Oct. 29, 1963 J. G. VALLDEPERAS 3,108,653

LOUD SPEAKER BAFFLE FOR FLOORS

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Fig. 1.

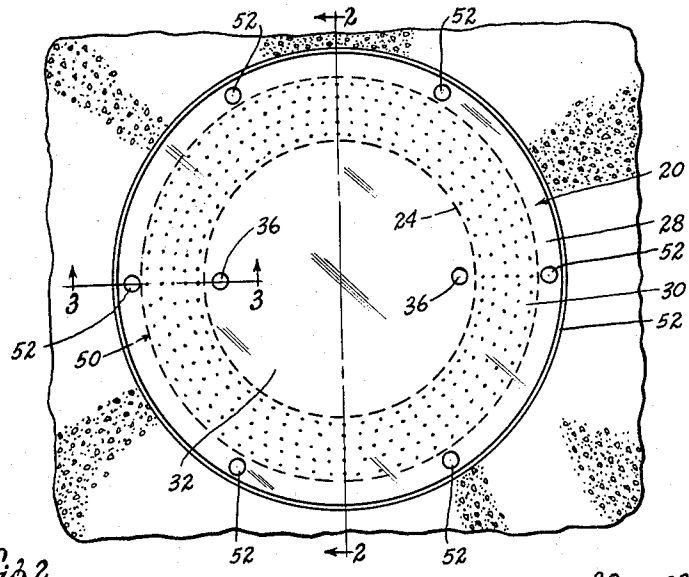


Fig. 2.

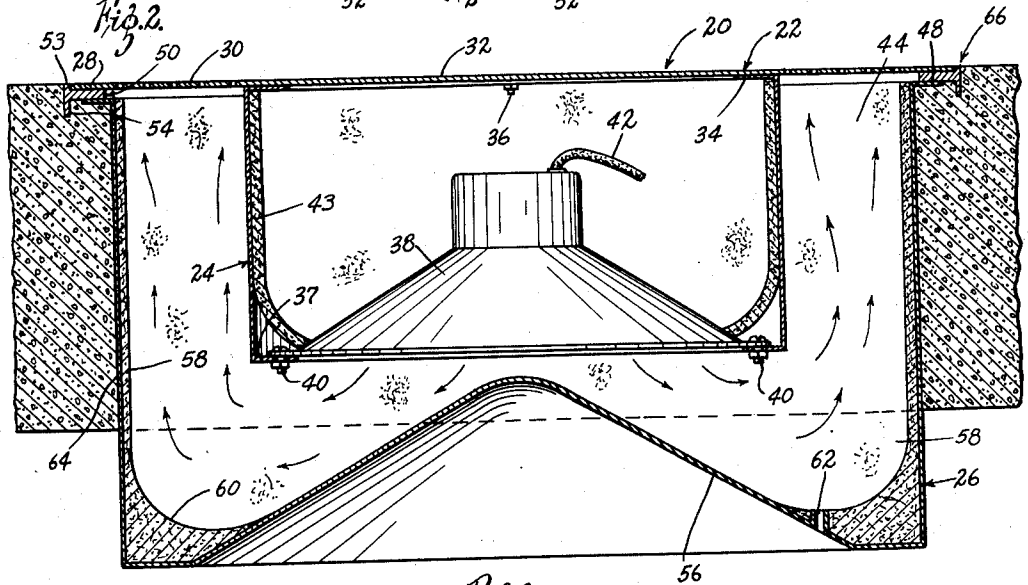
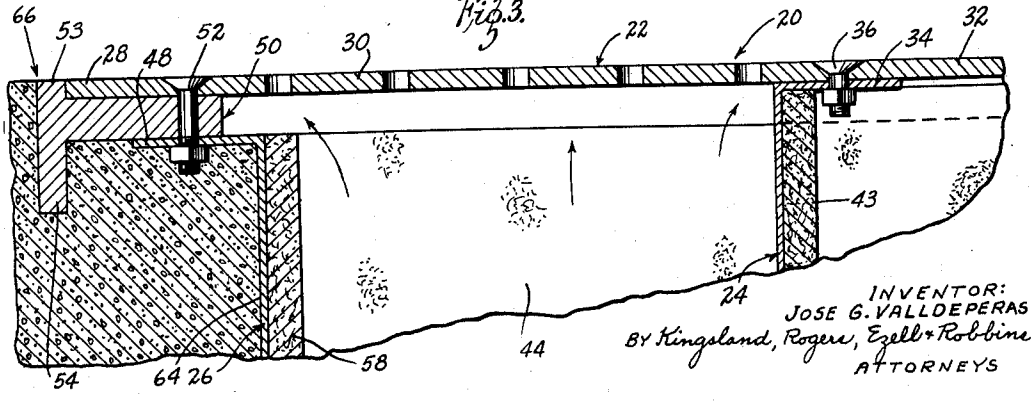


Fig. 3.



