March 3, 1953 V. I. ZELOV 2,630,526

HOUSING FOR RADIO RECEIVERS

Filed Nov. 4, 1948 2 SHEETS—SHEET 1

Fig. 1.

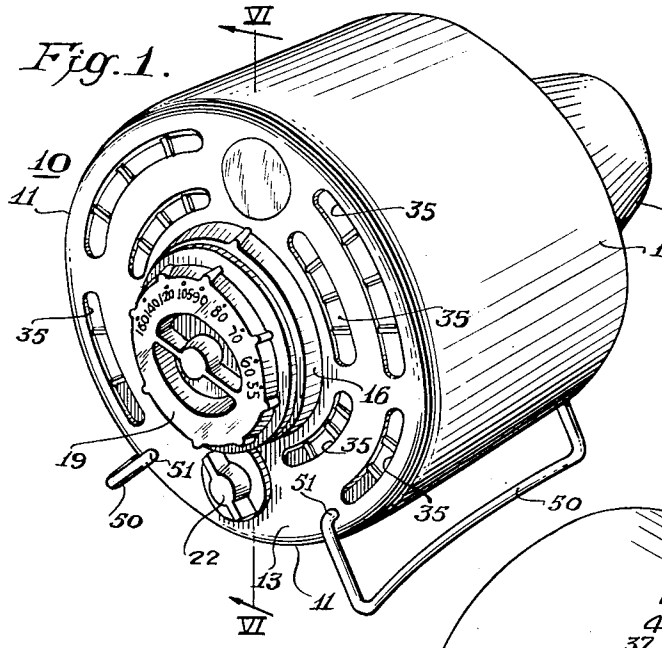


Fig. 5.

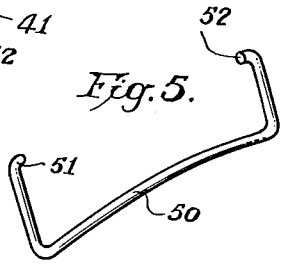


Fig. 2.

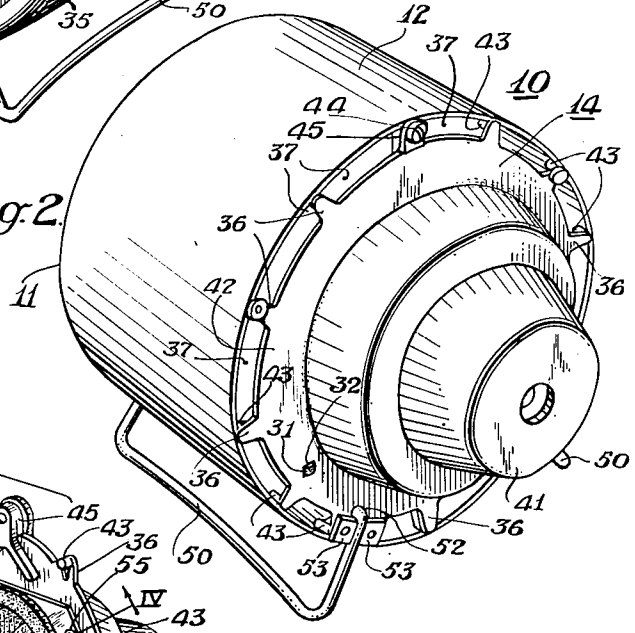


Fig. 3.

