April 12, 1955 N. J. DOVOLIS 2,705,912

REGISTER STRUCTURE

Filed June 6, 1952 2 Sheets-Sheet 1

Fig. 4

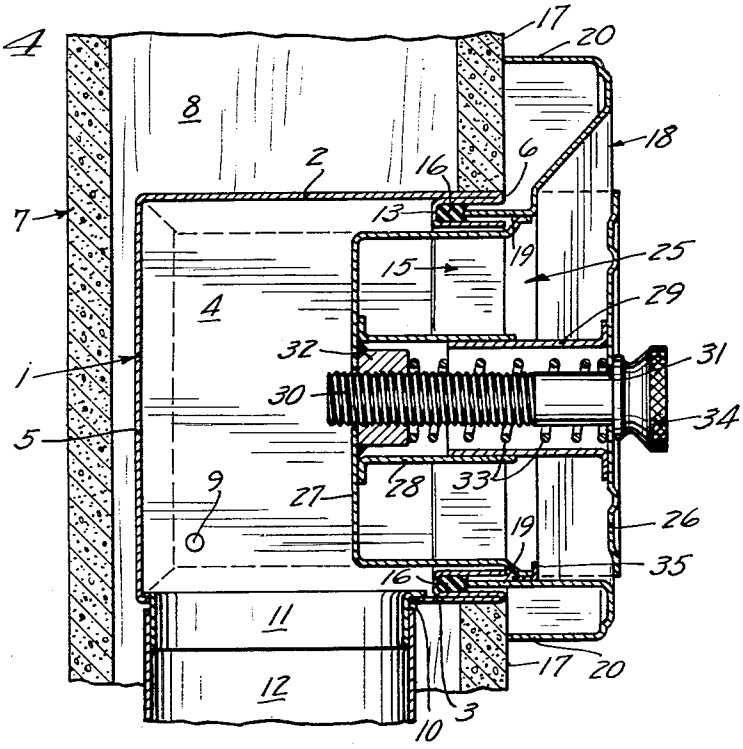
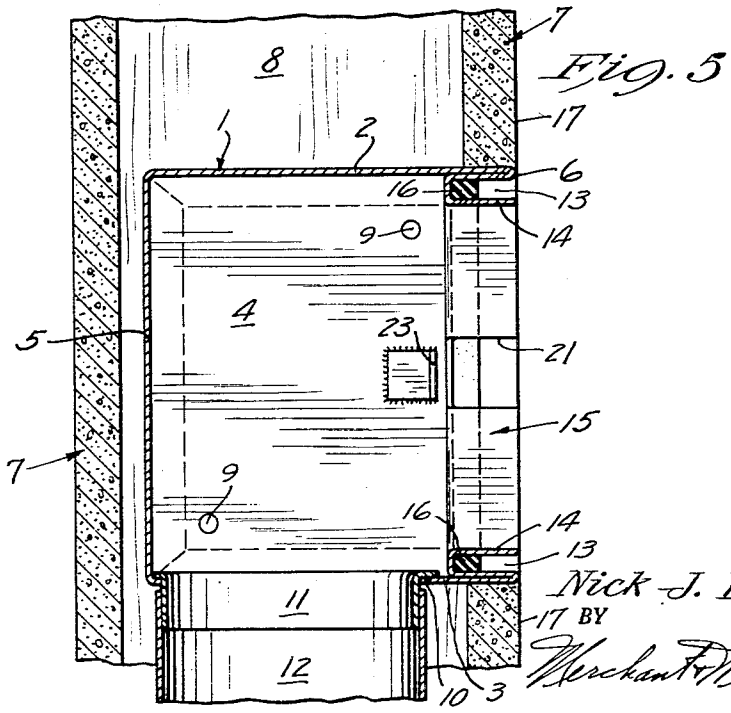


