Jan. 8, 1935. E. A. JONES ET AL 1,986,823

AIR DUCT REGISTER

Filed April 22, 1933

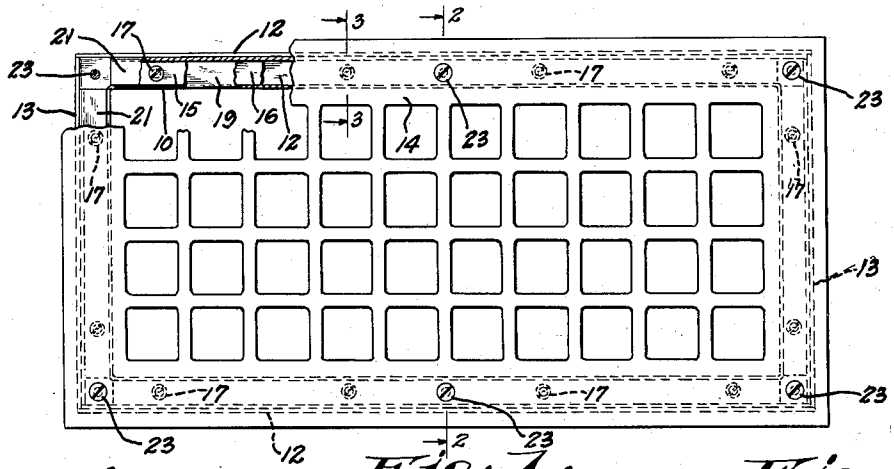


Fig. 1.

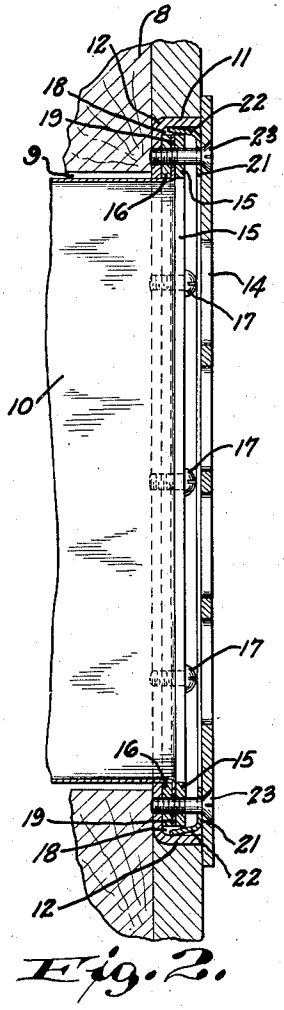


Fig. 2.

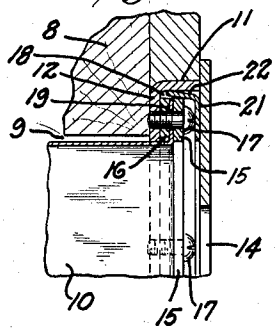


Fig. 3.

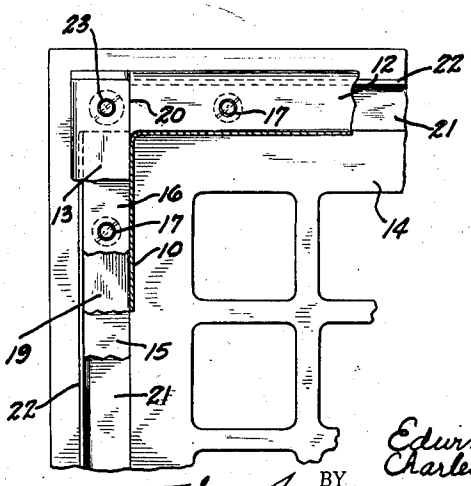


Fig. 4.

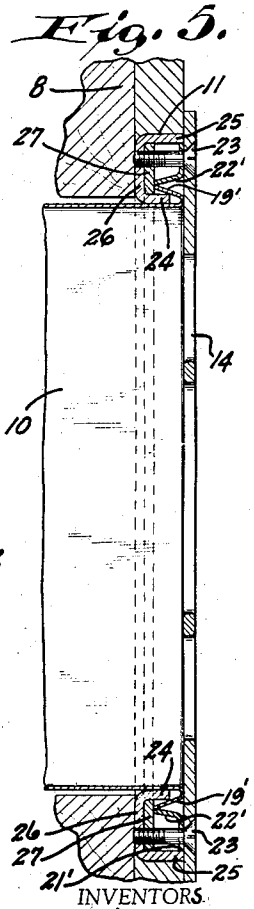


Fig. 5.

