United States Patent [19]

Hammes

[11] **3,731,760**

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[54] **HIGH SECURITY LOUD SPEAKER BAFFLE**

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[73] Assignee: **Lowe Manufacturing Company,** St. Louis, Mo.

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[52] **U.S. Cl.**.....**181/31 B,** 206/1.5, 220/18, 248/203

[51] **Int. Cl.**.....**G10k 13/00,** H04r 1/28

[58] **Field of Search**.....181/31 B, 31 R; 206/1.5; 220/18, 76; 248/203

[56] **References Cited**

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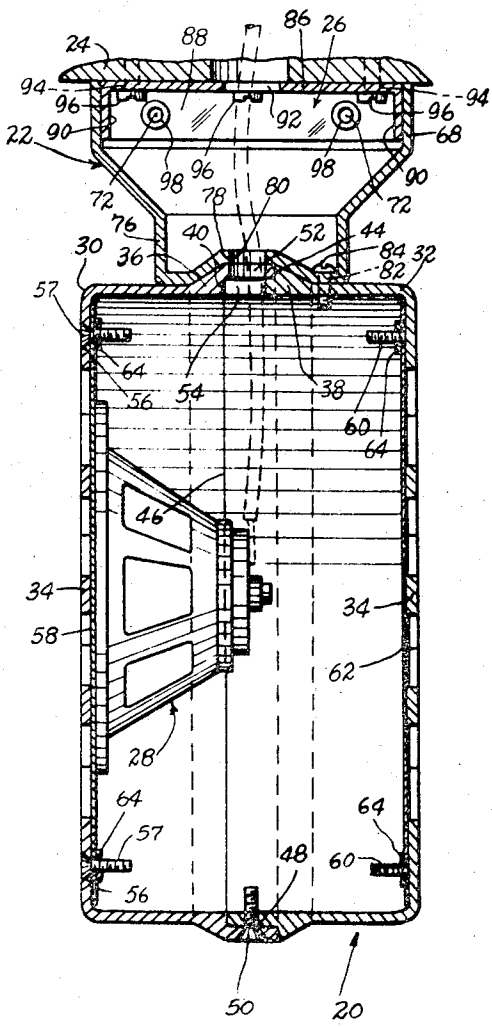
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Primary Examiner—Stephen J. Tomsky
Attorney—Glenn K. Robbins

[57] **ABSTRACT**

A high security loud speaker baffle for use in institutions such as prisons and the like to resist vandalism. The baffle is comprised of a pair of concave castings constituting a hollow baffle receiving a loud speaker. Each of the castings has a rim portion, one of which is exterior and the other interior, interfitting with one another and butting against shoulders. The two interfitted concave castings can be supported within a cradle receiving the rim portion and connected by tamper-proof screws to resist removal. The hollow loud speaker baffle comprised of the interfitted concave castings in addition to being used as a bidirectional baffle with the cradle can be simply employed by connecting one of the castings directly to a wall surface to provide a unidirectional baffle.

