

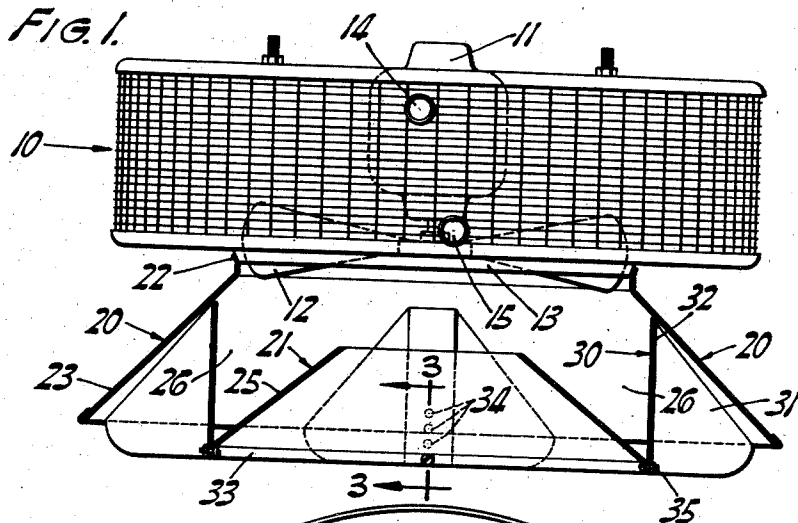
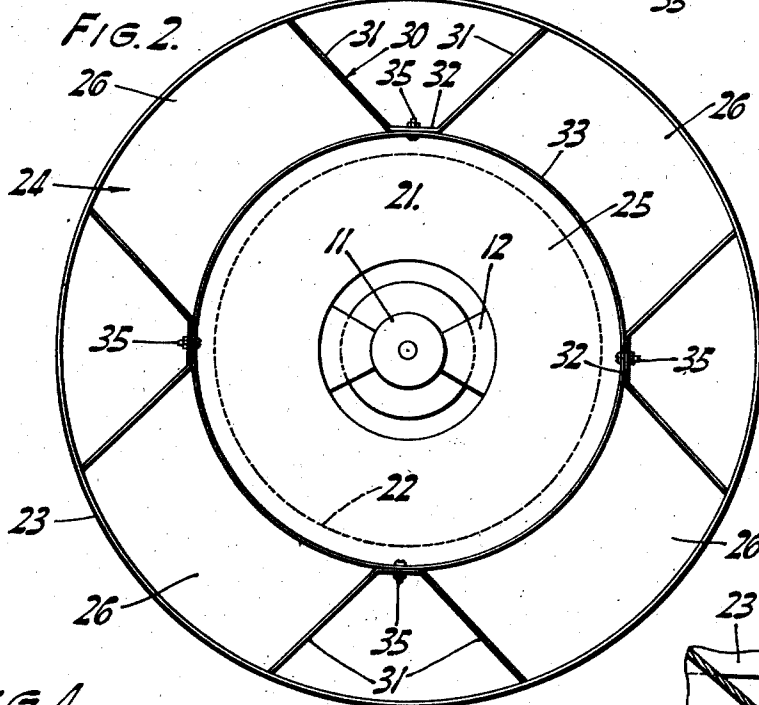
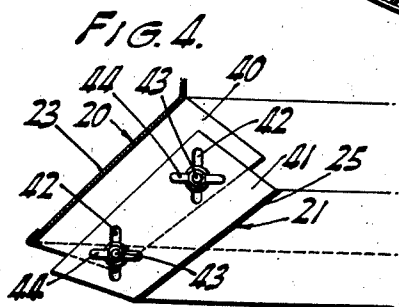
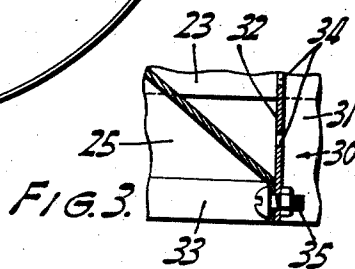
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UNIT HEATER

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UNIT HEATER

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5 Claims. (Cl. 98—40)

My invention relates in general to unit heaters and more particularly to the outlets of such heaters.

