Dec. 29, 1942. J. A. CHAMBERS 2,306,685

ACOUSTICAL ASSEMBLY

Filed Sept. 7, 1939 2 Sheets-Sheet 1

Fig. 1.

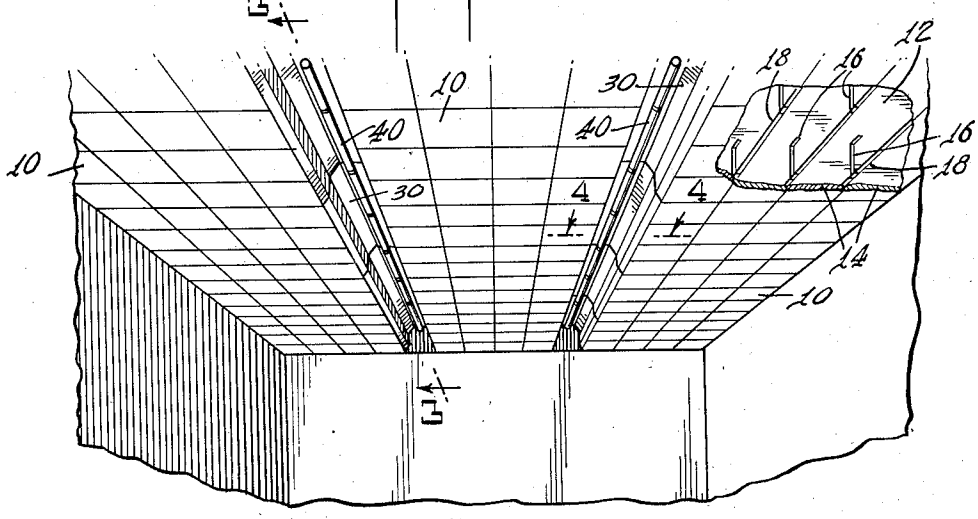


Fig. 2.

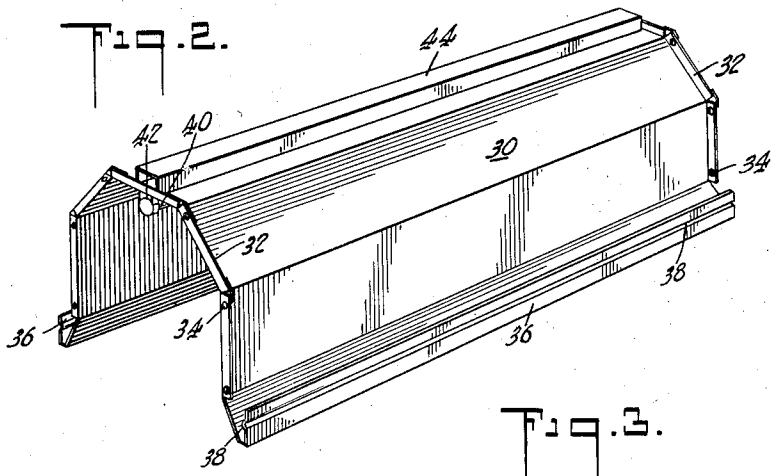
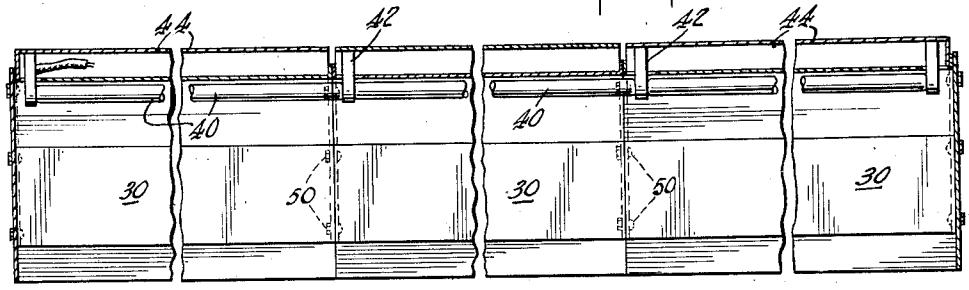


Fig. 3.



