Aug. 19, 1969 T. F. VOM BRACK ETAL 3,462,112

CONNECTOR ASSEMBLY FOR PIVOTALLY MOUNTED DISPLAY TUBE

Filed Aug. 4, 1967

FIG.1

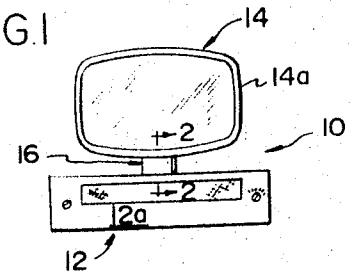


FIG.3

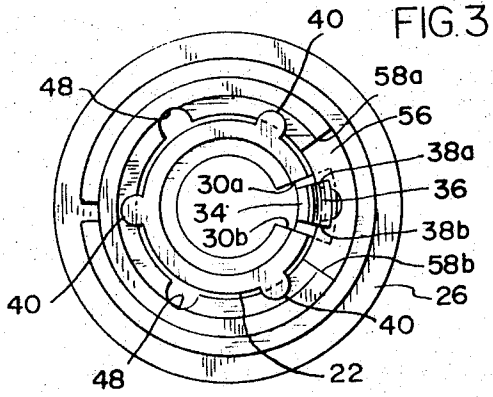


FIG.2

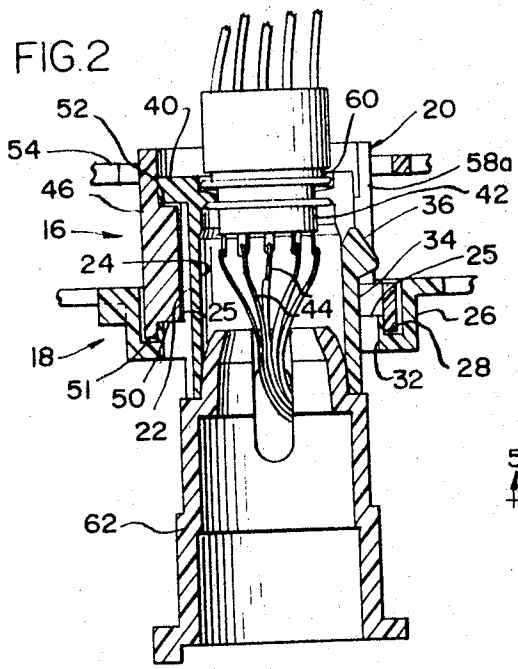
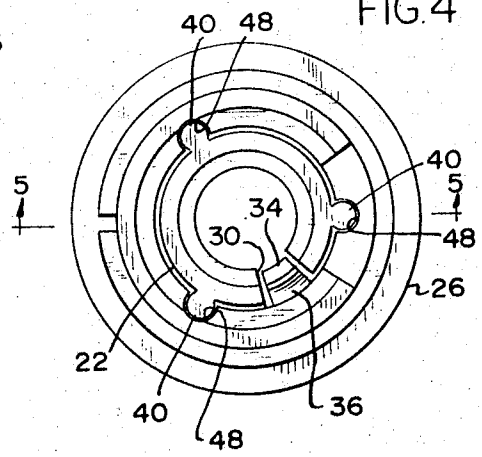


FIG.4



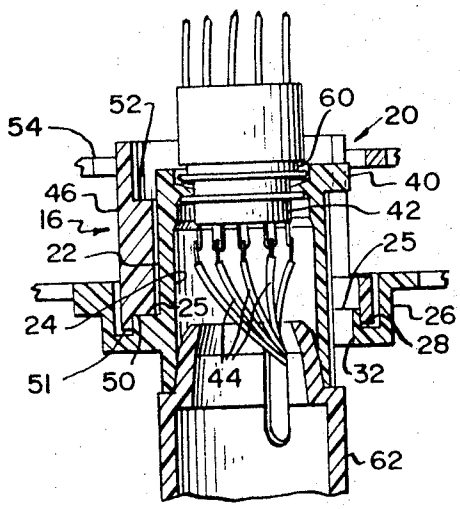


FIG.5

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CONNECTOR ASSEMBLY FOR PIVOTALLY MOUNTED DISPLAY TUBE

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U.S. Cl. 248—349 7 Claims

ABSTRACT OF THE DISCLOSURE

A connector assembly for a television receiver of the type having a display tube pivotally mounted above a base enclosing the functional components for receiving signals and transposing the same into a video and audio presentation. The rotational movement of the display tube is limited by a locking finger which may be selectively urged to a position beyond the normal limits of rotational movement to place the components of the connector assembly in a position for disassembly by relative axial movement thereof to permit disconnection and withdrawal of the display tube assembly from the base portion.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to a connector assembly for television receivers of the type having a display tube pivotally mounted with respect to a base which supports and encloses the functional components of signal receiving chassis.

