



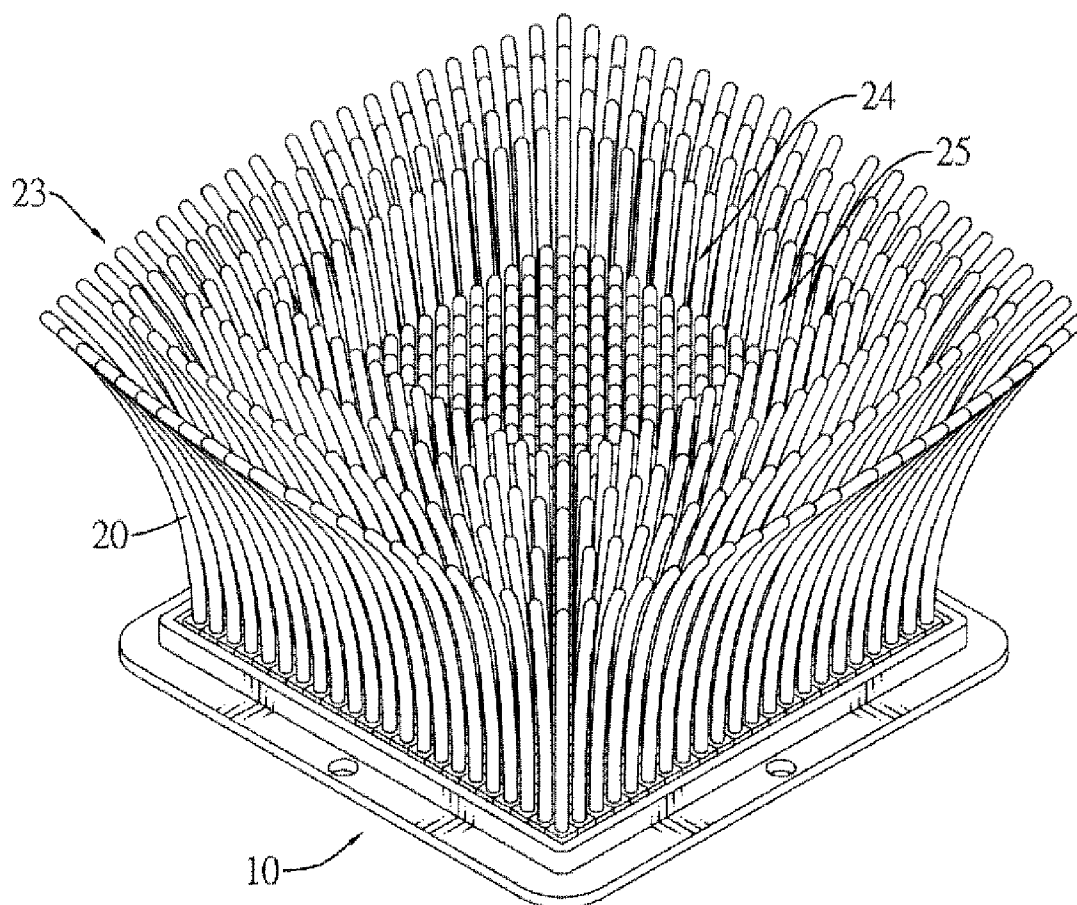
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(19) **United States**(12) **Patent Application Publication**
TUNG(10) **Pub. No.: US 2013/0306291 A1**(43) **Pub. Date: Nov. 21, 2013**(54) **STRIP HEATSINK**

(57)

ABSTRACT(76) Inventor: **Chia-Ming TUNG**, New Taipei City
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A strip heatsink has a base, multiple dissipating strips and a fastening loop. The strip heatsink uses a row of the dissipating strips to replace one conventional fin, and a shape of the strip part of each dissipating strip is circular. Therefore a whole surface area of the row of the dissipating strips is much bigger. Besides, because a cross section area of the mounting part is bigger than a cross section area of the strip part in a dissipating strip, the strip parts of the dissipating strips are mounted separately, and the blocking of the airflow is reduced. Therefore, air can flow more smoothly in an interval between the strip parts. To sum up, the strip heatsink enhances the heat conduction by increasing the whole surface area, and enhances the heat convection by making more space between the dissipating strips.



