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(54) **HEAT-DISSIPATING FAN UNIT**

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ABSTRACT

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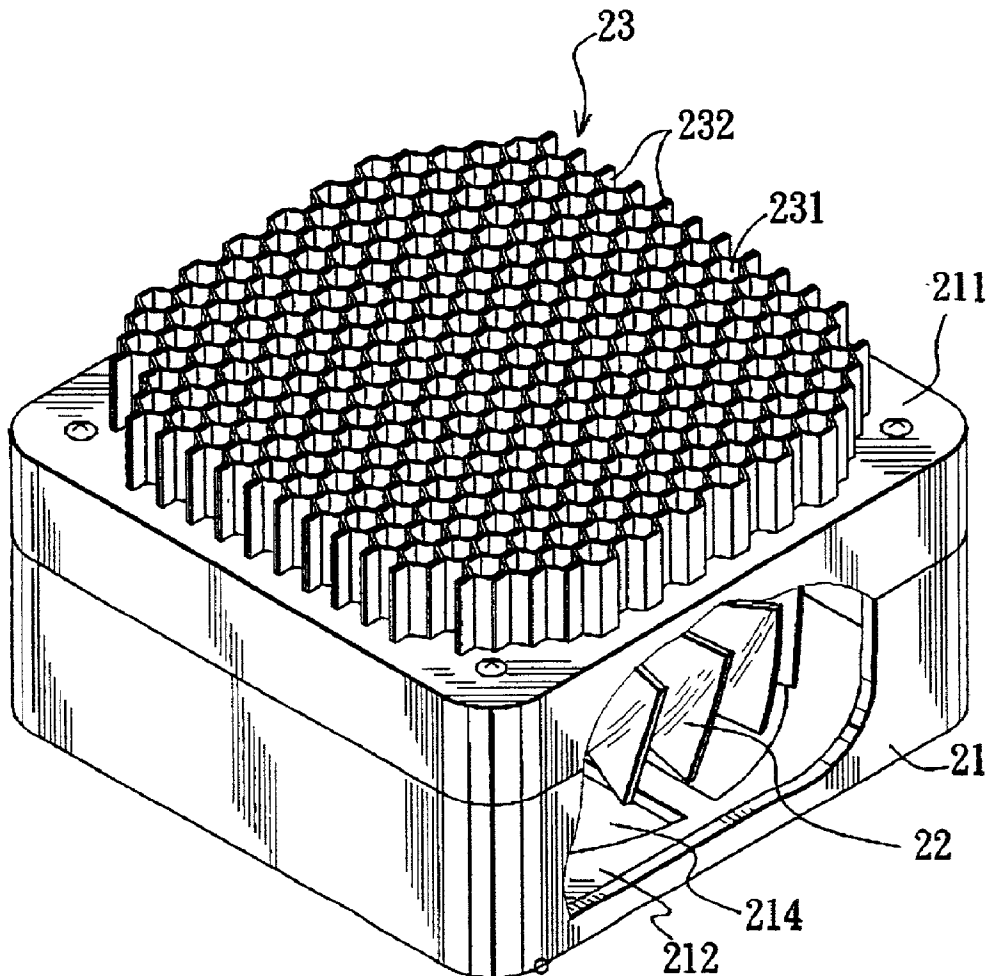
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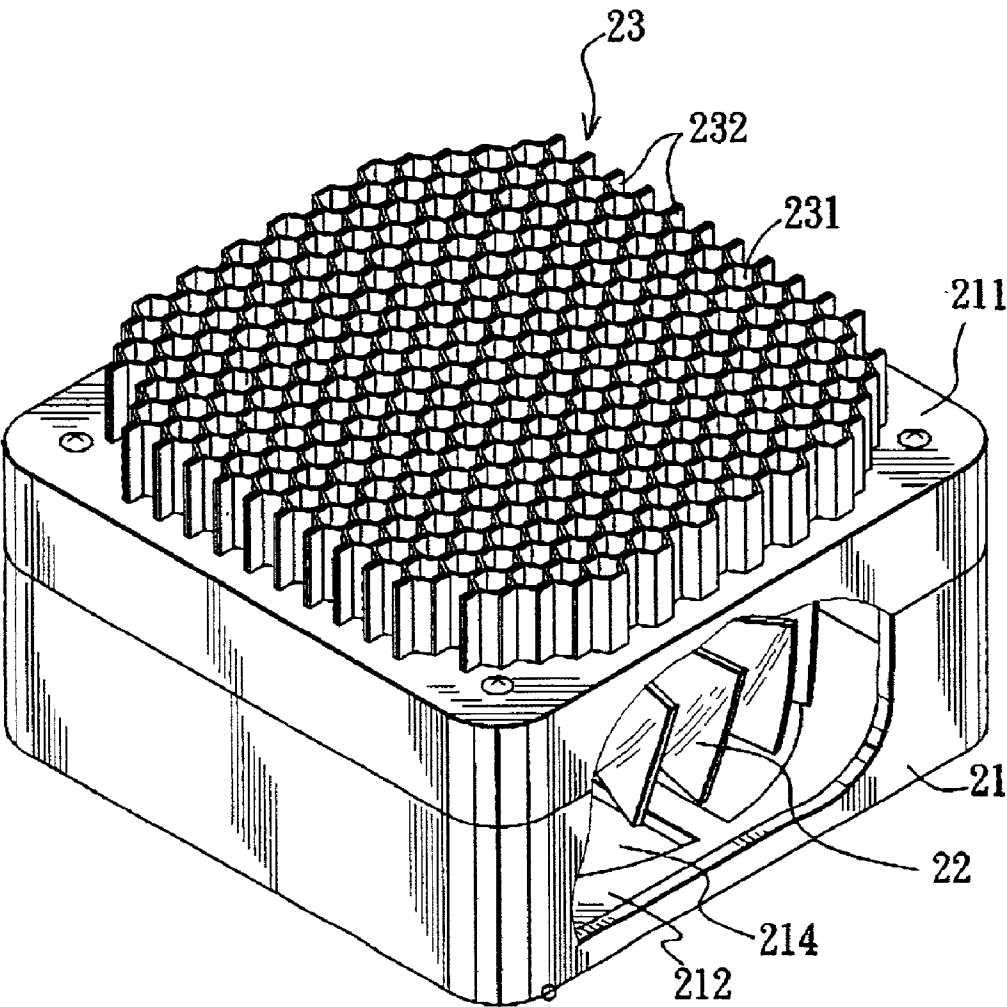
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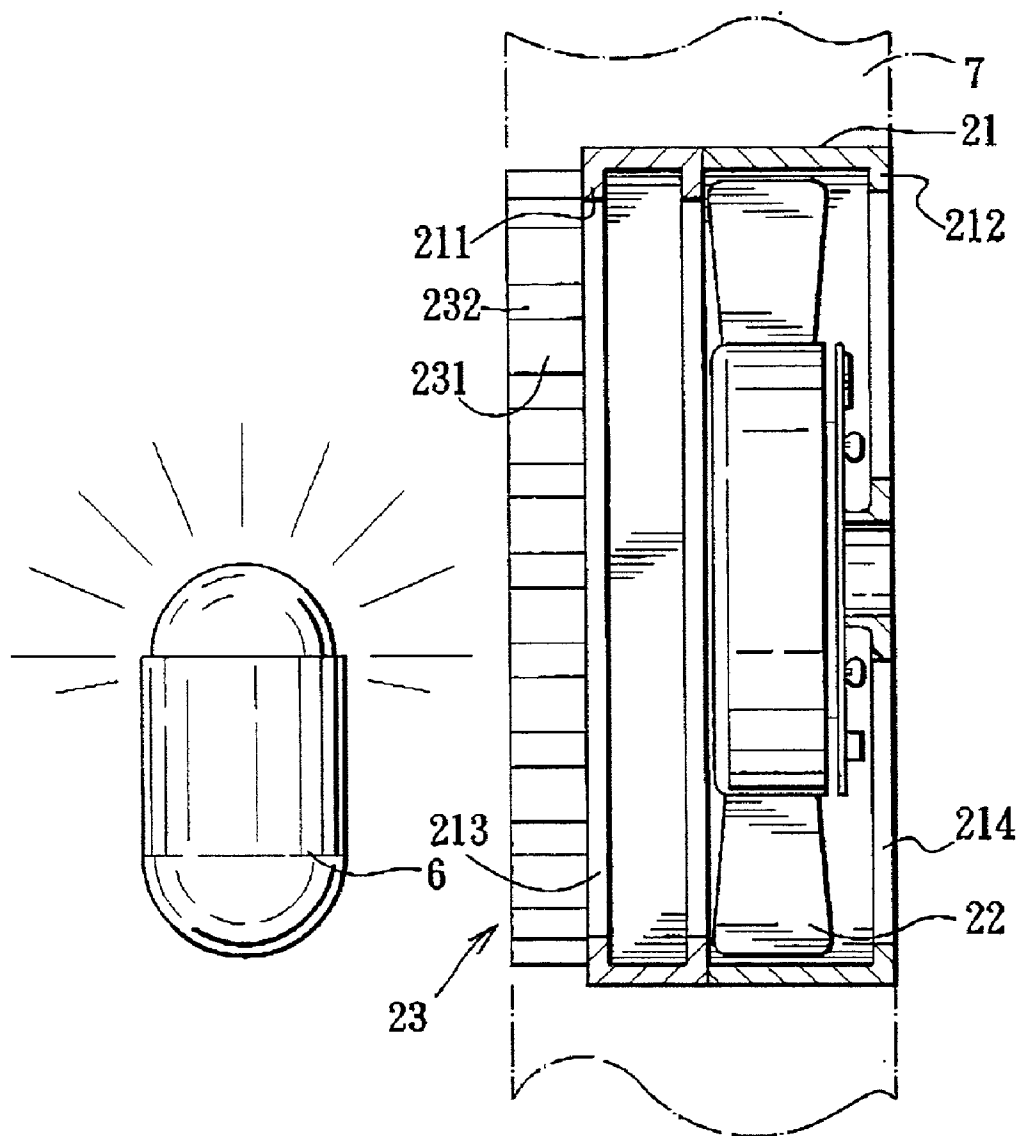
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A heat-dissipating fan unit includes a fan housing having first and second wall portions opposite to each other. An air guide member is mounted on the first wall portion of the fan housing and is registered with an air inlet formed in the first wall portion. The air guide member is formed with a plurality of vent holes, each of which is in fluid communication with the air inlet of the fan housing. Each of the vent holes is confined by a tubular wall that extends in a direction perpendicular to the first wall portion of the fan housing. A fan is disposed in the fan housing and is operable so as to draw air into the fan housing via the vent holes and the air inlet and to expel air in the fan housing via an air outlet formed in the second wall portion.

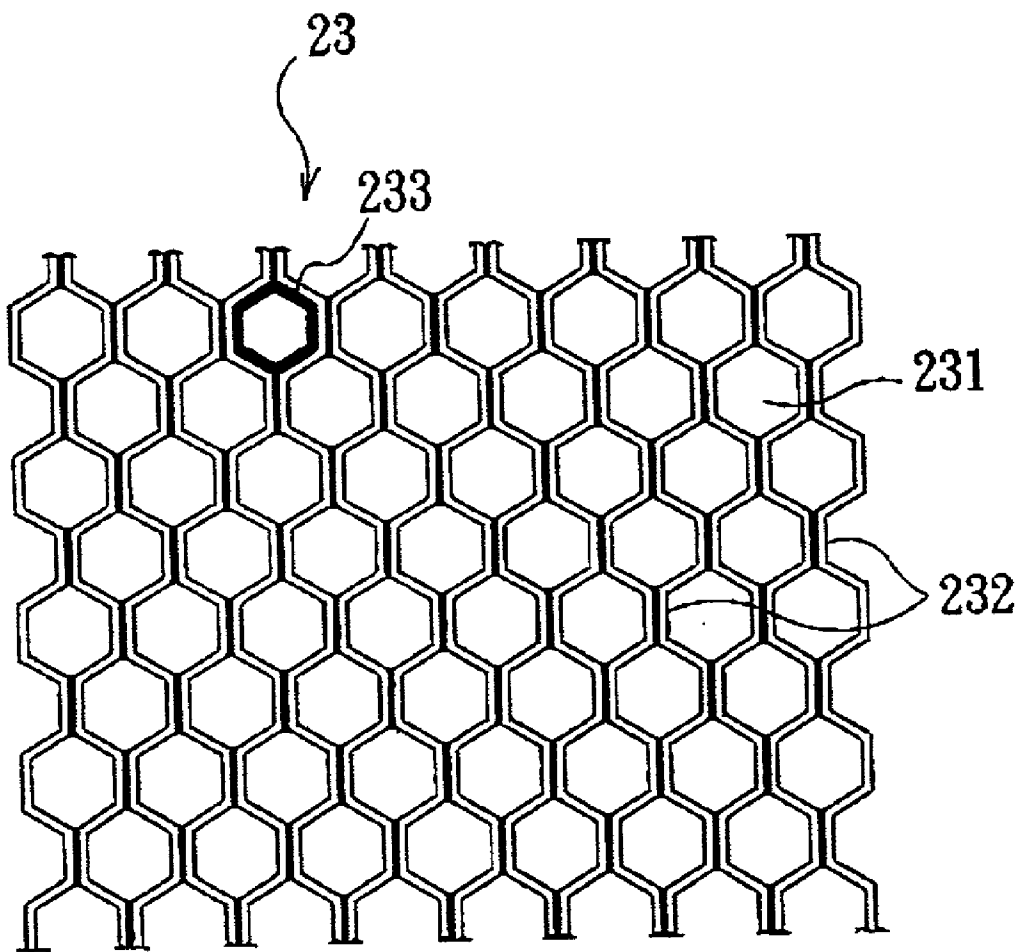




F I G. 1



F I G. 2



F I G. 3

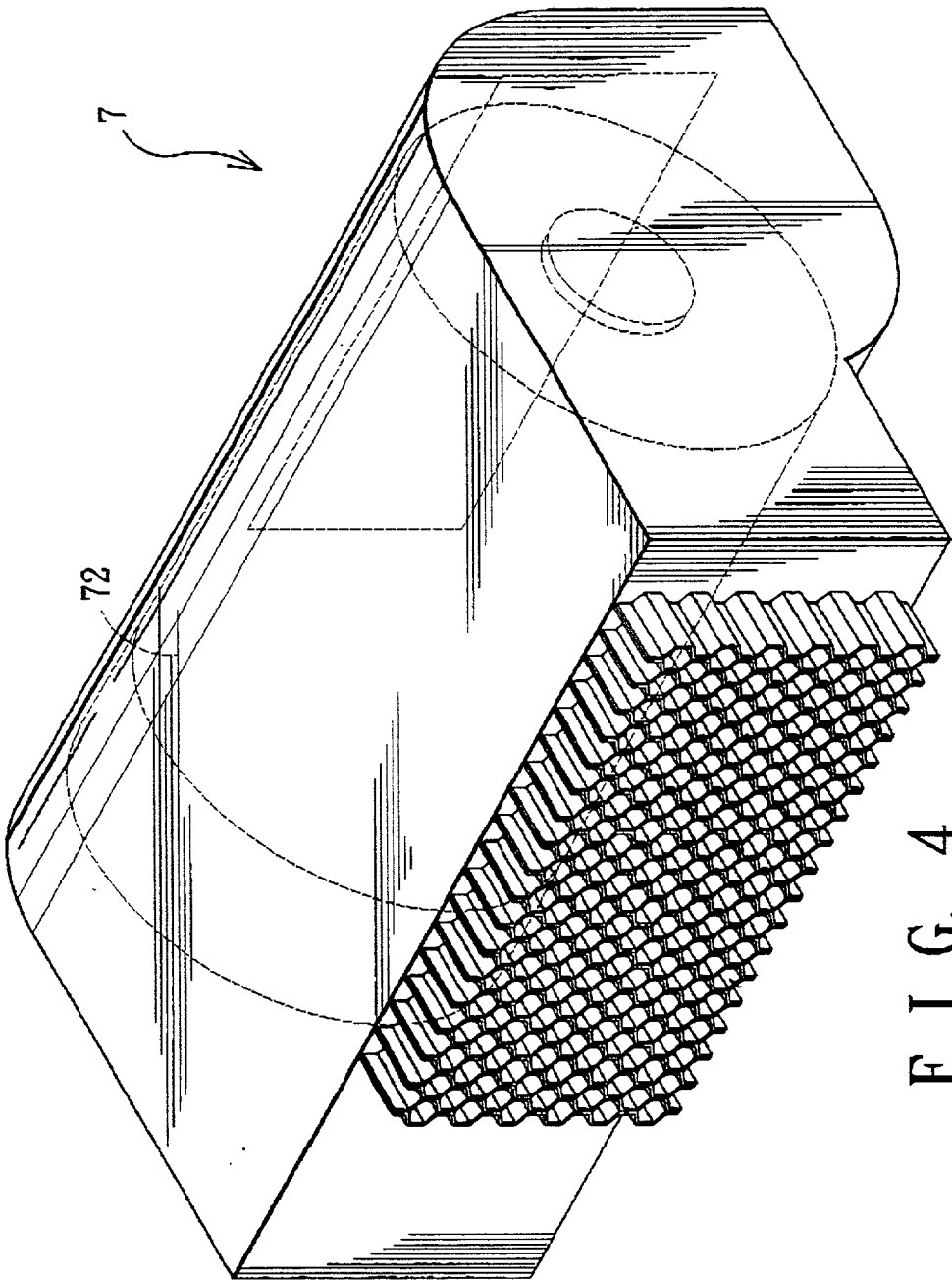


FIG. 4

HEAT-DISSIPATING FAN UNIT

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority of Taiwan patent Application No. 090201594, filed on Jan. 31, 2001.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The invention relates to a heat-dissipating fan unit, more particularly to a heat-dissipating fan unit that is relatively silent and that has an enhanced heat-dissipating effect.

[0004] 2. Description of the Related Art

[0005] Generally, a conventional heat-dissipating fan unit is used with a liquid crystal projector for dissipating heat generated by the latter. The conventional fan unit is usually provided with a plurality of inclined light-shielding members for shielding harmful light generated by the liquid crystal projector. However, the inclined light-shielding members may interrupt air flow from the liquid crystal projector, thereby resulting in inferior heat dissipation and loud noise.

SUMMARY OF THE INVENTION

[0006] Therefore, the object of the present invention is to provide a heat-dissipating fan unit that is relatively silent and that has an enhanced heat-dissipating effect.

[0007] According to the present invention, a heat-dissipating fan unit comprises:

[0008] a fan housing having first and second wall portions opposite to each other, the first wall portion being formed with an air inlet, the second wall portion being formed with an air outlet;

