

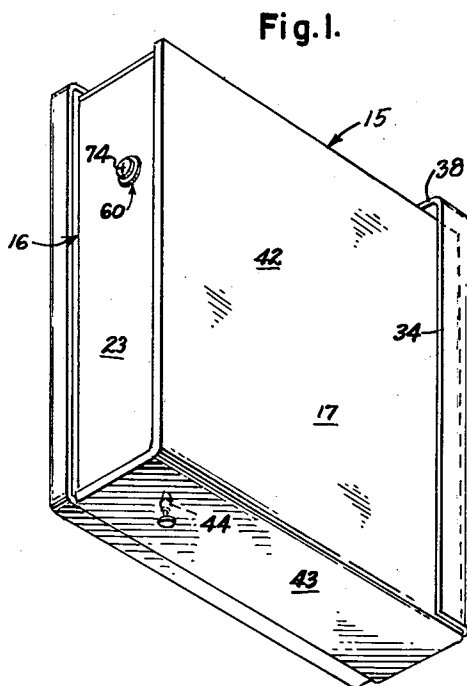
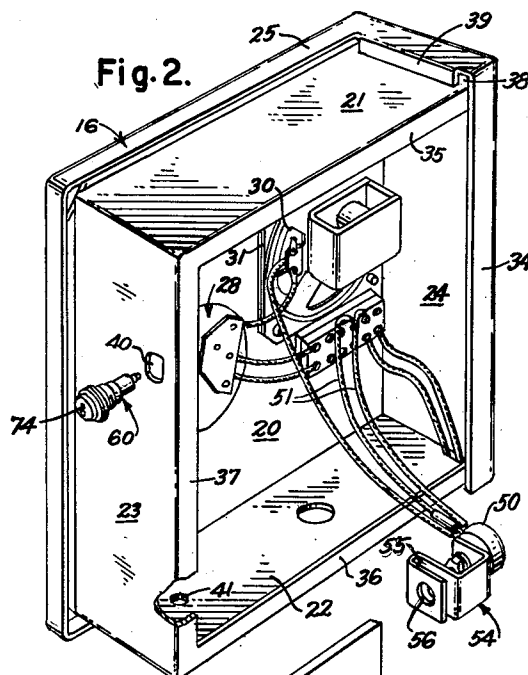
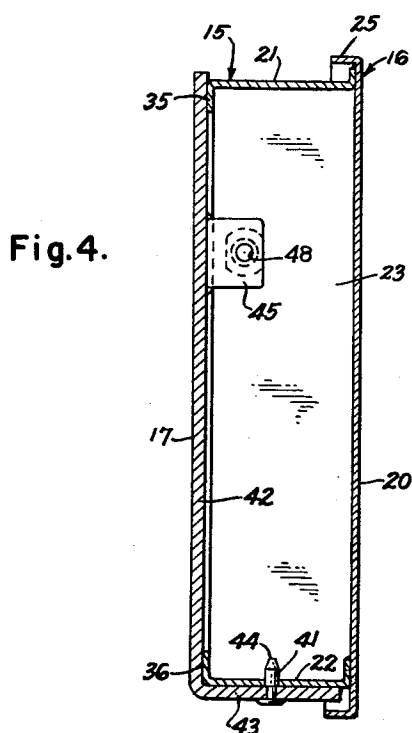
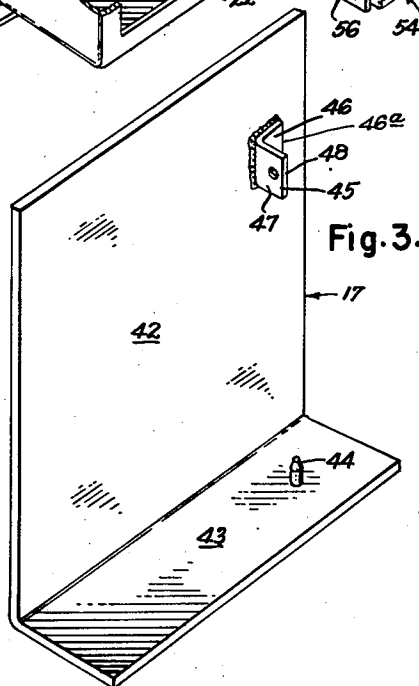
Nov. 13, 1962

