel **21** having a cathodoluminescent screen **25** disposed on the interior surface thereof. An electrical conductive coating **23**, such as Aquadag, is disposed in a substantially continuous manner on interior areas of the neck and funnel portions. A foraminous electrode structure **27** is located in the forward portion of the tube in spaced relationship with the aforementioned cathodoluminescent screen **25**. Positioned within the neck portion of the envelope **15** is an electron generating means or electron gun **29** having an antenna getter structure **31** affixed to the forward end thereof. The getter structure includes a longitudinal positioning means or wand **33** formed as a curved resilient member which has a getter container **35** affixed to the forward end along with an associated skid or envelope contact means **37**. When the material in the getter container **35** is "flashed," by discretely applied heat from a source not shown, the vaporized material is diffused in a substantially conical projection, represented by the $\angle\theta$, and is disposed as a film on the internal surfaces of the tube impinged by the diffusion. During tube assembly, when the electron gun **29** is inserted into the neck portion **17** of the envelope, the curved getter structure is forced inward toward the axis **19** of the tube and the skid or contact means **37** adjacent the end of the getter structure **31** is scraped along the neck **17** of the tube following the coated internal contour thereof into the coated funnel portion **19**. The scraping of the getter skid **37** over the coated portion of the tube loosens particles of coating which become potential detracters of tube quality.

In referring to FIGS. **2** and **3**, there is illustrated one embodiment of the improved container positioning structure **39** of the invention. A substantially straight longitudinal positioning member **41** is formed of a strip of alpha bilaminate metallic material having aft **43** and fore **45** attachment areas, the aft area being substantially terminally affixed to the electron gun structure **31**. Affixed to the fore attachment area of the bilaminate positioner, is a terminal getter orientation means **47** formed of a shaped strip of beta bi-laminate metallic material which differs from the aforementioned alpha material in both composition and temperature response. As shown, this getter orientation means incorporates a substantially U-shaped bend **54** in one end thereof. In this embodiment, the container, such as a getter container or ring **35**, is mounted on a metallic getter support member **49**, which in turn is attached to the distal end portion of the getter orientation means **47**. The exemplary getter ring **35**, in this instance, is in the form of a continuous metallic channel having diffusible getter material disposed as a filling therein, but other types of getter containers are also applicable to utilization in the structure of the invention. A dual leg contact means of skid member **37** is suitably attached to the getter support member **49**. When the longitudinal positioning member **41** is permanently deformed by heat during tube processing, the terminally oriented structures on the end thereof are moved in a direction radially outward from the tube axis **13** whereof the skid means **37** makes contact with the coated wall of the envelope **19**.

In greater detail, the alpha bilaminate material which constitutes the longitudinal positioning member **41** has a predetermined flexure performance, being formed of a first lamina of active alloy material **51** which is continuously metallurgically bonded along a common interface **52** to a second lamina of a passive alloy material **53**. This active alloy upon being subjected to an alpha predetermined termperature, encountered during tube processing, undergoes a metallurgical phase transformation which effects a set volume change therein. The passive alloy is of a composition that remains in a substantially stable single metallurgical phase state throughout the temperature range wherein the alpha predetermined temperature is included. This alpha predetermined temperature level, which effects the phase transformation of the active lamina thereby producing a set flexure in the alpha material, is above any of the temperatures encountered by the alpha bilaminate material during fabrication and forming of the getter structure and during subsequent incorporation of the getter structure into the tube assembly per se. In manufacturing the getter structure **39**, this positioning member **41** is formed to have a primary shape that is substantially straight, as exemplified in FIG. **2**. The active lamina portion of the primary shaped positioning member **41**, upon reaching the alpha predetermined temperature during tube processing, undergoes a metallurgical phase transformation which imparts an arcuate movement to the positioning member in a direction radially outward from the axis of the tube. The resultant flexure formed in the positioning member effects a secondary arcuate structural shape **41'** thereto and consummates a modified location of the positioning member within the infundibular portion of the tube envelope.

