United States Patent

Geloso, deceased

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[54] LIGHTING UNIT INCORPORATING LOUDSPEAKERS

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[21] Appl. No.: **38,802**

[52] **U.S. Cl.** ..... **179/146 R**
[51] **Int. Cl.** **H04r 1/02**
[58] **Field of Search** 179/146

[56] **References Cited**

FOREIGN PATENTS OR APPLICATIONS

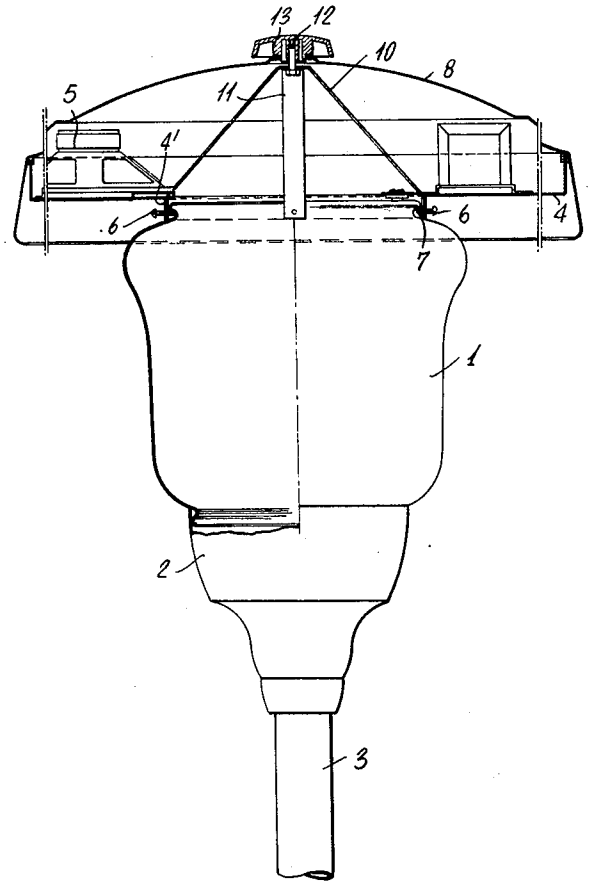
357,392	3/1938	Italy	179/146
582,378	12/1924	France	179/146
836,501	4/1952	Germany	179/146

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[57] **ABSTRACT**

A light unit incorporating, above, a sound distribution unit separate from the lamp and protected by an upper cap designated to also form the sound box of the aforementioned sound distribution system. The elements are assembled in such a way as to permit easy access to the sound distribution system independently of the lamp.