[0009] an air guide member mounted on the first wall portion of the fan housing and registered with the air inlet of the fan housing, the air guide member being formed with a plurality of vent holes, each of which is in fluid communication with the air inlet of the fan housing, each of the vent holes being confined by a tubular wall that extends in a direction perpendicular to the first wall portion of the fan housing; and

[0010] a fan disposed in the fan housing, the fan being operable so as to draw air into the fan housing via the vent holes and the air inlet and to expel air in the fan housing via the air outlet.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying drawings, of which:

[0012] FIG. 1 is a perspective, partly cutaway view showing the first preferred embodiment of a heat-dissipating fan unit according to the present invention;

[0013] FIG. 2 is a schematic partly sectional view of the first preferred embodiment;

[0014] FIG. 3 is a fragmentary schematic top view of an air guide member of the first preferred embodiment; and

[0015] FIG. 4 is a perspective view showing the second preferred embodiment of a heat-dissipating fan unit according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] Referring to FIGS. 1 and 2, the first preferred embodiment of a heat-dissipating fan unit according to the present invention is shown to include a fan housing 21, an air guide member 23, and a fan 22. In this embodiment, the fan unit is adapted for use with a liquid crystal projector (not shown) for dissipating heat generated by a light source 6 in the liquid crystal projector.

