

July 23, 1957

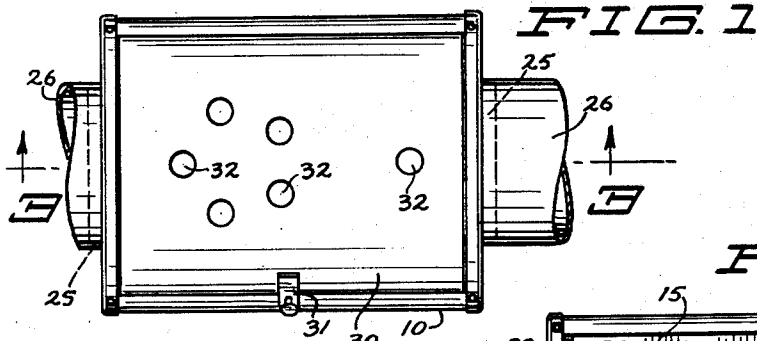
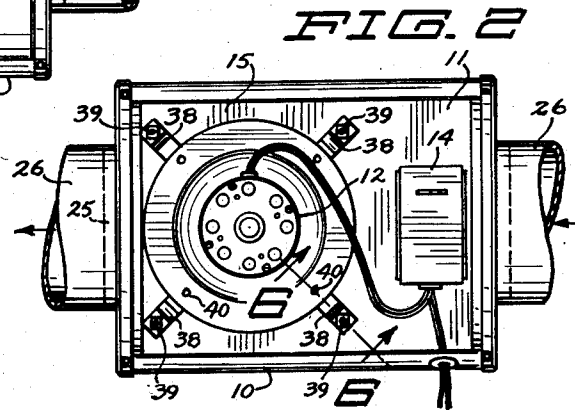
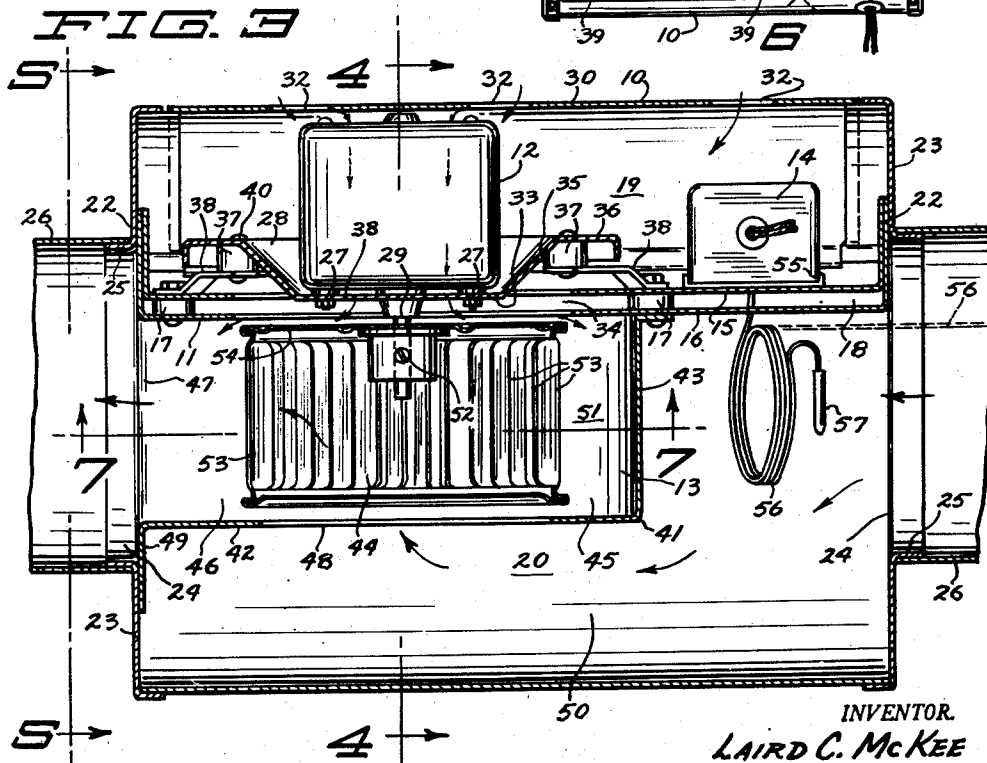
L. C. McKEE

2,800,272

BLOWER UNIT

Filed Jan. 31, 1955

2 Sheets-Sheet 1



INVENTOR.

