

Dec. 29, 1953

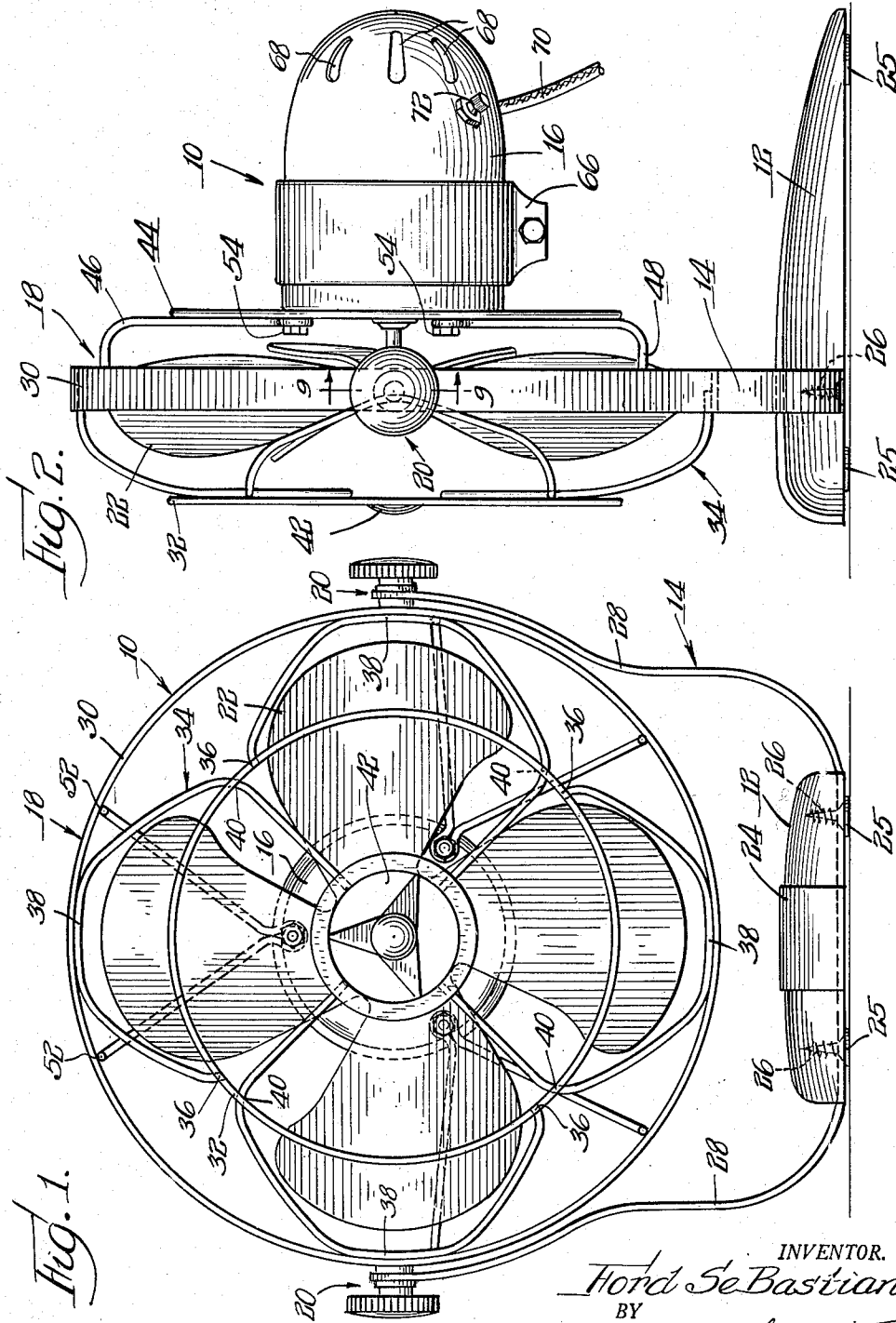
F. SE BASTIAN

2,664,242

ADJUSTABLE FAN WITH GUARD

Filed May 27, 1950

2 Sheets-Sheet 1



INVENTOR.
Ford Se Bastian
BY
Moore, Olson & Treflow
Attys.