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LOUD-SPEAKER ENCLOSURES

3,064,086

Filed Jan. 31, 1961

3 Sheets-Sheet 1



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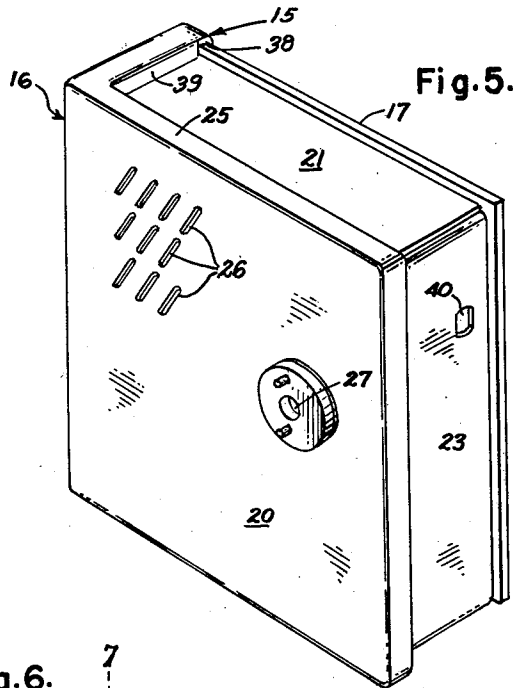
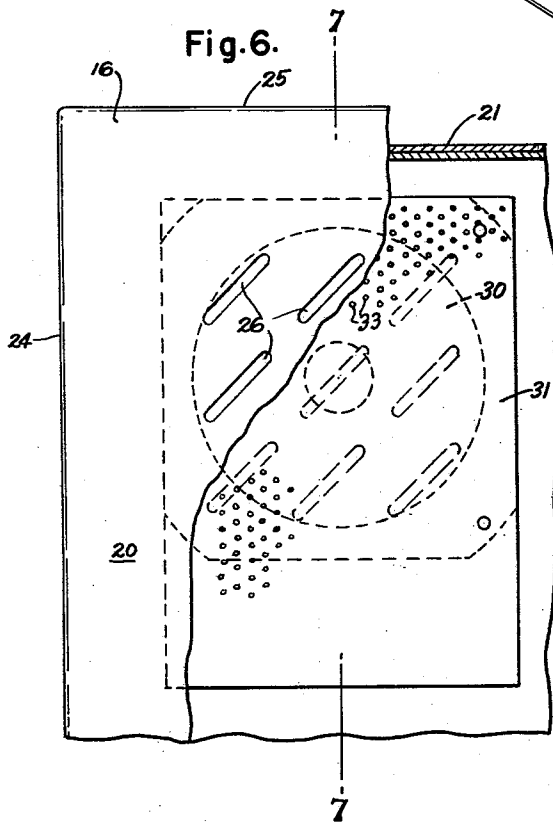
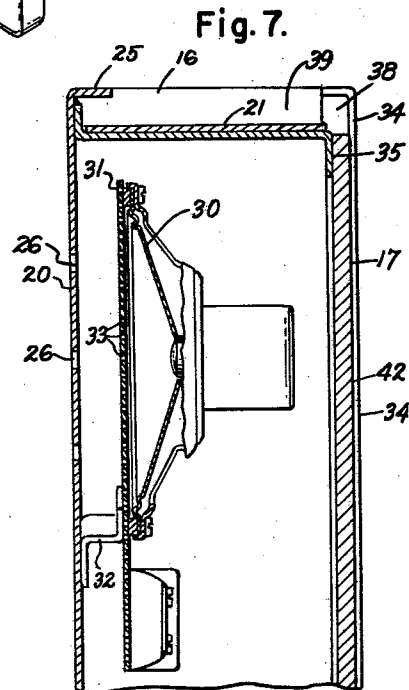
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3 Sheets-Sheet 2



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LOUD-SPEAKER ENCLOSURES

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3 Sheets-Sheet 3

Fig. 8.