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LOUD SPEAKER BAFFLE FOR FLOORS

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This invention relates to loud speaker baffles and in particular is concerned with such a baffle that may be mounted level upon a floor surface.

It is a principal feature of this invention that a loud speaker baffle has been provided which can be mounted flush with the floor surface in such a manner that sound waves from a conventional loud speaker supported by the baffle can be transmitted through the floor. The baffle is so constructed that the loud speaker positioned upon the baffle is not subject to damage as it is protected by an imperforate base of the baffle upon which it is mounted. Further, the loud speaker is mounted in such a manner that it directs downwardly sound waves which are then caused to be diverted to the sides by a nose cone, and then reversed in direction upwardly through a perforate section of the baffle. A central protective closure for the loud speaker is provided such that water and other foreign matter that might tend to fall through the perforate sections of the baffle are blocked from entry into the loud speaker section.

The baffle unit is one that can be very simply mounted in a hole in a floor section. The baffle can be installed in unitary fashion and can be made completely flush with the floor surface to provide both a soundly operating loud speaker device and at the same time blend uniformly into the floor surface. The above features are objects of applicant's invention and further objects will be apparent to those skilled the art and will further appear in the detailed description below.

For the purpose of illustration of applicant's invention, there is shown in the accompanying drawings a preferred example thereof. It will be understood that these drawings are for the purpose of illustration and example only, however, and that the invention is not limited thereto.

In the drawings:

FIGURE 1 is a top plan view of a floor surface provided with applicant's baffle device;

FIGURE 2 is an enlarged view in section taken on line 2—2 of FIGURE 1 showing the structure of the baffle device; and

FIGURE 3 is a still further enlarged view taken in section on line 3—3 of FIGURE 1 showing further details of the mounting structure for connecting the elements of the baffle device and mounting the baffle device upon a floor surface.

The baffle device of this invention is generally identified by the reference numeral 20. As shown in FIGURE 2, the main components of the baffle device comprise a baffle member 22, a loud speaker mounting section 24 connected to the underside of the baffle at the central portion thereof, and a protective can or enclosure member 26 connected to the underneath of the baffle member at the border portion.

The baffle member 22, as shown in FIGURES 1 and 3, has an imperforate peripheral portion 28, an annular baffle section 30, and a central imperforate section 32 which overlies the back of the loud speaker mounting.

The loud speaker mounting 24, as shown in FIGURES 2 and 3, is of a generally tubular construction that has an inturned ring-like flange 34 at the top, which is connected by bolts 36 to the central section 32 of the baffle member. At the bottom an inturned ring-like flange 37 is also provided by means of which a conventional loud speaker 38 can be secured thereto by bolts 40. It will be

understood that the loud speaker 38 is of conventional construction and can be supplied separately. It may be connected to a conventional source of electrical supply by a conventional lead 42 as will be well understood.

In order to minimize vibration and provide a deadening quality, an undercoating 43 is provided upon the interior of the loud speaker mounting member 24. The undercoating 43 provides for the substantial elimination of any vibration in the mounting member and acts to absorb any forces at the back of the loud speaker that would cause undesirable resonance or vibration. The undercoating is of a more or less sponge-like nature but is relatively hard and may be conventionally made of fiber, tar and oil, which acts as a metallic deadener when applied to a base surface.

The protective enclosure 26 is of a generally cylindrical construction and has its cylindrical walls substantially spaced from tubular member 24 to provide a passage 44 for sound waves, as will more fully appear. Thus, by this passage 44, sound waves as indicated by the arrows of FIGURE 2 can emanate downwardly from the loud speaker, turn in direction and pass upwardly through the perforated baffle section 30. The protective enclosure 26 has outwardly turned flanges 48 at its upper end which underlie the peripheral portion 28 of the baffle member. An intermediate ring 50 having a T-shaped cross section is interposed between the baffle member and the flanges 48 of the protective member. Securing of these components is provided by bolts 52 as best shown in FIGURE 3. It will be noted that the T-shaped ring 50 has one portion 53 forming the head of the T which is shorter than the other portion 54. Thus, the portion 53 is of a length such that it is flush with the baffle member which is situated thereover and a close fit and alignment therewith is provided such that nesting is accomplished. The longer leg 54 fits within the floor and may be installed in moist concrete or cement by merely pressing it into the peripheral portion to provide a very firm affixation of the entire baffle device around an opening in the floor.

