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F. FREIMANN ET AL

2,078,321

LOUDSPEAKER MOUNTING

Filed May 22, 1935

Fig. 1.

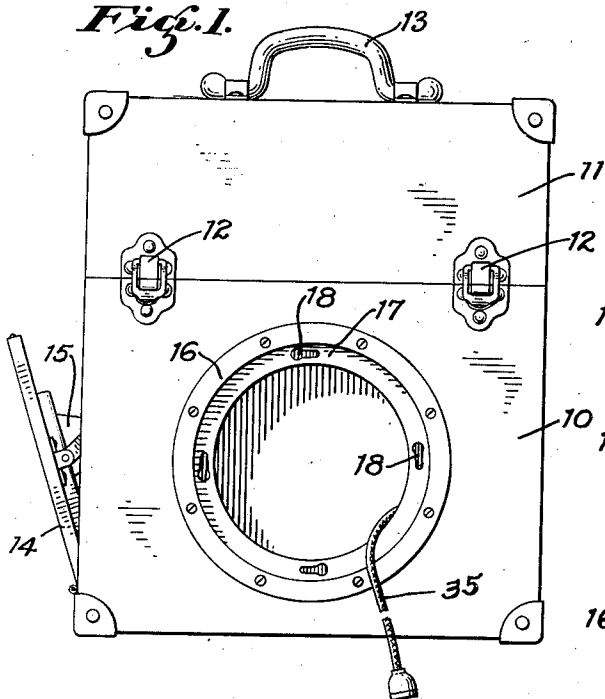


Fig. 2.

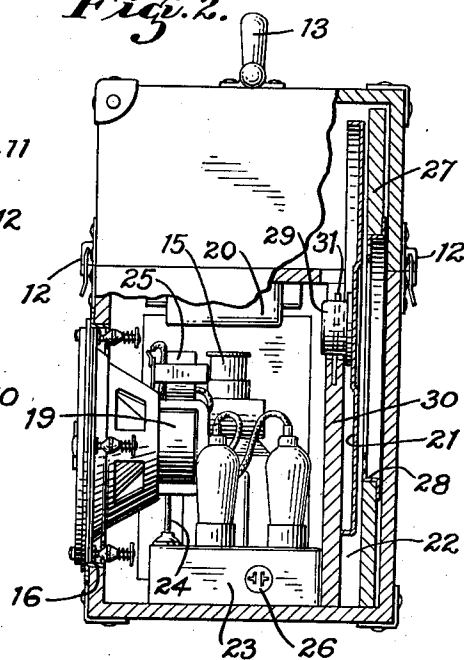


Fig. 3.

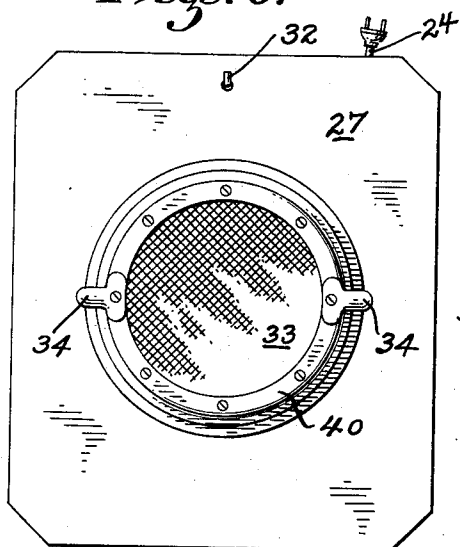


Fig. 4.

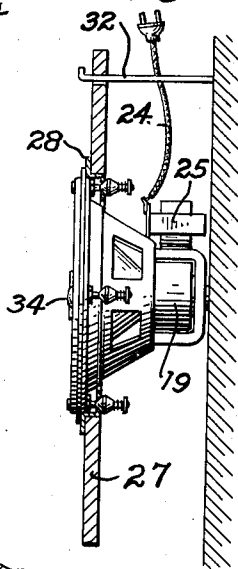


Fig. 5.

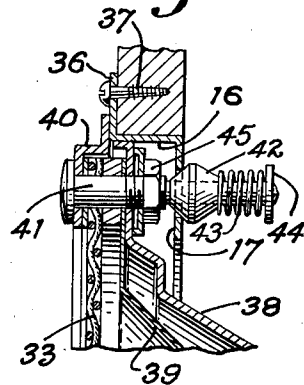


Fig. 6.

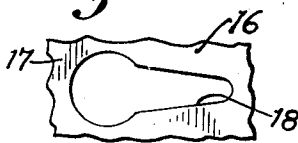
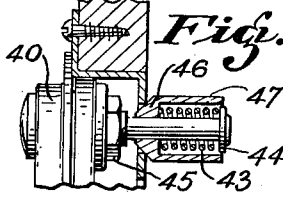


Fig. 7.



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LOUDSPEAKER MOUNTING

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Application May 22, 1935, Serial No. 22,887

6 Claims. (Cl. 179—146)

The present invention relates to sound reproducing apparatus and more particularly to an improvement for use in connection with portable sound reproducing apparatus that will provide a convenient mounting for a loud speaker of electrodynamic type and permit the use of the loud speaker under different conditions of operation with a minimum of inconvenience.

An object of the invention is to provide a new and novel arrangement for the mounting of a loud speaker whereby the speaker may be conveniently transferred from one mounting to another without the use of any special tools or the like.

Another object of the invention is to provide in conjunction with a portable sound reproducing device employing an electrodynamic loud speaker, means whereby the loud speaker may be operated as a part of the portable device or detached therefrom and operated at a point remote from the remaining apparatus of the sound reproducing device.

A further object of the invention is to provide a novel form of securing means for attaching a loud speaker of the electrodynamic type to a suitable baffle and firmly holding the loud speaker against displacement when in operation.

Other objects and advantages of the invention will be in part evident to those skilled in the art to which this invention pertains and in part pointed out in the description to follow.

In the art to which the invention relates it has been the practice to mount a loud speaker directly upon the cabinet or carrying case in which the sound reproducing apparatus is contained and where picture projecting apparatus is associated with the sound reproducing apparatus, as is contemplated by this invention, it often happens that the operation of the loud speaker upon the carrying case adjacent the picture projecting apparatus is not practicable. With apparatus of this character it is necessary that the picture projecting apparatus be placed out in front of a screen and consequently when the loud speaker is mounted on the carrying case adjacent the picture projecting apparatus, it must necessarily propagate the voice and/or musical program from this point. The most convenient place for the mounting of such a loud speaker upon a carrying case is at one side of the axis of the picture projecting apparatus and, therefore, unless the pictures are projected from a position at one side of the room a large part of the audience will not be in a position to properly hear the sound program. For a natural

and pleasing effect the loud speaker should be placed in front of the audience adjacent the screen and, therefore, in carrying out the present invention we have provided a novel form of mounting for a loud speaker that will permit its convenient detachment from the carrying case and its attachment to a suitable baffle forming member which can be placed in front of the audience or at any other convenient or desired point within the room or auditorium where an illustrated sound program is to be rendered.

For a better understanding of the invention, reference should be had to the accompanying drawing wherein there is shown, by way of illustration and not of limitation, a preferred embodiment thereof.

In the drawing wherein like numerals refer to like parts throughout the several views—

Figure 1 is a side elevation of a convenient form of carrying case having a loud speaker aperture in one of its sides and with the loud speaker removed,

Figure 2 is an end elevation of the carrying case illustrated in Figure 1, with parts broken away to show the interior arrangement of the apparatus carried thereby,

Figure 3 is a front view of an independent baffle forming member with a loud speaker constructed in accordance with this invention mounted thereupon,

Figure 4 is a side elevation partially in section showing the manner of mounting the loud speaker upon the baffle forming member illustrated in Figure 3 of the drawing.

Figure 5 is a substantially full-sized view showing the details of the loud speaker securing means contemplated by this invention,

Figure 6 is a fragmentary view showing the configuration of a preferred form of keyhole slots provided upon the loud speaker supporting ring, and

Figure 7 is a view similar to Figure 5 showing a modified form of loud speaker securing means.

In the drawing we have, by way of illustration, shown a carrying case for apparatus of the character disclosed in a co-pending application, entitled Carrying case, filed August 18, 1934, by Frank Freimann, and identified by Serial Number 740,448.

The carrying case, designated by the numeral 10, is shown as provided with a removeable cover 11 which is adapted to be secured upon the case 10 by means of a plurality of snap clasps 12. When the cover 11 is thus secured upon the case 10 the apparatus can be carried by means of a

grip 13. At one end of the case there is a hinged panel 14 upon which is mounted a suitable picture projecting lantern 15. In the side of the carrying case 10 there is formed an aperture for the installation of a loud speaker. As shown in the drawing, the aperture in the side of the case 10 is provided with a loud speaker supporting ring 16. The ring 16 has a recessed inwardly disposed flange 17 having a plurality of keyhole slots 18, the function of which will be described hereinafter.

In Figure 2 of the drawing the carrying case 10 is shown as having a loud speaker 19 mounted upon the ring 16 that outlines the aperture in the side thereof. As disclosed in the aforementioned co-pending application, the carrying case 10 contains a motor mechanism 20 that is adapted to support and drive a sound record supporting platen 21 which, in this figure of the drawing, is shown as removed and positioned within a suitable compartment 22 at one side of the carrying case.

For convenience and ease in handling, the carrying case 10 is made long and relatively narrow. Therefore, when the apparatus is adapted to the reproduction of programs from a twelve or fourteen inch sound record, the platen 21 will have a diameter greater than the width of the carrying case and it is for this reason that provision must be made for the removal and carrying of the record supporting platen 21. This is accomplished, as illustrated in the drawing, by placing the platen 21 edgewise in the compartment 22. Below the motor mechanism 20, and within the carrying case 10, there is a suitable thermionic tube amplifier 23 for amplifying the electromagnetic currents generated by an electromagnetic pick-up device (not shown) which engages the sound record as is well understood. The output of the amplifier 23 is connected through a detachable plug and lead 24 to an input transformer 25 carried by the loud speaker 19. Upon the base of the thermionic amplifier 23 there is a suitable plug receptacle 26 through which current can be supplied to the apparatus from any convenient source of power. In this figure of the drawing and disposed within the compartment 22, there is also shown a separate baffle forming member 27 having a central aperture with a loud speaker supporting ring 28 which is in every respect similar to the loud speaker supporting ring 16 previously described as mounted within the aperture provided in the side wall of the carrying case 10.

Before proceeding further with the description of this invention, attention is directed to the manner of supporting the sound record platen 21 within the compartment 22. As here shown, the sound record platen 21 has a central hub 29 with a transversely extending hole therethrough, and in a notch upon a wall 30 of the compartment 22 there is a pin 31 that is adapted to project through the transversely extending hole in the hub 29 of the sound record supporting platen 21. This feature is to form the subject matter of another application to be filed by the applicants.

In Figures 3 and 4 of the drawing, the baffle forming member 27 is shown as suspended upon a suitable hook 32 and as having a loud speaker 19 mounted thereupon. As illustrated, the loud speaker 19 is protected against damage by a suitable grill 33, and at its sides it has oppositely disposed grip members 34, by means of which it

may be rotated slightly and secured upon the supporting ring 19, as will hereinafter appear. When the loud speaker 19 is detached from the wall of the carrying case 10 and mounted upon the baffle 27, the connecting plug and lead 24 will be withdrawn from the thermionic tube amplifier 23 and then connected to the amplifier through a suitable extension lead 35 that is brought out through the aperture formed by the ring 16 in the side of the carrying case, as illustrated in Figure 1 of the drawing.

Upon referring to Figure 5 of the drawing, it will be seen that the loud speaker supporting ring 16 has a cylindrical portion from which inwardly projects the keyhole carrying flange 17. At the front of the baffle forming member the ring 16 is provided with an outwardly extending flange 36 through which suitable securing screws 37 extend. The loud speaker 19 has a diaphragm supporting housing 38 within which there is a conical diaphragm 39. Disposed in front of the diaphragm 39 and secured in place by means of a flanged ring 40, is the aforementioned protecting grill 33. As here shown, the diaphragm housing 38 has an outer diameter substantially equal to the inside diameter of the supporting ring 16, and the flanged ring 40 is so proportioned that it will extend slightly over the front of the supporting ring 16. At four equally spaced points about the diaphragm housing 38 there is provided a rearwardly projecting stud 41, that carries means which is adapted to cooperate with the keyhole slots 18 and demountably secure the loud speaker 19 firmly upon the carrying case 10, or upon the separate baffle forming member 27. In its preferred form, this means comprises a button-like member 42 which is biased against the back of the flange 17 by a spring 43, the spring 43 being held upon the stud 41 by a suitable securing washer 44. The studs 41 are shown as secured in place upon the diaphragm housing 38 by means of nuts 45.

The button-like members 42 upon the studs 41 are each provided with a conical keyhole slot engaging portion and in order to provide for a compression of the spring 43 and thus secure a tight attachment of the loud speaker to the baffle forming member the keyhole slots 18 are formed with their sides disposed at a tapering angle, as shown in Figure 6 of the drawing. With the keyhole slots 18 formed in this manner, it will be seen that as the button-like members 42 are moved in the keyhole slots 18 by a slight rotation of the loud speaker 19 they will move along their respective studs 41 and compress the cooperating springs 43. The springs 43 will then function to yieldingly hold the loud speaker 19 firmly upon the carrying case 10 or the baffle 27.

