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[54] **DEFLECTION YOKE HOLDING DEVICE**

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[52] **U.S. Cl.** **335/210;** 178/7.81

[51] **Int. Cl.²** **H01F 7/00**

[58] **Field of Search** 335/210, 213; 313/75, 409; 178/7.8, 7.81

[56] **References Cited**

UNITED STATES PATENTS

3,404,228	10/1968	McLeod et al.	335/210 X
3,602,853	8/1971	Cummings et al.	178/7.81 X
3,629,751	12/1971	Massa	335/210
3,657,674	4/1972	Goldammer	335/210
3,697,909	10/1972	Christensen et al.	335/210

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[57] **ABSTRACT**

A deflection yoke holder device for holding a deflection yoke on an attachment for a color cathode ray tube so as to move a neck of the deflection yoke by sliding mutual spherical surfaces, whereby a convergence deviation is corrected.

4 Claims, 2 Drawing Figures

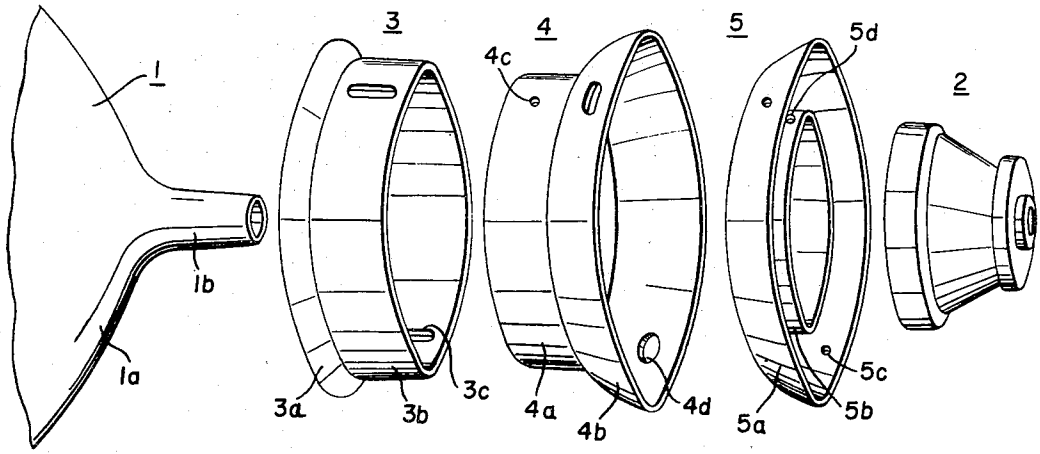


FIG. 1

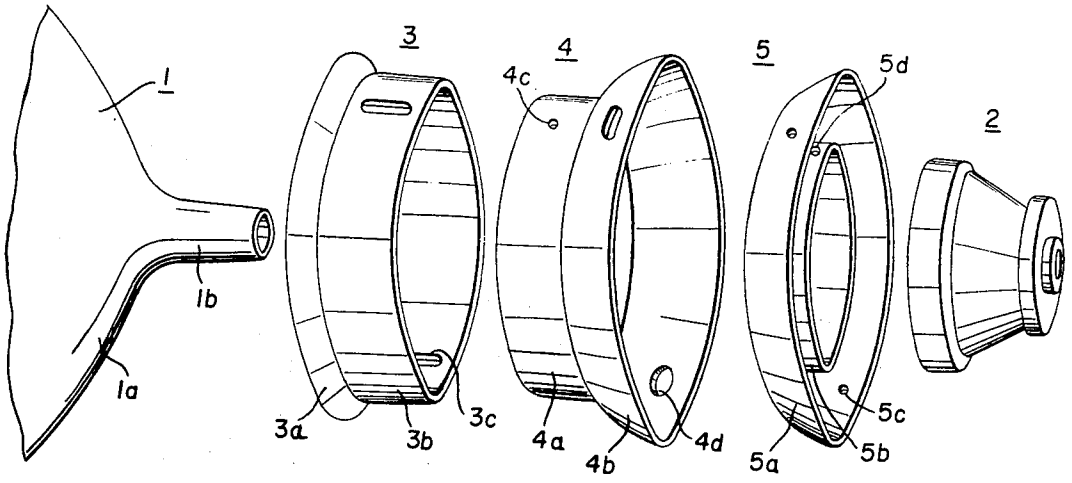
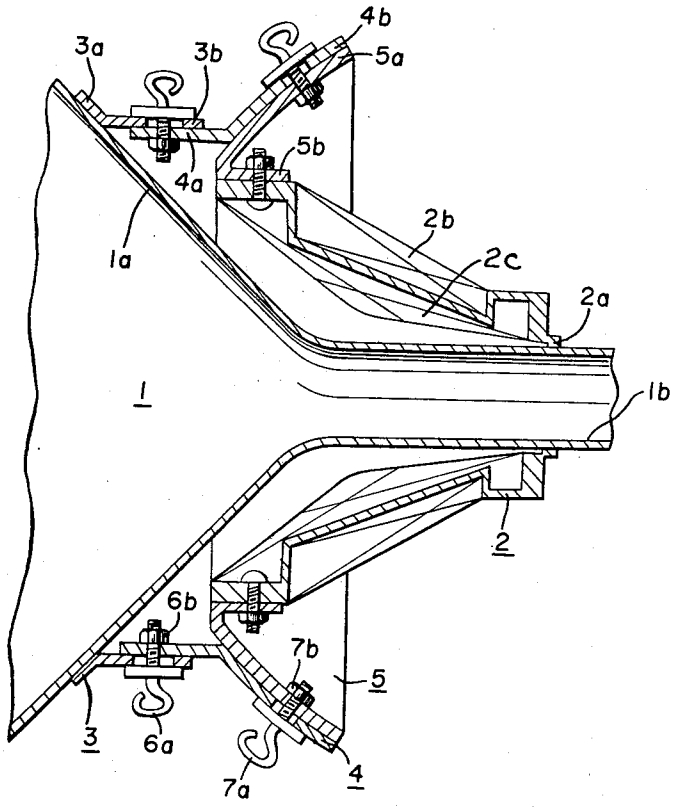

