

Oct. 17, 1967

R. S. RADCLIFFE

3,347,452

FAN CONSTRUCTION

Filed Jan. 14, 1966

2 Sheets-Sheet 1

FIG. 1.

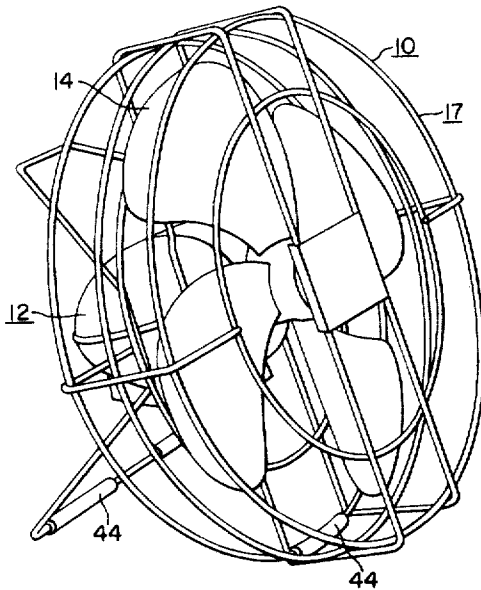


FIG. 2.

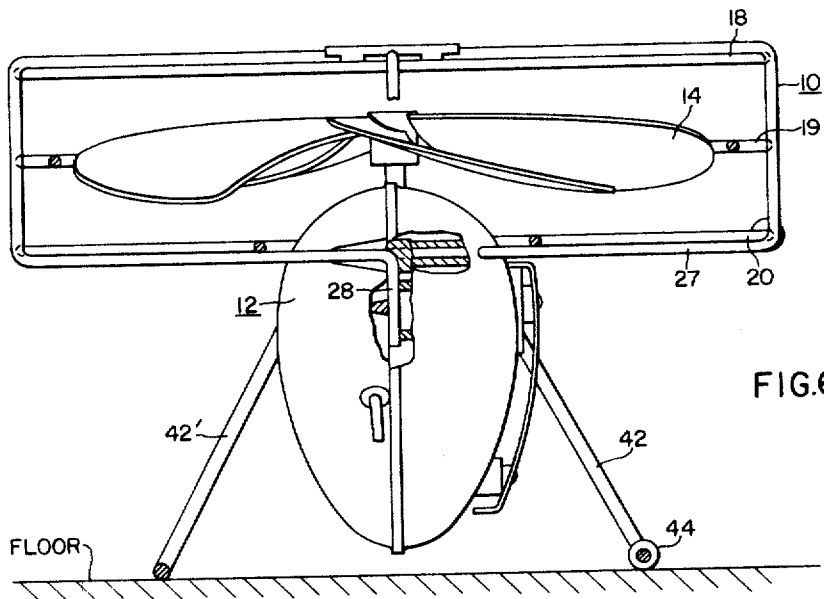
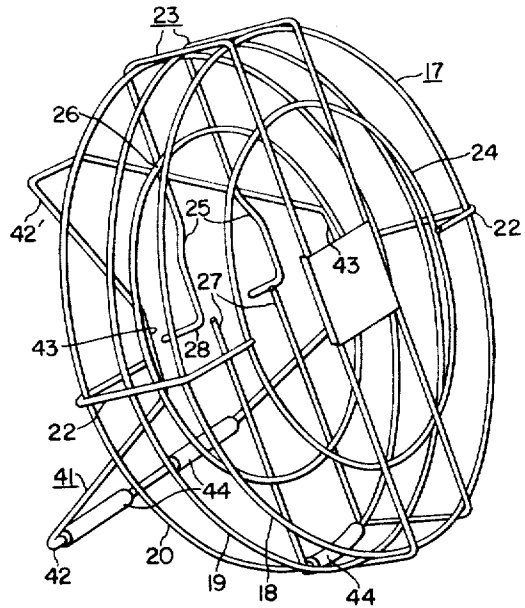


FIG. 6.

