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APPARATUS FOR HEATING ROOMS

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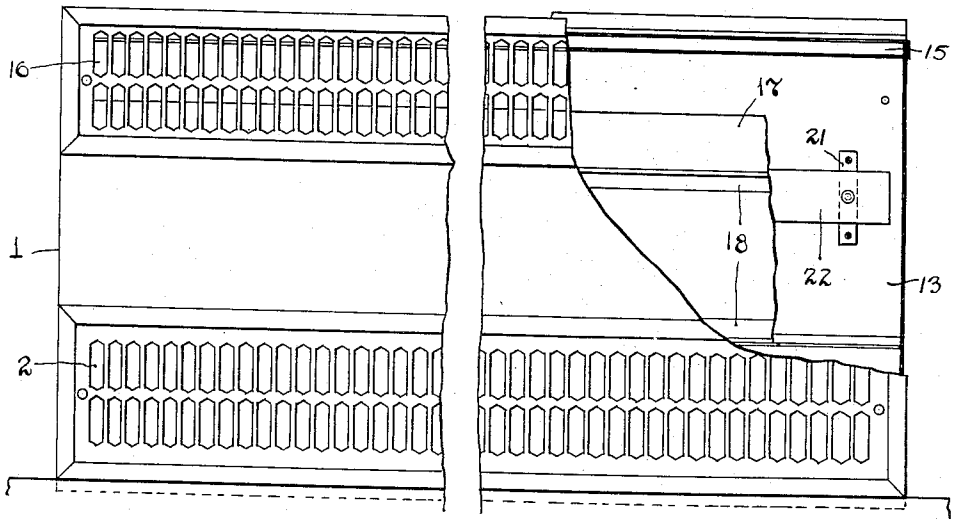


Fig. 1

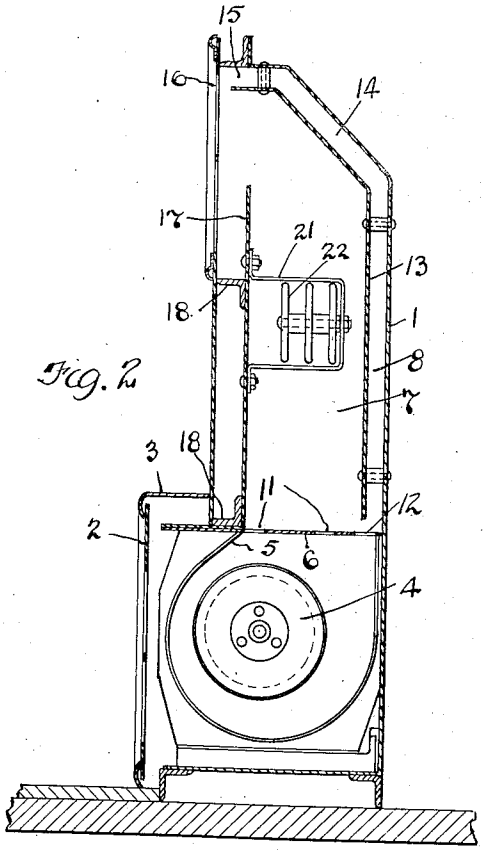


Fig. 2

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APPARATUS FOR HEATING ROOMS

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3 Claims. (Cl. 257—137)

This invention relates as indicated to apparatus for heating rooms. More particularly it comprises the utilization of a layer of relatively colder air projected above a zone of heated air in a substantially horizontal direction so as to retard the heated air from rising to a higher level and thus to secure more effective distribution of the heated air throughout the lower portions of a room preliminary to its rising to the ceiling.

Heretofore it has been the practice to circulate air over heating elements and distribute the same to rooms to be heated, but no means was provided for maintaining the heated air transmitted to such room within the lower portions thereof, and the tendency of such air, in response to natural laws, has been to move upwardly toward the ceiling and leave substantially undisturbed the colder air lodged within the lower portions of the room.

The principal object of the present invention is to improve the effectiveness with which warmed air may be utilized for heating a room by projecting over the heated air entering the room a layer of relatively colder air which will thus cause the heated air to move substantially over the entire lower areas of the room before breaking through the layer of colder air above the same and moving toward the ceiling.

A further object of the invention is to provide an improved means for heating rooms without increasing the quantity of heat supplied from the heating source, but by causing a more effective distribution of the heat supplied from such heating source. Other and further objects of the invention will appear in the course of the following description. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain means and one mode of carrying out the invention, such disclosed means and mode illustrating, however, but one of various ways in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a front elevation of an apparatus embodying the principles of my invention, a portion of the front and interior walls thereof being broken away; Fig. 2 is a central vertical sectional view taken through the device shown in Fig. 1.

