

[54] AIR CONDUIT AND DIFFUSER ASSEMBLY

[75] Inventor: Robert R. Lambert, Glendora, Calif.

[73] Assignee: Air Factors, Inc., Covina, Calif.

[22] Filed: Jan. 12, 1970

[21] Appl. No.: 2,112

[52] U.S. Cl. 98/40 C, 138/107

[51] Int. Cl. F24f 13/06

[58] Field of Search 98/40, 40 D, 40 DL, 40 C;
138/107, DIG. 4, 109

[56]

References Cited

UNITED STATES PATENTS

1,550,714	8/1925	Stacey, Jr.	138/DIG. 4
2,222,497	11/1940	Bins	138/107
2,956,587	10/1960	Fisher	138/107 X
3,357,088	12/1967	Hoffman et al.	98/40 X
3,478,667	11/1969	Bourquin	98/40

Primary Examiner—William E. Wayner

Attorney, Agent, or Firm—Miketta, Glenny, Poms & Smith; Professional Corporation

[57]

ABSTRACT

An air conduit and diffuser assembly for use in a room below the room ceiling in full view includes a conduit with a central cavity to conduct air into the room and openings through the conduit to diffuse the air throughout the room, the conduit being attached by rods extending between the ceiling and the upper portion of the conduit. The preferred embodiment includes a cavity in the upper portion for mounting a light fixture or the like, a utility channel in the central cavity to carry utilities into the room, and both metering and diffuser opening in the upper half of the conduit to direct the flow of air downwardly along the outside of the conduit. An alternative exemplary embodiment has a universal upper portion with the diffuser openings therein which accepts various sizes of lower portions for different central cavity sizes.

33 Claims, 6 Drawing Figures

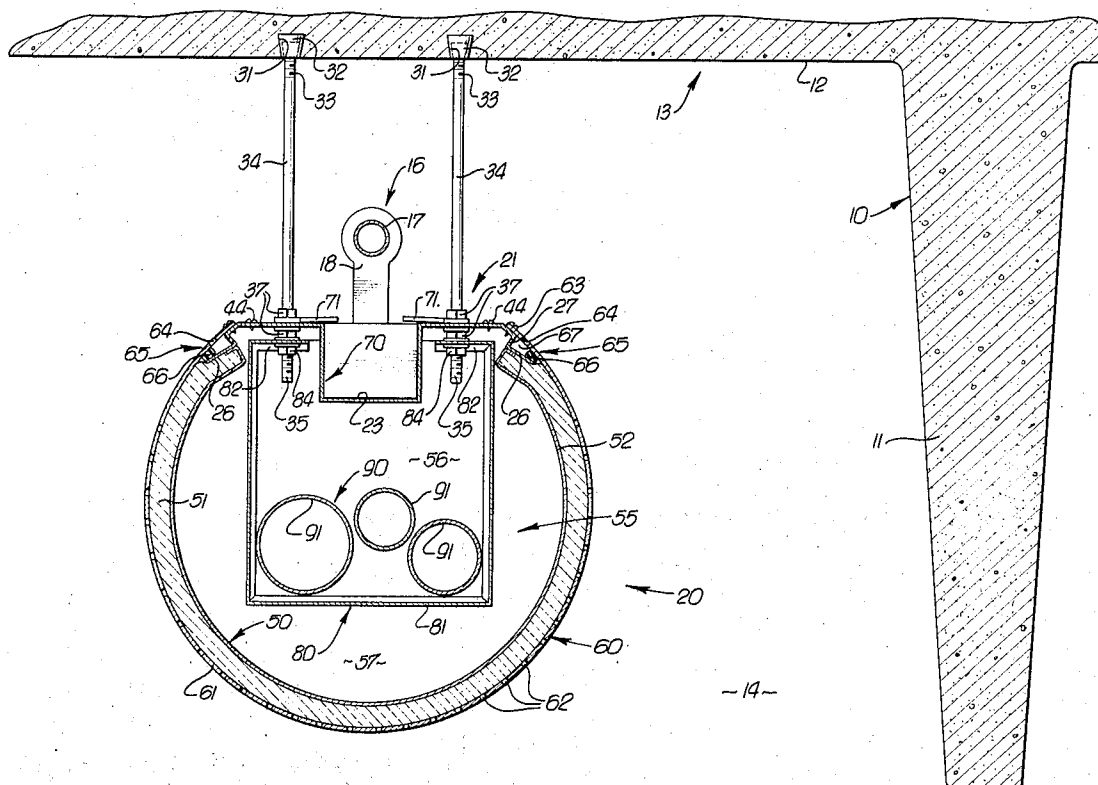
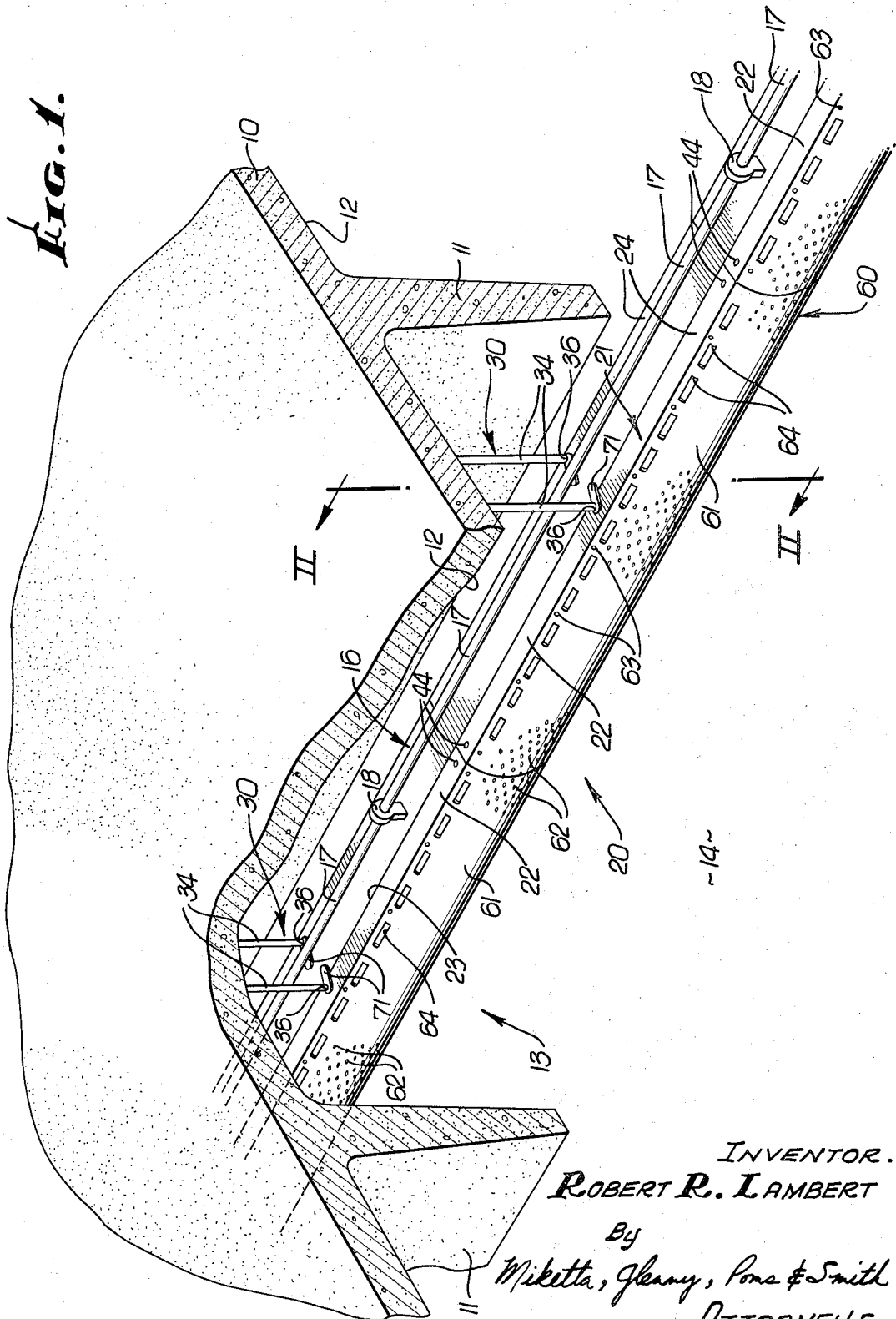