Dec. 29, 1953

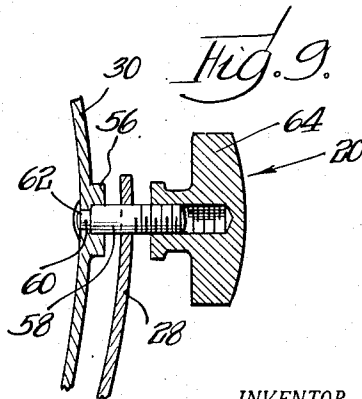
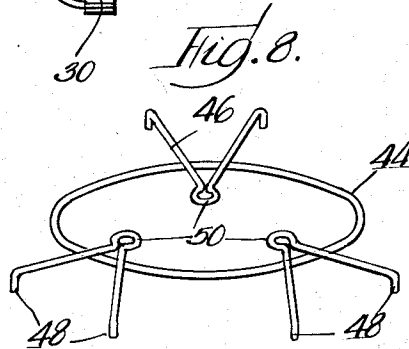
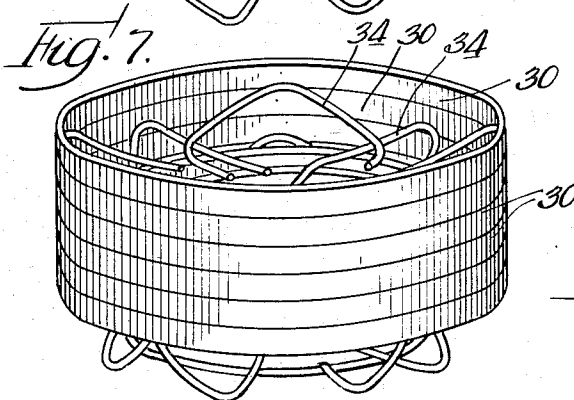
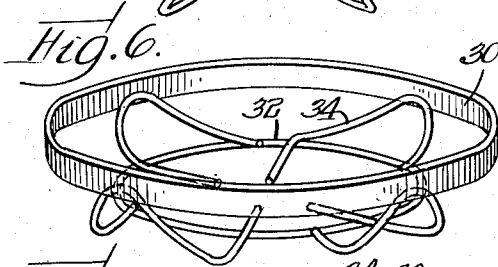
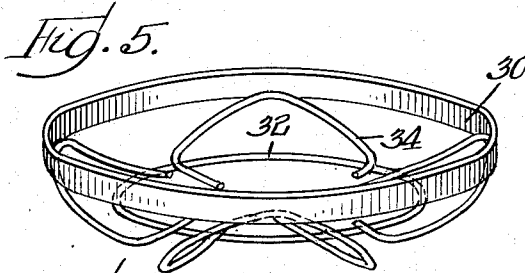
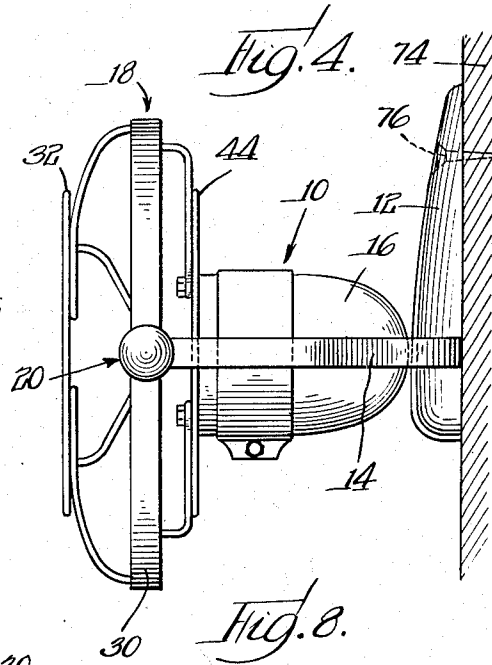
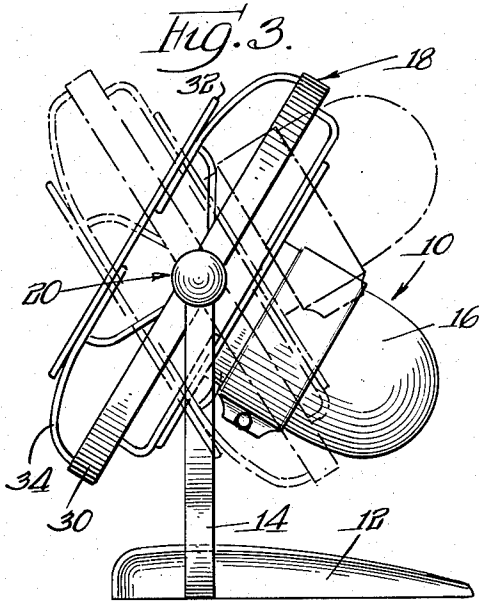
F. SE BASTIAN

2,664,242

ADJUSTABLE FAN WITH GUARD

Filed May 27, 1950

2 Sheets-Sheet 2



INVENTOR.

