July 27, 1943. L. S. RIENDEAU 2,325,425

AIR TRANSLATING APPARATUS

Filed Feb. 5, 1941 2 Sheets-Sheet 1

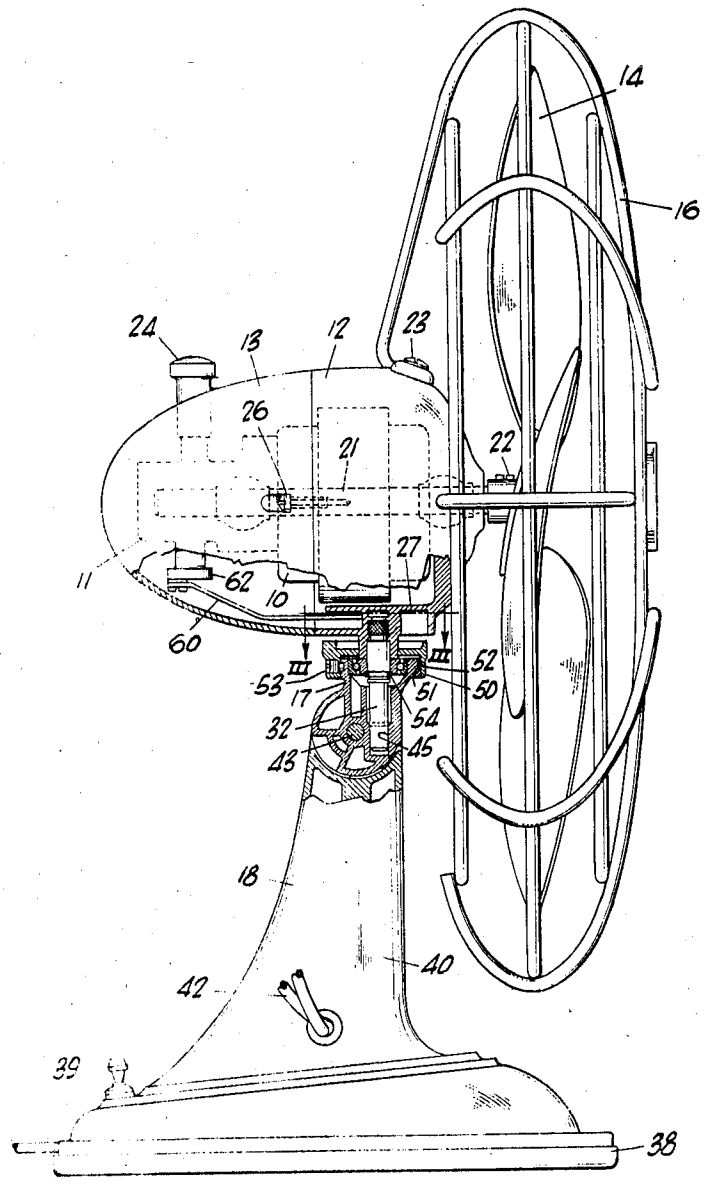


FIG. 1.

WITNESSES:

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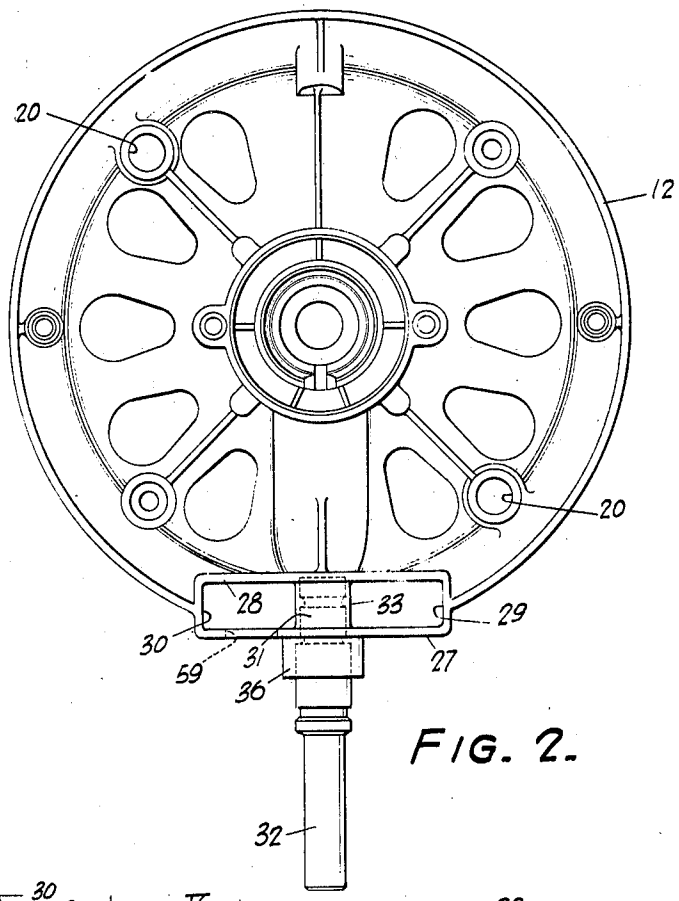


