Nov. 17, 1942. G. H. KOCH 2,301,953

AIR TRANSLATING APPARATUS

Filed April 9, 1940

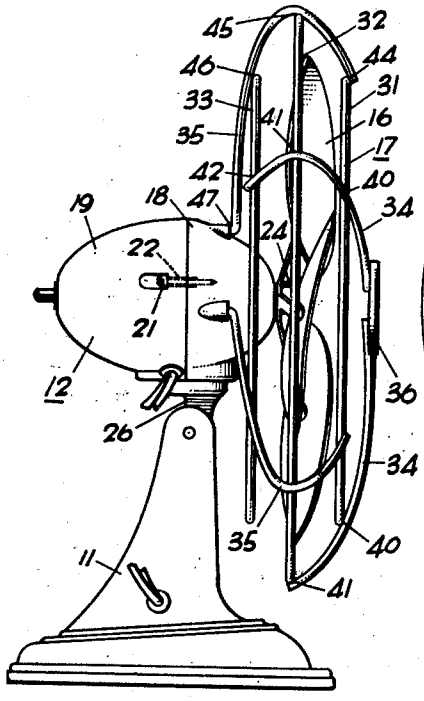


FIG. 1.

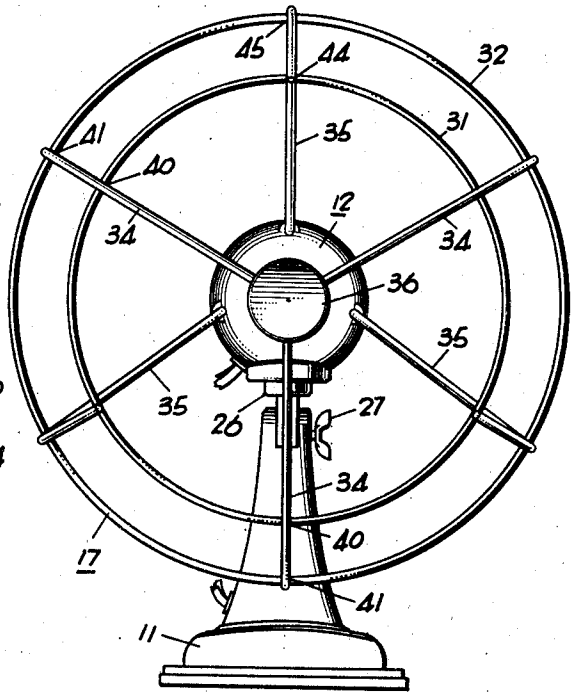


FIG. 2.

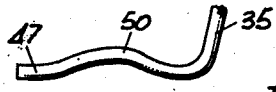


FIG. 5.

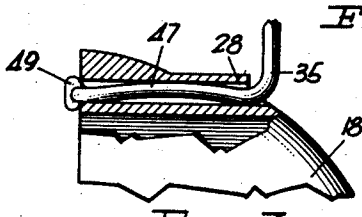


FIG. 3.

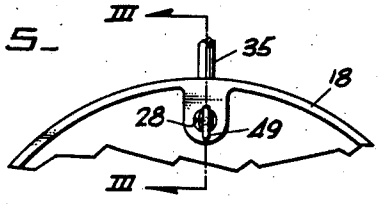


FIG. 4.

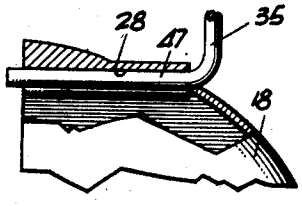


FIG. 6.

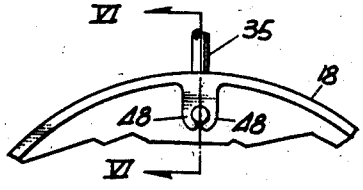


FIG. 7.

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UNITED STATES PATENT OFFICE

2,301,953

AIR TRANSLATING APPARATUS

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Application April 9, 1940, Serial No. 328,602

4 Claims. (Cl. 230—275)

My invention relates to an electric fan and has for an object to provide improved apparatus of the character set forth.

An object is to provide an electric fan which will be economical to manufacture and ornamental in design.

A specific object is to provide an electric fan in which the fan guard may be attached to the motor housing without the use of expensive eyes and screws.

Another object is to provide an electric fan in which the fastening means for fastening the fan guard to the motor housing is located inside of the motor housing.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawing, forming a part of this invention, in which:

Fig. 1 is a side elevational view of a fan embodying my invention;

Fig. 2 is a front elevational view with the fan blade removed;

Fig. 3 is a fragmentary detail view, in section taken on line III—III of Fig. 4 showing one embodiment of the fastening means between the motor housing and fan guard;

Fig. 4 is a fragmentary end elevational view of the structure shown in Fig. 3;

Fig. 5 is a detail view showing, slightly exaggerated, the portion of the fan guard which is attached to the motor housing in Fig. 3;

Fig. 6 is a fragmentary detail view in section taken on line VI—VI of Fig. 7, showing a second embodiment of the fastening means between the motor housing and fan guard; and

Fig. 7 is a fragmentary end elevational view of the structure shown in Fig. 6.

Referring now to the drawing more in detail, I show, in Figs. 1 and 2, an electric fan embodyiny my invention. The fan includes a support 11, a motor housing 12 in which the motor parts are mounted, a fan blade 16, and a fan guard 17.