8 Claims, 3 Drawing Figures



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SHEET 1 OF 2

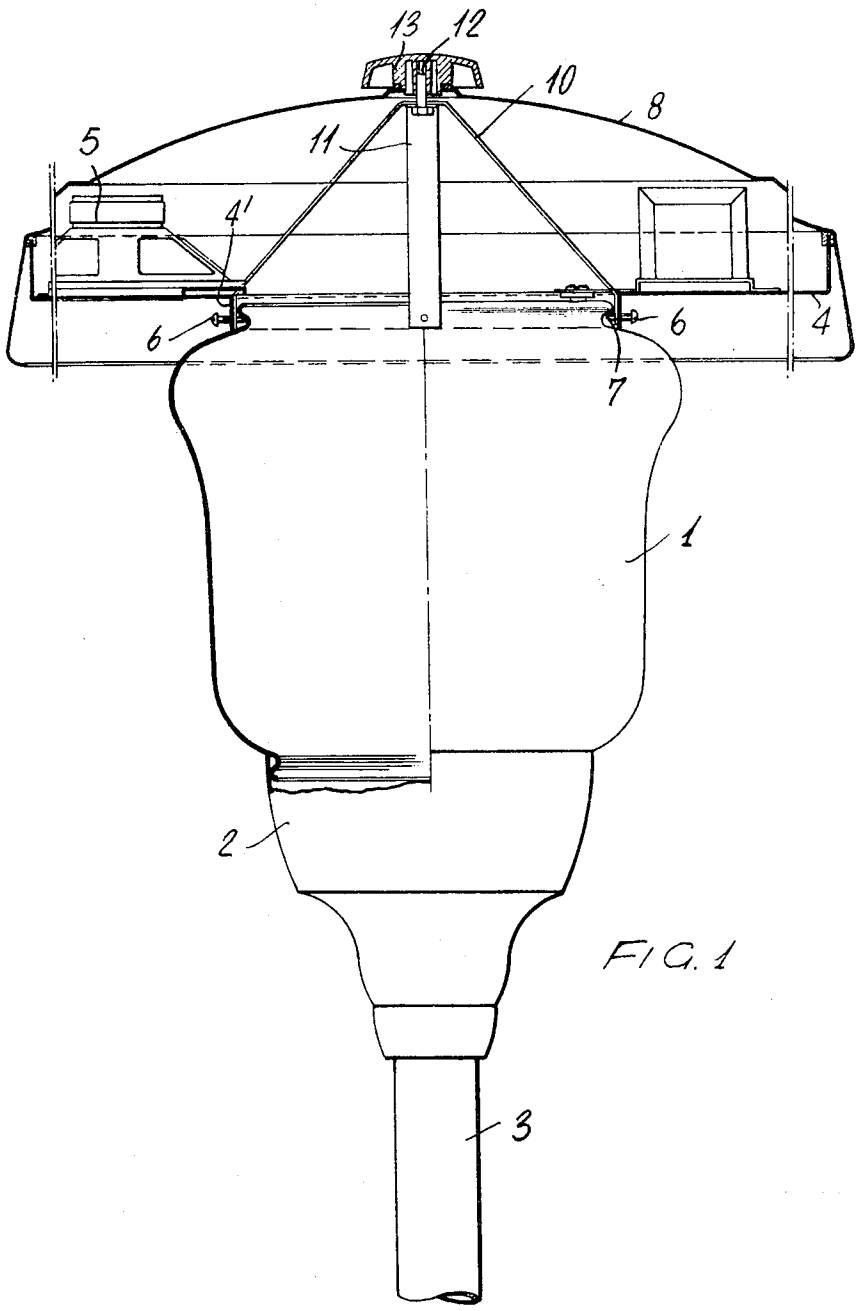


FIG. 1

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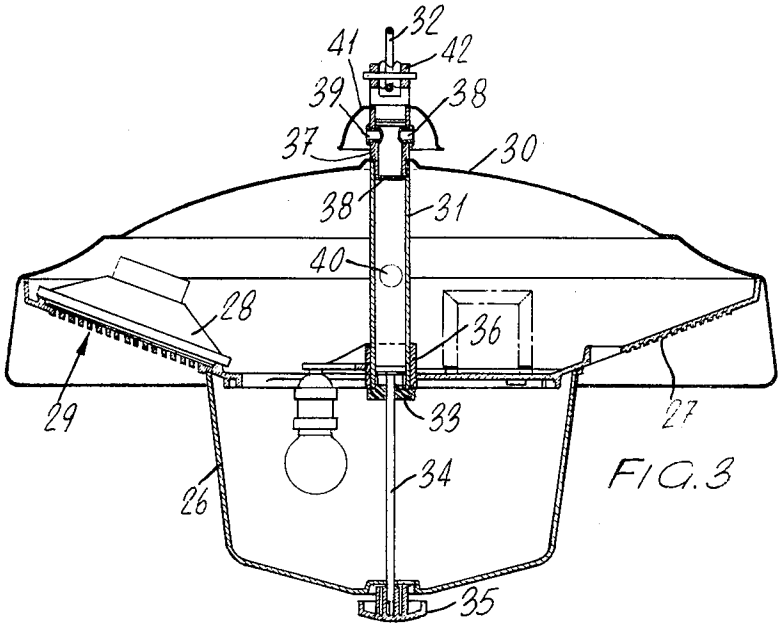