LAIRD C. McKEE

BY

Braddock and Braddock
ATTORNEYS

ATTORNEYS

July 23, 1957

L. C. McKEE

2,800,272

BLOWER UNIT

Filed Jan. 31, 1955

2 Sheets-Sheet 2

FIG. 4

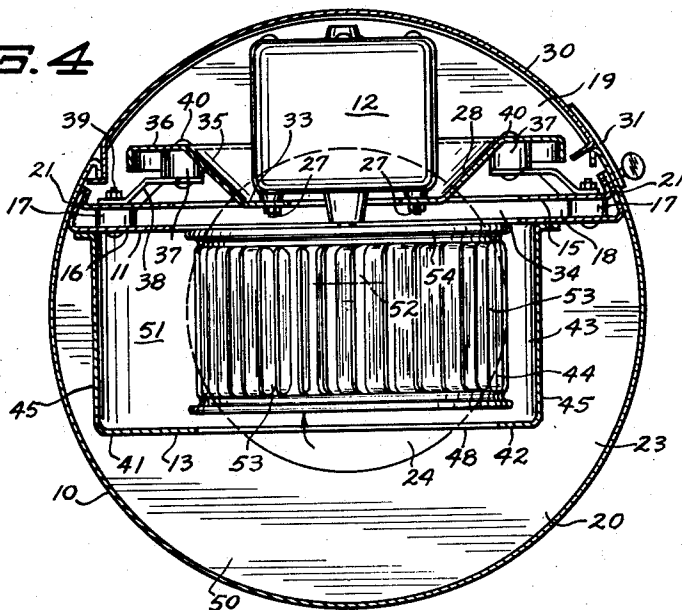


FIG. 5

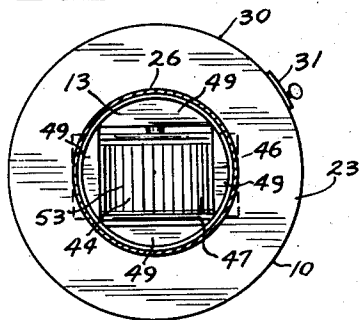


FIG. 6

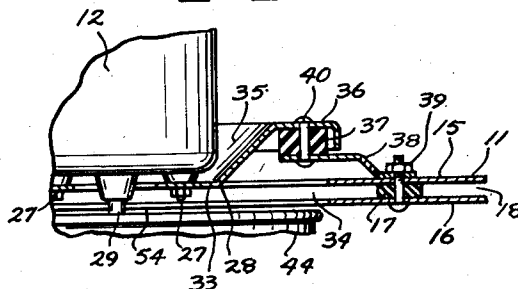
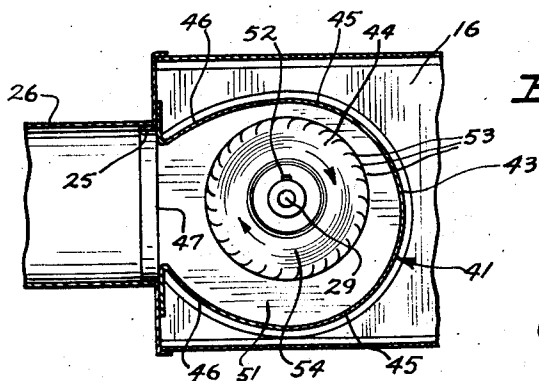


FIG. 7

INVENTOR.
LAIRD C. McKEE
BY
Braddock and Braddock
ATTORNEYS

1

2,800,272

BLOWER UNIT

Laird C. McKee, Minneapolis, Minn.

Application January 31, 1955, Serial No. 484,877

1 Claim. (Cl. 230—117)

This invention has relation to a unit for circulating air, commonly known as a booster fan. The unit can be employed in connection with air heating or air cooling apparatus, or independently, to cause air to be circulated. A casing of the unit, cylindrical as disclosed, supports a platform upon which a motor is mounted, the motor drives a fan of a blower of the unit, and, desirably, the platform supports a thermostat for controlling operation of the motor. The platform, motor, blower and thermostat are situated internally of the casing, and the air circulating unit incorporates novel and improved features and characteristics of construction which render it capable of operating in efficient and satisfactory manner.