9 Claims, 19 Drawing Figures



2 Sheets-Sheet 1

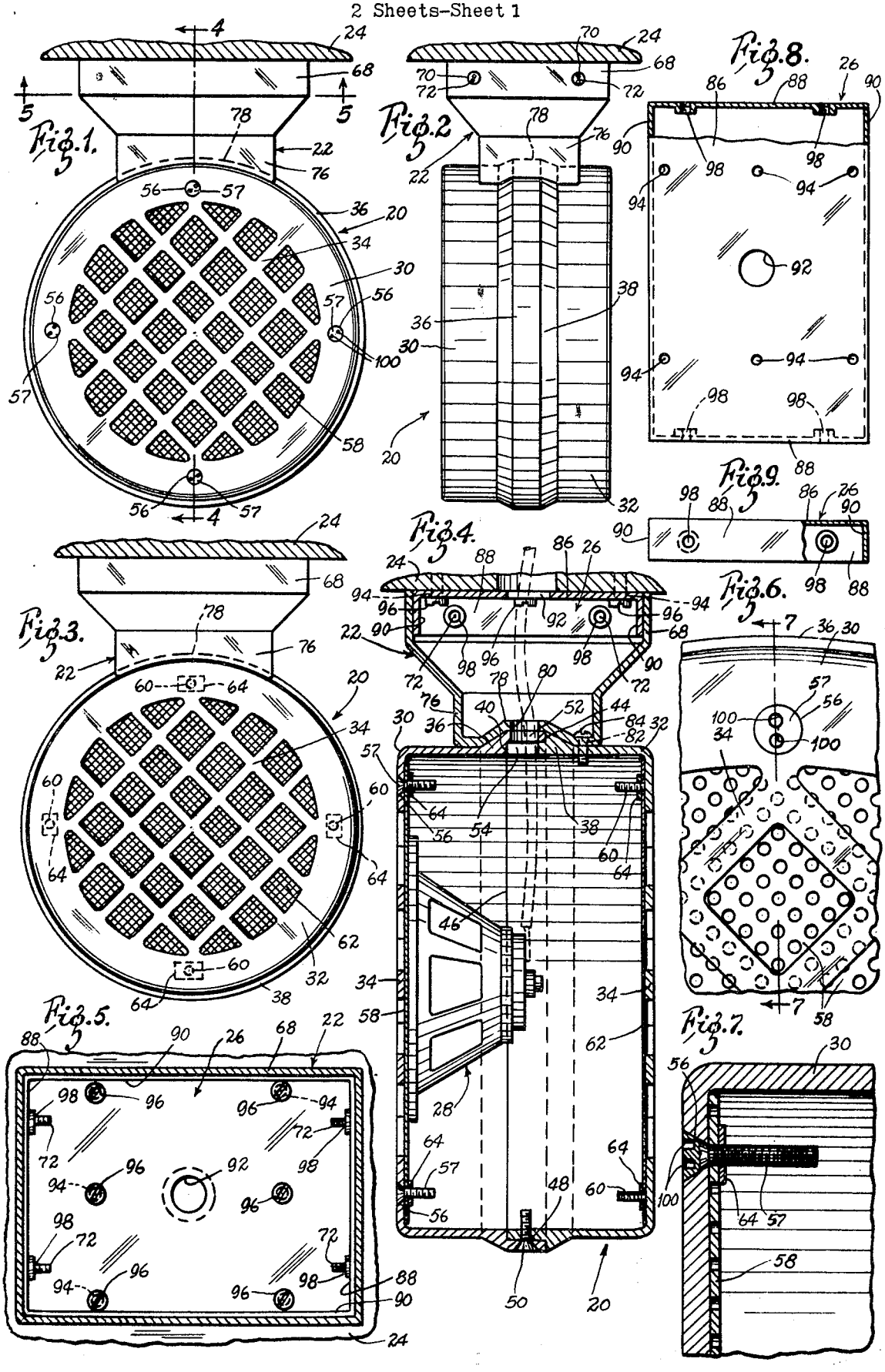


Fig. 10.

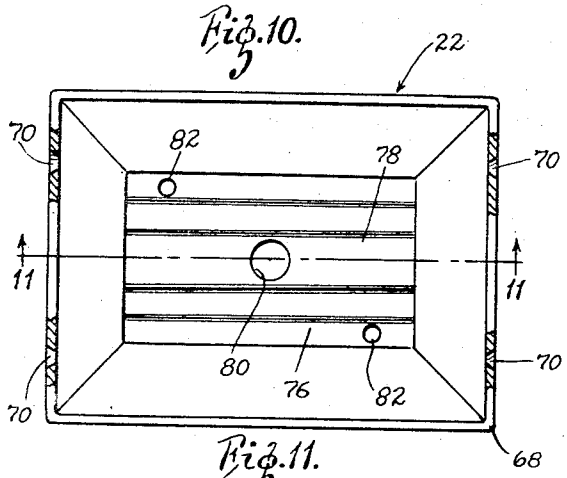


Fig. 11.

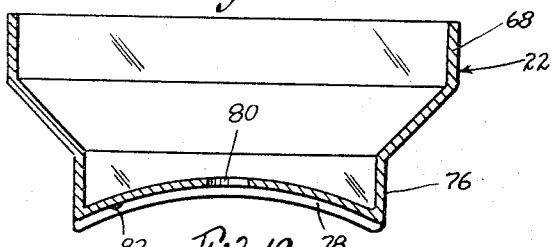


Fig. 12.

