

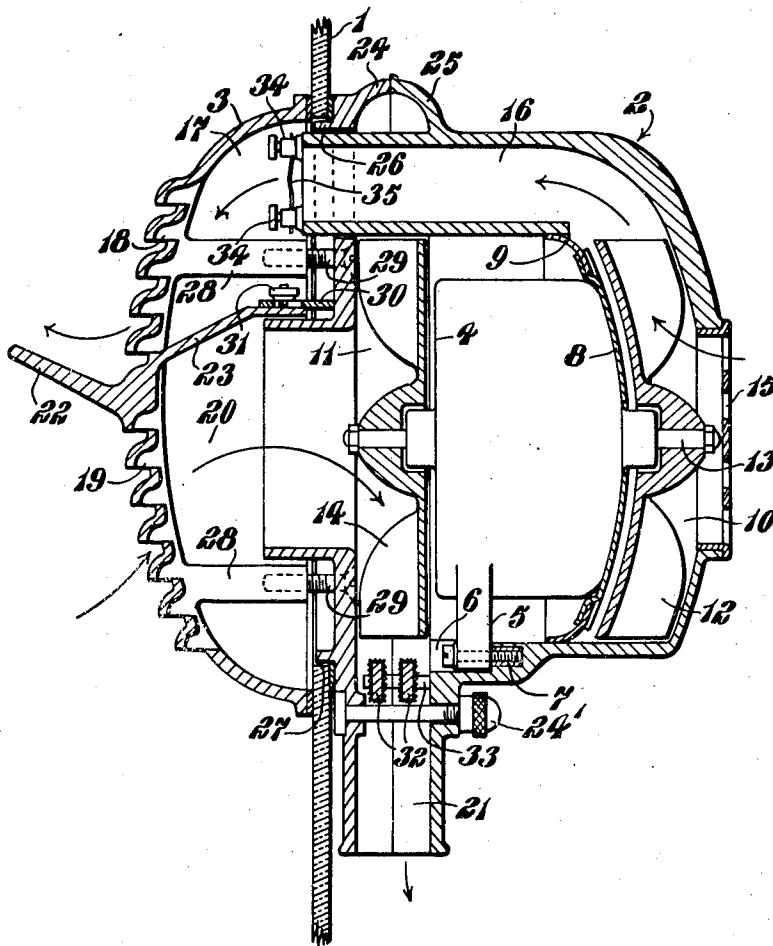
March 28, 1939.

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2,152,614

VENTILATING DEVICE

Filed May 10, 1938



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UNITED STATES PATENT OFFICE

2,152,614

VENTILATING DEVICE

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Application May 10, 1938, Serial No. 207,113

In Great Britain February 6, 1937

4 Claims. (Cl. 98—33)

This invention relates to ventilating apparatus of the type including an extracting fan adapted to draw foul or vitiated air from a compartment and an intake fan for delivering fresh air to the compartment.

It has been proposed to provide a ventilating arrangement of the above character which comprises a cup-like casing that is located within the interior of the compartment to be ventilated and incorporates two separate chambers. One of these two chambers accommodates an extracting fan adapted to draw foul or vitiated air from the compartment into the chamber and then exhaust it to the exterior of the compartment through a conduit which leads from said chamber through an aperture in the wall of the compartment to an outlet provided exteriorly of the compartment. The other chamber accommodates an intake fan adapted to draw fresh air through an inlet situated exteriorly of the compartment and an air inlet duct passing through the wall of the compartment and leading into the chamber from which latter fresh air is discharged into the compartment. The intake fan and the extracting fan are mounted on the same shaft which it has been proposed to drive by means of an electric motor housed within the cup-like casing.

According to the present invention there is provided in a ventilating apparatus of the type set forth and comprising a two-part casing, two independent chambers formed in one part of said casing, an extracting fan in one of said chambers, an intake fan in the other chamber and separate inlet and outlet ducts provided in the other part of the casing for fresh air and vitiated air respectively, an arrangement wherein the said two parts of the casing are adapted for co-operative association, through an aperture in a panel, in order to bring each air duct in the one part into communication with the appropriate fan chamber in the other part and at the same time clamp therebetween the said panel which then constitutes a support for the apparatus.

The part of the casing which incorporates the two independent fan chambers is adapted to be disposed within the interior of a compartment to be ventilated, said part being hereafter referred to as the interior part of the casing. The other part of the casing, namely that which includes the separate inlet and outlet air ducts is adapted to be located exteriorly of the said compartment and will be hereinafter referred to as the exterior part of the casing.

