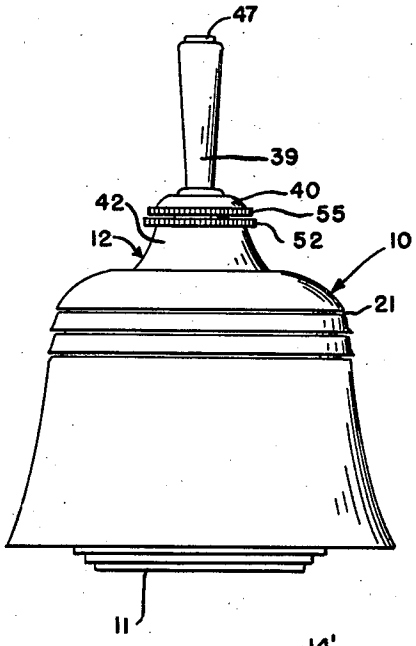
Nov. 3, 1942. D. J. CROWLEY 2,300,617

RADIO RECEIVING SET

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FIG. 1.



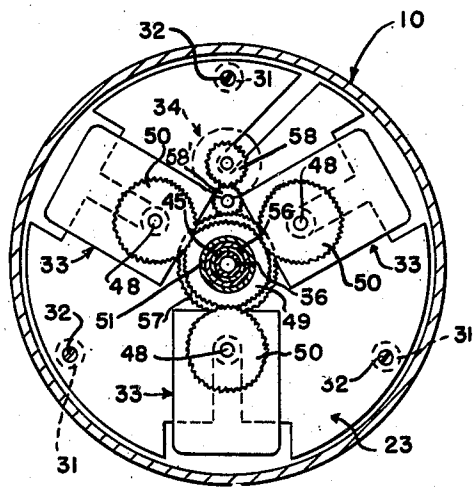


FIG. 3.

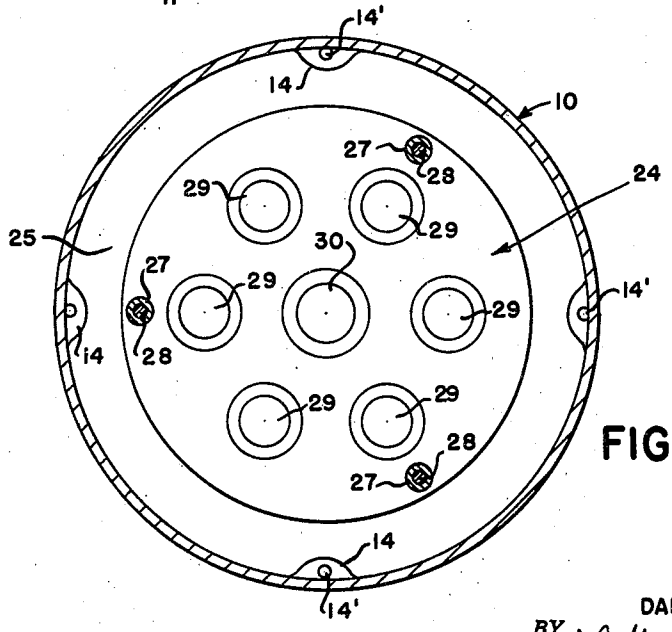


FIG. 5.