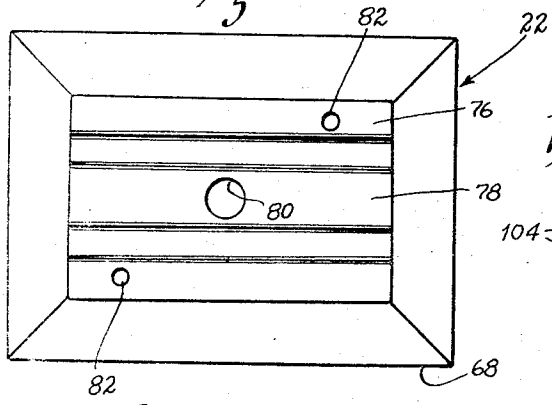


Fig. 13.

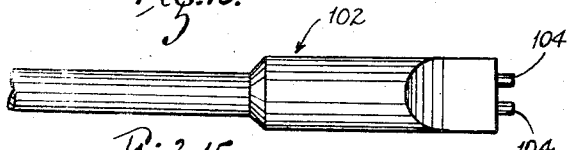
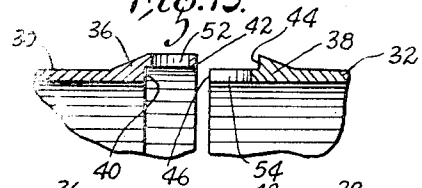


Fig. 15.



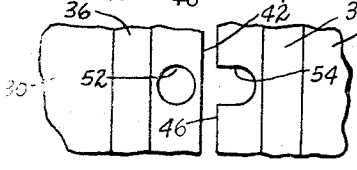


Fig. 16.

Fig. 17.

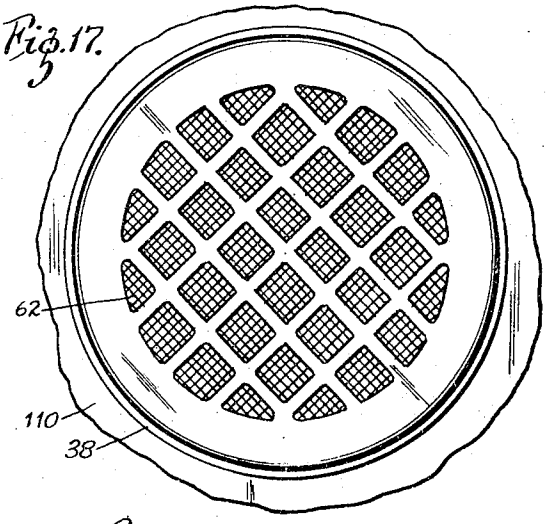


Fig. 18.

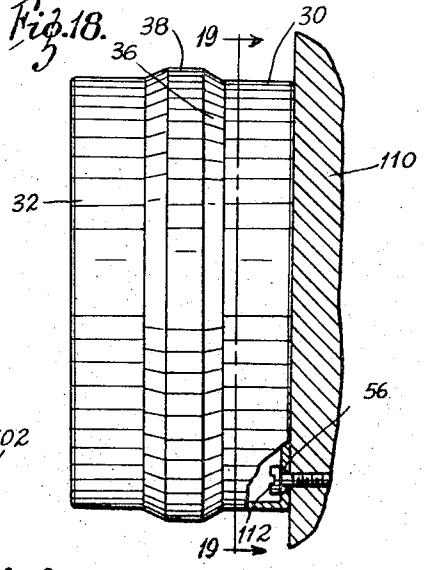


Fig. 14.

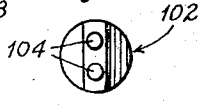
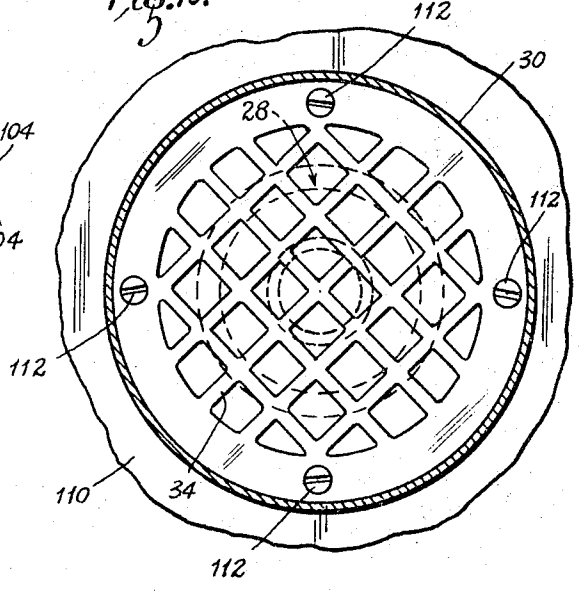


Fig. 19.