The bottom of the protective enclosure 26 is dished upwardly in the form of a cone 56, as shown in FIGURE 2. This cone is coaxial with the speaker 38 and the speaking mounting member 24 and is spaced just a short distance underneath the bottom of the loud speaker mounting member as shown. A protective undercoating 58 is provided at the inner walls of the protective enclosure 26 and is formed with a smooth shoulder 60 so that the coating merges with the nose cone. In this manner the passage 44 is provided in a generally U-shaped configuration so that sound waves emanate from the loud speaker and travel in the path of the arrows as shown in FIGURE 2. A condensate opening 62 is provided at the bottom portion of the nose cone as shown in FIGURE 2 to provide for drainage of any water that may collect in the baffle device.

Use

The baffle device 20 is very simply adapted to be installed in the floor. It may be installed as a unit in concrete as it is formed, with it being understood that there will be an opening 64 to receive the unit which is first made in the moist concrete before setting. Alternatively, a hole of the proper dimensions may be drilled in the concrete as will be well understood. Then the entire unit can be placed within the opening and the top portion pressed down in the moist concrete or any type of cement so that the T-shaped ring fits into the concrete in the manner shown in FIGURE 3. This provides a flush positioning of the baffle device with the surface of the floor, generally indicated at 66. Although reference has been made to concrete floors, it will be understood that the unit may be used in floors of any material of construction.

When so installed the loud speaker can be employed with people walking over the baffle as the device is structurally rigid and of sufficient strength to bear the weight of substantial loads. The imperforate section 32 fully protects the loud speaker in operation, while the perforate baffle section 30 provides for the passage of sound waves to the immediate area around the baffle device and for a substantial distance therefrom as the sound waves travel upwardly and spread out substantially to provide a wide distribution. The general passage of the sound waves from the loud speaker is downwardly and to the side occasioned by the positioning of the nose cone and then curved in direction to pass upwardly. The curving is made more or less in a general fashion due to the rounded configuration of the passage 44 effected by the curved shoulder 60 of the undercoating, which serves both to minimize vibration and provide a gently contoured passage for the sound waves.

It will be understood that once installed the baffle device provides a protective enclosure for the loud speaker and prevents any water or foreign objects from damaging the loud speaker. Further any water or other foreign matter that may fall through the perforated baffle section 30 into the interior of the passageway 44, such as by cleaning or mopping operations or misadventure, may be drained by passage through the condensate opening 62. The outlet of the condensate opening may be connected to a convenient waste source as will be obvious.

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

What is claimed is:

1. A loud speaker baffle for floors comprising a flat support having means for attaching it to a floor surface, said support having an imperforate central section and a peripheral perforate section, means for attaching a cone shaped loud speaker cone beneath said central section, said means comprising a cylindrical tubular element connected at a top end to the imperforate section of the flat support and at the bottom end to the loud speaker cone, said tubular element being concentrically disposed with the loudspeaker cone and enclosing the same, means for directing sound waves from the cone downwardly and away from the axis of the cone and upwardly about the exterior of the tubular element, said means comprising a well member having a cylindrical wall surface concentric with the tubular element and spaced exteriorly therefrom to define an annular sound wave passage therebetween. said well member being connected to the flat support exteriorly of the perforate section, and a diffusing cone connected to the bottom of the well member having an upwardly directed apex positioned axially and in spaced relation underneath the loud speaker cone.

2. A loud speaker baffle for floors comprising a flat support having means for attaching it to a floor surface, said support having an imperforate central section and a peripheral perforate section, means for attaching a cone shaped loud speaker cone beneath said central section, said means comprising a cylindrical tubular element connected at a top end to the imperforate section of the flat support and at the bottom end to the loud speaker cone, said tubular element being concentrically disposed with the loudspeaker cone and enclosing the same, means for directing sound waves from the cone downwardly and away from the axis of the cone and upwardly about the exterior of the tubular element, said means comprising a well member having a cylindrical wall surface concentric with the tubular element and spaced exteriorly therefrom to define an annular sound wave passage therebetween, the diameter of the cylindrical tubular element being a major portion of the diameter of the cylindrical well member, said well member being connected to the flat support exteriorly of the perforate section, and a diffusing cone connected to the bottom of the well member having an upwardly directed apex positioned axially and in spaced relation underneath the loud speaker cone, and a protective undercoating on the walls of the well member defining a smooth shoulder connecting the base of the diffusing cone with the bottom side walls of the well member.

References Cited in the file of this patent

FOREIGN PATENTS

721,732 Germany ---------- June 16, 1942

OTHER REFERENCES

Publication "Ground Loudspeakers," by David Scott, Audio Engineering, October 1949, pages 18–19.