Sept. 1, 1931. C. W. HICKS 1,821,469

SOUND AMPLIFIER

Filed Aug. 3, 1928

FIG. 7.

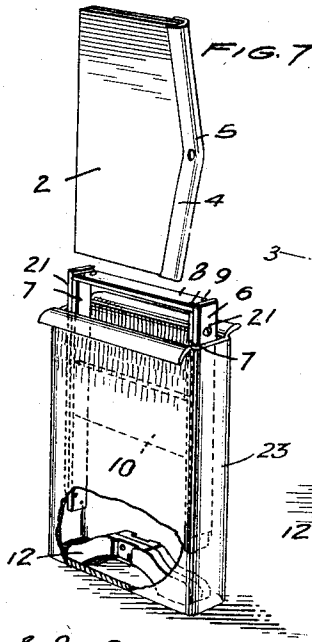
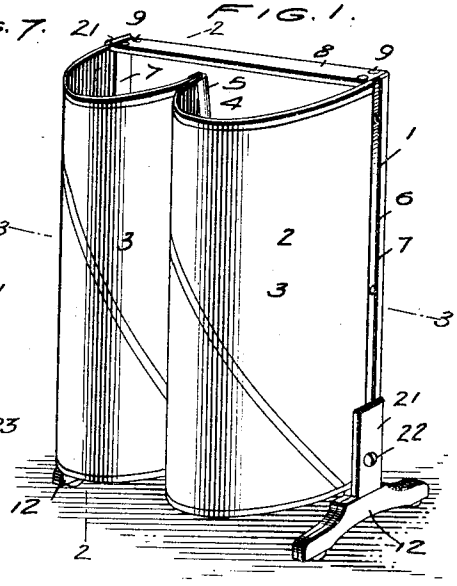


FIG. 1.



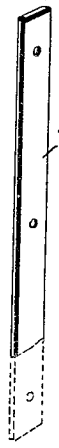
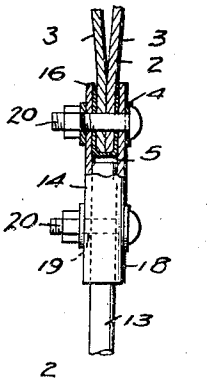


FIG. 4.



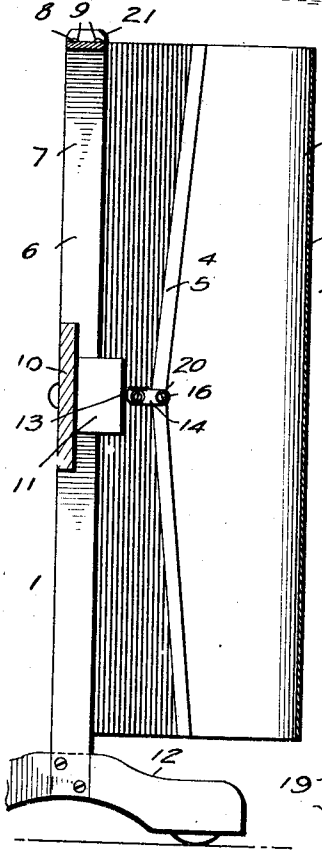


FIG. 2.

FIG. 3.

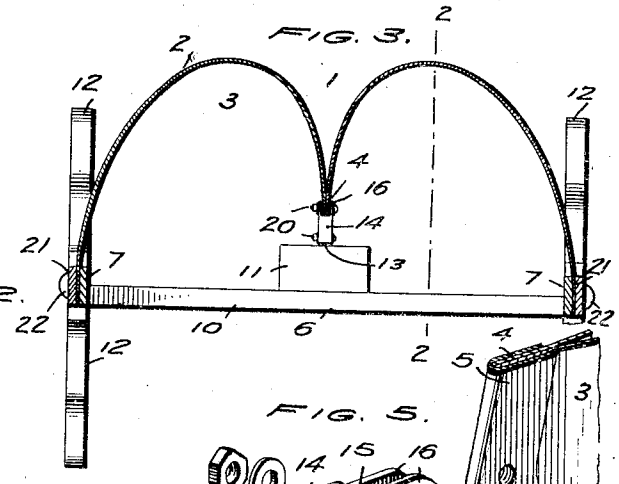


FIG. 5.

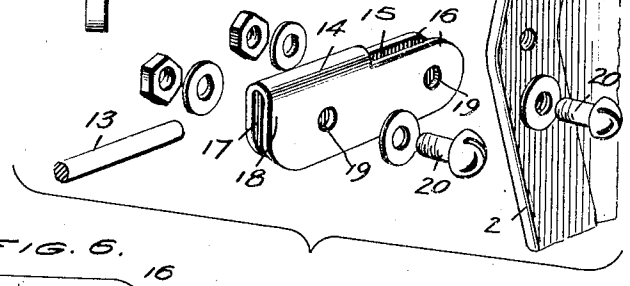
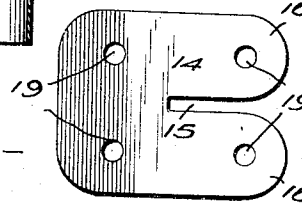


FIG. 6.



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UNITED STATES PATENT OFFICE

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SOUND AMPLIFIER

Application filed August 3, 1928. Serial No. 297,222.

This invention relates to sound amplifiers or loud speakers for radio reception, phonographs or the like, and has for its object to provide a device which embodies the characteristic of compactness for portability and at the same time provides the highest efficiency in sound reproduction.