1
1b
1a
3
3a
3b
3c
4
4c
4a
4b
4d
5
5d
5a
5b
5c
2

FIG. 2


4b
3a
3b
5a
5b
4a
2b
2c
2a
1a
1
1b
2
6b
7b
5
3
6a
7a
4

DEFLECTION YOKE HOLDING DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a deflection yoke holding device for correcting the position between the deflection yoke and the cathode ray tube for a color TV receiver.

2. Description of the Prior Art

In the conventional three beam convergence method for a color TV receiver, the horizontal and vertical magnetic fields of the deflection yoke are substantially parallel magnetic fields and the three beams are respectively predeflected by synchronizing deflection with the horizontal period and the vertical period separately, whereby the three beams coincide in all of the picture elements.

In this case, as the magnetic fields are substantially parallel and a device for correcting preliminary deflection is provided, it is not a serious problem if a certain deviation exists between the axis of the electron gun of the cathode tube and the axis of the deflection yoke.

However, in a cathode ray tube wherein the three electron guns are disposed on one plane, the horizontal magnetic field should be a point magnetic field and the vertical magnetic field should be a cylindrical magnetic field for providing the deflection magnetic field.

Accordingly, the position of dependency of the magnetic field is quite high in comparison with that of the parallel magnetic field configuration. When the axis of the cathode ray tube is not coincident with the axis of the deflection yoke, a large convergence deviation results. The convergence deviation can be corrected by moving the deflection yoke in parallel so as to make both of the axes coincide. However, the inner diameter of the deflection yoke must be sufficiently larger than the outer diameter of the neck of the cathode ray tube to permit such movement. If the inner-diameter of the deflection yoke is large, however, the deflection sensitivity is decreased and the consumption of power and the cost of receiver are disadvantageously increased.

An effect similar to such parallel movement can be obtained, however, by fixing the rear part of the deflection yoke and moving the front part of the deflection yoke, in order to overcome the mentioned disadvantage. In this case, the deflection sensitivity is not reduced.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a deflection yoke holding device which can easily correct a convergence deviation.

It is another object of the invention to provide a deflection yoke holding device which can move the deflection yoke with high accuracy about a center.

