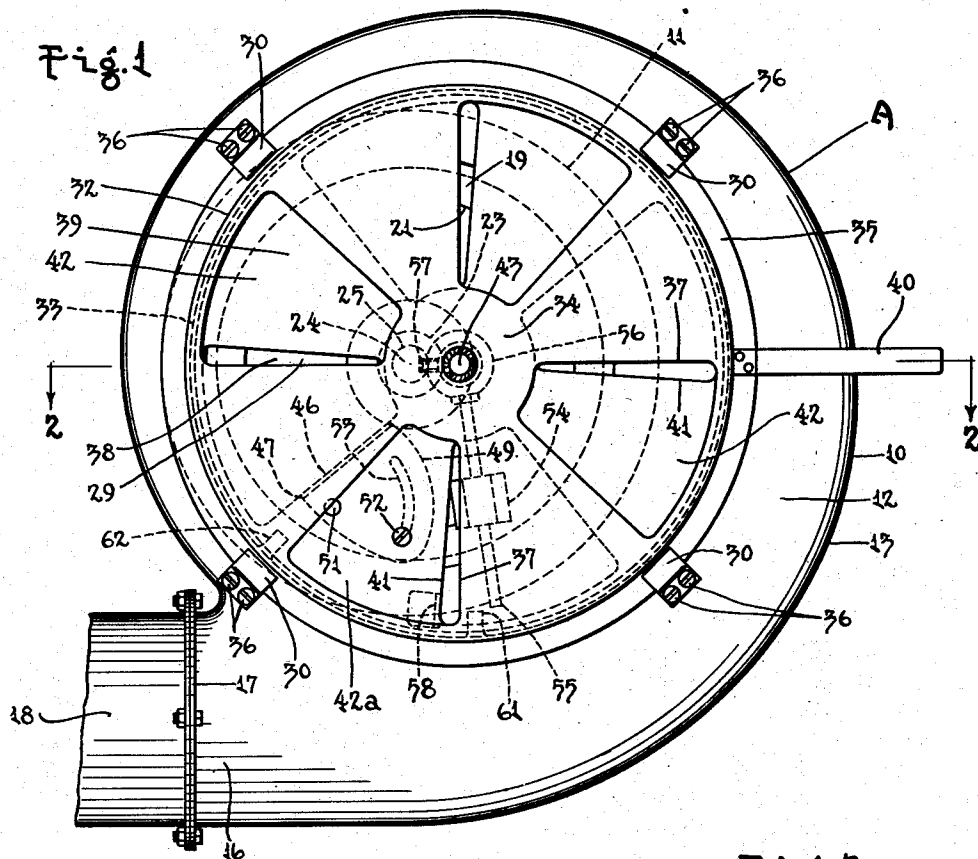
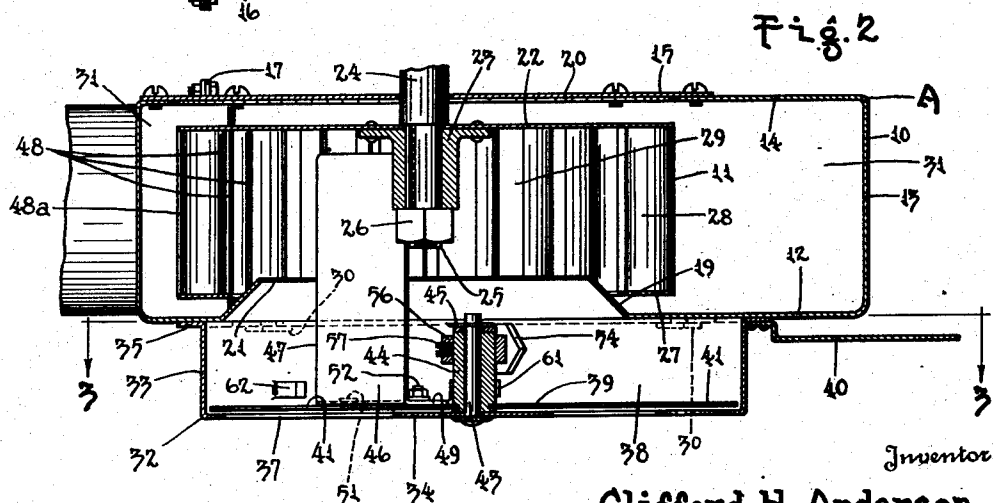


