

HEAT DISSIPATION FAN

1. Field of the Utility model

The present utility model relates to a heat dissipation fan, and more particularly to a small direct current heat dissipation fan having a locking plate.

2. Description of Related Art

A conventional heat dissipation fan in accordance with the prior art shown in Fig. 4 and Fig. 5 comprises a rotor (60), a bearing (61), a stator (63) with a circuit board (62) and a casing (64). The rotor (60) has a shaft (601) centrally extending therefrom. The shaft (601) has a free end that is cone-shaped and contains a groove (602) to receive a locking ring (50). The casing (64) includes a collar (641) to hold the stator (63) in place, and the collar (641) contains a recess (642) to receive the bearing (61). The recess (642) has a through hole (643) to allow the shaft (601) to extend through. The locking ring (50) contains a hole (51) that has a diameter corresponding with that of the groove (602). The locking ring (50) further contains a slit (52) extending out from the hole (51).

To assemble the heat dissipation fan, the stator (63) and the circuit board (62) are placed around the collar (641) of the casing (64), and the bearing (61) is pressed into the recess (642) of the collar (641). The shaft (601) of the rotor (60) is locked into the bearing (61) by the locking ring (50) that is clipped into the groove (602) after the shaft extends through the bearing (61) and the through hole (643) of the recess (642).

A worker needs a tool to press the locking ring (50) into the groove (602) of the shaft (601) when assembling the heat dissipation fan. Since the locking ring (50) has only one slit (52), the slit (52) will be opened widely when pressed over the free

end of the shaft (601). This heat dissipation fan is a small device with small parts, and the locking ring (50) must be mounted deep in the collar (641) of the casing (64). Consequently, a worker needs to use a special tool to press the locking ring (50) into the groove (602) of the shaft (601). It will be tedious for the worker and reduce output efficiency.

The groove (602) in the shaft (601) extends below the through hole (643) of the recess (642). Therefore, the rotor (60) easily falls down and abuts the top portion of the bearing (61). This will cause improper chafing between the rotor (60) and bearing (61). The chafing will damage the rotor (60) and bearing (61) and further reduce the life of the heat dissipation fan.

The present utility model has arisen to mitigate and/or obviate the disadvantage of the conventional

In accordance with one aspect of the present utility model, a heat dissipation fan with a locking member is provided. The locking member includes a locking plate containing a through hole and multiple slits around the through hole. The slits in the locking plate make the assembly of the heat dissipation fan easier further simplifies the assembly thereby saving time and improving the efficiency. Not only does this improve the rate of assembly and increase the output, but it also prevents the shaft of the heat dissipation fan and the bearing from chafing thereby increasing the life of the fan.

In the drawings:

Fig. 1 is an exploded perspective view of a heat dissipation fan in accordance with the present utility model;

Fig. 2 is a side plan view in partial section of the heat dissipation fan in Fig. 1;

Fig. 3 is a perspective view of the heat dissipation fan in Fig. 1;

Fig. 4 is a side plan view in partial section of a conventional heat dissipation fan in accordance with the prior art; and

Fig. 5 is a partial exploded perspective view of the conventional heat dissipation fan in Fig. 4.

Referring to the drawings and initially to Fig. 1 and Fig. 2, the heat dissipation fan in accordance with the present utility model comprises a rotor(10), a self-lubricating bearing (20), a stator (30) mounted on an electrical circuit plate (31) in a casing (40). The rotor (10) includes a hub (not number), multiple fan blade (not numbered) radially extending from the hub and a shaft (11) vertically extending from the center of the hub towards the stator (30). The shaft (11) has a free end that is rounded and contains a neck (111) to receiving a locking plate (12). The casing (40) has a collar (41) extending therefrom to hold the stator (30) in place. The collar (41) contains a recess (411) to securely hold the self-lubricating bearing (20) and has an internal shoulder (412) formed therein to support and restrain the locking plate (12) and the self-lubricating bearing (20). The locking plate (12) is round and contains a through hole (121) therein. The through hole (121) has a diameter corresponding with that of the neck (111) in the shaft (11). The locking plate (12) has multiple slits (122) formed on the periphery of the through hole (121). A washer (13) is received in the bottom of the recess (411) and contains a hole with a diameter smaller than the shaft (11) therein to abut the free end of the shaft (11).

To assemble the heat dissipation fan, the stator (30) and the electrical plate (31) are put around the collar (41) of the casing (40). The washer (13) is put in the bottom of the recess (411) first, the locking plate (12) is put on the internal shoulder (412) and the self-lubricating bearing (20) is securely pressed into the recess (411) and abuts the locking plate (12). The shaft (11) of the heat dissipation fan blade (10) is inserted through the self-lubricating bearing (20) and the locking plate (12), and the end of the shaft (11) is pressed through the locking plate (12) until the locking plate (12) is seated in the neck (111). This completes the assembly of the heat dissipation fan.

As mentioned above, the heat dissipation fan in accordance with the present utility model has several advantages.

1. Easy to assemble, since no special tools are required to press the fan blade (10) shaft (11) through the locking plate (12), the assembly of the heat dissipation fan is greatly simplified with a resultant improvement in productivity and efficiency.

2. Prevent improper from chafing, the combination of the internal shoulder (412) in the collar (41) and the washer (13) working in conjunction with the end of the heat dissipation fan blade (10) shaft (11) and the bearing (20) virtually obviates any chafing between the heat dissipation fan blade (10) and the bearing (20).

CLAIM:**1. A heat dissipation fan comprising:**

a rotor (10) including a hub, multiple fan blade radially extending from said hub and a shaft (11) vertically extending from a center of said hub, said shaft (11) having a neck (111) formed near the free end thereof;

a self-lubricating bearing (20) containing a hole therein to allow said shaft (11) of said fan blade (10) to penetrate therethrough;

a locking plate (12) seated in said neck (111) of said shaft (11) after penetrating through said hole of said self-lubricating bearing (20) and containing a through hole (121) and multiple slits (122) defined to communicate with said through hole (121);

a casing (40) having a collar (41) extending therefrom, said collar (41) containing a recess (411) to securely received said self-lubricating bearing (20) therein and an internal shoulder (412) defined in said recess (411) to support said locking plate (12) and said self-lubricating bearing (20), said recess (411) having a bottom portion for receiving a washer (13) therein, said washer (13) abutting said free end of said shaft (11); and

a stator (30) with an electrical circuit plate (31) around said collar (41) of said casing (40).

