

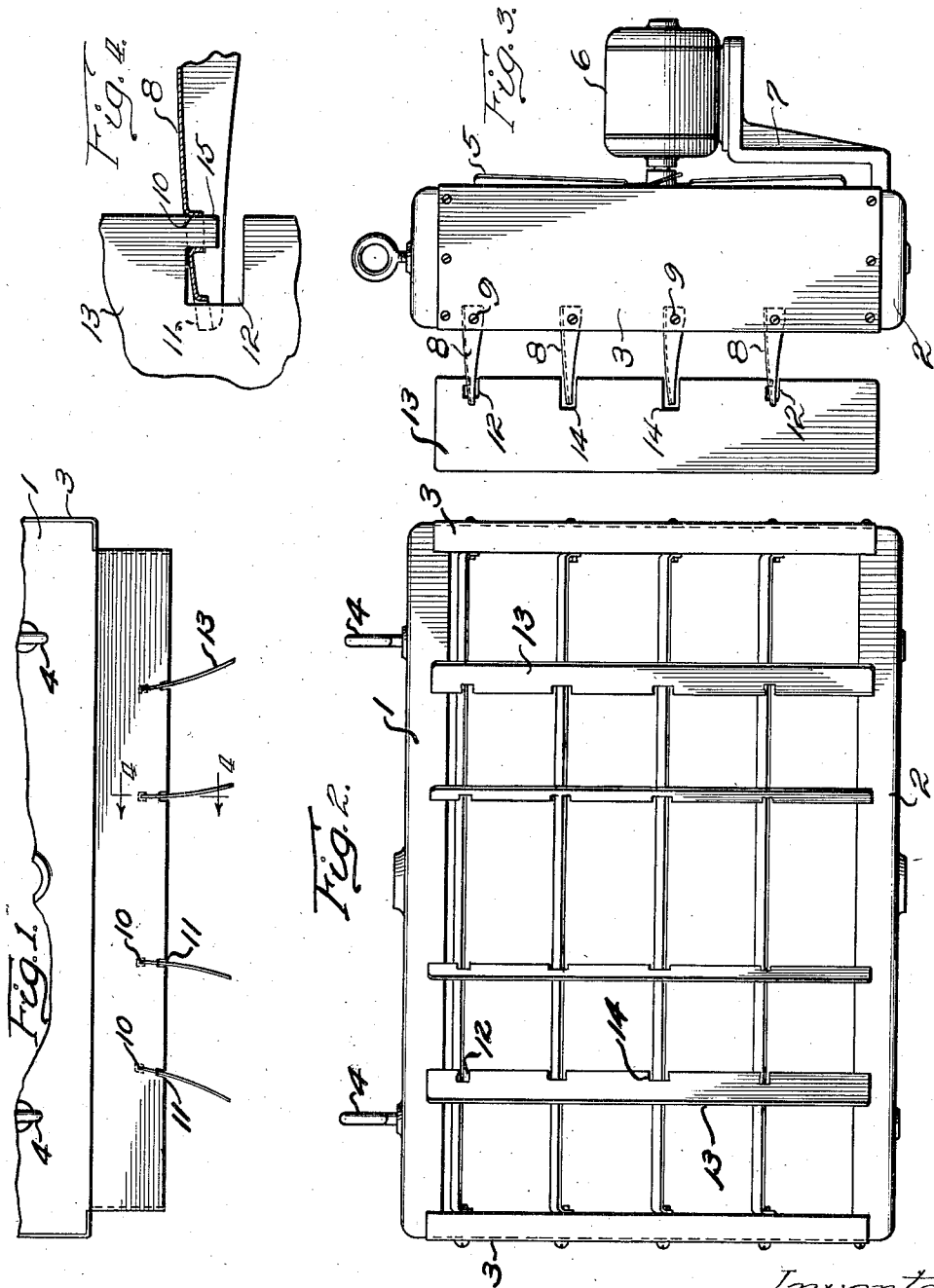
March 22, 1932.

