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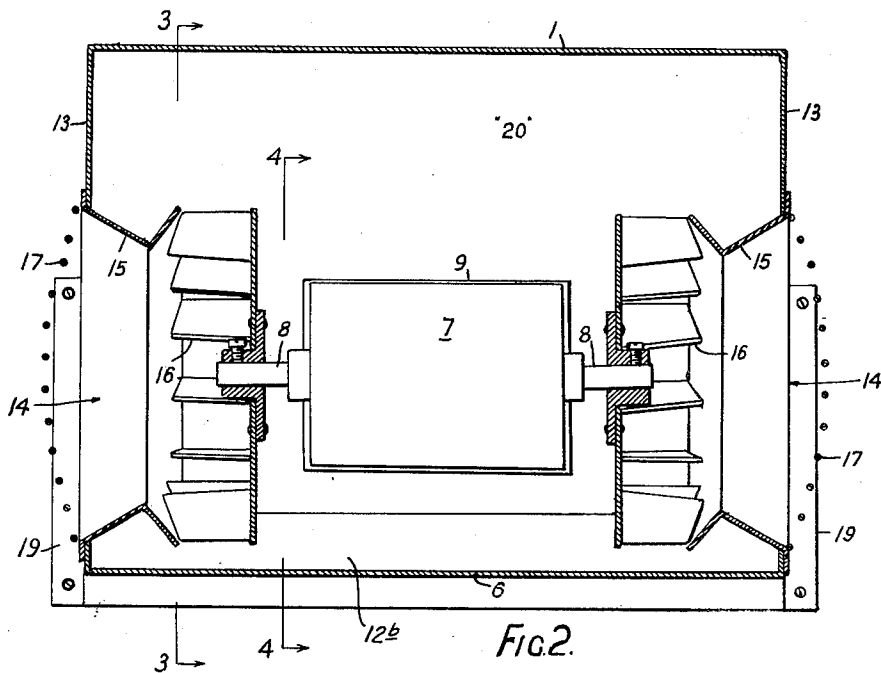
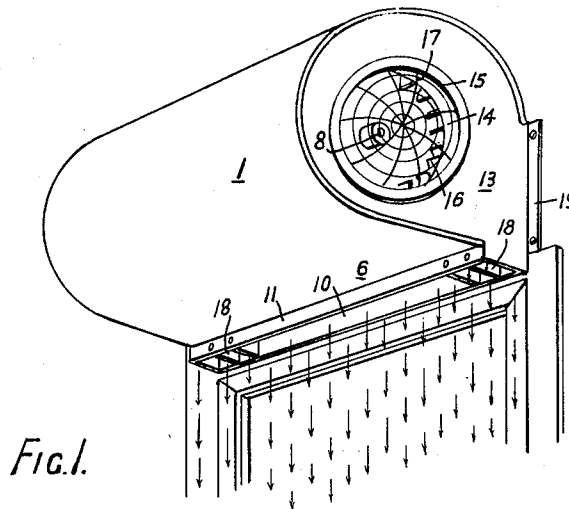
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AIR SCREEN CREATING APPARATUS

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2 Sheets-Sheet 1



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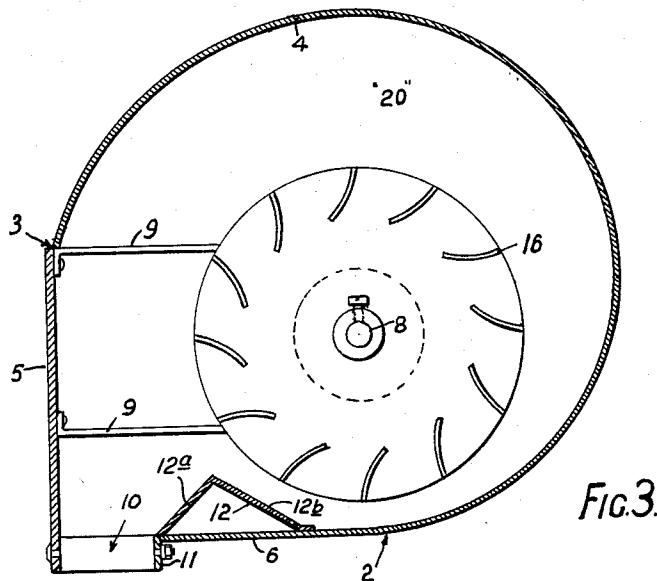


FIG. 3.