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Fig. 3

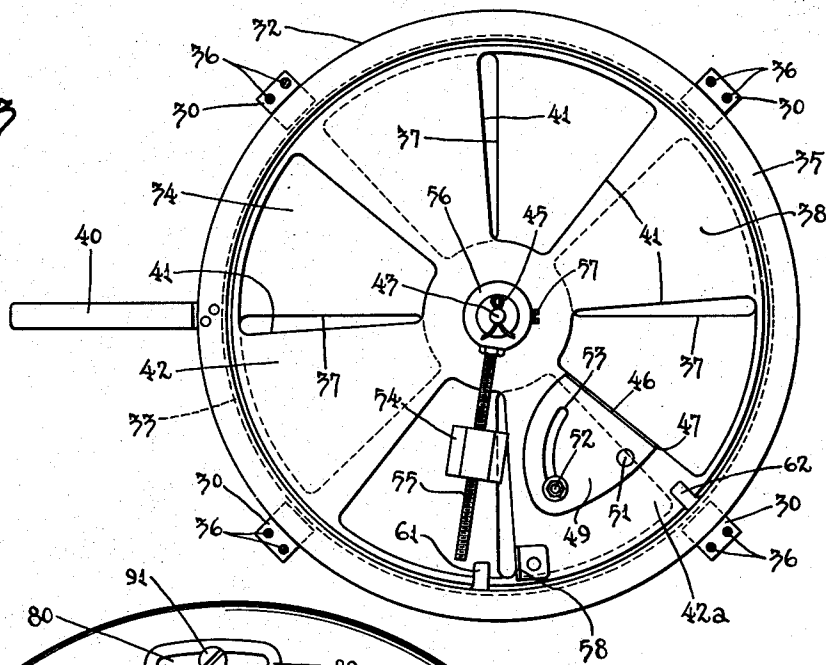
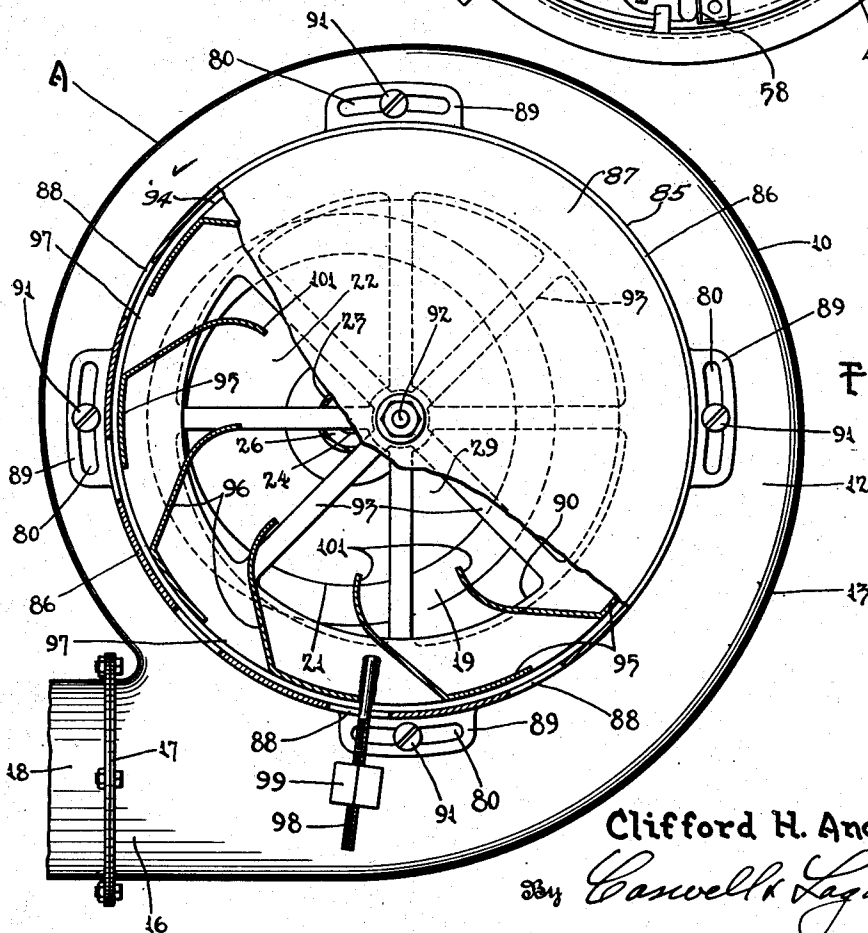