Fig. 5



INVENTOR.
Nick J. Dovolis
BY
Merchant & Merchant
ATTORNEYS

April 12, 1955 N. J. DOVOLIS 2,705,912

REGISTER STRUCTURE

Filed June 6, 1952 2 Sheets-Sheet 2

Fig. 1

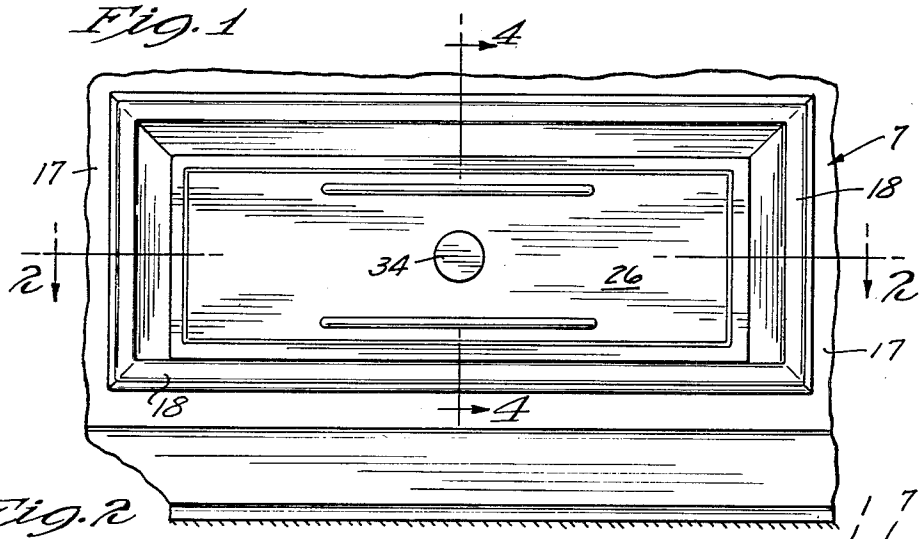
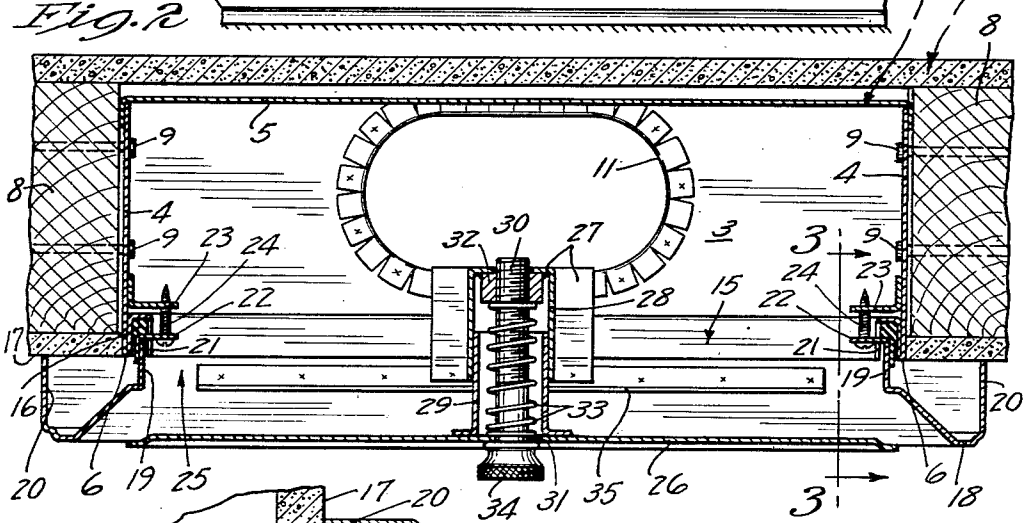


Fig. 2



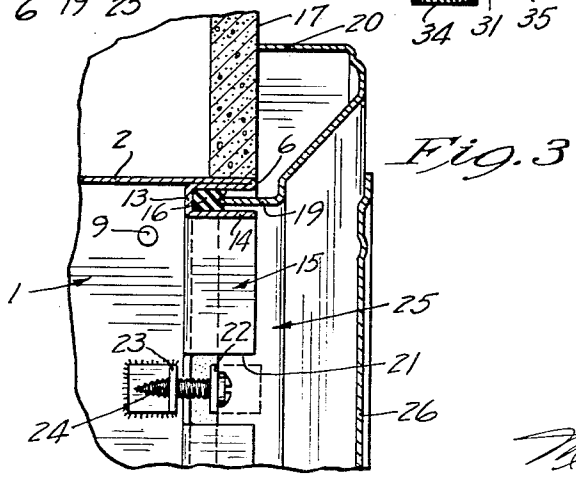


Fig. 3

INVENTOR.
Nick J. Dovolis
BY
Merchant & Merchant
ATTORNEYS

United States Patent Office 2,705,912 Patented Apr. 12, 1955

2,705,912

REGISTER STRUCTURE

Nick J. Dovolis, Minneapolis, Minn., assignor to Char-Gale Manufacturing Company, Minneapolis, Minn., a corporation of Minnesota

Application June 6, 1952, Serial No. 292,154

1 Claim. (Cl. 98—114)

My invention relates generally to ventilating apparatus and more particularly to novel register construction for ventilators and the like.