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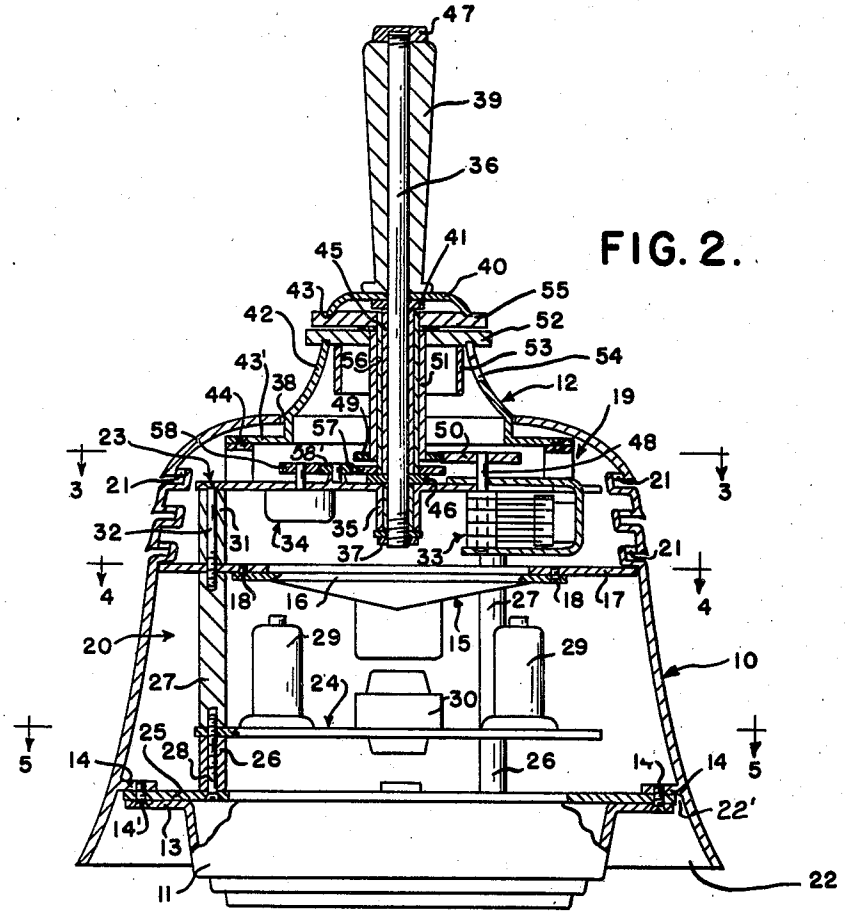


FIG. 2.

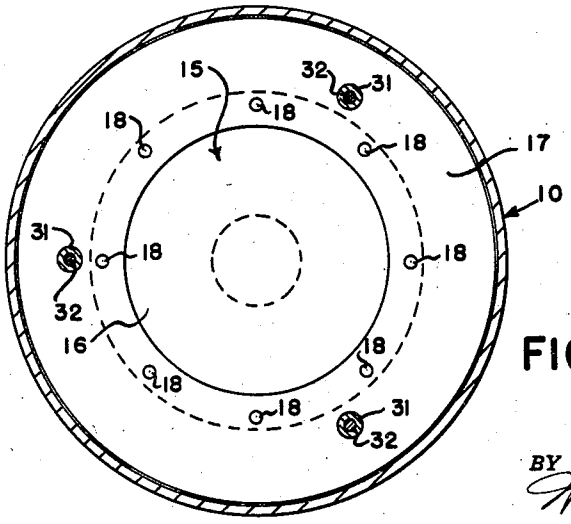


FIG. 4.

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RADIO RECEIVING SET

Daniel J. Crowley, Grosse Pointe, Mich.

Application January 27, 1941, Serial No. 376,222

7 Claims. (Cl. 250—14)

This invention relates generally to radio receiving sets and refers more particularly to improvements in combined articles of furniture and radio receiving apparatus.

It is one of the principal objects of this invention to compactly arrange the various instrumentalities of a radio receiver in a casing artistically designed to impart a pleasing appearance to the set and to, also, support the speaker in the casing in such a manner that the side walls of the casing form an efficient baffle for the speaker.

Another object of this invention is to provide a casing having openings adjacent the top and bottom and having a speaker unit supported in a horizontal position in the casing between the openings in a manner to divide the casing into vertically spaced compartments.