Any desired suitable clamping means may be

incorporated for the purpose of effecting the desired clamping together of the two-part casing in order to grip between themselves the panel by which the apparatus is supported. Thus, the interior and exterior members may be clamped to a window or other panel which may be glass or otherwise and is provided with a suitable aperture to receive a flange or equivalent portion carried by the one part for the purpose of locating the apparatus. In some arrangements the flange portion is adapted to be directly engaged with a co-operating portion provided on the other part of the casing, for example a screw threaded engagement may be effected between said flange portion and a suitably screw threaded portion on the other part. Alternately, suitably disposed lugs may be provided on one or other of the two parts for the accommodation of securing pins or bolts which may be accessible from either the inside or outside of a compartment.

The interior casing is of course provided with an air duct which serves to conduct fresh air from the intake fan chamber to the compartment being ventilated, whilst the chamber accommodating the extracting fan is also open to the compartment for the purpose of withdrawing therefrom foul or vitiated air.

If desired an electric heating resistance may be arranged in association with the fresh air duct of the apparatus, such heating element being under the control of suitable switch means so that when required the fresh air entering the compartment may be heated.

The fresh air duct may in some cases have associated therewith filtering devices, deodorising, disinfecting or perfuming means.

In order that the invention can be fully appreciated a preferred embodiment thereof will now be described with reference to the accompanying drawing, the single figure of which shows a vertical sectional view of a ventilating apparatus according to the invention clamped to a supporting panel indicated at 1.

With this arrangement the casing is constituted by an interior part indicated in general at 2 and an exterior part indicated in general at 3. The interior part 2 of the casing is adapted to house an electric motor of any desired suitable type and this motor is indicated at 4 and includes a plurality of radially extending arms, one of which is shown at 5, for engagement with corresponding grooves 6 in this casing part and screw means 7 are provided for bolting through the arms 5 to secure the motor in position.

At one end of the motor 4 there is provided a

plate member 8 the edge of which has attached thereto a ring 9 of resilient material, for example rubber, which, as shown in the drawing, comes into contact with adjacent walls of the casing and serves to divide the casing into two independent chambers 10 and 11 respectively.

Within the chamber 10 there is arranged an extracting fan 12 which is mounted upon one end of the shaft 13 of the electric motor 4.

The other end of the shaft 13 has mounted thereon an intake fan 14 which is thus located within the chamber 11.

Foul or vitiated air within a compartment to be ventilated is adapted to be drawn by the extracting fan 12 through an opening 15 into the chamber 10 and hence passed along an exhaust duct 16 into an outlet duct 17 provided in the exterior part 3 of the casing, said outlet duct 17 communicating with the exterior of the compartment through a louvre opening 18.

Fresh air is adapted to be drawn in by means of the intake fan 14 through a louvre opening 19 provided in the exterior part 3 of the casing, inlet duct 20 to chamber 11 and then discharged into the interior of the compartment through a discharge conduit 21.

There is thus provided an arrangement for withdrawing foul or vitiated air from a compartment and at the same time feeding fresh air to the compartment. The louvre openings 18 and 19 are separated, on the exterior, by a deflector 22 which serves to maintain separation of the outgoing and incoming air streams.

It should be noted that the outlet duct 17 and the inlet duct 20 are separated by a partition wall 23.

In order to render the interior of the part 2 of the casing readily accessible, especially for the purpose of servicing the electric motor, this part 2 of the casing is formed in two relatively detachable portions indicated at 24 and 25 respectively.

These two portions 24 and 25 of the interior part of the casing are adapted to be attached the one to the other by means of a plurality of bolt and nut means, one of such means being shown at 24'. It will be appreciated that upon the release of these nut and bolt means the portion 25 can be removed from the portion 24 of the casing and that the electric motor 4 and fans 12 and 14 will remain intact with the removed portion 25 of the casing.

The portion 24 is provided with a flange 26 which is adapted to be located within an aperture 27 provided in the panel 1.

The exterior part 3 of the casing is provided with lug portions 28 which are bored and screw threaded for the reception of screw bolts 29 which constitute means whereby the interior and exterior parts of the casing can be clamped to the panel 1, rubber or other suitable washers are preferably provided between the contacting surfaces of the casing and the panel.

It should be noted that the portion 25 of the interior part 2 can be dismantled for servicing or other purposes without interfering with the clamping engagement between the portion 24 and the outer casing part 3.

In order to assure a high degree of separation between the ducts 17 and 20 provided in the exterior part 3 of the casing, there is provided in association with the partitioning wall 23 a sliding fillet piece 30, an edge of which can be brought, as shown, into contact with a wall of the portion 24. This fillet piece can be adjustably set by

means of a screwed lock-nut 31 thus providing a ready means for assuring the desired separation of the air ducts 17 and 20, even although the thickness of the panel to which the apparatus is attached may vary.

Within the discharge conduit 21 for fresh air there is arranged an electric heating resistance indicated at 32. This heating resistance is supported by one or more pillars 33 extending from the portion 25 of the interior part of the casing.

