

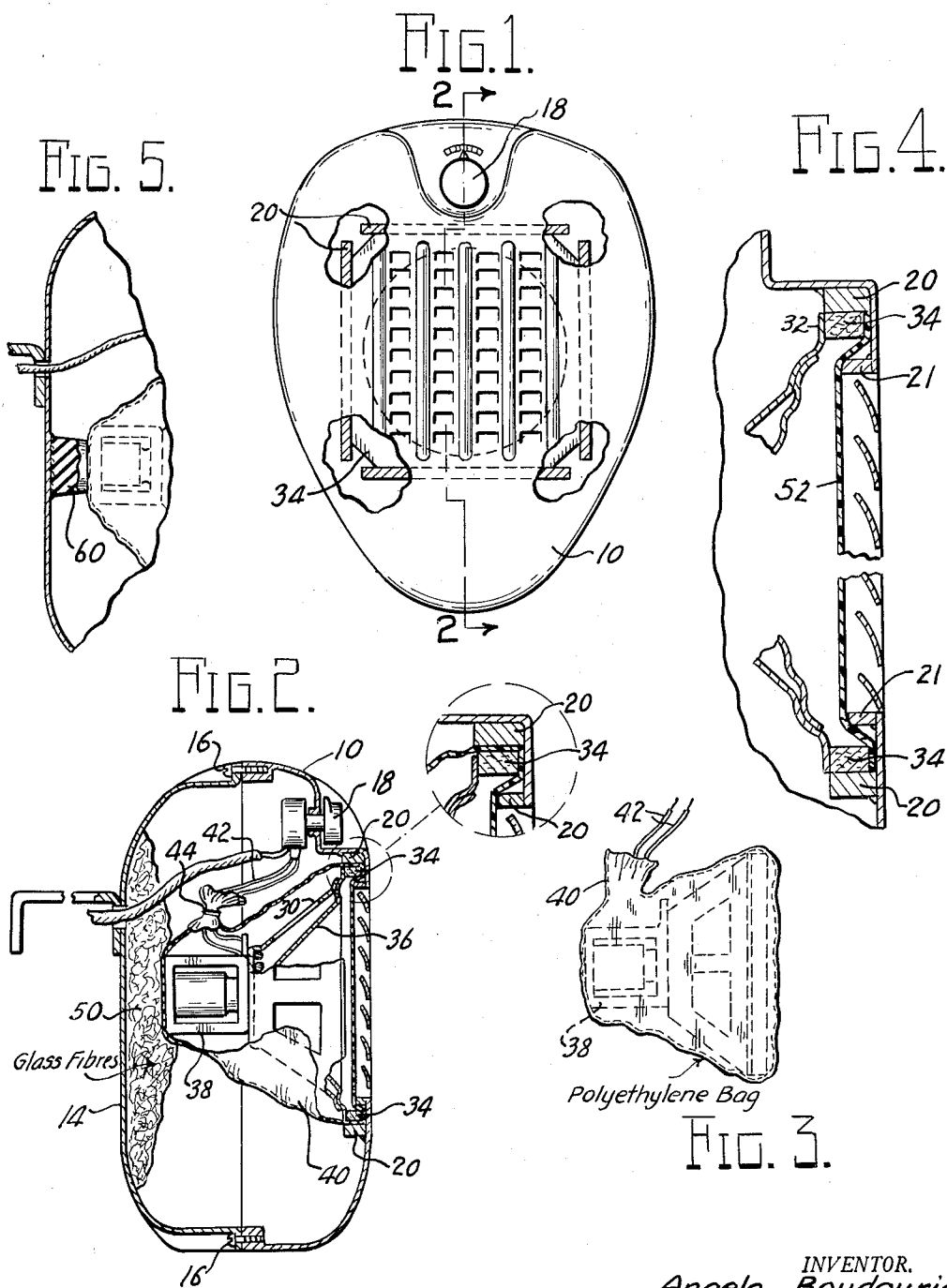
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A. BOUDOURIS

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LOUD SPEAKER FOR OUTDOOR THEATERS

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INVENTOR.
Angelo Boudouris
BY *Owen & Owen*

ATTORNEYS

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LOUD SPEAKER FOR OUTDOOR THEATERS

Angelo Boudouris, Sylvania, Ohio

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2 Claims. (Cl. 181—31)

This invention relates to loud speakers for outdoor theaters and is particularly directed to a unit that is resistant to deterioration from the usual conditions encountered in service.

Loud speakers for outdoor theaters are subject to rapid deterioration not only from direct rain from which they may be partially shielded by the housing in which they are contained but by condensed moisture, dust accumulations, deposits by spiders, wasps and other insects, and by vandalism on the part of the patrons.

The primary object of the present invention is to provide a means for mounting and protecting a loud speaker for outdoor theaters so that it is not readily damaged by any of the above causes.

Another object of the invention is to provide a mounting for a loud speaker for outdoor theaters which completely protects the vital parts of the speaker against rain, condensation and all other outside influences.

Still another object is to provide a mounting by which the loud speaker is fixed in its case without the use of screws through or into the front face of the housing in which the speaker is contained.

Other objects and advantages of the invention will become apparent from the following specification, reference being had to the accompanying drawings in which:

Fig. 1 is a front view of a loud speaker housing with parts broken away;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a side elevation of a speaker partially prepared for mounting in a housing;

Fig. 4 is a fragmentary sectional view of a modified form of a loud speaker cone protective device; and

Fig. 5 is a fragmentary sectional view showing a modified form of speaker retaining means.