Another object of this invention is to provide radio receiving apparatus having parts respectively located in the compartments at opposite sides of the speaker and carried by frame sections which are quickly detachably secured to opposite sides of the speaker unit in vertically spaced relation to the latter. In accordance with this invention, the two frame sections and speaker form a unit and the casing may be readily placed over or removed from the unit without disassembling the latter.

Another advantageous feature of this invention is to support the parts of the radio receiving apparatus on the two frame sections in such a manner that these parts are exposed for repair purposes upon removing the casing.

A further feature of this invention is to simplify the control of the radio receiving apparatus from a point adjacent the top of the casing by supporting the variable condensers and volume control rheostat of the radio receiving apparatus on the frame section in the top compartment of the casing.

Still another object of this invention which contributes materially to reducing the overall length of the set to a minimum is to provide a plurality of variable condensers mounted on the upper frame section in such a manner that the rotor shafts of the condensers extend parallel to the axis of the casing and are concentrically disposed with respect to the axis of the casing.

A still further object of the present invention is to provide a pair of control discs supported one above the other adjacent the top of the casing for rotation independently of each other about the axis of the casing and respectively operatively connected to the volume control rheostat and to the variable condensers.

A further feature of the present invention is to provide a radio set comprising a bell-shaped casing having a support engaging part at the lower end of the casing simulating a clapper or striker in appearance and having a reduced hub portion at the top circumferentially slotted to receive the peripheral portions of the control discs for the radio receiving set.

In addition to the foregoing, the present invention contemplates a bell-shaped casing of the type set forth in the preceding paragraph having a member extending above the hub portion in concentric relation to the axis of the casing and simulating a handle in appearance.

Still another advantageous feature of this invention is to provide means for attaching an illuminating lamp fixture including a shade to the upper end of the handle. This feature as well as the foregoing and other objects will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein—

Figure 1 is a side elevational view of a radio receiving set constructed in accordance with this invention;

Figure 2 is a vertical sectional view of the radio receiving set shown in Figure 1;

Figure 3 is a cross sectional view taken substantially on the plane indicated by the line **3—3** of Figure 2;

Figure 4 is a cross sectional view taken substantially on the plane indicated by the line **4—4** of Figure 2;

Figure 5 is a cross sectional view taken on the plane indicated by the line **5—5** of Figure 2.

For the purpose of illustrating the present invention, I have selected a radio receiving set simulating a bell in appearance and having provision for supporting an illuminating lamp at the upper end of the handle of the bell if desired. However, it will be noted as this description proceeds that the present invention embodies numerous features which may be advantageously employed in radio receiving sets of different shapes or designs and, therefore, the invention is not limited to the specific shape illustrated in the drawings.

Upon reference to Figures 1 and 2 of the drawings, it will be noted that my improved radio receiving set is provided with a bell-shaped casing **10** having a support engaging part **11** at the lower end and having a sectional hub **12** at the top thereof. The support engaging part **11** is in the form of a sheet metal stamping which is fashioned to simulate a bell striker in ap-

pearance and projects below the lower end of the casing 10 to support the latter end in spaced relationship to a suitable supporting surface. As shown in Figure 2, the upper end of the stamping 11 extends into the casing 10 through the lower end of the latter and is provided with an outwardly extending annular attaching flange 13. The attaching flange 13 is readily detachably secured to the casing 10 by fastener elements 14' in the form of screws threaded into the lugs 14 which project inwardly from the side wall of the casing in circumferentially spaced relationship.

Supported within the casing is a speaker unit 15 having a diaphragm 16 extending horizontally of the casing intermediate the ends of the latter and having an extension in the form of a ring 17. The inner portion of the ring 17 is secured to the peripheral portion of the diaphragm 16 by means of the fastener elements 18, and the periphery of the ring 17 abuts the inner surface of the side wall of the casing so as to divide the latter into two compartments, indicated in Figure 2 by the reference characters 19 and 20. The portion of the side wall of the casing 10 above the speaker unit 15 is fashioned with a plurality of louvres 21 having openings which establish communication between the top compartment 19 and the atmosphere. Communication is also established between the bottom compartment 20 and the atmosphere through the space 22 provided between the bottom edge of the casing and the adjacent supporting surface. As a result, the side wall of the casing 10 forms an efficient baffle for the speaker and the sound vibrations are readily transferred from the atmosphere within the casing to the atmosphere exteriorly of the casing.