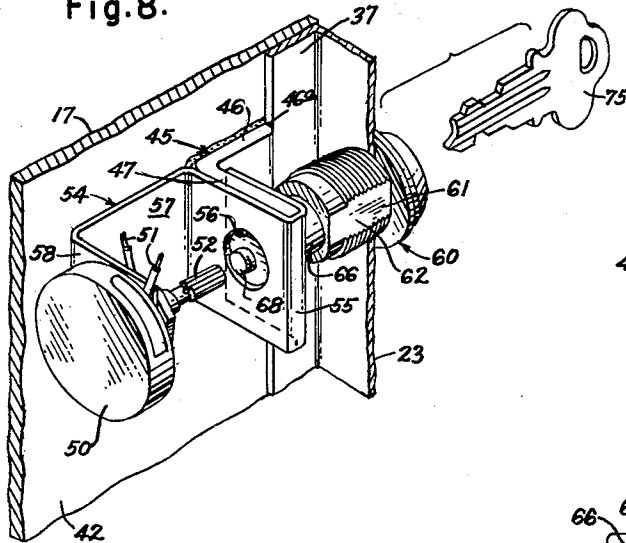


Fig. 11.

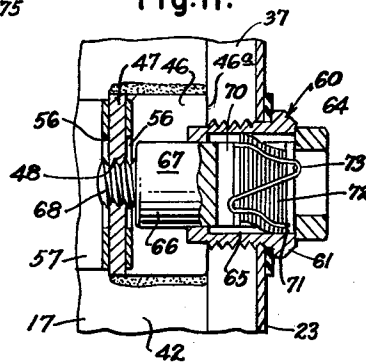


Fig. 9.

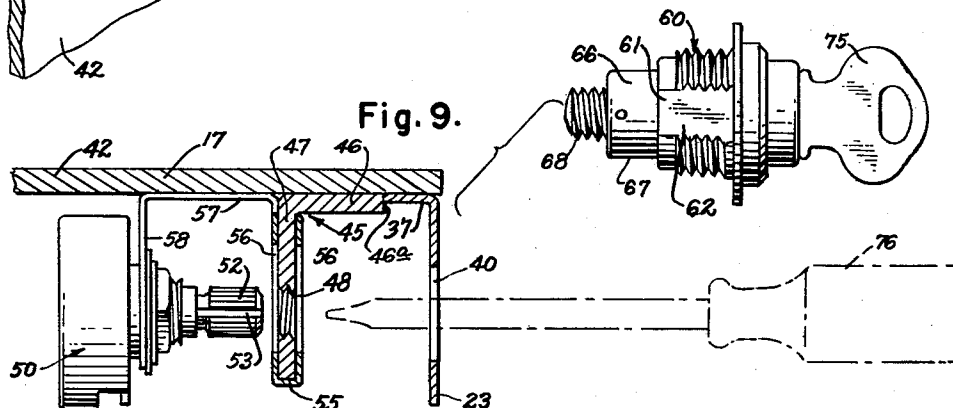


Fig. 10.