The device is particularly applicable to field use and for transportation by airplane, because the compactness in which the same may be arranged for shipment is a feature of the invention.

While compactness for portability is an object of the invention, the invention has for its inventive purpose to employ a fibrous diaphragm preferably of a high grade blotting paper, so arranged in its mounting that objectionable interference and distortion of sound is eliminated, to the end that the maximum volume, tone, clarity, and definition is produced at high as well as at low frequencies of the diaphragm.

With these and other objects in view, the invention consists of the novel construction of the device, and in the arrangement and combinations of parts, all of which will be first fully described and afterwards specifically pointed out in the appended claims.

Referring to the accompanying drawings:

Figure 1 is a perspective view of the sound amplifier in operative position.

Figure 2 is an enlarged vertical sectional view taken on line 2—2 of Figures 1 and 3.

Figure 3 is a horizontal sectional view taken on line 3—3 of Figure 1.

Figure 4 is an enlarged fragmentary plan view partly in section of the diaphragm connecting clip.

Figure 5 is a fragmentary perspective view of the diaphragm, diaphragm clip and assembly.

Figure 6 is a plan view of the blank of the diaphragm clip, and

Figure 7 is a perspective view of the device knocked down for transportation or shipment.

Like numerals of reference indicate the same parts throughout the several figures, in which:

1 indicates the amplifier or loud speaker, which includes the flexed diaphragm 2, which as shown in the drawing comprises two substantially semi-circularly curved sections 3 connected together at 4, and having their meeting edges bound together as by a strip of adhesive tape 5.

6 indicates the diaphragm frame or mounting, which preferably includes the two vertical side-pieces 7 connected together by the horizontal top member 8 by screws 9, and again centrally connected together by the mounting 10 for the electromagnetic or other actuating unit 11. Suitably and demountably connected to the vertical side-pieces 7 are the transverse supporting feet 12.

13 indicates the connecting pin of the unit 11. To effect a simple and highly efficient connection between the unit 11 and the diaphragm 2, I provide a connecting clip 14, which, as shown in Fig. 6, is blanked out of suitable hard fibre or sheet metal. The blank is provided with a slot 15 which bifurcates the blank for substantially one half its length. When, therefore, the blank is bent as shown in Fig. 5, the bifurcated portions 16 are opposed, and are spaced apart to conform to the thickness of the bound edges 4 of the two curved sections 3 of the diaphragm 2, while the opening 17 formed between the opposing faces of the body portion 18, is sufficient to snugly receive the connecting pin 13 of the unit 11. Holes 19 formed in the blank, register in pairs when the blank is bent or formed into shape as shown in Fig. 5, so as to receive the assembly screws 20, by means of which the body 18 of the clip is securely clamped around the connecting pin 13 and the bifurcated portion 16 is clamped on each side of the bound meeting edges 4 of the diaphragm 2.

The frame 6 having been assembled, the diaphragm 2 is mounted thereon by securing the side edges thereof to the vertical side pieces 7. This is conveniently accomplished by the side strips 21 which clamp said edges to the vertical side pieces 7 by means of wood screws 22. The diaphragm being thus mounted, the connecting clip 14 is clamped around the connecting pin 13 of the unit 11. This completes the assembly.

The ease with which the device may be assembled is apparent. For shipment or transportation, a flat paper carton 23 is preferably employed. The supporting feet 12 and the mounting frame 6 are inserted in the carton and the diaphragm 2 is flattened out into the normal form of the sheets and inserted in the manner as indicated in Fig. 7. A most convenient package is thus provided, which renders the device particularly adapted to field use and airplane transportation.

By reason of the employment of a high grade of blotting paper or of a fibrous material which embodies the minimum inherent elasticity and the minimum capacity for self vibration to produce audible sound, the objectionable distortion is eliminated, while tone, clarity and definition is maintained in the highest degree, without interference and the use of resonators or the like.

Having thus fully described the invention, I do not wish to be understood as limiting myself to the exact construction herein set forth, but consider myself clearly entitled to all such changes and modifications as fall within the limit and scope of the appended claims:

1. A device of the character described including a rectangular shaped frame having vertical sides, a top and a central member, a vibratory diaphragm of flexed blotting paper, the same composed of two substantially semicircularly curved portions having their meeting edges secured together and their outer edges extending to the vertical sides of the frame, a clamping strip on each of the vertical sides for removably clamping the outer edges of the diaphragm to the frame, an actuating unit mounted on the central member of the frame, and a connecting clip for removably connecting the actuating unit to the meeting edges of the two curved portions of the diaphragm.

2. A device of the character described including a rectangular shaped frame having vertical sides, a top and a central member, a vibratory diaphragm of flexed blotting paper composed of two substantially semicircularly curved portions having their meeting edges secured together, means for removably securing the outer edges of the diaphragm to the vertical sides of the frame, an actuating unit mounted on the central member of the frame, and a connecting clip for removably connecting the actuating unit to the meeting edges of the two curved portions of the diaphragm.

3. A device of the character described including a rectangular shaped frame having vertical sides, a top and a central member, a vibratory diaphragm of flexed blotting paper composed of two substantially semicircularly curved portions, means for securing the outer edges of the diaphragm to the vertical sides of the frame, an actuating unit mounted on the central member of the frame and a connecting clip for removably connecting the actuating unit to the curved portions of the diaphragm.

In testimony whereof I affix my signature.

CHESTER W. HICKS.