The principal object of my invention has been to provide an outlet means for unit heaters which shall be adjustable to vary the velocity of air emerging therefrom.

Another object has been to provide an outlet for unit heaters made up of two interengaging members so formed that relative movement thereof will bring about an adjustment of the outlet opening to vary the velocity of the air passing therethrough, one or both of which members may have inclined side walls.

A further object has been to provide an outlet formed of two interengaging members in the form of a frustrum of a cone or a pyramid.

Another object has been to provide means for dividing the outlet into a number of definite outlet passageways defined by spaced walls, while at the same time permitting adjustment of the size of the passageways.

Moreover, my invention is applicable to unit heaters of any type and may be easily attached to the outlet nozzle of any unit heater.

Furthermore, my invention is inexpensive to manufacture and may be easily adjusted in permanent manner.

The above objects and advantages have been accomplished by the device shown in the accompanying drawing, of which:

Fig. 1 is a side elevation of a unit heater showing my outlet in section.

Fig. 2 is a bottom plan view of my invention.

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

Fig. 4 is an enlarged, fragmentary, sectional view of a modified form of invention.

In the drawing, 10 represents the unit heater of the type usually suspended from the ceiling of the room to be heated. In this type of heater, an electric motor 11 is suitably mounted within the center of the heater and carries at its lower end a fan 12 which is preferably located in the outlet nozzle 13 of the unit. These unit heaters are provided with a heating coil (not shown) to which an inlet pipe 14 and an outlet pipe 15 are suitably connected. In heaters of this type air is drawn horizontally into the heater over suitable fins (not shown) carried by the heating coil and is driven by means of the fan downwardly through the outlet nozzle 13 of the heater.

In carrying out my invention I use two members so arranged as to provide a valved outlet opening for the heater with means for adjusting

the valve members so as to change the size of the openings for varying the velocity of the heater outlet. For convenience of illustration, I have shown an outer member 20 and an inner member 21. These members are shown as being in the shape of a frustrum of a cone or a pyramid but obviously other shapes, hereinafter referred to, may be used to carry out my invention.

My invention comprises an outer cone 20 and an inner cone 21 so arranged as to provide a space between them which forms the outlet for the heater. The outer cone 20 has a flange 22 for suitable attachment to the outlet nozzle 13 of the heater and a skirt 23 arranged at a suitable angle with the axis of the outlet nozzle.

The inner cone 21 has a skirt 25 which may be arranged at a slightly different angle than the skirt 23 of the outer cone 20 and this cone is mounted centrally within the outer cone to provide the outlet space 24. This outlet space is divided into a number of outlet passageways 26 arranged symmetrically within the outer cone 20 and each formed by two interspaced splitters 30 formed preferably of sheet metal having two diverging walls or wings 31 extending from a centrally arranged guide portion 32 and secured suitably to the inner surfaces of the outer cone. The two opposite walls 31 of any two adjacent splitters are preferably parallel in arrangement for forming the outlet passageways 26. The splitters are so designed and positioned that the guide portions 32 thereof contact with the outer periphery of the inner cone 23 and therefore provide guides for the vertical adjustment of said inner cone. The inner cone is preferably formed with a downwardly extending flange 33 which coacts with the guide portions 32 to provide suitable guiding and clamping surfaces on this cone. Each of the guide portions 32 of the splitters is provided with a plurality of adjusting apertures 34 which are registerable with suitable apertures formed in the flange 33 of the inner cone and through which may be passed bolts 35 whereby the inner cone may be securely fastened in its adjusted position.