FIG. 1.



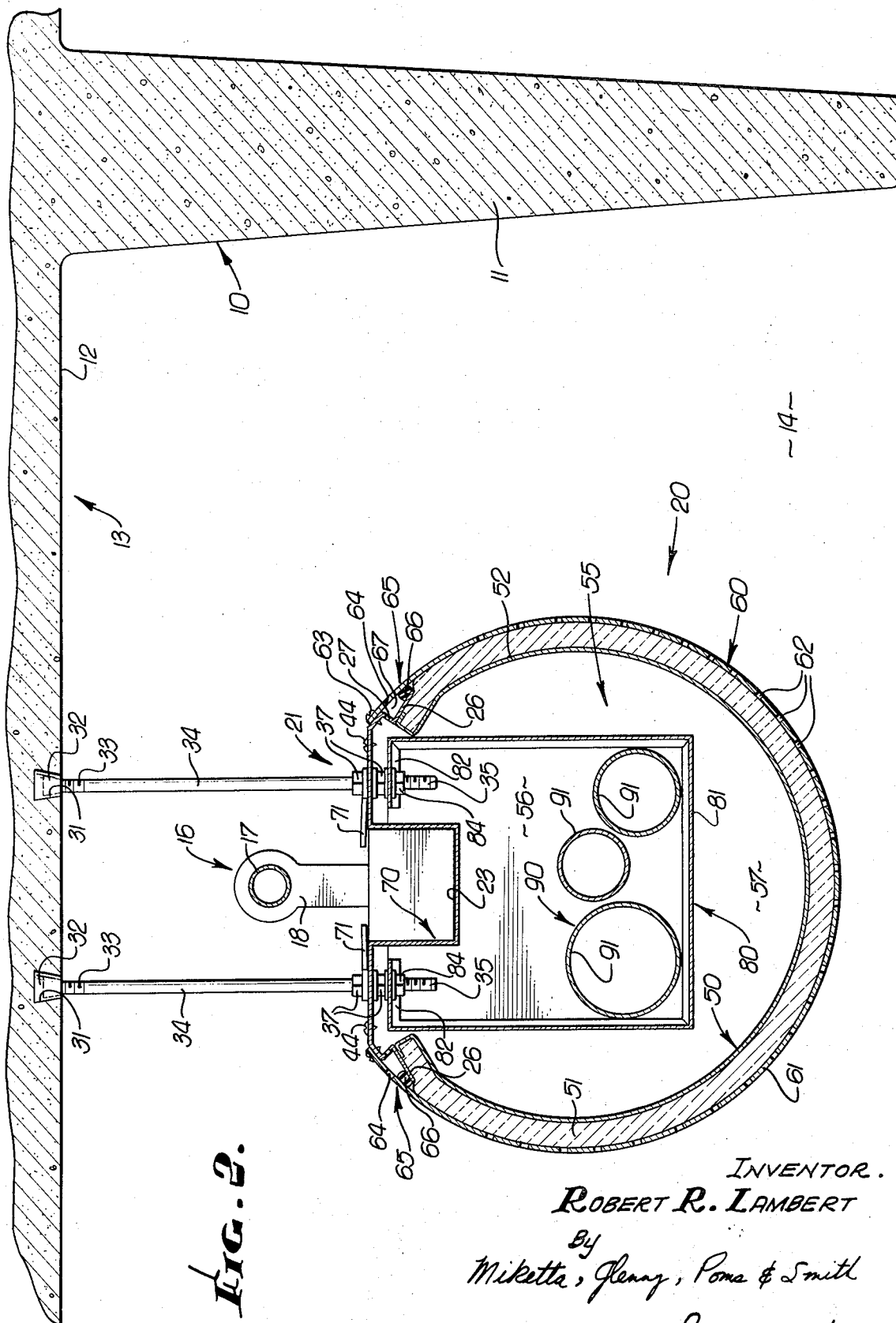


FIG. 2.

INVENTOR.
ROBERT R. LAMBERT
 By
Miketta, Penny, Poma & Smith
 ATTORNEYS.

FIG. 3.

