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HOUSING FOR ELECTRO-ACOUSTIC APPARATUS

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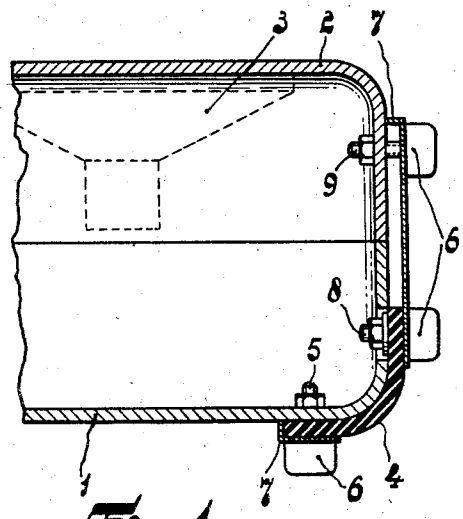

Fig. 1

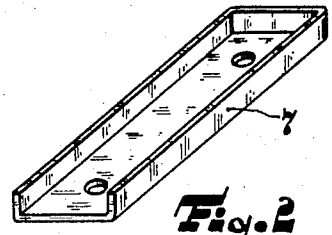

Fig. 2

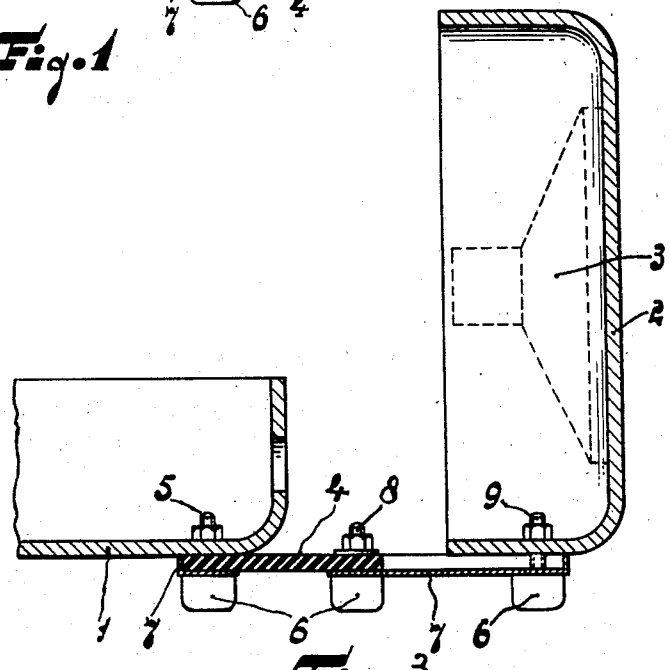

Fig. 3

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HOUSING FOR ELECTRO-ACOUSTIC APPARATUS

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3 Claims. (Cl. 181—31)

This invention relates to housings for electro-acoustic apparatus, more particularly portable amplifiers or the like with incorporated sound-recording and sound-reproducing apparatus. The invention more particularly applies to a portable amplifier incorporating a loudspeaker and a record player, the loudspeaker being fitted to the cover of the housing, the amplifier and the record playing mechanism being installed in the subjacent compartment. Alternatively, the invention may advantageously be used for other electro-acoustic apparatus.

In apparatus of this type the acoustic feedback between the sound-reproducing apparatus and the sound-recording apparatus involves serious difficulties. It will be evident that such a feedback gives rise to self-oscillation of the device as a whole, which may cause whistling, howling and so on and in addition linear distortion of the sound curve of the apparatus.

The present invention has for its object to obviate said difficulties. It is based on the realization that by far the major part of the fed back sounds finds its way in the form of contact vibrations (vibrations in solid bodies) from the reproducing apparatus via the individual parts of the housing to the sound recording apparatus, whereas only a comparatively small part is transmitted through the air.

The invention has the feature that the sound-recording and reproducing apparatus are secured to different parts of the housing, more particularly to the cover and to the lower part of the housing, respectively, which parts are linked together in a collapsible manner through elastic hinging bands by which the sound is entirely or substantially entirely damped. In this manner, the main sound feedback bath comprises damping means by which said detrimental phenomena are substantially avoided.

The invention may preferably be carried out in such manner that the hinging bands are strong rubber bands, each being connected, directly or indirectly and parallel with each other, at one end to the lower part of the housing and at the other end to the cover of the housing. The rubber bands have a sound-damping effect and link the parts of the housing together in the form of hinges.

With such a housing comprising a cover and a lower part the rubber bands may be slightly shorter than corresponds to their attachment to the cover and to the lower part of the housing, respectively. The edge of the cover may be provided with a guide or constructed in such manner that the bands are slightly stretched on closing the cover to ensure a satisfactory safe closure. On the side of the housing opposite the rubber hinges provision is made of a spring-catch or the like so that the cover is firmly drawn against the lower part of the housing on closing it.