WITNESSES

Theodore F. Wrobel
Robert C. Baird

INVENTOR

Remington S. Radcliffe

BY *B. Sklar, Jr.*

AGENT

Oct. 17, 1967

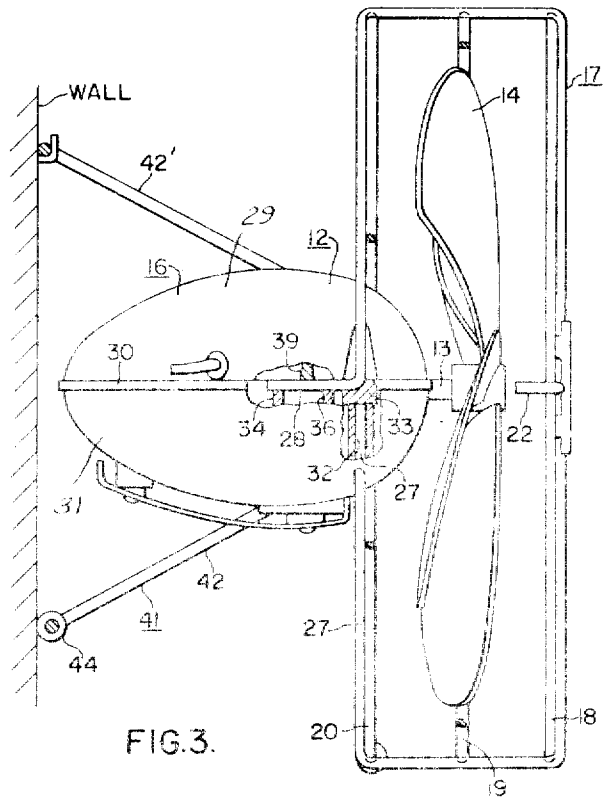
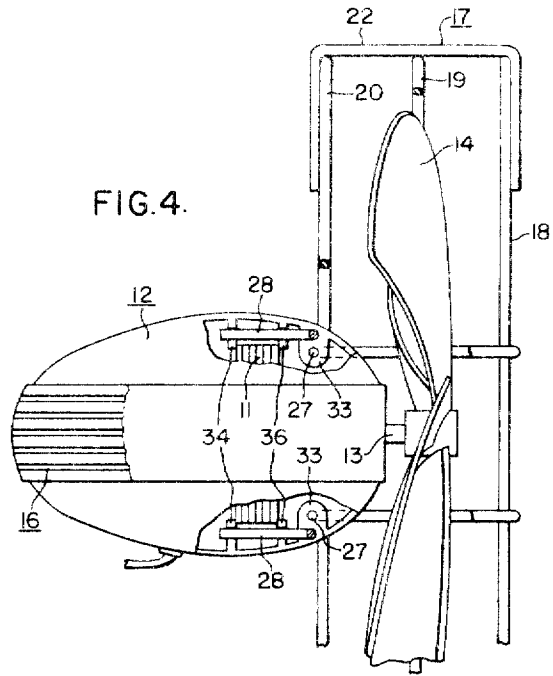
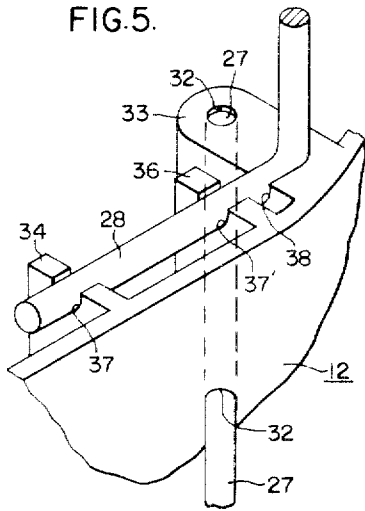
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FAN CONSTRUCTION

Remington S. Radcliffe, Lexington, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

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6 Claims. (Cl. 230—259)

This invention relates, in general, to fan constructions and, more particularly, to a multi-purpose fan construction.

The general object of this invention is to provide a new and improved fan construction adapted for use as a wall, desk or hassock-type air circulating means.

It is a more particular object of this invention to provide, in a portable type fan construction, new and improved means for supporting the motor and motor housing.

Another object of this invention is to provide new and improved fan guard and support structure therefor to which air circulating means can be assembled without the use of fasteners or special tools.

