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LOUD-SPEAKING TELEPHONE SET WITH LOW
ACOUSTIC COUPLING
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FIG. 2

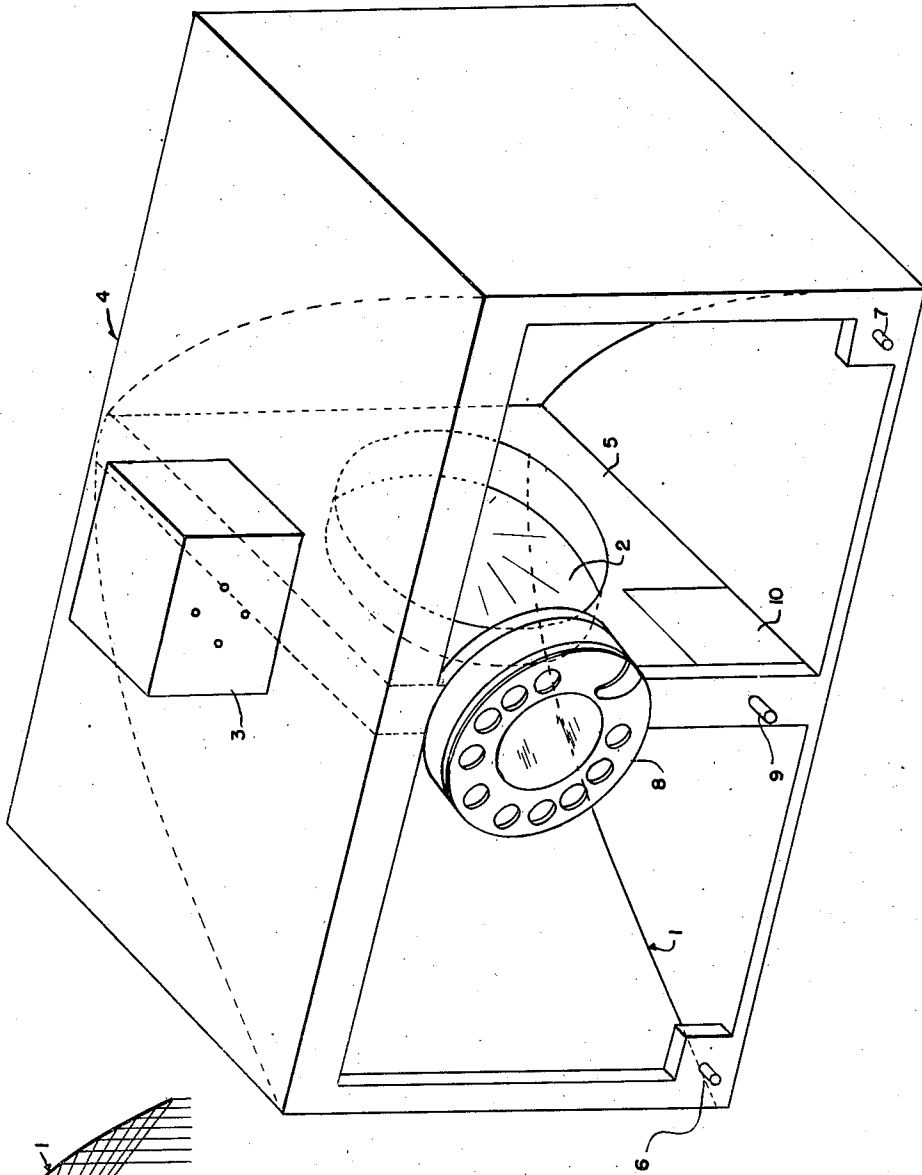
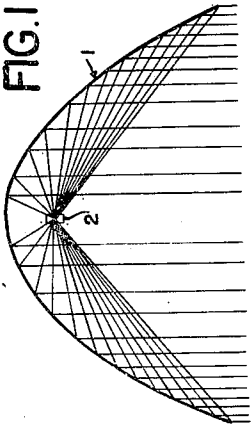


FIG. 1



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LOUD-SPEAKING TELEPHONE SET WITH LOW ACOUSTIC COUPLING

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8 Claims. (Cl. 179-1)

1

This invention relates to improvements in acoustic devices, and more specifically to certain relative arrangements of the loudspeaker means and transmitter means in a set for a two way telephone system.