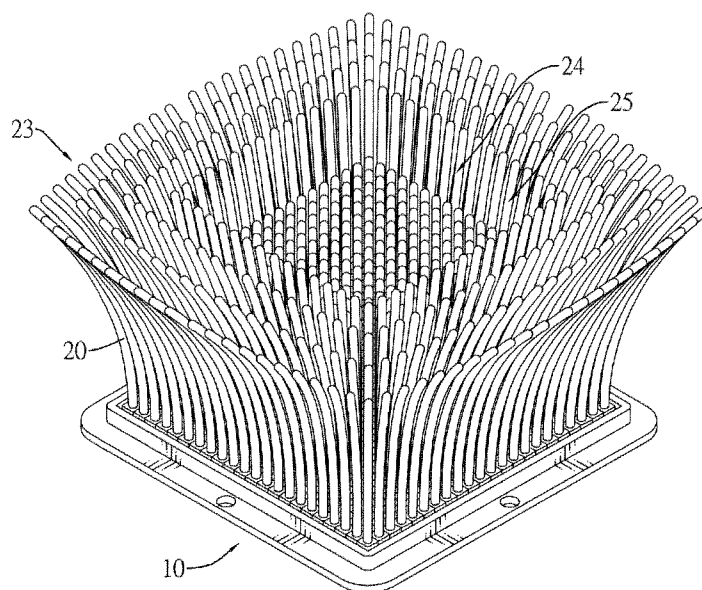


FIG.1

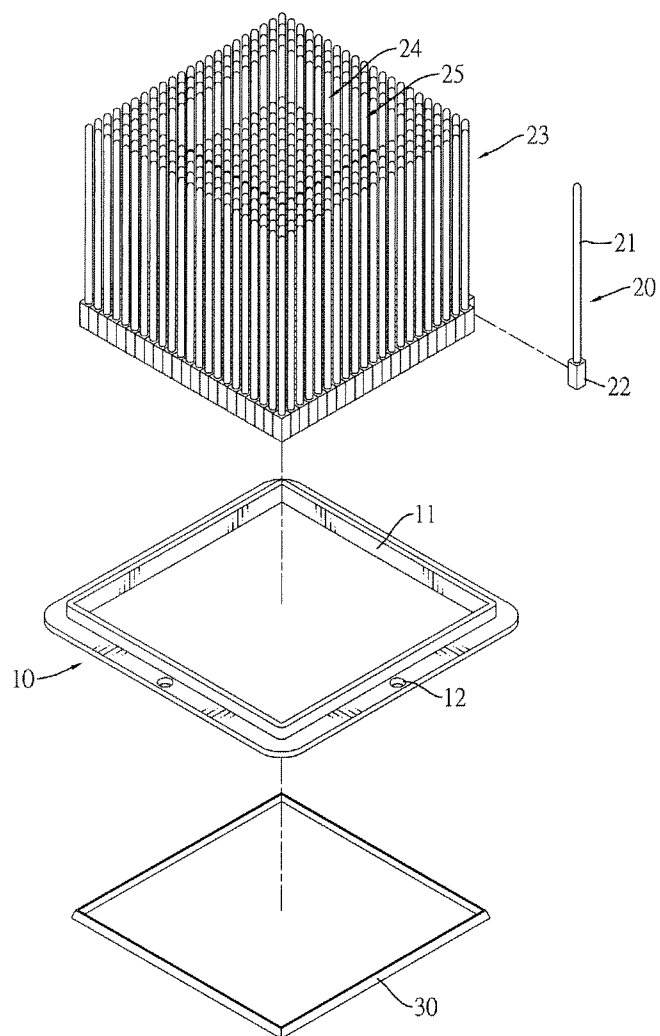


FIG.2

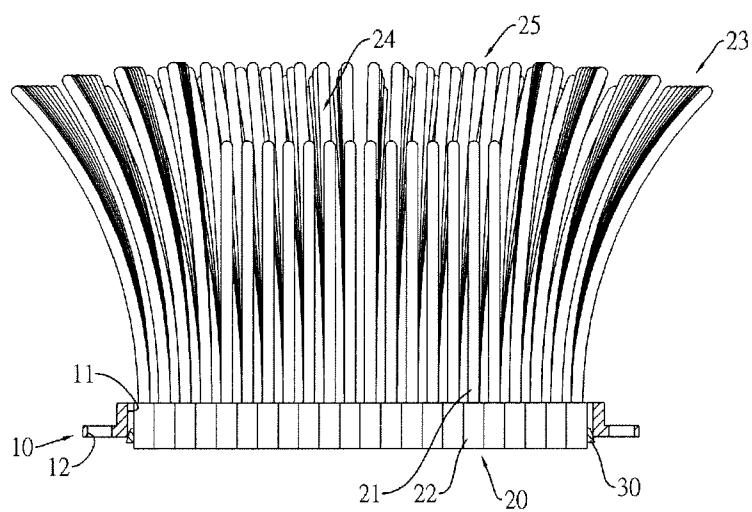


FIG.3

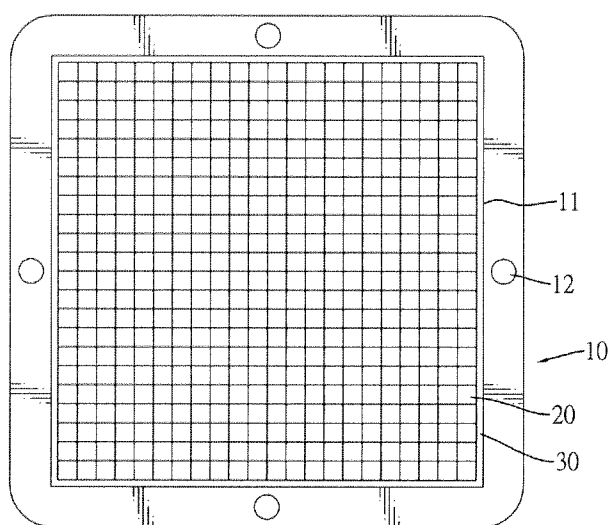


FIG.4

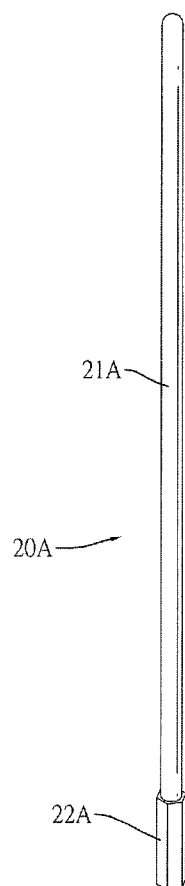


FIG.5

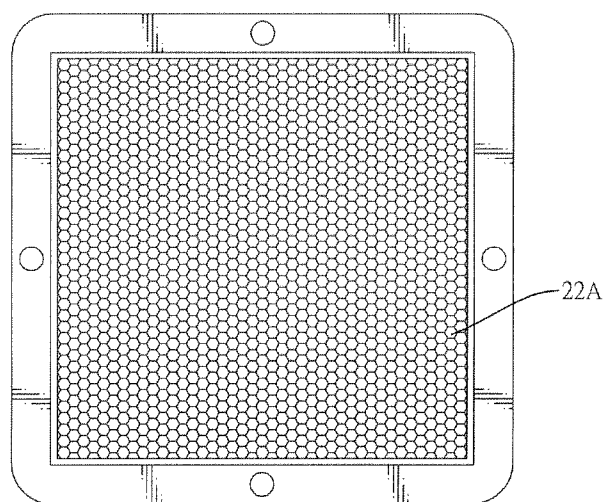


FIG.6

STRIP HEATSINK

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a strip heatsink, especially to a strip heatsink that increases the heat dissipation by enhancing the efficiency of conduction and convection.

[0003] 2. Description of the Prior Arts

[0004] With the development of technology, the computers compute faster with increasing capabilities. However, to dissipate heat of the electronic components inside the computer is always a difficult problem, especially as the lifespan and the working stability of the electronic components depend on the working temperature. As a result, the electronic components must be kept at a reasonable temperature by the heatsink to dissipate heat.