The speaker 15 is removably clamped in the desired position within the casing between a pair of frame sections 23 and 24. The bottom frame section 24 is in the form of a plate removably secured to the inner portion of an annular attaching ring 25 having the periphery clamped between the lugs 14 on the casing and the outwardly extending annular flange 13 on the striker simulating part 11 by means of the fastener elements 14'. Attention is directed to the fact, at this time, that an annular clearance 22' is provided between the periphery of the ring 25 and the adjacent wall of the casing. This clearance 22' permits the exchange of air between the compartment 20 and the atmosphere required for satisfactory operation of the speaker. Upon reference to Figure 2, it will be noted that the plate 24 is spaced above the attaching ring 25 by means of spacers 26 and is spaced below the diaphragm 16 of the speaker by means of spacers 27 positioned in axial alignment with the spacers 26. The top and bottom spacers are secured together with the peripheral portions of the plate 24 therebetween by means of the fastener elements 28 which also serve to secure the attaching ring 25 to the plate 24. Upon reference to Figures 2 and 5, it will be noted that the plate 24 forms a support for the various tubes 29 of the radio receiving apparatus and for the output transformer 30. These are the principal parts of the radio receiving apparatus supported on the plate 24, and it will be understood that various other instrumentalities may also be mounted on the support.

The frame section 23 is also in the form of a plate and is secured in the top compartment 19 of the casing in spaced relation to the speaker above the latter by means of spacers 31 located in axial alignment with the spacers 27 and cooperating with the latter to clamp the extension 17 of the speaker diaphragm 16 therebetween. In the present instance, fastener elements in the form of screws 32 are provided for securing the frame section 23 to the upper ends of the spacers 31 and for securing the lower ends of the spacers 31 to the spacers 27. It follows from the above that the frame sections 23 and 24 form an assembly with the speaker 15.

The frame section 23 forms a support for a plurality of variable condensers 33 and for a combined volume control rheostat and "off and on" switch 34. As shown in Figure 2, the frame section 23 is provided with a hub 35 concentrically disposed with respect to the axis of the casing 10 and adapted to receive the lower end of a supporting shaft in the form of a tube 36 having threads at the lower extremity for receiving a clamping nut 37. The hub 35 extends upwardly through a centrally disposed opening 38 in the top wall of the casing and, in the present instance, projects through the sectional hub 12 to a point spaced a substantial distance above the casing 10. A member 39 is secured to the portion of the tube 36 extending above the hub 12 and this member is shaped to simulate a handle for the bell-shaped casing 10.

The lower end of the handle member 39 abuts the top section 40 of the sectional hub 12 and the latter, in turn, rests upon an abutment 41 mounted on the tube 36 at the lower side of the top section 40. The lower section 42 of the hub 12 is spaced from the top section 40 a sufficient distance to provide a circumferentially extending slot 43 adjacent the upper end of the hub, and the lower end of the section 42 projects into the casing through the opening 38. Upon reference to Figure 2, it will be noted that the lower end of the section 42 is provided with a radially outwardly extending annular flange 43' secured at its periphery to the frame section 23 by means of fastener elements 44. The flange 43' and the attaching elements 44 are concealed from view by the top wall of the casing 10.