HIGH SECURITY LOUD SPEAKER BAFFLE

SUMMARY OF THE INVENTION

In the past various types of institutional loud speaker baffles have been employed. These have been both unidirectional for mounting directly to a wall or bidirectional for mounting upon a cradle. The problem has always existed to provide a high degree of security to resist vandalism.

By means of the instant invention there has been provided a strong, durable, rugged, and simply installed high security loud speaker baffle which can be employed both as a bidirectional baffle with a specially designed cradle or as a unidirectional baffle for mounting directly upon a wall surface.

The high security loud speaker baffle of this invention is comprised of a pair of concave castings each having a peripheral rim portion. The rim portions are specially designed so that one is an exterior portion and the other casting has an interior rim portion, which portions interfit and abut against shoulders. The rim portions are raised and are seated within a specially designed cradle with affixation being provided from the interior of the cradle. The cradle is adapted to be connected to a junction box or mounting box by tamper proof screws. In the installation of the baffle, a loud speaker can first be connected to one of the concave castings with the connecting wire being interfitted through a hole, and the other casting then affixed to the first, the wiring being accommodated in the second casting by means of a notch in the rim that registers with the hole in the first casting.

The loud speaker baffle may also be simply connected to a wall surface to provide a unidirectional baffle without the use of a cradle. This is accomplished by affixing one of the concave castings directly to the mounting box or other base on the wall surface and then simply connecting the other half of the loud speaker baffle constituting the mating concave casting.

The above features are objects of this invention and other objects will appear in the detailed description which follows and will be otherwise apparent to those skilled in the art.

For the purpose of example there is shown in the accompanying drawings a preferred embodiment of this invention. It is to be understood that these drawings are for the purpose of illustration only and that the invention is not limited thereto.

In the drawings:

FIG. 1 is a view in front elevation of the cradle mounted baffle.

FIG. 2 is a view in side elevation thereof.

FIG. 3 is a view in rear elevation of the cradle mounted baffle.

FIG. 4 is an enlarged view in section taken on the line 4—4 of FIG. 1.

FIG. 5 is an enlarged view in section taken on the line 5—5 of FIG. 1.

FIG. 6 is a fragmentary plan view of the front baffle showing the perforated screen holes.

FIG. 7 is an enlarged view in section taken on the line 7—7 of FIG. 6 showing the connection of the screen.

FIG. 8 is a top plan view partially broken away of the mounting or junction box.

FIG. 9 is a view in side elevation partially broken away of the mounting or junction box.

FIG. 10 is a bottom plan view of the cradle.

FIG. 11 is a view in section taken on the line 11—11 of FIG. 10.

FIG. 12 is a top plan view of the cradle.

FIG. 13 is a fragmentary plan view of a specialized tool used for the security screws.

FIG. 14 is a view in end elevation taken from the right hand of the tool of FIG. 13.

FIG. 15 is a fragmentary exploded view in axial cross-section showing the interfitting of the front and rear baffles.

FIG. 16 is a fragmentary exploded plan view showing the interfitting of the front and rear baffles.

FIG. 17 is a plan view showing the unidirectional mounting of the baffle to a wall.

FIG. 18 is a view in side elevation of the mounted baffle of FIG. 17 partially broken away in section.

FIG. 19 is a view in section taken on the line 19—19 of FIG. 18.

DESCRIPTION OF THE INVENTION

The loud speaker baffle of this invention is generally identified by reference numeral **20** in FIGS. **1** through **4**. As there shown, it is connected to a specially designed cradle **22** affixed to a ceiling **24** through a mounting box **26** to provide for bidirectional emanation of sound waves from a conventional loud speaker **28** mounted within the loud speaker baffle.

