Nov. 30, 1926. 1,608,938

P. P. HENSHALL

AIR VELOCITY CONTROL WING

Filed Oct. 24, 1925

Fig. 1.

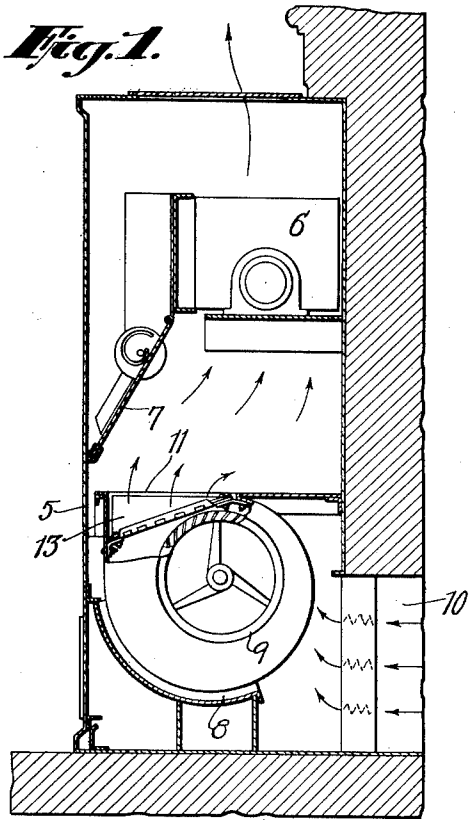


Fig. 2.

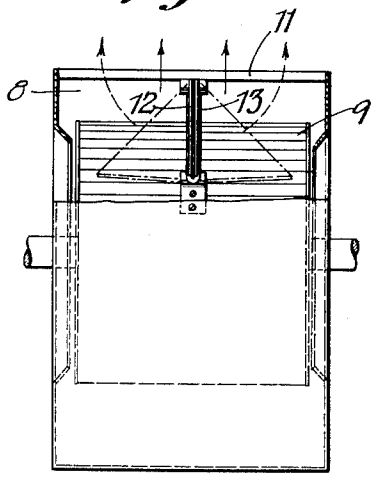
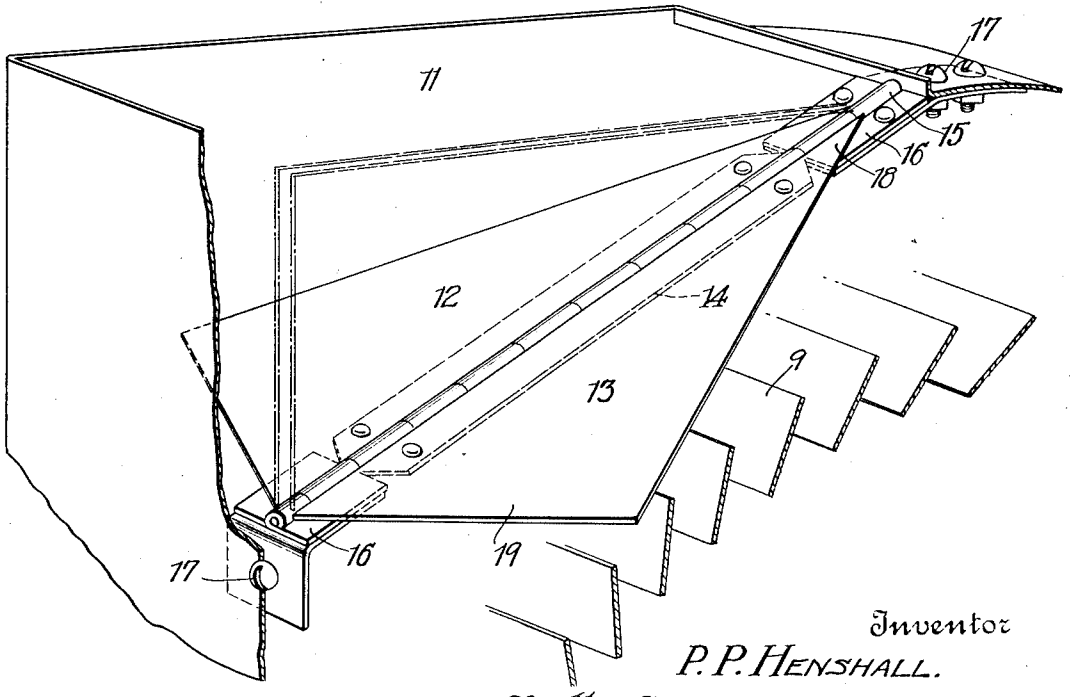


Fig. 3.



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UNITED STATES PATENT OFFICE.

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AIR-VELOCITY-CONTROL WING.

Application filed October 24, 1925. Serial No. 64,665.

This invention relates to air velocity control wings and more particularly to a novel and improved means for regulating or controlling the velocity and volume of air from a fan or blower housing of a heating and ventilating unit to produce a quiet, smooth operating mechanism.

One of the objects of my invention is to provide air regulating and controlling means in conjunction with a fan or blower housing in heating and ventilating units wherein a single or constant speed fan drive is employed so that the air velocity and volume required may be maintained without reducing or increasing the speed of said fan.

Another object of my invention is to introduce in the outlet of a fan or blower housing an adjustable set or pair of vanes constructed and arranged to lie within the pressure section and the velocity section of said housing so as to spread or distribute the air over a larger area or surface when driving it through or over a heating element such as a radiator.