Ventilators or registers for warm air heating or air conditioning generally consist of a register box connected to trunk lines or ducts through which air passes to or away from a room to be heated or otherwise temperature controlled. Usually, a register box is contained within the wall structure and a frame or register plate is secured thereto or to the wall adjacent the register box. In many instances, particularly when the register structure is utilized to conduct air into a room, air from the register box escapes between the register frame and the wall, and, in a relatively short period of time, causes the wall above the register to become noticeably dirty. An important object of my invention is, therefore, the provision of a register structure which is so constructed and arranged as to prevent leakage of air between the register frame and the underlying wall surface of the room from the register box, even when said underlying wall surface is rough or uneven.

Another object of my invention is the provision of a register box of the type herein described, which, when installed in an unfinished building structure, will enable the builder to finish-plaster the wall adjacent the register opening in a quick and efficient manner, and enable the plasterer to achieve a smooth even wall surface around the register opening.

Another object of my invention is the provision of a novel connecting and sealing means between the register box and the register frame associated therewith.

Still another object of my invention is the provision of a register structure as set forth which is simple and inexpensive to produce, which is efficient in operation, and which is rugged in construction and extremely durable in use.

The above, and still further highly important objects and advantages of my invention will become apparent from the following detailed specification, appended claim, and attached drawings.

Referring to the drawings, which illustrate the invention, and in which like characters indicate like parts throughout the several views:

Fig. 1 is a fragmentary view in front elevation of a register built in accordance with my invention, installed in a wall structure;

Fig. 2 is an enlarged horizontal section taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary detail partly in section and partly in side elevation taken on the line of 3—3 of Fig. 2, on an enlarged scale;

Fig. 4 is a view in section taken substantially on the line 4—4 of Fig. 1; and

Fig. 5 is a view corresponding to the Fig. 4, but with some parts removed.

Referring with greater detail to the drawings, the numeral 1 indicates, in its entirety, a generally rectangular register or air transfer box comprising top and bottom walls 2 and 3 respectively, opposite end walls 4, a rear wall 5, and a front wall 6. The register box 1 is adapted to be mounted in a wall structure 7, preferably by being secured between studdings or the like 8 by nails or the like as indicated at 9. As shown the nails 9 are driven through the opposite end walls 4 of the box 1 and into adjacent studdings 8. The bottom wall 3 of the register box 1 is provided with an opening 10 through which projects a mounting flange 11 that is welded or

otherwise rigidly secured to said bottom wall 3 and which is adapted to be telescopically engaged with a conventional air conduit or duct 12 which may be assumed to be connected to a heating or air conditioning apparatus not shown.

The front wall 6 of the register box 1 is formed to provide an endless rectangular forwardly opening channel 13 the inner wall portion 14 of which defines a generally rectangular opening 15. A gasket 16 is contained in the bottom of the channel 13 for a purpose which will hereinafter be described. The gasket 16 is preferably made from compressible elastic material such as sponge rubber or the like.

In contrast to register boxes in common use, which are installed in wall structures with their front edges extending forwardly of the finished wall surface, my novel register box is mounted between the studdings 8 in such a manner that the front wall 6 of the box will be flush with the adjacent inner surface of the wall structure when lath and plaster are applied. In the drawings, the finished inner wall is indicated at 17. Obviously, with this arrangement, the work of finish-plastering is much simplified and a more flat and even wall surface adjacent the register box may be obtained than is possible with box constructions having outwardly projecting flanges and the like. The register box 1 may be made from any suitable material but is preferably fabricated from sheet metal or the like.

