May 8, 1934. J. A. H. SIERS 1,957,558

AIR TEMPERATURE REGULATING APPARATUS

Filed March 6, 1933

Fig. 2.

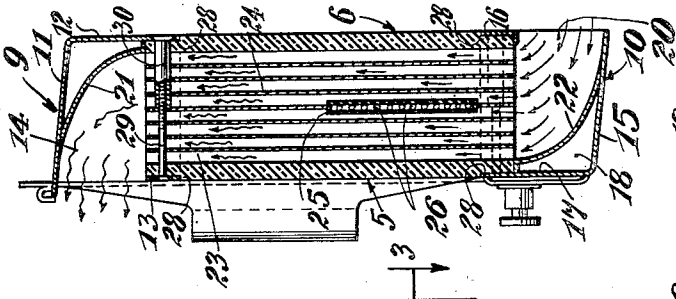


Fig. 1.

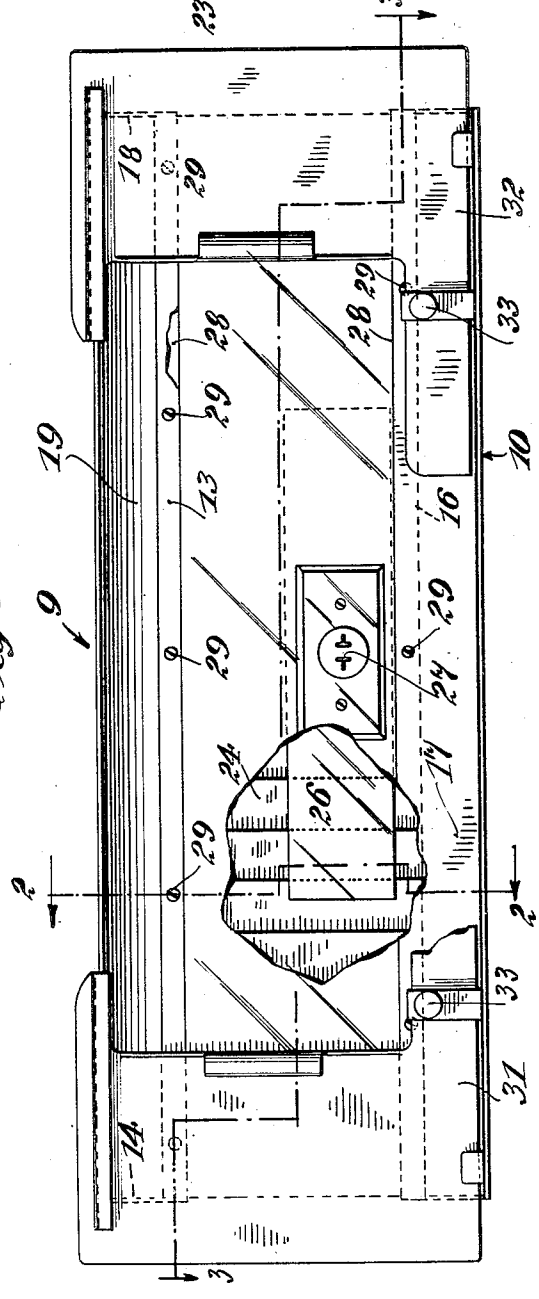
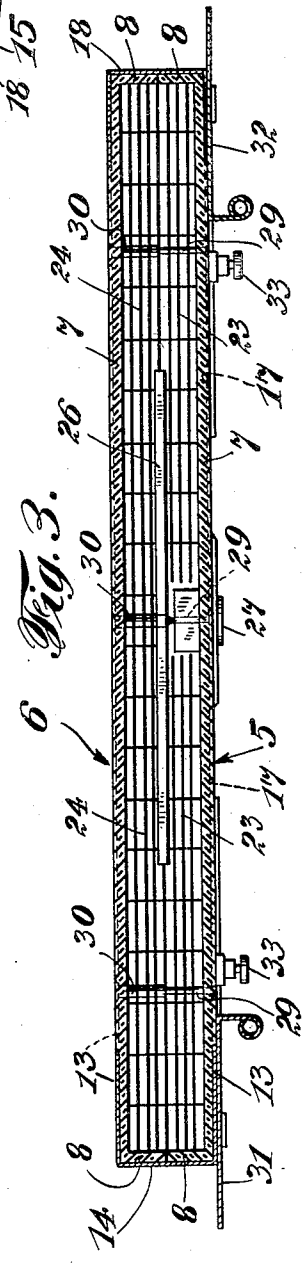


Fig. 3.



