

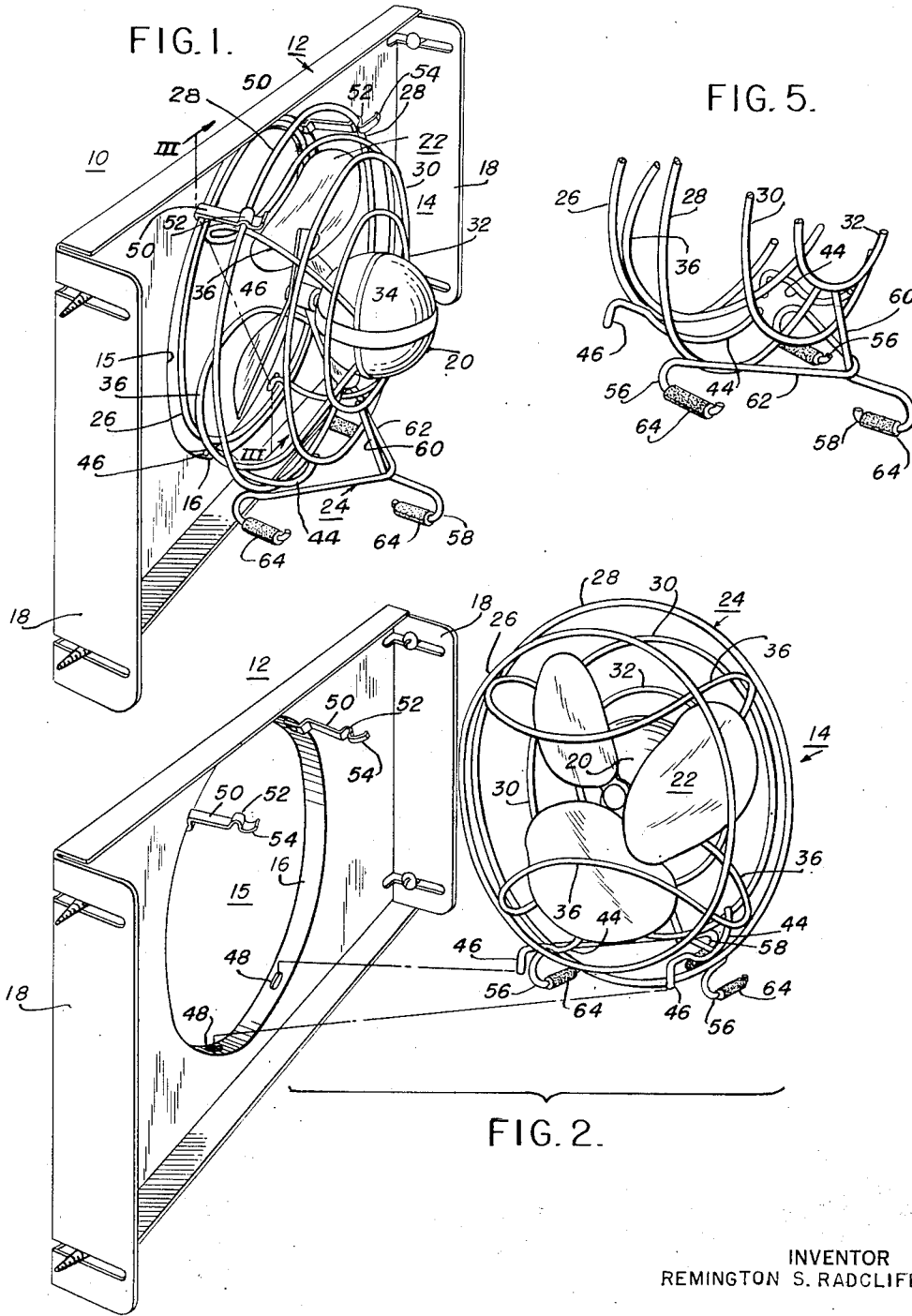
Dec. 2, 1952

R. S. RADCLIFFE
AIR TRANSLATING APPARATUS

2,620,127

Filed Feb. 28, 1950

2 SHEETS—SHEET 1



INVENTOR
REMINGTON S. RADCLIFFE

BY *R. J. Eisinger*
ATTORNEY

Dec. 2, 1952

R. S. RADCLIFFE

2,620,127

AIR TRANSLATING APPARATUS

Filed Feb. 28, 1950

2 SHEETS—SHEET 2

FIG. 3.

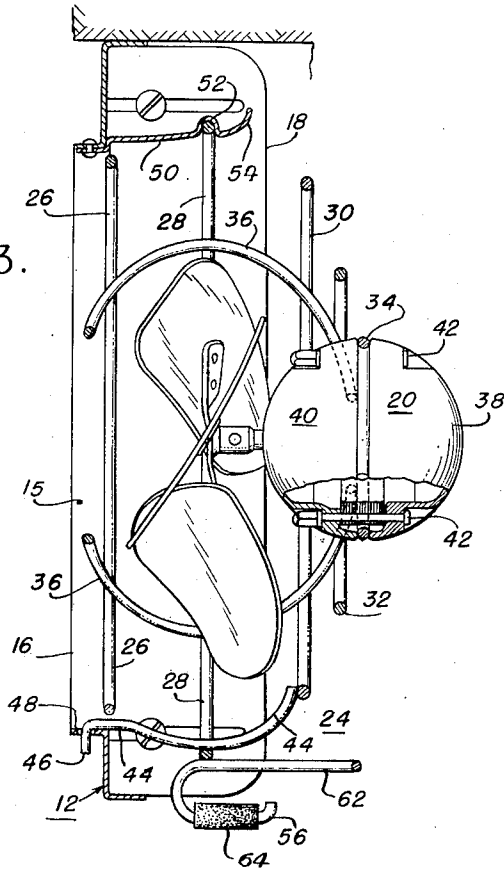
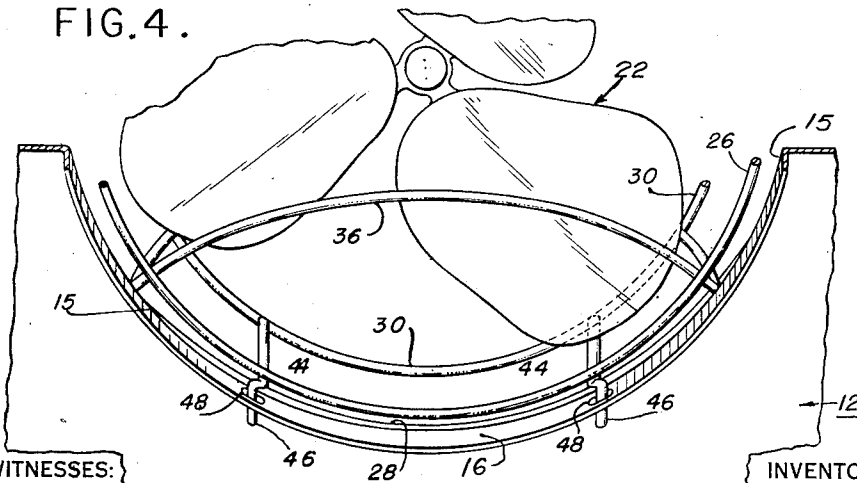


FIG. 4.



WITNESSES:

D. J. McCarty
E. H. Lutz

INVENTOR

REMINGTON S. RADCLIFFE

BY *R. J. Eisinger*
ATTORNEY

UNITED STATES PATENT OFFICE

2,620,127

AIR TRANSLATING APPARATUS

Remington S. Radcliffe, Springfield, Mass., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application February 28, 1950, Serial No. 146,649

4 Claims. (Cl. 230—259)

1

This invention relates to ventilating and air circulating fans in general, and more particularly to an electrically driven fan which may be used either as a window mounted exhaust fan or as a portable air circulating fan for a room.

It is an object of the present invention to provide a window mounting structure having a fan unit detachably mounted on a panel for operation as an exhaust fan, which fan may be easily and quickly detached for operation as a portable desk fan.

It is another object of the invention to provide an improved means for detachably mounting the fan unit to the panel.

A further object is to provide the fan unit with a wire structure comprising the impeller guard, motor mount, supporting foot structure and panel mounting means.

The invention is illustrated in the following drawings in which:

Fig. 1 is a rear perspective view of the fan unit and the panel;

Fig. 2 is a perspective view showing the fan unit removed from the panel;

Fig. 3 is a section taken on line III—III of Fig. 1;

Fig. 4 is a fragmentary front perspective view showing the lower locking arrangement; and

Fig. 5 is a fragmentary rear perspective view of the impeller guard showing the mounting hooks and supporting feet.

Referring to the drawings and particularly to Figs. 1, 2 and 3, there is shown a fan structure generally designated 10, having a window mounting panel 12 and a detachable fan unit 14. As shown in Fig. 1, the fan structure serves as a window mounted fan of the type usually employed to exhaust air from a dwelling room. The panel 12 may be made of sheet metal and is provided with a centrally located circular exhaust opening 15 defined by an outwardly extending collar 16. The opposite end portions of the panel are bent back to form a pair of vertical flanges 18, whereby the panel may be mounted in a window frame (not shown) in a well-known manner.

The fan unit 14 comprises an electric fan motor 20 having an output shaft, a directly driven impeller 22 carried by the shaft and an impeller guard 24. The impeller guard 24 is preferably fabricated of wire and includes a plurality of guard rings 26, 28, 30, 32 and a motor mounting ring 34 of varying diameters arranged in concentric relation with the motor shaft. The rings are united at a plurality of points by

2

cross-members 36, which are welded to the rings to form a unitary structure. The ring 34 (as best shown in Fig. 3) encircles the fan motor 20 and is clamped between the halves of the motor casing 38 and 40 by a plurality of bolts 42 to support the motor in the guard structure 24.

A pair of formed wire members 44 provided with downwardly bent hook portions 46 are fastened to the lower portion of the impeller guard 24 by welding. Although the members 44 may be fastened to any portion of the guard as desired, I have shown them fastened to the rings 30 and 28. The portion of member 44 adjacent the hook 46 is spaced from the ring 26 for a purpose which will be described later.

The exhaust collar 16 is provided with a pair of openings or slots 48 disposed in its lower portion and spaced to receive the hooks 46. The upper portion of the collar is provided with a pair of latches or spring clips 50 having bent portions 52 adapted to engage the guard ring 28. The end portions of the clips may be bent outwardly to provide cam surfaces 54 which permit the ring 28 to be snapped into engagement with the bent portions 52.

The impeller guard 24 is provided with a supporting foot structure having a pair of laterally disposed feet 56 and a rear foot 58. The foot structure may also be formed of wire and includes a rear member 60 having its upper end fastened to guard ring 32 and its lower end bent into an open loop to form the rear foot 58. A V-shaped wire member 62 having its central portion fastened to the rear member 60, has its end portions bent into similar open loops to provide the lateral feet 56 and is fastened to the guard ring 28 adjacent the lateral feet. To prevent the scratching of polished table or desk tops and also to prevent slippage of the unit 14 when in operation as a desk fan, the feet may be covered with short pieces of rubber tubing 64 or the like.

When it is desired to mount the fan unit on the panel, the hooks 46 are first engaged with the slots 48 while the unit is held in a rearwardly tilted position. The unit is then rotated forwardly about the hooks 46 and urged against the clips 50, whereby the cam surfaces 54 deflect and permit the ring 28 to be snapped into engagement with the bent portions 52.

The fan unit is now mounted with the impeller 22 in registry with the opening 15. Upon energization of the motor 20, which may be effected in any suitable manner already well known, the

impeller is effective to effect flow of air through the opening 15. Referring to Fig. 3, the flow of air is from the right to the left. This assembled fan structure is ideally suited, for example, to serve as a window mounted kitchen exhaust fan.

The fan unit 14 may easily and quickly be removed from the panel 12, as when it is desired to operate the fan as a desk type fan. This is accomplished by flexing the spring clips 50 out of engagement with the guard ring 28, tilting the fan unit rearwardly about the hooks 46 as an axis to clear the clips, and then lifting the unit to disengage the hooks 46 from their mating slots 48. The fan is now adapted to serve as a table-top or desk fan, in which case the fan is supported by the feet 56 and 58.

It will thus be seen that I have provided a fan structure which is fully adapted to serve as either a window mounted or panel fan, or as a desk or table-top fan. A simple and quickly operated means is provided for attaching the fan unit to the panel or removing it therefrom.

The structure above described provides a sturdy mounting arrangement for an exhaust fan which is rattle-proof. Motor noises which would otherwise be transmitted to the panel 12 are substantially reduced, since the fan unit is, in effect, spring mounted on the panel. The hook members 44 are free to absorb the motor noises and the space between the members 44 and the guard ring 26 permits any vibration to occur quietly.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What I claim is:

1. In combination, a substantially vertical panel having a ventilating opening therein and a fan unit detachably mounted on said panel in registry with said opening; said fan unit comprising a wire frame, a motor mounted on said frame and an impeller attached to the shaft of the motor, said wire frame including an impeller guard having a front ring and a rear ring arranged concentrically with said shaft, a resilient hook member, said hook member being fastened to the lower portion of said rear ring and extending forwardly beyond said front ring and engaging said panel adjacent the lower portion of said opening, said panel having a spring latch member disposed adjacent the upper portion of said opening engaging said frame in the direction to maintain said hook member in engagement with said panel, said hook member being spaced from said front ring and serving to absorb vibrations of the motor and the impeller, and said fan unit being detachable from said panel by sequentially disengaging said latch from said ring and disengaging said hook from said panel.

2. A panel having an opening therein and a fan unit adapted to be detachably mounted on said panel in registry with said opening to provide room ventilation, said fan unit comprising a wire frame having a front ring and a rear ring arranged concentrically with said shaft, a motor supported by said frame and an impeller attached to the shaft of said motor, and means for detachably interlocking said unit to said panel, said means including a resilient hook member attached to the lower portion of said rear ring and

extending forwardly beyond said front ring and adapted to be received within the lower portion of said opening, said means further including a spring latch member carried by the upper portion of said panel and adapted to engage the upper portion of the frame to complete the interlock, said hook member being spaced from said front ring and serving to absorb vibrations of the motor and the impeller, and said unit being adapted to serve as an air circulating fan when detached from said panel and having a plurality of supporting feet, said unit being attachable to said panel by sequentially engaging said hook in said opening and engaging said frame by said latch.

3. In combination, a panel having a ventilating opening therein and a fan unit detachably mounted on said panel in registry with said opening; said fan unit comprising a motor, an impeller attached to the shaft of the motor, an impeller guard supporting said motor and having a guard ring and a pair of spaced hook members, said panel having a pair of slots adjacent one side of the opening adapted to receive said hook members and a spring clip remotely spaced from said slots but adjacent said opening and adapted to receive said guard ring, said spring clip having a cam portion arranged to deflect and permit said guard ring to engage said clip when said fan unit is urged against said cam portion to thereby firmly but detachably secure said fan unit on said panel.

4. A panel having an opening therein and a fan unit adapted to be detachably mounted on said panel in registry with said opening to provide room ventilation, said fan unit comprising a motor, an impeller directly driven by said motor, an impeller guard supporting said motor, and means for detachably interlocking said fan unit to said panel, said means including a pair of spaced hook members attached to the lower portion of the frame and extending downwardly, and a pair of slots in said panel for receiving said hooks, said means further including a latch member carried by the upper portion of the panel and having a cam portion arranged to deflect and permit the upper portion of the frame to be gripped by said latch when said unit is urged against said cam portion to complete the interlock, said unit being adapted to serve as a desk fan when detached from said panel and having a plurality of supporting feet, said feet being provided by a formed wire member rigidly attached to the frame.

REMINGTON S. RADCLIFFE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,329,816	Winslow -----	Feb. 3, 1920
1,738,719	Morse -----	Dec. 10, 1929
1,917,327	Preston -----	July 11, 1933
1,935,179	Orear -----	Nov. 14, 1933
2,100,923	Schmidt et al. -----	Nov. 30, 1937
2,215,035	Gundelfinger -----	Sept. 17, 1940
2,258,325	Hess et al. -----	Oct. 7, 1941
2,325,754	Ebert -----	Aug. 3, 1943
2,418,760	Cucci -----	Apr. 8, 1947