Jan. 11, 1966 YASUSHI WATANABE ETAL 3,229,149

HIGH-VOLTAGE RECTIFYING APPARATUS FOR TELEVISION RECEIVERS

Filed April 23, 1963

Fig. 1.

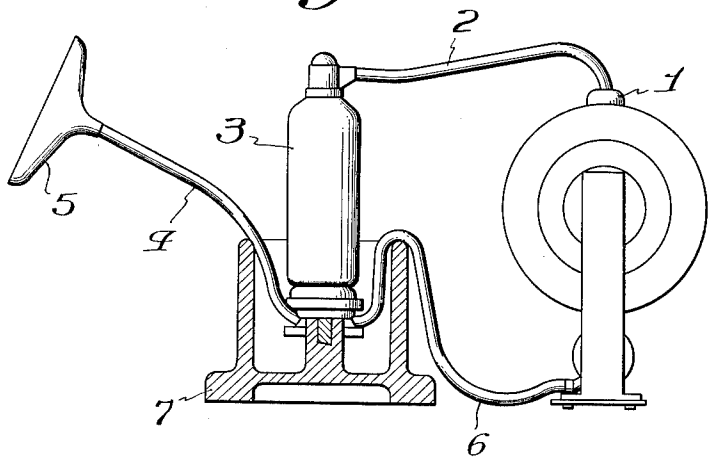


Fig. 2.

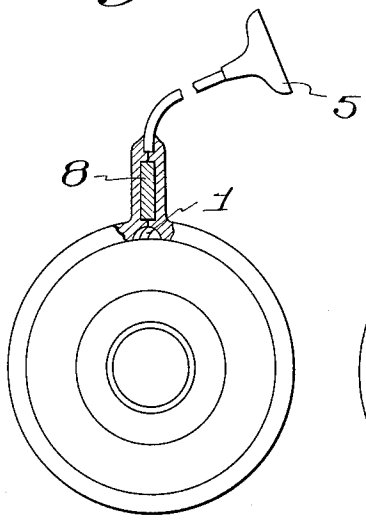
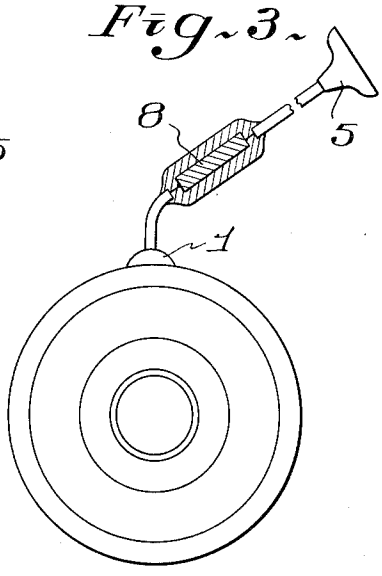


Fig. 3.



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3,229,149

HIGH-VOLTAGE RECTIFYING APPARATUS FOR TELEVISION RECEIVERS

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Claims priority, application Japan, Apr. 24, 1962, 37/20,156
4 Claims. (Cl. 315—22)

This invention relates to television receivers, and more particularly it relates to a new and improved high-voltage rectifying apparatus for television receivers.

Heretofore, high-voltage rectifying apparatuses of similar type have had the disadvantage of cumbersome and bulky construction intended to prevent damage due to creeping discharge, as will be described hereinafter.

It is an object of the present invention to eliminate the above-stated disadvantage.

More specifically, it is an object of the invention to provide a new high-voltage rectifier wherein, in order to eliminate bulky construction, a semiconductor rectifier of high reliability is used in place of a vacuum tube and installed in a unique manner whereby damage due to creeping discharge is prevented, and, at the same time, the high-voltage rectification circuit is simplified and miniaturized.

The precise nature, principle, and details of the invention will be more clearly apparent by reference to the following description, taken in conjunction with the accompanying drawing in which like parts are designated by like reference numerals, and in which:

FIGURE 1 is an elevational view, partly in section resulting from cutting away a part, showing a conventional high-voltage rectifying device for television receivers; and

FIGURES 2 and 3 are elevational views, each partly in section resulting from cutting away a part, showing an embodiment of the high-voltage rectifying device according to the invention.

