PORTABLE SOUND SYSTEM

Oliver Jepsen, Flushing, N.Y., assignor to Ampeg Company, Inc., Linden, N.J., a corporation of New York

Filed July 27, 1962, Ser. No. 212,990
3 Claims. (Cl. 179—1)

This invention relates to improvements in sound reproducing systems, and, more particularly, to an improved form of portable amplifier and speaker cabinet that is especially adapted for use with musical instruments, although it is not limited to such use.

So-called musicians' amplifiers for amplifying signals picked up from a musical instrument have requirements that are difficult of achievement, viz., they must be capable of high quality reproduction yet be readily portable, preferably in one hand, since the musician also has his instrument to carry. In an effort to meet these requirements, it has been proposed hitherto to mount the amplifier inside the speaker enclosure. This unfortunately rules out the possibility of using a reflex-type of enclosure which would be preferred in the interests of good quality reproduction, because enclosures of this type are sealed and do not provide adequate ventilation for an amplifier powerful enough to drive the speaker.

As a result, it has been the practice to use open-back speaker enclosures which provide adequate ventilation for the amplifier but at the expense of efficiency and quality.

It is an object of the invention, accordingly, to provide a sound reproducing system which is free from the above-noted deficiencies of the prior art.

Another object of the invention is to provide a readily portable sound system of high quality which is especially suitable for use as a musical instrument amplifier.

According to the invention, a sound system is provided which comprises speaker means in a reflex type enclosure having an opening closed by a removable and reversible closure to which amplifier means is secured. Normally, in the carrying position, the closure is mounted to the enclosure so that the amplifier means thereon is contained within the enclosure. In use, the closure is secured to the enclosure in reversed position so that the amplifier means is completely outside of the closure while the latter is properly sealed as required for good sound reproduction. The invention also contemplates the provision of a rigid dolly means to facilitate transport of the equipment from one location to another.

For a more complete understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an isometric assembly view of an exemplary embodiment of a portable sound system constructed according to the invention and in the normal carrying condition;

FIG. 2 is another isometric assembly view of the sound system shown in FIG. 1, with the amplifier out of the speaker enclosure and ready for use;

FIG. 3 is a transverse sectional view taken along the plane represented by line 3—3 of FIG. 1 and looking in the direction of the arrows;

FIG. 4 is a top view partially broken away, of the amplifier and speaker cabinet of FIG. 1; and

FIG. 5 is an isometric assembly view showing the amplifier and speaker cabinet of FIG. 2 assembled for operation.

Referring first to FIG. 3, the invention is shown embodied in a musical instrument amplifier system comprising a speaker enclosure 10, preferably of the reflex type, mounted on a detachable wheeled dolly 12. The dolly 12 has two pairs of heavy duty wheels 14 and 16 which are preferably formed of suitable resilient material so that the speaker enclosure 10 can be easily rolled over sidewalks, ballroom floors, into automobiles and wherever else a musician might reasonably be expected to take a sound system.

The dolly 12 is provided with dolly shock absorbers 18 and 20 fixed rigidly to the upper surface 22 thereof by glue or other suitable means. The dolly 12 is adapted to be detachably secured to the speaker enclosure 10 by a knurled knob 24 provided with a threaded shank 26 extending upwardly through an aperture 28 in the dolly surface 22 and threaded into a recess 30 formed in a small flanged fitting 32. The bolts 34 and 36 secure the flanged fitting 32 in an aperture 38 provided in the bottom wall 40 of the speaker enclosure 10.

Thus, the dolly 12 can be quickly attached to the speaker enclosure 10 to facilitate movement from one place to another. During such movement, the speaker enclosure 10 is protected against shock or vibration by the pairs of resilient dolly wheels 14 and 16 and the dolly shock absorbers 18 and 20. To remove the dolly 12 from the speaker enclosure 10, it is only necessary to turn the knob 24 to unscrew the shank 26 from the flanged fitting 32.

The speaker enclosure 10 comprises a bottom 46, an upright rear side 42, end walls 44 and 46, a front wall 48 and a top surface 50 all formed of a strong, rigid material, such as laminated wood, for example. The bottom 40, rear side 42, end walls 44 and 46, front wall 48 and top surface 50 are assembled by suitable means, such as glue and dowel and/or keylock joints 52, 54, 56 and 58, for example, to form a rigid enclosure 59.

The front wall 48 is formed with a centrally disposed circular aperture 60 in which a loudspeaker 62 is secured by screws or other suitable means. Also, appropriately positioned ports 64 and 66 are formed in the front wall 48 as required to form a reflex ported speaker enclosure 10.

Secured in spaced relation to the front wall 48 is a frame 70 in which a grill 71 of cloth, or other suitable material, is supported. The grill 71 provides protection for the speaker without materially impeding the propagation of sound therefrom.