Description of the prior art

No specific prior art is known which shows the type of connector assembly disclosed and claimed herein. However, the general type of television receiver to which this connector assembly is directed has been previously known, examples of which are shown in U.S. Letters Design Patent No. Des. 183,779, issued Oct. 21, 1958, to Richard J. Whipple, and U.S. Letters Design Patent No. Des. 183,780, issued Oct. 21, 1958, to Richard J. Whipple and Severen Johanssen. Generally speaking, each of these design patents shows a television receiver of the type wherein the display tube is pivotally mounted with respect to a separate base wherein the functional circuitry components are housed for receiving a signal and converting the same into a discernible audio and video presentation.

Most television receivers are of the type wherein the display tube is mounted within a housing which also encloses the chassis to which the functional components of the circuitry are connected. Thus, the display tube is not pivotal with respect to the chassis or the remaining components of the circuitry. It has been found desirable to provide a more "personalized" type of television receiver which can be used on a smaller shelf arrangement or as part of a desk arrangement or the like wherein the display tube is pivotal with respect to the chassis to provide increased viewing area versatility.

SUMMARY OF THE INVENTION

This invention is directed, in brief, to the provision of a connector assembly for use between the housing for the base, or chassis, portion and the housing for the display tube of a television receiver of the type wherein the display tube is pivotally mounted above the base or chassis. In particular, the connector assembly herein has a novel construction permitting limited pivotal movement of the display tube relative to the housing and also facilitating easy disconnection and removal of the dsplay tube from its pivotal mounting by means of a lock arrangement

wherein the means limiting pivotal movement may be overcome to move the assembly to a position wherein the components may be separated to disconnect, or release, the display tube portion from the base portion.

DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a front elevational view of a television receiver of the type wherein the display tube is pivotally mounted with respect to a base which encloses the chassis and provided with a connector assembly embodying the invention;

FIGURE 2 is a fragmentary enlarged sectional view taken generally along the lines 2—2 of FIGURE 1;

FIGURE 3 is a top plan view of the connector assembly, the plug, and socket being omitted;

FIGURE 4 is a view similar to FIGURE 3 but showing the components of the connector assembly moved to a position wherein they may be separated by axial movement to effectuate the disconnection of the display tube housing from the base; and

FIGURE 5 is a section view similar to FIGURE 2 but with the connector assembly in the relationship shown in FIGURE 4 ready for relative disconnection.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Television receiver **10** is the type having a separate base **12** including a housing **12***a* which encloses the chassis. A display tube **14** secured within a housing **14***a* is pivotally mounted on top of the base **12** by means of the connector, or neck, assembly **16** of this invention. The connector, or neck, assembly **16** includes a base portion, or member, **18** which may be formed as an integral portion of the housing **12***a*, and a top portion, or member **20**, which may be formed as an integral portion of the housing **14***a*. Portions **18** and **20** will be discussed herein as separate individual units, or member, with the understanding that they actually could be integrally formed as a part of the housings **12***a* and **14***a* respectively.

Base member **18** includes a generally cylindrical hub **22** having a hollow cylindrical interior **24**. Preferably the hub is made of a plastic material such as polystyrene. The lower end of the hub has a radially enlarged surface **25**. A ring **26** is concentric to the hub **22** in the area of surface **25** and joined thereto by channel portion **28**. The cylindrical wall of the hub at spaced portions **30***a* and **30***b* and a portion of the ring **26** are cut away at **32** to define a yieldable finger **34**. The free end of the finger is formed with a cam surface **36**, the sides **38***a* and **38***b* of which provide lateral protrusions or stop members to serve as part of the means for limiting pivotal movement of the assembly. A plurality of bosses **40** extend radially outwardly from the upper end of the hub and form part of the locking surfaces for normally holding the portions **18** and **20** axially together. In addition, the upper end of the hub supports a socket member **42** to which is connected wiring **44** from the several circuitry components of the chassis.

Top member **20** includes a sleeve-like member **46** of hard plastic material which is generally of a size and shape to fit over the hub portion **22** and partially into the channel **28**. The sleeve portion includes a plurality of axially extending grooves **48** in the inner wall thereof, the grooves **48** being of a size and shape to generally matingly receive the bosses **40** of the hub. The lower end of the interior of sleeve **46** is increased in diameter to form a shoulder **50** which engages surface **25** of the hub to limit the telescopment of sleeve **46** with hub **22**. The reduced portion **51** of the sleeve is received in channel **28**. The upper end of the sleeve **46** is provided with an increased interior diameter forming a shoulder **52** which underlies the bosses **40** when the parts are in their normal assembled position as

shown in FIGURES 2 and 3 with shoulder **50** abutting surface **25**. Shoulder **52** cooperates with bosses **40** to provide mutually engageable locking surfaces which prevent axial withdrawal of sleeve **46** from hub **22**.

A portion of the wall of the sleeve **46** is cut away to provide an opening **56** limited by side wall **58***a* and side wall **58***b*. The finger **34** extends through this opening and the sides **38***a* and **38***b* of the finger combine with the sides **58***a* and **58***b* of the opening to provide a means for limiting the relative rotation of the portion **20** and portion **18**. The sector defined by the opening **56** is sufficiently limited in relation to the location of the grooves **48** and the relative location of finger **34** and bosses **40** so that bosses **40** cannot be aligned with grooves **48** within the limited amount of pivotal movement permitted by the finger-slot connection **34–56**.