The abutment 41 is held in position on the tubular shaft 36 by means of a spacer 45 in the form of a sleeve mounted on the shaft 36 with the upper end engaging to the bottom surface of the abutment and with the lower end engaging a washer 46 which is seated on the frame section 23. Thus, it will be seen that the top section 40 of the hub is positioned with respect to the bottom section 42 by the abutment 41 and sleeve 45. Referring again to Figure 2, it will be noted that the upper end of the tubular shaft 36 projects beyond the corresponding end of the handle member 39 and is threaded for engagement with a cap nut 47. The nut 47 cooperates with the clamping nut 37 at the bottom of the shaft 36 to secure the handle member 39 and the hub section 40 against the abutment 41.

With the foregoing construction, it will be noted that the bell-shaped casing 10 may be assembled by merely dropping the same over the handle portion 39 and the assembled frame sections. Of course, it will be understood that the striker simulating part 11 is removed from the casing during assembly and is subsequently secured in place. In this connection, it should be further noted that the contour of the casing is such as to provide ample clearance for the passage of the lugs 14 over the radial extension 17 of the speaker diaphragm 16. It also follows that the bell-shaped casing may be readily re-

moved when desired by merely detaching the part 11 and lifting the casing off of the frame sections and associated parts.

Upon reference to Figure 3, it will be noted that the variable condensers 33 are supported on the frame section 23 around the tubular shaft 36 in such a manner that the rotor shafts 48 of the variable condensers extend parallel to the shaft 36 and are concentrically disposed with respect to the latter. The rotor shafts 48 are operated simultaneously by means of a central driving gear 49 meshing with suitable pinions 50 respectively secured to the upper ends of the rotor shafts 48. The central driving gear 49 is secured to the lower end of a sleeve 51 rotatably supported in concentric relation to the shaft 36 and having a control disc 52 secured to the upper end. The periphery of the control disc 52 projects through the circumferentially extending slot 43 in the hub 12 so as to be capable of manipulation by the operator and is provided with an indicating dial 53 which is visible through a window 54 formed in the section 42 of the hub 12. It follows from the above that rotation of the control disc 52 effects a simultaneous operation of the variable condensers 43.

Supported directly above the control disc 52 within the slot 43 is a second control disc 55 having the central portion secured to the upper end of a sleeve 56 extending downwardly through the sleeve 51 and having a gear 57 secured to the lower end thereof. The gear 57 meshes with an idler pinion 58' and the latter meshes with a pinion 58 secured to the volume control rheostat 34. As a result, the volume control rheostat 34 is operated by the control disc 55. The above arrangement of controls is highly advantageous in this particular instance because it blends in with the design of the casing and adds rather than detracts from the design of the latter.

What I claim as my invention is:

1. A radio receiving set comprising a bell-shaped casing terminating at the upper end in a reduced annular hub portion having a cap spaced above the annular portion to form a circumferentially extending slot therebetween, a shaft having the lower end anchored in the casing in concentric relation to the latter and having the upper end extending through the cap to a point substantially above said cap, means supporting the cap on the shaft, a member supported on the shaft above the cap and simulating a handle in appearance, radio receiving apparatus supported within the casing and including a variable condenser and a volume control rheostat, a pair of control discs supported one above the other on said shaft for rotation independently of one another and having the peripheral portions extending through the slot aforesaid, and means respectively connecting the discs to the variable condenser and volume control rheostat.

2. A radio receiving set comprising a casing having openings adjacent the top and bottom, a speaker unit secured in the casing and having a diaphragm extending horizontally between the openings dividing the casing into vertically spaced air chambers, radio receiving apparatus including a variable condenser and a volume control rheostat supported in the casing above the speaker, additional parts of the radio receiving apparatus supported in the casing below the speaker, a pair of control elements supported one above the other beyond the upper end of the casing and accessible for manipulation exteriorly of the casing, and means respectively operatively connecting said controls to the variable condenser and volume control rheistat.