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FIG. 3

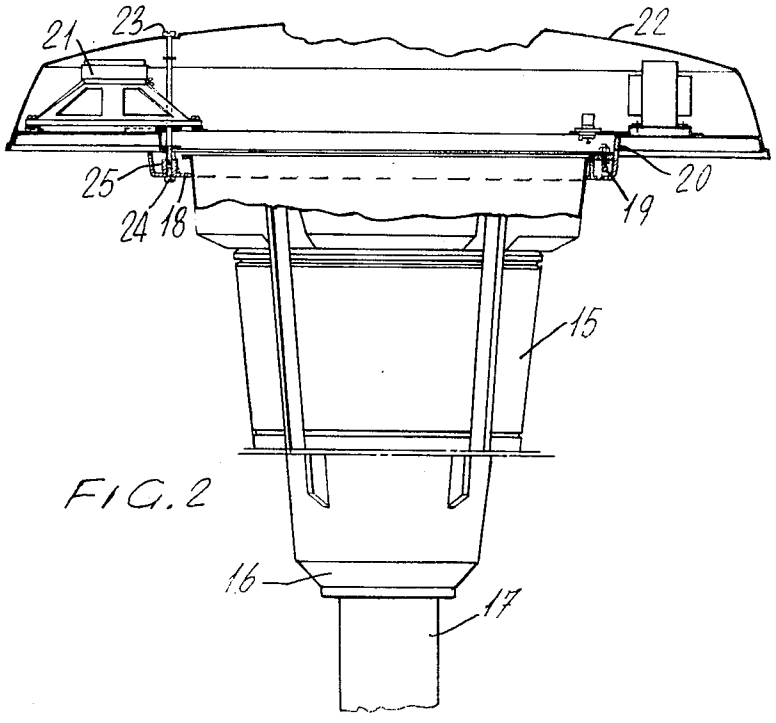

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FIG. 2

LIGHTING UNIT INCORPORATING LOUDSPEAKERS

This invention concerns lighting combined with a sound distribution system in such a way as to achieve simultaneously the combined effects of lighting and broadcasting music, announcements, information, etc. in a common area.

The combination of lighting and a sound distribution system is achieved in this invention in such a way as to make the sound distribution system completely independent and easily detachable from the lighting system, in order to facilitate its replacement and/or repair.

These lights are basically manufactured in order to resolve in a practical way the problem of sound distribution and at the same time that of lighting, preferably in open spaces, and essentially consist of an upper metal dome which performs a protective function, and acts as a sound diffuser, supported by a circular plate which separates it from the refractor below. The plate effectively closes the upper dome in such a way as to form an interior chamber in which are fitted the loudspeakers of the sound distribution unit.

The assembly of the various elements can be achieved in any form providing that it can easily support the sound distribution unit. The following shows, as examples, three ways of producing the lights, which are:

FIG. 1 is a sectional view of a first embodiment of producing the light and sound distribution system;

FIG. 2 is a sectional view of a second embodiment of producing the light and sound distribution system; and

FIG. 3 is a sectional view of a third embodiment of producing the light and sound distribution system.

Referring now to FIG. 1 it can be seen that the lighting system consists of a refractor 1 containing a light source not shown, which is supported on an enlarged collar 2 inserted in and positively fixed on a post 3.

Above the refractor 1 is fixed a horizontal plate 4 which supports the loudspeakers 5 (only one is shown in the drawing) of the sound distribution system, said plate being appropriately apertured for emission of the sound. The plate 4 is fixed to the lighting unit by means of screws 6—6, which are screwed into a corresponding flange 4 provided on the plate and which make contact with a peripheral throat 7 formed in the upper edge of the refractor 1. In this way the sound reproduction unit is completely independent of, and detachable from, the lighting unit below it.

Above the plate 4, is placed a dome 8 which protects the lighting unit and serves as a sound diffuser suitable for the sound reproduction system. The dome 8 rests on the outer edge of plate 4, held in place and attached to the plate underneath by a series of screws. This method of mounting consists primarily of a support having legs 10 and 11 which are appropriately diverged downward, their ends attached to flange 4. The aforesaid support has an aperture where the legs 10 and 11 converge to allow the passage of a screw 12 which, issuing through means defining a hole made in cap 8, engages with a tapped knob 13 to fix the cap 8 on the support legs 10 and 11.

The appropriate provision of a gasket, not shown, enables the interior of the dome to be sealed.

With the assembly shown in FIG. 1, it is possible to unscrew screws 6-6, and to disassemble completely the sound distribution system from the refractor to give easy access to the bulb inside the refractor or, alternately, to substitute a new sound distribution unit for a faulty one. On the other hand the sound distribution system may be fixed to the refractor which encompasses the lighting unit, and in this case the dome 8 may easily be detached to allow access to the sound distribution unit alone in order to carry out repairs.

Referring to FIG. 2 it can be seen that the lighting unit comprises a refractor 15, in the shape of a truncated cone, which is supported on and partially within an upstanding metal collar 16, appropriately fixed to a support tube or post 17. On the upper edge of the collar 16 is fixed a circular flange 18, which is pivoted at 19 to the plate 20, holding a number of loudspeakers 21 (one only is shown in the drawing) and forming part of the sound distribution system.