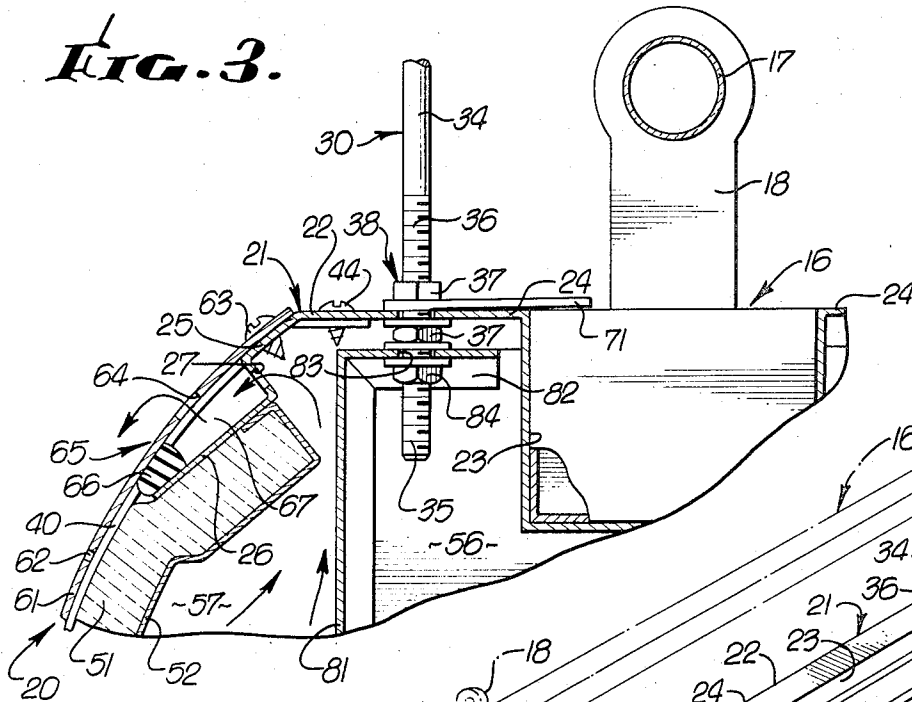
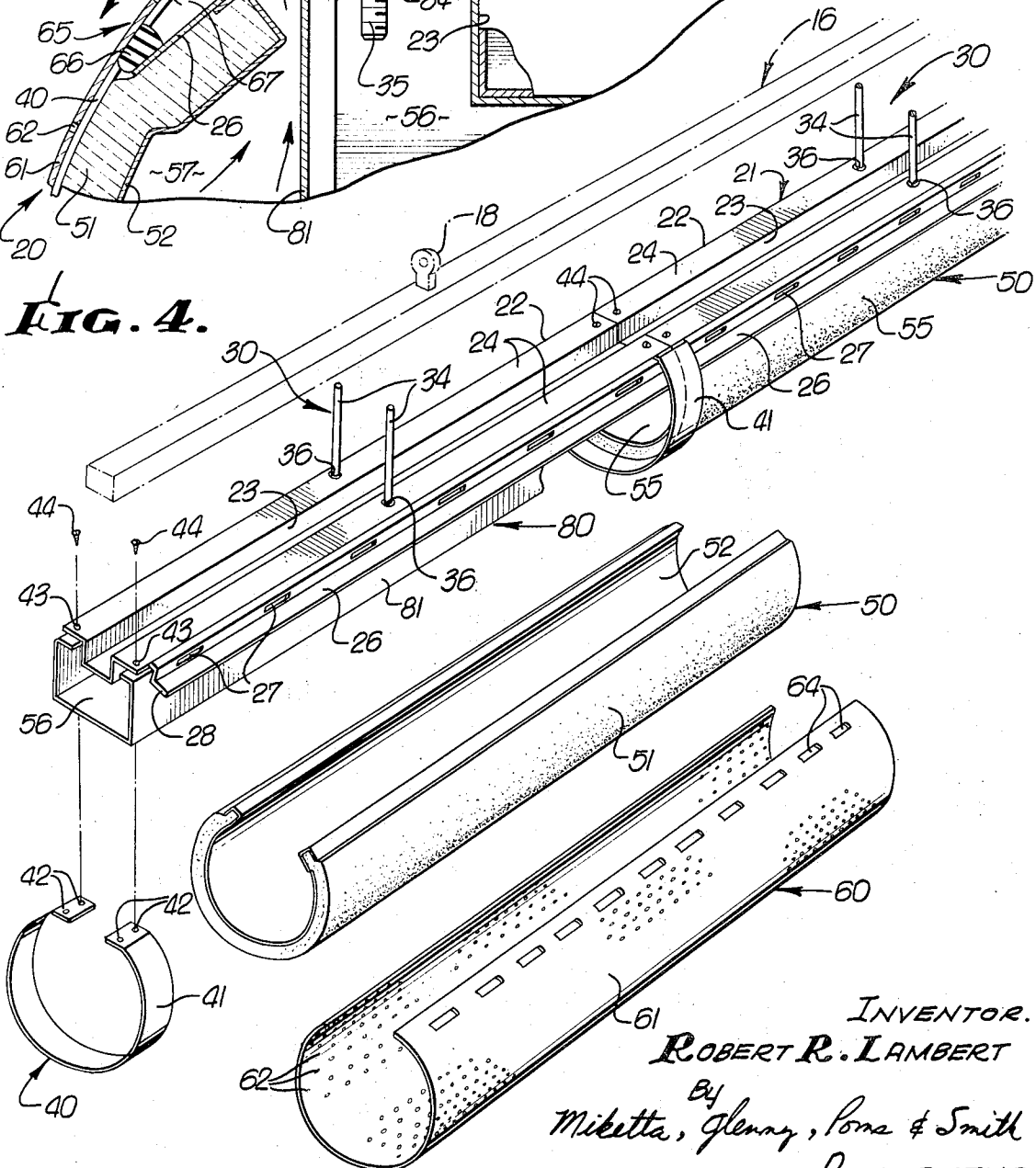
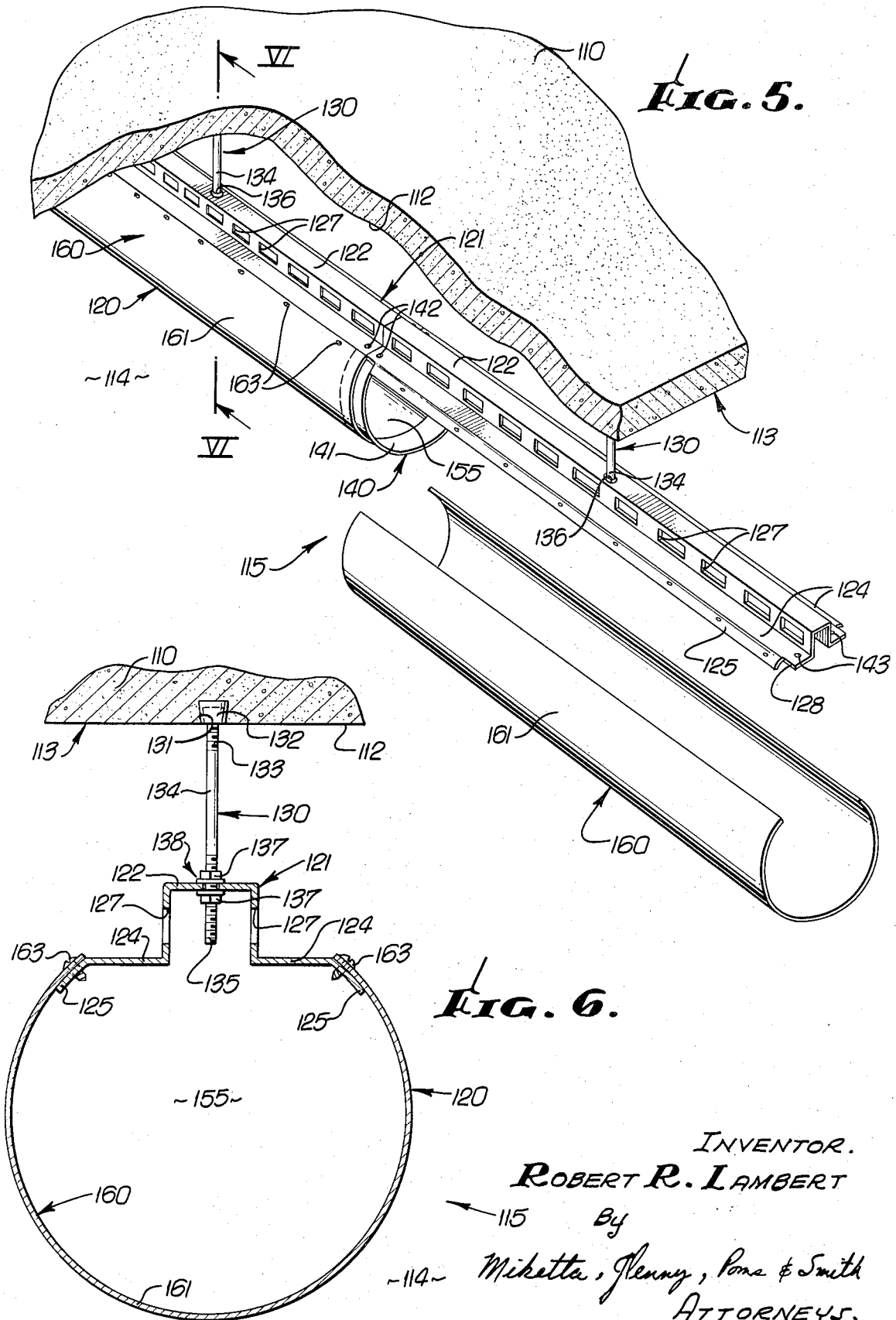