Ford SeBastian

BY

Moore, Olson & Treple
attys.

UNITED STATES PATENT OFFICE

2,664,242

ADJUSTABLE FAN WITH GUARD

Ford Se Bastian, Elmhurst, Ill., assignor, by mesne assignments, to The Silex Company, Hartford, Conn., a corporation of Connecticut

Application May 27, 1950, Serial No. 164,637

8 Claims. (Cl. 230-259)

1

This invention is concerned generally with an electric fan and more particularly with an adjustable electric fan and a cage or guard therefor.

Generally electric fans are provided with a base and support upstanding therefrom and pivotally connected to the casing of the fan motor. To control the direction of the air-stream, the pivotal connection is loosened and pressure is applied to the propeller guard with the fingers. The fingers are thus endangered by the propeller and if the pivotal connection is loosened without support for the propeller guard, the fan tips forward moving the center of gravity from above the base so that the entire structure tumbles over. The falling fan creates a great danger to persons and objects in its vicinity.

This invention generally contemplates the provision of an electric fan in which the propeller or blades of the fan along with the guard or cage and the fan motor are pivotally mounted relative to the base so that the air stream from the fan can be directed upwardly or downwardly as desired. The pivotal connection is made between the guard and a support extending upwardly from the base rather than in the conventional manner between a support and the motor casing so that the propeller and cage can be pivoted or tipped safely by moving the motor up or down rather than by pushing the guard and endangering the fingers. Positive locking means are provided for the pivotal connection so that the fan will remain in any desired adjusted position, and the supported pivoted structure lies entirely above the base at all times when the base is supported on a substantially horizontal surface so there is practically no danger of the fan's ever tipping over.

An object of this invention is the provision of an electric fan having a pivotal connection between the fan guard and a support with means for locking the pivotal connection in any desired position to control the direction of the air stream from the fan.

A further object of this invention is an electric fan as set forth in the above object in which the center of gravity of the pivotally supported structure lies above the fan base at all times when the base is supported on a horizontal surface.

In the assembly of mass production items it is desirable that separate pieces or sections of like configuration should be grouped in compact but readily separable relation so that each piece can be grasped readily by an operator for

2

assembly. It is important that little conscious effort need be exerted by the operator in grasping successive parts so that he can concentrate on assembling the parts. Fan blade or propeller guards are generally made of wire twisted into suitable convolutions. The wires of each guard encompass a considerable volume and present little supporting area so that heretofore it has been impossible to stack propeller guards one upon another so that they can be grasped readily by an operator for assembly.

This invention contemplates the provision of a two piece fan blade or propeller guard comprising generally a front section and a back or rear section so constructed that a plurality of front pieces can be stacked neatly one upon another in nested fashion and similarly a plurality of back pieces can be stacked one upon another in nested fashion. Generally, the front section of the cage or guard comprises a peripheral band of substantial longitudinal extent having wire guard members welded thereto on the inside thereof and extending inwardly and forwardly therefrom while the back piece comprises a wire ring having wire fasteners or spacers welded thereto and adapted to be welded to the peripheral band of the front piece and secured to the fan motor casing by bolts or screws.

An object of this invention is the provision of an electric fan having an improved fan blade or propeller guard or cage.

Another object of this invention is the provision in an electric fan of a two piece fan blade or propeller cage or guard with like pieces adapted to be stacked in nested relation prior to final assembly.

Other and further objects and advantages of the present invention will be apparent from the following description when taken in connection with the accompanying drawings in which:

Fig. 1 is a front view of an electric fan embodying the principles of my invention;

Fig. 2 is a side view of said fan;

Fig. 3 is a side view of the fan on a reduced scale showing adjusted positions thereof;

Fig. 4 is a side view of the fan as supported from a vertical surface such as a wall;

Fig. 5 is a perspective view of a front section of the propeller guard;

Fig. 6 is a perspective view similar to Fig. 5 showing the front section rotated substantially 45° about its longitudinal axis;

Fig. 7 is a perspective view showing a plurality of front sections stacked in nested relation;

3

Fig. 8 is a perspective view of a back section of a propeller guard; and

Fig. 9 is a sectional view taken substantially along the line 9—9 of Fig. 2.