Fig. 6

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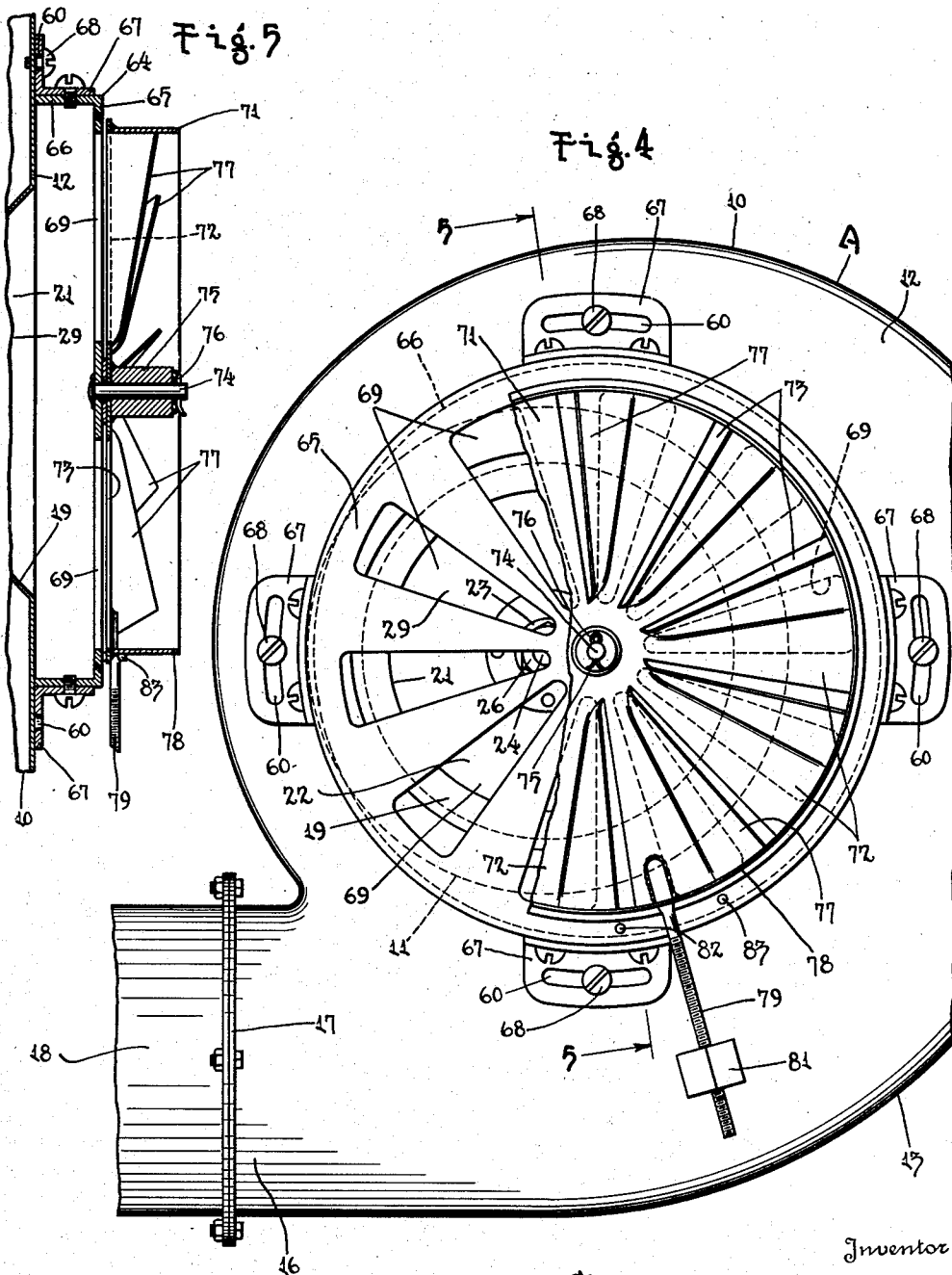
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3 Sheets-Sheet 3



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2,273,458

AIR CONTROL

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Application July 12, 1940, Serial No. 345,164

18 Claims. (Cl. 230-114)

My invention relates to air controls for air impelling devices such as blowers and the like and has for an object to provide an air control which will operate to provide the desired amount of air required by the device to which the blower is connected.

An object of the invention resides in providing an air control particularly adapted to be used in conjunction with blowers employed in connection with fuel combustion systems, such as heaters and the like, and has for an object to provide an air control by means of which the proper amount of air may be furnished to produce proper combustion regardless of the condition of the fire and regardless of atmospheric conditions.

Another object of the invention resides in providing an air control which operates on the inlet side of the blower.

A feature of the invention resides in providing an air control which may be readily applied to existing blowers without appreciable alteration or reconstruction thereof.

Another object of the invention resides in providing an air control adapted to operate through variations in the turbulence of the air entering the rotor of the blower.

A still further object of the invention resides in providing a damper for controlling the travel of air into the inlet of the blower and a vane connected with the damper for operating the same, said vane being disposed in proximity to the blades of the rotor and being subjected to the action of the currents of air passing through the blower rotor.

An object of the invention resides in providing an air control particularly adapted to be used in conjunction with a blower including a rotor having a plurality of blades arranged circumferentially to provide an air chamber within the blades and having the vane disposed within said chamber in proximity to the blades.

Another object of the invention resides in mounting the vane for movement in the direction of movement of the blades of the blower rotor and in arranging the vane in a substantially radial direction.

A still further object of the invention resides in attaching the vane to the damper.

Other objects of the invention resides in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

In the drawings:

Fig. 1 is an elevational view of a blower illus-

trating an embodiment of my invention applied thereto.