FIG. 4.



INVENTOR.
ROBERT R. LAMBERT
 By
 Micetta, Glenay, Poma & Smith
 ATTORNEYS.



AIR CONDUIT AND DIFFUSER ASSEMBLY

BACKGROUND OF THE INVENTION

This invention relates to air conduit and diffuser assemblies and more particularly to such assemblies which are mounted below the ceiling in a room in full view.

Conventionally in modern buildings, a false decorative ceiling is spaced (usually hung) from the actual room ceiling. The spaced between the false ceiling and the actual ceiling forms an attic. This attic contains recessed lighting fixtures, heating and air conditioning duct systems, sprinkler systems, and other conduits that provide power, telephone, etc. to the room. However, suspended false ceilings are costly and are for the most part only decorative in function. A false ceiling does little more than provide a decorative appearance and attic space that could not be done by the real ceiling itself.

Therefore in some buildings, the provision of a false ceiling has been eliminated, and the actual ceiling of the room, usually the underside of the floor above, is the only ceiling provided. With the elimination of the false ceiling, the attic space has been eliminated also. However, the room still needs the services heretofore supplied by the ducts and other conduits mounted in the attic space between the real ceiling and the false ceiling.

Therefore, it is a primary object of this invention to provide a novel tubular air conduit and air diffuser assembly which will mount below the ceiling of a room in full view but with hidden air diffuser outlets.

It is an object of this invention to provide such an air conduit and diffuser assembly which will carry conditioned air to and distribute the same into a room while providing space for additional service components without a false ceiling and an attic space.

It is another object of this invention to provide such an air conduit and diffuser assembly, which also mounts a light fixture to provide indirect lighting for the room.

It is yet another object of this invention to provide such an air conduit and diffuser assembly for an overhead T concrete deck which mounts below the deck and has mounted thereon a light fixture which is hidden from view from any occupant of the room below the overhead T concrete deck.

It is a further object of this invention to provide such an air conduit and diffuser assembly which has means provided therewith for absorbing sound.

It is yet a further object of this invention to provide such an air diffuser assembly for an overhead T concrete deck with generally upwardly facing diffuser openings but which direct the air generally diagonally downwardly along the assembly sides to prevent the air from hitting the lower end of the T and thereby being directed straight downwardly in a vertical stream.

It is another object of this invention to provide such an air conduit and diffuser assembly which has the diffuser openings located in the upper portion or support panel.

It is yet another object of this invention to provide such an air conduit and diffuser assembly having an upper portion or support panel with diffuser openings which receives different sizes of lower skins to form a central cavity of different sizes.

It is further object of this invention to provide such an air conduit and diffuser assembly having a universal support panel for a variety of sizes of assemblies.

SUMMARY OF THE INVENTION

An air conduit and diffuser assembly for use below the ceiling of a room to conduct air from a supply into the room and to diffuse it throughout the room including conduit or air plenum means having a central cavity to conduct air therealong and a plurality of generally outwardly directed diffuser openings therethrough to diffuse the air throughout the room, and attaching means attaching the conduit means in the room under the ceiling in visual and air flow communication with room areas below the ceiling. The air diffuser assembly can also include mounting means associated therewith for mounting a visually hidden light fixture thereon. The air diffuser assembly may be comprised of individual support panel sections and individual duct panel sections together by attaching means to be assembled into the air conduit and diffuser assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is partially cut away view of a pre-cast double-T concrete deck which acts as a ceiling for the room below and which has mounted thereto an air conduit and diffuser assembly according to the preferred embodiment of this invention for diffusing air throughout the room below and for mounting a light fixture or the like thereon;

FIG. 2 is an enlarged cross-sectional view taken along the plane II—II of FIG. 1 showing the central cross-section of the air conduit and diffuser assembly of FIG. 1;

FIG. 3 is an enlarged section view of the portion of FIG. 2 enclosed in rectangle III and showing the details of construction of the air conduit and diffuser assembly of FIG. 1;