The terminal getter orientation means **47**, being configurated to a specific primary shaping and affixed to the fore attachment area **45** of the alpha bilaminate po-

sitioning member **41**, is formed of a strip of a beta bilaminate metallic material of predetermined flexure performance. This formed orientation means has proximal **55** and distal **57** ends, of which the proximal end is affixed to the fore attachment area **45** of the described longitudinal positioning member. This beta bilaminate material is likewise comprised of first and second laminae of active and passive alloy materials **61** and **63**, respectively. The beta active lamina material **61** has a higher metallurgical phase transformation temperature than that of the alpha active material **51**. When the beta active material reaches a beta predetermined temperature, such being encountered during the getter vaporization step in tube processing, the active material undergoes a metallurgical phase transformation effecting a set volume change therein thereby producing a modification in the shape of the orientation means and a resultant movement associated with the contiguous positioning means **41'**.

The generic bilaminate materials utilized in the getter structures of this invention and the representative alloys comprising the temperature-deformable bilaminates, are the subject of U.S. Pat. No. 3,743,485, which issued July 3, 1973 to Arnold J. Gottlieb and George A. Majesko; and a continuation-in-part patent application, Ser. No. 373,400, filed June 25, 1973, by the same inventors, Arnold J. Gottlieb and George A. Majesko. The aforenoted patent and patent application are both assigned to the Wilbur B. Driver Company, Newark, New Jersey which is a subsidiary of the assignee of the present invention. The aforenoted patent and patent application both disclose bilaminate materials for utilization in existing structures wherein the characteristics of the material provide improved results thereof. In the present application, the generic bilaminate material of U.S. Pat. No. 3,743,485 is put to new usage in a newly designed antenna getter structure for utilization in a cathode ray tube to provide results heretofore unattained.

To further amplify the functioning of the initially described terminal getter orientation means **47**, reference is directed to FIGS. **2**, **3**, and **4**. This embodiment of the beta bilaminate terminal orientation means is formed to have a substantially U-shaped bend **54** in substantially the distal end region **57** thereof to effect an arcuate movement of the getter container **35** associated therewith during getter vaporization. With particular reference to FIG. **4**, this movement is effected by the metallurgical phase transformation of the beta active lamina portion **61** of the beta bilaminate material, the beta active portion being oriented to be the outer lamina of the U-shaped bend formation **54**. Localized heating which is directed to the getter container region, such as from an externally positioned induction heating source not shown, during the getter flashing step in tube processing, consummates vaporization of the getter material from the container, and substantially simultaneously effects the metallurgical phase transformation of the active lamina **61** in the U-shaped getter orientation means **47**. This transformation resultantly opens or spreads the U-configuration from a primary shaping **65** to a secondary shaping **65'**, the spreading thereof being in the order of 0.060 to 0.080 inch. This modification in the shaping of the orientation means, in conjunction with the skid contact against the coated wall of the envelope, imparts an arcuate movement to the getter container during the vaporization of the material therefrom. Thus, a substantially conical diffusion of the getter material, represented by the $\angle\theta$, is arcuately increased as denoted by the $\angle\phi$, thereby disposing a broad expanse of getter film on the internal surfaces of the tube. Since the proximal end **55** of the orientation means **47** is affixed to the fore attachment area **45** of the priorly-deformed positioning means **41'**, the modification in shaping of the orientation means causes a slight movement in the positioning means due to the resiliency thereof. For reasons of clarity, such movement is not shown in FIG. **4**.