It is an object of this invention to design a simple and economical telephone set which will provide satisfactory operation at desired volumes when used by a party located at a distance from the sets.

It is a further object of this invention to provide improved transmission by producing a set which will minimize the strength of the acoustic coupling between the loudspeaker means and the transmitter means, which coupling is inherent in this type of equipment.

It is a feature of this invention to employ a loudspeaker means with its axis normal to the axis of a cylindrical parabolic reflector so that the sound waves from the loudspeaker means leave the reflector as a beam of parallel rays directed in a forward direction.

It is also a feature of this invention to position the loudspeaker means at the cylindrical parabolic reflector focal point so that an equal amount of waves are emitted on both sides of a vertical plane passing through the focal point.

A further feature of the invention is the positioning of the transmitting means in a manner such that a minimum of sound waves reflected by the cylindrical parabolic reflector will reach the transmitting means.

It is also a feature of the invention to position the axis of the loudspeaker means normal to the axis of the cylindrical parabolic reflector and the axis of the transmitter parallel to the axis of the reflector.

It is another feature of the invention to position the approximate center of the loudspeaker means at the focal point of the cylindrical parabolic reflector and the approximate center of the transmitter means on a vertical line passing through the focal point.

Novel features believed to be characteristic of the invention are set forth with particularity in the appended claims. The invention, together with further objects and features thereof, will best be understood by reference to the following specification taken in connection with the accompanying drawings comprising Figures 1 and 2.

Figure 1 is a diagrammatic view of a speaker equipped with a cylindrical parabolic reflector for the radiation of sound waves emitted by the speaker.

Figure 2 is a perspective view of a distant talk-

2

ing telephone set comprising an illustrative embodiment of this invention.

In Figure 1, a loudspeaker means 2 is positioned at the focal point of a cylindrical parabolic reflector 1. The reflector may be fashioned from a rectangular sheet of metal or any other suitable reflector material so that it forms a reflector shaped as a portion of a parabolic cylinder. The loudspeaker means 2 is mounted with its approximate center located in a vertical line which passes through the foci of the cylindrical parabolic reflector and with its axis normal to the axis of the reflector. In this manner, an equal amount of waves are emitted on both sides of the plane passing through the foci and the vertex of the reflector. The sound waves are reflected by the cylindrical parabolic reflector in a forward direction parallel to the axis as a beam of parallel rays. Since a greater efficiency of sound waves is experienced at the center of the loudspeaker means, viewing any horizontal plane, a concentration of waves will result at the outer edges of the reflector which become relatively weaker as the axis of the parabolic reflector is approached. This manner of wave reflection produces a beam of waves with a so-called dead spot along the axis of the reflector.

Figure 2 in perspective illustrates the transmitting means 3 mounted on cabinet 4 with its approximate center on a vertical line passing through the foci of the cylindrical parabolic reflector 1 and having its axis parallel to that of the reflector. The loudspeaker means 2 is mounted on a baffle board 10 which is located along the axis of the reflector.

It may be readily observed that the position of the transmitting means as narrated above places it in the plane where a minimum of radiated waves of the reflector will be experienced. Therefore, the sound energy of the loudspeaker is unable to agitate the transmitting means sufficiently to initiate singing in the circuit, this being the object of the invention.

The cabinet 4 houses a conventional amplifier having a reflector 1, an on-off switch 6, a volume control 7, a dialing means 8 with connections to a telephone line, and a talk-answer, dial key 9.

The reflector is fashioned in the form of a cylindrical parabola from any suitable reflecting material. The vertical edges of the reflector are attached to the vertical sides of the cabinet and the horizontal edges are fashioned to effect a tight fit with the top and bottom inner surfaces of the cabinet on three sides by means of wood screws

or the like, the fourth side being in contact with the reflector.