Referring to the drawings, 10 designates a front section of a loud speaker housing of the type commonly employed in outdoor theaters having a grilled or pierced front face. The housing has an impervious back 14 held in sealed relationship to the front section by any suitable fasteners such as screw 16. Apart from the openings in the front of the housing through which sound waves pass, the only other opening in the housing is a small hole for the reception of the shaft of a volume control 18.

Extending inwardly from the front wall of the front housing section are a plurality of ribs 20. The ribs may be welded to the housing if the latter is metal or may be molded integrally therewith if the housing is plastic. In either event they cooperate to form relatively rigid, spaced projections between which a loud speaker may be mounted by frictional engagement alone as hereinafter described. A ring or ridge 21 surrounds the open portion of the front housing section in inwardly spaced relation to the ribs 20.

A loud speaker, diagrammatically shown, is mounted within the housing 10 and comprises a frame 30 terminating in a flange 32 to which is adhered a compressible gasket member 34. The periphery of the compressible gasket member preferably corresponds in size and shape

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to the opening between the ribs 20 both vertically and laterally. The usual speaker cone 36 is mounted within the frame and is attached at its center to the conventional driver member. A speaker field magnet 38 extends rearwardly from the frame 30 in the usual manner. The speaker cone 36 is usually made of paper or similar fibrous material and is affected detrimentally by water, whether in the form of condensed moisture or rain. Further, spider webs and the debris that frequently accumulates within the housing by the action of insects and wind cause the cone to respond imperfectly to the vibrations imparted to it from the driver mechanism. The present invention protects the speaker cone as well as the driver unit, in a preferred form, by enclosing the entire system in a bag or container of water-impervious, but acoustically transparent material 40. The wires to the speaker coils are designated 42 and are brought out through the neck of the bag or through an opening in the container and the container is then closed around them by heat sealing or by twisting a sealing wire 44 in a manner to complete a water-tight closure. Polyethylene plastic has been found suitable for the bag material. If desired, a pellet of moisture absorbing material may be placed in the bag 40 prior to sealing it.

Since the speaker is enclosed within a bag whose surface must remain unbroken, the present invention comprises means to mount the speaker within the housing 10 without puncturing the bag. The compressible gasket member 34 has a peripheral contour and size that fits frictionally within the space, both laterally and vertically, between the ribs 20 and the adjacent surfaces of the bag assist in wedging the parts into a tight frictional engagement. This expedient may be supplemented, or even replaced, by a construction in which a mass of rot proof, weather-impervious fiber 50 is interposed between the rear of the speaker and the back section 14 of the housing. Glass fibers have been found adequate for the purpose since a mat formed thereof is compressible and is not affected by heat, cold, moisture or rot. The speaker is thus placed in the housing under the compression of the mat of fibers and the front ribs 20 need only serve as locating guides and not as a holding media.

In mounting the speaker the unit is first placed within the polyethylene bag as indicated in Fig. 3 and sealed therein with the leads extending therefrom to the volume control. The unit in its bag is then forced into frictional engagement between the ribs 20, and the bag itself is stretched over the ring element or ridge 21 so that the front surface of the bag is held out of engagement with the louvres and cannot vibrate there against when the speaker is energized. The rear section of the housing with the glass fiber mat adhered thereto is then brought into position by the fastening elements 16 and, since the mat of glass fibers would normally extend beyond the rear of the speaker the latter is placed under compression by the resilience of the fiber mat.

In some instances where the housing can be made weather tight between halves, it is sufficient that the plastic, acoustically transparent protective member merely extend as a film across the front of the speaker cone. Such a construction is shown in Fig. 4. In this form of the invention the plastic sheet is designated 52 and is adhered to the resilient gasket member 34 which is carried by the frame of the loud speaker. The protective sheet or film 52 extends continuously across the openings formed by the louvres in the front of the housing and since it is pressed against the interior of the front over the ridges 21, completely seals the openings against the admission of water or other foreign matter.

Fig. 5 shows an additional modification of the invention by which the loud speaker is held in place by a resilient member 60 bonded or otherwise adhered to the

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inside of the rear housing member and having a height such that its acts against the rear of the loud speaker to force it into place with respect to the front housing section when the parts are assembled. A mat of glass fibers or other acoustic absorbing material may be used with this form or omitted. It has been found in practice that the acoustic absorbing mat of fibers greatly improves the acoustic properties of the small loud speakers used in outdoor theater installations since such speakers have various high frequency resonant points that can be reduced or flattened by the use of the absorbent material.

While the invention has been disclosed in conjunction with a particular form of housing and disposition of the parts it should be expressly understood that this disclosure is for purposes of illustration only and that the invention is not limited thereto but may take other forms within the scope of the appended claims.

What I claim is:

1. Means for mounting and protecting a loud speaker or the like comprising, a housing having openings therein for the passage of sound waves originating in said speaker, said housing comprising front and rear portions, means to fasten the front and rear housing portions together, a loud speaker disposed within said housing, a compressible mass of fibrous material interposed between the rear of said speaker and the interior rear wall of said housing, said fibrous material being compressed by engagement with said speaker to urge the latter against the front of

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said housing, a water-impervious, acoustically transparent film across at least the entire front of said speaker to cover said openings, and means to retain said speaker and film against vertical and lateral movement relative to the front wall of said housing.

2. Means for mounting and protecting a loud speaker or the like comprising, a housing having openings therein for the passage of sound waves originating in said speaker, said housing comprising front and rear portions, means to fasten the front and rear housing portions together, a loud speaker disposed within said housing, means to mount said speaker resiliently against the front of said housing, resilient means forming the periphery of the front of said speaker, a water-impervious acoustically transparent film adhered to said resilient means across the front of said speaker, and means carried by said housing to frictionally engage said last named resilient means and thereby retain said speaker and protective film against vertical and lateral movement relative to the front wall of said housing.

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