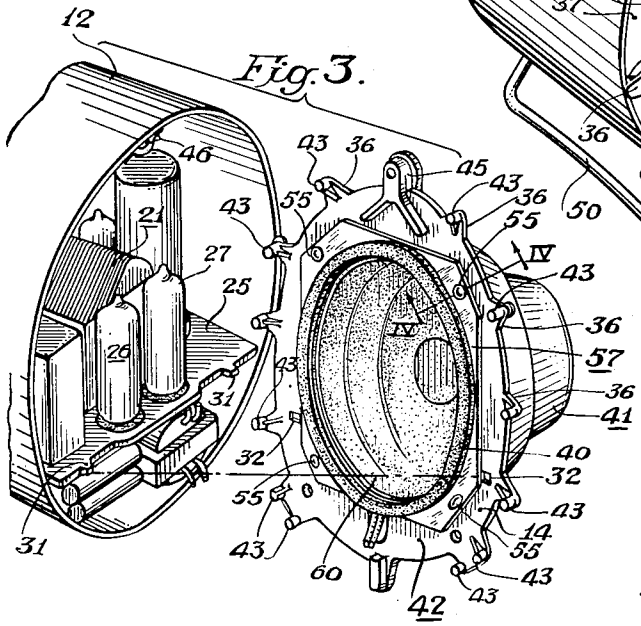
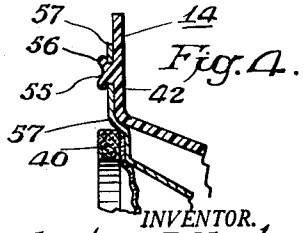


Fig. 4.



INVENTOR.
Victor I. Zelov
BY
Ralph T. French
ATTORNEY

March 3, 1953 V. I. ZELOV 2,630,526

HOUSING FOR RADIO RECEIVERS

Filed Nov. 4, 1948 2 SHEETS—SHEET 2

Fig. 6.

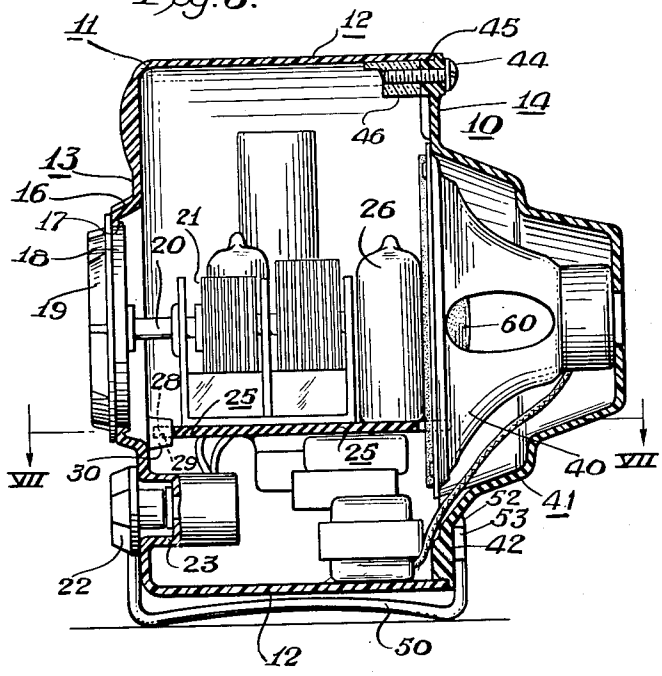


Fig. 8.

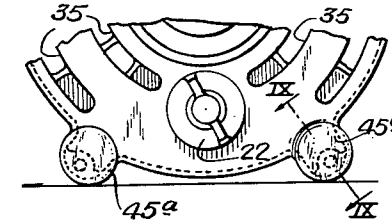


Fig. 7.

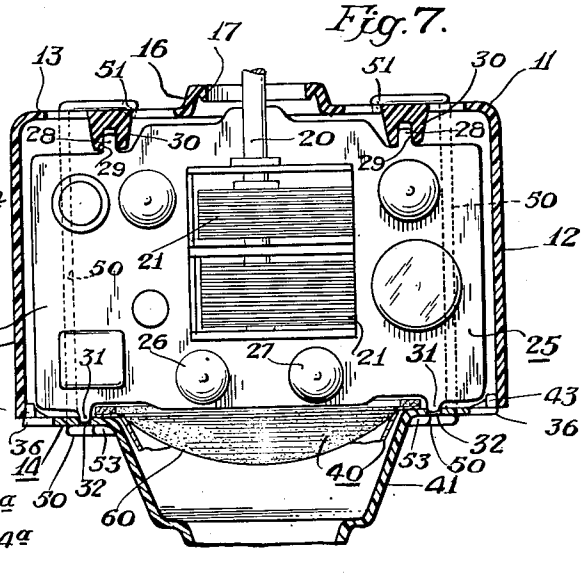


Fig. 9.