AnOther embodiment of the getter structure of the invention **69** is shown in FIG. **5**, wherein the getter container **35** is directly attached to the beta bilaminate getter orientation means **71**. In this embodiment the terminal getter orientation means is formed to have a substantially U-shaped bend **73** in the proximal end region **75** thereof to effect an arcuate movement to the getter container **35** during getter vaporization. As in the previous embodiment, this arcuate movement is resultant of the metallurgical phase transformation of the active lamina **61** which is the outer lamina in the U-shaped proximal formation **73** of the orientation member **71**. This effects an opening or spreading of the U-shaped configuration from a primary shaping **77** to a secondary shaping **79**. This modification in conjunction with the skid contact **37** against the coated wall of the envelope **19**, produces the arcuate movement of the getter container **35** during the vaporization of the getter material therefrom. Thus, this embodiment also provides a substantially conical diffusion of the getter material, represented by the $\angle\theta$, which is increased during diffusion, as illustrated by the $\angle\phi$, thereby disposing a broad expanse of getter film on the internal surfaces of the tube.

FIGS. **6***a* and **6***b* illustrate a third embodiment of the getter structure wherein a modified getter orientation means **81** is illustrated. As shown, the getter container **35** is affixed directly to the beta bilaminate terminal orientation means which is formed to have a substantially S-shaped configurative shaping **83** in the proximal end region thereof to effect a rocking movement of the getter container **35** during getter vaporization which assures a broad expanse of getter diffusion. The S-shaped configuration **83** is formed to have a first bend **85** and a second bend **87**, the end portion **89** of the second bend being affixed to the fore attachment area **45** of the bilaminate positioning member **41'**. It is Preferable to have the beta passive lamina portion **93** of the S-shaped configuration bonded to the alpha passive lamina portion **53** of the longitudinal positioning member **41** since both are stable phase alloys. This beta bilaminate structure **81** has the active **91** and passive **93** alloy laminae so oriented that the active lamina **91** is on the outer portion of the first bend **85** and the inner portion of the second bend **87** of the S-shaped configuration **83**. During getter flashing, the first bend or loop **85** of the S-shaped configuration, which is the loop nearest the getter ring, and which first receives the heat radiated and conducted from the ring, tends to open or spread, as a resultant of the phase transformation of the active lamina **91**, thereby moving the orientation means **81** on its skid **37**, which is in contact with the coated envelope **19**. This initiates a primary motion of the orientation means effecting an extended area of getter coverage as shown in FIG. **6***a*. The primary movement is followed by a sequential secondary mo-

tion, initiated as the second bend or loop 87 of the S-shaped configuration, which is more remote from the getter ring, receives the phase transformation heat and tends to close thereby imparting a sequential arcuate movement to the getter ring 35 during getter effusion.

In an operating cathode ray tube, the region wherein the antenna getter structure is oriented reaches a temperature range in the order of 25° C to 75° C; but during processing of the tube, the getter structure is subjected to a much greater temperature differential. For example, during the exhaust processing of the tube, a temperature of approximately 320° C. is reached, and during a subsequent processing step, when the getter material is vaporized from the getter container, localized heating of the terminal or getter container region of the getter structure reaches a temperature in the order of 650° C. to 700° C. During the getter vaporization step, the temperature of the longitudinal positioning member which is terminally affixed to the electron gun, reaches a temperature in the order of 180° to 200° C. Upon considering the foregoing temperature differentials, the alpha bilaminate material comprising the longitudinal positioning member is one wherein the metallurgical phase transformation of the alpha active lamina material takes place at a temperature level encountered during the tube exhaust processing step, while the beta bilaminate material of the getter orientation means is chosen to have an active lamina whereof the metallurgical phase transformation is effected within the temperature range normally encountered during getter vaporization processing. Thus, the two bilaminate materials comprising the getter structure, being of diverse compositions, are metallurgically modified to effect sequential positionings of componental parts thereby providing a markedly improved getter structure. In fabricating the getter structure of the invention, the alpha bilaminate material comprising the longitudinal positioning member, is for example an alloy wherein the alpha active lamina portion is an iron-nickel alloy consisting essentially of 32 percent to 33 percent by weight of nickel with the balance being iron. The metallurgical phase change transformation temperature of this alloy is in the region of approximately 325° C. One example of an alpha passive alloy material, for contiguous association with the above-noted alpha active lamina material, is another iron-nickel alloy consisting essentially of about 34 percent to 36 percent by weight of nickel, with the balance being iron. A suitable beta bilaminate material for forming the terminal getter orientation means of the structure, is for example one wherein the beta active lamina portion is a nickel-cobalt-iron alloy consisting essentially of about 29 percent by weight of nickel and about 17 percent by weight of cobalt with the balance being iron. This alloy material is commercially known as Rodar and is available from the Wilbur B. Driver Company, Newark, New Jersey. The metallurgical phase transformation temperature of this beta active alloy material is in the neighborhood of approximately 600° C. One example of a beta passive alloy material for contiguous association with the above-noted beta active lamina material, is a carbon stabilized Rodar material, such material being available from the above-noted source.