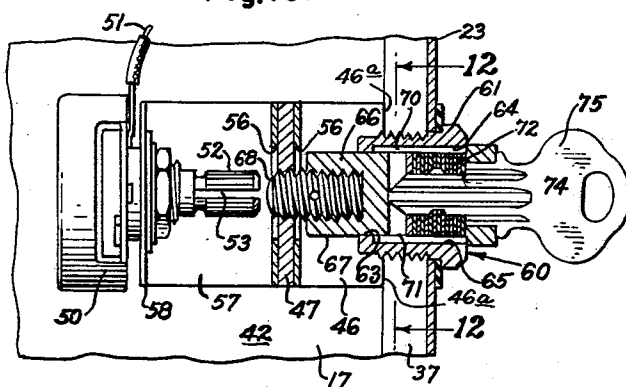
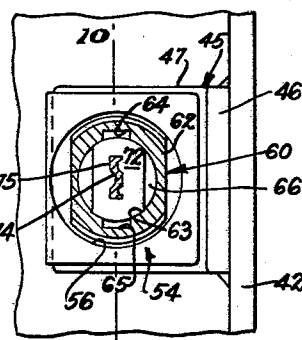


Fig. 12.



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LOUD-SPEAKER ENCLOSURES

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Filed Jan. 31, 1961, Ser. No. 86,184
10 Claims. (Cl. 179-100)

This invention relates to improvements in loud-speaker enclosures. It is particularly applicable to loud-speakers used in conjunction with various exhibits, such as at zoos, play parks, museums, and so on. It relates especially to customer-operated loud-speakers. For example, in one type of loud-speaker, the customer buys a plastic key and inserts it in a lock at each speaker in order to actuate an electrical switch that starts a message-repeater, which then plays a timed program through the loud-speaker, stopping at the end of the specified time. Other types may be coin-operated or push-button operated.

Loud-speakers of this type have to be constructed from rugged materials and be rendered substantially tamper-proof, as they are often used in outside installations. However, it is also desirable to provide for regulation of the volume of the loud-speaker by an attendant and to prevent the customers from regulating it.

One object of the invention is to provide an improved loud-speaker enclosure for use in systems of the kind described.

Another object of the invention is to provide a generally tamper-proof loud-speaker with volume control inaccessible to the general public but easily regulated by an attendant.

Another object of the invention is to provide a loud-speaker enclosure which is locked to prevent access to it from the public but which is readily opened for adjustment, coin removal, replacement of parts, disassembly, or other needed attention.

Other objects and advantages of the invention will appear from the following description of a preferred embodiment thereof.

In the drawings:

FIG. 1 is a view in perspective, looking from the rear and from below, of a loud-speaker enclosure embodying the principles of the invention.

FIG. 2 is a view in perspective from the rear and from above of the enclosure of FIG. 1, with the rear cover plate removed.

FIG. 3 is a view in perspective of the rear cover plate.

FIG. 4 is a view in elevation and in section taken through the assembly of FIG. 1 showing the lock arrangement that locks the enclosure together.

FIG. 5 is a view in perspective of the enclosure, looking from the front and from above.

FIG. 6 is a fragmentary view of a portion of the enclosure and contents, showing a portion of the front wall with a portion cut away to show the speaker mounted behind it.

FIG. 7 is a view in section taken along the line 7-7 in FIG. 6.

FIG. 8 is an enlarged fragmentary view in perspective of the lock arrangement of FIG. 4 and the volume control, showing also the attendant's key about to be inserted.

FIG. 9 is a view in horizontal section of the device of FIG. 6 with the lock and key shown removed and put to one side, illustrating how access to the volume control may be had by a screwdriver, which is shown in broken lines.

FIG. 10 is a fragmentary view in elevation and in vertical section of the matter shown in FIG. 9, with the lock in place and the key in the lock. This view is taken along the line 10-10 in FIG. 12.

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FIG. 11 is a fragmentary view in elevation and in vertical section showing the lock in place with the key removed.

FIG. 12 is a view in elevation and partly in section of the lock of FIG. 11, taken along the line 12-12 in FIG. 10.