In the accompanying drawings forming a part of this specification,

Fig. 1 is an elevational view of a blower unit made according to the invention;

Fig. 2 is a view similar to the disclosure of Fig. 1 as when a cover plate of the blower unit is removed;

Fig. 3 is an enlarged central longitudinal sectional view, taken on line 3—3 in Fig. 1;

Fig. 4 is a transverse sectional view, taken as on line 4—4 in Fig. 3;

Fig. 5 is a transverse sectional view, on the scale of Figs. 1 and 2, taken as on line 5—5 in Fig. 3;

Fig. 6 is a detail sectional view, taken on line 6—6 in Fig. 2; and

Fig. 7 is a detail sectional view, taken as on line 7—7 in Fig. 3.

A cylindrical casing 10 of the blower unit houses a platform 11, a motor 12, a blower 13 and a thermostat 14.

The platform 11 is constituted as first and second parallel rectilinear plates, denoted 15 and 16, respectively, retained in separated relation by spacer elements 17 to provide an air space 18 between said plates. Said platform is situated at a side of a plane passed longitudinally and diametrically through the cylindrical casing 10 in parallel relation to the rectilinear plates 15, 16, and the platform divides the interior space of said casing into first and second compartments, indicated 19 and 20, respectively. The opposite side edges of each of the rectilinear plates 15 and 16 are secured, as at 21, by welding or in any other suitable and convenient manner, to an internal surface of said cylindrical casing, and the opposite end edges of each of said rectilinear plates are secured, as at 22, to internal surfaces of transverse walls 23 upon the opposite ends of the cylindrical casing. A central circular opening 24 in each transverse wall 23 is bounded by an outwardly extending circular flange 25 for removably receiving a pipe connection 26.

The motor 12 is situated within the compartment 19 of the casing 10 adjacent an end thereof, the left end in Figs. 1, 2 and 3. An interior end of said motor is supported, as at 27, upon a base member 28 to position the motor driven shaft 29 in perpendicular relation to the platform 11, and an exterior end of the motor is adjacent a curvilinear cover plate 30 removably attachable, as by a strap 31, to the casing 10. The cover plate is provided

2

with spaced apertures 32 to permit passage of air into the compartment 19.

The base member 28 includes a central portion 33 disposed within a circular opening 34 through the platform 11 in alignment with said platform. A conical portion 35 of the base member, in integral, surrounding relation to the central portion 33 and in spaced, surrounding relation to the interior end portion of the motor, integrally supports an annular flange 36 itself supported, by resilient shock absorbing cushions 37, upon brackets 38 secured to the platform, as at 39, and extending upwardly therefrom. Stated differently, the motor 12 is mounted upon the platform 11 in spaced relation thereto through the instrumentality of the shock absorbing cushions 37. As disclosed, there are four brackets 38, spaced at ninety degrees apart, and four shock absorbing cushions 37, one for each bracket. The shock absorbing cushions are secured to the brackets by rivets 40 which pass through said cushions and brackets, as well as through the annular flange 36 of the base member 28. The cushions 37 are situated between the annular flange 36 and the brackets 38.

The blower 13 is situated within the compartment 20 in transverse alignment with the motor 12. A blower housing is provided by a portion of the second plate 16 of the platform 11 surrounding the circular opening 34 and a box-like member 41. The blower housing is bounded at a side thereof adjacent the motor 12 by said platform, at a side thereof opposite said motor by a wall 42 in spaced, parallel relation to the platform, at a rearward end thereof by a wall 43 perpendicular to and extending between said platform and the wall 42 in parallel relation to the motor shaft 29, and at opposite sides thereof adjacent the periphery of a fan 44 of the blower by walls, each indicated 45, perpendicular to the second plate 16 of the platform and the wall 42. Said second plate and the wall 42 are flat. The walls 43 and 45 are curved, as denoted at 46. An outlet from the motor housing is indicated at 47. The wall 42 is provided with a circular opening 48 aligned with the circular opening 34 through the platform 11, and, save for the openings 34, 48 and said outlet 47, said blower housing is closed. The box-like member 41 of the blower housing can be supported within the compartment 20 in any suitable and convenient manner. Exteriously extending flanges 49 upon the outlet end of said blower housing close the space between the blower housing and the annular wall which bounds the opening 24 through the forward transverse wall 23 upon the cylindrical casing 10. The walls 42, 43 and 45 of the blower housing are in spaced relation to said cylindrical casing and to the rearward transverse wall 24, and, together the second plate 16 of the platform 11, the walls 42, 43, 45, the casing 10 and the transverse walls 23 bound a conduit 50 leading from the rear of said casing into the interior 51 of the blower housing by way of the opening 48 in the wall 42.