FIG. 4 is a partially exploded view of the air conduit and diffuser assembly of FIG. 1 showing the method of construction

FIG. 5 is a partially cut away and partially exploded view of a floor which acts as a ceiling for the room below and which has mounted thereto an alternative exemplary embodiment of the air conduit and diffuser assembly, according to this invention, for diffusing air throughout the room below;

FIG. 6 is an enlarged cross-sectional view taken along the plane 6—6 of FIG. 5 showing the central cross-section of the alternative exemplary embodiment of the air conduit and diffuser assembly of FIG. 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, a pre-cast double-T concrete deck 10 is shown having, on the underside thereof, spaced downwardly extending portions 11 connected by horizontal surface portions 12 which form the ceiling 13 of a room 14. An air conduit and diffuser assembly according to this invention is generally indicated at 15 and is mounted below and from the ceiling 13 in the room 14 between the spaced downwardly extending portions 11. The air diffuser assembly 15 has mounted thereon a light fixture or the like 16 having a light bulb 17 mounted in between mounting ends 18.

While the ceiling 13 is shown in the exemplary embodiment as being the underside of a pre-cast double concrete deck 10, it should be understood that the ceiling 13 for mounting the air diffuser assembly 15 may be any type of a ceiling.

The air diffuser assembly 15 generally includes conduit means 20 of an upper portion or support panel 21 and a lower portion or duct 50 surrounded by a decorative skin 60 and attached to the ceiling by attaching means 30. The conduit 20 has mounting means 70 for mounting the light fixture 16 thereon and securing means 71 for maintaining the light fixture mounted thereon. The air diffuser assembly 15 may be provided with canal means 80 including utility support means 90 inside the conduit means 20 for conducting various utilities and other services into the room.

As best seen in FIGS. 1 and 2, the upper portion or support panel 21 of the conduit means 20 is made up of a multiplicity of elongated support panel sections or u-shaped members 22 having an inverted hat-shaped cross-section. Each support panel section 22 has an upwardly opening light fixture receiving cavity 23 bounded by a web 24. The web 24 has outwardly and downwardly extending side flanges 25 with each flange 25 having a radially inwardly directed lip or jag 26 therein. The jags 26 have a series of metering openings 27 in the upper leg thereof which lie in radial planes through the conduit assembly for allowing a limited amount of air to pass through the support panel sections 22. Each support panel section 22 has notches 28 at either side of both ends to facilitate securing the support panel sections together. The support panel sections 22 are each mounted to the ceiling 13 by attaching means 30.

As best seen in FIG. 2, the attaching means or hanging means 30 includes a pair of parallel centrally-located spaced keyways 31 in the ceiling 13. The keyways 31 have an inverted trapezoidal cross-section for receiving and maintaining therein, feet 32. The feet 32 have threaded holes for receiving the threaded upper ends 33 of rods 34. The rods have a threaded lower ends 35 which extend through centrally located openings 36 in the support panel section 22 and receive nuts 37 to attach each support panel section 22 in spaced relationship from the ceiling 13. A plurality of nuts 37 are provided to act as leveling means 38 to permit the aligning and leveling of the support panel sections 22.

Splice means 40 is provided for attaching adjacent end to the support panel sections 22 together to form the support panel 21. As best seen in FIG. 4, the splice means includes a plurality of alignment bands 41, with each band 41 extending from the one side of the flange 25 of a support panel section 22 below the support panel section and around to the other side of the support panel section in an open loop for receiving the duct 50. A pair of spaced holes 42 are provided in the alignment band 41 adjacent either end thereof which may be aligned with holes 43, at either side of both ends of support panel sections 22 with sheet metal screws 44 being screwed therethrough to secure the alignment band 41 to the support panel sections 22 while securing the support panel sections 22 together to form a support panel 21.

The lower portion or duct 50 is made of a multiplicity of duct sections or insulating material 51 from a high density insulation glass formed in a generally tubular

shape. The length of the duct sections 51 corresponds to the length of the support panel sections 22. The duct sections 51 may be provided with heat reflective foil 52 either along the interior side or sandwiched between the sides in a special slot provided therefor, depending upon the particular use intended for the air diffuser assembly 15.

The duct sections 51 after being rolled into a generally tubular shape, are inserted inside the loop of the alignment bands 41 to secure the duct sections 51 to the support panel sections 22 and form the duct sections 51 in alignment into a duct 50. The support panel 21 and the duct 50 together form a central cavity 55 for carrying air or other services into the room 14.

A decorative skin outer wrapper or membrane 60 is provided around the duct 50 and the support panel 21 to enhance the appearance of the air diffuser assembly 15. The decorative skin 60 is made of a multiplicity of skin sections 61 having a sound absorbing surface of uniform perforations 62. The skin sections 61 are of a corresponding length to the length of the support panel sections 22 and wrap around the duct sections 51 with each end thereof around the alignment bands 41 to be attached to the flanges 25 of the support panel sections 22 and the alignment bands 41 by sheet metal screws 63. The skin sections 61 meet each other at adjacent ends to form a butt joint forming a continuous decorative skin 60 which, besides enhancing the appearance of the air diffuser assembly 15, also absorbs sound in the room 14.

The skin sections 61 of the decorative skin 60 cover the lips or jags 26 of the support panel sections 22. A diffuser opening 64 is provided over each of the metered openings 27 for diffusing the air from the central cavity 55, through the metered openings 27 and through the decorative skin 60, generally tangentially, to the conduit outer surface into the room 14. Seal means 65 in the form of sponge rubber gaskets 66 as best seen in FIG. 4 are provided between the jags 26 and the decorative skin 60 below the diffuser openings 64 in the chamber 67 formed thereby, to prevent the air passing through the metering openings 27, from passing between the decorative skin 60 and the duct 50. Thus the air in the central cavity 55 will follow the path shown by the arrows in FIG. 3.

Mounting means 70 is provided in the conduit means 20 for mounting a light fixture or the like thereto. The particular mounting means of the preferred embodiment includes the cavity 23 in each support panel section 22 which are aligned as the sections 22 are attached into the support panel 21. The light fixture 16 is inserted into the cavity 23 and maintained therein by securing means 71 which in the preferred embodiment are turn clamps mounted on the rods 33 and pivoted over the light fixture 16 in the cavity 23. Notice in FIG. 2 that the light fixture 16 when positioned in the cavity 23 has the light bulb 17 thereover extending between mounting ends 18, but that the light bulb 17 is hidden from view by the conduit means 20 throughout the room because of the downwardly extending portions 11 of the ceiling 13 restricting the line of sight. Thus the light fixture 16 mounted on the conduit means 20 provides hidden lighting to a room 14 having no false ceiling.