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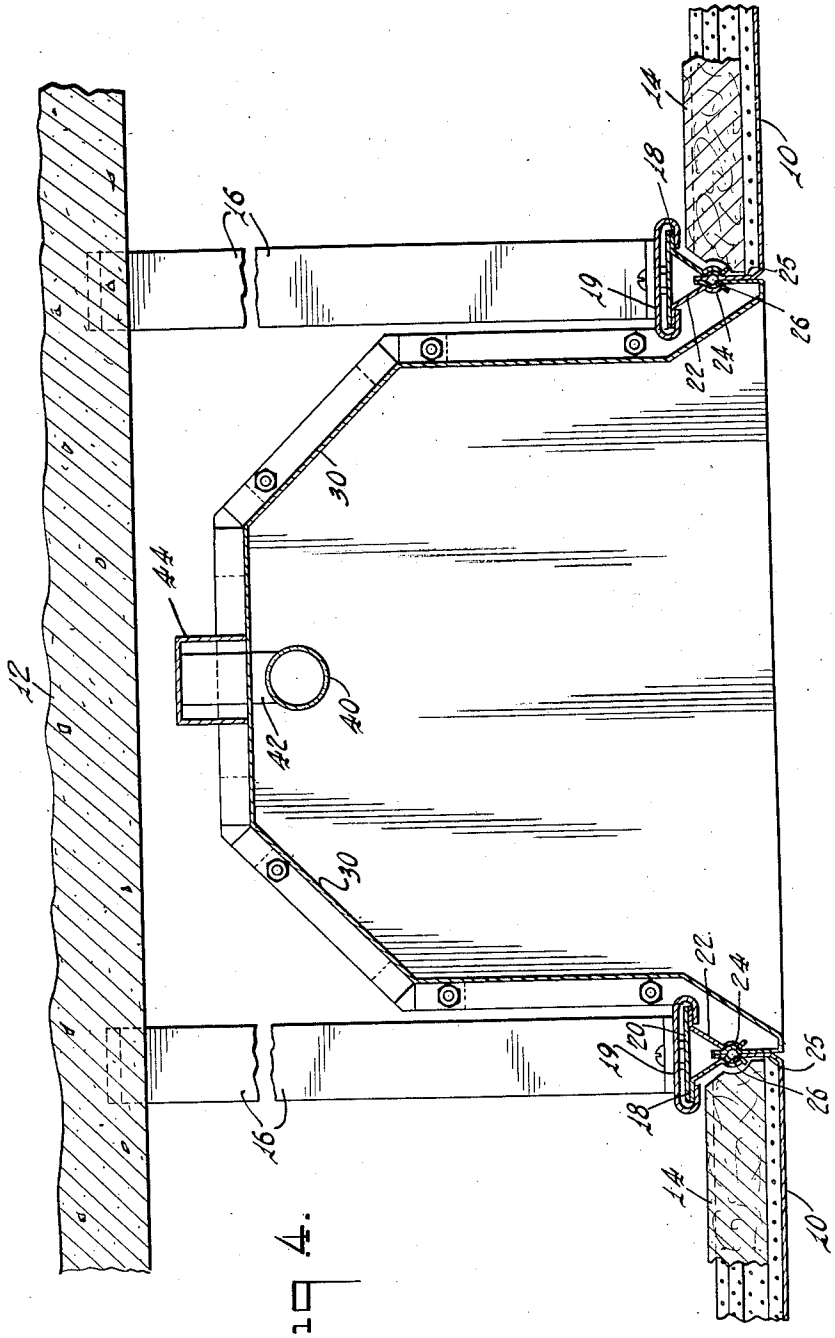


FIG. 4.

