

Feb. 13, 1951

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FURNACE VOLUME CONTROL

2,541,346

Filed Jan. 2, 1948

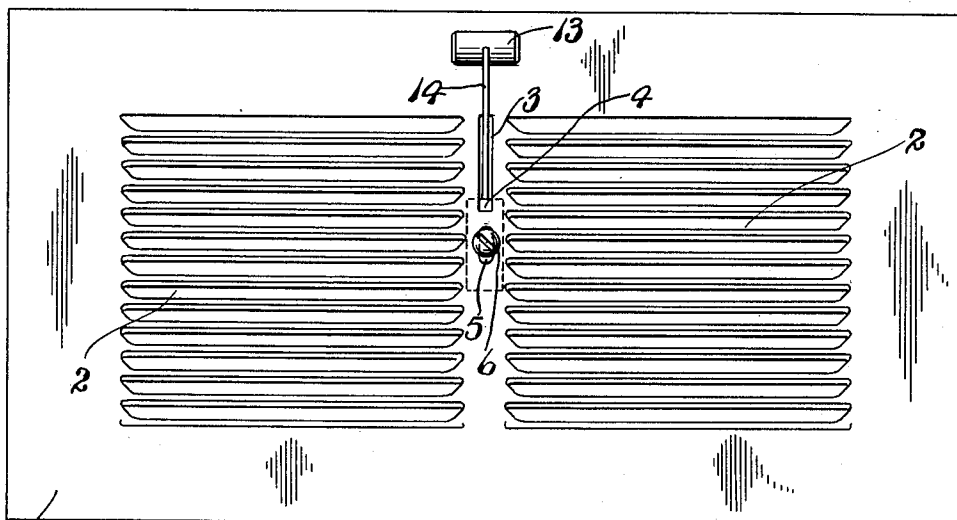


FIG. 1.

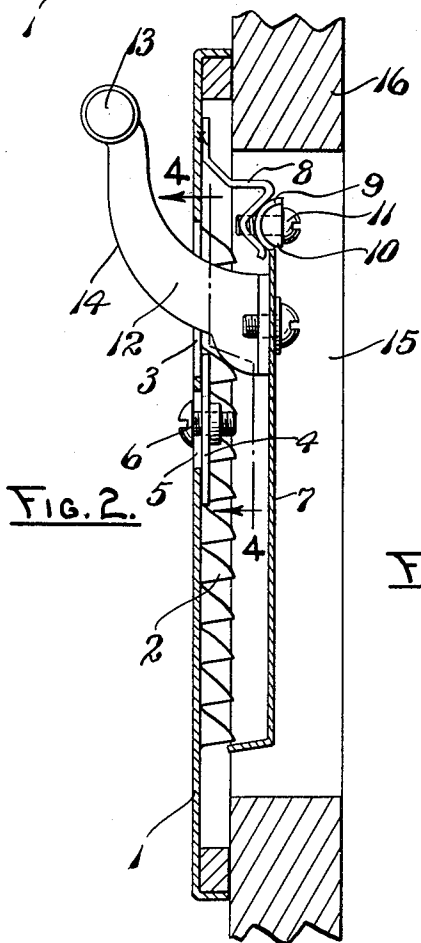


FIG. 2.

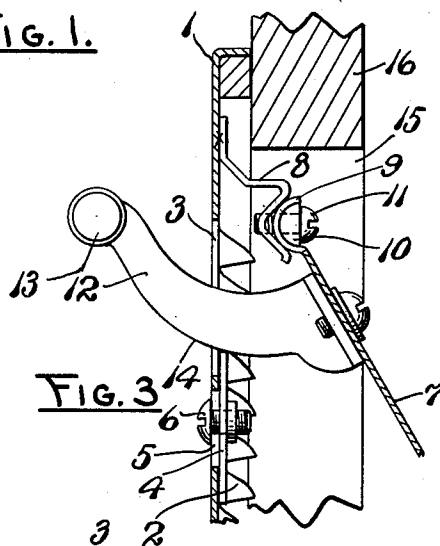


FIG. 3.

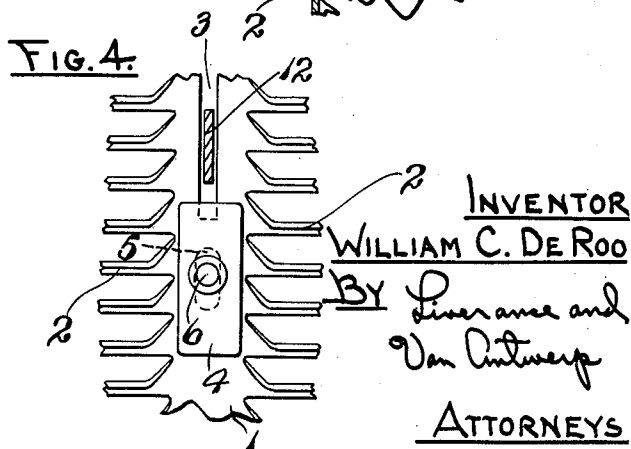


FIG. 4.

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2,541,346

FURNACE VOLUME CONTROL

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Application January 2, 1948, Serial No. 213

1 Claim. (Cl. 98—106)

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This invention relates to a simple and novel construction for controlling the volume of air passing to a room from a furnace.

The control is now, in general, obtained by dampers in hot air carrying furnace stacks, or other means in association with the furnace itself, which are relatively expensive compared to the present invention, require skill in installation, time and expense in adjustment, and are liable to be imperfect in operation. The present invention is concerned with a novel construction in connection with a warm air register which covers the outlet of a furnace pipe or stack at an opening through a wall or floor for the warm air to pass through said opening and through the register into the room which is to be heated. With a furnace different rooms in a house require, or may have controlled with reference thereto, differing volumes of warm air.