Fig. 2 is a plan sectional view taken on line 2-2 of Fig. 1.

Fig. 3 is an elevational sectional view taken on line 3-3 of Fig. 2.

Fig. 4 is a view similar to Fig. 1 showing a modified form of the invention applied to the blower.

Fig. 5 is a fragmentary elevational sectional view taken on line 5-5 of Fig. 4.

Fig. 6 is a view similar to Fig. 1 of still another form of the invention applied to a blower and showing portions cut away to illustrate the construction thereof.

For the purpose of illustrating the application of my invention I have shown a blower indicated in its entirety by the reference character A. This blower consists of a case 10, and a rotor 11 mounted within the same. These parts will now be described in detail.

The case 10 comprises spaced side walls 12 and 14 which have attached to them at their edges a spiraling wall 13. The wall 14 has an opening 20 in it which is closed by means of a closure 15 bolted to the wall 14. The walls 12, 13 and 15 are constructed to provide a neck 16 on the case, which has an opening in it serving as a discharge outlet for the blower. A flange 17 extending about the neck 16 serves to attach the case 10 to a conduit 18 adapted to lead the air circulated by the blower to the desired locality. The side wall 12 of the case 10 is constructed with an opening 21 in it, which is encircled by a lip 19 extending inwardly therefrom. This opening serves as an inlet to the blower.

The rotor 11 consists of a disc or spider 22 which is attached to a hub 23 secured to the blower shaft 24. Shaft 24 is reduced in diameter at its end, as indicated at 25, to receive the hub 23. The shaft 25 is threaded at its end to receive a nut 26 which holds the hub 23 attached to the said shaft. The rotor 11 further includes an annulus 27 spaced from the disc 22. A number of curved blades 28 extend between the disc 22 and the annulus 27 and are attached to the same in any suitable manner. The blades 28 are so arranged that the air enters the same from the inner edges 48 thereof and is discharged outwardly therefrom at the outer peripheral edges 48a of the said blades. By means of the construction provided an air chamber 29 is formed within the rotor 11 and into which the lip 19 extends. It will thus be seen that the chamber 29 is in communication with the ex-

terior through the inlet 21 and that air enters the blower from said inlet. The shaft 24 is arranged substantially at the center of the spiral walls 12 and 14 so that a passageway 31 is provided which gradually increases in cross sectional area and finally discharges into the neck 16 whereby the air passing through the rotor is discharged through the outlet of the blower. The shaft 24 extends through the closure 15 and may be the shaft of a motor for operating the blower or the same may be journaled in independent bearings, not shown in the drawings, and driven from any suitable source of power.

The invention proper includes a housing 32, best shown in Fig. 2, which consists of a cylindrical tubular wall 33 and a planiform end wall 34. These parts may be formed integral or connected together by welding or otherwise, as desired. The tubular wall 33 has a flange 35 issuing outwardly therefrom which is adapted to rest upon the side wall 12 of the blower case 10 and is adapted to be secured thereto by means of a number of clips 30 which overlie said flange and which are attached to said wall by means of screws 36 threaded into the wall 12. The tubular wall 33 is greater in diameter than the inlet 21 and when positioned, as shown in Fig. 2, the said wall encircles the said inlet.

Formed in the end wall 34 are a number of segmental-shaped openings 37 which are in communication with the chamber 38 provided within the interior of the housing 32 and through which the air entering the inlet 21 and the chamber 29 in the rotor 11 passes. A plate-like damper 39 is employed for opening and closing the openings 37 which is located within the chamber 38 of housing 32. This damper is circular in form and has a plurality of segmental-shaped openings 41 therein corresponding in number, form and position to the openings 37. By means of these openings closure members 42 are provided intermediate the openings which are adapted to close the openings 37 of the end wall 34.

The damper 39 is pivoted to the housing 32 in the following manner: Secured to and issuing inwardly from the center of the end wall 34 is a stub shaft 43. A bushing 44 secured to the damper 39 at the center thereof is rotatably mounted on the stub shaft 43 and is held from axial movement thereon by means of a cotter key 45 which extends through the protruding end of said shaft.

In conjunction with the damper 39 a planiform vane 46 is employed which consists of a sheet of metal elongated in form. This vane is situated at right angles to the plane of the damper 39 and is of suitable dimensions to extend into the chamber 29 through the lip 19 and inlet 21. The edge 47 of this vane is disposed in proximity to the inner edges 48 of the blades 28 of rotor 11. The vane 46 has a flange 49 bent outwardly therefrom which overlies the inner surface of one of the closure members 42a of the damper 39. This flange is pivoted to the said closure member by means of a rivet 51 and is adapted to swing in an arc of a circle to vary the angularity between the vane 46 and a plane passing through the edge 47 of said vane and the axis of the shaft 43. The flange 49 is held in position with reference to the closure member 42a by means of a bolt 52 which passes through a slot 53 in the flange 49 and also through the closure member 42a.