A protective dome 22 closes the lighting unit, held in position by a pair of opposed screws 23 and 24 which, screwed into an appropriate sleeve fixed to flange 18, hold the elements together.

In addition, the protective dome 22 is suited for attachment by its outer edge to plate 20, for supporting the loudspeakers in such a way that the latter are completely protected from the atmosphere. Furthermore, the volume of the protective dome 22 may be calculated in such a way so that it forms a good soundbox as well. Its desired volume therefore is a function of the number and type of loudspeakers used.

Referring to FIG. 3, it can be seen that the lighting unit assembly shown therein still comprises a refractor 26 above which is fitted an annular plate 27 to support a complex of loudspeakers 28 (only one is shown) in line with the means defining openings 29 provided in the plate, the speakers being inclined towards the top of the plate itself.

On plate 27 there is fitted a protective dome 30 which also serves as a reverberation box.

The aforementioned components are held together by an internal axial tubular element 31, into which is fitted the support hook 32.

More precisely, as shown in FIG. 3, internally of the lower end of tubular element 31 is screwed a threaded connector 33 to which is fastened the upper end of a shaft 34.

Shaft 34 emerges, its lower extremity threaded, from an appropriate aperture provided in the base of the refractor 26, and a knob 35 is screwed to said extremity to positively fix the refractor 26 to the tubular element 31. The threaded connector 33 has a flanged head which axially enters the tubular element 31, to provide a supporting shoulder for plate 27, which carries the sound distribution system. In particular, as shown in FIG. 3, plate 27 has an inner ring 36 appropriately fixed rigidly to the plate itself, which is fitted onto the tubular element 31 and supported by the flange on the head of connector 33. In this way the support plates of the loudspeakers are held up both by this contact with connector 33 and by its contact along the outer edge of refractor 26.

At the opposite extremity of the tubular element 31 is fixed a second tubular element 37 whose lower end 38 has a reduced diameter to enable it to be inserted and fixed inside tubular element 31. The reduced diameter section 38 of the second tubular element 37 is also inserted through a corresponding aperture in the protective dome 30 to lock the dome against the tubular element 31.

Tubular element 37 is also apertured at 38 and 39, and tubular element 31 has a central aperture 40 to allow the passage of the conducting wires.

To avoid the possibility of water entering apertures 38 and 39, the second tubular element 37 has a downwardly turned cover 41 which protects the apertures 38 and 39.

Above the protective cover 41 is fitted the forked support 42 to which is pivoted the hook 32 which suspends the whole assembly.

It must be understood that what has been described and shown in the attached drawings represents only examples and other variants may be made without avoiding the protection given to the invention.

What is claimed is:

1. In an improved lighting unit and sound distribution system, the combination comprising, a refractor having at least an upper flange portion and a base, a light source within said refractor, an annular plate having a perimeter provided with a plurality of means defining openings arranged to be associated with said refractor, a series of loud speaker units having means adapted to cooperate with the means defining openings in said annular plate and further arranged circumferentially about the flange portion of said refractor, and a protective dome-like cover enshrouding said sound distribution system and including means for associating said cover with the perimeter of said annular plate.

2. An improved lighting unit as claimed in claim 1, wherein the refractor is supported on a post.

3. An improved lighting unit as claimed in claim 1, wherein the domeclike cover includes means associated therewith that extend axially therefrom, said means further adapting said unit to be supported in a dependent position from a fixture.

4. An improved lighting unit as claimed in claim 3, wherein the means adapting said unit to be supported in a dependent position is associated with the base of said refractor.

5. An improved lighting unit as claimed in claim 1 wherein the light source includes a support means, said support means being associated with said means associated with said dome-like cover.

6. An improved lighting unit as claimed in claim 1, wherein

the dome-like cover is supported in spaced relation relative to said refractor by annular means interposed between the refractor and the dome-like cover.

7. An improved lighting unit as claimed in claim 1, wherein the sound distribution system including the loud speakers is removable as an integral unit from the refractor.

8. An improved lighting unit as claimed in claim 6, wherein the dome-like cover is pivotally supported adjacent to the refractor by means arranged in spaced relation relative thereto.

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