F. M. YOUNG

1,850,822

AIR DIRECTOR VANE FOR UNIT HEATERS

Filed Oct. 10, 1930 2 Sheets-Sheet 1



Witness
Arthur M. Franke.

Inventor
Fred M. Young
Rummler, Rummler & Woodworth

Attys:

March 22, 1932.

F. M. YOUNG

1,850,822

AIR DIRECTOR VANE FOR UNIT HEATERS.

Filed Oct. 10, 1930 2 Sheets-Sheet 2

Fig. 5.

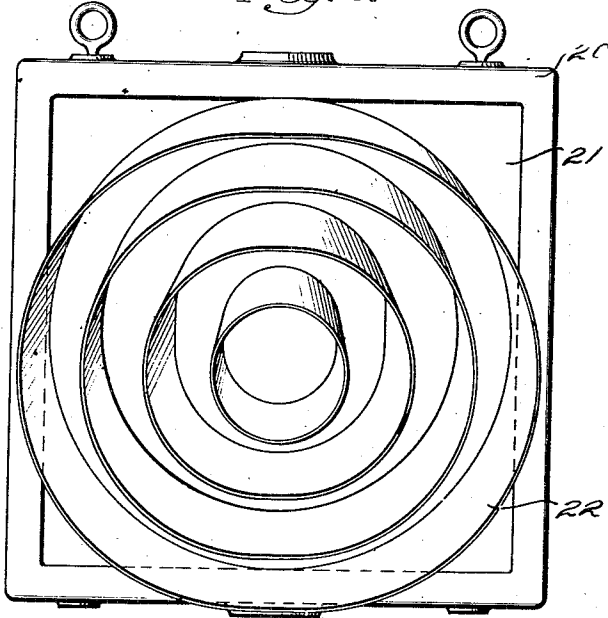


Fig. 6.

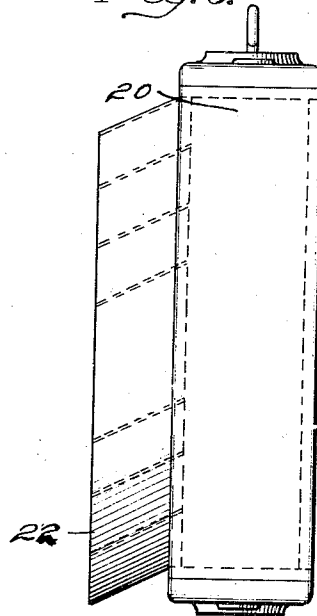


Fig. 7.

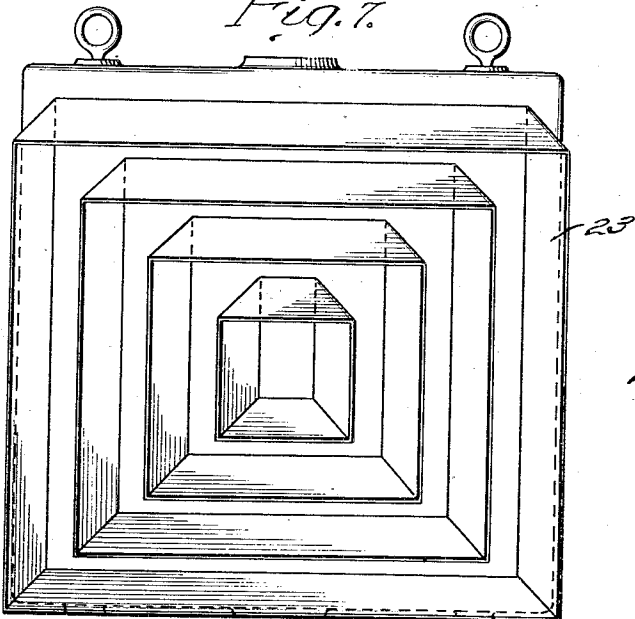
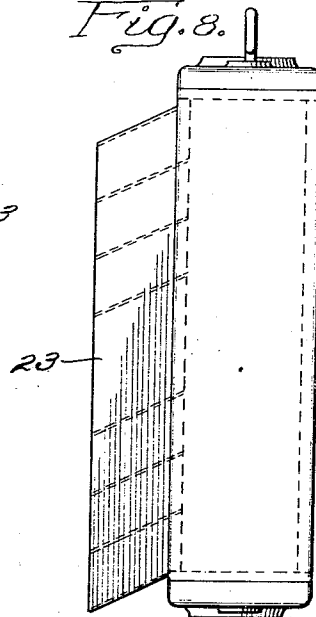


Fig. 8.



