

United States Patent

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[54] **CEILING BOXES FOR DISTRIBUTING AIR**
3 Claims, 3 Drawing Figs.

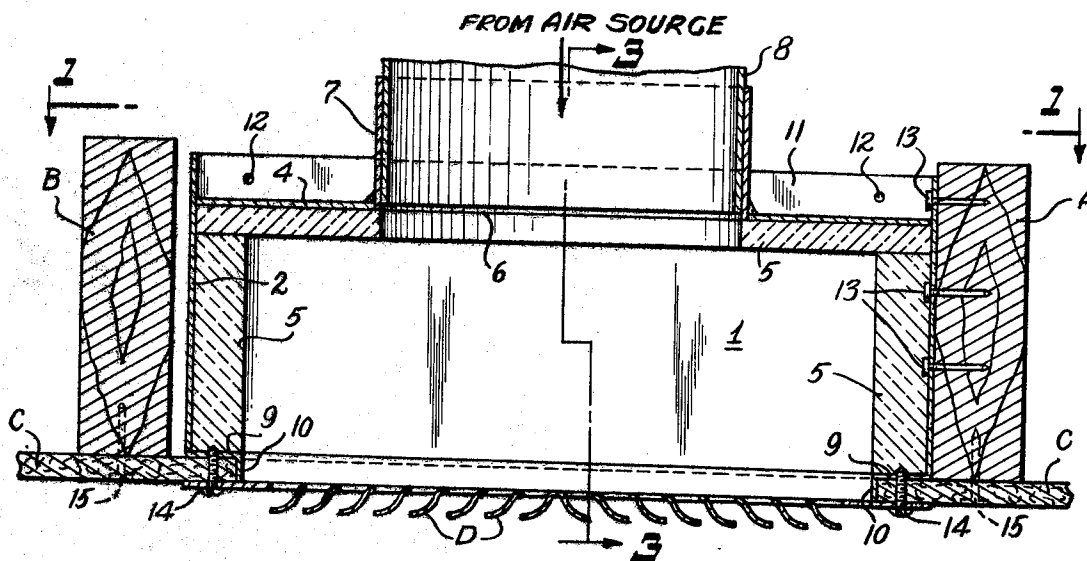
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98/114; 248/343

[51] Int. Cl..... **F24t 7/00**

[50] Field of Search..... 62/259;
52/302, 303; 98/40D, 40DL, 114; 248/57, 342,
343X

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ABSTRACT: The invention is directed to ceiling boxes used to distribute air down through the ceiling of a room from a suitable furnace or cooler. The improved box is of rectangular form and is so constructed that it may be installed between the ceiling joists in a position with its length extending either parallel with or transversely of said joists, as desired. To achieve this the box is adapted to be supported on one joist only, and is secured to this joist by means of fastening devices passing through either an end wall or a sidewall of the box. The open lower side of the box is covered by a suitable grille through which the air is discharged.



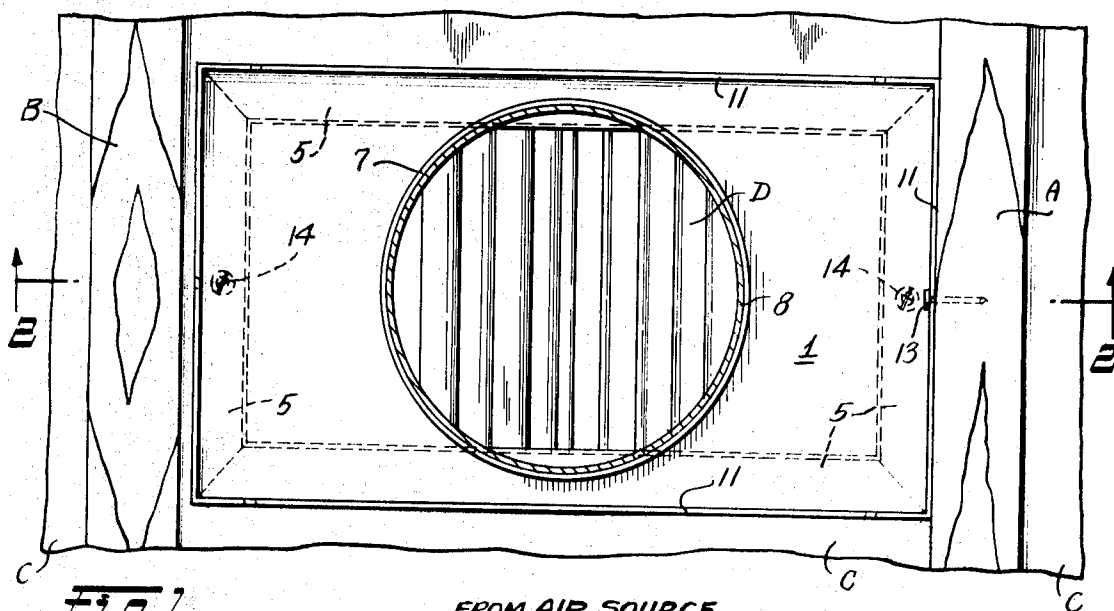


Fig. 1.