The foregoing and other objects of the present invention have been attained by providing a deflection yoke holding device which includes a first holding member having a cylindrical part, one end of which is fixed to an outer suface of a color cathode ray tube; a second holding member having a spherical surface which is fixed to a deflection yoke; and a third holding member having a sliding part which slide along with the cylindrical part of the first holding member, and having a spherical surface which is plied on the spherical surface of the second holding member; whereby the spherical surface of the second holding member is guided on the spherical surface of the third holding member, and the deflection yoke can be moved about the center.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

FIG. 1 is an exploded view of one embodiment of the deflection yoke holding device according to the present invention; and

FIG. 2 is a sectional view of the assembled embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. 1 which illustrates an expansional view of the deflection yoke holding device of the invention, wherein an outer attachment of a cathode ray tube **1** includes a funnel **1***a*, a neck **1***b* and a faceplate (not shown in the drawing). A deflection yoke **2** is fitted to the neck **1***b* of the attachment **1.** A funnel ring **3** includes a joint part **3***a* for connecting to the outer surface of the funnel **1***a* and a cylindrical part **3***b* for surrounding the meck **1***b*.

A pair of elongated holes **3***c* are formed on the cylindrical part **3***b*. A slider **4** includes a cylindrical part **4***a* for engagement with the cylindrical part **3***b* of the funnel ring **3** and a spherical surface **4***b*. A pair of screw holes **4***c* are formed on the cylindrical part **4***a* and a pair of elliptical holes **4***d* are formed on the spherical surface **4***b*.

A holder **5** includes a spherical surface **5***a* for engagement with the spherical surface **4***b* of the slider **4** and a cylindrical part **5***b* for fixing the deflection yoke **2.** A pair of screw holes **5***c*, **5***d* are formed on the spherical part **5***a* and the cylindrical part **5***b*, respectively. FIG. 2 is a sectional view of the assembly of the parts, wherein the funnel ring **3** is bonded to the funnel **1***a* with a bonding agent, and the holder **5** is screwed on the deflection yoke **2** at the cylindrical part **5***b*.

The cylindrical part **4***a* of the slider **4** is fitted to the cylindrical part **3***b* of the funnel ring **3** and the spherical part **4***b* is slidably mounted on the spherical part **5***a* of the holder **5.** These parts are fastened by the screws having heads **6***a* and **7***a* and nuts **6***b* and **7***b* at the screw hole **4***c* and elongated hole **3***c*, as well as at the eliptical hole **4***d* and screw hole **5***c*. The rear end **2***a* of the deflection yoke **2** is sized for fitting the neck **1***b* without a gap and has elasticity. A vertical deflection coil **2***b* and a horizontal deflection coil **2***c* are then equipped.

In the deflection yoke holding device, the deflection yoke **2** can be moved in the forward or reverse direction by sliding the slider **4** along the elongated hole **3***c* of the funnel ring **3,** whereby fine adjustment of the color cathode ray tube is rendered possible.

As the spherical surface **4***b* of the slider **4** is plied on the spherical surface **5***a* of the holder **5,** the holder **5** can be freely moved within the range of the elliptical holes **4***d* of the slider **4,** about a center of the rear end **2***a* of the deflection yoke **2,** whereby convergence deviation of the color cathode ray tube can be corrected.

In this case, the rear end **2***a* of the deflection yoke **2** is not moved in the forward or reverse direction, whereby accidental purity deviation is not created.

As stated above, in accordance with the invention, it is possible to provide a deflection yoke holding device for moving the deflection yoke about a center by sliding mutual spherical surfaces, whereby convergence deviation can be corrected by a simple operation.

Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A deflection yoke device comprising:

a first holding member having a cylindrical part, one end of which is fixed to an outer surface of a color cathode ray tube;

a second holding member having a spherical surface which is fixed to a deflection yoke; and

a third holding member having a cylindrical part which is capable of matingly sliding along said cylindrical part of said first holding member, and having a spherical surface which is plied on and mates with said spherical surface of said second holding member;

whereby said spherical surface of said second holding member is guided on said spherical surface of said third holding member so as to permit said deflection yoke to be rotated about its central axis and said cylindrical part of said third holding member is guided upon said cylindrical part of said first holding member so as to permit said deflection yoke to be moved in a direction parallel to said axis.

2. The deflection yoke holding device according to claim **1**, wherein one end of said deflection yoke is fixed on said second holding member and the other end of said deflection yoke is elastically held on the outer attachment of said color cathode ray tube.

3. The deflection yoke holding device according to claim **1**, wherein at least one elliptical hole is formed on said spherical surface of said third holding member and both of said spherical surfaces of said second and third members are plied and connected together by a screw passing through said hole, whereby said deflection yoke can be moved about said axis.

4. The deflection yoke holding device according to claim **1**, wherein at least one elongated hole in the longitudinal direction is formed on said cylindrical part of said first holding member and said third holding member is slidably connected to said first holding member by a screw passing through said elongated hole.

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