The loud speaker baffle **20** is comprised of a front baffle housing **30** and a rear baffle housing **32**. The front housing **30** is formed of a generally dish shaped or concave casting of aluminum or other metal to provide a rectangular protective grid **34**. A rim **36** protrudes from the exterior of the casting for better seating within the cradle as will be described. The rim **36** of the front casting is formed as an exterior rim to interfit with the interior rim **38** of the rear casting. The rim **36** has an interior shoulder **40** and a square end **42** to provide for mating and seating with the shoulder **44** and the square end **46** of the interior rim of the rear baffle. At the bottom of the baffle rim portions as best shown in FIG. **4** registering holes are provided in the exterior and interior rims designated by the reference numeral **48** to receive a tamper-proof screw **50** to connect the baffles together.

The front baffle rim at the top has an opening **52** to receive a wire for connection of the loud speaker which in the assembly of the housing may be first connected to the front portion of the baffle. The mating portion of the interior rim **38** of the rear baffle as best shown in FIG. **15** and **16** is provided with a notch **54** to receive the connecting wire (not shown) in the installation.

The front baffle as shown in FIG. **4** is provided with openings **56** in the face of the casting to receive additional tamper proof screws **57** for affixation of a perforated metallic screen **58**. The rear baffle is provided with threaded studs **60** integrally formed with the interior of the rear baffle casting to receive a perforated metallic screen **62**. Both the screens **58** and **62** can be conventionally secured in place by Tinnerman nuts **64**.

The cradle **22** is comprised of a rectangular box-like base **68** provided with openings **70** at the end for affixation to the junction box **26**. The affixation is provided by tamper-proof bolts **72**. Supported upon the base **68** is an arcuate cradle **76** which has a central groove **78** receiving the exterior rim **36** of the front baffle when the front and rear baffle are connected together as

shown in FIG. 4. An opening 80 is provided in the central portion of the cradle and the groove to receive an electrical lead wire and additional openings 82 are provided at the opposite ends of the cradle for reception of bolts 84 adapted to connect the baffle to the cradle as best shown in FIG. 4.

The junction box 26 is best shown in FIGS. 4, 5, 8, and 9. It is a box-like structure having a base 86 and end walls 88 and side walls 90. A central opening 92 is provided for the loud speaker electrical connecting wire. Openings 94 are additionally provided in the base for connecting the box to the ceiling or wall through screws 96 as shown in FIG. 4. Threaded openings 98 are provided in the ends for reception of the tamper-proof bolts fitting through the registering openings in the ends of the base of the cradle as shown in FIG. 5.

The tamper-proof screws used to prevent unathorized tampering are shown in FIGS. 6 and 7. They may take the form of either a screw or a bolt and are provided with a flat beveled head having a pair of openings 100 instead of the usual diametrical slot. The openings 100 are adapted to be engaged by a specially designed tamper-proof screw driver shown in FIGS. 13 and 14 and identified by the reference numeral 102. This screw driver with a conventional handle (not shown) and a pair of prongs 104 at the end which are received by the openings 100 in the heads of the tamper proof screws and it is apparent that the screws or bolts can be threaded only by the use of the specially designed tamper-proof screw driver as shown.

The use of the loud speaker baffle 20 of this invention has been shown in FIGS. 1 through 4 with the cradle 22 for bidirectional generation of sound waves from the loud speaker 28 through both the associated grids and screens in the front and rear baffle castings. A modified use of the loud speaker baffle for unidirectional employment by direct mounting of the baffle upon a vertical wall surface 110 is shown in FIGS. 17 through 19. In this employment the cradle is not required to be used and the loud speaker baffle can be directly mounted to the wall by the connecting screws 112 passing through the openings 56 in the front baffle. In this modification, the screen 58 is not required to be used and the loud speaker 28 may be mounted either to the front baffle as shown in FIG. 4 or to the rear baffle upon the threaded studs 60. In the unidirectional employment of the mofidication shown in FIG. 17 through 19, it will be understood that the lead wire opening 52 in the front baffle is plugged. The conventional lead wire for the connection of the loud speaker can be passed through the wall by passing it through the grid openings and the grid of the front baffle casting.