As is clearly shown in the drawing, the apparatus comprising the casing 1 is preferably formed of sheet metal and of substantially rectangular shape, and preferably of substantially greater length than height. Said casing is preferably closed on all sides excepting at the front thereof where it is provided adjacent its lower portion with an inlet opening 2 which may be in the form of an ornamental grille. This inlet opening preferably is formed as a forwardly projecting section 3 of the casing behind which is positioned an air moving apparatus 4 which is preferably in the form of a squirrel cage fan. Said fan is positioned within a suitable housing or fan scroll 5 provided with suitable apertures whereby air may be forced by said fan upwardly through the casing. Immediately above the fan housing a transverse wall 6 is provided, said wall separating the fan chamber from the heating chamber 7 and the cold air chamber 8. Suitable openings are provided in the transverse wall, certain of the openings 11 providing for the passage of air into the heating chamber and other openings 12 providing for passage of air from the fan chamber into the cold air chamber. The cold air chamber is formed by means of an internal wall 13 secured to the rearward wall or casing in spaced relation thereto, so as to provide a passageway covering substantially the entire rearward face of the casing for the relatively colder air, said passageway at its upper portion 14 being disposed angularly and at its forward portion 15 being disposed substantially horizontally so as to provide an outlet opening for the layer of relatively colder air in the substantially horizontal plane above the heated air moving through the passageway 7, as will hereinafter be explained. An outlet opening 16, preferably covered by a suitable open grille work, is preferably provided across the entire upper portion of the front wall of the casing. The outlet passageway for the relatively colder air 15 is immediately behind said outlet opening at the top of the casing. In spaced relation to the front wall of the casing, extending from the transverse wall 6 to a position somewhat overlapping the outlet opening, a partition wall 17 is provided, said wall being suitably spaced by angle irons 18 from the front wall of the casing. Secured to the inner face of the partition wall are a plurality of brackets 21 which serve as supports for heating elements 22 which preferably extend longitudinally throughout the greater portion of the casing.

Obviously various modifications may be made

in the construction of the air heating and circulating device above described, but it has been found that a device of substantially the character illustrated will very satisfactorily distribute heated air into a room and secure a more efficient disposition of the heated air than is possible with other types of apparatus. It will be noted that the passageway for the cold air is of much smaller cross-sectional area than that of the heated air. It will also be noted that the opening adjacent the discharge outlet for the heated air is somewhat constricted so that a greater heating effect may be obtained on the air passing through the larger passageway and the heated air carried beneath the layer of cold air discharged through the opening 15 at the top of the casing.

With the apparatus just described, the cold air adjacent the floor of the room to be heated will be drawn into the fan housing and projected upwardly through the respective passageways for the cold air layer and the heated air layer. The same fan will supply both air columns and will force the separated portions of air through the outlet opening at the top of the casing. As stated, the layer of cold air projected above the heated air will serve as a means for retarding the upward movement of the warmer air and will cause such zone of warmer air to move substantially horizontally across the room before it intermingles with the counter-currents of air, which will cause it to rise toward the ceiling. In this manner the air adjacent the lower portion of the room will receive heat from the column of heated air emerging from the casing and the air within the room will be maintained at a more uniform temperature throughout its area than where the heated air is allowed to rise directly to the ceiling without the controlling and retarding influence of the layer of relatively colder air.

Other modes of applying the principles of my invention may be employed instead of the one explained, change being made as regards the means and the steps herein disclosed, provided those stated by any of the following claims or their equivalent be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A heating apparatus comprising a casing including rear and top walls, having an inlet opening adjacent its base and an outlet opening adjacent its top, an internal wall positioned in adjacent relation to the rear wall of the casing, and provided with an upper forwardly extended portion positioned in adjacent and spaced relation to the top wall of the casing, thereby forming a cold air passage between said internal wall and the rear and top walls of the casing and a heated air passage forwardly of said internal wall, a heat unit disposed in said heated air passage, and a blower positioned adjacent the lower extremity of said internal wall and discharging into both of said passageways, said heat unit comprising a plurality of spaced vanes positioned in vertical planes and extending lengthwise of the casing.

2. In a heater, an elongated casing provided in the upper region of its forward wall with a discharge opening, a blower in the lower region of the casing, discharging upwardly, and a heat unit interposed between said blower and the discharge opening, said unit comprising a plurality of spaced vanes positioned in vertical planes and extending lengthwise of the casing.

3. In a heating apparatus adaptable for installation in a wall, an upright casing including front, rear and top walls, having an inlet opening adjacent its base and an outlet opening in its front wall adjacent its top, an internal wall positioned in adjacent spaced relation to the rear wall and provided with an upper forwardly extended portion positioned in adjacent spaced relation to the top wall and terminating just short of the plane of said outlet opening, thereby forming a cold air passage between said internal wall and the rear and top walls of the casing and a heated air passage forwardly of said internal wall, entirely insulated from the rear and top walls by said cold air passage, a heat unit of a type which is capable of producing fire hazard temperatures, located in said heated air passage, and a blower positioned adjacent the lower extremity of said internal wall and discharging into both of said passageways.

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