Still another object of this invention is to provide a new and improved fan construction which can be fabricated inexpensively by simple manufacturing techniques.

These and other objects and advantages of the present invention will become more apparent when considered in view of the following detailed description, and drawings, in which:

FIGURE 1 is a perspective view of a fan construction illustrating one operating position thereof;

FIG. 2 is a perspective view of a fan guard and support structure with the air circulating means of FIG. 1 removed;

FIG. 3 is a side elevational view, partly broken away, of the fan construction illustrated in FIG. 1, but in another operating position;

FIG. 4 is a fragmentary top view, partly broken away, of the fan shown in FIG. 3;

FIG. 5 is a fragmentary perspective view illustrating motor support means forming a part of the invention; and

FIG. 6 is a view illustrating still another operating position of the fan construction shown in FIG. 1.

Referring to the drawings, especially FIGS. 1, 3 and 4 reference character 10 indicates generally a fan construction comprising an electric motor 11 (see FIG. 4) supported in a motor housing 12. A shaft 13 (FIGS. 3 and 4), coaxially mounted relative to the rotor of the motor 11 and operatively connected thereto, extends beyond the front of the housing 12 for receiving a multiple blade air impeller 14 which together with the motor 11 forms air circulating means generally indicated by reference character 16. A cage-like guard or framework 17 supports the housing 12, in a manner to be described hereinafter, such that the impeller 14 is completely disposed therein while the major portion of the motor housing lies outside thereof and extends rearwardly thereof.

The cage-like guard 17 (see FIG. 2) comprises a plurality of coaxial wire hoops 18, 19 and 20 of equal diameter which are fixedly spaced from each other by a pair of U-shaped rib members 22 and a pair of substantially rectangular-shaped rib members 23, the rib members being secured to the outer portions of the hoops in any suitable manner, for example, by spot welding. A wire hoop 24 of a smaller diameter than the hoop 18 is also secured to the rib members, and is supported thereby such that it lies in the plane of the hoop 18 and is concentric therewith. A second hoop 26 of equal diameter with the hoop 18 is similarly supported by the rib members but in the plane of the hoop 20.

The hoops 18, 19, 20, 24 and 26 are fabricated by bend-

ing a desired length of suitable gauge, for example, .135 inch diameter, steel wire, into a circular configuration and securing the ends thereof one to the other in any suitable manner, for example, by butt welding in accordance with well known practices. Unlike the hoop ends, the ends of the rectangular-shaped rib members 23, of which there are two, are not joined together in order that they may be inserted into the motor housing 12 for support thereof. A segment or straight portion 27 of each of the rib members 23 extends inwardly, from a point on the circumference of the hoop 20 and terminates approximately at a point in a plane occupied by the horizontal diameter of the hoop 26. The segment 27 lies in a plane which is substantially perpendicular to and therefore intersects the plane occupied by an offset segment or portion 28 of each of the rectangular rib members 23, the offset portion extending rearwardly of the framework 17. As viewed in FIG. 2, the rib members 23 are slightly curved as indicated at 25 so that the offset portions straddle the motor and lie outside of the segments 27, see FIG. 4.

The motor housing 12 comprises a substantially hollow upper section 29 and a substantially hollow lower section 31 (see FIGS. 3 and 5) adapted to be secured together by suitable fastening means, not shown, and separable along a line indicated by reference character 30. The lower housing section 31 has a pair of elongated bores 32 provided in sidewardly projecting shoulder 33. The segments 27 of the rectangular rib members 23 are insertable, one each, in each of the bores 32 and thereby serve, in one operating position (see FIG. 6) of the air circulating means 16, to support the weight thereof while in another operating position (see FIG. 3) they serve to fix the horizontal position of the air circulating means relative to other parts of the fan construction 10. The lower housing section 31 is further provided with two pairs of inwardly projecting and spaced apart shoulders 34 and 36 each provided respectively with recess 37, 37' for receiving one end and an intermediate portion of one of the offset segments 28. A recess 38 is also provided in each of the shoulders 33 for receiving the other end of the offset segment 28.

The upper housing section 29 is provided with a pair of sidewardly projecting post members 39, only one of which is shown, which abut the top of the offset segments 28 intermediate the length thereof when the upper and lower housing sections are assembled. Each of the offset segments 28 is thereby captivated between the posts 39 and the wall portions defining the bottoms of the recesses (see FIG. 3).