The loud-speaker enclosure 15 of this invention includes a box-like receptacle or housing member 16, preferably of steel, which is open at the rear, and a rear cover and base support member 17, also preferably of steel. The box-like member 16 has a front wall 20, a top wall 21, a bottom wall 22, and two side walls 23 and 24. The top wall 21 is a substantially imperforate member which may be spaced down somewhat from the top edges 25 of the front wall 21 and the side wall 24.

The front wall 21 is provided with a series of slots 26 which serve as speaker openings to provide passage of sound therethrough. The front wall 21 also has an opening 27 leading to a customer-operated off-on switch assembly 28; so the opening 27 may be called an actuation opening. Preferably, the assembly 28 is like that shown in my co-pending application Serial No. 89,466, filed February 15, 1961, in which a plastic key (not shown) is inserted in the opening 27 and then turned to actuate the switch assembly 28 to start a message repeater (not shown) that plays a message. The repeater is usually located at a distant location, wires connecting the switch assembly 28 and the speaker 30 to the repeater passing out through the bottom of the enclosure 15, or through an opening (not shown) in the rear cover 17.

The speaker 30 is supported back of the speaker openings 26 on a perforated plate 31 mounted to the wall 20 by a plurality of brackets 32. The purpose of the perforated plate 31 is to prevent people from damaging the loud-speaker 30 by sticking sticks, popsicle handles, and so on into the loud-speaker openings 26; so its perforations 33 are quite small, smaller than the diameter of the openings 26, which are themselves preferably narrow.

The side wall 24 is generally imperforate and has a flange 34 that extends around the edge of the open rear portion at a spaced distance from the bottom wall 22. The walls 21, 22, and 23 also may have short flanges 35, 36, and 37 all level with each other, and the flanges 34, 35 form a notch 38 at the upper end extending up between the flange 34 and a flange 39. The side plate 23 has a lock-receiving opening 40 that will be much discussed later, while the bottom wall 22 has a small keying opening 41 for use in assembly.

The rear cover member 17 is an L-shaped heavy metal member which also acts as a support for the device. It includes a back wall 42 and a base plate 43. The base plate 43 has a stud 44 projecting up therefrom for engagement with the keying opening 41 on the bottom wall 22. The back wall 42 supports a bracket 45, which may be an angle member with one side 46 welded to the inside surface of the wall 42 and with a projecting portion 47 having a threaded opening 48 therethrough. This bracket 48 is so located that its opening 48 is directly in line with the lock-receiving opening 40 and is spaced a desired distance from it when the whole is assembled. The edge 46a provides a positive stop when the unit is assembled and locked, engaging the edge 37 and preventing relative movement between the units 16 and 17 or deformation or bending of any of their parts.

A volume control rheostat 50 connected by suitable wires 51 to the loud-speaker 30 is provided with a volume control shaft or key member 52 having a key or slot 53, which may be like that in the head of an ordinary screw. This volume-control member 50 is mounted upon a

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bracket 54, which is provided with a generally U-shaped slip-over portion 55 having openings 56 therein to fit over the projecting portion 46 of the bracket 45, the holes 56 being in alignment with the threaded opening 47. The bracket 50 also has a spacing portion 57 and a support portion 58 for the volume control, the whole being proportioned so that the volume control key member 52 is located directly back of and in line with the threaded opening 48 of the bracket 45.

A lock 60 is provided to secure the members 16 and 17 together. The lock 60 may comprise a housing member 61 which may be generally tubular with flattened sides 62 that fit into the similar-shaped opening 40 in the side wall 23 to prevent the member 61 from turning. The interior bore 63 of the member 61 is cylindrical except that there are upper and lower keyways 64 and 65 recessed into it at the top and bottom. Within this latch member 61 fits a lock barrel 66 having a cylindrical portion 67 and, at the end opposite the keyhole, a projecting screw stud 68. The barrel 66 is provided with upper and lower openings 70 and 71 through which lock tumblers 72 may project to engage in the keyways 64 and 65 to prevent the barrel 66 from turning relative to the housing 61. A spring 73 normally urges the tumblers 72 outwardly in some pattern to lock the barrel 66 in the housing 61. There is also a keyhole 74.