The air diffuser assembly 15 may have one end thereof attached to a supply of conditioned or heated air (not shown) for conducting the conditioned or

heated air into the room 14 permitting the air to be diffused through the metered openings 27 and the diffuser openings 64 throughout the room 14. The metering openings 27 are so sized to permit only a limited amount of air to pass therethrough so that all of the openings 27 will have generally the same amount of air passing therethrough for any given flow in the central cavity 55. The diffuser openings 64 are larger and generally located in the upper half of the conduct means 20 to diffuse the air passing through the metering openings 27. Additionally the location of the diffuser openings 64 in the upper half of the conduct means 20 tends to hide the openings 64 from view giving a clean decorative appearance from below in the room 14 uninterrupted by the utilitarian diffuser openings.

The conditioned or heated air from the supply (not shown) enters the central cavity 55 with a high velocity pressure and with a higher static pressure to pass down the central cavity 55. At each metered opening 27 a limited amount of air passes therethrough into the upper end of chamber 67 between the jags 26 of the support panel 21 and the skin 60 where the velocity of the air is reduced and the static pressure increased before passing out the diffuser openings 64. The diffuser openings 64 are much larger than the metering opening 27 so the velocity of the air therethrough is much less, giving less noise. Notice in FIG. 3 that the diffuser openings 64 are adjacent the lower end of the chamber 67 between the panel 21 and the skin 60 causing the air to flow along the skin 60 for a short distance until the momentum of the air cause it to break free of the skin 60. The flow of diffused air along the skin prevents the air from flowing against the downwardly extending portions 11 of the T deck 10 to be deflected thereby in a stream down at the floor and the occupants of the room.

If the air diffuser assembly is not to be used with a T-deck, then chamber 67 and separated metering and diffuser openings may not be necessary and the common openings in the skin will both meter and diffuse the air.

The air diffuser assembly may act as a return or exhaust by drawing air from the room through the diffuser openings 64 and the metering openings 27 into the central cavity 55 to be conducted thereby. Also, the air diffuser assembly 15 may also be used to conduct other services than air conditioning or heating into the room 14.

Canal means 80 may be located within the central cavity 55 of the air diffuser assembly 15 to divide central cavity 55 into the utility carrying portion 56 and an air carrying portion 57. The canal means 80 is shown in the preferred embodiment as an elongated U-shaped open upperended channel 81 having inwardly extending flanges 82 with openings 83 therethrough for receiving the thread lower ends of rods 33 to be attached within the central cavity 55 by nuts 84. The channels 81 may be made in a multiplicity of channel sections of lengths similar to the support panel sections and may be attached to the rods 33 prior to the duct sections 51 being inserted into the alignment bands 41.

The channels 81 may be provided with utility support means such as ring clamps or conduit 91 to segregate the particular utilities such as telephone, electrical, sprinkler systems, etc. within the channel 81 while the utilities are conducted throughout the room by the air diffuser assembly 15. Suitable conduits (not shown)

can be provided for passing the utilities out of the air conduit and diffuser assembly 15 at the desired locations.

Referring now to FIGS. 5 and 6, and particularly to FIG. 5, an alternative exemplary embodiment of the air conduit and diffuser assembly 15 according to this invention is generally indicated by the number 115. This alternative embodiment of the air conduit and diffuser assembly 115 is mounted below and from the ceiling 113 in the room 114. The ceiling 113 is defined by the horizontal surface portion 112 of a pre-cast concrete deck 110. Notice that the pre-cast concrete deck 110 is flat across the lower surface and has no downwardly extending portions.

While the ceiling 113 is shown in the exemplary embodiment as being the underside of a pre-cast concrete deck 110, it should again be understood that the ceiling 113 for mounting the air conduit and diffuser assembly 115 may be any type of ceiling.

The air conduit and diffuser assembly 115 according to the alternative embodiment includes conduit means 120 of an upper portion or support panel 121 and a lower portion or skin 160 to be attached to the ceiling by attaching means 130.

As best seen in FIG. 5, the upper portion or support panel 121 of the conduit means 120 is made up of a multiplicity of elongated support panel sections 122 having a hat-shaped cross-section. Each support panel section 122 has downwardly opening hat-shaped portion 123 bounded on either side by a web 124. The web 124 has downwardly and outwardly extending flexible side flanges 125. A plurality of diffuser openings 127 are located in both vertical sides of the downwardly opening hat-shaped portion 123 to open the interior of the support panel 122 to the room 114. Each support panel section 122 has a notch 128 at either side of both ends to facilitate the securing of the support panel sections together. The support panel sections 122 are each mounted to the ceiling 113 by attaching means 130.

As best seen in FIG. 6, the attaching means 130 includes a keyway 131 in the ceiling 113. A keyway 131 has an inverted trapezoidal cross-section for receiving and maintaining therein a plurality of feet 132. The feet 132 have threaded holes for receiving the threaded upper ends 133 of rods 134. The rods 134 have a threaded lower end 135 which extend through centrally located openings 136 in the support panel sections 122 and receive nuts 137 to attach the support panel sections in spaced relationship from the ceiling. A plurality of nuts 137 are provided to act as leveling means 138 to permit the aligning and leveling of the support panel sections 122.

Splice means 140 is provided for attaching adjacent ends of the support panel sections 122 together to form a support panel 121. As best seen in FIGS. 4, the splice means 140 include a plurality of alignment bands 141. Each band 140 extends from one side flange 125 of a support panel section 122 below the ends of adjacent support panel section 122 and around to the other side of the support panel section 122 in a loop. A pair of spaced holes 142 are provided in the alignment bands 141 adjacent either end thereof. The holes 142 may be aligned with the holes 143 at either side of both ends of the support panel sections 122 with sheet metal screws 144 being screwed therethrough to secure the alignment band 141 to the support panel sections 122.

and to secure the support panel sections 122 together to form a support panel 121.

A lower portion or skin 160 is provided around the alignment bands 141 to form a central cavity 155 for carrying air into the room 114. The skin 160 is made up of a multiplicity of skin sections 161 of corresponding lengths to the length of the support panel sections 122. The skin sections 161 are wrapped around the alignment bands 141 and attached to the flanges 125 of the support panel sections 122 by sheet metal screws 163. The skin sections 161 meet each other at adjacent ends to form a butt joint to form a continuous appearing skin 160. Any gap that might occur at the butt joint of the skin sections 161 is closed by the alignment bands 141 on the inside thereof.