The vane 46 is counterbalanced by means of a weighted nut or counterbalance 54 which is

screwed upon a threaded spindle 55. Spindle 55 is attached to a collar 56 which encircles the bushing 44 and is adjustably held in position thereon by means of a set screw 57. The counterbalance 54 fits sufficiently tightly on the threads of the spindle 55 so that the same remains in adjusted position. The spindle 55 may be set at any angle with reference to the vane 46 so that the proper effect can be procured.

Adjustment of the action of my invention may be had by rotating the housing 32 relative to the blower case 10. For this purpose the clips 30 fit loosely with respect to the flange 35 and form a guide for the specified movement of the housing. A lever 40 secured to the housing 32 extends outwardly therefrom and may be used for manually adjusting the position of the housing 32.

Issuing outwardly from the closure member 42a is a lug 58. This lug is movable between two stops 61 and 62 extending inwardly from the tubular wall 33 of housing 32. These stops limit movement of the damper 39 so that, when the lug 58 engages the stop 61, the openings 37 are fully closed and when lug 58 engages the stop 62, the openings 37 are fully open.

When the device is ready for use, the position of the housing 32, relative to the case 10, is first adjusted to the locality where the action of the moving air in the chamber 29 on the vane 46 is the greatest. The device will be most sensitive at this position. I have found with the type of device shown in Figs. 1 to 3 such results are procured when the edge of the vane is in proximity to the narrowest portion of the passageway 31 as shown in Fig. 1. The position of the collar 56 on the bushing 44 and the position of the counterweight 54 on the spindle 55 are next adjusted to counterbalance the weight of the vane 46 and to give sufficient resistance to the opening of the damper to produce the desired increase in air supplied to the apparatus to which the air is furnished.

The operation of the invention is as follows: Assume that the duct 18 is the air duct of a stoker for supplying air to the fuel being burned in the boiler or furnace with which the stoker is used. When the stoker is shut off the motor driving the blower A is also shut off and only a small amount of air leaks through the damper and into the combustion chamber. The damper is so constructed that a sufficient amount of air leaks through the same to prevent the fire from going out. When the thermostat calls for heat both the blower A and the mechanism for feeding coal into the stoker is set into operation. If a light bed of coal is present in the combustion chamber at the time the blower is started, only a small amount of resistance to the flow of air through the said bed results and a relatively small amount of back pressure is created in the duct 18 and the passageway 31 of the blower. Whatever air is passing through the damper of the control device passes readily from the chamber 29 and to the inner edges 48 of the blades 28 without producing any appreciable turbulence in chamber 29 and without affecting the vane 46. If, however, the bed of fuel is heavy or becomes so after operation of the fuel feeding mechanism, greater resistance to the passage of air through the fuel results. This causes back pressure in the passageway 31 which prevents the air from passing readily from the chamber 29 and to the inner edges 48 of the blades 28. Such action produces a turbulence in the air within the

chamber 29 which tends to cause the air adjacent the edges 48 of the blades 28 to travel in a circumferential direction with reference to the rotor 11. Such movement of the air exerts a force on the vane 46 tending to cause the said vane to rotate about the axis of the shaft 43. With the instant invention such rotation is in the same direction as the direction of rotation of the rotor. With the parts arranged as shown in Figs. 1 and 2, the vane 46, when the back pressure is increased, would move in a clockwise direction, tending to move the damper in a like direction. Movement of the damper 42 in a clockwise direction would shift the closure members 42 in a direction to uncover a greater portion of the openings 37. This would allow a greater amount of air to enter the chamber 29 and to be drawn in between the blades 28 by the action of the blower rotor 11. Such added air would supply the necessary additional air to maintain the proper combustion of the fuel in the combustion chamber. If the fire bed were exceedingly deep or a large quantity of coal had been forced into the same by the coal feeding mechanism, the resistance to the flow of air would be greatly increased. Such a large bed of coal would require more air to properly support combustion than a light bed. The increase in static pressure in the chamber 31 caused by the heavy bed of fuel would thus increase the turbulence within the chamber 29 and move the vane 46 a still greater amount in a clockwise direction, thus uncovering the openings 37 to a still greater extent. It will thus be seen that my invention automatically controls the amount of air delivered to the combustion chamber in accordance with the amount of air required for burning the fuel and that the proper amount of such air can be readily obtained by making adjustments on the counter balancing and positioning of the damper and vane. As soon as the thermostat ceases to call for heat the motor operating the blower A is shut off and the rotor 11 comes to rest. Pressure on the vane 46 now ceases and the damper 39 is so balanced that it immediately is moved into closing position in which the openings 37 are practically completely covered.

