May 15, 1928. 1,669,459

A. FEINBERG ET AL

BLOWER UNIT

Filed May 24, 1926

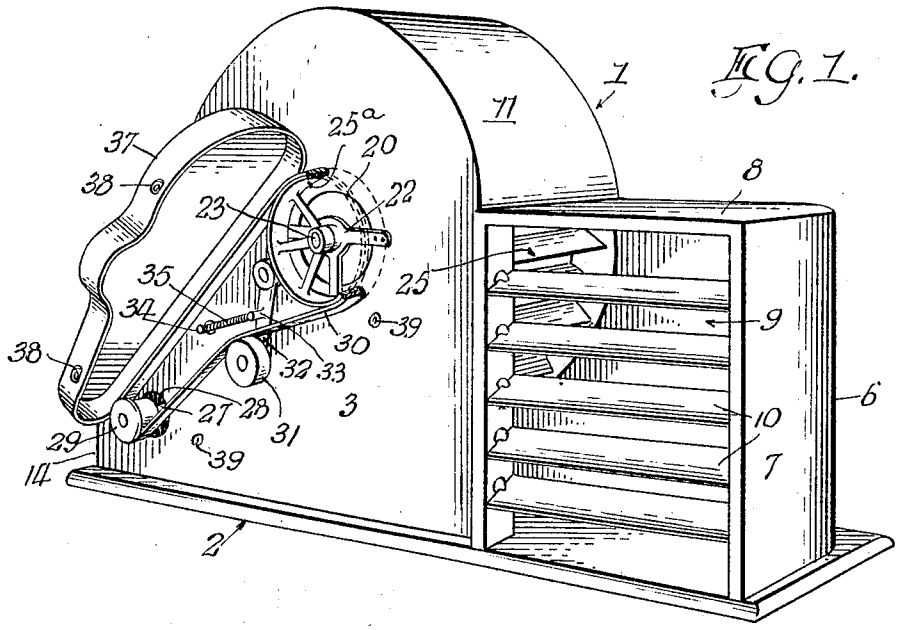


Fig. 1.

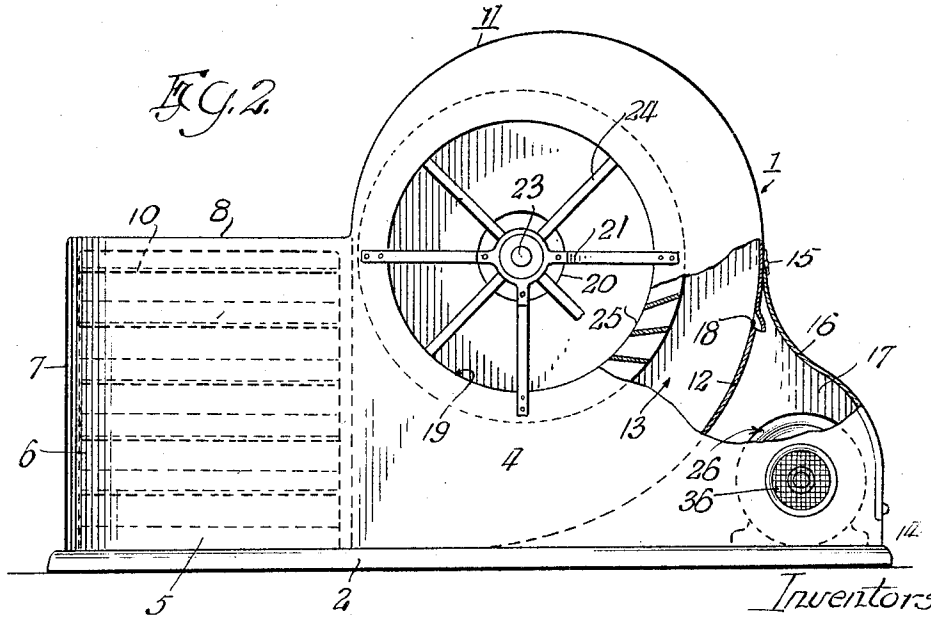


Fig. 2.

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UNITED STATES PATENT OFFICE.

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BLOWER UNIT.

Application filed May 24, 1926. Serial No. 111,090.

This invention relates to improvements in blower units and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

One of the objects of the present invention is to provide a blower unit which comprises a casing mounted on a base and has an air inlet and outlet or discharge and is formed to provide a fan housing and an adjacent motor housing in which a motor is located for driving the fan.