In the top of the speaker enclosure 10 is a rectangular aperture 68 which is bounded on two opposite sides by the top edges 69 and 69a of the end walls 44 and 46 and on the other two opposite sides by shoulder portions 72 and 72a. Seated on the top edges 69 and 69a and on the shouldered portions 72 and 72a and suitably secured thereto is a gasket 73a formed preferably of some resilient material such as rubber, for example. The aperture 68 is adapted to be closed by a rectangular closure member 75 which also serves as the mounting board for an amplifier 74.

The closure member 73 is adapted to be held securely in position by suitable means such as clamp bolts 77 on the speaker enclosure 10 which are adapted to clamp means such as lag bolts 76 mounted in the ends of the closure member 73, as shown.

The gasket 73a and the overlying closure member 73 complete the soundproof integrity of the speaker enclosure 10, thus providing a reflex-type enclosure insuring good quality sound reproduction.

To one side of the closure member 73 is secured a power amplifier 74 which may be of conventional design and which forms no part of the present invention. The means mounting the amplifier 74 to the closure member 73 will preferably include shock absorbing means 78 to shield the amplifier 74 from shocks and vibration.

Secured to the other side of the closure member 73 is a swingably mounted hand grip or handle 79 of conventional construction by means of which the entire enclosure 10 can be lifted or propelled when on its dolly.
3. On occasion, it is desired to support the enclosure 10 in a tilted position to direct the sound upwardly as shown in FIG. 5. For this purpose, a fitting 80 is mounted in the rear enclosure wall 42 having a socket 81 into which a removable leg 82 is adapted to be inserted. When the equipment is to be transported from one location to another, the dolly 12 is fastened to the speaker enclosure 10 in the manner hereinbefore described and the closure member 73 is latched to the enclosure 10 with the amplifier 74 inside the latter so that the handle 79 is exposed for convenient gripping. The shock absorbers 78 as well as the dolly shock absorbers 18 and 20 and the resilient pairs of dolly wheels 14 and 16 protect the amplifier 74 from the vibrations and jolts encountered during transportation and movement.

Upon arrival at the desired location, the dolly 12 is removed from the speaker enclosure 10 in the manner previously described and the claw bolts 75 are released, permitting the closure member 73 to be removed and replaced in reverse position with the amplifier 74 outside of the enclosure 10, as shown in FIG. 2. The claw bolts 75 are again clamped to the lag bolts 76 to seat the closure member 73 firmly against the gasket 73a so as to form a substantially soundproof seal. An electrical plug 83 on a cable 84 is then plugged into a socket 85 in the end wall 46 of the enclosure, thus connecting the output of the amplifier to the speaker.

The leg 82 is now inserted in the socket 81 and the enclosure is tilted rearwardly so that the sound is projected upwardly as well as outwardly. Moreover, the amplifier 74 can be provided with a transparent or translucent panel 86 bearing a suitable monogram which may be the monogram of the orchestra leader. To further enhance the appearance of the speaker enclosure 10, a covering 87 of leather, plastic or any suitable decorative or protective material, may be secured to the enclosure surfaces.

The novel apparatus described above thus provides a complete sound amplification system that can readily be transported. Also, by locating the amplifier on a reversible closure for the speaker enclosure, the amplifier can be positioned externally of the speaker enclosure 10 for use. So positioned, the amplifier is adequately ventilated and shielded from shock and vibration while the speaker enclosure is maintained sealed, as required for proper operation.

It is obvious to those skilled in the art that the above described exemplary embodiment is susceptible of modification and variation within the spirit and scope of the invention. For example, more than one loudspeaker can be used within a speaker enclosure. Thus, the invention is not deemed to be limited except as defined by the appended claims.

I claim:
1. In a portable sound system, the combination of a loudspeaker enclosure having an opening therein, a detachable and reversible closure removable from and replaceable in inverted relationship in said opening, amplifier means secured to and on one side of said closure, and means retaining said closure releasably in closing relation to said opening.

2. In a portable sound system, the combination of a sealed loudspeaker enclosure having an opening therein, gasket means bounding said opening, a detachable and reversible closure removable from and replaceable in inverted relationship in said opening, amplifier means mounted on one side of said closure, handle means mounted on the other side of said closure, and means retaining said closure releasably against said gasket means to close said opening.

3. In a portable sound system, the combination of a portable reflex loudspeaker enclosure having a substantially rectangular opening in the top thereof, gasket means bounding said opening, a substantially rectangular, detachable and reversible closure removable from and replaceable in inverted relationship with said opening, amplifier means secured on one side of said closure, handle means mounted on the other side of said closure, shock absorber means interposed between said amplifier and said closure, and means retaining said closure releasably against said gasket means to close said opening.

References Cited by the Examiner

UNITED STATES PATENTS

1,695,929 12/28 Perlin ------------------ 280—79.2
2,186,163 8/39 Kamenarovic -------- 179—1
2,964,329 12/60 Beck ------------------ 280—79.2
3,023,274 2/62 Shaw ------------------ 179—1

ROBERT H. ROSE, Primary Examiner.
WILLIAM C. COOPER, Examiner.