INVENTOR.
Victor I. Zelov
BY
Ralph T. Prunck
ATTORNEY

Patented Mar. 3, 1953 2,630,526

UNITED STATES PATENT OFFICE

2,630,526

HOUSING FOR RADIO RECEIVERS

Victor I. Zelov, Rosemont, Pa.

Application November 4, 1948, Serial No. 58,203

3 Claims. (Cl. 250—14)

1

This invention relates to radio apparatus and the like, more particularly to home receiving sets, and has for an object to provide improved apparatus of this character.

Another object of the invention is to provide a radio apparatus having a plastic casing which is circular in cross section, whereby the tools for forming the latter may be turned on a lathe with consequent minimum tooling costs.

Yet another object of the invention is to provide a radio apparatus in which the chassis is retained in position solely by clamping between the front of the casing and a removable rear panel.

A further object of the invention is to provide, in a radio, means for cross ventilation for improved cooling of the interior thereof.

Another object of the invention is to provide a radio apparatus having unitary front and side walls and a separable rear panel, together with resilient leg members which clamp the rear panel to the unitary front and side wall structure.

Yet another object of the invention is to provide a radio apparatus having a plastic casing of circular cross section and a flat horizontal chassis, with the heat-emanating elements so arranged on the chassis that the hottest elements are located adjacent the transverse center of the casing, whereby they are spaced the maximum distance from the plastic casing.

A further object of the invention is to provide a radio apparatus whose casing is closed at all sides, but wherein the front and rear walls are provided with openings for cross circulation of cooling air therethrough.

An additional object of the invention is to provide a radio apparatus whose speaker is positioned rearwardly of the tubes.

A further object of the invention is to provide a radio apparatus whose speaker is positioned rearwardly of the tubes with the speaker diaphragm adjacent the latter so that it is heated by the tubes during normal use.

Thermoplastic materials are easier to form and possess many advantages over thermosetting materials, but heretofore it has been considered impractical to use the former for radio apparatus casings due to the fact that it tends to deform at temperature of from 150 degrees F. to 200 degrees F., which temperatures may be reached or exceeded in conventional radio apparatus. Thermo-setting materials, on the other hand, can withstand temperatures as high as 400 degrees F.

Accordingly, it is another object of the invention to provide a radio apparatus in which the

2

maximum temperatures are sufficiently low to permit use of a casing of thermo-plastic material.

These and other objects are effected by the invention as will be apparent from the following description and claims, taken in connection with the accompanying drawings forming a part of this application, in which:

Fig. 1 is a front perspective view of a radio apparatus constructed with the present invention;

Fig. 2 is a rear perspective view of the radio apparatus shown in Fig. 1;

Fig. 3 is an exploded rear perspective view of the radio apparatus shown in Figs. 1 and 2;

Fig. 4 is an enlarged fragmentary sectional view, taken along the line IV—IV of Fig. 3, looking in the direction indicated by the arrows;

Fig. 5 is a perspective view of one of the leg members;

Fig. 6 is a sectional view, taken along the line VI—VI of Fig. 1, looking in the direction indicated by the arrows.

Fig. 7 is a sectional view, taken along the line VII—VII of Fig. 6, looking in the direction indicated by the arrows;

Fig. 8 is a fragmentary front elevational view of a modification of the invention; and,

Fig. 9 is a sectional view, taken along the line IX—IX of Fig. 8, looking in the direction indicated by the arrows.

