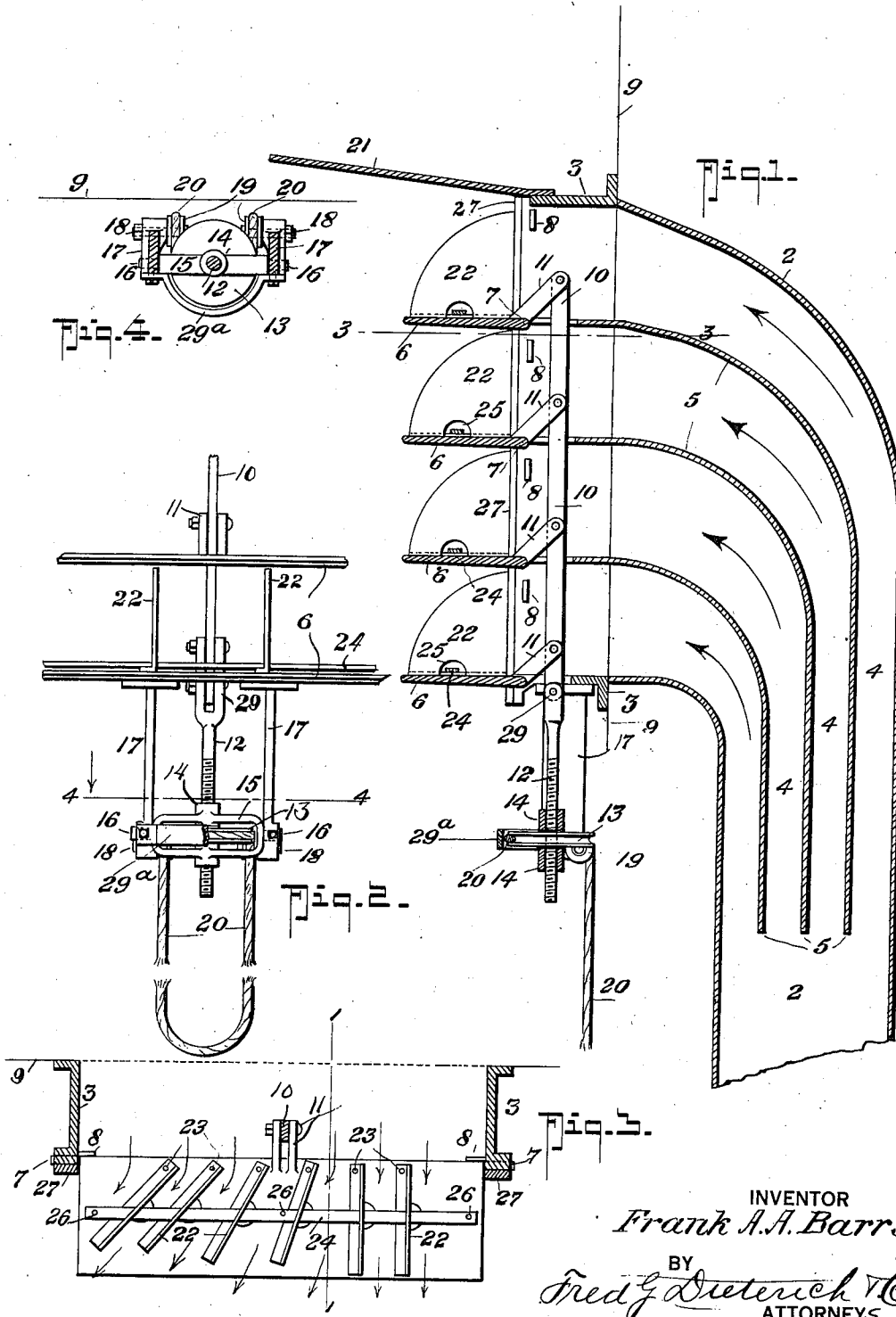


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AIR DIFFUSER AND REGULATOR.
APPLICATION FILED AUG. 16, 1918.

1,299,659.

Patented Apr. 8, 1919.