A support structure 41 is fabricated by bending a single piece of steel wire to form a pair of bail-shaped leg members 42 and 42' joined by intermediate portions 43, the ends of the wire being connected as by butt welding. The intermediate portions 43 are spot welded to opposite sides of the hoop 26 such that the leg members 42 and 42' extend rearwardly of the guard 17 (see FIGS. 1 and 3), and such that they straddle the major portion of the housing 12 and the bight portions thereof terminate in the same plane at a point slightly beyond the rear end of the housing (see FIG. 3) whereby the bight portions can simultaneously contact a flat surface without the end of the motor housing contacting the surface.

The leg member 42 and a part of the wire hoop 20 intermediate the rectangular rib members 23 are provided with a plurality of sleeves or feet 44, made from any suitable material, for example, soft plastic. The purpose of the sleeves is to prevent marring of a supporting surface which would otherwise be contacted by bare metal wire. The sleeves may be installed in any convenient manner, for example, by first splitting the sleeve along its longitudinal axis and then inserting the wire between the severed por-

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tions of the sleeve. With the sleeves or feet 44 installed, the fan construction 10 may be simultaneously supported thereon as shown in FIG. 1 which illustrates the use of the invention as a desk or a table top fan. Alternately the fan construction 10 may be supported on a horizontal surface such as a floor by the bight portions of the leg members 42 and 42' (see FIG. 6) for use as a floor or hassock-type fan. The fan construction 10 may also be hung on a vertical wall (see FIG. 3) by the bight portion of the leg member 42', the leg member 42 serving to hold the motor housing 12 out of contact with the wall.

Since numerous changes may be made in the above-described apparatus and different embodiments of the invention may be made without departing from the spirit thereof, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings, shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. Multi-purpose fan structure comprising: air circulating means including a motor, motor housing, a shaft coaxially mounted relative to said motor and adapted to be rotated thereby, said shaft extending forwardly of said motor housing, and air impeller means supported on said shaft for rotation therewith; a cage-like framework having a front and a rear; means forming a part of said framework for supporting said motor housing such that said air impeller is positioned within said framework and said motor housing extends rearwardly thereof; a support for said framework including a pair of divergent bail-shaped leg members each including a bight portion; said support being secured to said framework such that said leg members extend rearwardly of said framework and slightly beyond the rear end of said motor housing and said bight portions lie in the same plane on opposite sides of said motor housing permitting simultaneous contact of a flat surface by said bight portions without contact of said surface by said motor housing.

2. Structure as specified in claim 1, wherein at least one of said bight portions is provided with at least one resilient protective member for preventing marring of the surface contacted by said one of said bight portions.

3. Structure as specified in claim 1, wherein said motor housing support means comprises a plurality of rib mem-

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bers including portions lying in intersecting planes and insertable into said motor housing, the rib portions in one of said planes being adapted to support the majority of the weight of said air circulating means when in a first operating position and said rib portions in the other of said planes being adapted to support the weight of said air circulating means when in a second operating position.

4. Structure as specified in claim 3, wherein said motor housing comprises at least two sections one of which is provided with a plurality of recessed shoulders and elongated bores for receiving said rib member portions lying in intersecting planes and the other of which is provided with means abutting the opposite side of the rib member portions received in said recessed shoulders.

5. Structure as specified in claim 1, wherein said cage-like framework comprises a base adapted to cooperate with one of said leg members for supporting said framework and said air-circulating means on a flat surface.

6. A combination air impeller guard and motor support structure comprising: a plurality of coaxial hoops, first rib members secured to said hoops for maintaining them in spaced relationship, second rib members secured to said hoops, said second rib members having terminal portions lying in intersecting planes and adapted to be inserted into a motor housing for support thereof in at least two operating positions, and leg means secured to one of said hoops for supporting said hoops on a flat surface, said leg means being adapted to cooperate with means carried by one of said hoops for supporting said hoops on a flat surface.

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DONLEY J. STOCKING, *Primary Examiner*.

HENRY F. RADUAZO, *Examiner*.