INVENTOR-
John A. H. Siers
BY C. P. Goepel
his ATTORNEY-

Patented May 8, 1934 1,957,558

UNITED STATES PATENT OFFICE

1,957,558

AIR TEMPERATURE REGULATING APPARATUS

John A. H. Siers, Jersey City, N. J.

Application March 6, 1933, Serial No. 659,715

4 Claims. (Cl. 219—34)

This invention relates to air temperature regulating apparatus for supplying air at an approximated desired temperature to the rooms of dwellings, offices, factory buildings and other domestic or mercantile establishments.

More particularly, the subject matter of the present application is concerned with certain important improvements in temperature regulating apparatus, such as that shown and described in my pending application Serial No. 563,805, filed September 19, 1931, which is designed and intended for use as a window ventilator for the purpose of altering or changing the temperature of the outside air before its admission to the room.

It is a more particular object of the present invention to provide means whereby a more extensive area of conductive material for the temperature regulating medium is provided with greater uniformity in the transmission of such medium to the air passing through the ventilator casing between the inlet and outlet thereof.

It is also a further object of the invention in one embodiment thereof to provide an improved construction of the ventilator casing and mating honeycomb sections providing a multiplicity of vertically extending air passages and having means for supporting a temperature regulating unit between said sections.

It is also a detail object of my invention to provide a sectional casing or housing including opposite side walls of insulating material between which the honeycomb sections are arranged, together with simple and efficient means for rigidly securing the several parts of the casing or housing and said honeycomb sections together as an assembled unit.

With the above and other objects in view, the invention consists in the improved air temperature regulating apparatus, and in the form, construction and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawing and subsequently incorporated in the subjoined claims.

In the drawing wherein I have illustrated one simple and practical embodiment of the invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a front elevation of my improved air temperature regulating apparatus, a portion of the casing being broken away and disclosing the temperature regulating unit;

Fig. 2 is a transverse sectional view taken substantially on the line 2—2 of Fig. 1; and

Fig. 3 is a horizontal sectional view taken substantially on the line 3—3 of Fig. 1.

Referring in detail to the drawing, wherein I have shown a type of apparatus especially designed for use as a window regulator, the casing is of elongated rectangular form, and in the present instance, includes front and rear sections generally indicated at 5 and 6 respectively. Each of these casing sections may be conveniently molded or formed from "bakelite", asbestos composition or other suitable insulating material, and includes a side wall 7 which extends throughout the length of the casing and at each end thereof is flanged to provide one-half of an end wall of the casing as indicated at 8.

The casing also includes the upper and lower sections 9 and 10 respectively, preferably though not necessarily, formed of sheet metal. The section 9 of the casing has a transversely inclined top wall 11, a rear wall 12 and a front wall 13, said walls being integrally connected with each other by opposite end walls indicated at 14. Similarly, the lower or bottom section 10 of the casing includes a bottom wall 15, a rear wall 16 and a front wall 17 connected by the opposite end walls 18.

The major portion of the front wall 13 of the top section 9 of the casing is cut away to provide the outlet opening 19, and similarly the major portion of the rear wall 16 of the bottom section 10 is cut away to provide the air inlet opening indicated at 20. Each of these casing sections is further provided with a curved air deflecting wall indicated at 21 and 22 respectively.

Between the casing sections 5 and 6, the mating honeycomb sections 23 and 24 are arranged and provide a multiplicity of vertical air passages extending between the air inlet opening 20 and the outlet opening 19. As herein shown, the opposing sides of the honeycomb sections 23 and 24 which are preferably constructed from light metal stock such as sheet aluminum, are recessed as at 25 to receive the temperature regulating unit 26. In the present instance, I have shown this regulating unit in the form of an electrical heating resistance suitably encased and connected by suitable leads with the contacts of a socket indicated at 27 which is mounted in the wall 7 of the front casing section.

