Oct. 25, 1932. M. W. SCHELDORF 1,884,280

PORTABLE LOUD SPEAKER

Filed May 28, 1931 2 Sheets-Sheet 1

Fig. 1.

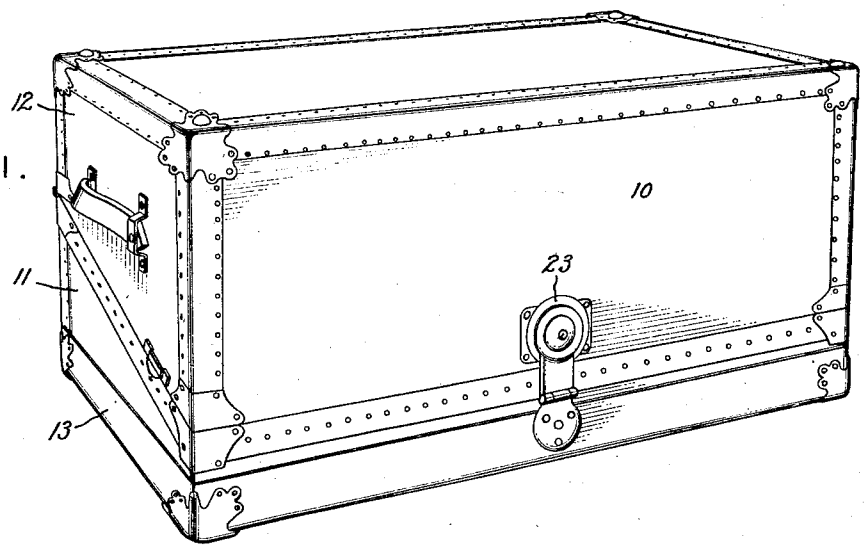
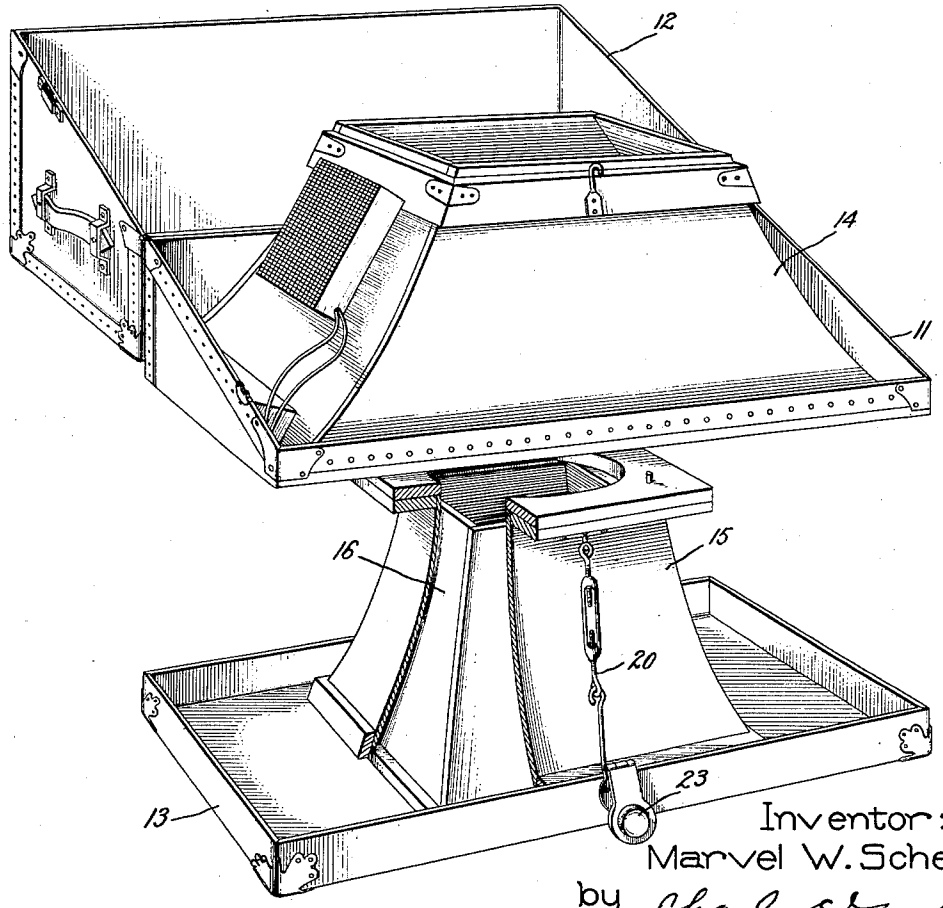


Fig. 2.