USE

For the bidirectional mounting of the loud speaker baffle shown in FIGS. 1 through 4, the junction box 26 is first installed. The front loud speaker baffle casting 30 with the loud speaker 28 connected to it is then connected to the electrical lead as shown in FIG. 4 with the lead passing through the opening 52 in the front baffle and the opening 80 in the cradle through the junction box to the appropriate electrical connection. It will be understood that this may be a connection on the junction box itself. The rear baffle casting 32 is then interfitted with the front baffle casting in the relationship shown in FIGS. 15 and 16 with the exterior rim 36 of the front baffle fitting over the interior rim 38 of the rear baffle and with the notch 54 of the rear baffle registering with the opening 52 of the front baffle. The tamper-proof screw 50 is then fastened through the registering openings in the interfitting rims of the baffle castings as shown at the bottom of FIG. 4 through the use of the specially designed tamper-proof screw driver 102. It will be understood that other types of tamper-proof screws and screw drivers can be used as desired as these are conventional in the art.

With the baffle castings connected together the bolts 84 are fitted through the openings 82 at the interior of the cradle and at the opposite ends to affix both the front and the rear baffle firmly to the cradle. Only two such bolts are required with one each being used on the front and rear baffles rims at opposite sides of the cradle. The cradle groove prevents twisting. The raised rim of the front baffle nests within the groove 78 and provides a secure interfit to resist any heavy blows caused by vandalism and the like.

With the baffle castings connected to the cradle, the cradle is then interfitted over the junction box in the relationship shown in FIG. 4 and the tamper proof screws 72 are interfitted in the registering holes at the ends of the base of the cradle and the junction box to complete the connection.

For the modification shown in FIGS. 17 through 19 for a unidirectional application, the cradle 22 is not employed. In this modification, the front baffle is used for a direct connection to the wall or a conventional junction box as desired. The loud speaker baffle may be connected either in the fashion shown in FIG. 4 to the front baffle or where desired may be connected to the rear baffle which in a change of relationship is actually used as a front baffle for the unidirectional application.

The connection of the loud speaker baffle is made directly to the wall by the connecting screws 122 passing through the openings 56 in the front baffle as shown in FIG. 18. The lead from the loud speaker can be passed through the openings in the grid of the front baffle to an interior connection as will be readily apparent.

Various changes and modifications may be made within this invention as will be readily apparent to those skilled in the art. Such changes and modifications are within the scope and teaching of this invention as defined by the claims appended hereto.

What is claimed is:

1. In a high security loud speaker baffle enclosure: first and second bowl-like housing portions each having a rim, the rim of one telescoping into the rim of the other, whereby when the housing portions are fitted together they jointly form the enclosure, the rim portion of at least one housing portion extending outwardly from the periphery of the enclosure providing a ridge; the rims being of rigid material and the telescoping being of substantial width to resist separation of the parts by noncoaxial warping; at least one housing portion having an openwork grill that cannot be removed from the outside of the housing portion, so that a loud speaker within the enclosure of the housings may be protected; tamper-proof means to hold

the housing portions together with their rims telescoped, including a cradle engageable onto the rim of the conjoined housing portions, the cradle having a recess means complementary to the ridge on the one housing portion, and means to secure the enclosure to the cradle firmly so that the enclosed cannot be twisted with respect to the cradle.

2. In the baffle enclosure of claim 1, the telescoping rims both having projections forming at least one peripheral ridge and providing ridge walls facing oppositely, the cradle having its recess means shaped complementary to both ridge walls so that both ridge walls cooperate in resisting twisting.

3. In the baffle of claim 1, a pin-like element of the tamper-proof means being located opposite the cradle and joining the telescoping rims.

4. In the baffle of claim 1, the cradle comprising a hollow member, and tamper-proof means attaching elements inside the cradle, one extending into each housing element and affixing it to the cradle.

5. In the baffle of claim 1: the cradle and telescoping rims of the housings having cut-outs contained within the cradle so as to be inaccessible from outside the cradle, for admitting electric wiring into the baffle.

6. In the baffle of claim 1: the housing being round and having a medial projection around it, the cradle having an arcuate portion to receive the round housing, and a recess complementary to the projection, to prevent twisting of the housing in the cradle.

7. In the baffle of claim 1: the cradle being hollow and having walls outwardly projecting from the housing, a bracket attachable to the wall and fitted within the said walls to be concealed by them, and tamper-proof connectors between the cradle and the bracket.

8. In the baffle of claim 1: the openwork grill having relatively large openings, and a screen back-up in the housing back of the grill.

9. In the baffle of claim 1: both housings having openwork grills, and openings through one housing member to receive screws or the like for fastening it directly to a wall or like support.

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