In Figs. 4 and 5 I have shown a modification of the invention. Inasmuch as the blower shown in these figures is constructed in identically the same manner as the blower A the description thereof will not be repeated, and the same reference numerals used to designate corresponding parts.

In the form of the invention shown in Figs. 4 and 5 a housing 64, similar to the housing 32, is employed which is constructed with an end wall 65 and a tubular wall 66 connected therewith. These parts may be formed integral or connected together by welding or otherwise, as desired. The tubular wall 66 has a number of angle brackets 67 connected thereto which are adapted to be secured to the side wall 12 of the blower 10 by means of screws 68. These screws pass through arcuate slots 60 in the brackets and are threaded into said wall of the case. The tubular wall 66 is positioned with reference to the inlet of the blower in the same manner as the housing 32. The end wall 65 is constructed with a number of segmental-shaped openings 69 which serve the same purpose as the openings 37 in the end wall 34 of case 32.

For opening and closing the openings 69 in the end wall 65 a damper 71 is employed which is constructed from a sheet of metal formed with

a plurality of radially extending openings 73 which form in the damper a number of closure members 72. The damper 71 is pivoted to the end wall 65 in the following manner. Secured to the center of the end wall 65 is a stub shaft 74. A bushing 75 is secured to the center of the damper 71 and is rotatably mounted on the stub shaft 74. This bushing is held in position by means of a cotter key 76. The closure members 72 correspond in number and size to the openings 69 of the end wall 65 so that the said closure members, when the damper is rotated to one position, may cover the openings 69 and when rotated to another position will fully uncover the same.

Portions of the metal of the blank from which the damper 71 is constructed at the edges of the closure members 72 are bent up out of the plane of the damper to form a number of vanes 77. These vanes are disposed so that the same project angularly outwardly from the closure members 71. A rim 78 is attached to the ends of the closure members 72 and the vanes 77.

Secured to the damper 71 is a threaded spindle 79 which has screwed on it a weighted nut 81 for returning the damper 71 to closed position. The spindle 79 operates between two pins 82 and 83 secured to the end wall 69 which limit the movement of the damper so that the same travels between fully open and fully closed position.

The operation of the device shown in Figs. 4 and 5 is similar to that described in conjunction with the form of the invention shown in Fig. 1. When the static pressure of the air within the chamber 31 of the blower 10 increases, a turbulence is produced in the air within the chamber 29 and also within the interior of the housing 64. The air in passing through the openings 69 and past the vanes 77 also has an effect on the vanes 77. This action causes the vanes 77 to rotate and the closure members 72 to uncover the openings 69. As the openings 69 are uncovered, more air is admitted to the blower. In this manner the control device serves to control the amount of air fed to the combustion chamber in a similar manner to the device shown in Fig. 1. Adjustment of the device can be had by rotating the housing 71 relative to case 10 which is guided for movement by the screws 68 and the slots 60 and by moving the counter weight 81 on the spindle 79.

In Fig. 6 I have shown still another form of the invention. Inasmuch as the blower, with which the invention is used is identical with that previously described, the description thereof will not be repeated, and the same reference numerals used to designate corresponding parts.

The device shown in Fig. 6 comprises a housing 85 which is mounted over the inlet of the blower in the same manner as the housing 32. This housing has a tubular wall 86 to which is connected an end wall 87. These parts may be welded together or secured together in any other suitable manner. The end wall 87 is free from openings, while the tubular wall 86 is provided with axially extending openings 88 spaced at regular intervals throughout the circumferential extent thereof. The tubular wall 86 is provided with ears 89 by means of which the case 85 may be secured to the end wall 12 of the blower 10 through screws 91 which pass through slots 80 in said ears and are threaded into the wall 12.

A damper 90 is disposed within the housing 85 and is rotatably mounted therein in the follow-

ing manner: A stub shaft 92 is secured to the end wall 87 and extends into the interior of the case 85. This stub shaft has rotatably mounted on it a spider 93 which is formed with an annular rim portion 94. Attached to the rim portion 94 are a number of arcuate closure members 95 which follow along the inner surface of the tubular wall 86 and which are adapted to cover and uncover the openings 88 in said wall. These closure members may be welded or otherwise secured to the said rim 94. The closure members 95 are equally spaced from one another and correspond in number to the number of openings 88. By means of these closure members, openings 97 are formed between the said closure members which are adapted to register with the openings 88. Issuing angularly, inwardly from the closure members 95 are vanes 96 which are disposed opposite the openings 97 and 88 and which have curved tips 101.

Attached to the rim 94 is a threaded spindle 98 which has screwed on it a weighted nut 99. This spindle passes through one of the openings 88 which limits movement of the damper 90.

The action of the device shown in Fig. 6 is as follows: As the pressure in the duct 18 is increased, a decrease in velocity through the openings 88 results which causes a turbulence in the chamber 31 and also in the vicinity of the vanes 96. This turbulence causes rotation of the damper 90 which uncovers the openings 88 and causes a greater amount of air to be drawn into the blower.