Witness

Arthur M. Frank.

Fred M. Young

Attorney, Minneapolis & Woodward

Attys.

UNITED STATES PATENT OFFICE

FRED M. YOUNG, OF RACINE, WISCONSIN

AIR DIRECTOR VANE FOR UNIT HEATERS

Application filed October 10, 1930. Serial No. 487,789.

This invention relates to improvements in louver constructions for unit heaters of the class which are employed in the heating and ventilation of buildings. Due to the different locations at which the heaters are most conveniently placed, it is desirable to provide the same with air directing means so that the air passing through the heater may be directed outwardly at various angles such as downwardly, and partly to one side or straight ahead with possibly some lateral or vertical deflection.

One of the principal objects of the invention is to provide in connection with a horizontal louver construction for effecting the desired declination of air passing through the radiator, a vertical louver arranged co-operating with the horizontal louvers to be movable therewith in a vertical direction, while having an independent lateral deflecting capacity.

A further object of the invention is to provide improved fixed louver constructions for directing air angularly with reference to the fore and aft axis of a heater.

The objects of the invention are accomplished by means of constructions as illustrated in the drawings, in which:

Figure 1 is a fragmentary plan view of a unit heater provided with the improved louver construction.

Fig. 2 is a face view of the construction shown in Fig. 1.

Fig. 3 is a side view of the construction shown in Figures 1 and 2.

Fig. 4 is a fragmentary enlarged detail partly in section illustrating the method of attaching vertical vanes to horizontal vanes.

Fig. 5 is a face view of a modified form of the louver construction employing concentric deflectors, each flaring outwardly and having a common axis which extends downwardly from the horizontal so that a conical column of air is delivered from the heater angularly with reference to the horizontal.

Fig. 6 is a side view of the construction shown in Fig. 5.

Fig. 7 is a face view of another modification of the louver arrangement in which a plurality of continuous flaring vanes are employed for producing a flaring column of heated air with its axis extending downward from the horizontal.

Fig. 8 is a side view of the construction shown in Fig. 7.

It is customary to provide in unit heaters of the general class to which this invention relates and which are employed in the heating and ventilating of buildings, a set of parallel louvers which are either vertically or horizontally arranged across the face of the heater and frequently hinged thereto so that the air may be deflected either downwardly or to one side of the direction in which the heater is facing.

The construction to which this application for patent relates is one in which the combined effect of vertical and horizontal louvers may be had in one unit and in addition the louvers are arranged to direct the delivered currents of air outwardly in a flaring column so as to rapidly lessen the velocity and concentration of the heater air at a comparatively short distance from the heater. The purpose is to provide for the delivery of a large quantity of heated air through a small unit while permitting the movement of the air to be not too apparent when the currents of air reach to within five or six feet from the floor.

The desired result may be obtained by any one of the three forms illustrated by the drawings. These forms in general are in one instance a set of parallel louvers hinged to the heater casing on friction pivots which serve to maintain desired angular relationship between the parallel louvers and the heater and supporting on the outer ends of these parallel louvers another set at right angles thereto but flaring outwardly with respect to each other. Alternative means for accomplishing the same purpose are illustrated in Sheet 2 of the drawings, and may be continuous louvers such as the more or less conical circular ones shown in Fig. 5 or the rectangular set shown in Fig. 7, each of which flare outwardly from the heater with respect to a common axis which may be declined or extend laterally from the horizontal.