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Patented Jan. 8, 1935 1,986,823

UNITED STATES PATENT OFFICE

1,986,823

AIR DUCT REGISTER

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Application April 22, 1933, Serial No. 667,314

4 Claims. (Cl. 98—114)

This invention relates to improvements in air duct registers.

In warm air heating, ventilating, and air conditioning systems, a room of a building has the open end portion of a pipe or stack opening thereinto. It is the practice to apply to the end of said stack or pipe a register which is mounted against the wall into which the pipe or stack extends.

Heretofore, in most register constructions and installations it has been very difficult, if not impossible, to secure a gas tight connection between the register and the end of the stack which will prevent leakages around the register with resultant streaking and discoloration of the wall.

It is, therefore, the primary object of the present invention to provide an air duct register construction wherein the end of the pipe or duct is connected with the register in such a manner that an absolute gas tight seal will be effected which will prevent any leakage around the register.

A further object of the invention is to provide an air duct register wherein the parts thereof, including the register face or grille are readily separable and removable, which is easily installed and connected with the stack, and which, when in place, is securely held against undesired disengagement.

A further object of the invention is to provide an air duct register wherein the register face or grille will lie flatly against the surface of the wall and will not shrink away from the same so as to expose the periphery of the wall opening into which the stack extends.

A further object of the invention is to provide an improved air duct register which may be manufactured, assembled and installed with a minimum of expense and operations.

A further object of the invention is to provide an air duct register which is of very simple construction, is strong and durable, is neat and attractive in appearance, and is well adapted for the purposes set forth.

With the above and other objects in view, the invention consists of the improved air duct register, and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a front view of the improved air duct register with portions broken away and in section to show details of construction;

Fig. 2 is an enlarged sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is an enlarged, fragmentary rear view of a corner portion of the register with portions broken away and in section to show details of construction; and

Fig. 5 is a transverse vertical sectional view through a modified form of air duct register.

Referring now more particularly to the drawing, it will appear that the register is adapted for installation in a wall 8 having an opening 9 therethrough into which the end portion of a pipe or stack 10 extends. Adjacent the outer face of the wall the opening is enlarged, as at 11, to receive inner portions of the register, as will later be explained more in detail.

In order to fit within the enlargement 11 of the wall opening and to engage the end portion of the stack, the register is provided with a rectangular frame. The sides 12 and ends 13 of said frame are all angle bars. Said frame is disposed adjacent the inner surface of a register grille 14 in a manner so that one set of legs of the angle bars edgewise engage the inner surface of the grille 14 at right angles to the plane thereof and slightly inwardly of the periphery of the grille, while the other set of legs of the angle bars lies in a plane rearwardly of and parallel to said inner surface of the grille. Each of the last-mentioned legs of the angle bar sides and ends 12 and 13 of the frame carries, against the face adjacent the grille, a pair of longitudinally extending flat metallic strips or bars 15 and 16, which bars are tightly secured to the angle bars by screws 17. The outer side edges of said bars 15 and 16 terminate inwardly of the inner face of the other legs of the angle bars of the frame to provide continuous spaces or recesses 18. Also, the faces of the bars 15 are spaced rearwardly of the inner face of the grille 14 so as to accommodate the heads of the screws 17 which do not pass into the grille.

As was previously mentioned the end portion of the pipe or stack 10 extends into the wall opening 9 and is surrounded by the angle bar frame which engages the stack end in the manner of a collar. The extreme end portion of the stack is flanged laterally outwardly, at right angles, as at 19, and said flanged portion 19 is connected to the frame by being clamped between the various bars 15 and 16, as best shown in Figs. 2 and 3.

The construction of the corners of the angle bar frame is of importance in the attainment of proper joints and connections. The arrangement is best disclosed in the broken away portions of Figs. 1 and 4 and it will appear that insofar as the side angle bars 12 are concerned, the legs thereof which are parallel with the plane of the grille have their end portions cut away as at 20, to receive the ends of the end angle bars 13. Said ends of the angle bars 13 are overlapped by end portions of the flat bars 16 of the frame ends, which latter end portions abut against the ends of the bars 16 of the frame sides, the latter bars terminating short of the angle bars carrying the

same. This is also true of all of the flat bars 15. Also, as for the flange 19 of the stack, square pieces are cut out of all of the corners thereof.

The grille 14 is a rectangular metallic sheet, and, save for a substantial margin, is of lattice-work or other ornamental open-work design to permit the flow of air therethrough. Welded or otherwise secured to the inner face of the marginal portion of the grille, substantially inwardly of the edge portion thereof, is a sealing frame formed of angle members. The legs 21 of said members are secured flatly against the inner surface of the grille, while the other legs 22 thereof project rearwardly, slightly outwardly therefrom and are somewhat yieldable.