[0017] The fan housing 21 is adapted to be mounted in a projector housing 7 of the liquid crystal projector, and has first and second wall portions 211, 212 opposite to each other. The first wall portion 211 is formed with an air inlet 213. The second wall portion 212 is formed with an air outlet 214. In this embodiment, the first wall portion 211 is adapted to be disposed adjacent to the light source 6.

[0018] The air guide member 23 is mounted on the first wall portion 211 of the fan housing 21 and is registered with the air inlet 213 of the fan housing 21. The air guide member 23 is formed with a plurality of vent holes 231, each of which is in fluid communication with the air inlet 213 of the fan housing 21. Each of the vent holes 231 is confined by a tubular wall that extends in a direction perpendicular to the first wall portion 211 of the fan housing 21. The tubular walls of the vent holes 231 are in close with each other and are polygonal in cross-section. In this embodiment, the air guide member 23 has a honeycomb structure, and the tubular wall of each of the vent holes 231 has a hexagonal cross-section, as best shown in FIG. 3. The air guide member 23 includes a plurality of guide plates 232, each of which is made from extended aluminum. Each guide plate 232 cooperates with an adjacent guide plate 232 to define the tubular walls of a series of the vent holes 231. Adjacent ones of the guide plates 232 are interconnected, such as with the use of an adhesive, to form the air guide member 23. Preferably, the tubular wall of each vent hole 231 is coated with a sound damping layer 233 (see FIG. 3).

[0019] The fan 22 is disposed in the fan housing 21, and is operable so as to draw air into the fan housing 21 via the vent holes 231 and the air inlet 213 and to expel air in the fan housing 21 via the air outlet 214. In this embodiment, the fan 22 is an axial fan.

[0020] Due to the presence of the air guide member 23, air around the light source 6 can be guided and drawn into the fan housing 21 via the vent holes 231 and the air inlet 213 in parallel directions so as to result in a relatively low air-resistance for enhancing heat-dissipation. Furthermore, due to the presence of the sound damping layer 233, the noise generated by the fan unit of the present invention can be reduced to a minimum.

[0021] FIG. 4 illustrates the second preferred embodiment of a heat-dissipating fan unit 7 according to the present invention, which is a modification of the first preferred embodiment. Unlike the previous embodiment, the fan 72 is a centrifugal fan.

[0022] While the present invention has been described in connection with what is considered the most practical and preferred embodiments, it is understood that this invention is not limited to the disclosed embodiments but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation so as to encompass all such modifications and equivalent arrangements.

We claim:

1. A heat-dissipating fan unit, comprising:

a fan housing having first and second wall portions opposite to each other, said first wall portion being formed with an air inlet, said second wall portion being formed with an air outlet;

an air guide member mounted on said first wall portion of said fan housing and registered with said air inlet of said fan housing, said air guide member being formed with a plurality of vent holes, each of which is in fluid communication with said air inlet of said fan housing, each of said vent holes being confined by a tubular wall that extends in a direction perpendicular to said first wall portion of said fan housing; and

a fan disposed in said fan housing, said fan being operable so as to draw air into said fan housing via said vent holes and said air inlet and to expel air in said fan housing via said air outlet.

2. The heat-dissipating fan unit as claimed in claim 1, wherein said tubular walls of said vent holes are in close contact with each other and are polygonal in cross-section.

3. The heat-dissipating fan unit as claimed in claim 2, wherein said air guide member includes a plurality of guide plates, each of which is made from extended aluminum, each of said guide plates cooperating with an adjacent one of said guide plates to define said tubular walls of a series of said vent holes.

4. The heat-dissipating fan unit as claimed in claim 1, wherein said air guide member has a honeycomb structure, and said tubular walls of said vent holes are hexagonal in cross-section.

5. The heat-dissipating fan unit as claimed in claim 3, wherein said air guide member includes a plurality of guide plates, each of said guide plates cooperating with an adjacent one of said guide plates to define said tubular walls of a series of said vent holes.

6. The heat-dissipating fan unit as claimed in claim 1, wherein said fan is an axial fan.

7. The heat-dissipating fan unit as claimed in claim 1, wherein said fan is a centrifugal fan.

8. The heat-dissipating fan unit as claimed in claim 1, wherein said tubular wall of each of said vent holes is coated with a sound damping layer.

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