Sept. 20, 1966 C. G. ROBERTS 3,273,662

STEREO SOUND SYSTEM

Filed Dec. 27, 1965

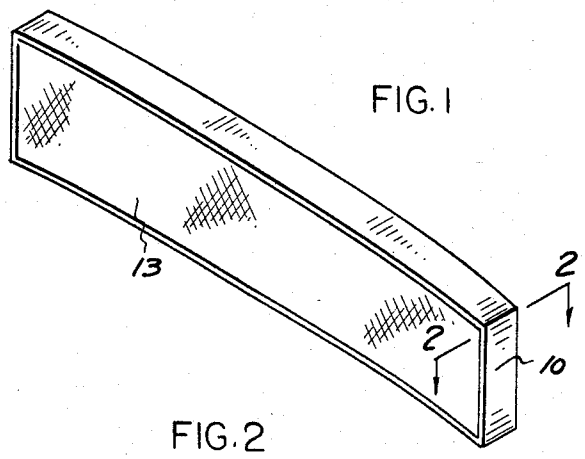
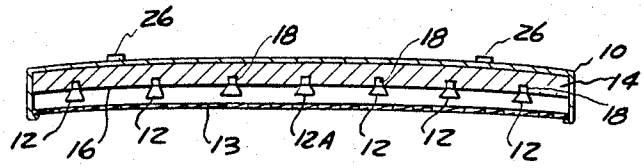


FIG. 1

FIG. 2



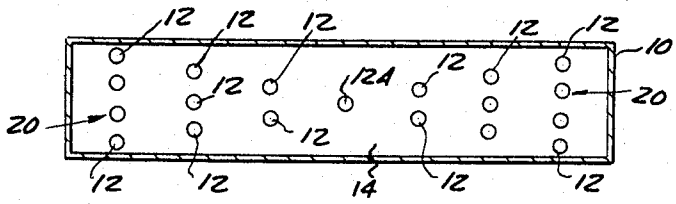


FIG. 3

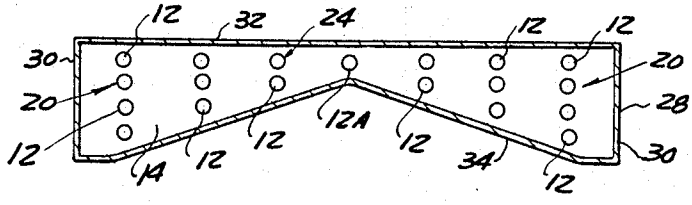


FIG. 4

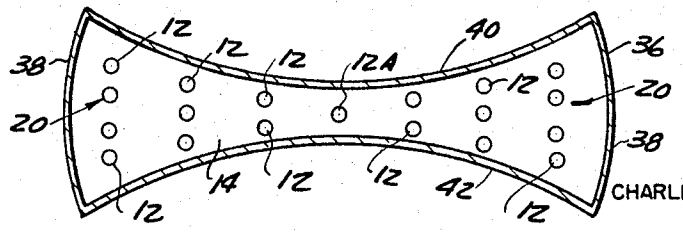


FIG. 5

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STEREO SOUND SYSTEM

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The present invention relates to multiple speaker systems and more particularly to a stereophonic musical sound reproducing system.

In recent years stereophonic musical reproducing systems have gained increasing popularity. Music lovers invest considerable sums of money each year to obtain expensive and sophisticated equipment that will faithfully reproduce the complete spectrum of tonal sounds as they were recorded by the musical artists, groups and symphonies. Part of the secret of obtaining a true sound reproduction of the original music as recorded has been found to lie in the audio speaker system. Multiple speaker systems have been devised which have incorporated various arrangements of speakers of selected sizes mounted in expensive and acoustically tuned cabinets and controlled by various adjusting devices. Many sound systems, in spite of their complexity, require the listener to be located in a particular position relative to the speaker system in order to enjoy an optimum effect.

The above problems have been obviated by the present invention whereby it has been found that by arranging a plurality of small inexpensive speakers of a similar size and in a particular configuration, a faithful reproduction of the complete range of tonal effects may be reproduced with no adjustments. The speakers are mounted in a cabinet with a horizontal dimension substantially greater than the vertical dimension but with the exact relationship depending upon the number of speakers employed. The speakers are disposed within the cabinet but with their faces arranged in a vertical plane formed in a large horizontal arc. The speakers are arranged in two banks about a center speaker. The number of speakers increases as the distance increases from the center speaker in each horizontal direction. The total number of speakers is not critical, but it has been found that where the speakers are all of the same size that the centrally disposed speakers will reproduce the higher pitched tones and the tones become progressively richer and lower as the distance of the speakers progresses from the center. The use of small speakers has been found to reduce aberrations to a minimum.

Therefore it is an object of the present invention to faithfully reproduce musical sounds with a minimum of aberration by providing for a stereo sound system in which the speakers are disposed in a horizontally arcuate vertical plane and arranged around a center speaker whereby as the distance increases along a horizontal axis, through the center speaker, the number of speakers on each side increases.

It is other object of the present invention to provide an inexpensive stereophonic sound system by providing a device utilizing small inexpensive speakers arranged in a configuration that requires no adjustments to obtain optimum musical tonal effects.

Still further objects and advantages will readily occur to one skilled in the art to which the invention pertains by reference to the following drawings in which—

FIGURE 1 is a perspective view of a preferred embodiment of the present invention.

FIGURE 2 is a sectional view as seen substantially from a horizontal plane through line 2—2 of FIGURE 1.