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ACOUSTICAL ASSEMBLY

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9 Claims. (Cl. 189—85)

The present invention relates to acoustical assemblies and particularly to such assemblies including lighting units.

An acoustical treatment for walls, ceilings, and the like which has achieved outstanding commercial success comprises a perforated facing element supported from the ceiling or wall. Behind the facing element is disposed a sound-absorbing medium. Preferably, the facing element takes the form of a plurality of metal pans including vertical edges releasably interlocked with supporting members termed "T-bars" suspended from the ceiling. The facing elements lie in substantially the same plane and form the visual wall or ceiling of the room to which the treatment is applied.

The present invention is concerned with and has for its principal object the provision of an acoustical treatment of the type referred to, which has lighting devices incorporated therein as a unitary portion thereof.

Recently, there has been proposed, in substitution for the conventional incandescent lighting bulbs, relatively elongated illuminating units which evenly distribute illumination over extended areas of a room. One example of this type of lighting is the so-called "fluorescent" unit, comprising elongated glass tubes, the interior surfaces of which are coated with a material which will glow brightly or fluoresce in the presence of ultra-violet radiation, produced in the tubes by means of a mercury vapor arc. It has been proposed that tubes of this type, suitably connected to a source of electric power, be arranged in lines in any desired arrangement in a ceiling or wall structure. Considering the above referred to proposals, it is a further object of the present invention to provide means for accommodating lighting means of this type in the acoustical treatment previously described.

A further object of the invention is the provision of an acoustical treatment including such lighting means which will permit of the location of the lighting means in any desired portion of the treatment.

A still further object of the invention is the provision of an acoustical treatment as referred to in which the lighting means may be readily removed and replaced at different locations.

My invention will be more fully understood and further objects and advantages thereof will become apparent when reference is made to the more detailed description thereof which is to follow and to the accompanying drawings, in which

Fig. 1 is a perspective view of a partial room interior with parts broken away for clearness of illustration depicting a combined acoustical treatment and lighting means in accordance with the invention;

Fig. 2 is a perspective view of a lighting unit employed in the construction of Fig. 1;

Fig. 3 is a sectional view on an enlarged scale taken on the line 3—3 of Fig. 1; and

Fig. 4 is a sectional view on an enlarged scale taken on the line 4—4 of Fig. 1.

Referring now to the drawings, and particularly to Figs. 1 and 4, a basically conventional acoustical treatment is disclosed, comprising a plurality of perforated preferably metal pans 10 supported from an inner ceiling 12, the pans containing sound-absorbing material 14. In the preferred construction, the pans are supported from the ceiling or wall of the room by suspension members 16, spaced at suitable intervals, carrying substantially parallel longitudinally extending attaching members or T-bars 18. The T-bars (see particularly Fig. 4) comprise a base 20 and resilient converging side flanges 22 including locking lips 24. The T-bars 18 and suspension members 16 are formed of any suitable relatively light-gauge metal and may be secured together as by attaching clips 19. The center-to-center spacing of the T-bars is made equal to the lengths of the pans employed.

The perforated pans 10 include upstanding end walls 25 having a preferably integral bead 26. The lower faces of the pans lie in substantially the same plane and form the visual surface of the ceiling or wall to which the treatment is applied. In the assembly of the acoustical units in the conventional manner where T-bar suspension means are employed, the beads 26 carried by the end walls 25 are forced or snapped into place between the lips 24 of the T-bars, whereby the units are securely but removably held in position to bridge the space between adjacent T-bars.

The suspension means of the above type, including T-bars, is preferred for the purposes of the present invention. However, it has heretofore been proposed to employ other types of suspensions for acoustical treatments, which also may be employed with the combined acoustical and lighting assembly of the invention. Thus, for example, certain of the pans only may be supported from the T-bars or directly from the ceiling, if desired, and others of the pans be carried by the supported pans.