Referring first to Figs. 1-4 an electric fan 10 may be seen to comprise generally a base or stand 12 having an upstanding support 14. A motor casing 16 is secured to a fan blade or propeller guard or cage 18 which is in turn secured to the support 14 by pivotal connections 20 and has a four bladed propeller 22 within it. When the base rests on a horizontal support, the center of gravity of the motor casing and enclosed motor, propeller, and guard is above the base as the parts are pivoted through substantially 180° to provide an airstream in any desired direction with no danger of tipping the fan.

The base 12 comprises an elongated metal casting which is streamlined to give a pleasing appearance, tapering in height from front to rear and having a longitudinal raised band or strap 24. The base 12 preferably varies in width from front to rear to provide an attractive appearance from above. A plurality of pads 25 of felt, rubber or the like are secured to the bottom of the base 12 as by an adhesive to prevent damage to a supporting surface. The support 14 comprises a continuous metal band secured in a transverse slot in the bottom of the base 12 by means such as screws 26. The support 14 extends upwardly from each side of the base 12 as a pair of arms 28 displaced outwardly and upwardly from the base and shaped arcuately at their extremities in close spaced relation to the cage 18.

The propeller cage or guard 18 comprises a peripheral band 30. A wire ring 32 of lesser diameter than the band 30 is spaced forwardly of the band 30 by symmetrically disposed wire spacers generally designated 34 welded to the inside of the ring 32 and band 30. There are four spacers 34 and each such spacer has one end 36 welded to the rear of the ring 32 from where the spacer curves outwardly and rearwardly to be welded to the band 30 along a portion where the spacer and band lie in substantially tangential contacting relation as at 38. From the welded junction 38 each spacer 34 curves forwardly and inwardly to the rear of the ring 32 where it is welded at 40. From the welded junction 40 each spacer 34 extends substantially radially inwardly to a button 42 aligned with the center of the propeller 22 where it does not interfere with the airstream from the fan. The button 42 may be secured by clamping or welding and may have some abstract ornamentation or may have a device or name indicative of the manufacturer of the fan. The parts of the fan blade or propeller guard or cage described heretofore comprise what will hereinafter be called the front piece or section of the guard.

The rear piece or element of the fan guard comprises a circular wire 44 conveniently of the same diameter as the circular wire 32 of the front section, and three symmetrically disposed spacers 46 welded to the front thereof. The spacers 46 are substantially V-shaped and have their arms curved sharply forward near the outer extremities to form fingers 48 fitting within the peripheral band 30 wherein they are welded upon final assembly of the fan guard. The apexes of the V-shaped spacers 46 extend inwardly of the ring 44 and are formed with eyelets 50.

As noted heretofore, prior to final assembly of the electric fan it is desirable to group simi-

4

lar parts so that each part as it is desired can be readily picked up by one assembling the fan. Each group of parts should be in orderly array so that a single part readily may be grasped without having it become entangled with other like parts. With particular reference to Figs. 5-7 it may be seen that a succession of front sections can be stacked one upon another as there is no structure overlying the front and rear edges of the bands 30. The wire rings 32 and spacers 34 are of considerably lesser longitudinal extent than the bands 30 and it may be seen that they will not contact one another when the front sections of the fan are stacked one upon another as shown in Fig. 7. When successive front sections are rotated substantially 45° as shown in Figs. 5-7, the spacers 34 of successive front sections are angularly displaced from one another so that there is no tendency for them to become entangled and an operator readily can grasp the top front section by means of a spacer 34 without contacting a spacer of the front section immediately therebelow.

The rear sections cannot be stacked in alignment as the fingers 48 on the spacers 46 have a longitudinal extent which is much greater than that of the wire ring 44 and the fingers thus would not be spaced apart and would contact one another. It may be seen in Fig. 8 that each spacer has an arcuate extent of less than one-sixth of a complete circle and as there are only three spacers it is possible to stack sections atop one another by rotating each succeeding section substantially 60°. Clearance for the fingers can be provided by rotating each successive section only a few degrees but the fingers on the remainder of the spacers then would be so positioned as to make it difficult to grasp only one spacer, and to make it possible for spacers to become entangled with one another upon careless lifting of the top section. Alternate sections cannot be stacked in exact alignment as the fingers 48 extend forwardly of the wire ring 44 a greater distance than the thickness of the succeeding section, but the wire ring and section immediately below provide sufficient spacing that there is no tendency to grasp two spacers simultaneously or to entangle spacers by careless lifting of the top section.