When the improved register is to be assembled and installed the flanged end of the stack 10 is engaged with the first-described angle bar frame by being clamped between the various flat bars 15 and 16. Said frame is then disposed within the enlargement 11 of the wall opening and it is next necessary to position and secure the grille 14. The sealing frame is carried by the rear face of the grille and aids in properly positioning and locating said grille as the legs 22 of the sealing frame extend into and lodge in the recesses 18. Due to the slight outward angle to said legs 22 and to the fact that the same are yieldable, they impinge in the recesses between the outer edges of the flat bars 15 and 16 and the inner faces of the angle bars 12. As will be seen from Figs. 2 and 3, an absolute seal is effected between the end portion of the stack and the component parts of the register whereby there can be no leakage. The grille is held in this position by screws 23 which extend through marginal portions of the grille, the legs 21 of the sealing frame and into tapped openings provided therefor in the superimposed portions of the bars 15 and 16 and the angle bars 12.

A modified form of air duct register is illustrated in Fig. 5 wherein the inner rectangular frame is composed of channel bars having inner and outer legs 24 and 25 respectively at right angles to the plane of the grille 14, and rear legs 26 parallel with the plane of the grille and spaced therefrom. The legs 25 engage the rear face of the grille, while the legs 24 terminate short thereof. The end portion of the pipe or stack 10 is provided with an annular outwardly, rearwardly turned hooking flange 19' which hooks over the short inner legs 24 of the channel bar frame and abuts against flat bars 27 secured within the channel members. The sealing frame carried by the inner surface of the marginal portion of the grille comprises angle strips secured to the grille in a rectangular formation with legs 21' thereof against the grille and with their other legs 22' extending rearwardly inwardly from the inner edges of the legs 21', said legs 22' being springy or yieldable. The hooked end of the pipe engages the channel frame as shown, and said channel frame lodges within the enlargement 11 of the wall opening. The grille 14 fits against the face of the wall over the opening, as in the principal form of the invention, and the legs 22' of the sealing frame extend into the channel members and impinge against the hooked end of the stack to force it against the channel legs 24, thereby effecting a seal. The grille is removably held in position by means of screws 23 extending through the grille, the sealing frame legs 21', and into tapped openings in the bars 27 and the channel members.

The improved air duct register construction is one which has great utility in heating, ventilating, and air conditioning system installations. By virtue of the construction disclosed a gas tight joint is effected between the stack end and the register and the joint or connection is easily made. The component parts of the device are easily manufactured and assembled and correct placing of the grille member is assured by locating the projecting legs of the sealing frame carried thereby within the recess therefor in the inner, connecting frame. The yieldability of the projecting legs of the sealing frame is of importance because said legs yieldably impinge against the inturned portion of the stack and insure a seal. The grille and other parts, may be easily removed for repairs or replacements.

From the foregoing description it will be seen that the improved air duct register is both simple and novel, and is well adapted for the purposes described.

What we claim as our invention is:

1. In combination, a register including an inner, angle bar frame with an opening therethrough and having a rectangular flange extending substantially parallel to the sides of the opening through the frame and having another flange substantially at right angles to the first flange, a pipe extending into said frame and having a bent end portion overlapping the latter flange of the frame, bars for clamping said pipe end portion to said frame flange, and a grille detachably connected to said frame and having a rectangular yieldable flange extending within said frame adjacent the outer edges of said bars and impinging against the first-mentioned frame flange for sealing and grille locating purposes.

2. In combination, a register including an inner channeled frame, one set of side legs of the channeled members being shorter than the other set of side legs of said channeled members, a pipe extending into said frame and having a hooking flange extending over the short legs of said channeled members of the frame, and a grille detachably connected to said frame and having a yielding flange extending into the channel of said frame and engaging the hooked portion of the pipe and portions of the channeled frame for sealing and securing purposes.

3. In combination, a register including an inner frame, the frame elements being of angular form in cross-section and each including a pair of legs, a pipe extending into said frame and having a hooking flange extending over one set of legs of the frame, and a grille detachably connected to the frame and having a yielding flange extending into the angled frame and engaging the hooked portion of the pipe and portions of the frame for sealing and securing purposes.

4. An air duct register, comprising an inner frame having a flange extending substantially parallel to the sides of the opening through the frame and having another flange substantially at right angles to the first flange, a bar carried by one of the flanges of the frame, a pipe having a bent end portion extending within said frame against the bar, and a grille detachably connected to said frame and having a yieldable flange extending within said frame adjacent the engaged end of the pipe and against said bar, for sealing purposes.

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