The motor housing 12 is oval in shape and comprises a pair of complementary members 18 and 19. The motor parts are mounted in the member 18 and the member 19 is attached to the member 18 by means of screws 21. The screws 21 extend through apertures 22 in member 19 and engage threads (not shown) on the inside of member 18. A motor shaft extends through the end of member 18 and carries the fan blade 16 on its end. The fan blade 16 is attached to the motor shaft by means of a set screw 24. The motor housing 12 is attached to the support 11 by means of a bracket 26 which is attached to the member 18, and a thumb screw 27.

The fan guard 17 is composed of rings 31, 32 and 33, and two sets of spokes 34 and 35. The spokes 34 are connected together at the front of the guard by a plate 36. The two upper spokes 34 are welded to rings 31, 32 and 33 at points 40, 41 and 42. The lower spoke 34 terminates at ring 32 to facilitate the removal of the fan blade which will be explained hereinafter, and is welded to the rings 31 and 32 at points 40 and 41. The spokes 35 are welded to the rings 31, 32 and 33 at points 44, 45, and 46 and terminate in axially-extending portions 47 by means of which the fan guard 17 is attached to the motor housing 12.

Referring to Fig. 3, I show one embodiment of my invention. In this form, axially-extending apertures 28 extend from the outside surface of the member 18 to the inside and along the inside wall. The fan guard 17 is attached to the member 18 by inserting the axially-extending portions 47 of the spokes 35 in the axially-extending apertures 28 and deforming the ends of the axially-extending portions 47. I have shown them swaged at 49 but they may be deformed in any suitable manner. In this embodiment, the axially-extending portions 47 of the spokes 35 are slightly bent as indicated at 50 in Fig. 5. It will be readily seen that when the portions 47 are inserted in the apertures 28, the bends 50 will be slightly straightened and the portions 47 will be held tight against the inside walls of the apertures 28 by the spring action of the bends 50, thereby minimizing any possibility of rattling.

From the foregoing description it will be apparent that the guard 17 may be assembled as a unit and installed on the motor housing 18 by simultaneously inserting all of the axially-extending portions 47 of the guard into the respective axially-extending apertures in the motor housing.

Referring to Fig. 6, I show a second embodiment of my invention. In this form, the axially-extending apertures 28 extend from the outside of the member 18 to the inside and along the inside wall of the member 18. The material adjacent the apertures on the inside of the motor housing is slotted as shown in Fig. 7 to form a pair of jaws 48. The fan guard 17 is attached to the member 18 by inserting the axially-extending portions 47 of the fan guard spokes 35 in the axially-extending apertures 28 and swaging

the jaws 48 so as to firmly grip the portions 47 of the fan guard spokes 35.

In practicing my invention, the fan guard 17 is permanently attached to the motor housing 12. Accordingly, the fan guard is made so that the blade may be inserted and withdrawn through the guard when attached. In the illustrated embodiment this is done by terminating the lower spoke 34 at the ring 32. To disassemble the fan, the set screw 24 is loosened and the fan blade 16 is slipped off the end of the motor shaft. The fan blade is then removed from inside the guard through the space between rings 31 and 32 at the lower edge thereof. The motor is disassembled by removing the member 19, and then removing the parts from within the shell 18 with the fan guard attached thereto.

The members 18 and 19 which form the motor housing 12 are die-cast and apertures 22 and 28 are formed therein by the same casting operation that forms the members.

From the above description, it will be seen that I have provided a simple and economical means for attaching a fan guard to a motor housing without the use of expensive eyes and screws. It will also be noted that a more pleasing appearance is provided in that the fan guard is fastened interiorly of the housing and without the use of eyes or screws on the exterior. It will be apparent that no expensive machining operations are required in order to fasten the fan guard to the motor housing.

While I have shown my invention in several forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In an electric fan, in combination, a fan guard having a plurality of substantially axially-extending portions, a motor housing having a plurality of substantially axially-extending apertures to receive said axially-extending portions of the fan guard, said axially-extending portions of the fan guard being slightly bent to make them fit tight in the apertures in the motor housing, and the ends of said axially-extending portions of the fan guard being deformed on the inside of said motor housing.

2. An electric fan comprising, in combination, an electric motor including a motor housing, a fan blade carried by the shaft of said motor, a guard for the fan blade including a portion on the side of the fan blade opposite the motor and also including wire frame members formed with substantially axially-extending end portions, said motor housing having therein a plurality of substantially axially-extending apertures to receive said axially-extending end portions, said end portions extending to the interior of the motor housing and being fastened to the motor housing on the inside thereof, thereby attaching said guard to said motor housing, said fan guard being supported by said motor housing, and a support connected to the motor for supporting the fan.

3. An electric fan as set forth in claim 2, wherein said end portions are secured in the motor housing by deforming the same on the inside of the housing.

4. An electric fan comprising, in combination, an electric motor including a motor housing, a fan blade carried by the shaft of said motor, a guard for the fan blade including a portion on the side of the fan blade opposite the motor and also including wire frame members formed with substantially axially-extending end portions, said motor housing having a plurality of apertures therein extending axially inwardly from the outer surface of the motor housing to receive said axially-extending portions, said end portions extending into said axially-extending apertures and being retained therein solely by contact between the end portions and the motor housing interiorly of the outer surface of the latter, thereby attaching said guard to said motor housing, said fan guard being supported by said motor housing, and a support connected to the motor for supporting the fan.

GUSTAV H. KOCH.