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Fig. 3.

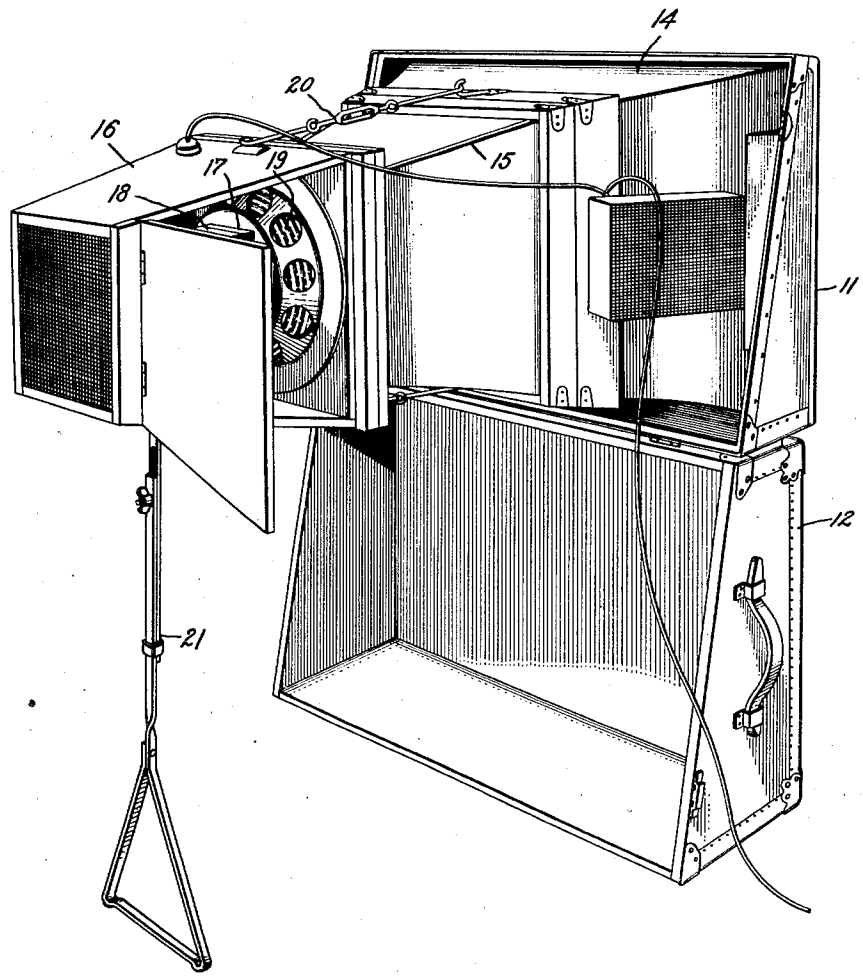
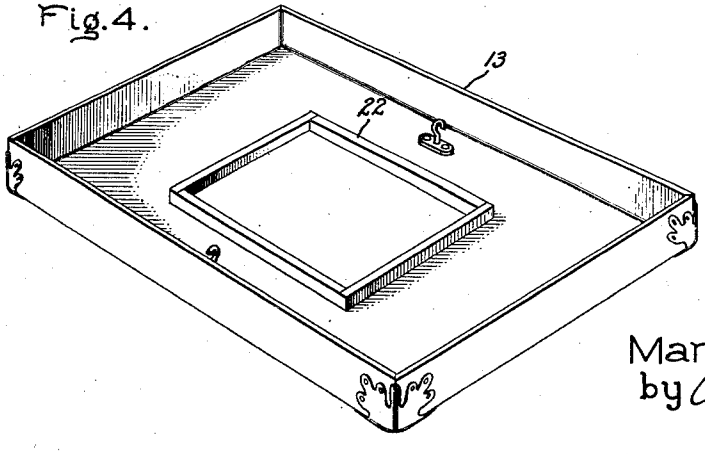


Fig. 4.