It will of course be understood that suitable electrical connections are made to the electric motor 4 and the heating resistance 32 and it is preferable to provide independent switching means for the motor and heating resistance.

In addition, when said heating resistance is employed it is preferable to incorporate a fuse means which will become operative upon stoppage of the motor, due to fouling or other causes, and break the electrical circuit including the heating resistance in order to prevent overheating of the structural parts of the apparatus. Such a fuse means is shown in association with the air ducts 16 and 17 and consists of terminal clamping means 34 for holding in position a fuse wire 35. With this arrangement the wire 35 will remain intact as long as the fan 12 is creating a flow of air along the ducts 16 and 17, but should for any reason the fan 12 discontinue to function the temperature of the wire 35 will increase as a result of the absence of the air current and will eventually fuse to interrupt the electric supply to the heating resistance 32.

It is of course to be understood that in a modified arrangement the supports for a fuse wire can be arranged in association with the inlet duct 20 in which case the fuse wire would be subjected to the current of air created by the fan 14. The action of this latter arrangement would of course be similar to that above described with reference to the fan 12.

The casing parts 2 and 3, (the former including of course the two portions 24, 25) and also the fans 12 and 14 can be formed from a synthetic resin composition, with the result that the entire apparatus is particularly simple to assemble, has a most attractive appearance and is impervious to climatic changes or conditions.

If desired the connection between the arms 5 of the motor 4 with the groove 6 in the casing can be made through the intermediary of rubber or other resilient mountings in order to prevent transmission of vibration from the motor to the casing and hence to the supporting panel.

What I claim and desire to secure by Letters Patent of the United States of America is:

1. A ventilating apparatus for use with a supporting panel or wall having a single opening therein, including a casing adapted for positioning in said single opening, the casing including a first part constituted by two sections and a second part, means for securing one of said sections to the second casing part in such manner as to clamp therebetween the panel edge about said opening and thus secure said parts to the panel, means for securing the other section to the first section, said other section having mounted therein an electric motor, an extracting fan at one end of the shaft of said motor, an air intake fan at the other end of said shaft, said first casing part having therein partitioning means cooperating therewith to provide separate chambers for the two fans and inlet and exhaust ducts communicating with the second casing part, the second casing part having therein openings and a partition dividing said

part into separate inlet and exhaust ducts for fresh and vitiated air communicating through said first mentioned ducts with the intake and extracting fan chambers respectively, and said first casing part having an inlet opening for one of said chambers and an outlet opening for the other of said chambers.

2. A ventilating apparatus adapted for use with a supporting panel or wall having a single opening therein, including a casing adapted for positioning in said single opening, the casing being constituted by two parts and means for clamping said parts together so that they embrace the panel therebetween and thus effect the support of the casing upon said panel, one of said parts having mounted therein an electric motor, an extracting fan at one end of the shaft of said motor, an air intake fan at the other end of said shaft, said one casing part having therein partitioning means cooperating therewith, including a ring of resilient material located between the motor and the walls of said casing parts, to provide separate chambers for the two fans and inlet and outlet ducts communicating with the other casing part, and said other casing part having therein openings and a partition dividing said part into separate inlet and exhaust ducts for fresh and vitiated air communicating through said first-mentioned ducts with the intake and extracting fan chambers respectively, and said one casing part having an inlet opening for one of said chambers and an outlet opening for the other of said chambers.

3. A ventilating apparatus as set forth in claim 1 wherein the first casing section which is secured to the second casing part is provided with a flange formation adapted for location in the single opening of the supporting panel and wherein the second casing section is readily detachable

from the first casing section whereby said second casing section and the motor and fan carried thereby may be removed without disturbing the remainder of the apparatus that is clamped to the supporting panel.

4. A ventilating apparatus adapted for use with a supporting panel or wall having a single opening therein, including a casing adapted for positioning in said single opening, the casing being constituted by two parts and means for clamping said parts together so that they embrace the panel therebetween and thus effect the support of the casing upon said panel, one of said parts having mounted therein an electric motor, an extracting fan at one end of the shaft of said motor, an air intake fan at the other end of said shaft, said one casing part having therein partitioning means cooperating therewith to provide separate chambers for the two fans and inlet and exhaust ducts communicating with the other casing part, said other casing part having therein openings and a partition dividing said part into separate inlet and exhaust ducts for fresh and vitiated air communicating through said first mentioned ducts with the intake and extracting fan chambers respectively, said one casing part having an inlet opening for one of said chambers and an outlet opening for the other of said chambers, an electric heating resistance in the inlet duct, and means for supporting a fuse wire in a position in which it is subject to a current of air created by one of the fans, said fuse wire being electrically connected with the electric heating resistance whereby upon failure of the motor the fuse wire will fuse and interrupt the supply to said resistance.

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