In accordance with the instant invention, a lighting fixture is provided for attachment in

the acoustical treatment by the same means employed for the pans 10. Preferably, as indicated above, this means comprises the T-bar type of suspension and the following description is particularly directed to a construction employing such means. However, as will be understood by those skilled in the art, there may be employed a suspension means of the type in which certain of the pans and/or the lighting means may be supported by others of the pans. The lighting fixture includes an inverted trough-like member 30 (see Fig. 2) suitably formed of sheet metal or the like and including end flanges 32 provided with perforations 34 for the reception of bolts, whereby a plurality of the members 30 may be secured together in endwise abutting relationship to form an extended inverted trough, as illustrated in Figs. 1 and 3. The lower portions of the side walls of members 30 are retroverted to provide flanges 36 corresponding in height to the walls 25 of the pans 10. The flanges 36 are provided with preferably integral beads 38, identical with or similar to the beads 26 of the pan walls. Members 30 support a lighting means, which preferably includes an elongated glass tube 40 in which a mercury vapor arc may be produced to cause fluorescence of an inner coating to obtain fluorescent lighting of the type previously described. The tubes are supported in the member 30 by suitable means as indicated at 42 and a casing member 44 is provided for the electrical connections and other electrical elements of the lighting means, which per se forms no part of the instant invention.

In the assembling of an acoustical treatment including lighting units as a unitary portion thereof, in accordance with the present invention, the acoustical pans 10 containing the sound-absorbing material 14 are positioned to bridge the spaces between the parallel T-bars, the beads 26 of their end walls 25 engaging between the lips 24 of the T-bars. Rows of the pans are omitted, however, in certain areas where it is desired to install lighting units. Preferably, these areas constitute spaces between adjacent T-bars extending across or substantially across the room, as illustrated in Fig. 1. If, previous to the inclusion of the lighting fixture in the assembly, the pans have been employed to entirely cover the ceiling or wall, the same, with their contained sound-absorbing material, may be removed at the desired locations by merely pulling down on the pans to unsnap the beads on their flanges from the T-bars.

In the spaces from which the pans have been omitted or removed, members 30 carrying the lighting means are inserted in position by pressing the same upwardly until their flanges 36 including beads 38 engage between the walls 25 of the pans already in position and lips 24 of the spaced T-bars (see Fig. 4). If extended lines of the lighting units are desired, the members 30 are connected together in endwise contiguous relationship, as illustrated in Fig. 3, by bolts 50 extending through the aligned apertures 34 in the end flanges 32. After insertion of the lighting units in position, the same may be connected in any suitable way to electrical outlets provided at desired locations behind the acoustical treatment, access being had to the space behind the treatment by simply removing any of the pans 10. Alternatively, if desired, the lighting units may be first assembled in the ceiling, the electical connections made, and the pans then connected to the T-bars.

A construction in accordance with the invention as described above provides all of the advantages of the known type of acoustical treatment, with the addition of provision for lighting units of the type described in any desired arrangement. Furthermore, the construction permits of the rearrangement of the lighting fixtures from time to time by merely removing a row or a portion of a row of the pans and substituting lighting units therefor. The removed pans may be snapped into position in the location formerly occupied by the lighting unit.

As will be readily understood, the T-bars may be spaced at any desired distances apart to accommodate the particular size pans and lighting units desired. Conventionally, acoustical units or pans of a length twice their width are employed, that is, pans 12" x 24", while the lighting units of the invention are preferably 12" in width. In such case, the T-bars may be suitably arranged 12" apart where lighting units are to be inserted at the present time or where it is contemplated that they might be employed at a future time, and 24" apart where such lighting units are not to be employed.

Although the invention has been particularly described for use in connection with fluorescent lighting, other types of lighting may be employed in the members 30 of the invention.

It will be further understood that although the invention has been described in rather full detail, these details need not be strictly adhered to and that various changes and modifications may suggest themselves to one skilled in the art, all falling within the scope of the invention as defined by the subjoined claims.