The fan 44 of the blower 13 is rigidly mounted, as at 52, upon the motor shaft 29, and peripheral surfaces of said fan rotate in adjacent relation to the curved surfaces 46 of the walls 43, 45 of said blower. The fan includes circumferentially spaced blades 53 at its periphery, and a circular plate 54 closes the interior end of said fan. The exterior end of the fan, in adjacent, parallel relation to the wall 42 of the blower housing, is open. The construction and arrangement are such that operation of the fan will cause air to be drawn through the conduit 50 and the opening 48 into the interior of the blower housing and forced from said blower housing through the outlet 47. Also, operation of the fan will cause air to be drawn through the spaced apertures 32 in the cover plate 30, the compartment 19 and the opening 34 in the platform 11 into the interior of the blower housing and emitted from said blower housing with air forced therefrom by the fan.

The thermostat 14 is supported, as at 55, in the compartment 19 upon the first plate 15 of the platform 11. A tube 56 with bulb 57 of said thermostat is situated in the compartment 20. Said tube and bulb will contain an expansible and contractible fluid, such as alcohol, for control of a circuit for the motor 12 in response to rise and fall of temperature within the conduit 50, or elsewhere. As shown in Fig. 3, the tube 56 is rolled up and can be elongated to situate the bulb 57 at any location, within limits, which may be selected. Air drawn through the spaced apertures 32 in the cover plate 30 also will contact the portion of the thermostat 14 situated in the compartment 19. Control of the motor 12 could be accomplished by employment of an instrumentality (not shown) responsive to change of pressure in the conduit 50. Such an instrumentality desirably could be mounted upon the platform 11.

Air at relatively low temperature drawn into the compartment 19 and made to travel over the motor 12 and the thermostat 14 in response to operation of the fan 44 will function to remove heat from said motor and thermostat. The double-walled platform 11, providing the air space 18, will resist passage of heat from the compartment 20 to the compartment 19, and the circular plate 54 will resist passage of heat from the interior 51 of the blower housing into said compartment 19. The blower unit will operate efficiently and satisfactorily regardless of the temperature of the air being circulated.

The blower unit can be employed independently, as shown in the drawings, or incorporated in any heating, cooling or other air circulating system. In an instance when the cylindrical casing 10 is to be assembled with pipe connections of greater diameter than the pipe connections 26, outwardly extending circular flanges each of diameter greater than that of each of the outwardly extending circular flanges 25 will be secured to the transverse end walls 23 in surrounding relation to the central circular openings 24 through said transverse end walls.

What is claimed is:

A blower unit comprising a hollow member constituted as an elongated casing and first and second transverse walls at opposite ends, respectively, of said elongated casing,

there being a first opening through said first transverse wall leading to and a second opening through said second transverse wall leading from said hollow member, a platform, constituted as first and second plates in separated relation to provide an air space therebetween, supported within and dividing said hollow member into first and second compartments, a motor within said first compartment and supported upon said first plate, said motor having a drive shaft thereof extending into said second compartment, a blower housing constituted in part by said second plate and in part by a box-like member on the second plate situated in said second compartment in aligned relation with said motor transversely of said elongated casing, a fan fixed upon said drive shaft for rotation within said blower housing adjacent an outlet thereof contiguous with said second opening, a third plate rotatable with and closing an interior end of said fan, there being a third opening through the first and second plates of said platform in aligned relation with said motor, fan and third plate and a fourth opening through a wall of said blower housing at the side of said fan and third opening opposite said motor, said second compartment communicating with the interior of the blower housing by way of said fourth opening, there being an aperture in a wall of said hollow member for passage of air into said first compartment, said elongated casing and said blower housing together providing a conduit for passage of air from said first opening to said fourth opening and said second compartment being closed save for said first and fourth openings, said blower housing being closed save for its outlet and said third and fourth openings, said first and second plates of said platform and the air space therebetween being resistant to passage of heat from said second compartment to said first compartment, and said third plate being resistant to passage of heat from the interior of said blower housing to the first compartment.

References Cited in the file of this patent

UNITED STATES PATENTS

1,809,603	Reed	June 9, 1931
2,617,371	Resek et al.	Nov. 11, 1952