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FRANK A. A. BARRS, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

AIR DIFFUSER AND REGULATOR.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK A. A. BARRS, a citizen of the Dominion of Canada, residing at Vancouver, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Air Diffusers and Regulators, of which the following is a specification.

This invention relates to a means for controlling the admission of air for ventilation into a room and for directing and diffusing the air as admitted.

In any ventilating system where heated or cooled air is delivered into a room, unless some means is taken to upwardly direct and diffuse the inpassing air, objectionable draft is experienced in the line of the delivery, while there may be stagnation of air in other parts of the room.

The invention, which is the subject of this application, is designed to avoid these objections by providing the air delivery inlet to the room with a means not only for controlling the amount of air admitted but for directing and diffusing the inflow.

The invention is particularly described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Figure 1 is a vertical section through the air register and diffuser on the line 1—1 in Fig. 3.

Fig. 2 is a face view showing the connection of the operating means to the air directing planes.

Fig. 3 is a plan on the line 3—3 in Fig. 1, and

Fig. 4 is a plan of the rope operated nut by which the directing planes are set and held at any desired angle and of the yoke in which it is mounted.

In these drawings 2 represents the duct through which fresh air for ventilation is delivered to a room and 3 the frame of the aperture through which the air is delivered. The air duct adjacent the delivery aperture is divided by partitions 5 into a series of separate outlets 4, and these partitions are carried a sufficient distance into the duct 2 below the delivery aperture to insure reasonable uniformity of flow through the several divisions of the duct.

The partitions 5 of the delivery aperture are preferably disposed horizontally and each subdivision has a closing and inflow directing plane 6 pivotally mounted at 7 in

the front edge of each side of the frame 3 in line with the underside of the subdivision aperture 4 and closable upward against stops 8 projecting from the inner side of the outlet frame.

The pivots of the inflow directing planes are retained in position by cover strips 27 secured over them to the edge of the frame 3. These inflow directing planes may be set at any desired angle in relation to the plane of the wall 9 and may be closed against the stops 8 by a link rod 10 which is pivotally connected to a spur lever 11 backwardly and upwardly projecting from the pivot edge of each plane 6 adjacent its midlength. The lower end of this link rod 10 is pivotally connected at 29 to the end of a screw 12, on which screw is threaded as a nut a rope sheave 13. This nut sheave is rotatably mounted between bearings 14 in a yoke 15 which is provided with trunnion pins 16 on which the yoke is carried in brackets 17 secured to and downwardly projecting from the underside of the outlet frame 3.

This trunnion mounting of the nut carrying yoke 15 allows the nut sheave 13 to adjust itself to the angular movement of the screw 12. The brackets 17 also carry the pins 18 on which small rope guide sheaves 19 are mounted, around which sheaves an endless operating rope 20 is conducted from the pendant vertical line of the rope to the horizontally disposed groove of the nut sheave 13. By placing the guide sheaves 19 back of the nut sheave 13 the rope 20 is more effectively retained on the sheaves, but a guard 29^a may be carried around the front of 13 to prevent accidental displacement of the rope.

By this manner of mounting, the nut sheave 13 may be rotated in either direction by the endless rope 20, and, being held against endwise movement, will, through the agency of the screw 12, raise or lower the link rod 10 to close or set all the planes 6 to any desired angle and will support them as set.

Secured to and projecting forward from the upper side of the outlet frame 3 at a slight upward angle is a hood or canopy 21, which prevents the upwardly directed current of air from being projected against the ceiling. The air delivered into a room may thus be controlled in amount and directed upward or downward as required to insure satisfactory ventilation.

Lateral diffusion of the air currents so delivered from each division of the air admission is effected by a series of diffusing vanes 22 secured to and upwardly projecting from each plane 6. These vanes are flanged along the lower edge where they are secured to the planes and the upward and the forward edge is substantially concentric with the pivotal mounting of the planes 6 that the vanes will freely pass within the division of the delivery aperture. These lateral diffusing vanes 22 are pivotally connected at 23 to the back or pivotal edge of each plane 6 and are secured in any desired position of angular adjustment by a clamping bar 24, which passes through an elongated aperture 25 partially sheared in each vane and the partially sheared portion downwardly turned to the side opposite the flange, on which flange and downwardly turned portion the bar 24 may be clamped to secure the vanes by a small bolt 26 at each end of the bar and intermediate of the same.