As the diameter of the propeller 22 is considerably greater than that of either of the wire rings 32, 44 it is preferable that the propeller should be placed between the front and back sections of the fan guard before these sections are welded together as at 52. The propeller is secured to the motor shaft extending from the front of the motor casing and the fan guard 18 is secured to the motor casing by bolts extending from the motor casing through eyelets 53 and nuts 54 threaded onto the ends of the bolts. Alternately, headed screws or bolts may be placed through the eyelets 50 and threaded into suitable recesses in the motor casing 16.

As noted heretofore the fan guard is pivotally connected to the support 14 by pivotal connections or couplings 20. Each of the pivotal connections as shown in detail in Fig. 9 comprises a circular boss 55 on the band 30 within which is secured a threaded bolt 58. The bolt is provided at its inner end with a reduced neck portion 60 thus forming a shoulder on the bolt which cooperates with a complementary shoulder in the boss 55 to prevent inward movement of the bolt. Outward movement of the bolt is pre-

5

vented by a peened over head 62. The bolt fits through an aperture near the end of the arm 28 and a nut 64 preferably having a knurled edge is threaded onto the bolt so that the arm 28 can be clamped between the nut and the boss 56 to support the propeller guard in any desired position. As the motor housing 16 and propeller 22 are supported by the guard 18 they will be tilted along with the fan guard to direct the airstream in any desired direction.

The motor casing 16 is made in two parts for ready access to the motor and the two parts are secured together by a split clamp 66. Slots 68 are provided in the rear of the motor housing for ventilation of the motor and power is supplied to the motor through a line cord 70 and an on-off switch 72 exposed near the rear of the casing 16.

As may be seen in Figs. 2 and 3, the base 12 extends forwardly and rearwardly sufficiently far that when the base is supported on a substantially horizontal surface, the motor casing lies above the base 12 and the center of gravity of the supported structure comprising the motor and casing, the propeller, and the propeller guard 18 projected downwardly falls within the confines of the base 12 when the supported structure is positioned as in Fig. 2 to give a substantially horizontal airstream or is tilted up or down as shown in Fig. 3. Thus there is no tendency for the fan to tip over.

The fan may be supported from a substantially vertical surface such as a wall 74 (Fig. 4) by means of a nail or screw 76 placed through a central aperture near the rear end of the base 12. It may be seen that the motor casing and support 14 are suitably dimensioned to allow swinging of the motor casing 10 past the base 12 so that a horizontal or upwardly or downwardly directed airstream may be procured with the fan base supported on a substantially vertical surface.

The fan herein disclosed, having a pivotal support connection on the fan guard rather than on or directly beneath the motor casing, readily may be tipped by moving the motor casing up and down. The fingers need not be placed on the propeller guard adjacent the propeller where they readily may be struck by the propeller if extreme care is not exercised. The relative dimensions and positioning of the supported structure and the base of the fan are such that there is no danger of tipping when the fan is supported on a substantially horizontal surface and the base is adapted to be hung from a substantially vertical support such as a wall. The construction of the fan guard is such that before the front and rear sections thereof are assembled, like sections may be stacked one upon another in nested relation.

Although a particular embodiment of this invention has been shown and described it is apparent that this is for illustrative purposes only and that the invention is to include all that which is comprehended by the following claims.

I claim:

1. An electric fan comprising an elongated base of substantial mass and having a transverse slot in the bottom thereof, support means including an integral strip secured within said slot and forming a flush surface with said base, said strap being upwardly directed substantially from each side of said base, a propeller guard, means for pivotally securing said propeller guard to said supporting means, means for locking said securing means with said guard and support means

6

in any relative predetermined position, electric motor means carried by said guard above said base when said base is supported on a substantially horizontal surface, and a propeller within said guard and rotatable by said motor means.

2. An electric fan comprising an elongated base, support means extending upwardly and outwardly from said base near the forward end thereof and including a pair of arms, a propeller guard pivotally carried between said pair of arms at a predetermined distance from said base, electric motor means carried by said guard and extending rearwardly of said guard from the pivotal connection a distance less than the distance of said pivotal connection from said base to allow pivoting of said motor and guard through a vertical position when said base is supported on a substantially horizontal surface, said base extending farther to the rear than said motor means, and a propeller mounted within said guard and rotatable by said motor.