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UNITED STATES PATENT OFFICE

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PORTABLE LOUD SPEAKER

Application filed May 28, 1931. Serial No. 540,683.

My invention relates to loud speaker apparatus, more particularly to loud speakers of the auditorium or large diaphragm type having a directional horn-type baffle, and has for its principal object the provision of a high capacity loud speaker of the auditorium type which is readily portable.

It is well known that in order to obtain high quality reproduction of sound over all frequencies in loud speaker apparatus adapted to large volume reproduction, as in auditorium or similar use, it is necessary that the apparatus be relatively bulky, comprising, for example, a large cone diaphragm, a relatively heavy electrodynamic driving unit for actuating the diaphragm, and a directional baffle in the form of a tapered horn extending a considerable distance from the diaphragm and having a wide opening at its bell portion.

In stationary installations, as in motion picture or other theaters, the loud speaker unit including the electrodynamic driver and the diaphragm may be permanently mounted in place and permanently connected to the large horn. In case, however, it is required that loud speaker apparatus of this character be moved frequently from place to place, difficulties are met with due to the bulk of the apparatus when moved in its operative condition. It is desirable therefore that means be provided whereby the apparatus may be arranged for greater ease of handling and safety in transportation.

In accordance with my invention these difficulties are obviated by the provision of a loud speaker apparatus comprising a preferably sectioned horn detachable from the loud speaker unit, and a carrying case associated with the horn and in which the speaker unit and horn are adapted to be compactly enclosed when the apparatus is to be transported.

My invention will be better understood from the following description when considered in connection with the accompanying drawings and its scope will be pointed out in the appended claims.

Referring to the drawings, Fig. 1 is a perspective view of loud speaker apparatus including a carrying case in which operating parts of the apparatus are enclosed for transportation; Fig. 2 is a perspective view of the apparatus shown in Fig. 1 but with the carrying case opened to show a loud speaker housing and horn mounted on portions of the carrying case; Fig. 3 is a perspective view of loud speaker apparatus shown in Fig. 2 assembled in operative position; and Fig. 4 is a perspective view of a closure member of the carrying case.

Referring to Fig. 1, the carrying case 10 in which the operating parts of the apparatus are completely enclosed for transportation may be similar in outside appearance to a suitcase and may comprise a base member or portion 11, a cover member 12 hinged to the base member 11 and a closure member 13 fitted detachably to the lower portion of the base member.

In assembling the apparatus, as shown in Fig. 2, the closure member 13 is removed from the base member 11 and the cover member 12 is opened, exposing a horn, which in the present embodiment of the invention comprises a plurality of sections 14, 15, and a housing 16 in which a loud speaker unit 17 comprising a driving unit 18 and cone 19 is mounted as shown in Fig. 3. It will be noted that the larger section 14 of the horn is preferably permanently connected at its larger end to apertured base member 11, but that the smaller horn section 15 and the loud speaker housing 16 are detachably mounted upon the closure member 13 and held in place during transportation, as by means including eye-bolts 20.

To complete the assembly of the apparatus as shown in Fig. 3, the smaller horn section 15 is removed from its position in the closure member 13 shown in Fig. 2 and fitted to the larger horn section 14; the loud speaker housing 16 is then removed from member 13 and fitted to the small end of the smaller section 15 of the horn; and the born and housing are fastened securely together by means including the above-mentioned eye-bolts 20, which are arranged to extend between the smaller end of the larger horn section 14 and the housing 16.

To provide a base for the assembled apparatus, the cover member 12 is swung around into line with the base member 11, the open end of the horn connected to the latter member 11 thus being elevated a suitable distance when the assembled loud speaker housing and horn are brought to the horizontal position as shown in Fig. 3. The cover and base members 11, 12 are preferably so formed that when the apparatus is in operative position, as shown in Fig. 3, the lower side of the cover forms a relatively wide base for the apparatus. To support the loud speaker housing end of the assembly, a strut 21 is provided which is preferably made adjustable in length in order that the direction of sound from the horn may be changed in the vertical plane when desired, the rigidly connected loud speaker unit and horn swinging about the hinged connection between base member 11 and cover member 12 when the loud speaker unit end of the assembly is raised or lowered by changing the length of the strut.