FIG. 2.

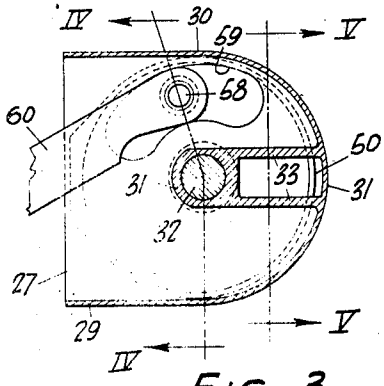


FIG. 3.

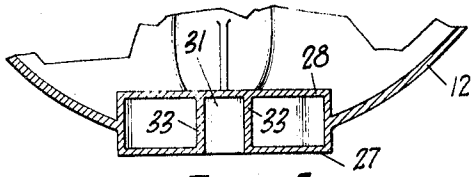


FIG. 5

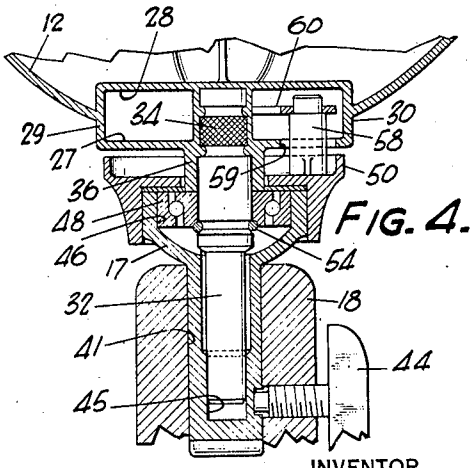


FIG. 4.

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UNITED STATES PATENT OFFICE

2,325,425

AIR TRANSLATING APPARATUS

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Application February 5, 1941, Serial No. 377,424

5 Claims. (Cl. 230—256)

This invention relates to oscillating electric fans and it has for an object to provide improved apparatus of this type.

A further object is to provide an electric fan of this type which is rugged and economical to manufacture.

A further object is to provide an electric fan of this type having an integral swivel pin and motor housing assembly.

A further object is to provide an economical motor housing and swivel pin assembly for fans of this type that requires no expensive machining operations.

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

Fig. 1 is a side elevational view, with parts broken away for the sake of clearness, of a fan embodying this invention;

Fig. 2 is an elevational view showing a part of the motor housing with the swivel pin attached thereto;

Fig. 3 is a partial sectional view taken along line III—III of Fig. 1;

Fig. 4 is a partial sectional view taken along line IV—IV of Fig. 3; and

Fig. 5 is a partial sectional view taken along line V—V of Fig. 3.

Referring to the drawings in detail, in Fig. 1 is shown an oscillating electric fan including a motor 10, an oscillating mechanism 11, a housing for the motor and oscillating mechanism comprising shells 12 and 13, a fan blade 14, a guard 16, a pivot member 17, and a support 18. The motor 10 is fastened in the shell 12 by bolts which pass through apertures 20, shown in Fig. 2, or by any other suitable means. The motor has a shaft 21 which extends through the shell 12 of the motor housing and to which the fan blade 14 is attached by means of a set screw 22. The fan guard 16 is attached to the shell 12 by means of screws 23.