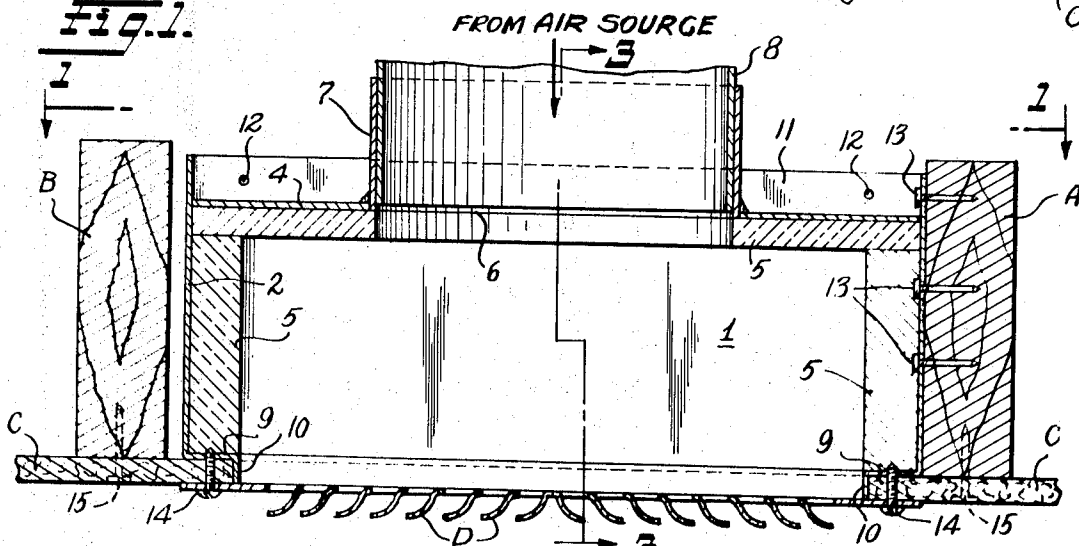


Fig. 2.

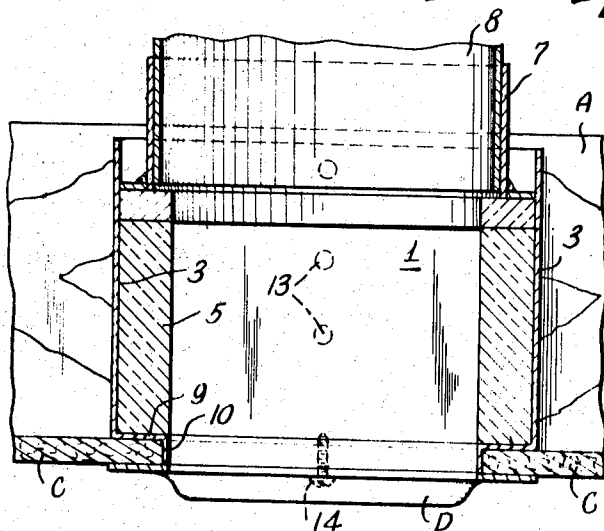


Fig. 3.

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CEILING BOXES FOR DISTRIBUTING AIR

This invention relates to so-called "ceiling boxes" used to distribute air down through the ceiling of a room for the purpose of heating, cooling or ventilating the room or building.

In many parts of the country it is common practice to mount a furnace (usually gas fired) and/or cooling equipment having a fan or blower attached, in the attic or in a closet of a building and to force air from the furnace or cooler through a duct system to the "ceiling box" set in the ceiling, and provided at its lower side with a suitable grille.

In installing boxes of this type, it has been the common practice to support the box by forming a framed opening, secured to the ceiling joists, and set the box within such framed opening. This is troublesome and expensive, and one of the objects of the present invention is to design a box that can be installed without the necessity of forming a framed opening.

Supply grilles are usually made rectangular, and boxes have the same shape. The present invention makes it possible to mount the box and grille so that the grille extends lengthwise in either direction desired.

Another object is to devise a box which may be supported on a single joist only, and which is so constructed that either the end wall or side wall of the box may be secured directly to this joist.

Yet another object of the of the invention is to provide a construction in which the free end or side of the box is additionally supported by the grille in cooperation with an edge of the sheet material of which ceilings are usually made.

A still further object is to devise means, when new houses or other buildings are being constructed, to prevent the mechanic applying the sheet ceiling material from covering up the box, so that the mechanic subsequently setting the grille has difficulty in locating the box.