With the diffuser openings 127 being in the support panels 121, the skin 60 need not be specially made to include any openings as in the preferred embodiment. With a universal skin 160 being useable, a central cavity 155 can be of any size as long as the skin 161 and the alignment bands 141 being of a corresponding size. The support panel sections 122 of the alternative embodiment of the air conduit and diffuser assembly 115 can be made for universal use to make all sizes of air diffuser assembly.

If after installation and/or during addition to a room, more capacity is desired, the alternative embodiment of the air diffuser assembly 115 need not be completely replaced but may merely have the skin 160 and the alignment bands 141 replaced to provide the added capacity desired. The alternative exemplary embodiment of the air conduit and diffuser assembly 115 provides simplified and universal construction.

Thus the air conduit and diffuser assembly according to this invention mounts below the real ceiling of a room in full view to conduct conditioned air into the room to be diffused throughout the room.

I claim:

1. An air conduit and diffuser assembly for use in a room below the room ceiling in full view to conduct air from a source thereof into the room and to diffuse the air throughout the room, comprising:

conduit means having a central cavity therein for conducting the air from said source therealong into said room and presenting an outer surface below said ceiling;

air diffuser means, including diffuser openings in said conduit in the upper half thereof and facing generally upwardly, and means for directing air from said cavity through said openings in a direction generally tangential to said outer surface of said conduit and in a generally downwards direction into the room; and

attaching means for attaching said conduit means in said room below said ceiling, said conduit being thereby in visual and air-flow communication with areas of said room below said ceiling.

2. The air conduit and diffuser assembly as in claim 1 wherein the conduit means includes:

a support panel forming the upper portion of the conduit and having means for receiving a lower portion of the conduit; and a lower portion having a generally tubular shape open at the top to receive the support panel and said lower portion together forming the central cavity, and wherein the support panel had cavity for receiving a light fixture and securing means for selectively securing the light fix-

ture in the cavity to mount a light fixture in the room.

3. The air conduit and diffuser assembly as in claim 1 wherein the conduit means includes:

a support panel forming the upper portion of the conduit and having means for receiving a lower portion of the conduit; and a lower portion having a generally tubular shape open at the top to receive the support panel and said lower portion together forming the central cavity, and additionally comprising:

a decorative skin surrounding said lower portion and attached to said support panel.

4. The air conduit and diffuser assembly as in claim 3 wherein the panel is provided with metering openings and said decorative skin covering said metering openings and said skin has diffuser openings therethrough in fluid communication to said metering openings, said diffuser openings permitting air to flow from the metering opening therethrough into the room.

5. The air conduit and diffuser assembly as in claim 4 wherein seal means is provided between said skin and said upper portion to prevent the air from leaking therebetween from said metering openings.

6. The air conduit and diffuser assembly as in claim 5 wherein the diffuser openings are in the upper half of the skin, but below the metering openings to diffuse the air therethrough along the skin downwardly to uniformly diffuse the air into and throughout the room.

7. The air conduit and diffuser assembly as in claim 1 additionally comprising canal means mounted in the central cavity to divide the cavity into two portions, one portion to act as an air passage and the other portion to carry utilities.

8. The air conduit and diffuser assembly as in claim 1 wherein said air diffuser means includes:

a plurality of metering openings in association with the diffuser opening; means for providing each of said plurality of metering openings in a plane generally normal to the plane of an associated diffuser opening; and means for providing a chamber communication between each of said metering openings and its associated diffuser openings, whereby air flow from said cavity is directed by said metering opening through the associated chamber generally tangential of the associated diffuser opening.

9. An air conduit and diffuser assembly for use in a room below the room ceiling in full view to conduct air from a source thereof into the room and to diffuse the air throughout the room, comprising:

conduit means having a central cavity therein for conducting the air from said source therealong into the room below the ceiling, said conduit means including a support panel forming the upper portion of the conduit and having means for receiving the lower portion of the conduit, and a lower portion having a generally tubular shape open at the top to receive the support panel and a decorative skin around said lower portion, attached to said support panel; said support panel and said lower portion together forming the central cavity;

a plurality of metering openings and associated diffuser openings to diffuse the air from said conduit into the room;

said metering opening being provided in said panel and said diffuser openings being provided in said decorative skin and in fluid communication to said

metering openings; whereby air flow from said cavity in said conduit is through the metering openings then through the diffuser openings then into the room.

10. The air conduit and diffuser assembly as in claim 9 wherein seal means is provided between said skin and said panel upper portion of said conduit to prevent the air from leaking therebetween from said metering openings.

11. The air conduit and diffuser assembly as in claim 9 wherein the diffuser openings are in the upper half of the skin but below the metering openings to diffuse the air therethrough along the skin downwardly to uniformly diffuse the air into and throughout the room.

12. The air conduit and diffuser assembly as in claim 9 wherein the diffuser openings are in the upper half of the skin and flush therewith to be hidden from view from the room below.

13. The air conduit and diffuser assembly as in claim 9 wherein said diffuser openings are generally normal to said associated metering opening and said diffuser openings are larger than said metering openings.

14. The air conduit and diffuser assembly as in claim 2 wherein said diffuser openings are generally normal to said associated metering opening and said diffuser openings point in a generally upward direction.

15. The air conduit and diffuser assembly as in claim 14 wherein said lower portion and said decorative skin forms a chamber near their intersection with said support panel.

16. The air conduit and diffuser assembly as in claim 15 wherein said chamber is in fluid communication with said metering openings and said diffuser openings whereby air passes through said metering opening into said chamber and then through said diffuser openings, and then along a distance of said decorative skin.

17. An air conduit and diffuser assembly for use in a room below the room ceiling in full view to conduct air from a source thereof into the room and to diffuse the air throughout the room, comprising:

conduit means having a central cavity therein for conducting the air from said source therealong into said room below said ceiling, wherein the conduit means includes:

a support panel forming the upper portion of the conduit and having means for receiving a lower portion of the conduit, and

a lower portion having a generally tubular shape open at the top to receive the support panel, said support panel and said lower portion together forming the central cavity;

a plurality of openings through said conduit to diffuse said air from said conduit into said room; and attaching means for attaching said conduit means in said room below said ceiling, said conduit being thereby in visual and air flow communication with areas of said room below said ceiling;

wherein the support panel has a cavity for receiving a light fixture and securing means for selectively securing the light fixture in the cavity to mount a light fixture in the room.