What I claim is:

1. A partition comprising a base, a plurality of similar T-bars suspended from said base and lying in substantial parallelism to one another, a plurality of perforated pan-like members containing sound-absorbent material detachably supported from said T-bars and bridging certain of the spaces therebetween, and lighting units comprising elongated, inverted, trough-like members carrying lighting means detachably supported from said T-bars and bridging others of the spaces therebetween, said pan-like members and said trough-like members having similar means for attachment to said T-bars.

2. A partition or the like comprising a base, a plurality of T-bars suspended from said base and lying in substantial parallelism to one another, said T-bars including opposed locking lips, a plurality of perforated pan-like members including flanges having beads in removable interlocking engagement with said opposed locking lips of certain of the T-bars and bridging the spaces therebetween, said pan-like members containing a sound-absorbent filling, and lighting units bridging the spaces between others of the T-bars, said units comprising elongated, inverted, substantially trough-like members including side flanges similar to the flanges of said pan-like members and having beads in removable interlocking engagement with the lips of adjacent T-bars, said trough-like members carrying lighting means.

3. A lighting unit for suspension from parallel supporting T-bars of an acoustical treatment including a plurality of readily removable units, said lighting unit comprising an elongated, inverted, trough-like member having means for supporting a lighting element, and retroverted side flanges extending from the side walls of

the trough-like member and including longitudinal beads adapted for interlocking engagement with said T-bars whereby said lighting unit may be substituted for one or more of said removable units.

4. A ceiling or the like comprising a base and a facing spaced therefrom, said facing comprising a plurality of acoustical units and lighting units comprising elongated, inverted, trough-like members having their lower edges in substantially the plane of the faces of the acoustical units and carrying lighting means, said acoustical units and lighting units having similar attaching flanges, and means suspending said units from said base detachably interlocked with said flanges whereby the positions of said lighting units and one or more of said acoustical units may be interchanged.

5. A ceiling or the like comprising a base, a plurality of similar supporting members suspended therefrom in spaced relationship to one another, a plurality of sound-absorbing units detachably supported by said members and bridging certain of the spaces therebetween, and lighting units comprising elongated, inverted, trough-like elements having means for supporting a lighting element detachably supported by said members and bridging others of the spaces therebetween, said sound-absorbing units and said lighting units having similar means for attachment to said members.

6. A ceiling or the like comprising a base, a plurality of T-bars suspended from said base and lying in substantial parallelism to one another, a plurality of perforated pan-like members including flanges in removable interlocking engagement with said T-bars and bridging certain of the spaces therebetween, said pan-like members containing a sound-absorbent filling, and lighting units bridging other of said spaces between the T-bars, said units comprising elongated, inverted, substantially trough-like members including side flanges similar to the flanges of said pan-like members in interlocking engagement with said T-bars, said trough-like members having means for supporting a lighting element.

7. A lighting unit for suspension from parallel supporting members of an acoustical treatment including a plurality of readily removable units, said lighting unit comprising an elongated, inverted, trough-like member having means for supporting a lighting element and retroverted, relatively narrow side flanges formed as a continuation of said side walls of the trough-like member and lying in spaced relationship thereto, said flanges including longitudinal beads adapted for interlocking engagement with said supporting members.

8. A ceiling or the like comprising a base, a plurality of similar supporting members suspended therefrom in spaced relationship to one another, a plurality of sound-absorbing units detachably supported by said members and bridging certain of the spaces therebetween, and lighting units comprising elongated, inverted, trough-like elements having means for supporting a lighting element detachably supported by said members and bridging others of the spaces therebetween.

9. The combination of a ceiling structure comprising rows of individual ceiling block members with interposed rows of elongated lighting units and a plurality of parallel evenly spaced supporting bar members for detachably supporting both said block members and said lighting units, said block members and said lighting units being of substantially the same width to fit interchangeably between successive bar members, said lighting units comprising inverted trough-shaped reflectors carrying a light source, said reflectors having their open mouths substantially flush with said ceiling block members.

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