A blade axis that has reduced frictional area, one end of it is fixed at the back end center of the blade, and another end of it is inserted into the sliding bearing by using a clip to stop and fix it in the frame body, on the surface of the axis where it contacts the inner diameter surface of the sliding bearing is cut and processed with several dented slots to facilitate the insertion of the contact part of the axis to the sliding bearing to reduce frictional area, furthermore, the slot possesses a function of storing the lubricating oil, it creates a lubrication effect in the inner diameter surface of the sliding bearing, and the final goals of temperature reduction, noise reduction and life time enhancement can thus be achieved.
BLADE AXIS THAT POSSESS A REDUCED FRICTIONAL AREA

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to an improvement on a blade axis, more specifically relates to a blade axis which can be inserted into the sliding bearing and can reduce the frictional area.

[0003] 2. Description of the Related Art

[0004] Conventionally, the blade of heat-dissipating fan is assembled onto the frame body for positioning by using components such as a sliding bearing, a bearing sleeve, a gasket and a C shape clip. As shown in FIG. 1, the sliding bearing 2 is installed at the back end of the blade 1; it operates by providing an insertion space for the axis 11' of the blade 1 and the whole assembly is then positioned in frame body 3; therefore, the friction force generated by the axis 11' of blade 1 during its rotation and up and down movement can thus be reduced. During long and constant operation of the blade, sliding bearing will have constant friction with the axis, therefore, its inner diameter surface will become irregular or in oval shape, this will affect the operational smoothness or cause noise, it will also reduce the lifetime of the equipment. Therefore, in this industry, conventional sliding bearing is further processed to oil-contained sliding bearing, this is to reduce the wear between axis and bearing due to long and constant blade operation, in the meantime, to reduce the mechanical noise and to enhance usage lifetime.

[0005] Furthermore, for the manufacturing process of oil-containing bearing, it sinters and alloys the inner diameter surface to form oil-containing bearing, this is not only a tedious process, it also needs stringent technology and a high investment cost on the processing equipment. This is very disadvantageous to enhance the production capability of low cost heat-dissipating fan, in addition, high production cost will in turn affect the sales profit of a heat-dissipating fan and its competitiveness, therefore, further improvement is really necessary.

SUMMARY OF THE INVENTION

[0006] This invention is based on the usage requirement of the sliding bearing of heat-dissipating fan, it improves the disadvantages of the above-mentioned oil-containing bearing, it further provides a blade axis which can be inserted into the sliding bearing to reduce the frictional area for the industry application.

[0007] Technically, this invention is to solve the disadvantages of conventional oil-containing bearing which uses a process to sinter and alloy to form the inner diameter surface, this process not only has stringent technical requirement but high equipment investment cost. Therefore, on the blade axis part where it contacts the sliding bearing is further cut to from several dented shape slots, this is to facilitate the insertion of the contact part of the axis to the sliding bearing to reduce frictional area, in the meantime, the slots have the function to store lubrication oils, this will bring a lubrication effect on the inner diameter surface of the sliding bearing, and other effects such as temperature reduction, noise reduction and lifetime enhancement can be achieved too, the effect reached is the same as that achieved by conventional oil-containing sliding bearing, in the mean time, the cut and processed blade axis can have an effect of reducing the frictional area of the contact part and storing the lubrication oil, furthermore, the dented shape slots can be formed and manufactured in one time during the blade axis processing processes, and the process is very simple and low technical requirement therefore, it is very advantageous for the low price heat-dissipating fan, this invention can have effects such as: low manufacturing cost, enhancement of production capability and enhancement of product competitiveness.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is the prior art relationship drawing between an assembly of blade and sliding bearing in heat-dissipating fan.

[0009] FIG. 2 is the relationship drawing between an assembly of blade and sliding bearing in heat-dissipating fan of the current invention.

[0010] FIG. 3 is the cross sectional drawing between an assembly of blade and sliding bearing in heat-dissipating fan of the current invention.