The advantages of my invention are manifest. The device may be easily and quickly applied to existing blowers without appreciable reconstruction or alteration thereof. The device may be applied to the blowers of fuel burners for furnaces and boilers by directly attaching the same to the inlet side of the blower. In this manner no changes in the structure or method of operation of the burners will be required. The device is exceedingly simple in construction and can be manufactured at an economical cost. The device having but a single moving part has a minimum number of bearings and friction may be made negligible. The device is exceedingly sensitive in action and operates to accurately control the proper amount of air to support combustion of the fuel. The device automatically compensates for variations in conditions in the combustion chamber of the furnace or boiler, as well as for atmospheric conditions.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In combination with a blower having a rotor and a case providing an outlet and an inlet, a movable damper for controlling the flow of air through the inlet, a vane disposed in proximity to the portions of the blades of the rotor at which the air enters the same and extending in a direction transverse of the direction of movement of the blades of the rotor, pivot means for guiding the vane for movement along a path following the inner edges of the blades of the rotor and in a direction corresponding to the direction of movement of the blades of the rotor, the turbulence of the air at the inner edges of the blades exerting a pressure on the vane tending to move it along its path of movement, said vane

being connected to said damper and serving upon movement along said path to move the damper.

2. In combination with a blower comprising a case having an inlet and an outlet, and a rotor disposed within said case and having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, a movable damper for controlling the flow of air through said inlet, a movable vane disposed within said chamber in proximity to said blades and subject to the turbulence of the air entering said rotor, means for guiding said vane for movement along the inner periphery of said blades independently of the rotational movement of the rotor, said vane being connected to said damper and being moved by the turbulence of the air entering the rotor to move the damper.

3. In combination with a blower comprising a case having an inlet and an outlet, and a rotor disposed within said case and having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, a movable damper for controlling the flow of air through said inlet, a vane disposed within said chamber in proximity to said blades and extending in a direction transverse to the direction of movement of the blades of said rotor, said blades being subject to the turbulence of the air entering the rotor, pivot means for said vane disposed in proximity to the axis of said rotor, said vane being free from the rotor and independently movable about its pivot means, said vane being connected to said damper and serving to move the same.

4. In combination with a blower comprising a case having an inlet and an outlet, and a rotor disposed within said case and having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, a member covering said inlet and having openings therein, a damper pivoted to said member and adapted to open and close said openings, a vane disposed within said chamber in proximity to said blades and subject to the turbulence of the air entering said rotor, said vane being fixedly attached to said damper and serving to move the same about its pivot.

5. In combination with a blower comprising a case having an inlet and an outlet, and a rotor disposed within said case and arranged with its axis in a horizontal position, said rotor having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, a member covering said air inlet and having openings therein, a damper, a pivot having a horizontal axis for pivoting said damper to said member, said damper being adapted to open and close said openings, a vane disposed within said chamber in proximity to said blades and subject to the turbulence of the air entering said rotor, said vane being fixedly attached to said damper and serving to swing the same about its pivot, and a counterweight movable with said damper and opposing the weight of said vane.

6. In combination with a blower comprising a case having an inlet and an outlet, and a rotor disposed within said case and having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, a member covering said inlet and having a number of openings therein, a

damper, pivot means for pivoting said damper to said member, the axis of said pivot means being substantially parallel with the axis of said rotor, said damper being adapted to open and close said openings, a vane disposed within said chamber in proximity to said blades and subject to the turbulence of the air entering said rotor, said vane being rotatable with and about the axis of said damper and serving to move the same.

7. In combination with a blower having a rotor and a case providing an outlet and an inlet, a member covering said inlet and having a number of openings therein, a damper, pivot means for pivoting said damper to said member, said damper being adapted to open and close said openings, a vane disposed on the inlet side of said rotor and subject to the action of the currents of air passing through said rotor, a flange formed on said vane and overlying said damper, and means for adjustably attaching said flange to said damper and for restraining movement relative thereto to vary the position of the vane with reference to said rotor.

8. In combination with a blower comprising a case having an inlet and an outlet, and a rotor disposed within said case and having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, a member covering said inlet and having a number of openings therein, a damper, pivot means for pivoting said damper to said frame, said damper being adapted to cover or uncover said openings, a vane disposed within said chamber in proximity to said blades and subject to the action of the air entering said rotor, a flange formed on said vane and overlying the damper, and means for adjustably connecting said flange to said damper for varying the angularity of said vane with reference to said blades.

9. In combination with a blower comprising a case having an inlet and an outlet, and a rotor disposed within said case and having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, a housing having a tubular wall encircling said inlet and attached to said case, and an end wall attached to said tubular wall, said end wall being constructed with a number of openings therein, a damper disposed within said housing, pivot means between said damper and end wall, a vane disposed within said chamber in proximity to said blades and subject to the turbulence of the air entering the rotor, said vane extending into said housing and being fixedly attached to said damper at a locality within said housing.