Referring now to the drawings more in detail, the reference character 10 indicates, in its entirety, a radio receiving set or the like, including a casing 11 which is circular in cross section and comprised by a cylindrical portion 12 having an integral front wall 13 and a separable rear wall in the form of an independent panel 14. As result of the casing 11 being completely circular in cross section, the dies, punches and other tools required for its manufacture can be produced by relatively simple turning operations on a lathe, as distinguished from the expensive and complicated machine operations involved in producing tools for manufacture of conventionally-shaped home receiving sets, which are generally rectangular.

Preferably, the front wall 13 includes a centrally-located boss 16 having an enlarged opening 17 therethrough (Fig. 6), in which is positioned the journal portion 18 of a tuning dial 19. The dial 19 is fixedly secured to the forward end of a shaft 20 carried by the usual tuning condenser 21.

Directly below the tuning dial 19 is an off-on

and volume control dial 22 rotatably mounted in the inwardly-directed boss 23 (Fig. 6).

Disposed in the lower portion of the casing is a flat horizontal chassis 25 on which are mounted many of the conventional elements of a radio receiving set including a power output tube 26 and a rectifier tube 27, both of which will be referred to later. The chassis has a pair of forwardly-extending lugs 28 at its front edge, received in openings 29 formed in bosses 30 integral with the inner surface of the front wall 13 (Figs. 6 and 7). A pair of similar lugs 31 extend rearwardly from the rear edge of the chassis 25 and are received in mating recesses 32 formed in the rear panel 14 (Figs. 3 and 7). From consideration of Fig. 7 it will be apparent that no other supporting or securing means for the chassis 25 is necessary, and that the chassis may be conveniently removed simply by taking off the rear panel 14 and moving the chassis rearwardly from the casing.

Heretofore it has been considered impractical to construct the casings for radio receiving sets of thermo-plastic materials, as such materials are subject to deformation at temperatures of the order of 150 to 200 degrees F., which temperatures may frequently be exceeded during normal operation of such apparatus. Consequently, where plastic materials have been desired, those of a thermo-setting nature have been relied upon as they are satisfactory up to temperatures as high as 400 degrees F. However, the thermo-setting materials are subject to wastage due to cracking or other forms of damage occurring during manufacture.

The present invention renders possible the use of the more satisfactory thermo-plastic materials, by incorporating novel means for cooling the casing. To this end the hottest elements in the apparatus, such as the power output tube 26 and the rectifier tube 27, are so positioned with respect to the circular configuration of the casing as to place them the maximum distance from the latter. As best shown in Figs. 3 and 7, these tubes are located adjacent the axial center line of the casing where the maximum height of the casing occurs, with consequent maximum spacing of these tubes from the thermo-plastic wall structure.

To promote removal of heat from the interior of the casing, provision is made for cross ventilation of the latter. To this end the front wall 13 is provided with a plurality of openings 35, shaped and located to be ornamental as well as functional. Likewise, the rear panel 14 is formed at its edges with spaced lugs 36, providing therebetween openings 37 for circulation of air through the interior of the casing to promote removal of heat therefrom.

The openings 35 in the front wall 13 not only cooperate with the openings 37 in the rear panel to provide for cross ventilation, but also serve as emission openings for sounds from the speaker 40, which is positioned at the rear of the casing, in a novel manner.

As shown in Figs. 2 and 6, the rear panel 14 includes a central portion 41 of generally frusto-conical shape with its base integral with a radially-extending flange portion 42 carrying the previously-mentioned lugs 36. These lugs 36 have forwardly-extending projections 43 so spaced with respect to the axis of the frusto-conical portion that they are closely received within the rear end of the cylindrical casing portion 12,

while the outer tips of the lugs 36 abut the rear edge of portion 12 to position the rear panel with respect to the casing structure.