A generally rectangular register frame 18 includes a pair of rearwardly projecting endless inner and outer flanges 19 and 20 respectively, the former of which projects rearwardly a distance greater than does the latter. The internal flange 19 is of a size whereby to be received within the channel 13 of the register box 1 when the external flange 20 is in abutting engagement with the finished surface 17 of the wall structure 7, see Figs. 2–4 inclusive. The amount of rearward projection of the inner flange 19 relative to that of the outer flange 20 is such that when the front wall portion 6 of the box 1 is flush with the interior finished surface 17 of the wall structure and the edge of the outer flange 20 is in abutting engagement with said surface, the rear edge of the inner flange 19 will be disposed in compressing engagement with the gasket 16 contained in the bottom of the channel 13. The inner wall portion 14 of the channel 13 opposite the end walls 4 of the register box are cut away to provide a pair of notches 21 which are adapted to receive lugs 22 that project laterally inwardly from opposite edge portions of the inner flange 19 of the frame 18, see Figs. 2 and 3. One each of a cooperating pair of anchoring lugs 23 extends laterally outwardly from the opposite end walls 4 of the register box in alignment with the notches 21 and the lugs 23 receivable therein. A pair of anchoring screws 24 extend through suitable apertures in the lugs 22 and are screw-threaded into the anchoring lugs 23 to securely anchor the frame 18 against the wall surface 17. With this arrangement, it will be seen that, when the register structure is used as an inlet to a room, leakage of air from the interior of the register box 1 outwardly between the outer flange 20 of the frame 18 and the wall surface 17 is effectively prevented by the sealing engagement between the edge of the inner flange 19 and the compressible gasket 16. Therefore, accumulation of dust on the inner wall surface 17 and the resulting soiled appearance thereof is eliminated. This sealing engagement is particularly valuable when the rear edge of the outer flange 20 cannot contact the surface of the wall structure along its entire length, such as would be the case when the wall surface is uneven, due to careless finishing or due to the particular finish of the wall, which may in some instances be provided with a so called said float or textured finish.

Preferably and as shown, the inner flange 19 of the frame 18 defines a generally rectangular opening 25 which is in register with the opening 15 in the front wall of the register box when the frame 18 is anchored thereto. Passage of air through the opening 25 in the frame 18 is regulated by a damper plate 26 that is mounted for movements inwardly and outwardly with respect to the frame 18. The frame 18 is provided with a bracket 27 having a tubular member 28 which is secured thereto and which

telescopically receives a cooperating tubular member **29** welded or otherwise secured to the central portion of the damper plate **26**. An adjustment screw **30** extends inwardly through a central aperture in the damper plate **26** and has screw-threaded engagement with a nut or burr **32** rigidly secured to the bracket **27** within the tubular member **28** thereof. A coil compression spring **33** surrounds the adjustment screw **30** and is interposed between the portion of the damper plate **26** underlying the knurled head **34** of the screw **30** and the nut **32**. As shown in Figs. 2–4 inclusive, the frame **18** is provided with a shoulder **18'** and a stop flange **35** which limits inward movement of the damper plate **26**. When the damper **26** is moved into engagement with the shoulder **18'** and the flange **35**, the opening **25** is effectively closed and movement of air through the box **1** is stopped. As indicated, the spring **33** exerts yielding bias upon the damper plate **26** towards its open portions illustrated in the drawings.

I do not wish the invention to be confined to the exact structure of the frame **18** and to the damper construction shown, except as defined in the claim. Features relating to the damper construction and parts relative thereto are clearly described and claimed in my co-pending application for United States Letters Patent Serial No. 276,107, filed March 12, 1952.

My invention has been thoroughly tested in commercial use and found to be completely fit for the accomplishment of the objectives set forth; and while I have shown and described a preferred embodiment of my novel register structure, it will be understood that the same is capable of modification without departing from the spirit and scope of the invention as defined in the claim.

What I claim is:

In a register structure, a register box having an opening in its front wall and a second opening in one of its other walls for the passage of air therethrough, said register box being adapted to be mounted within a wall structure with its front wall substantially flush with the adjacent outer surface of said wall structure, the front wall of said box comprising a forwardly opening endless marginal channel defining the opening therein, a compressible gasket in said channel, a frame adapted to be placed against said outer surface of the wall structure surrounding said box, said frame including spaced inner and outer rearwardly projecting endless flanges the former of which projects inwardly a greater distance than the latter, said inner flange being receivable within said channel and having engagement with said gasket when the outer edge of said outer flange is in contact with the outer surface of the wall structure, and means for anchoring said frame to the register box.

References Cited in the file of this patent

UNITED STATES PATENTS

718,446	Foster	Jan. 13, 1903
1,336,210	Druliner	Apr. 6, 1920
1,438,981	Christensen	Dec. 19, 1922
1,438,982	Christensen	Dec. 19, 1922
1,509,572	Truax	Sept. 23, 1924
1,756,143	Ahl	Apr. 29, 1930
1,785,993	Auer	Dec. 23, 1930
1,811,231	Gehri	June 23, 1931
1,952,707	Germonprez	Mar. 27, 1934
2,104,208	Oltrogge	Jan. 4, 1938
2,466,353	Babcock	Apr. 5, 1949