18. An air conduit and diffuser assembly for use in a room below the room ceiling in full view to conduct air from a source thereof into the room and to diffuse the air throughout the room comprising:

conduit means having a central cavity therein for conducting the air from said source therealong into

said room below said ceiling, wherein the conduit means includes:

a support panel forming the upper portion of the conduit and having means for receiving a lower portion of the conduit, and

a lower portion having a generally tubular shape open at the top to receive the support panel, said support panel and said lower portion together forming the central cavity;

a plurality of openings through said conduit to diffuse said air from said conduit into said room; and

attaching means for attaching said conduit means in said room below said ceiling, said conduit being thereby in visual and air flow communication with areas of said room below said ceiling;

said assembly additionally comprising a decorative skin surrounding said lower portion.

19. The air conduit and diffuser assembly as recited in claim 18 wherein said skin has a sound absorbing surface thereon to aid in absorbing the sound in the room.

20. The air conduit and diffuser assembly as recited in claim 19 wherein the skin has a series of perforations therethrough, and a backing of sound absorbing material to aid in absorbing sound in the room.

21. An air conduit and diffuser assembly for use in a room below the room ceiling in full view to conduct air from a source thereof into the room and to diffuse the air throughout the room, comprising:

conduit means having a central cavity therein for conducting the air from said source therealong into said room below said ceiling, wherein the conduit means includes:

a support panel forming the upper portion of the conduit and having means for receiving a lower portion of the conduit, and

a lower portion having a generally tubular shape open at the top to receive the support panel, said support panel and said lower portion together forming the central cavity;

and wherein the support panel and the lower portion are both made in elongated sections for being attached together and an alignment band is provided for each joint of the sections, said alignment band being secured to adjacent ends of the panel sections to attach the panel sections together and to close the gap between the sections;

a plurality of openings through said conduit to diffuse said air from said conduit into said room; and

attaching means for attaching said conduit means in said room below said ceiling, said conduit being thereby in visual and air flow communication with areas of said room below said ceiling,

said air conduit and diffuser assembly additionally comprising a decorative skin around said alignment bands and said lower portion and attached to said support panel.

22. The air conduit and diffuser assembly as in claim 21 wherein the panel is provided with metering openings and said decorative skin covering said metering openings and said skin has diffuser openings therethrough in fluid communication to said metering openings, said diffuser openings permitting air to flow from the metering openings therethrough into the room.

23. The air conduit and diffuser assembly as in claim 22 wherein seal means is provided between said skin

and said upper portion to prevent the air from leaking therebetween from said diffuser openings.

24. The air conduit and diffuser assembly as in claim 22 wherein the diffuser openings are in the upper half of the skin, but below the metering openings to diffuse the air therethrough along the skin downwardly to uniformly diffuse the air into and throughout the room.

25. The air conduit and diffuser assembly as in claim 22 wherein the diffuser openings are in the upper half of the skin and flush therewith to be hidden from view from the room below.

26. An air conduit and diffuser assembly for use in a room below the room ceiling in full view to conduct air from a source thereof into the room and to diffuse the air throughout the room, comprising:

conduit means having a central cavity therein for conducting the air from said source therealong into said room below said ceiling, wherein the conduit means includes:

a support panel forming the upper portion of the conduit and having means for receiving a lower portion of the conduit, and

a lower portion having a generally tubular shape open at the top to receive the support panel, said support panel and said lower portion together forming the central cavity;

a plurality of openings through said conduit to diffuse said air from said conduit into said room; and

attaching means for attaching said conduit means in said room below said ceiling, said conduit being thereby in visual and air flow communication with areas of said room below said ceiling,

wherein said air conduit and diffuser assembly additionally comprises canal means mounted in the central cavity to divide the cavity into two portions, one portion to act as an air passage and the other portion to carry utilities.

27. The air conduit and diffuser assembly as in claim 26 where the attaching means additionally mounts the canal means in said cavity.

28. An air conduit and diffuser assembly for use below a "T" concrete deck ceiling above a room to mount a light fixture or the like and to conduct air from a supply into a room to be diffused throughout the room comprising:

an elongated support panel, said support panel having a longitudinal cavity for receiving an elongated light fixture with the light bulb thereabove, and having means for receiving a duct;

a duct received by said support panel, said duct and said support panel together forming a central cavity to conduct air therealong, and having a plurality of openings therethrough to diffuse air into the room; and

attaching means attaching said support panel and said duct in said room between the downwardly extending portions of said "T"s of the ceiling, said panel and said duct being located a spaced distance from said ceiling whereby the light bulb does not protrude into the line of sight past the downwardly extending portion of the "T"s and by the sides of

the duct to keep the light bulb hidden from view.

29. An air conduit and diffuser assembly as in claim 28 wherein the support panel and the duct have a chamber associated therewith with a multiplicity of metering openings through which air from the central cavity passes into the chamber, and a multiplicity of diffuser openings through which the air in the chamber passes into the room, said diffuser openings being located in such a relationship to said metering openings that the velocity of the air between the two openings directs the air out of the diffuser opening downwardly along the sides of the duct for a short distance to avoid hitting the downwardly extending portions of the T deck ceiling and thereby avoiding the air being directed thereby in a stream down into the room.

30. In a room with a floor, ceiling and side walls, an air conduit and diffuser assembly to conduct air from a supply into the room to be diffused throughout the room comprising:

conduit means mounted below the ceiling in the room, said conduit means having a central cavity therein to conduct air therealong and a plurality of openings therethrough to diffuse the air into the room, said openings being in the upper half of the conduit means to be substantially hidden from view from the room below; and

attaching means attaching said conduit means in said room under said ceiling, and means for directing air flow generally tangentially through said openings in a generally downwardly oriented direction into the room.

31. A top discharge air duct system constructed to be hung from a ceiling which comprises a plurality of air ducts, each air duct comprising a U-shaped member forming the top portion of said duct having flanged portions extending therefrom and having spaced air passage holes therethrough, a wrapper cylindrically curved, the ends of said wrapper terminating on the flanged portions, means for securing the ends of the wrapper to the flanged portions and means for joining two adjacent sections of said duct together and hanging said sections from the ceiling, whereby when said duct system is hung from a ceiling, the air is discharged from the top portion of the air duct through said spaced holes.

32. A top discharge air duct system according to claim 31 wherein the U-shaped member is in the form of an upright U and which further comprises a light disposed in the U portion.

33. A section of a top discharge air duct system constructed to be hung from a ceiling which comprises an air duct comprising a U-shaped member forming the top portion of said duct having flanged portions extending from the top of the U and having spaced air passage holes through the flanged portions for air emission, a wrapper cylindrically curved, the ends of which overlap the flanged portions, means for securing the ends to the flanged portions and means attached to the U-shaped member for hanging said section from the ceiling.

* * * * *