When the aforedescribed alpha and beta bilaminate materials are subjected to their respective phase transformation temperatures, during specific steps in the tube processing procedure, the respective active material lamina portion of the respective bilaminate material undergoes a crystal structure transformation from the martensitic phase to the austentitic phase. In this change of phase the active material shrinks in volum thereby deforming and inducing flexural stress in the bilaminate material thereby causing arcuate deformation therein which effects a change in the configuration from a primary shaping to a secondary shaping. As previously mentioned, the respective active and passive alloys comprising the alpha and beta bilaminate materials are selected to have phase transformation temperatures of the active materials that are within the tube processing range, that is, preferably above about 300° C. and below about 700° C. In addition, the respective passive alloys should remain in a stable metallurgical phase throughout the temperature range encountered by the materials which should be up to substantially 800° C. When the critical temperatures of the respective phase transformations are attained, modifications of the respective primary shapings of the positioning member and the getter orientation means are triggered by the active material components thereof, and such changing of shapings are substantially permanently retained by the respective structural components, the coefficients of thermal expansion of the active and passive laminae being substantially equal in each of the bilaminates described. Thus, the modifications of the shapings of the alpha and beta bilaminate structures are sustained regardless of the temperatures normally encountered thereafter in further tube processing and subsequent tube operation. In each of the described embodiments of the getter structure of the invention, the jointures of the componental parts are effected by suitable affixture such as by spot welding techniques. While the welding temperature so encountered may be momentarily in the order of 1,200° C., only a minute and inconsequential area of each attachment portion or jointure will be transformed or deformed by the phase transformation. In each instance the flow of heat from the immediate weld or jointure area is minimized by the use of temporarily applied heat sink means.

Several embodiments of the improved antenna getter structure have been shown and described wherein the getter structure does not make contact with the neck and funnel portions of the envelope during tube assembly, but are subsequently desirably positioned as a resultant of discrete tube processing temperatures. The getter structure of the invention also provides a broader expanse of vaporized getter deposition on the interior surface of the tube than priorly achieved by conventional getter structures. Thus, the improved container positioning structure provides a marked improvement in the operational quality characteristics of the tube.

While there has been shown and described what are at present considered the preferred embodiments of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention as defined by the appended claims.

What is claimed is:

1. In a cathode ray tube having a longitudinal axis therethrough and an encompassing envelope strucutre integrally formed of a neck portion with an electron generating means spatially positioned therein, and infundibular portion, and a viewing panel having a cath-

odoluminescent screen disposed on the interior surface thereof, a heat deformable antenna getter structure formed to achieve predetermined positioning of the getter container relative to the interior surface of the envelope, said structure comprising:

a longitudinal positioning member formed of a strip of alpha bilaminate metallic material of predetermined flexure performance having aft and fore attachment areas, said aft attachment area being substantially terminally affixed to said electron generating means and said fore attachment areas being positioned between said longitudinal axis and said infundibular portion, said alpha bilaminate material being formed of a first lamina of an alpha active alloy material metallurgically bonded along a common interface to a second lamina of an alpha passive alloy material, said alpha active alloy material upon being subjected to an alpha predetermined temperature undergoes a metallurgical phase transformation effecting a set volume change thereof, said alpha passive material remaining in a substantially stable single metallurgical phase state throughout a temperature range wherein said alpha predetermined temperature is included, said positioning member having a formed primary shape effected prior to tube assembly, the alpha active lamina portion of said primary shaped positioning member upon reaching an alpha predetermined temperature during tube processing transforms to said metallurgical phase thereby imparting an arcuate movement to the positioning member in a direction radially outward from said axis producing a resultant flexure therein to effect a set secondary structural shape and movement of the positioning member toward the infundibular portion of said envelope;

a terminal getter orientation means affixed to the fore attachment area of said bilaminate positioning member, said orientation means being formed of a strip of beta bilaminate metallic material of predetermined flexure performance having proximal and distal ends of which said proximal end is affixed to the fore attachment area of said positioning member, said beta bilaminate material being comprised of first and second laminae of beta active and beta passive alloy materials respectively, said beta active material having a beta metallurgical phase transformation temperature higher than that of the alpha active lamina in said alpha bilaminate material, said terminal orientation means being discretely shaped to effect a configurative change from a primary to a secondary shaping thereby providing a related arcuate movement of said orientation means relative to said positioning member during getter vaporization processing;

a getter container associated with said terminal positioning means in a manner oriented to direct vaporized material substantially toward the interior of said tube; and

contact means associated with said terminal positioning means relative to the distal end thereof oriented toward the wall of said envelope to effect contact therewith during tube processing.

2. The antenna getter structure according to claim **1** wherein the alpha active lamina portion of the alpha bilaminate material forming said positioning member is oriented to be adjacent to the wall of the envelope.

3. The antenna getter structure according to claim **1** wherein the predetermined alpha phase transformation temperature of the alpha active lamina portion of said alpha bilaminate material is substantially within the range of 300° to 400° C.

4. The antenna getter structure according to claim **1** wherein the predetermined beta phase transformation temperature of the beta active lamina portion of said beta bilaminate material is substantially within the range of 500° to 700° C.

5. The antenna getter structure according to claim **1** wherein said beta bilaminate terminal orientation means is formed to have a substantially U-shaped bend therein to effect an arcuate movement of said getter container during getter vaporization.

6. The antenna getter structure according to claim **5** wherein the beta active lamina portion of the beta bilaminate material forming said terminal orientation means is oriented to be the outer lamina of said U-shaped bend formation.

7. The antenna getter structure according to claim **1** wherein said beta bilaminate terminal orientation means is formed to have a substantially U-shaped bend in the proximal end-region thereof to effect an arcuate movement of said getter container during getter vaporization.

8. The antenna getter structure according to claim **1** wherein said beta bilaminate terminal orientation means is formed to have a substantially U-shaped bend in the distal end-region thereof to effect an arcuate movement of said getter container during getter vaporization.

9. The antenna getter structure according to claim **1** wherein said beta bilaminate terminal orientation means is formed to have a substantially S-shaped configurative shaping in the proximal end-region thereof the effect a sequential arcuate movement of said getter container during getter vaporization.

10. The antenna getter structure according to claim **9** wherein the beta passive lamina portion of said S-shaped configuration is bonded to the alpha passive lamina portion of said longitudinal positioning member.

11. The heat deformable structure according to claim **1** wherein the alpha and beta active laminae of the respective alpha and beta bilaminate materials undergo respective crystal structure transformations from the martensitic phase to the austentitic phase at respective predetermined temperatures, and wherein the coefficients of thermal expansion of the respective associated active and passive laminae are substantially equal, and wherein the active material lamina portion of each bilaminate material shrinks in volume when transforming from the martensitic to the austentitic phases thereby inducing structural movement of the respective bilaminate members of the heat deformable structure.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,848,154 Dated November 12, 1974

Inventor(s) Robert J. Bowes and Donald R. Kerstetter

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 10, line 42: "the effect" should read --- to effect ---

Signed and sealed this 18th day of February 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks