

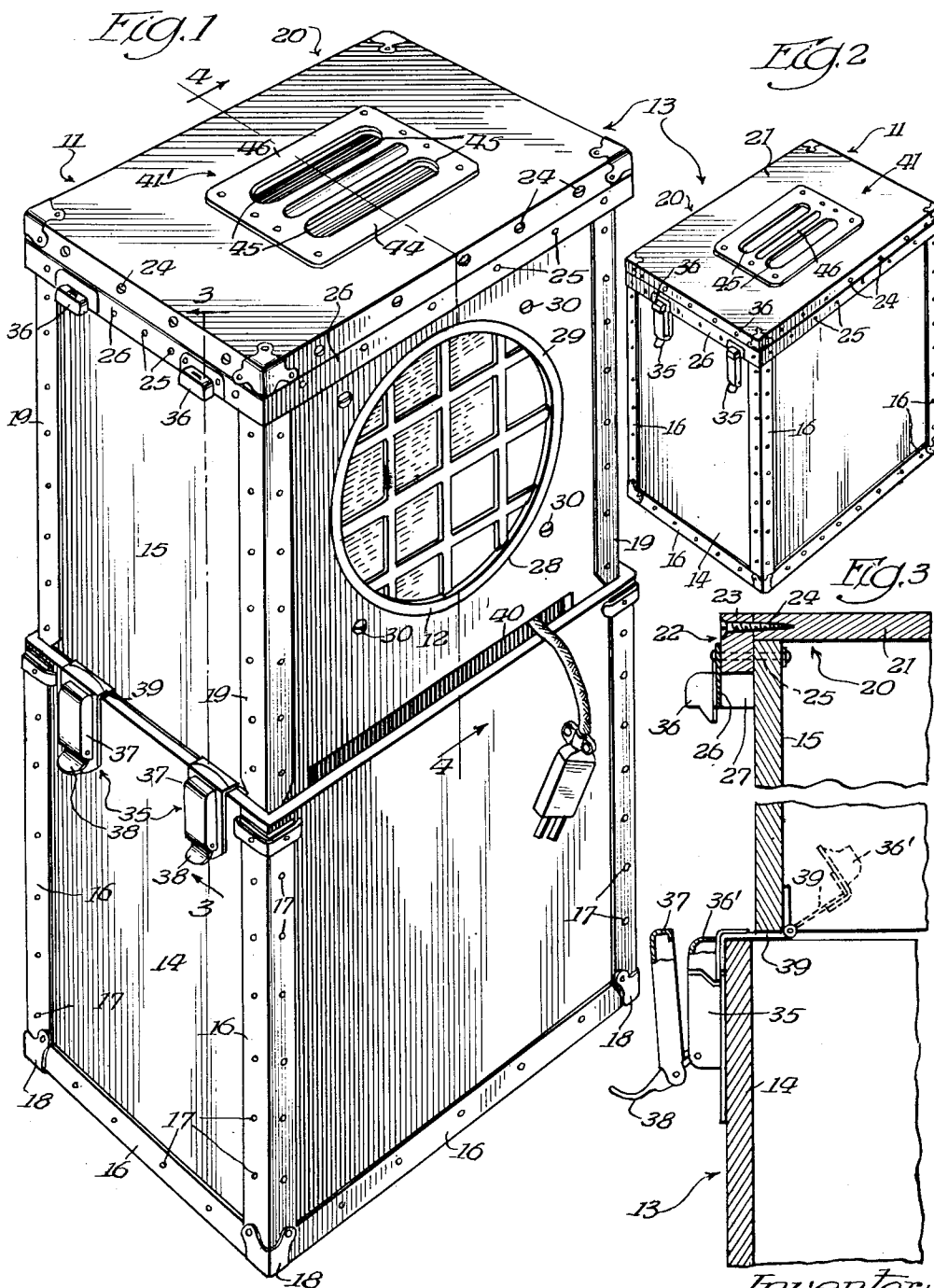
March 18, 1952

R. M. ALBRECHT
PORTABLE SOUNDING DEVICE

2,589,319

Filed Feb. 1, 1946

2 SHEETS—SHEET 1



Inventor:
Richard M. Albrecht
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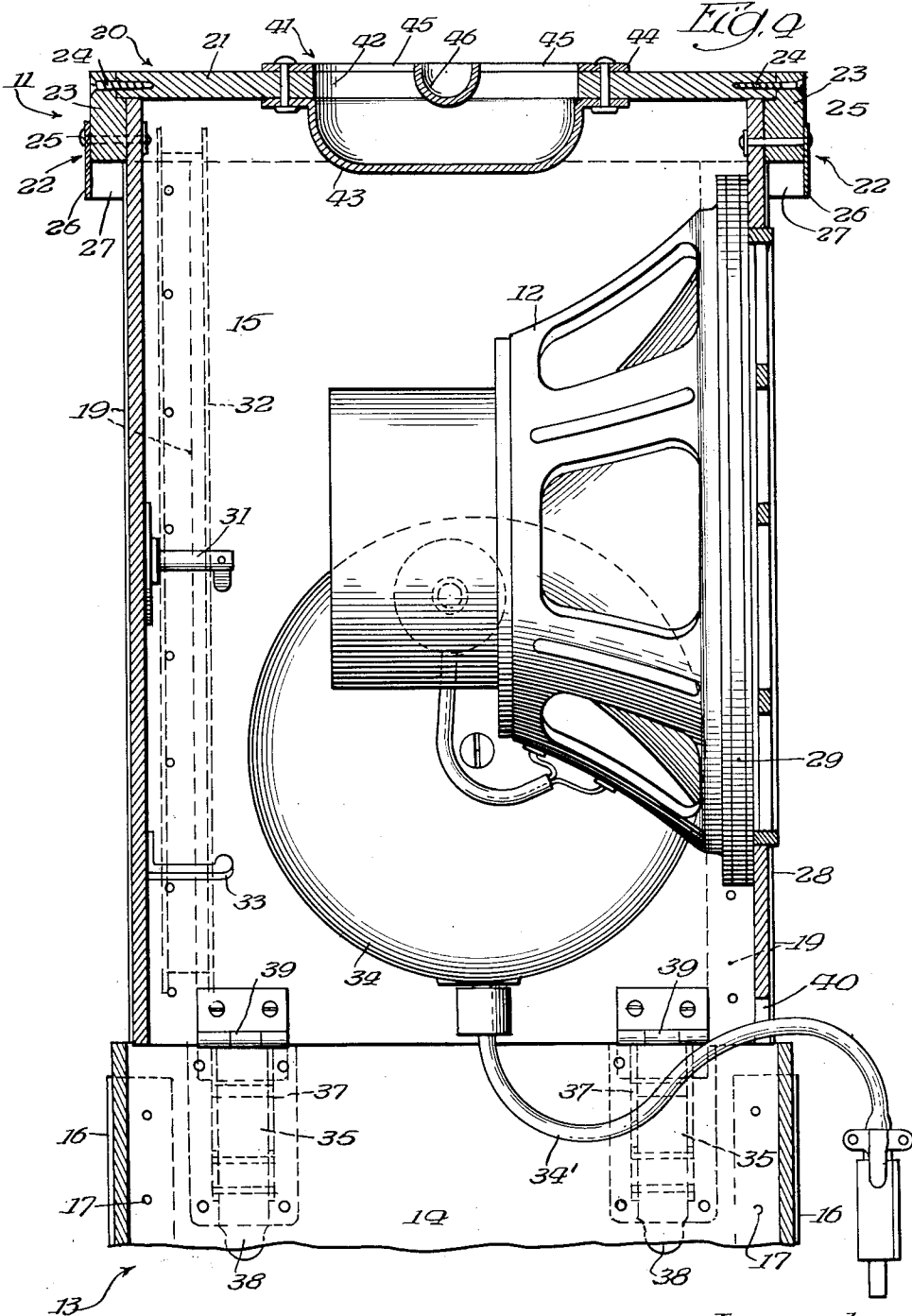
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PORTABLE SOUNDING DEVICE

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The present invention relates in general to sounding devices, and has more particular reference to improved sound reproducing means of the sort commonly referred to as a loud speaker; the invention pertaining especially to a portable loud speaker, particularly well adapted for easy transportation and to be set up for service in any desired location, as in a public address system, or for the reproduction of sound in connection with the display of moving pictures.

Portable sounding devices for use in public address systems, or use with talking pictures, almost of necessity have to be sufficiently light in weight to afford ready portability. As a consequence, such apparatus, because of weight considerations, usually sacrifices quality of sound reproduction through failure to provide adequate baffle means in the sound reproducing device, or else, where adequate baffle means is provided, the device sacrifices ready portability.

An important object of the present invention is to provide a sounding device that is not only exceedingly compact, light in weight, and hence readily portable, but also provides for the accurate and complete reproduction sound components; a further object being to provide a portable sound reproducer affording adequate baffle means, whereby to enable sounds to be completely re-created or reproduced.

Another important object of the present invention is to provide a sound reproducer or loud speaker comprising a sounding unit mounted in a collapsible container, whereby the container may be collapsed or folded together to form a neat carrying case for the transportation of the device, the case, when in expanded condition, serving to provide an improved resonant sounding box or baffle, whereby to improve the reproduction of sound, including overtones, particularly in the lower registers.

Another important object is to provide a collapsible sounding device which, when set up for use as a loud speaker, will provide adequate sound baffle means adapted, in conjunction with the reproducing unit of the device, to provide mellow, full bodied sound reproduction, including substantially all of the harmonics and overtones, to the end that sound effects reproduced by the device of the present invention may include all components and nuances of the original.

Another important object is to provide a portable sounding device or loud speaker, comprising a pair of boxes, including an outer box forming a carrying case having an open top, and an inner box mounting a sound reproducing unit

and adapted to fit telescopically within the case and to be received completely therein, the inner box having a top adapted to interfit with the open end of the case to form a cover closure therefor when the inner box is in collapsed position within the case; a further object being to provide latch means for supporting the inner box in projected operating position, on the case, and extending above the open end thereof, whereby the box and case form adequate sound baffle means for the reproducing unit, when in extended position, while the box and case, when in collapsed position, form a compact portable housing for the loud speaker.

Another important object is to provide the top of the inner box with flange means adapted to interfit with the open top of the outer case, whereby, when the parts are in collapsed position, said interfitting flange will serve to form a substantially weather-tight joint with the open end of the case for the substantial weather-proof enclosure of the reproducing unit within the case when the parts are in collapsed position.

Another important object is to provide latch means on the case in position to co-operate with mounting means on the inner box to latch the same in extended position, said latch means being also positioned to latchingly co-operate with keeper means on the top of the inner box to secure the same in collapsed position within the case.

Another important object is to provide a handle on the top of the inner box in position to serve as a carrying handle when the box is latched in collapsed position in the case, said handle serving also to aid in extending the box from the case in adjusting the parts to operating position; a further object being to provide an improved flush handle on the top of the inner box, whereby the upper surface of the device is substantially flat.

Another object is to provide a handle comprising a perforated plate affording a medial handle bar, and adapted to be fastened on an object substantially in the plane of a surface thereof; a further object being to provide an opening in the wall to which the handle is attached, and to provide a bowl-like inner cover at said opening, whereby to close the same while allowing insertion of the hand, or other carrying means, under the medial bar of the handle device.

The foregoing and numerous other important objects, advantages and inherent functions of the invention will become apparent as the same is more fully understood from the following description, which, taken in conjunction with the

accompanying drawings, discloses selected embodiments of the invention for the purpose of demonstrating the same.

Referring to the drawings:

Fig. 1 is a perspective view of a sounding device embodying the present invention, the device being shown in extended operating position;

Fig. 2 is a perspective view of the device in collapsed or closed, easily portable condition;

Fig. 3 is an enlarged sectional view taken substantially along the line 3—3 in Fig. 1; and

Fig. 4 is a sectional view taken substantially along the line 4—4 in Fig. 1.

To illustrate the invention, the drawings show a sounding device 11 comprising a sound reproducing unit 12, mounted in casing means 13 forming sound baffle means for enhancing the sound reproducing characteristics of the unit 12, the casing means 13 being collapsible or foldable, when not in use, to provide a neat and compact carrying case, as shown more particularly in Fig. 2 of the drawings. The casing means 13 is also adjustable to the expanded, operating position, shown in Fig. 1, to provide adequate sound baffle means, when the device is set up for operation.

To these ends, the casing means 13 comprises a pair of box-like elements, including an outer element 14, open at the top and sized to receive the other or inner box element 15, in telescopic fashion, within the case 14. Both of the box elements 14 and 15 are preferably constructed of resonant material, such as plywood, the inner box element 15 being sized to fit snugly and telescopically, yet slidingly, within the outer box element 14, and to be extended therefrom through the open top thereof.

The outer box element or case 14 preferably comprises plywood panels secured together at their meeting edges to form side walls and a bottom wall, the panels being secured together preferably by metallic edge joining and bracing angle members 16, to which the wall forming panels may be riveted or otherwise secured, as by means of the fastening elements 17. Metallic corner bracing and strengthening brackets 18, also, are preferably applied at the lower corners of the case 14, and preferably rubber feet-forming buttons are applied to the panel forming the bottom of the case, preferably adjacent the corners thereof.

The inner box element 15 likewise comprises side walls of resonant material, such as plywood, secured together as by preferably metallic edge joining and bracing angle members 19, the bottom end of the box 15 being open. The upper or top end of the element 15, however, is closed by a cover structure 20, having a central panel portion 21 and a projecting marginal structure 22, which may conveniently be formed by fastening plywood strips 23 to the outer surfaces of the element 15 at the top thereof, said strips 23 being secured to the edges of the top panel 21, as by means of screws 24 at spaced intervals along the marginal edge of said panel, in position overlying and secured to the upper edges of the side wall members, as by rivets or other fastening elements 25. The projecting edge structure 22, also, preferably includes a dependent, preferably sheet metal strip 26 secured to the plywood strip means 23, as by means of the fastening members 25, the dependent strip 26 extending preferably entirely around the top structure 22 and forming a peripheral, downwardly facing pocket 27 at the upper portions of the box element 15, said pocket,

when the elements 14 and 15 are in collapsed, interfitted position, serving to snugly receive the edges of the case 14 at the upper, open end thereof, so that the cover structure 22 may form a weather-proof cover for the case 14.

The sound reproducing element or loud speaker unit 12 is mounted on and supported by the box element 15, the same being preferably secured on a side wall of the element 15 in position opposite an opening 28 formed in such side wall. To this end, the unit 12 is preferably formed with a mounting flange 29, which is fastened to the wall of the element 15, as by means of mounting studs 30 which preferably have countersunk heads exposed on the outwardly facing surfaces of the wall of the element 15 on which the unit 12 is mounted.

As an added convenience, the interior of the box element 15 may be used to enclose auxiliary apparatus or equipment usable in conjunction with the sounding device, or with the apparatus with which the sounding device is adapted to be used. To this end, suitable bracket means may be mounted within the box element 15 in position to support such auxiliary equipment in the space within the element 15 not occupied by the reproducing unit 12. While tools, spare parts, and other equipment may be thus mounted within the element 15 when the sounding device is not in operation, the drawings show a center mounting stud 31 adapted to detachably receive and support a standard moving picture film reel 32, and edge supporting brackets 33 in position to engage and support the edges of a film reel 32 mounted on the stud 31. Also shown mounted on a side wall of the box element 15 is a take-up reel 34 for mounting an extension cable 34' for connecting the speaker unit 12 with sound reproducing equipment, such as a public address system, radio receiver, talking picture apparatus, or other like equipment with which the unit 12 has to be connected when set up for operation.

Co-operating latching means on the case 14 and on the cover structure 22 is provided for securing the box elements 14 and 15 in folded or collapsed, and readily portable condition, such latch means preferably comprising manually operable latches 35 on the case 14 adjacent the upper, open end thereof, and co-operating latch keepers 36 on the top structure 22 in position to be engaged by the latches 35 when the box elements 14 and 15 are in the collapsed position shown in Fig. 2 of the drawings. Each of the latches 35 may comprise a keeper engaging member 37 and a latch operating handle 38 adapted for manual operation, to release the latching member 37 from its co-operating keeper 36, in order thus to release the box member 15 for sliding movement upwardly through the open top of the case 14, and means is provided for supporting the box 15 on the case 14 with the open bottom of the element 15 facing the open top of the case 14, whereby the elements 14 and 15, when in extended position, form a tubular, box-like column affording a resonant columnar sound baffle adapted to co-operate with the unit 12 in order to produce full bodied reproduction of sound, including all components, overtones, and harmonic constituents thereof.

It will be noted that the inner box element 15 may be withdrawn entirely from the case 14 in order to afford access to the film reel 32, or other auxiliary equipment, through the open bottom of the element 15, and also to afford access to the sound reproducing unit 12 to facilitate repair or

replacement thereof. In order to provide for mounting the box element 15 in extended operating position upon the case 14, the box element is provided with foldable supports 39 at the lower open edges thereof, said supports preferably comprising hinges secured on the element 15 at the lower edges thereof, in position to be folded inwardly to inoperative position, as shown in dotted lines in Fig. 3 of the drawings, and to be extended outwardly to operative position, as shown in solid lines in Fig. 3. These supports 39, when in operative position, form outstanding legs adapted to rest upon the edges of the case 14 at the upper, open end thereof, to thereby support the element 15 on the case 14. The hinged supports 39, also, preferably each carry a latch keeper 36', preferably identical to the keepers 36, such latch keepers 36', when the support members 39 are in outwardly extended position, being in co-operative alinement with the latches 35 on the case. Consequently, the latches 35 may be operated to latchingly engage the keepers 36' in order to secure the box element 15 in extended position mounted on and in alinement with the case 14.

The lower edge of the box element 15 is preferably cut away, as at 40, to provide an opening through which the connection cable 34' may conveniently extend from the unit 11, when the same is in operation.

Suitable carrying handle means may be provided, such handle means preferably including a handle structure 41 on the top cover structure of the element 15. It is preferable, also, that the handle structure 41 be formed to preserve the generally flat nature of the top of the device. To this end, the top panel 21 is formed preferably centrally thereof, with a cut-away opening 42, which is closed on the inner side of the panel with a dished closure plate 43. A handle bracket 44 is also secured to the panel member 21 at the opening 42. The bracket 44 preferably comprises a flat plate, the marginal edges of which are secured to the panel 21 at the edges thereof defining the opening 42. Preferably, such edges are secured by and between the marginal edges of the plate 44 and the flanged marginal edges of the closure plate 43, the edges of the plates 43 and 44 being preferably riveted together upon the panel 21 extending therebetween. The plate 44 is provided with a pair of longitudinally extending openings 45, providing a handle bar 46 between said openings. The underside of this bar 46 may be downwardly curved to provide a comfortable hand hold for grasping purposes.

The provision of the handle means 41 at the top of the box element 15 not only provides for carrying the device 11 when in collapsed position for transportation, but also affords convenient grasping means for aiding in extending or drawing the inner box element 15 from collapsed position, and also aids in manipulating the box element 15 when mounting the same in extended position on the case 14. The handle means 41 further provides a convenient handle for grasping the unit, when the parts thereof are latched in extended position, so that the unit may be moved about and placed exactly where desired, after having been set up for operation.

It will be seen from the foregoing that the device provides an exceedingly neat, readily portable package when in collapsed position, such package being substantially weather-proof through the co-operation of the flanged structure 22 with the upper edge of the case 14. The latch means 35, in conjunction with the co-

operating keeper means 36, adequately and firmly secures the parts in collapsed position. The flush handle 41 leaves the top of the package substantially flat, thereby eliminating undesirable projections. The sounding device of the present invention may be quickly and easily set up for operation and latched in operating position through the co-operation of the latching means 35 with the projectable support members 39. When so latched in operating position, the parts may be handled as a unit. The device not only affords an exceedingly compact, handy, and readily portable package for transportation, but such package is strong and rigid, while of relatively light weight, thus facilitating transportation, and, at the same time provides, when set up for operation, adequate resonant sound baffle means, whereby the resulting sound reproduction is substantially true.

It is thought that the invention and its numerous attendant advantages will be understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the scope or spirit of the invention, or sacrificing any of its attendant advantages, the form herein disclosed being a selected embodiment for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. A portable sounding device comprising a sound reproducing unit and a pair of hollow, telescopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide a cover for enclosing the same when said housing members are in relatively collapsed position, said open top carrying case member serving, in cooperation with said open bottom mounting member, to form a hollow columnar sound baffle for said unit when the members are telescopically extended in operating position.

2. A portable sounding device comprising a sound reproducing unit and a pair of hollow, telescopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide a cover for enclosing the same when said housing members are in relatively collapsed position, said open top carrying case member serving, in cooperation with said open bottom mounting member, to form a hollow columnar sound baffle for said unit when the members are telescopically extended in operating position, and means to latch said members in extended operating position and in collapsed position to form a conveniently portable package.

3. A portable sounding device comprising a sound reproducing unit and a pair of hollow, tele-

scopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide a cover for enclosing the same when said housing members are in relatively collapsed position, and means to support the mounting member in extended operating position, on the carrying case member, with the open bottom of the mounting member in alinement with the open top of the carrying case member, whereby said members, in extended position, form a hollow columnar sound baffle for the sound reproducing unit on said mounting member.