[0005] The conventional heatsink comprises a base and multiple fins. The base is attached tightly to the electronic component, such as the central processing unit (CPU). The heat is conducted from the CPU through the base and fins to the air around the fins by heat conduction. Then the heat dissipates in the air by heat convection so that the heat from the CPU is dissipated.

[0006] From the description above, the efficiency of the heat dissipation depends on two aspects.

[0007] The first aspect is about the heat conduction. The heat conduction depends on the surface area of the fins contacting air, so the bigger surface area the fins have, the more heat the fins exchange. Nevertheless, the surface area of the fin for dissipating heat mainly relies on the two opposite surfaces, and an area of the rest three edges are so small that the area can be ignored. Therefore, the whole surface area is not large enough, and the heat conduction is not good enough.

[0008] The second aspect is about the heat convection. The heat convection depends on how easily the air can enter and leave the interval between the fins. However, the fin in a plate shape forms a wall to stop the airflow so the air only can move from the narrow interval between the fins. The fresh air is hard to move in, and the hot air is hard to move out. Then the heatsink has poor heat convection.

[0009] To overcome the shortcomings, the present invention provides a strip heatsink to mitigate or obviate the aforementioned problems.

SUMMARY OF THE INVENTION

[0010] The main objective of the present invention is to provide a strip heatsink that can increase the heat dissipation by enhancing the efficiency of conduction and convection.

[0011] The strip heatsink in accordance with the present invention has a base, multiple dissipating strips and a fastening loop. The strip heatsink uses a row of the dissipating strips to replace one conventional fin, and a shape of the strip part of each dissipating strip is circular. Therefore a whole surface area of the row of the dissipating strips is much bigger. Besides, because a cross section area of the mounting part is bigger than a cross section area of the strip part in a dissipating strip, the strip parts of the dissipating strips are mounted separately, and the blocking of the airflow is reduced. Therefore, air can flow more smoothly in an interval between the strip parts. To sum up, the strip heatsink enhances the heat

conduction by increasing the whole surface area, and enhances the heat convection by making more space between the dissipating strips.

[0012] Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a perspective view of a first embodiment of a strip heatsink in accordance with the present invention;

[0014] FIG. 2 is an exploded perspective view of the strip heatsink in FIG. 1;

[0015] FIG. 3 is a side view in partial section of the strip heatsink in FIG. 1;

[0016] FIG. 4 is a bottom view of the strip heatsink in FIG. 1;

[0017] FIG. 5 is a perspective view of a dissipating strip of a second embodiment of a strip heatsink in accordance with the present invention; and

[0018] FIG. 6 is a bottom view of the strip heatsink in FIG. 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] With reference to FIGS. 1 and 2, a first embodiment of a strip heatsink in accordance with the present invention comprises a base 10, a periphery dissipating assembly 23, a central dissipating assembly 24 and a fastening loop 30.

[0020] With reference to FIGS. 2 to 4, the base 10 has a mounting hole 11 formed through the base 10. In a preferred embodiment, the mounting hole 11 is rectangular. Besides, the base 10 has multiple connecting holes 12. The connecting holes 12 are formed through the base 10 and are arranged surrounding the mounting hole 11.

[0021] With reference to FIGS. 1 and 3, the central dissipating assembly 24 is surrounded by the periphery dissipating assembly 23. Each dissipating assembly 23, 24 comprises multiple dissipating strips 20. The dissipating strips 20 are mounted securely in the mounting hole 11 of the base 10. Each dissipating strip 20 has a strip part 21 and a mounting part 22. The strip part 21 has a top end. The mounting part 22 is formed on a bottom of the strip part 21 and protrudes through the base 10. The mounting parts 22 of the dissipating strips 20 are flush with each other. A cross section area of the mounting part 22 is bigger than a cross section area of the strip part 21. In a preferred embodiment, the cross section of the mounting part 22 is rectangular. The top ends of the strip parts 21 of the periphery dissipating assembly 23 are bent outward. Each dissipating strip 20 of the central dissipating assembly 24 is shorter than each dissipating strip 20 of the periphery dissipating assembly 23 to form a recess 25 above the top ends of the strip parts 21 of the central dissipating assembly 24. The recess 25 may be rectangular.

