

United States Patent

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[33] **Japan**
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[56]

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[54] **DEFLECTING YOKE**
4 Claims, 5 Drawing Figs.

[52] U.S. Cl.....	335/210,
	335/213
[51] Int. Cl.....	H01f 7/00
[50] Field of Search.....	335/210,
	213; 313/75

ABSTRACT: A toroidal-type deflecting yoke for use in television receivers, wherein a ring core having an elliptical cross section is longitudinally divided into two sections. Coils having a greater number of turns are wound on the two core sections respectively, the core sections having the coils wound thereon being joined to each other. Coils having a lesser number of turns are wound on the joined portions of said core sections, so that the winding of the coils can be effectively performed.

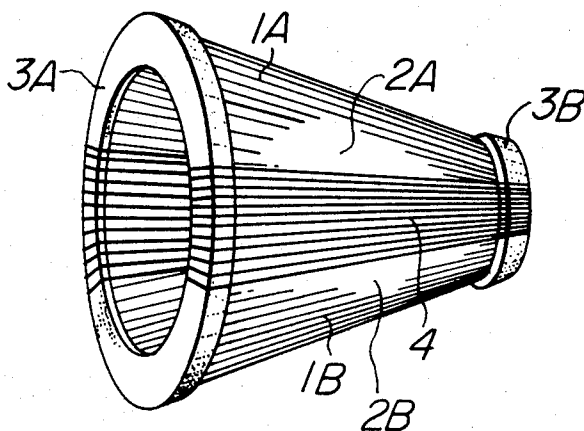


FIG. 1

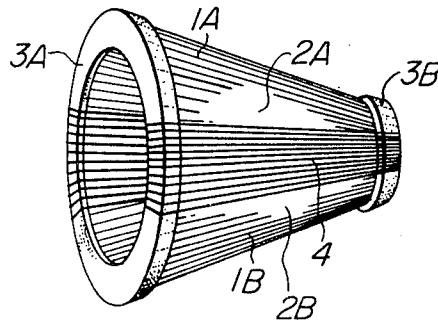


FIG. 2

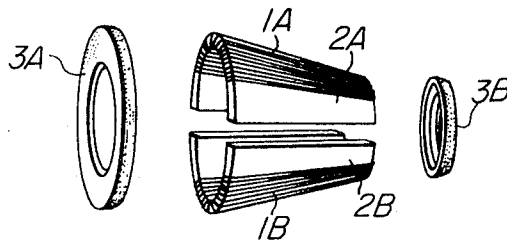


FIG. 4a

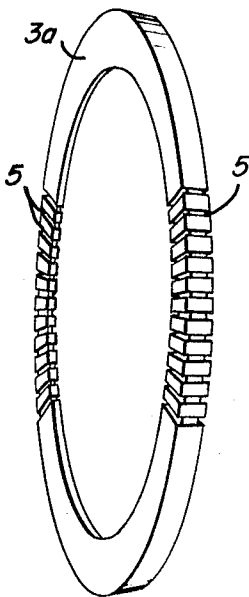


FIG. 3

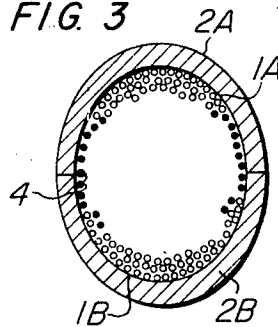
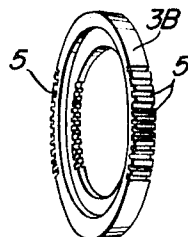


FIG. 4b



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DEFLECTING YOKE

This invention relates to a deflecting yoke.

The toroidal deflecting yoke is advantageous over the saddle-type deflecting yoke in that it provides improved deflection efficiency and can be small in size since the coils are wound directly on the core. However, a special winding machine is required for winding the coils on the ringlike core, so that with an increased number of turns, efficient winding of the coils becomes impossible. Therefore, it is presently the practice to make only one of the two windings toroidal.

It is an object of the present invention to make it possible to efficiently wind both coils toroidally.

Another object of the present invention is to improve the insulation of both windings when the foregoing object has been achieved.