A single screw 44 (Figs. 2 and 6) extends through a special lug 45 at the top of the flange portion 42 of the rear panel and into a boss 46 formed at the rear top of the casing cylindrical portion 12.

A pair of U-shaped legs 50 of resilient material have their forward terminal portions 51 engaged in openings in the casing front wall 13 and their rearward terminal portions 52 received between spaced pairs of lugs 53 on the rear panel flange 42 (Figs. 1 and 2). Thus, the legs 50 perform the double function of supporting the set 10 and of clamping the rear panel 14 to the remaining casing structure, the only other holding means being the single screw 44.

In the construction illustrated in Figs. 8 and 9, the only change from the structure previously described lies in the substitution of leg members 50a formed integral with the main casing structure 11, for the resilient legs 50. In place of the clamping action of the legs 50, there are substituted a pair of screws 44a extending through lugs 45a on the rear panel into bosses 46a secured to the legs 46a.

The frusto-conical portion 41 of the rear panel provides a housing for the speaker 40, which may be of conventional construction. The flange portion 42 of the rear panel 14 has a plurality of lugs or projections 55 of thermo-plastic material integral with the forward face thereof and projecting forwardly therefrom and so located as to be received in the usual openings 56 in the flange 57 of the speaker 40. These lugs or projections 55 are headed over by the application thereto of heat and pressure to secure the speaker to the rear panel (Fig. 4).

The above-described arrangement of the speaker as the rearmost element of the receiving set 10 effects at least two novel results. In the first place, vibrations set up by the speaker promote movement of air within the casing from the back to the front thereof, cooling air entering through the openings 37 in the rear panel 14 and exiting through the openings 35 in the front wall 13 and carrying with it heat from the tubes and other heat-producing elements of the apparatus.

Secondly, with the diaphragm 60 of the speaker located adjacent the heated interior of the set, the diaphragm is maintained in a dry condition at all times during use, thereby effecting maximum quality of reproduction, as distinguished from speakers located in such positions that their diaphragms are subject to the changing atmospheric conditions outside of the sets.

While the invention has been illustrated in but two forms, it will be apparent to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof.

What is claimed is:

1. In a radio receiving set, a cylindrical casing constituting side walls, a transverse end wall integral with the casing at one end of the latter and constituting the front, a horizontal chassis positioned within said cylindrical casing a material distance below the axial centerline of the latter for supporting heat-emanating elements in spaced relation to said casing, a pair of forwardly-projecting lugs integral with said chassis at the front thereof, a pair of rearwardly-projecting bosses integral with the inner face of the transverse end wall and having recesses in

the rear ends thereof receiving the pair of forwardly-projecting lugs on the chassis to support the latter at the front, a pair of rearwardly-projecting lugs integral with said chassis at the rear thereof, and a panel member closing said cylindrical casing at the rear, said panel member having a pair of openings therein into which said pair of rearwardly-projecting lugs extend, whereby said chassis is supported by said front wall and said panel member.

2. Structure as specified in claim 1, wherein the panel member includes a frusto-conical central portion extending rearwardly of the cylindrical casing and providing a housing for a speaker located rearwardly of the heat-emanating elements supported by the horizontal chassis.

3. Structure as specified in claim 2, wherein the front wall has openings therethrough and the panel member has openings therethrough radially outward of the frusto-conical speaker housing, whereby circulation of cooling air through the casing may occur.

VICTOR I. ZELOV.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
D. 91,469	Raffetto	Feb. 6, 1934
D. 148,725	Sharma	Feb. 17, 1948
1,537,228	Gargan	May 12, 1925
1,710,035	Thompson	Apr. 23, 1929
1,860,348	Grigsby	May 31, 1932
1,883,893	Flaherty	Oct. 25, 1932
2,137,035	Swallow	Nov. 15, 1938
2,157,693	Ernolf	May 6, 1939

FOREIGN PATENTS

Number	Country	Date
799,075	France	June 5, 1936