While we have, for the sake of clearness and in order to disclose our invention so that the same can be readily understood, described and illustrated specific devices and arrangements, we desire to have it understood that this invention is not limited to the specific means disclosed, but may be embodied in other ways that will suggest themselves to persons skilled in the art. It is believed that this invention is new and it is desired to claim it so that all such changes as come within the scope of the appended claims are to be considered as part of this invention.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

1. In a demountable support for a sound reproducing loud speaker, the combination of a sound baffle forming member having an aperture

therethrough, a ring outlining the aperture in said baffle forming member having an inwardly projecting flange with a plurality of keyhole slots therein, a loud speaker disposed within said aperture with its sound propagating end in substantial alignment with said baffle forming member, an outwardly extending flange about the periphery of said loud speaker adapted to engage the front of said baffle forming member, and a plurality of yieldingly supported button-like members upon said loud speaker adapted to interlock with the keyhole slots in said ring to secure said loud speaker firmly in cooperating relation with said baffle forming member.

2. A mounting for a loud speaker of the cone-diaphragm type, comprising the combination of a loud speaker having a diaphragm enclosing frame, a baffle forming member having an aperture of a diameter substantially equal to the outer diameter of said diaphragm enclosing frame, a flanged ring having an inwardly disposed flange with a plurality of tapering keyhole slots formed therein, a flange upon said diaphragm enclosing housing, extending outwardly and overlapping said baffle forming member about the periphery of the aperture therein, and a plurality of yieldingly supported and rearwardly projecting members carried by said loud speaker adapted to engage the keyhole slots in the flange about the baffle opening and cooperating with the outwardly extending flange about said diaphragm housing to secure said loud speaker demountably in the opening of said baffle forming member.

3. In a mounting for a loud speaker of the electrodynamic type, the combination of an electrodynamic loud speaker, a sound baffle forming member having an aperture therein for the reception of said electrodynamic loud speaker, a ring disposed about the periphery of the aperture of said baffle forming member having an inwardly projecting flange disposed in the back of the front surface of said baffle forming member, said flange having a plurality of keyhole slots of tapering configuration, an outwardly extending flange about the periphery of said loud speaker adapted to extend over the front of said baffle adjacent the aperture therethrough, a plurality of rearwardly extending studs upon said loud speaker adapted to project through the keyhole slots in the inwardly projecting flange of said ring, and a yielding button-like member upon each of said studs adapted to pass through the large end of said keyhole slots and having a conical end which will engage the tapering portions of the keyhole slots when the loud speaker is turned slightly and thus more firmly secure the loud speaker as it is turned upon said baffle forming member.

4. In a mounting for a loud speaker, the com-

bination of an electrodynamic loud speaker, a baffle forming member having an aperture corresponding to the outer diameter of said loud speaker, a ring secured about the aperture of said baffle forming member having an inwardly disposed flange with a plurality of slots of tapering width, a plurality of rearwardly projecting studs upon said loud speaker adapted to pass through the slots of the inwardly disposed flange on said ring, a button-like member upon each of said studs having a conical end adapted to interlock with said slots, and spring means for biasing the conical end of said button-like members into cooperating relation with said slots to yieldingly secure the loud speaker upon said ring.

5. In a demountable support for securing a loud speaker of the electrodynamic type upon a baffle forming surface, the combination of a baffle having a metallic ring extending about its loud speaker receiving aperture, said ring having a plurality of slots of tapering dimensions extending concentrically around said ring, a loud speaker having an outwardly extending flange adapted to overlie said ring, a plurality of studs upon said loud speaker adapted to extend through the slots in said ring, a slidable button upon each of said studs adapted to pass through the wide end of said slots and having a conical ring engaging end extending toward the flange upon said loud speaker, and a spring between the outer end of said studs and said buttons adapted to exert a yielding force thereupon, whereby said springs will be compressed and hold said buttons in clamping engagement with the narrow end of said slots as the loud speaker is rotated in said ring.

6. In a demountable support for securing a loud speaker of the electrodynamic type upon a baffle forming surface, the combination of a baffle having a metallic ring extending about its loud speaker receiving aperture, said ring having a plurality of slots of tapering dimensions extending concentrically around said ring, a loud speaker having an outwardly extending flange adapted to overlie said ring, a plurality of studs upon said loud speaker adapted to extend through the slots in said ring, a slidable button upon each of said studs adapted to pass through the wide end of said slots and having a conical ring engaging end extending toward the flange upon said loud speaker, a spring between the outer end of said studs and said buttons adapted to exert a yielding force thereupon, and means at the front of said loud speaker for positioning and rotating it upon said ring, whereby said springs will be compressed to secure the loud speaker upon said ring as the conical ends of said buttons are moved into engagement with the sides of said tapering slots.

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