The outer surfaces of the casing sections 5 and 6 at their upper and lower ends are rabbeted or recessed as indicated at 28 to receive the edge portions of the several walls of the top and bottom sections 9 and 10 of the casing, said walls and the sections 5 and 6 having registering aper-

tures coinciding with openings in the spaced walls of the honeycomb sections 23 and 24 to receive the male and female parts 29 and 30 respectively of a plurality of connecting tie rods or bolts. It will therefore be readily understood that by adjusting the parts 29 and threading the same into the parts 30 of said tie rods, the several sections of the casing will be rigidly fixed or held in assembled relation with the honeycomb sections 23 and 24 and the unit 26 securely confined and supported between the casing sections 5 and 6.

Horizontally adjustable plates 31 and 32 are slidably mounted in any suitable manner upon the front side of the ventilator casing at its opposite ends and may be conveniently secured in their adjusted positions by the set screws 33. When the casing is positioned upon a window sill below the lower sash, these plates are outwardly adjusted until their outer vertical edges come into binding contact with the opposite vertical portions of the window frame. The screws 33 are then tightened so as to thereby removably retain said casing in fixed relation to the frame. The window sash is then lowered until it comes into close contact upon the transversely inclined top wall 11 of the casing section 9.

In the use of the apparatus as above described, connection is made by means of the usual plug between the contacts of socket 27 and the source of electric current, whereby the resistance unit 25 becomes operative to generate a high degree of heat. By convection and radiation, this genrated heat is rapidly conducted or transmitted by the walls of the honeycomb sections 23 and 24 to uniformly heat the air entering the apparatus at the inlet opening 20 as it rises through the numerous passages of said honeycomb sections, so that at the outlet opening 19, warm, fresh air of approximately the desired temperature enters the room or apartment. Owing to the extensive surface area of the walls of the honeycomb sections, and their capacity to rapidly conduct the heat, a comparatively large volume of air will be uniformly heated to the required temperature with the use of a heating unit of relatively small size so that the apparatus can be operated with a minimum consumption of electric current.

By reason of the sectional construction of the casing, the several parts thereof together with the honeycomb sections and the temperature regulating unit may be accurately and readily assembled and rigidly secured against relative movement. Also in the event that repairs or replacement of the heating unit is required, the parts may be readily disconnected by merely removing the sectional tie rods or bolts and as readily reassembled by the individual owner or householder. The mounting of the temperature regulating unit as herein disclosed assures its complete protection against damage or injury, and in the event that either of the sheet metal upper or lower sections 9 and 10 of the casing should become badly damaged, it can be readily replaced at nominal expense. However, it is to be understood that my invention is not necessarily limited to the specific sectional construction of the casing and the connecting means therefor, but in so far as the essential features of the present disclosure are concerned, the same may be incorporated in various different types of such apparatus adapted for either household or industrial use. Accordingly, in the practical development of the present invention, I reserve the right to incorporate the essential features thereof in such other alternative structural forms, as may be fairly considered within the spirit and scope of the appended claims.

I claim:—

1. An air temperature regulating means, including a casing body comprising mating halves of insulating material, separate air inlet and outlet casing sections having walls telescoping the lower and upper ends of the casing body respectively, air passage forming metallic sections within the casing body, a heating unit associated therewith and means for detachably securing the upper, lower and body sections of the casing, together with said passage forming sections and the heating unit, in assembled relation with each other.

2. A portable ventilator and air heating apparatus including a casing body open at its upper and lower ends, said body comprising separate mating halves, means within said casing body for heating and directing the air therethrough, and casing sections detachably telescoped over the lower and upper ends of the halves of the casing body to retain the same in assembled relation, said casing sections being open on relatively opposite sides thereof, and respectively having means for directing the air into and from the lower and upper ends of the casing body.

3. In a window ventilator, an outer rectangular casing body open at its upper and lower ends, two passage forming sections within said casing body each providing a plurality of vertical air passages separated from each other longitudinally and transversely of the casing, said sections having mating recesses in their opposing faces and adjacent their lower edges, a heating unit fitted within said recesses, and means extending transversely through the side walls of the casing body and through said sections to detachably secure the latter and said unit in assembled relation with the casing.

4. In a window ventilator, an outer rectangular casing body open at its upper and lower ends, two passage forming sections within said casing body each providing a plurality of vertical air passages separated from each other longitudinally and transversely of the casing, said sections having mating recesses in their opposing faces and adjacent their lower edges, a heating unit fitted within said recesses, members extending below and above the casing body to engage the window frame and sash respectively, and having means for directing air into and from said passages, and common means for detachably securing said members, sections and heating unit in assembled relation with the casing body.

JOHN A. H. SIERS.