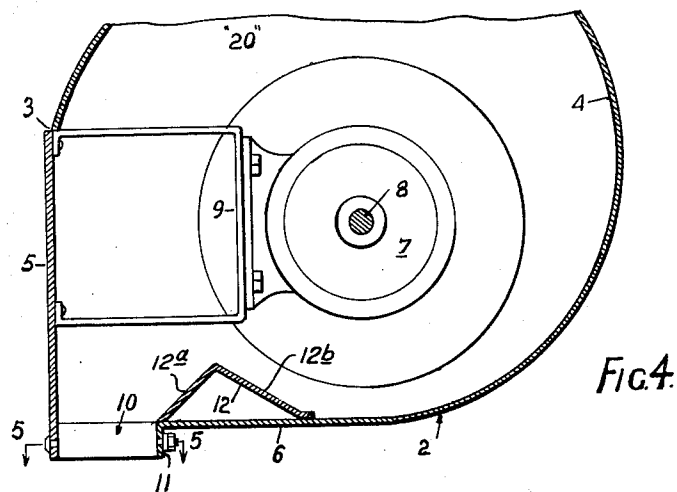


FIG. 4.

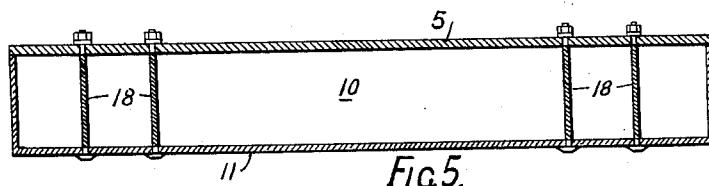


FIG. 5.

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## AIR SCREEN CREATING APPARATUS

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2 Claims. (Cl. 98—36)

This invention relates to air screen creating apparatus adapted to be mounted over doors or entrances to buildings or compartments to permit persons to pass therethrough but to prevent ingress of insects and dust and to prevent a flow of air through the screens.

The invention has been devised to provide an air screen creating apparatus for the above stated purposes having a casing with a motor and suction fan blades therein which will enable a more effective air screen to be created than was possible with comparable apparatus used hitherto, which is cheaper to make than the apparatus as constructed hitherto and which permits the spread and direction of the air screen to be adjusted.

Broadly the apparatus consists of a substantially cylindrical casing having a rectangular outlet port longitudinally in its wall and end covers having inlets therein eccentric to the axis of the casing with an internal flange surrounding each inlet. A motor is mounted in the casing. It has a suction fan on each end of its shaft, the fans being located in juxtaposition to and concentric with the inlets in the end covers. The parts are arranged to form a part crescent like chamber with the outlet port in juxtaposition to the major width of the chamber.

In one embodiment of the invention the cylindrical casing has a chord like gap in its wall and a base plate and a trunk plate in the form of an angle joined to the edges of the chord like gap. The motor is mounted on the base plate. It is located so that its shaft is eccentric to the axis of the casing in a plane parallel to the base plate and on the trunk plate side of the axis of the casing. The trunk plate has a depending chimb or flange which is spaced from the base plate to define therebetween a rectangular outlet port which is disposed adjacent the base plate and extends substantially the length thereof. An angle plate is mounted on the trunk plate adjacent the outlet port and has a side forming an internal extension of the chimb or flange. End cover plates on the casing each have a circular inlet concentric to the axis of the motor shaft with an internal flange surrounding the inlet. A suction fan is mounted on each end of the motor shaft in juxtaposition to the inlets.

The casing is adapted for mounting above the top of an opening to be screened with the outlet port located to direct air flowing therefrom downwardly and over the area of the opening.

The general construction of the casing and the fans therein provide a uniform flow of air through the whole area of the outlet port.

In this embodiment of the invention the outlet port is equipped with adjustable vanes which enable a part of the air stream to be deflected so that the spread of the air curtain exceeds the length of the outlet port. Thus it is possible to cover openings wider than the length of the casing without unduly increasing the height at which the casing is mounted above the opening. The resulting advantage is that the velocity of the air screen at the bottom of the opening is effective for the purpose of the invention.

The casing can be so arranged that the outlet port will direct the air screen downwardly vertically or alternatively it can be arranged to direct the air screen downwardly at an acute angle. Means may be incorporated whereby

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the suction fans draw air from the inside or the outside of a building on which the apparatus is erected.

The invention is described in further detail with reference to the annexed drawings wherein:

FIGURE 1 is a perspective view of the apparatus.

FIGURE 2 is a longitudinal central sectional elevation.

FIGURE 3 is a section on line 3—3 of FIGURE 2.

FIGURE 4 is a section on line 4—4 of FIGURE 2.

FIGURE 5 is a section on line 5—5 of FIGURE 4.

The part cylindrical casing 1 extends from the position indicated at 2 to the position indicated at 3 and the curvature of the part 4 is made to a gradually increasing radii. The edge at position 3 is joined to a base plate 5 and the edge at position 2 is joined to a trunk plate 6.

An electric motor 7 having its shaft 8 projecting from each end is mounted on brackets 9 fixed to the base plate 5. The motor is located so that its shaft is eccentric to the axis of the casing 1 in a plane parallel to the base plate 5 and on the trunk plate side at the axis of the casing.

The trunk plate 6 has a rectangular outlet port 10 therein extending substantially the length thereof. The port is formed between a chimb or flange 11 and the base plate 5. An angle plate 12 extends from the longitudinal edge of the port 10 remote from the base plate to a position on the trunk plate at/or near the position 2. The angle plate 12 has an inwardly diverging side 12a which forms an internal extension of the chimb 11 and a side 12b formed integrally with the side 12a and disposed at an angle thereto.

End cover plates 13 are fixed to each end of the casing. Each cover plate has a circular inlet 14 located concentric to the axis of the motor shaft 8. An internal flange 15 is fixed to each end cover plate 13. These flanges 15 could be made convex but for simplicity of manufacture they are made of two conjoined plates set at or about the angle shown in FIGURE 2.

A suction fan 16 is mounted on each end of the shaft 8 in juxtaposition to the inlets 14, and a guard grid 17 is fixed to each end cover plate over the inlet 14. The periphery of each of the fans 16 is disposed adjacent the side 12b of the angle plate 12. The outlet port has vanes 18 therein in spaced relationship near each end. They are made of manually deformable material so that they can be manually adjusted angularly to deflect a part of the air stream flowing through the outlet port. This adjustment is made according to the length of the apparatus, its location in relation to the opening to be screened and the width of the opening. Usually once the adjustment has been made there is no need to make alterations thereto.

Parts of the base plate 5 project beyond the end cover plates 13 as indicated at 19. These parts have holes therein to take bolts whereby the apparatus is fixed to a support.

Where it is desired to draw air into the apparatus from a location other than the location of the apparatus inlet trunks may be mounted on the end cover plates 13. Alternatively the apparatus may be mounted in a box casing having an air inlet at the desired location and a slot to accommodate the outlet port. A delivery trunk extension can be connected to the outlet port in order to adapt the apparatus to a particular location.

It will be seen that the air chamber 20 at the position of the fans 16 and one side 12b of the angle plate 12 forms a restriction against air circulating in the chamber. Also that the gradually increasing size of the chamber in a circular path assists in the spread of flowing air to provide a substantially uniform density of air at the outlet port 10. The other side 12a of the angle plate 12 assists in directing the air into the outlet port and this side 12a of the angle plate 12 forms an internal extension of the

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flange or chimb 11 and hence of the outlet port. In effect the construction provides a part crescent like chamber with the outlet port at the position of major width.

I claim:

1. Air screen creating apparatus adapted to be positioned adjacent a door opening or the like comprising a hollow casing including a generally cylindrical side wall forming a volute casing, axial end walls, and a flat base plate forming an extension of said side wall, one edge of said cylindrical side wall being spaced from the lower edge of said base plate to form therebetween an outlet port in said casing, means defining inlet openings in said axial end walls of said casing, a tapered shroud extending inwardly from each of said inlet openings, a centrifugal blower mounted interiorly of said casing adjacent each inlet opening, a motor mounted on said base plate between said centrifugal blowers and operatively connected thereto to actuate them simultaneously, a triangularly shaped baffle mounted interiorly of the casing adjacent said one edge of said cylindrical side wall whereby air drawn into the interior of the housing by said centrifugal blowers

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engages said baffle and is directed through said outlet port, said outlet port being disposed adjacent a door opening or the like so that the air discharged therethrough provides an air screen and at least one vane adjacent a terminal end of said outlet port which is selectively adjustable so that the width of the air screen created may be varied selectively.

2. Apparatus as claimed in claim 1 wherein an adjustable vane is provided adjacent each terminal end of said elongated outlet port.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

1,862,289	Anderson	June 7, 1932
2,081,104	Manning	May 18, 1937
2,335,734	Caldwell	Nov. 30, 1943
2,337,325	Hach	Dec. 21, 1943
2,659,294	Hersperger	Nov. 17, 1953
2,827,844	Weir	Mar. 25, 1958
2,841,326	Davis	July 1, 1958
3,023,688	Kramer	Mar. 6, 1962