In order that the invention may be clearly understood, reference is made to the accompanying drawing, forming part of this specification, and in which:

FIG. 1 is a plan view of the ceiling box;

FIG. 2 is a vertical section taken substantially on the line 2-2 of FIG. 1; and

FIG. 3 is a vertical transverse section taken substantially on the line 3-3 of FIG. 2.

Referring to the drawing in detail, two ceiling joists are indicated at A AND B.

They may be 2 inches x 6 inches or other standard size.

It is common to use sheet material such as "sheet rock" or the like for the ceiling itself, as indicated at C. The grille through which the air is discharged into the room below the ceiling in is indicated at D.

The ceiling box itself is indicated at 1 and comprises a rectangular sheet metal structure having end walls 2 and side walls 3. It also has a top wall 4 provided with a central circular opening 6 to admit the air. The entire box, including the top, is lined with suitable insulating material 5.

Secured to the top 4 around the opening 6 is an upstanding collar 7 into which fits a pipe or conduit 8 through which hot or cool air is delivered from a suitable source such as the furnace or cooler by means of a fan or blower.

The lower edges of both the side and end walls of the box are provided with inwardly extending horizontal portions 9 constituting an inwardly projecting flange, and at the inner edge of this horizontally projecting flange is a narrow vertical flange 10.

Around the upper part of the box above the top 4 is a vertically disposed nailing flange 11, having suitable holes 12 punched therein to receive nails or other suitable fastening devices such as screws.

In installing this box a hole is cut in the ceiling material (if the box is being installed in an existing house) and one side or one end of the box is placed in contact with the inner side of

one of the ceiling joists such as A and is secured thereto by means of nails or screws 13, one or more of which pass through the holes 12 in the nailing flange 11 while others are driven through the insulation 5 into the side of the joists as shown in FIG. 2.

It will be observed that the other end of the box is not secured to a second joist such as B but is spaced somewhat from it, the box being of such dimensions that it can be received in the space between any two joists.

While FIG. 2 shows the end wall of the box secured to the joist A, the side wall of the box can just as well be secured to the joist. Thus the box can be installed selectively in either one of two positions depending upon in what direction it is desired to have the grille extend.

The sheet material forming the ceiling is secured to the lower edge of the joists A and B by means of nails or screws 15 and this ceiling material is so cut as to project inwardly of these joists to an extent at least equal to the width of the horizontal flange 9.

After the box has been secured in position against the side of one of the joists, with the horizontal flange 9 lying in the same plane as the lower edge of the joist, the grille D is installed by placing it in position on the ceiling and securing it to the box by means of sheet metal screws 14 which threadedly engage the flange 9 in such a way as to squeeze the edge of the ceiling material between the grille and the flange 9. These screws, and the inwardly projecting edge of the ceiling material serve to support the free end or side of the box opposite the end or side which is secured to the joist A.

The narrow vertical flange 10 which is of a width approximately equal to the thickness of the ceiling material is particularly useful in the construction of new houses. The present presence of this narrow vertical flange projecting below the plane of the lower edges of the joists prevents the mechanic who is applying the ceiling material from covering up the box, as otherwise, without this vertical flange the mechanic setting the grille would have difficulty in locating the box or determining precisely where the grille should be.

I claim:

1. Means for distributing air from a desired source into a room through an opening in the ceiling, said means comprising a rectangular sheet metal ceiling box having side and end walls and a top wall, said top wall having an opening, means for delivering air from the source into said box through the opening in the top wall, both the width and length of said box being less than the distance between the usual ceiling joists, means for supporting said box on one joist only, including means for selectively securing either an end or a side wall to said joist, and a grille covering the opening in the ceiling, said side and end walls being formed at their lower edges adjacent a ceiling panel with horizontal extensions together constituting an inwardly projecting flange, said flange being for connecting the ceiling panel to the grille thus providing support for the grille.

2. A ceiling box in accordance with claim 1 in which a narrow flange extends downwardly from the inner flange, below the bottom of the joist, thus defining the ceiling openings, said vertical, narrow flange being of approximately the same width as the thickness of the conventional sheet material usually employed for the ceiling panel, the edge of such sheet material abutting said narrow vertical flange, and being squeezed between the grille and said inwardly projecting horizontal flange, and sheet metal screws passing through such ceiling material.

3. A ceiling box in accordance with claim 1 in which the edge of the sheet material conventionally used for ceiling panel is interposed and squeezed between the grille and said horizontal, inwardly projecting flange, and sheet metal screws passing through said grille the ceiling material, and into said flange.

Disclaimer

3,559,560.—*William R. Trahan*, Houston, Tex. CEILING BOXES FOR DISTRIBUTING AIR. Patent dated Feb. 2, 1971. Disclaimer filed June 25, 1973, by the assignee, *Texfan, Inc.*

Hereby enters this disclaimer to all claims of said patent.

[*Official Gazette November 6, 1973.*]