As a rule, such portable amplifiers are constructed in such manner that the loudspeaker is fitted to the cover and is folded up during operation. In this instance the loudspeaker is in the operative condition, the cover constituting in general a substantially perpendicular baffle. With a housing according to the invention it may then be

advisable to use clamping straps for the nuts used for attaching the rubber bands, said straps extending in the direction of the bands and having, for example, a U-profile. However, they do not touch each other and the clamping straps secured to the cover have such a length that the cover carrying the sound-reproducing apparatus can be made to stand sufficiently firmly with its shorter side downwards. In this case, the bands need not be secured to the cover itself, it being sufficient to secure them to the ends of the U-shaped clamping straps adjoining the lower part of the housing.

In order that the invention may be readily carried into effect, it will now be described with reference to the accompanying drawing, in which:

Fig. 1 is a cross-sectional view of an embodiment of the housing of the present invention in closed condition;

Fig. 2 is a perspective view of an embodiment of a clamping strap which may be utilized in Figs. 1 or 2; and

Fig. 3 is a view of the housing of Fig. 1 in opened condition.

The housing shown in Fig. 1 comprises a lower part 1 and a cover 2 fitting on the lower part and carrying a loudspeaker 3. Since the sound-reproducing apparatus installed in the lower part of the housing does not form part of the invention, it is not shown in the drawing. The lower part 1 and the cover 2 are linked together through rubber bands 4, of which only one is visible in the drawing, the other(s) being located behind the band 4. Each rubber strip 4 is secured to the lower part 1 by means of a bolt 5 which may have a rubber foot 6, a clamping strap 7 of U-shaped cross-section distributing the pressure exerted by the bolt 5 evenly over the rubber. The rubber strips 4 are secured to the cover 2 in exactly the same manner, but in this case the clamping strap 7 is much longer. In Fig. 2, the clamping strap 7 is shown in perspective. Bolts 8 and 9, which may comprise similar rubber feet 6 serve to secure the rubber strip 4 to the strap 7 and to secure the latter to the cover 2. When the cover is folded down the nut of the bolt 8 rests in a corresponding bore of the lower part 1 of the housing.

When the cover is opened up, the housing shown in Fig. 1 looks as shown in Fig. 3. As shown in the drawing, the length of the strap 7 secured to the cover 2 is so chosen, that the center of gravity of the cover with the loudspeaker secured thereto is about centrally above the bolts 8 and 9. In this manner, the opened up cover remains erect and, moreover, the sound waves emitted by the loudspeaker 3 cannot be transmitted as contact vibrations to the lower part 1 of the housing, since both parts of the housing are linked together by the rubber bands 4 damping the sound substantially entirely instead of transmitting them. In this manner, acoustic feedback through contact vibrations is ruled out. Transmission of such vibrations to the base of the apparatus is also ruled out, since this is prevented by the rubber feet 6.

While the invention has been described by means of a specific example and in a specific embodiment, I do not wish to be limited thereto, for obvious modifications will occur to those skilled in the art without departing from the spirit and scope of the invention.

What I claim is:

1. A housing for at least one amplifier and an associated loudspeaker comprising a receptacle for said amplifier having an opening in the top thereof, a cover fitting over said receptacle, said cover having said loudspeaker mounted thereon, and at least one elastic band operatively connected at one end to said cover and secured at the other end to the bottom of said receptacle, said cover in the closed position thereof forming a closure for said receptacle and in the open position thereof being vertically disposed relative to said receptacle and acous-

tically separated from said receptacle and supported on a side thereof and a U-shaped clamping strap enclosing a portion of said elastic band and provided with a plurality of foot members for supporting said cover in its open position.

2. A housing for at least one amplifier and an associated loudspeaker comprising a receptacle for said amplifier having an opening in the top thereof, a cover fitting over said receptacle, said cover having said loudspeaker mounted thereon, and at least one elastic band operatively connected at one end to said cover and secured at the other end to the bottom of said receptacle, said cover in the closed position thereof forming a closure for said receptacle and in the open position thereof being vertically disposed relative to said receptacle and acoustically separated from said receptacle and supported on a side thereof, said elastic band being substantially horizontally disposed when said cover is in said open position, and a U-shaped clamping strap enclosing a portion of said elastic band and provided with a plurality of foot members for supporting said cover in its open position.

3. A housing for at least one amplifier and an associated loudspeaker comprising a receptacle for said amplifier having an opening in the top thereof, a cover fitting over said receptacle, said cover having said loudspeaker mounted thereon, and at least one elastic band operatively connected at one end to said cover and secured at the other end to the bottom of said receptacle, said cover in the closed position thereof forming a closure for said receptacle and in the open position thereof being vertically disposed relative to said receptacle and acoustically separated from said receptacle and supported on a side thereof, said elastic band being substantially horizontally disposed when said cover is in said open position, and a U-shaped clamping strap enclosing a portion of said elastic band and provided with a plurality of foot members for supporting said cover in its open position, said U-shaped clamping strap being secured to the said cover to support the said cover in said open position.

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