The oscillating mechanism 11 is driven from the end of the motor shaft 21 which is opposite the fan blade 14 and is housed in the shell 13. A clutch knob 24 extends through the shell 13 for adjusting the oscillating mechanism to oscillating or non-oscillating positions. This knob 24 is connected to the oscillating mechanism by means of a sliding fit and may be readily removed whenever it is desired to disassemble the fan. The shells 12 and 13 are fastened together with screws 26.

The shells 12 and 13 are die cast and the shell 12 has a chamber-like construction located substantially in the bottom portion thereof, said chamber-like construction being defined by oppositely-disposed side walls 27 and 28 and oppositely-disposed end walls 29 and 30. A swivel pin 32 is first formed of steel, or some other suitable metal, then the pin 32 is attached to the shell 12 by die casting one of its ends into the walls 27 and 28 of the chamber construction. A box-like web having side walls 33 and end walls 31 extends between the walls 27 and 28 of the chamber construction to reinforce the swivel pin mounting and make the assembly more rugged. The pin 32 is cast through this web and the metal of the web entirely surrounds the pin. The pin may be knurled as at 34, Fig. 4, to insure a better bond between the pin and the metal of the web. A boss 36 is formed on the swivel pin 32 adjacent the under side of the wall 27. By casting the swivel pin 32 integral with the shell 12, no machining operations are required to properly assemble the motor housing and the swivel pin 32. Very little machining is required at all, it frequently being only necessary to brush the flash metal off the casting. Although the shells 12 and 13 have been described as die castings, it is to be understood that they may also be formed of molded material, such as a plastic, and the pin 32 molded into the walls 27 and 28 of the chamber construction.

The support 18 includes a base 38, to which a switch 39 for turning the fan motor on and off is attached, and a leg 40, the end of which is bifurcated to provide a slot 41 in which the pivot member 17 is mounted. Conductors 42 are provided for connecting the motor to a suitable source of power.

The pivot member which permits the fan to be tilted to different angles, is pivotally held in the slot 41 by a pin 43. A thumb screw 44 is provided for clamping the fan in the desired tilted position with respect to the base 38. The pivot member 17 has an aperture 45 therein for receiving the swivel pin 32 and a larger aperture 46 at the top in which a ball bearing 48 is positioned. The ball bearing 48 is of the conventional type having an outer race and an inner race and balls in between the two races. A collar 50 having a tongue 51 which fits in a recess 52 in the pivot member 17 is clamped to the pivot member by a set screw 53. The collar 50 serves to retain the ball bearing 48 in position in its seat in the top of the pivot member. A retain-

ing ring 54 is positioned in a groove in the swivel pin 32. The ring 54 abuts against the inner race of the ball bearing 48 and serves to prevent the swivel pin 32 from being withdrawn from the aperture 45. The boss 36 rests on the inner race of the ball bearing 48 and serves to transmit thrust forces to the ball bearing.

The collar 50 has a stationary pin 58 formed integrally therewith by the same operation that forms the collar. This collar may also be die cast or formed of some suitable molded material such as a plastic. The pin 58 extends through an opening 59 in the lower wall 27 of the chamber construction described above and projects into the chamber. A connecting rod 60 is connected at one end to a revolving eccentric 62 carried by the oscillating mechanism 11, and the other end extends into the chamber construction and is connected to the stationary pin 58. If it is desired, the pin 58 may be extended through both the lower wall 27 and the upper wall 28 of the chamber construction. This arrangement would insure against the connecting rod jumping off the end of the pin 58.

When the fan motor rotates the eccentric 62 is also rotated, if the clutch knob 24 is adjusted to oscillating position, and because one end of the connecting rod 60 is held stationary by the pin 58, the fan structure which is attached to the shell 12 of the motor housing is oscillated back and forth on the swivel pin 32 in a manner that is well known in the art.

In some prior art devices of this type it has been the practice to attach the swivel pin to a single wall of the motor housing. This assembly is not entirely satisfactory because after continuous vibration over a period of time the single thickness wall will weaken and the fan will tilt downward. This objection has been eliminated by the construction described herein. The chamber-like construction defined by the walls 27, 28, 29, and 30 provides a very rigid mounting for the swivel pin that will not weaken under continuous vibration over a long period of time since the swivel pin is anchored at two spaced points along its length. The web defined by the walls 31 and 33 provides additional reinforcement for the pin mounting and insures that the fan will not tilt downward about the swivel pin.