4. A portable sounding device comprising a sound reproducing unit and a pair of hollow, telescopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide a cover for enclosing the same when said housing members are in relatively collapsed position, said open top carrying case member serving, in cooperation with said open bottom mounting member, to form a hollow columnar sound baffle for said unit when the members are telescopically extended in operating position, and latching means on said carrying case member, at the open top thereof and operable selectively to latch said mounting member in extended position on and in collapsed position within said carrying case member, whereby said structure may be handled as a unit when in either extended or collapsed condition.

5. A portable sounding device comprising a sound reproducing unit and a pair of hollow, telescopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide a cover for enclosing the same when said housing members are in relatively collapsed position, said open top carrying case member serving, in cooperation with said open bottom mounting member, to form a hollow columnar sound baffle for said unit when the members are telescopically extended in operating position, latch means operable on the carrying case member at the open top thereof, keeper means on the mounting member in position, at the closed top thereof, for latching engagement with said latch means when the members are in relatively collapsed position, and additional keeper means on said mounting member at the open bottom thereof, in position for latching engagement with said

latch means when the members are in relatively extended position.

6. A portable sounding device comprising a sound reproducing unit and a pair of hollow, telescopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide a cover for enclosing the same when said housing members are in relatively collapsed position, said open top carrying case member serving, in cooperation with said open bottom mounting member, to form a hollow columnar sound baffle for said unit when the members are telescopically extended in operating position, latch means operable on the carrying case member at the open top thereof, keeper means on the mounting member in position, at the closed top thereof, for latching engagement with said latch means when the members are in relatively collapsed position, and additional keeper means on said mounting member at the open bottom thereof, in position for latching engagement with said latch means when the members are in relatively extended position, said additional keeper means being retractable inwardly on said mounting member when not in use for latching purposes.

7. A portable sounding device comprising a sound reproducing unit and a pair of hollow, telescopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide a cover for enclosing the same when said housing members are in relatively collapsed position, said open top carrying case member serving, in cooperation with said open bottom mounting member, to form a hollow columnar sound baffle for said unit when the members are telescopically extended in operating position, the closed top of said mounting member having marginal edges formed to interfittingly receive and seal with the edges of said carrying case member, at the open top thereof, when the members are in relatively collapsed position, whereby to form a substantially weatherproof enclosure, within said carrying case member, for the mounting member and the reproducing unit mounted thereon.

8. A portable sounding device comprising a sound reproducing unit and a pair of hollow, telescopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide

a cover for enclosing the same when said housing members are in relatively collapsed position, said open top carrying case member serving, in cooperation with said open bottom mounting member, to form a hollow columnar sound baffle for said unit when the members are telescopically extended in operating position, latching means on said carrying case member and operable selectively to latch said mounting member in extended position on and in collapsed position within the carrying case member, whereby said structure may be handled as a unit when latched in either of said positions, and handle means on said mounting member to facilitate carrying the structure when latched in collapsed position, to aid in moving the mounting member to extended position on the carrying case member, and to provide grasping means for handling the structure when latched in extended position.

9. A portable sounding device comprising a sound reproducing unit and a pair of hollow, telescopically interfitting housing members of resonant material forming a collapsible mounting structure for said reproducing unit, one of said housing members having an open top and forming a carrying case member sized to telescopically receive another of said members, said other member having a lateral wall forming a mounting panel for said reproducing unit and having an open bottom and a closed top formed for interfitting engagement with said open top of the carrying case member whereby to provide a cover for enclosing the same when said housing members are in relatively collapsed position, said open top carrying case member serving, in cooperation with said open bottom mounting member, to form a hollow columnar sound baffle for said unit when the members are telescopically ex-

tended in operating position, latching means on said carrying case member and operable selectively to latch said mounting member in extended position on and in collapsed position within the carrying case member, whereby said structure may be handled as a unit when latched in either of said positions, and handle means on said mounting member to facilitate carrying the structure when latched in collapsed position, to aid in moving the mounting member to extended position on the carrying case member, and to provide grasping means for handling the structure when latched in extended position, said handle comprising a lifting bar mounted on and substantially in the plane of the closed top of the mounting member, and said closed top being formed with a finger receiving cavity therein behind said bar, whereby said top, including said handle provides a substantially flat projectionless surface.

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