A still further object of my invention is to provide an air velocity and volume control set of wings located in the outlet of a fan or blower housing as employed in heating and ventilating units so as to eliminate the interior air friction and modulate the air currents, overcome the whir or hum within the unit and otherwise increase the efficiency of its elements.

In order to more fully understand and appreciate my invention, reference may be had to the accompanying drawing showing a preferred embodiment thereof in one of its applications, wherein—

Fig. 1 is a vertical sectional view through a heating and ventilating unit showing the application of my invention and its relation to the outlet of the fan or blower housing.

Fig. 2 is a plan partly in section of the air regulating and controlling vanes showing their relation to the fan or blower.

Fig. 3 is an enlarged detail of the air regulating and controlling vanes and the means of mounting them within the blower housing.

Referring now to the drawings wherein like reference characters designate corresponding parts throughout the several views, 5 designates the front wall, 6 a heating element such as a radiator, 7 a damper and 8 a fan or blower housing located in the bottom of a combined heating and ventilating unit. Within the fan or blower housing there is provided a rotary element 9 which draws the air into the unit through the inlet or opening 10 and forces the air through the top outlet opening 11.

My invention proper consists in providing air velocity and control means located in the top outlet opening 11 of the fan or blower housing and comprises a set or pair of wings or vanes 12, 13, fastened or connected to a piano type brass hinge 14, said hinge being mounted on a supporting rod 15 in such manner as to permit the wings or vanes to be manually set to any angle between ninety and one hundred eighty degrees, as shown in full and dotted lines, see Fig. 3. The ends of said rod are attached to end plates 16 which are secured to the front wall and top wall respectively of said housing by suitable fastening elements, such as short screws and bolts 17. The shape of the wings or vanes are substantially that of right angle triangles with their apices 18 located near one end of the rod and their longer sides parallel to the said rod and hinge. The bases 19 therefor and the widest portion of the wings or vanes when opened are adapted to lie in what I term the pressure section of the housing and somewhat below the top of the outlet opening whereas the apices of said vanes are disposed in the velocity section of the housing.

When the wings or vanes are spread or opened as shown by Fig. 3 so as to lie substantially tangential to the rotor, the air will be so distributed that when driven through the unit, a smooth, quiet operation is accomplished. On the other hand the vanes may be set by means of the hinge to any desired angle from that shown by full lines to that shown by dotted lines in Figs. 2 and 3 whereby the volume and velocity of the air may be effected in accordance with the speed of the rotor employed so that variable speed rotors are obviated. It will thus be seen that the adjustment of the wings or vanes permits of a smooth, quiet running operation since the volume of air admitted may be spread over a greater area into the chamber leading to the heating element. The maximum heating efficiency is thus obtained in that the air may pass over the entire surface of the

heater instead of but a limited section thereof when the wings or vanes are not employed.

In actual practice, when the wings or vanes are installed in the outlet opening of the blower chamber, they are set to a predetermined angle depending on the speed of the rotor to be employed and the area of the outlet opening. Under certain conditions it may be necessary to increase or decrease the angle of the wings or vanes slightly from a set position when a greater or less volume of air is driven by the rotor in order that the whir or hum may be entirely eliminated but in any event when the vanes are once adjusted properly, they remain so and require no further attention.

Having shown and described my invention what I now claim as new and desire to secure by Letters Patent of the United States is:

1. In a blower for heating and ventilating units having a blower housing and rotor, wings mounted in the outlet of the housing above the rotor and a connecting hinge for said wings permitting their adjustment to predetermined positions whereby the volume of air may be controlled within the said unit.

2. In a blower for heating and ventilating units having a blower housing and rotor, wings mounted in the pressure and velocity section of the blower and housing and a connecting hinge for said wings permitting their adjustment to predetermined angles whereby the volume of air may be controlled within the said unit.

3. In a blower for heating and ventilating units having a blower housing and rotor, a pair of wings mounted in the pressure and velocity section of said housing tangential to the rotor and a connecting hinge permitting the manual adjustment of said wings to predetermined angles in accordance with the speed of said rotor whereby the volume of air may be controlled within the interior of the said unit.

4. In a blower for heating and ventilating units having a blower housing and rotor, a pair of wings having a connecting hinge therefor mounted in the outlet opening of the housing, the base of said wings lying within the pressure section of said housing and tangential to the rotor and adjustable to predetermined positions in accordance with the speed of the said rotor whereby the volume of air may be controlled within the interior of the said unit.

5. In a blower for heating and ventilating units having a blower housing and rotor, a pair of triangular wings mounted in the outlet opening of the housing, a connecting hinge for said wings, the base of said wings lying within the pressure section and the apices within the velocity section of the housing and tangential to the rotor, said wings being manually adjustable to predetermined positions in accordance with the speed of the said rotor whereby the volume of air may be controlled within the interior of the said unit.

6. In a blower for heating and ventilating units having a blower housing and rotor, a pair of triangular wings mounted in the outlet opening of the housing, a connecting hinge for said wings, the base of said wings lying within the pressure section and the apices in the velocity section of the housing and tangential to the rotor, said hinge permitting the wings to be adjusted to any angle between ninety and one hundred eighty degrees whereby the volume of air may be controlled within the interior of the unit in accordance with the speed of the rotor.

In testimony whereof I affix my signature.

PERCIVAL P. HENSHALL.