Referring to the drawings, Figs. 1 to 4 illustrate one form of the louver construction

as applied to the well-known type of unit heater, outlined in Figs. 2 and 3, and which in general comprises headers 1 and 2 for steam or hot water connected together by a radiator core, not shown, and the side plates 3. Such heaters are frequently suspended from ceiling beams and are therefore provided with the eyes 4 on the upper header 1.

Air is blown through the heater by means of the motor driven fan 5 shown in Fig. 3, and the motor for which is indicated at 6. The motor is supported on bracket 7 extending upwardly from the lower header 2. This unit heater is provided with the customary set of horizontally disposed air deflector vanes 8 pivoted to the side plates 3 of the heater on friction pivots 9.

The horizontal vanes or louvers 8 may therefore be set at different angles with respect to the horizontal. In order to provide for lateral deflection of the air with but slight change over the standard construction, at least two of the horizontal vanes are altered as illustrated by the detailed drawings, Figs. 4 and 1, to provide collared apertures 10, and recesses 11 at their outer edges for the purpose of supporting vertical vanes in fixed positions thereon without interfering with vertical adjustment of the horizontal vanes. The vertical vanes effect lateral deflection of the air passing through the heater, and may be slightly curved in plan view as shown in Fig. 1, and in oppositely disposed sets so that the air will be directed outwardly on both sides in an enlarged column.

At spaced points on the vertical vanes their inner edges are cut to form the bayonet slots 12 for interlocking with the upper and lower horizontal vanes 8 at the apertures 10 and recesses 11 therein. The inner edges of the vertical vanes 13 are also cut out at 14 to clear the outer edges of the intermediate horizontal vanes 8. The projections 15 of the vertical vanes which are set within the apertures 10 of the horizontal vanes are formed to allow the necessary clearance upon adjustment of the horizontal vanes, and the recesses 11 are so located with reference to the apertures 10 to provide for permanent setting of the vertical vanes to suit the particular requirements in this regard for the intended use of any one heater.

In the operation of the construction shown in Figs. 1 to 4, inclusive, air blown through the heater may be directed in a generally horizontal direction, or upwardly or downwardly therefrom according to the adjustment of the horizontal vanes 8.

When adjusting these vanes with the vertical vanes mounted thereon, both horizontal and vertical vanes may be moved as a unit to a limited degree in a vertical direction. It is generally desirable to deflect the air downwardly by means of the horizontal vanes. The vertical vanes attached thereto serve the

purpose of changing the general direction of the air so that the currents of air passing between the vanes are compelled to spread toward both sides of the heater.

Figures 5 to 8 inclusive show two other arrangements of the louvers whereby the desired directional and spreading effect upon the air is accomplished. The construction illustrated by Figures 5 and 6 comprises a unit heater 20 upon which is mounted on the air outlet face 21 thereof a concentric series of outwardly flaring air deflector vanes 22. The common axis of these outwardly flaring vanes is diagonal to the horizontal center line of a radiator. With this construction, the air which is blown through the radiator and heated thereby is spread conically as it leaves the radiator.

The rectangular arrangement of continuous vanes 23, shown in Figures 7 and 8, also serves to spread the air as it leaves the radiator uniformly at all sides from a common axis which extends downwardly from the center of the radiator.

Although specific embodiments of this invention have been illustrated and described, it is understood that modifications thereof may be made without departing from the claims.

I claim:

1. In combination with a radiator and means for creating a blast of air there-through, a set of horizontally disposed vanes pivotally supported on horizontal axes adjacent said radiator, a set of vertical vanes supported vertically on said horizontal vanes, said supports of the vertical vanes being provided for by interfitting apertures and lugs formed in both sets of vanes.

2. In combination with a radiator and means for creating a blast of air there-through a set of horizontal vanes pivotally supported on horizontal axes adjacent the outlet side of said radiator, a set of vertical vanes notched to fit over the ends of said horizontal vanes, said vertical vanes also being provided with lugs, and holes in some of said horizontal vanes for receiving said lugs.

Signed at Chicago this 8th day of October, 1930.

FRED M. YOUNG.