[0011] FIG. 4 shows the blade axis of another better embodiment for the current invention.

[0012] FIG. 5 shows the blade axis of yet another better embodiment for the current invention.

[0013] FIG. 6 shows the blade axis of yet another better embodiment for the current invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] Please refer to FIG. 2 and FIG. 3, this invention provides a blade axis which can reduce the frictional area, one end of it is fixed to the back center of blade 1, and another end of it is inserted into the sliding bearing 2 and fixed and stopped in the frame body 3 by using the clip, therefore, blade 1 can be positioned in frame body 3 and thus operates smoothly, axis 11 is cut to form several dented shape slots 111 on the contact part L to the inner diameter surface 21 of the sliding bearing 2.

[0015] As shown in FIG. 3, when the axis 11 of blade 1 is inserted into the inner diameter surface 21 of the sliding bearing 2, since several dented shape slots 111 is formed on the contact part L of the axis 11, the frictional area with inner diameter surface 21 can thus be reduced during its insertion into the sliding bearing 2, in addition, this slot 111 can have the effect of storing the lubrication oil.

[0016] Therefore, no matter blade 1 or sliding bearing 2 rotates, the wear between its axis 11 and inner diameter surface 21 of the sliding bearing 2 thus decreases, meanwhile, the lubrication oil stored in slot 111 can generate lubrication effect, the high temperature generates due to friction accompanied with long time operation can effectively reduced, besides, mechanical noise can be reduced and lifetime can be enhanced, the effect it achieved is the same as that achieved by oil-containing sliding bearing.

[0017] Moreover, the cut and processed axis 11 of blade 1 for the current invention can be used to reduce the frictional area of the contact part L and to store lubrication oil, this
dented type slot 111 can be cut and processed in one time during the processing of axis 11 of blade 1, the processing process is much simpler and lower technical requirement is needed, for the low unit price heat-dissipating fan, the current invention possess the effect of oil-containing bearing, it can also reduce the production cost, enhance production capability and product competitiveness.

[0018] Of course, the several dented type cut and processed slots 111 at the contact part 1 between the axis 11 of the current invention and the inner diameter surface 21 of sliding bearing 2 are not limited to the rectangular dented type slots 111 as shown in FIG. 3, they can also be manufactured to be the V shape dented type slots 111 as shown in FIG. 4, or they can be manufactured to be the continuous screw dented type slots 111 as shown in FIG. 5, or they can be manufactured to be semi circle arc dented type slots 111 as shown in FIG. 6, or they can be manufactured to be other type of saw-toothed shape or trapezoidal shape . . . etc, either formed as staggered or continuous extended dented type slots 111. But, the descriptions and drawings in the above-mentioned dented type slots 111 are only embodiments of the current invention, they are not used to limit the embodiment of the current invention, anyone who is familiar with the arts can do any equivalent change or modification according to the feature and scope of the current invention, they should be considered to be within the scope of the claims of the current invention.

[0019] To summarize the above descriptions, we clearly know that the current invention provides a blade axis which can reduce the frictional area, it does achieve the expected practical value and purpose, it also has industry utility value which meets the requirement of being an invention.

What the invention claimed is:

1. A blade axis which can reduce the frictional area, one end of it is fixed to the back center of the blade, and another end of it is inserted into the sliding bearing and stopped and fixed inside the frame body by a clip, the axis has a contact part which contacts the inner diameter surface of sliding bearing cut and processed by several dented type slots to facilitate the reduction of frictional area when the contact part of the axis is inserted into the sliding bearing, meanwhile, the slot possesses the function of storing lubrication oil which in turn generates lubrication effect on the inner diameter surface of the sliding bearing, and the final goals of temperature reduction, noise reduction and lifetime enhancement can thus be achieved.

2. The blade axis which can reduce the frictional area of claim 1 wherein the several slots can be rectangular shape, V shape, semi circle arc shape, screw shape, saw-toothed shape . . . etc, they can be formed in staggered or continuous extension dented surface type.

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