3. A radio receiving set comprising a casing having an annular side wall and having openings at the top and bottom, a speaker unit located in the casing and having a diaphragm supported in a horizontal plane between the openings dividing the casing into upper and lower compartments, a frame section located in the upper compartment above the speaker and detachably secured to the speaker unit adjacent the periphery of the speaker diaphragm at circumferentially spaced points, a shaft concentrically located in the casing and having the lower end anchored on the frame section, a plurality of variable condensers carried by the frame section in concentric relation to the shaft, a control element rotatable about the axis of the shaft and accessible for manipulation exteriorly of the casing, and means operatively connecting the control element to said condensers for simultaneously actuating the latter upon rotation of said control element.

4. A radio receiving set comprising a casing having an annular side wall and having openings at the top and bottom, a speaker unit located in the casing and having a diaphragm supported in a horizontal plane between the openings dividing the casing into upper and lower compartments, a frame section located in the upper compartment above the speaker and attachably secured to the speaker unit adjacent the periphery of the speaker diaphragm at circumferentially spaced points, a shaft concentrically located in the casing and having the lower end anchored on the frame section, a plurality of variable condensers carried by the frame section in concentric relation to the shaft, a control element rotatable about the axis of the shaft and accessible for manipulation exteriorly of the casing, means operatively connecting the control element to said condensers for simultaneously actuating the latter upon rotation of said control element, a plate located in the bottom compartment and detachably secured to the speaker unit in spaced relation to the latter, additional radio parts carried by said plate, and means removably securing the bottom plate to the casing.

5. A radio receiving set comprising a casing having an annular side wall and having a centrally disposed opening in the top wall, a speaker unit having a diaphragm supported in the casing and having an annular extension projecting beyond the periphery of the diaphragm into engagement with the annular side wall of the casing dividing the latter into top and bottom compartments, a frame section located within the top compartment and detachably secured to the annular extension of the speaker unit in vertical spaced relation to the latter, a shaft extending through the opening in the top of the casing in concentric relation to the latter and having the lower end secured to the frame section, a plurality of variable condensers concentrically disposed and mounted on the frame section around the axis of the shaft, a pair of control discs supported one above the other for rotation about the axis of the shaft and accessible for manipulation exteriorly of the casing, means operatively connecting one of the control discs to the variable condensers for actuating the latter simultaneously, a rheostat secured to the frame section and operatively connected to the other of said control discs, a plate removably secured to the an-

nular extension in spaced relation to the speaker unit below the latter, additional parts of the radio receiving apparatus carried by said plate, and means removably securing the plate to the casing.

6. A radio receiving set comprising a casing having a central opening through the top wall and having the side wall flared outwardly at the bottom of the casing, a speaker for radio receiving apparatus supported in a horizontal position intermediate the ends of the casing and having the periphery engaging the side walls of the casing in a manner to divide the interior of the casing into upper and lower compartments, supporting means carried by the casing and projecting downwardly beyond the bottom edge of the outwardly flared portion on the casing for engagement with a supporting surface, said supporting means providing openings which establish communication between the interior of the lower compartment and the atmosphere to enable the transfer of air between the lower compartment and the atmosphere around the bottom edge of the casing, a hub extending upwardly through the central opening in the top of the casing and having a circumferentially extending slot adjacent the upper end thereof, a control member supported for rotation about the axis of the hub and having the periphery extending through said slot, and a variable condenser supported in said casing and connected to the control member.

7. A radio receiving set comprising a bell-shaped casing, radio receiving apparatus supported within the casing and including a speaker extending horizontally of the casing and having the periphery engaging the side walls of the casing in a manner to divide the interior of the casing into upper and lower compartments, the upper compartment having an opening communicating with the atmosphere to enable the transfer of air between the atmosphere and interior of the upper compartment, a support engaging part concentrically arranged with respect to the casing and having a portion with a flat surface projecting below the bottom edge of the casing for engagement with a supporting surface, said part having another portion located in the lower end of the casing and secured to said casing by means providing for the transfer of air between the lower compartment and the atmosphere.

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