3. An electric fan as set forth in claim 2 wherein the base is at least as wide as the motor means and is narrower than the diameter of the guard.

4. An electric fan structure comprising a base, support means upstanding from said base, motor means, a propeller driven by said motor means, a guard for said propeller secured to said motor means and carried by said upstanding support means, said guard including a circular peripheral band of ribbon-like configuration substantially flat in cross section and lying outside the path of said propeller, a second band of lesser extent than said peripheral band, a plurality of symmetrically disposed spacers interconnecting said band and supporting said second band forwardly of the path of said propeller, a third band, and a plurality of symmetrically disposed spacers supporting said third band from said peripheral band and disposed to the rear of the path of said propeller.

5. An electric fan structure comprising a base, support means upstanding from said base, motor means, a propeller driven by said motor means, a guard for said propeller secured to said motor means and carried by said upstanding support means, said guard including a circular peripheral band lying outside the path of said propeller and formed of a relatively wide strip of sheet material substantially flat in cross section, a second band of lesser extent than said peripheral band, a plurality of symmetrically disposed spacers interconnecting said bands and extending inwardly of said second band, said second band being supported forwardly of the path of said propeller, a third band, and a plurality of symmetrically disposed spacers supporting said third band from said peripheral band to the rear of the path of said propeller, said last named spacers having structure adapted to be secured to said motor means.

6. An article of manufacture for use with an electric fan having electric motor means and a propeller driven thereby, comprising a propeller guard having front and rear sections; said front section comprising a peripheral band substantially flat in cross section and having a predetermined longitudinal dimension, elongated guard members secured to the inside of said peripheral band and extending inwardly and forwardly therefrom and having a thickness less than the longitudinal dimension of said band; and said rear section comprising a band of lesser extent than said peripheral band and a plurality of symmetrically disposed spacers secured to said

7

rear section band and adapted to be secured to said peripheral band and to fan motor means; like sections being nestable one within another.

7. An article of manufacture for use with an electric fan having electric motor means and a propeller driven thereby, comprising a propeller guard having front and rear sections; said front section comprising a peripheral band of sheet material substantially flat in cross section and having a predetermined longitudinal dimension, a second band having lesser longitudinal and radial dimensions, and a plurality of symmetrically disposed wire spacers each having a thickness less than the longitudinal dimension of said peripheral band interconnecting said bands and maintaining said second band forwardly of said peripheral band; said rear section comprising a band of lesser radial dimension than said peripheral band and a plurality of symmetrically disposed spacers adapted to be secured to said peripheral band of said front section and to fan motor means; the arcuate extent of each of said spacers being no more than the arcuate spacing between adjacent spacers; like sections being nestable one within another.

8. An article of manufacture for use with an electric fan having electric motor means and a propeller driven thereby, comprising a propeller guard having front and rear sections; said front section comprising a substantially circular peripheral band of sheet metal and having a predetermined longitudinal dimension and a predetermined diameter, said band being of ribbon-like configuration substantially flat in cross sec-

8

tion, a substantially circular wire ring thinner than the predetermined longitudinal dimension of said peripheral band and having a diameter less than that of said peripheral band, and a plurality of symmetrically disposed wire spacers connected to the inside of said peripheral band and extending inwardly and forwardly therefrom to support said wire ring while extending inwardly thereof; said rear section comprising a wire ring of lesser diameter than the peripheral band of said front section and a plurality of symmetrically disposed wire spacers secured to said rear section wire ring and adapted to be secured to the inside of the peripheral band of said front section and to fan motor means, each of said wire spacers being substantially V-shaped and having an arcuate extent less than the arcuate spacing between adjacent spacers; like sections being nestable one within another.

FORD SE BASTIAN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
D. 154,703	Phillips	Aug. 2, 1949
2,123,448	Weber	July 12, 1938
2,166,987	Fitzgerald	July 25, 1939
2,259,853	Koch	Oct. 21, 1941
2,345,516	Weber	Mar. 28, 1944
2,352,485	Kritzer	June 27, 1944
2,463,337	Weber	Mar. 1, 1949
2,498,968	Viewegh	Feb. 28, 1950