Heretofore, high-voltage rectification for television receivers has been accomplished by means of a device in which, as indicated in FIGURE 1, the high-voltage terminal 1 of a flyback transformer is connected by a lead wire 2 to the anode of a high-voltage rectifying tube 3, the heater (cathode) of which is connected by a lead wire 4 to an anode cap 5 to be connected to the anode of a picture tube (not shown), the said heater being supplied with power for heating from the flyback transformer through a heater winding 6.

In a rectifying device of the above-described construction, the high-voltage parts of the heater of the high-voltage rectifying tube 3 are exposed to the atmosphere. Accordingly, creeping discharge is caused by the development of creepage surface branched corona due to the structure supporting the socket of the tube 3, and insulation breakdown occurs. Therefore, in order to prevent this creeping discharge, a corona preventing cover 7 having a construction providing a large creepage surface has hitherto been necessary.

The present invention, which contemplates the solution of the above problem through the use of a semiconductor rectifier of high reliability, may be described with respect to the embodiment thereof illustrated in FIGURES 2 and 3. In this embodiment, a semiconductor rectifier 8 of high reverse breakdown voltage is connected directly to the high-voltage terminal 1 at the end of the winding of the high-voltage coil of a flyback transformer, to an intermediate part of a lead wire extending from the said terminal 1, or to the interior of the anode cap 5. The said rectifier 8 has a construction whereby it is integrally

molded with the high-voltage coil of the flyback transformer, the lead wire, or the anode cap 5 with wax, rubber, or one of various kinds of synthetic resins.

By the construction as described above of the high-voltage rectifying device of the present invention, the high-voltage parts thereof are completely molded and enclosed, whereby adverse effects due to creeping discharge are effectively prevented, and, at the same time, the high-voltage circuit can be simplified and miniaturized.

Although the present invention has been described in conjunction with a preferred, particular embodiment thereof, it is to be understood that modifications and variations may be resorted to therein wihout departing from the spirit and scope of the invention, as those skilled in the art will readily understand, and such modifications and variations are to be considered as being within the purview and scope of the invention and appended claims.

What is claimed is:

1. A high-voltage rectifying device for television receivers which are of the type having a flyback transformer and a cathode-ray picture tube, said rectifying device comprising a semiconductor rectifier of high reverse breakdown voltage which is provided between the winding terminal of the high-voltage coil of said flyback transformer and the anode terminal of said cathode-ray tube and is molded integrally with the high-voltage coil of said flyback transformer by a mold covering selected from the group consisting of waxes, rubbers and synthetic resins.

2. A high-voltage rectifying device for television receivers which are of the type having a flyback transformer and a cathode-ray picture tube, said rectifying device comprising a semiconductor rectifier of high reverse breakdown voltage which is provided between the winding terminal of the high-voltage coil of said flyback transformer and the anode terminal of said cathode-ray tube and is molded integrally with an anode cap for connection with said anode terminal of the cathode-ray tube by a mold covering selected from the group consisting of waxes, rubbers and synthetic resins.

3. In a high-voltage rectifying device for television receivers of the type equipped with a flyback transformer, a cathode-ray tube and a semiconductor rectifier of high reverse breakdown voltage between the winding terminal of the high-voltage coil of said transformer and the anode terminal of said tube, the improvement which comprises said rectifier being integrally molded to the high-voltage coil of said transformer by a mold covering, thereby preventing creeping corona discharge.

4. In a high-voltage rectifying device for television receivers of the type equipped with a flyback transformer, a cathode-ray tube and a semiconductor rectifier of high reverse breakdown voltage between the winding terminal of the high-voltage coil of said transformer and the anode terminal of said tube, the improvement which comprises said rectifier being molded integrally to an anode cap for connection with said anode terminal of the cathode-ray tube by a mold covering, thereby preventing creeping corona discharge.

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