The working mechanism of key 9 is positioned in a small cutaway section of baffle mounting board 10. The on-off switch 6 and volume control 7 have arm extension controls passing beyond the reflector to the amplifier. The amplifier chassis is curved in conformance to the shape of the parabolic reflector.

No particular specification is intended for the nature of the transmitting means in as much as the arrangement is adaptable to velocity, crystal or dynamic microphones. The speaker means likewise may be of varied types.

Although a particular embodiment of the invention has been described, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A distant talking and listening telephone set comprising a focusing parabolic sound reflector, a telephone loudspeaker apparatus being positioned in said set within said reflector on a vertical line which passes through the foci of said reflector and on a vertical plane coincident with the axis of said reflector so that a substantially equal volume of waves from said loudspeaker is transmitted on either side of the plane, said speaker having its axis normal to the axis of said reflector, and a transmitting means mounted on said set in such a position that its axis is coincident with said reflector axis and so that its approximate center lies on said vertical line, said set thereby effective to operate with a minimum amount of feedback occurring in the transmitting means.

2. In a loudspeaking telephone set, a parabolic reflector within the set shaped as a portion of a cylinder, a loudspeaker mounted within said reflector at approximately the focus of the reflector and having its axis perpendicular to a plane passing through the focus and the vertex of the reflector, said speaker transmitting sound waves approximately in equal volume on either side of said plane, and a microphone mounted above said speaker having its axis also falling within said plane and its central point lying approximately above said focus, whereby the minimum amount of feedback occurs in the microphone resulting from waves transmitted by said speaker.

3. In an acoustic device, a parabolic reflector therein, a loudspeaker mounted in said reflector so that its center is located approximately on a vertical line which passes through the foci of said reflector and on a vertical plane coincident with the axis of said reflector so that a substantially equal volume of waves is transmitted on either side of the plane, said speaker having its axis normal to the axis of said reflector, and a transmitting means mounted in the device in such a position that its axis is coincident with said plane, said device thereby effective to operate with a minimum of acoustic coupling between said loudspeaker and said transmitting means.

4. In a loudspeaking telephone set, a parabolic reflector therein in the form of a cylinder portion, a loudspeaker positioned in said reflector on

a line passing through the foci of said reflector and having its axis normal to the axis of said reflector, said reflector thereby effective to create a vertical plane of minimum sound waves, said vertical plane passing through the vertex and foci of said parabolic reflector, and a transmitting means whose axis is coincident with said dead plane, said set thereby operative to reduce acoustic coupling of said loudspeaker and said means.

5. In a loudspeaking telephone set, a parabolic reflector, a loudspeaker mounted within said reflector whose approximate center lies on a vertical line which passes through the foci of said reflector and being positioned on a vertical plane coincident with the axis of said reflector, so that a substantially equal volume of waves are transmitted to either side of said plane, and a transmitting means whose approximate center lies on said vertical line.

6. In a loudspeaking telephone set, a rectangular sheet of reflecting material fashioned in the form of a parabolic reflector having a cylindrical shape, a baffle board mounted in a vertical plane coincident with the axis of said reflector, a speaker mounted on said baffle board with its approximate center on a vertical line passing through the foci of said parabolic reflector and with its axis normal to the axis of said reflector, so that an equal amount of waves are transmitted to either side of said baffle board, said reflector thereby effective to transmit a beam of parallel rays with a so-called dead plane along the axis of said parabolic reflector.

7. In a system as claimed in claim 6, a transmitting means mounted with its approximate center located on said vertical line and in said dead plane, said set thereby effective to minimize acoustic coupling between said transmitting means and said speaker.

8. In a loudspeaking telephone set, a cabinet, a sheet of reflecting material fashioned in the form of a parabolic reflector, by having a shape similar to a parabolic cylinder portion, located in said cabinet and fastened thereto at its outer edges, a baffle board mounted in the cabinet along the axis of said reflector thereby dividing the enclosed reflector area into two equal sections, a speaker mounted in the approximate center of the baffle board, said speaker having its approximate center on a vertical line passing through the foci of said parabolic reflector and having its axis normal to the axis of said reflector, and transmitting means mounted on said cabinet in a position such that a minimum amount of sound waves from said speaker will reach said means.

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