10. In combination with a blower having a rotor and a case providing an outlet and an inlet, a housing covering said inlet and having a plurality of openings therein, a damper for controlling the flow of air through said openings, said damper having a plurality of closure members adapted to cover and uncover said openings, guide means for guiding said damper for movement from closing to opening position, and a plurality of vanes connected to said closure members and extending angularly therefrom, said vanes being subjected to the action of the currents of air passing through said openings and acting to move said damper.

11. In combination with a blower having a rotor and a case providing an outlet and an in-

let, a housing covering said inlet and having an end wall provided with a number of openings therein, a damper for controlling the flow of air through said openings, said damper having a plurality of closure members confined to a plane overlying said end wall and adapted to cover and uncover said openings, guide means for guiding said damper for movement from closing to opening position, and a plurality of vanes connected to said closure members and extending angularly outwardly from the plane thereof, said vanes being subjected to the action of the currents of air passing through said openings and acting to move said damper.

12. In combination with a blower having a rotor and a case providing an outlet and an inlet, a housing covering said inlet and having a cylindrical tubular wall provided with a number of circumferentially arranged openings, a damper within said housing pivoted for rotary movement therein with respect to said tubular wall, said damper including a number of closure members adapted to travel along said tubular wall and to cover and uncover said openings, and a plurality of vanes issuing inwardly from said closure members and disposed angularly with reference thereto, said vanes being subject to the action of the currents of air passing through said openings and acting to move said damper.

13. In combination with a blower having a rotor and a case providing an outlet and an inlet, a housing covering said inlet and having an opening therein, a damper for controlling the flow of air through said opening, said damper having a closure member adapted to cover and uncover said opening, a pivot for guiding said damper for movement from opening to closing position, a vane connected to said damper and subjected to the action of the current of air passing through said opening and acting to move said damper, and means for guiding said housing for movement relative to the case to shift the position of said opening with reference to said case.

14. In combination with a blower comprising a case having an inlet and an outlet, a rotor disposed within said case and having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, said blades causing the air entering the rotor to move in a circular path within said chamber following along said rotor, a vane disposed within said chamber in proximity to the inner edges of said blades and disposed in a substantially radial position relative to the axis of the rotor, means for guiding said vane for movement along the path of movement of the air entering the edges of the blades, said vane being subject to the action of the air moving along said path, and a damper for controlling the air entering said inlet and operated by said vane.

15. In combination with a blower comprising a case having an inlet and an outlet, a rotor disposed within said case and having a plurality of blades arranged circumferentially and causing the air entering the rotor to move in a circular path substantially concentric with the axis of the rotor, a vane disposed in the circular path of movement of the air entering the rotor and situated transversely thereof, means for guiding said vane for movement along said path of movement of the air entering the rotor, said vane being subject to action of the air moving along

said path, and a damper for controlling the air entering said inlet and operated by said vane.

16. In combination with a blower comprising a case having an inlet and an outlet, a rotor disposed within said case and having a plurality of blades arranged circumferentially and causing a turbulence of the air entering the rotor producing movement of the air along a path differing from the path of direct movement of the air into the rotor, a vane disposed in said first named path of movement of the air and situated transversely thereof and having its surface disposed in the direction of extend of said second named path of movement, means for guiding said vane for movement along said first named path of movement, said vane being subject to the movement of the air along said first named path and being moved thereby, and a damper for controlling the air entering said inlet and operated by said vane.

17. In combination with a blower comprising a case having an inlet and an outlet, and a rotor disposed within said case and having a plurality of blades arranged circumferentially to provide an air chamber within the blades communicating with said air inlet, a movable damper for controlling the flow of air through said inlet, a vane disposed within said chamber in proximity to

said blades and extending in a direction transverse to the direction of movement of the blades of said rotor, said blades being subject to the turbulence of the air entering the rotor, pivot means for said vane disposed in proximity to the axis of said rotor, said vane being free from the rotor and independently movable about its pivot means, said vane being fixedly attached to said damper and movable therewith, said vane serving to move said damper.

18. In combination with a blower having a case constructed with spaced side walls and a spiraling wall therebetween and a rotor disposed within said case and constructed with a number of blades arranged circumferentially and traveling in close proximity to said spiraling wall at one locality, said case having an inlet in one of the side walls and an outlet at said locality of the spiraling wall, a damper covering said inlet and pivoted for rotation about an axis parallel with the axis of said rotor and a vane issuing inwardly from said damper and movable therewith along the inner edges of the blades of said rotor, said vane being located at said denoted locality of the spiraling wall and being subject to the turbulence of the air at the inner edges of said blades and serving to operate said damper.

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