Another object of the invention is to provide a unit of the kind which is portable in that it may be readily placed in the desired location in a building with its air inlet in communication with the outside atmosphere, for the best results for its intended purpose.

A still further object of the invention is to so connect the fan and motor casing that the motor casing is ventilated and the motor prevented from heating up, and at the same time provided a second or auxiliary air inlet to the fan casing to increase its volumetric discharge.

These objects of the invention as well as the many advantages thereof will more fully appear as we proceed with our specification.

In the drawing:—

Fig. 1 is a perspective view of a blower unit, embodying our invention, as viewed more particularly from the front or discharge side thereof.

Fig 2 is a view in elevation of the rear or inlet side of the unit, with parts broken away to more clearly show the interior construction.

Referring now in detail to that embodiment of the invention, illustrated in the accompanying drawing, 1 indicates as a whole, a blower unit casing mounted on a horizontally disposed, elongated rectangular base board 2. The blower unit casing includes upright front and rear walls 3 and 4, the rear wall 4 including an extention 5 which is of a lesser height and merges by a rounded corner 6 into the end wall 7. The end wall 7 is spaced from the adjacent end of the front wall 3 and said end wall together with the rear wall extension, a flat top wall portion 8 and said adjacent end of the front wall defines a discharge compartment 9 at one end of the casing which is open at its front. In the open front of the discharge compartment are provided spaced deflectors or louvers 10 which may be disposed either horizontally or vertically or a combination of the two. As shown in Fig. 1 said louvers are horizontally disposed but this is to be considered by way of illustration only.

The top portions of the front and rear wall are rounded and are connected by a top wall 11, of spiral form, starting from the flat top wall 8 and including an extension 12 which terminates at the base 2 as best shown in Fig. 2, to provide a fan compartment 13. At that end of the casing, opposite the end wall 6 is a short upright end wall 14 and associated therewith and hinged to the wall 11, as at 15 is a door 16 thus forming a motor compartment or housing 17. In the spiral extension wall 12 spaced a suitable distance below the hinge 15 is a split or slot 18 by means of which air may pass from the motor compartment or housing into the fan housing.

In the rear wall 4 of the casing is an air inlet opening 19 of substantially large diameter and in the front wall 3, concentric with the air inlet opening 19 is a smaller or auxiliary air inlet opening 20. Associated with each inlet opening and fixed to the associated rear and front walls are bearing spiders 21 and 22, the hubs of which are coaxial and in which is journalled a fan shaft 23. Fixed to said shaft by means of the arms or spokes 24, (see Fig. 2) is a fan or rotor 25 of the turbine or squirrel cage type. One end of the shaft 23 projects a suitable distance beyond the bearing spider 22 and secured to said shaft end, a short distance beyond the front wall 3 is a pulley 25^a of the open web or spoke type.

In the compartment 17 is an electric motor 26 and one end of the armature shaft 27 thereof projects through an enlarged opening 28 in the front wall 3. To said end of the armature shaft is fixed a pulley 29, a belt 30 being trained over said pulleys 29 and 25^a for driving the fan or rotor 25. The lower lap of the belt 30 is trained over a tightener pulley 31, carried by a pivoted arm 32 and connecting a stud 33 on said arm with a stud 34 on the front wall 3 is a contractile spring 35 by means of which the belt is maintained in proper tension. In

the rear wall 4 of the casing, in line with the armature shaft of the motor 26, is a screen cover air inlet opening 36.

37 indicates a flanged cover member, which is hinged to the front wall 3 of the casing along a line parallel with and adjacent the top lap of the belt, so as to normally enclose the pulleys 25^a and 29 belt 30 and associated belt tightener members, said cover being shown in its open position in Fig. 1. Said cover includes apertured ears 38 which when the cover is in its closed position are adapted to be engaged by turn buttons 39 on the casing wall 3 for locking the cover in its closed position.