The resulting assembled structure provides a large capacity loud speaker apparatus of the auditorium type having the high power cone diaphragm and the long and wide directional baffle in the form of a horn required to insure sound reproduction of the required volume and directional characteristics.

To dismantle the assembled loud speaker unit and horn shown in Fig. 3 and to prepare the apparatus for transportation, housing 16 and horn section 15 are first disengaged from horn section 14 and the hinged casing members 11, 12 by removing the bolts 20. Housing 16 is then mounted centrally upon closure member 13, being centered, for example, by strips 22 fastened to member 13. The smaller horn section 15 is next also mounted upon closure member 13, the larger end of this section fitting closely about the larger end of housing 16. Housing 16 and horn section 15 are then locked securely in place by the bolts 20 fastened to the member 13 and to the smaller end of the horn section. The closure member 13 is then placed upon the base member 11, the large horn section 14 fitting over the small section 15. Finally the cover member 12 is closed over the base member 11 and the carrying case is maintained in closed position, as shown in Fig. 1, by any suitable means comprising, for example, lock 23 connected to the cover member 12 and the closure member 13.

It will be seen that in the loud speaker apparatus described herein, the operating parts and carrying case when arranged for transportation form a unit of comparatively small bulk and of size and shape convenient for handling, that one of the horn sections is permanently secured rigidly to the case, and that the housing, in which the loud speaker unit is mounted, and the horn sections are securely nested one within the other. It will be seen further that this unit may be easily, quickly and accurately assembled into its operating form, portions of the carrying case being utilized to form supporting elements for the operating elements.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. The combination of a carrying case and a loud speaker apparatus disposed therein comprising a diaphragm, a driving unit therefor and a horn adapted to be connected at one extremity to said diaphragm and connected at the other extremity to said carrying case, said carrying case forming a support for said speaker apparatus when said apparatus is in operative position.

2. The combination of a carrying case and a loud speaker apparatus disposed therein comprising a diaphragm, a driving unit therefor and a horn adapted to be connected at one extremity to said diaphragm, said carrying case including a member having an aperture formed therein and a member adapted to close said aperture, said horn being connected at its other extremity to said apertured member, said diaphragm and driving unit being mounted upon said closure member, and said carrying case forming a support for the larger extremity of said horn when said apparatus is in operative position.

3. The combination of a carrying case and a loud speaker apparatus disposed therein comprising a supporting member, a cone diaphragm and a driving unit therefor mounted upon said supporting member, and a horn comprising two sections, the larger of said sections being connected at its larger end to said case, the smaller of said sections being enclosed by said larger section, said supporting member and the diaphragm and driving unit mounted thereon being enclosed by said smaller section.

4. A portable loud speaker apparatus capable of assembly into operative position including a receptacle having a base member and a cover member therefor, a loud speaker unit including a diaphragm and driving means therefor, a horn adapted to be connected to said loud speaker unit, said base having an opening therethrough for the passage of sound waves from said diaphragm through said horn, the larger end of said horn being connected to said base member, and a closure member mounted detachably upon said base member, said loud speaker unit being mounted upon said closure member and nested within said horn.

5. A portable loud speaker apparatus capable of assembly into operative position including a supporting member, a loud speaker unit connected to said member including a diaphragm and driving means therefor, a horn connected to said supporting member adjacent to said diaphragm and including two sections, a casing including a casing member

closing the larger end of one of said sections, the other of said sections being mounted upon said casing member and extending within said first-named section, said supporting member being mounted upon said casing member and extending within said second-named section of said horn.

6. A loud speaker apparatus capable of being assembled into operative position including a housing, a diaphragm and a driving unit therefor mounted within said housing, a horn connected to said housing including two sections of different size, a casing connected to and enclosing the larger section of said horn, the smaller section of said horn nesting within said larger section, said housing nesting within said smaller section.

In witness whereof, I have hereunto set my hand.

MARVEL W. SCHELDORF.