The lower end of the sleeve **46** is provided with a plug **60** which matingly engages with the socket **42** to provide a separable electical connection therewith so that the wiring **44** may transmit the appropriate signals to the display tube **14** from the base portion **12**. The connector assembly **16** made up of the members **18** and **20** may rest upon a supporting neck structure **62** which may be connected to the chassis in the interior of the base **12**.

In operation, the connector assembly permits rotation of the display tube housing **14** relative to the base **12** through a preselected sector of angular displacement measured by the angular width of the opening **56** in the wall of the sleeve **46**. The opposite side walls **58***a* and **58***b* of opening **56** will abut the opposite sides **38***a* and **38***b* of the cam surface **36** of finger **34** to limit rotation. To disassemble the display tube housing **14** from the base **12**, the finger **34** may be urged inwardly to a non-limiting position so that the sides **38***a* and **38***b* of cam surface **36** do not engage walls **58***a* and **58***b*, thereby allowing finger **34** to ride in the interior of the sleeve **46**. The members **18** and **20** are then rotated relative to each other until the bosses **40** are in alignment with the grooves **48** which open through the shoulder **52**. When the parts are so positioned, as shown in FIGURES 4 and 5, relative axial movement between the two may be effected to separate top member **20** from base member **18**. In addition, the plug and socket connections **60** and **42**, respectively, permits the electrical disconnection between the display tube housing and the base member **18**.

To reassemble the two components, the plug and socket connection may first be connected. Then the sleeve **46** may be telescoped over the hub **22** with the bosses **40** in alignment with the grooves **48** as shown in FIGURE 4. The cam surface **36** causes the finger **34** to spring inwardly so that it rides in the interior of the sleeve **46**. When the sleeve bottoms in the channel **28** with shoulder **50** abutting surface **25**, the bosses **40** are above the shoulder **52**. The sleeve **46** may be then rotated relative to the hub **22** and as soon as the finger **34** is opposite the opening **56**, it will spring outwardly to the position shown in FIGURES 2 and 3. The relative rotation between the members **18** and **20** is then limited to a sector defined by the size of the opening **56**. Because grooves **48** are spaced from side **58***a* and **58***b* of opening **56** a distance such that bosses **40** cannot be aligned with the grooves while rotational movement is limited by finger **34**, members **18** and **20** are locked against relative axial withdrawal.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, as some modifications may be obvious to those skilled in the art.

We claim:

1. A connector assembly for pivotally mounting a display tube to a support housing, comprising: a hollow base member; means for fixedly associating the base member with a support housing; a top member; means for fixedly associating the top member with a display tube, said top member being rotatably associated with said base member; cooperating limit means on said members for limiting the relative rotation of the two members to a preselected sector, said rotation limiting means being selectively disposable to permit relative rotation of said members beyond said sector; and cooperating locking means on said top and base members for selectively preventing relative axial movement of said members, said locking means being selectively disposed to permit relative axial movement of said members as an incident of said members being rotated beyond said sector.

2. The connector assembly of claim **1** wherein said limit means includes a resiliently yieldable finger on the base member and angular spaced shoulders on said top member.

3. The connector assembly of claim **2** wherein the limit means further includes a slot formed in the top member into which said finger normally projects, said slot having side walls defining said angular spaced shoulders.

4. The connector assembly of claim **1** wherein said locking means include angular spaced bosses on one of the members and an annular shoulder on the other member having correspondingly angular spaced grooves which are out of alignment with said bosses when said limit means is arranged to limit the relative rotation of said members.

5. A connector assembly for pivotally connecting a display tube to a support housing containing functional components, comprising: a base member associated with the support housing, said base member comprising a substantially hollow cylindrical hub, the lower portion of the hub having a radially outwardly exteding surface terminating in means defining a channel, the top portion of the hub having a plurality of outwardly protruding locking surfaces, and a portion of the side wall of the hub being provided with a yieldable finger having a cam surface which normally projects outwardly from the said wall of the hub, the finger being movable inwardly of the hub to move the outwardly projecting surface of the finger within the peripheral border defined by the remainder of the hub; and a top member generally telescopically associated with the base member, the top member comprising a substantially circular cylindrical sleeve having an opening in a portion thereof through which the finger normally projects, engagement of the finger member and the opening in the sleeve limiting the relative rotation of the base and top members, movement of the finger of the base member inwardly permitting relative rotation of the base and top members beyond the normally limited relative rotation and further permitting axial withdrawal of the top member from the base to disassemble the components thereby.

6. The connector assembly of claim **5** wherein said top member is provided with a shoulder for engagement with the radial enlargement at the lower end of the hub to limit relative telescopment of the member on the base member.

7. The connector assembly of claim **6** wherein the top member is further provided with an upper shoulder which overlies said locking surfaces of the hub, the upper shoulder having a plurality of axially extending grooves of a size and shape to receive said locking surfaces, said grooves being spaced relative to the opening in the sleeve wall such that the locking surfaces of the base member cannot be brought into alignment with the grooves when said finger is in the rotation limiting position.

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