A key 75, when inserted in the keyhole 74, acts without any turning to retract the tumblers 72 against the pressure of the spring 23 so that they are brought substantially flush with the cylindrical portion 67; then the barrel 66 can be turned in the housing 61. It of course cannot be turned when the key 75 is removed, for the tumblers 72 then go up and engage in the recesses 64 and 65. The barrel portion 66 can be moved when the key 75 is inserted and can be taken out entirely by turning it to unthread the connection between the threaded member 68 and the threaded opening 48. When the key 75 is taken out of an inserted lock, the lock 60 cannot be taken out because the screw stud 68 holds it in place.

When the lock 60 is taken out, the volume control 50 is accessible to anybody having a screw driver 76. Therefore, the operation is such that without the metal key 75, which is quite different from the plastic key used to start the repeater, no one can operate the volume control. Therefore, the operator can set the volume of the speaker without fear of its being tampered with. When the lock 60 is removed, it also becomes possible to take the main member 16 off the support case 17 or vice versa, simply by sliding them a short distance and then lifting the member off. However, when the lock 60 is in place, the enclosure 15 is tamper-proof.

To those skilled in the art to which this invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. The disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

I claim:

1. A loud-speaker assembly, including in combination: a two-piece enclosure comprising a box-like receptacle open at the rear and having a side wall with a lock-receiving opening therethrough, and a closure member having a rear wall that closes said receptacle and a bracket on said rear wall, having an opening therethrough aligned with said lock-receiving opening when said enclosure is assembled; a loud-speaker supported inside said enclosure; volume control means for varying the volume of said speaker supported in line with said bracket opening and on the other side thereof from said lock-receiving opening; lock means insertable in said lock-receiving opening for locking said side wall to said bracket; and a key for unlocking said lock means for enabling removal of said lock means from said lock-receiving opening so that said volume control means can be adjusted through said lock-

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receiving opening and said bracket opening without further disassembly of said enclosure, and also said enclosure can be taken apart if desired.

2. The assembly of claim 1 wherein said receptacle has means engaging said bracket when said enclosure is assembled, preventing further relative movement between the receptacle and the closure member.

3. A loud-speaker assembly, including in combination: a two-piece enclosure comprising (1) a box-like receptacle open at the rear with a front wall having speaker openings therethrough and side walls, one side wall having a lock-receiving opening therethrough, and (2) a closure member having a rear wall that closes the rear of said receptacle, and a bracket on the inside side of said rear wall, having an opening therethrough aligned with said lock-receiving opening when said enclosure is assembled; a loud-speaker supported adjacent said front wall speaker openings; volume control means for varying the volume of said speaker supported in line with said bracket opening and on the other side thereof from said lock-receiving opening; lock means insertable in said lock-receiving opening for locking said side wall to said bracket; and a key for unlocking said lock means for enabling removal of said lock means from said lock-receiving opening so that said volume control means can be adjusted through said lock-receiving opening and said bracket opening without further disassembly of said enclosure, and also said enclosure can be taken apart if desired.

4. The assembly of claim 3 wherein there is a plate supported by said receptacle a spaced distance back of said speaker openings, said loud-speaker being supported by and behind said plate, said plate having small perforations for passage of sound for preventing damage to said loud-speaker by insertion of sticks and the like through said speaker openings.