Still another object of the present invention is to provide a deflecting yoke having improved deflection efficiency.

Other objects, features and advantages of the present invention will become apparent from the following description taken in conjunction with the following drawings, in which:

FIG. 1 is a perspective view showing the deflecting yoke according to an embodiment of the present invention;

FIG. 2 is an exploded view illustrating the assembling process of said deflecting yoke;

FIG. 3 is a cross-sectional view of the deflecting yoke; and

FIGS. 4a and 4b show the insulating frames for the yoke of FIGS. 1-3.

A special toroidal winding machine is required for effecting toroidal winding with respect to a ringlike core, but if the core is divided into two pieces, then such winding can be carried out by an ordinary winding machine, and yet a high winding speed can be attained. In view of this, a coil having a greater number of turns is bisected to be wound as coil sections 1A and 1B on two sections 2A and 2B of a ringlike core by means of an ordinary winding machine respectively, as shown in FIGS. 1 to 3. Then the two core sections 2A and 2B having the coil sections 1A and 1B wound thereon respectively are placed in contact with each other, and thereafter ringlike insulating frames 3A and 3B are fitted on the opposite ends of the core sections, so that the two core sections 2A and 2B are held in position and at the same time the coil sections 1A and 1B are insulated from other coils 4 which are wound on the ringlike insulating frames 3A and 3B respectively. By grooving the insulating frames 3A and 3B, the winding of the coils 4 can be facilitated. The coils 4 can be easily wound because of the lesser number of turns thereof, although the winding of them is performed by means of a toroidal winding machine. Incidentally, it is required that the coils of the deflecting yoke be wound in the form of a cosine distribution for the purpose of producing a uniform magnetic field. With such an arrangement, the thickness of the coils is higher at positions where the winding density is greater, and it becomes smaller towards the peripheral portions of the coils which are remotest from said

positions. Due to the fact that the number of turns of the deflecting coils 1A and 1B is greater than that of the other coils 4, there is a tendency for the coils 1A and 1B to be disposed close to the neck portion of the picture tube while the other coils 4 are located remotest therefrom, if a conventional circular core is used. Therefore, the cross-sectional configuration of the core consisting of the core sections 2A and 2B disposed in contact with each other may be slightly elliptical. By doing so, the respective coils 1A, 1B and 4 are disposed in close contact with the picture tube neck, so that a higher deflection efficiency can be achieved.

As described above, the toroidal deflecting yoke is constructed by dividing a ring core having an elliptical cross section into two sections, winding deflecting coils having a greater number of turns on the two core sections respectively, placing the core sections having the coils wound thereon in contact with each other, and further winding other coils having a smaller number of turns on the core sections. With such a construction, the coils having the higher number of turns can be wound by means of an ordinary winding machine, so that the winding of all the coils can be facilitated as compared with the case where all the coils are wound by means of a toroidal winding machine.

Furthermore, the deflection efficiency can be improved by the use of a core elliptical in section. Also, the coils having the smaller number of turns can be effectively insulated from coils previously wound, since the former are wound on insulating rings which are mounted on the opposite ends of two core sections so as to serve as means for holding the core sections in joined relationship with each other.

What is claimed is:

1. A deflecting yoke comprising:
 - two core sections formed by longitudinally dividing a ringlike core,
 - a first pair of coils toroidally wound on said core sections respectively, said coils having a predetermined number of turns,
 - means for joining said two core sections together into the ringlike shape,
 - a second pair of coils toroidally wound on said core sections and said means for joining in such a manner as to cover the joined portions of said core sections, said second pair of coils having a number of turns which is less than that of said first pair of coils.
2. A deflecting yoke according to claim 1, wherein the cross-sectional configuration of said ringlike core is elliptical.
3. A deflecting yoke according to claim 1, wherein said means for joining the two core sections are two insulating rings fitted on the opposite ends of said two core sections thereby to hold said two core sections in fixed relationship to each other.
4. A deflecting yoke according to claim 3, wherein grooves are formed in the outer peripheries of said insulating rings so that said second pair of coils wound thereon are fitted therein.

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