Assume that the unit as an entirety has been placed in position, with its rear wall adjacent an opening or a duct communicating with the outside atmosphere. A convenient place is upon a window sill, the associated sash of which may be assumed to be open. Also assume that the cover 37 is in its closed position and that the motor has been connected up with a suitable current conductor. The fan or rotor 25 will be driven in the proper direction and speed and will draw air in through the inlet opening 19 and will discharge it into the discharge compartment 9, where its direction is changed by the rounded corner 6 thereof to pass out between the louvers 10 into the room it is desired to ventilate or cool. In the rotation of the fan, air from the motor compartment 17 is drawn through the slit or slot 18 in the spiral wall extension 12 into the fan compartment, to mingle with the air therein and be discharged as described. As air is drawn through said slit or slot, other air from the outside atmosphere rushes through the screened opening 36, cooling the motor as it passes through the motor compartment. A portion of the air in the motor compartment may pass out through the opening 28 in the front wall 3 of the casing into the duct defined by the cover 37 when it is closed, to pass into the fan compartment 13 through the opening 20 in said front wall 3. Thus the cover when in its closed position not only functions as a cover for the purpose before mentioned but also as a duct by whch auxiliary or secondary air is directed into the fan compartment. Thus the motor although it is in a substantially closed compartment is cooled so that it cannot become overheated when in operation.

As is apparent from the foregoing description, the blower unit is an integral unit, which may be positioned because of its portability to the best advantage for its intended purpose and fills a long felt want for proper ventilation and cooling of small theaters or other places of public gathering, at a reasonable cost. It is compact, the moving parts are enclosed and it may be readily shifted from place to place and this eliminates the extra expense of the cost of a fan room.

While in describing our invention, we have referred to certain details of mechanical construction as well as form and arrangement of the parts thereof, we do not wish to be limited thereto except as may be pointed out in the appended claims.

We claim as our invention:

1. A blower embodying therein a casing formed to provide a motor compartment at one end, a discharge compartment at the other end and an intermediate fan compartment, said motor and fan compartments each having separate air inlets in one side of the casing, a motor and a fan in said motor and fan compartments, means on the other side of the casing for driving the fan from the motor and a cover enclosing said means and acting as a conduit connecting said motor and fan compartments on said other side of said casing.

2. A blower embodying therein a base, a casing thereon formed to provide a motor compartment at one end, a discharge compartment at the other end and an intermediate fan compartment, said motor and fan compartments having air inlets in one side of the casing and the discharge compartment having an outlet in the other side of the casing, a motor and a fan in said motor and fan compartments, means on the other side of said casing for driving the fan from the motor, and a cover for enclosing said means, there being openings in said other side of said casing within the plane of the cover which cover acts as a conduit connecting said motor and fan compartments on said other side of the casing.

3. A blower embodying therein, a base, a casing thereon formed to provide a motor compartment at one end, a discharge compartment at the other end and an intermediate fan casing, a motor in said motor compartment, a fan in said fan compartment, a part of said casing between said motor and fan compartments having an opening therein, said motor and fan compartments having air inlets in one side of the casing, and means associated with the other side of the casing for driving the fan from the motor.

4. A blower embodying therein a base and a casing mounted thereon, said casing being formed to provide a fan compartment and a motor compartment, said fan compartment having an air inlet and outlet and said motor compartment having an air inlet, a fan and a motor in said respective compartments, means for driving said fan from the motor and a cover for enclosing said means, said cover forming a duct connecting said fan compartment and motor compartment, said fan acting to establish a circulation of air through the motor compartment.

5. A blower embodying therein a base and

a casing mounted thereon, said casing being formed to provide a fan compartment and a motor compartment, said fan compartment having an air inlet and outlet and said motor compartment having an air inlet, said compartments having an air passage between them, a fan and a motor in said respective compartments, means for driving said fan from the motor, and a cover for said means and providing a duct leading from said motor compartment to said fan compartment, said fan acting to establish a circulation of air through the motor compartment.

6. A blower embodying therein a base and a casing mounted thereon, said casing being formed to provide a fan compartment and a motor compartment, said fan compartment having more than one air inlet and an outlet and said motor compartment having an air inlet, a fan and a motor in the respective compartments, means outside the casing for driving the fan from the motor, a cover adapted to enclose said means and forming a duct connecting the motor compartment and one of the fan inlets whereby said fan acts to cause a circulation of air through the motor compartment.

7. A blower embodying therein, a base and a casing mounted thereon and formed to provide a motor compartment at one end, a discharge compartment having an outlet, at the other end, and an intermediate fan compartment, having an air inlet and communicating with said discharge compartment, a fan and a motor in said fan and motor compartments, which motor compartment has an air inlet, means outside the casing for driving the fan from the motor and including pulleys and belts, and a cover on said casing to enclose said pulleys and belts and forming a conduit connecting said fan and motor compartments.

In testimony whereof, I have hereunto set my hand this 21st day of April, 1926.

ARCHIE FEINBERG.

In testimony whereof, I have hereunto set my hand this 18 day of May, 1926.

ISADORE M. HALVERSON.