With my invention a very simple, practical and effective control and one which is very easily adjusted for the maximum amount of warm air passing to a room is provided, and also by an instantaneous operation of the register structure the warm air, between none at all, and the maximum amount may be adjusted to any desired amount less than the maximum amount, at any time it should be wanted.

It is a primary object and purpose of the present invention to provide such simple, practical and effective volume control for the air from a warm air furnace, the air usually being under forced draft, to a room with the warm air carrying stack in the length thereof unobstructed throughout, and with the elimination of damper controls previously used therein.

An understanding of the invention may be had from the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is a front elevation of a warm air volume control register made in accordance with my invention,

Fig. 2 is a central vertical section therethrough, somewhat enlarged, with the grille of the register completely closed,

Fig. 3 is a fragmentary section like Fig. 2, with the grille open to the maximum amount to which it can be moved, with the volume control of my invention adjusted to limit the opening of the grille to such maximum, and

Fig. 4 is a vertical section in a plane parallel to the face of the grille, back thereof, on the plane of the broken line 4—4 in Fig. 2, looking in the direction indicated.

Like reference characters refer to like parts in the different figures of the drawing.

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The register construction includes a grille plate 1 of sheet metal, which may be of rectangular form, from which a plurality of vanes or louvers 2 are struck to provide slots between the successive louvers for air passage. The louvers in the disclosure shown are separated at adjacent ends a short distance, and between said adjacent ends of the louvers a vertical slot 3 is cut in the plate 1.

At the inner side of the grille plate at the lower end of and extending below said slot 3, a short plate 4 is located back of a shorter slot 5 which is below and spaced a short distance from the slot 3. A short bolt 6 has its threaded shank passing through the slot 5 and through the plate 4, receiving a nut at its inner end for releasably clamping the plate 4 against the inner side of the grille plate 1 to any position that it may be adjusted. It is evident that the plate 4, at its upper end portion, may be adjusted to various positions so as to extend different distances above the lower end of the slot 3.

A closure plate 7 of sheet metal is located back of the grille and is adapted to be pivotally mounted at its upper edge for turning so as to be moved into closing position with respect to the grille plate, or to an open position for air passage through the slots between the louvers 2. The pivotal mounting, the detail of which is not important to the present invention, includes in the disclosure shown, a bracket or brackets 8 permanently connected by spot welding or other equivalent fastening to the upper portion and at the rear side of the grille plate 1, provided with a seat or angular socket as shown against the rear side of which a semi-circular bead 9 at the upper edge of the plate 7 bears. A filler block 10 of semi-circular cross section is seated in the concave side of the bead 9 and a screw 11 passes through said block, through a vertical slot in the bead 9, and is threaded into the bracket 8. As disclosed, the plate 7, depending below its pivotal mounting, may be swung from vertical closed position in Fig. 2 inwardly to a partly open position, or to a fully open position if said plate 4 is moved so that it does not extend at its upper end above the lower end of the slot 3.

An arm 12 of flat metal is connected to the closure plate 7 at its front side and extends through the slot 3. It has a knob or handle 13 at its upper end for hand engagement. Its lower edge 14 is eccentric with respect to the pivotal axis of the plate 7. On pulling downwardly on the knob 13 to swing the plate 7 partly open, the outer edge 14 of the arm 12 strikes the upper edge of the adjustable plate 4. When it strikes such plate will depend upon the position to which the

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plate 4 has been adjusted. Therefore, the adjustment of the plate 4 governs and controls the extent to which the plate 7 may be opened.

The register structure described is adapted to be mounted over the opening 15 in a wall 16, to which opening a warm air carrying furnace stack leads, and is connected to the wall for air from the furnace to pass through the spaces or slots between the louvers 2 when the plate 7 is at other than its completely closed position, as in Fig. 2.

It is evident that the maximum volume of warm air from the furnace is controlled by the position of the upper end of the plate 4, as such position controls the extent that the plate 7 may be swung from its closed position. The farther it is moved away therefrom, the greater the volume of air which can pass. Thus in different rooms the maximum passage of warm air from a furnace stack may be varied in accordance with the particular conditions of the room and the requirements of the room for heat. Of course, any position of the plate 7 to lessen the maximum flow or volume of air may be obtained by moving the arm 12 upwardly and away from the upper end of the adjustable plate 4.

With this construction, dampers associated with the furnace or other means for air volume control in furnace stacks are eliminated. The structure is very practical and useful and serves the previous functions of dampers fully and completely and at a fraction of the cost thereof. Its simplicity is a perfect example of the axiom that "simplicity is the highest form of invention."

The invention is defined in the appended claim and is to be considered comprehensive of all forms of structure coming within its scope.

I claim:

In a structure as described, a vertical grille

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formed from flat metal having openings therein at each side of a middle vertical portion of said grille, said plate at its middle portion having an upper vertical slot and a shorter vertical slot below the lower end of and spaced a short distance from said first slot, a plate mounted at its upper edge at the inner side of said grille and back thereof for swinging movement at its lower portion toward and away from the grille, a hand lever secured to said plate at its outer side, near the hinged mounting thereof, extending through said first mentioned slot and upwardly and outwardly away from said grille, and a stop member at the inner side of said grille over the second shorter slot and adapted at its upper end to be adjusted to cover greater or less portions of the lower end of the first mentioned slot, combined with releasable means extending through said second shorter slot and said stop member for releasably and adjustably securing said stop member to the grille.

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