From the foregoing description taken in connection with the accompanying drawings, it will be seen that this invention has provided an improved oscillating electric fan which is rugged and economical to manufacture. It will also be seen that the swivel pin is integrally attached to the motor housing and that the motor housing and swivel pin assembly requires a minimum of machining in order to assemble.

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, 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 oscillating fan, the combination of a motor housing including a structure comprising two spaced-apart opposite walls, a swivel pin integrally attached to said motor housing, said swivel pin extending between and being connected to said two spaced apart opposite walls of said structure, a stationary pin projecting through one wall of said structure into the enclosure formed by the walls of said structure, an oscillating mechanism, a connecting rod extending into the enclosure formed by the walls of said structure and connecting said stationary pin to said oscillating mechanism, said structure serving to provide rigidity for said motor housing and swivel pin assembly and also providing a housing for the stationary pin and the connecting rod.

2. In an oscillating fan, the combination of a motor housing including a structure comprising spaced-apart opposite walls forming a chamber in the lower portion of the motor housing, a swivel pin integrally attached to said motor housing, said swivel pin extending between and being connected to two opposite walls of said chamber, a boss formed integrally with said swivel pin adjacent the outside of one wall of said chamber, a support for said fan, a pivot member attached to said support, said pivot member having an aperture therein for receiving said swivel pin, a bearing for said swivel pin carried by said pivot member, said boss serving to transmit thrust forces to said bearing, means retaining said bearing in position on said pivot member, and means retaining said swivel pin in the aperture in said pivot member.

3. In an oscillating fan, the combination of a motor housing including a structure which comprises spaced-apart opposite walls forming a chamber in the lower portion of the motor housing, a swivel pin integrally attached to said motor housing, said swivel pin extending between and being connected to two opposite walls of said chamber, an oscillating mechanism, a support for said fan, a pivot member attached to said support, said pivot member having an aperture therein for receiving said swivel pin, a bearing for said swivel pin carried by said pivot member, means retaining said bearing in position on said pivot member, means retaining said swivel pin in said aperture, a stationary pin projecting from said pivot member and extending through an aperture in one wall of said chamber and projecting into said chamber, a connecting rod connecting said stationary pin to said oscillating mechanism, said chamber providing rigidity for said motor housing and swivel pin assembly and also serving as a housing for said stationary pin and said connecting rod.

4. In an oscillating fan, the combination of a motor housing including a structure which comprises spaced-apart opposite walls forming a chamber in the lower portion of the motor housing, a swivel pin integrally attached to said motor housing, said swivel pin extending between and being connected to two opposite walls of said chamber, an oscillating mechanism, a support for said fan, a pivot member attached to said support, said pivot member having an aperture therein for receiving said swivel pin, a bearing for said swivel pin carried by said pivot member, means coacting between said bearing and said pivot member for retaining said bearing in position, means coacting between said bearing and said swivel pin for retaining said swivel pin in said aperture, a stationary pin formed integrally with said pivot member and projecting therefrom and extending through an aperture in one wall of said chamber and projecting into said chamber, a connecting rod connecting said stationary pin to said oscillating mechanism, said chamber providing rigidity for said motor housing and swivel pin assembly and also serving as a housing for the stationary pin and the connecting rod.

5. In an oscillating fan, the combination of a cast motor housing including a chamber in its lower portion, said chamber being defined by spaced-apart opposite walls, a swivel pin, said swivel pin extending between two of said spaced-apart opposite walls of said chamber and being attached thereto at spaced points along its lengths by casting the same into said walls, one wall of said chamber having an opening therein, a stationary pin projecting through said opening and into said chamber, an oscillating mechanism, a connecting rod extending into said chamber and connecting said stationary pin to said oscillating mechanism, said spaced walls of said chamber serving to provide rigidity for said motor housing and swivel pin assembly and also providing a housing for the stationary pin and connecting rod.

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