These three bolts of the clamping bar may be slackened and the vanes set at any desired angle to either or both sides and secured. This setting and clamping of the lateral diffusing vanes are supposed to be done by one who knows the ventilation requirements of the room.

By dividing the flow of air delivered to a room and by controlling the direction of the divided flow upward or downward and by laterally diffusing it, the ventilation of a room may be much more effectively accomplished, and while I am aware that prior to my invention the admission of air for the heating or ventilation of a room has been controlled by a register having narrow pivotally mounted louvers or shutters, which may have had the effect of directing the flow to some extent, I am not aware of any system wherein the inflow has been divided, directed and diffused as by the device hereinbefore described.

Having now particularly described my invention, I hereby declare that what I claim as new and desire to be protected in by Letters Patent, is:

1. An air register, comprising the combination with a duct delivering air to a room, means for controlling the amount of air admitted and for directing the admitted air upward or downward, and means cooperative with said controlling means for laterally directing the flow of the admitted air.

2. An air register, comprising the combination with a duct delivering air to a room, of means for dividing the delivery inflow by a series of partitions disposed in the duct a short distance from the inflow aperture at which they are horizontally disposed, means for controlling the amount of the divided inflow and for directing such inflow angu-

larly upward or downward as desired, and means cooperative with said controlling means for directing the inflow laterally to one side or the other.

3. An air register, comprising the combination with a duct delivering air to a room, a series of horizontally disposed partitions dividing the outflow aperture of said duct, planes pivotally mounted along the forward bottom edge of each horizontal subdivision, means for simultaneously moving the free edges of said planes to close the apertures or to sustain the planes at any desired angle, vanes pivotally connected along the pivot edge of each plane for laterally deflecting the inflowing air, and means for securing the vanes at any desired angle of lateral deflection.

4. An air register, comprising the combination with a duct delivering air to a room, a series of partitions vertically dividing the duct before it turns to the delivery outlet, said partitions being disposed to divide the outlet horizontally, planes pivotally mounted along the bottom forward edge of each subdivision, means for simultaneously setting the planes at any desired angle from the closed position and for sustaining them as set, said means comprising a link rod pivotally connected to a spur backwardly projecting from the pivot edge of each plane, a screw pivotally connected to said link rod, a rotatable nut threaded on the screw, means for rotating said nut, and means preventing endwise movement of it, vanes pivotally mounted and upwardly projecting from each plane, and means for securing said vanes at any desired position of angular adjustment on their pivots.

5. An air register, comprising the combination with a duct delivering air to a room, of a series of partitions dividing the outflow aperture of said duct, said partitions being carried for a short distance into the duct from the outflow aperture, means for closing the subdivided delivery apertures and for adjustably directing the inflow into the room, and adjustable means carried by and cooperative with said closing means for diffusing each divided inflow.

6. An air register, comprising the combination with a duct delivering air to a room, a series of horizontally disposed partitions dividing the outflow apertures of said duct, planes pivotally mounted along the forward bottom edge of each horizontal subdivision, said planes adapted to close the subdivided apertures or direct the inflow angularly upward or downward, a link rod pivotally connected to a spur backwardly projecting from the pivoted edge of each plane, a screw pivotally connected to one end of said link rod, a rope sheave threaded as a nut on the screw, a yoke within which the nut sheave is rotatable but not endwise movable, said yoke

trunnion-mounted to a fixed bracket, guide
sheaves rotatably mounted in the same
bracket in planes tangential to the groove of
the rope wheel and an endless rope passing
5 over the guide sheaves and around the rope
sheave whereby the sheave may be rotated to
close the planes or to adjust them at any
desired angle, vanes projecting upward from

each plane and pivotally mounted thereon
to be laterally angled to either side, and a 10
securing bar passing through an aperture in
each vane, and means for clamping the bar
to the planes to secure the vanes in any de-
sired position of angular adjustment.

In testimony whereof I affix my signature. 15
FRANK A. A. BARRS.