In the modified form shown in Fig. 4, the skirt 23 of the outer cone 20 is provided at a number of points with a downwardly extending adjusting plate 40. The skirt 25 of the inner cone 21 is provided with an equal number of upstanding adjusting plates 41. These plates are in overlapped arrangement, as shown in Fig. 4, and the plates 41 are each preferably formed with elongated slots 42 formed preferably in vertical planes and engaging bolts 43 carried by the plate

40. Wing nuts 44 are carried by the bolts whereby the plates may be securely locked together. In this form of invention, the adjustment is brought about by loosening the wing nuts and moving the inner cone 21 up or down to the desired position, whereupon the parts are securely fastened in such adjusted position by tightening the wing nuts.

It will be clearly seen from the foregoing that when it is desired to increase the velocity of air coming from the passageways 26 in the form of invention shown in Figs. 1 to 3, the bolts 35 are removed and the inner cone is adjusted upwardly to the desired position and where the apertures in the flange 33 will register with the apertures 34 of the splitters, whereupon the bolts are again inserted and the inner cone locked in its adjusted position. Obviously, when it is desired to decrease the velocity of the air at the outlet of the heater, the inner cone is lowered so as to increase the size of each of the outlet passageways.

While I have shown the two members of my invention as formed in the shape of a frustrum of a cone or a pyramid, it is obvious that other forms may be employed for producing the regulating or valve action on the outlet opening. For instance, the outer member may be cylindrical and the inner member conical; the outer member may be conical or pyramidal with a flat plate acting as the inner member, such inner member being flat or of conical cusp shape; or such members may be of inverted saucer shape. Furthermore, the outer member may be made in the form of an outwardly flaring cone frustrum and the inner member in the form of an inwardly flaring inverted cone frustrum. These and other modifications of the details herein shown and described may be made without departing from the spirit of my invention or the scope of the appended claims, and I do not, therefore, wish to be limited to the exact embodiments herein shown and described, the forms shown being merely a preferred embodiment thereof.

Having thus described my invention, what I claim is:

1. An outlet for unit heaters comprising an outer cone, an inner cone, said inner cone being smaller in diameter than the outer cone and axially movable to permit adjustment of said outlet, and a plurality of splitters arranged between said cones, said splitters having flaring wing portions and being so disposed as to divide the discharge space between the cones into a plurality of separate outlet passageways.

2. An outlet for unit heaters comprising an

outer cone, an inner cone, said inner cone being smaller in diameter than the outer cone and axially movable to permit adjustment of said outlet, and a plurality of splitters arranged between said cones, said splitters having flaring wing portions and being so disposed as to divide the discharge space between the cones into a plurality of separate outlet passageways, said splitters forming guides for the adjustment of said inner cone.

3. An outlet for unit heaters comprising an outer cone, an inner cone movable within the outer cone to regulate the size of the outlet, said inner cone being smaller in diameter than the outer cone, and a plurality of splitters carried by the outer cone, each comprising outwardly flaring wing portions secured to said outer cone and an interconnecting guide portion engageable with the outer periphery of said inner cone for maintaining the same in sliding adjustable relation with said outer cone, and means for locking said inner cone in adjusted position.

4. An outlet for unit heaters comprising an outer hollow tubular member having inclined walls, an inner member mounted within said outer member and in interspaced relation therewith, said inner member cooperating with said outer member to form an outlet opening for the heater, means for moving said inner member in axial relation to said outer member to change the size of the outlet opening for varying the velocity of the air passing therethrough, and a plurality of splitters between said members, each of said splitters being provided with flaring wing portions for attachment to said outer member to divide the outlet opening into a plurality of outlet passageways, each pair of wing portions being joined by a substantially flat portion, said flat portions providing guides for said inner member.

5. A unit heater comprising a rotary fan having an annular discharge of greater velocity near the outer end thereof, said heater being provided at its discharge end with an outer outlet cone and a co-acting inner cone mounted within said outer cone, said cones being so proportioned and arranged as to have the discharge opening therebetween in the path of the highest velocity fan discharge, said cones having relative axial movement for adjusting the area of the heater discharge, and a plurality of splitters between said members, each of said splitters having flaring wing portions for attachment to said outer cone to divide the annular discharge opening into a plurality of separate air passageways.

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