FIGURE 3 is a schematic cross sectional view of the speakers arranged according to the preferred embodiment of FIGURES 1 and 2.

FIG. 4 is a schematic cross-sectional view of an alternate arrangement of the speakers.

FIG. 5 is a schematic cross sectional view of an alternate shape for the enclosure for the speaker arrangement depicted in FIG. 3.

Now referring to the drawings for a more detailed description of the present invention and in which like reference characters refer to like parts, a preferred embodiment of the invention is illustrated in FIGS. 1–3 as comprising a horizontally elongated case **10** in which are mounted a pluralty of speakers **12**. The preferred case **10** has a horizontal dimension longer than the vertical dimension and is constructed with the front sound emanating side open. The front side of the case **10** may be covered with a suitable material **13** such as a tapestry so that as is shown in FIG. 1, the speakers **12** are hidden from view. The resulting system may therefore be decorated to fit in with the particular decor of the surrounding furnishings.

A backing **14** is disposed within the case **10** as can best be seen in FIG. 2, and provides a mounting for the speakers **12**. The backing **14** is preferably of a light and strong plastic foam material such as styrofoam and is formed so as to fit within and occupy the rear interior of the case **10**, and is mounted in place by any conventional means (not shown). A front side **16** of the backing **14** has a substantially arcuate shape from side to side so as to form a curved vertical surface. A plurality of recesses **18** are formed in the backing **14** at spaced intervals as will presently be described. The recesses **18** are shaped to receive and support the rear structure of the speakers **12** whereby the sound emanating faces of the speakers **12** will be disposed to form a vertical arcuate surface substantially parallel to the face **16** of the backing **14**.

The discovery of the present invention relates to the relative disposition of the speakers **12**. In addition to being positioned to form an arcuate surface, the speakers are arranged in two banks generally indicated by reference characters **20** in FIGURES 3–5. Each bank **20** is spaced horizontally from a central speaker **12A**. The speakers **12** in each bank are spaced from the center speaker **12A** and are disposed in increasing numbers vertically as the distance from the center speaker **12A** increases. In a preferred embodiment, each bank is comprised of a series of vertical rows displaced at spaced intervals from the center speaker **12A** and with each succeeding row containing one more speaker than the preceding row. As can best be seen in FIGURE 3, the speakers **12** in each row are at equispaced intervals and the vertical rows of speakers are positioned so that the top and bottom speakers of each row are equidistant from the center speaker **12A**. In an alternate arrangement, as can best be seen in FIGURE 4, the rows of speakers may be spaced so that a top row **24** of speakers **12** lies in a horizontal line passing through the center speaker **12A**. The remaining speakers **12** would then be positioned below the top speaker **12A** in constantly increasing numbers as the horizontal distance from the center speaker **12A** increases.

All speakers **12** and **12A** are preferably of the same size and smaller speakers are preferred over larger sized speakers for the reason that a more sensitive musical reproduction can be obtained.

It may be desirable to attach the stereo system to a wall in which case any suitable hanging means such as brackets **26** as shown in FIGURE 2 may be secured to the back side of the case **10**.

As has been noted, the relative disposition of the speakers to one another produces results in the faithful reproduction of the music. Therefore, the shape of the enclosure for the speakers may be formed into any pleasing

shape. In the preferred embodiment of FIGURES 1–3, the case **10** has parallel sides with the top and bottom sides contoured along their front edges in the same arcuate configuration provided for the faces of the speakers **12–12A**.

FIGURE 4 depicts an alternate case **28** shaped to conform to the alternate arrangement of speakers whereby two sides **30** are parallel to each other and perpendicular to a top side **32**. A bottom side **34** is formed in substantially the shape of an inverted V-shape with the ends of the legs attached to the two parallel sides **30**.

An alternate case **36** for the arrangement of FIGURE 3 is depicted in FIGURE 5 and comprises convexly arcuate sides **38** and a concavely arcuate top **40** and bottom **42**.

It is obvious that I have described a stereo sound system comprised of a relatively few inexpensive and easily assembled components that without any requirements for adjusting will accurately reproduce the complete range of musical sounds from treble to bass.

While I have described preferred embodiments of the present invention, it will be obvious that various changes, adaptations and modifications may be made without departing from the spirit and scope of the appended claims.

I claim:

1. A stereo sound system comprising

(a) an enclosure with an open side,

(b) a plurality of speakers mounted in the enclosure and facing said open side, and with the speakers disposed to form an arcuate surface, and arranged in vertical rows about a central speaker so that as the distance from the central speaker increases, the number of speakers in each vertical row increases.

2. The sound system as defined in claim **1** wherein the speakers are disposed in two banks one bank each located on opposite sides of said central speaker.

3. The sound system as defined in claim **2** wherein the enclosure is formed with a horizontally elongated shape.

4. The sound system as defined in claim **1** and including a plastic foam backing enclosed by said enclosure, said backing formed with recesses to receive and support the speakers.

5. The sound system as defined in claim **1** and including wall hanging means.

6. The sound system as defined in claim **1** wherein all speakers are of the same size.

7. The sound system as defined in claim **2** wherein each bank is comprised of a plurality of spaced vertical rows, each succeeding row from the central speaker including an additional speaker.

8. The sound system as defined in claim **1** and wherein the speakers are disposed in two banks, one bank located on each side of said central speaker, and wherein said arcuate surface comprises a section of a large cylindrical plane, and each bank of speakers is comprised of a plurality of spaced rows, each succeeding row from the central speaker disposed on a longitudinal element of said cylindrical plane and including an additional speaker, and each speaker in said sound system facing the longitudinal axis of the cylindrical plane.

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