5. A loud-speaker assembly, including in combination: a two-piece enclosure comprising (1) a box-like receptacle with a front wall having speaker openings therethrough, a top wall, a bottom wall, a first side wall with a lock-receiving opening therethrough, and a second side wall, and open at the rear, and (2) an L-shaped closure member having a base that fits below said bottom wall, a rear wall that closes said receptacle, and a bracket on the inside side of said rear wall, having an opening therethrough aligned with said lock-receiving opening when said enclosure is assembled, said bottom wall and base having interlocking keying members for aligning said two pieces; a loud-speaker supported adjacent said front wall speaker openings; volume control means for varying the volume of said speaker, having a keyed stem; means for supporting said volume control means with said keyed stem in line with said bracket opening and on the other side thereof from said lock-receiving opening; lock means insertable in said lock-receiving opening for locking said first side wall to said bracket; and a key for unlocking said lock means for enabling removal of said lock means from said lock-receiving opening so that said volume control means can be adjusted by rotating said keyed stem through said lock-receiving opening and said bracket opening without further disassembly of said enclosure and also said enclosure can be taken apart if desired.

6. The assembly of claim 5 wherein said bracket is L-shaped with one arm of the L secured to said rear wall and said first side wall has a flange engaging said arm of said bracket.

7. A loud-speaker assembly, including in combination: a two-piece enclosure comprising a box-like receptacle with one open side and with one side wall having a lock-receiving opening therethrough, and a closure member for said open side having an interiorly mounted bracket with an opening therethrough aligned with said lock-receiving opening when said enclosure is assembled; a loud-speaker supported inside said enclosure; volume

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control means for varying the volume of said speaker supported by said bracket in line with said lock-receiving opening; lock means insertable in said lock-receiving opening for locking said bracket to said receptacle; and a key for unlocking said lock means and enabling removal of said lock means from said lock-receiving opening so that said volume control means can be adjusted through said lock-receiving opening and said bracket opening without further disassembly of said enclosure, and also said enclosure can be taken apart if desired.

8. A loud-speaker enclosure including in combination: a box-like receptacle with one side open and a wall adjacent said opening having a lock-receiving opening therethrough; a closure member having a wall that closes said open side, having mounted thereon a bracket with a threaded opening therethrough aligned with said lock-receiving opening when closing said receptacle; loud-speaker volume control means supported in line with said bracket opening and on the other side thereof from said lock-receiving opening; a lock insertable in said lock-receiving opening and having a rotatable portion with threaded projection for insertion into said threaded bracket opening; and a key for unlocking said lock for turning said rotatable portion and for enabling removal of said lock from said lock-receiving opening, whereby when said lock is inserted in said lock-receiving opening and its projection is threaded into said bracket opening said enclosure is locked closed, and when said lock is withdrawn from said lock-receiving opening the volume control means can be actuated without further disassembly of said enclosure and also said enclosure can be taken apart if desired.

9. A loud-speaker enclosure, including in combina-

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tion: a two-piece enclosure comprising a box-like receptacle open at the rear and having a side wall with a lock-receiving opening therethrough, and a closure member having a rear wall that closes said receptacle and a bracket on said rear wall, having an opening there-through aligned with said lock-receiving opening when said enclosure is assembled; volume control means for varying loud-speaker volume of said speaker supported by said bracket in line with said lock-receiving opening; lock means insertable in said lock-receiving opening for locking said side wall to said bracket; and a key for unlocking said lock means for enabling removal of said lock means from said lock-receiving opening so that said volume control means can be adjusted through said lock-receiving opening and said bracket opening without further disassembly of said enclosure, and also said enclosure can be taken apart is desired.

10. A loud-speaker enclosure including in combination: a box-like receptacle with an open portion and a wall having a lock-receiving opening therethrough; a closure member for said open portion having an interiorly mounted bracket with a latching opening there-through aligned with said lock-receiving opening when said closure member closes said receptacle; loud-speaker volume control means supported by said bracket opening and on the other side of said latching opening from said lock-receiving opening; lock means insertable in said lock-receiving opening for securement to said latching opening; and key means for unlocking said lock for enabling its removal, so that the volume control means can be actuated without further disassembly of said enclosure, and also said enclosure can be taken apart if desired.

No references cited.