

Aug. 21, 1956

A. S. KNAPP  
TWIN WINDOW FANS

2,759,412

Filed Nov. 15, 1952

2 Sheets-Sheet 1

FIG. 1.

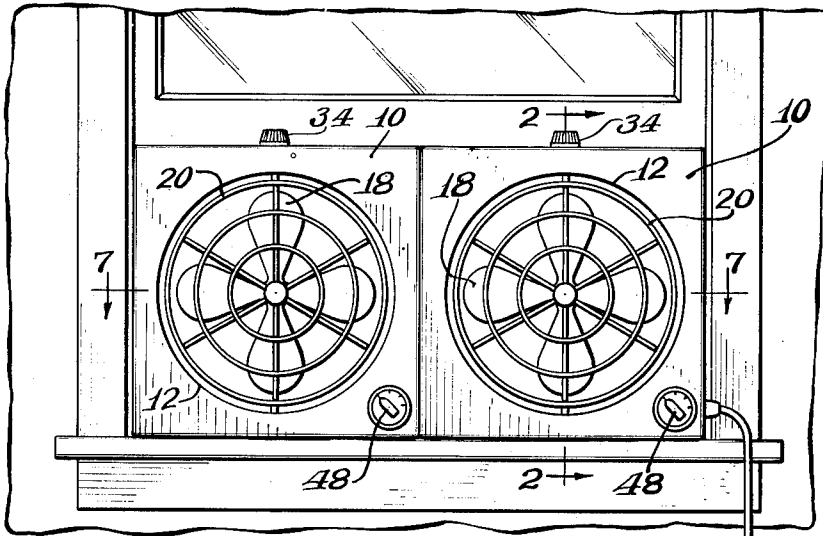


FIG. 2.

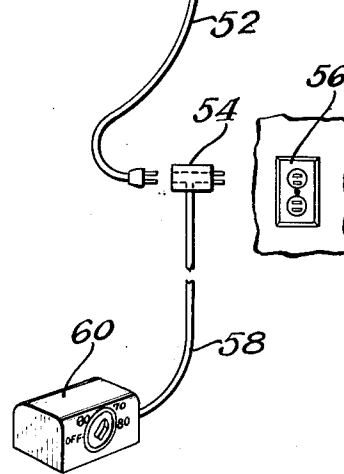
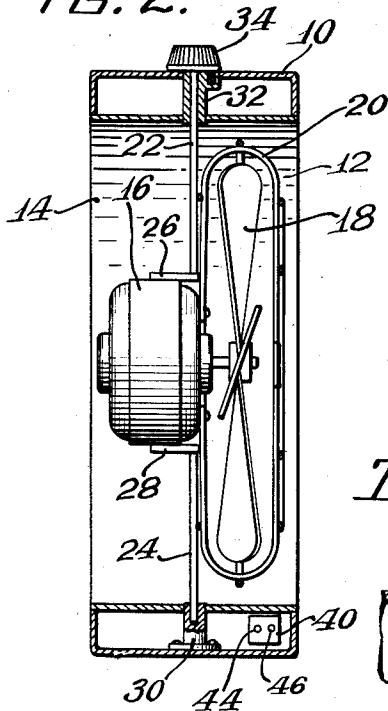
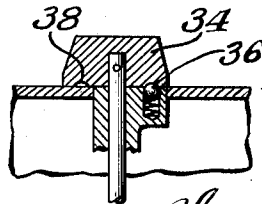


FIG. 3.



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FIG. 4.

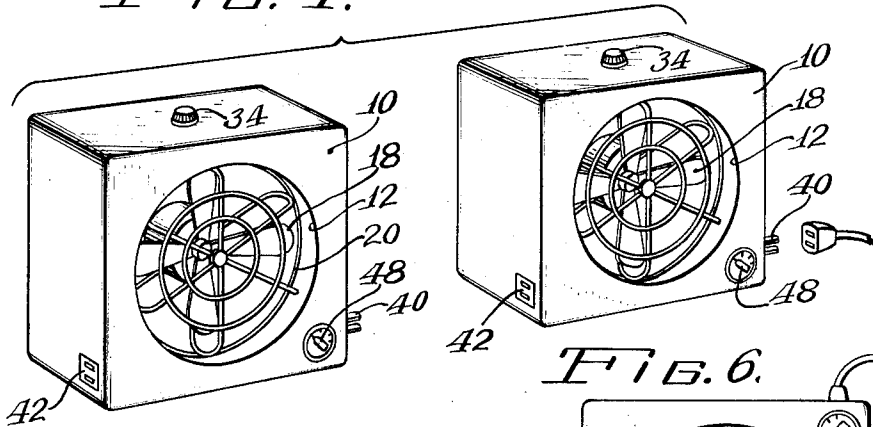


FIG. 5.

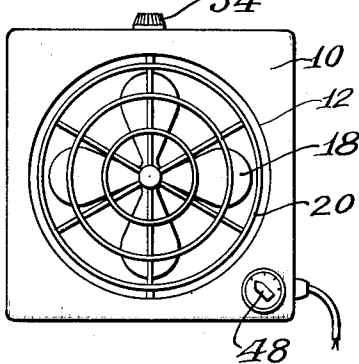


FIG. 6.

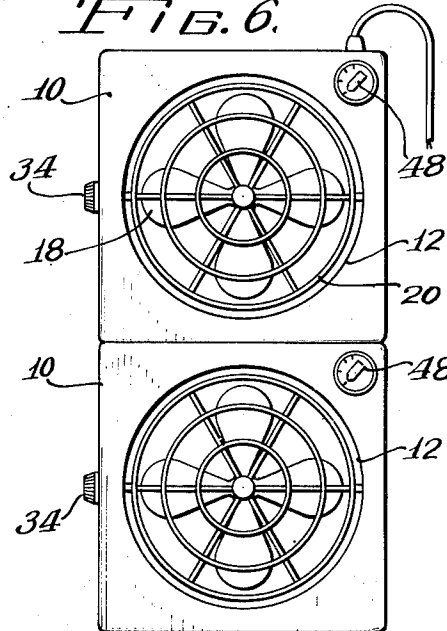


FIG. 7.

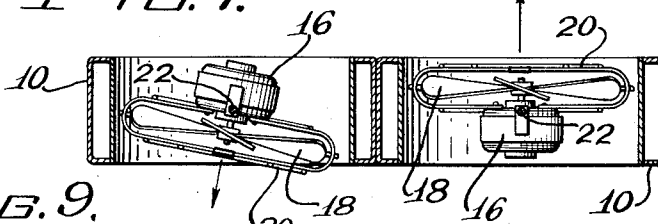


FIG. 8.

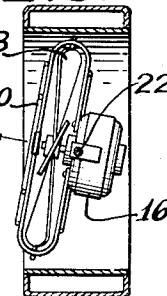
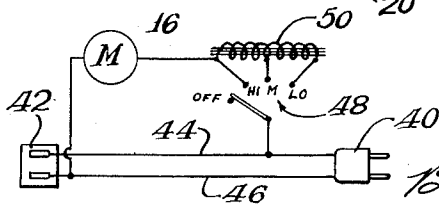


FIG. 9.



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## TWIN WINDOW FANS

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9 Claims. (Cl. 98—94)

This invention relates to twin window fans and more particularly to a window fan construction which is so designed that two of the fan units, each in its own housing, may be stacked either side-by-side or in vertical position so that they may be placed in an open window and used for circulating air either into or out of the room, or by certain adjustments of the fans, out through one housing and in through the other.

One object of the invention is to provide a fan structure including a housing that can be located in a window opening, a motor and fan being mounted in the housing for drawing air into one face of the housing and discharging it from the other, provision being made for electrically connecting two of the housings together so that individual control switches, each for the fan of its respective housing, may be operated independent of each other, the fans being mounted for reversal in their housings so as to effect discharge of air from either face of either housing and thereby providing for intake through one fan and output through another, intake through both, or output through both as desired.

Another object is to provide a fan structure of the character disclosed which may be used individually instead of as a twin ventilating fan and the housing being so constructed that the fan can be rotated on an axis for adjustment of angle, the axis being either vertical or horizontal as desired for effecting adjustment of the angle of air flow in either the horizontal or the vertical plane.

Still another object is to provide a fan structure which may be used as a room or desk fan as well as a window fan if desired.

A further object is to provide twin window fans and automatic remote control means therefor which can be manually reset for response to a different room temperature and can also be used to turn off the fans.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my twin window fans, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Figure 1 is an elevation of my twin window fans showing them mounted in a window opening and illustrating a room thermostat and off switch for remote control of the fan.

Figure 2 is an enlarged vertical sectional view on the line 2—2 of Figure 1 showing how the fan may be mounted in the housing for adjustment to throw the air in various desired directions.

Figure 3 is an enlarged detail of the upper portion of Figure 2, the parts being shown in section.

Figure 4 is a perspective view of two of the units illustrating how they may be combined in side-by-side relation to form a twin window fan.

Figure 5 shows one of the units separate as when used for a desk fan.

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Figure 6 shows two of the units stacked in a vertical arrangement as for use in a casement window.

Figure 7 is a horizontal sectional view on the line 7—7 of Figure 1 showing the relationship of the fans when used side-by-side in a window opening.

Figure 8 is a vertical sectional view through the fan unit when rotated 90 degrees from the position shown in Figure 5 so that the adjustment of the fan can throw air upwardly rather than at an angle laterally as in Figure 7; and

Figure 9 is an electro-diagrammatic view of the electrical connections in the fan unit.

On the accompanying drawings I have used the reference numeral 10 to indicate a housing. The housing 10 has openings 12 and 14 in the opposite faces thereof. Within the housing 10 a fan motor 16 is provided. Fan blades 18 are mounted thereon and the usual guard 20 surrounds the blades.

The motor 16 is mounted as by means of rods 22 and 24, and brackets 26 and 28 as shown in Figure 2 so that it can be adjusted as for instance shown in Figures 7 and 8. The rod 24 is journaled in a bearing 30 and the rod 22 in a bearing 32. A knob 34 on the rod 22 serves to rotate the rod and thereby adjust the fan for purposes which will hereinafter appear. To retain the adjustment a detent pawl 36 (see Figure 3) may coact with one of several detents 38 in the knob 34 in an obvious manner.

For supplying current to the motor 16, I provide an input connector 40 projecting from one side of the housing 10 and an output socket 42 in the other. These are connected by electrical conductors 44 and 46 as shown diagrammatically in Figure 9 and each housing 10 is provided with an off and speed control switch 48 for its respective motor 16. This is shown diagrammatically in Figure 9 connected with a choke coil 50 for effecting the various speed changes of the fan motor in the usual manner.

To supply current to one or more of the fan units, I provide a supply cord 52 adapted to be connected with a series plug 54 which in turn is connected to the usual wall outlet 56. A cord 58 extends laterally from the plug 54 to a combination room thermostat and off switch 60. Thus the switch 60 may automatically control the operation of the motors 16 from a remote position and this position may be, for instance, on a night stand, the switch 60 also having the off position illustrated so that the fans can be turned off without the user having to walk in front of them, to gain access to the control switch 48 thereon.

Twin window fans of the character disclosed, when made up in two square sections as shown, each comprising an individual fan unit, have the advantage that these units can be sold not only for twin window fan duty in a single room but also for use as a table or floor fan by separating the twin units and using the individual square units. Also they can be used as small window fans in two separate rooms when the individual square sections are thus separated.

Alternatively these two units can be stacked side-by-side as in Figure 1 or vertically as in Figure 6 for fitting the window opening available when they are coupled next to each other in the tandem manner shown in Figure 7. The knobs 34 may be manipulated for directing the air of both fans into or out of the room, or one in and the other out as they happen to be shown in Figure 7. Also the direction of the blast can be controlled in an obvious manner.

The units can be separated as in Figure 4 for use in different positions or one of the units may be used merely by itself as a desk fan or the like as shown in Figures 5 and 8. In Figure 5 the axis of adjustment for the fan is

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vertical the same as in Figure 7 so that the air blast can be turned sidewise as desired. In Figure 8 the axis is horizontal instead of vertical so that the air blast can be directed upwardly or downwardly as desired.

Thus the fan unit has great utility and is universal in its applications. Also the novel connector arrangement for the electric circuit of the unit with the plug 40 at one end and the socket 42 at the other and in alignment so that the units can be arranged in tandem as desired, makes the device particularly suitable as a twin window fan.

Some changes may be made in the construction and arrangement of the parts of my twin window fans without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In a window fan, a housing adapted to be positioned in a window opening, said housing being substantially hollow and comprising parallel spaced face portions and parallel spaced side portions interconnecting said face portions, said face portions having openings therein to provide a flow passage through said housing, a motor therein, a fan driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, the plane of rotation of said fan being substantially parallel to and axially aligned with said face portions, an input connector projecting outwardly from one side of said housing, an output socket in the opposite side of said housing and aligned with said input socket whereby a plurality of said housings may be connected in tandem, a pair of electrical connectors from said input connection to said output socket, and a control switch in series with said motor and connected with the motor across said electrical connectors.

2. In a window fan, a housing adapted to be positioned in a window opening, said housing being substantially hollow and comprising parallel spaced face portions and parallel spaced side portions interconnecting said face portions, said face portions having openings therein to provide a flow passage through said housing, a motor therein, a fan having an inlet and an outlet side driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, said motor being swingable about an axis to vary the position of the inlet and outlet sides of said fan with respect to said housing face portions to effect discharge of air from either of said face portions and to vary the direction of air relative to said housing, an input connector projecting from one side of said housing, an output socket in the opposite side of said housing and aligned with said input socket whereby a plurality of said housings may be connected in tandem, a pair of electrical connectors from said input connection to said output socket, and a control switch in series with said motor and connected with the motor across said electrical connectors.

3. In a window fan of the character disclosed, a housing adapted to be positioned in a window opening, said housing being substantially hollow and comprising parallel spaced face portions and parallel spaced side portions interconnecting said face portions, said face portions having openings therein to provide a flow passage through said housing, a motor therein, a fan driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, the axis of rotation of said fan lying in a plane substantially perpendicular to said housing face portions, an input connector projecting outwardly from one side of said housing, an output socket in the opposite side of said housing for tandem connection of a plurality of said housings together, a pair of electrical connectors from said input connection to said output socket, and electrical connections therefrom to said motor.

4. A window fan comprising a housing adapted to be positioned in a window opening, said housing being sub-

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stantially hollow and comprising parallel spaced face portions and parallel spaced side portions interconnecting said face portions, said face portions having openings therein to provide a flow passage through said housing, a motor therein, a fan having an inlet and an outlet side driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, said motor being swingable about an axis to vary the position of the inlet and outlet sides of said fan with respect to said housing face portions to effect discharge of air from either of said face portions and to vary the direction of air relative to said housing, an input connector projecting outwardly from one side of said housing, an output socket in the opposite side of said housing, a pair of electrical connectors from said input connection to said output socket, and electrical connections therefrom to said motor.

5. In a window fan, a substantially hollow housing comprising spaced face portions and interconnecting side portions, said face portions being apertured to provide a flow passage through said housing, a motor therein, a fan driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, the axis of rotation of said fan lying in a plane substantially perpendicular to said housing face portions, an input connector projecting outwardly from one side of said housing, an output socket in the opposite side of said housing and aligned with said input socket whereby a plurality of said housings may be connected in tandem, a pair of electrical connectors from said input connection to said output socket, a control switch in series with said motor and connected with the motor across said electrical connectors, and a room thermostat and off switch for controlling said motor, said room thermostat and off switch having a cord connection with said input connectors to provide for remote control of said motor.

6. In an air circulating system including an air reservoir, a confined space in which air is to be circulated, a window opening providing flow communication therebetween, the improvements comprising a pair of identical fan units, each of said fan units comprising a substantially hollow housing having spaced face portions and interconnecting side portions, said face portions being apertured to provide a flow passage through said housing, a motor within said housing, a fan driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, the axis of rotation of said fan lying in a plane substantially perpendicular to said housing face portions, said motor being adapted for adjustable positioning within said housing to vary the position of the inlet and outlet sides of said fan with respect to said housing face portions to effect discharge of air from either of said face portions and to vary the direction of air relative to said housing, means for electrically connecting said fan units together in tandem, comprising an input connector projecting outwardly from one side of each of said housings, an output socket in the opposite side of each of said housings, a pair of electrical connectors from the input connection to the output socket of each unit, and a control switch in series with said motor and connected with the motor across the electrical connectors of one of said units, said pair of fan units when so connected being positioned with adjacent sides thereof in contacting engagement to form an integral assembly substantially filling the entire area of said window opening, whereby flow communication there-through may be regulated by said fans, one of said fans being operative to effect air flow through said housing in a first direction, the other of said fans being operative to effect air flow in a second direction opposite to said first, thereby providing a complete circulating cycle between said air reservoir and said confined space.

7. In an air circulating system including an air reservoir, a confined space in which air is to be circulated, a window opening providing flow communication there-

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between, the improvements comprising a pair of identical fan units, each of said fan units comprising a substantially hollow housing having spaced face portions and interconnecting side portions, said face portions being apertured to provide a flow passage through said housing, a motor within said housing, a fan having an inlet and an outlet side driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, the axis of rotation of said fan lying in a plane substantially perpendicular to said housing face portions, said motor being swingable about an axis to vary the position of the inlet and outlet sides of said fan with respect to said housing face portions to effect discharge of air from either of said face portions and to vary the direction of air relative to said housing, means for electrically connecting said fan units together in tandem, comprising an input connector projecting outwardly from one side of each of said housings, an output socket in the opposite side of each of said housings, a pair of electrical connectors from the input connection to the output socket of each unit, and a control switch in series with said motor and connected with the motor across the electrical connectors of one of said units, said pair of fan units when so connected being positioned with adjacent sides thereof in contacting engagement to form an integral assembly substantially filling the entire area of said window opening, whereby flow communication therethrough may be regulated by said fans, one of said fans being operative to effect air flow through said housing in a first direction, the other of said fans being operative to effect air flow in a second direction opposite to said first, thereby providing a complete circulating cycle between said air reservoir and said confined space.

8. In a window fan, a housing adapted to be positioned in a window opening, said housing being substantially hollow and comprising parallel spaced face portions and parallel spaced side portions interconnecting said face portions, said face portions having openings therein to provide a flow passage through said housing, a motor therein, a fan driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, the axis of rotation of said fan lying in a plane substantially perpendicular to said housing face portions, an input connector projecting outwardly from one side of said housing, an output socket in the opposite side of said housing and aligned with said input socket whereby a

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plurality of said housings may be connected in tandem, a pair of electrical connectors from said input connection to said output socket, and a control switch in series with said motor and connected with the motor across said electrical connectors.

9. A window fan comprising a housing adapted to be positioned in a window opening, said housing being substantially hollow and comprising parallel spaced face portions and perpendicular pairs of parallel spaced side portions interconnecting said face portions, said face portions having openings therein to provide a flow passage through said housing, a motor therein, a fan having an inlet and outlet side driven by said motor to draw air into one of said face portions of said housing and discharge it from the other, said motor being swingable about an axis to vary the position of the inlet and outlet sides of said fan with respect to said housing face portions to effect discharge of air from either of said face portions and to vary the direction of air relative to said housing, said axis being parallel to one of said pairs of housing side portions and perpendicular to the other, said housing being alternatively positionable on its side portions with said axis vertical or horizontal, whereby the direction of air flow may be varied in either a horizontal or vertical plane, and input connector projecting outwardly from one side of said housing, an output socket in the opposite side of said housing, a pair of electrical connectors from said input connection to said output socket, and electrical connections therefrom to said motor.

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