[0022] The fastening loop 30 is mounted tightly around the mounting parts 22 of the dissipating strips 20, is mounted tightly in the mounting hole 11 of the base 10 and has an outer diameter, a top side and a bottom side. The outer diameter of the fastening loop 30 is decreased gradually. The fastening loop 30 is made of resilient material. In a preferred embodiment, the fastening loop 30 is mounted below the base 10, and the fastening loop 30 is narrower from the bottom side to the

top side. Besides, a cross section of an inner space surrounded by the fastening loop 30 is rectangular.

[0023] With reference to FIGS. 3 and 4, when the strip heatsink as described is in fabrication, the dissipating strips 20 are arranged in a matrix. The mounting parts 22 of the dissipating strips 20 abut against each other tightly. Then, the dissipating strips 20 are mounted in the mounting hole 11 of the base 10. Afterwards, the fastening loop 30 is mounted upward around the mounting part 22 of the dissipating strips 20, and is mounted in the mounting hole 11 of the base 10 at the same time. The fastening loop 30 is narrower from bottom to top so the more the fastening loop 30 moves upward, the more a wall of the mounting hole 11 presses inward the fastening loop 30, and the more the fastening loop 30 presses inward the dissipating strips 20. The fastening loop 30 is moved upward until the fastening loop 30 is connected securely to the base 10 and the dissipating strips 20. Then the tops of the strip part 21 of the dissipating strips 20 of the periphery dissipating assembly 23 are pushed aside to be bent outward. Additionally, because the cross section of the mounting part 22 is rectangular and the mounting parts 22 of the dissipating strips 20 are flush securely with each other, the dissipating strips 20 can be arranged in order. Therefore, the dissipating strips 20 can be pushed aside and bent by machines, which further enhances the work efficiency.

[0024] When the strip heatsink as described is used, bottom ends of the mounting part 22 of the dissipating strips 20 abut a surface of an electronic component, such as a top of a CPU. Then the strip heatsink is connected to a circuit board by screws mounted through the connecting hole 12 of the base 10.

[0025] The strip heatsink uses a row of the dissipating strips 20 to replace one conventional fin, and a shape of the strip part 21 of each dissipating strip 20 is circular. Therefore a whole surface area of the row of the dissipating strips 20 is bigger than a whole surface area of one conventional fin. Besides, because the cross section area of the mounting part 22 is bigger than the cross section area of the strip part 21 in a dissipating strip 20, the strip parts 21 of the dissipating strips 20 are mounted separately, and the blocking of the airflow is reduced. Moreover, tops of the dissipating strips 20 are bent outwards, which further increases an interval between the strip parts 21. Therefore, air can flow more smoothly in the interval between the strip parts 21. To sum up, the strip heatsink enhances the heat conduction by increasing the whole surface area, and enhances the heat convection by making more space between the dissipating strips 20.

[0026] Furthermore, fans can be installed in the rectangular recess 25 surrounded by the periphery dissipating assembly 23 and the central dissipating assembly 24 in order to accelerate the airflow and enhance the heat convection.

[0027] The mounting part 22 of the dissipating strips 20 may be formed in different shapes. In a second embodiment as shown in FIGS. 5 and 6, the cross section of the mounting part 22A of each dissipating strip 20A is hexagonal, thereby also making the dissipating strip 20A arranged in order and forming the interval between the strip parts 21A of the dissipating strip 20A.

[0028] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and features of the invention, the disclosure is illustrative only. Changes may be made in the details, especially in matters of shape, size, and arrangement of parts within the prin-

ciples of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A strip heatsink comprising:
 - a base having a mounting hole formed through the base;
 - multiple dissipating strips mounted securely in the mounting hole of the base, and each dissipating strip having:
 - a strip part having a top end; and
 - a mounting part formed on a bottom of the strip, wherein a cross section area of the mounting part is bigger than a cross section area of the strip part, and the mounting parts of the dissipating strips are flush with each other; and
 - a fastening loop mounted tightly around the mounting parts of the dissipating strips, mounted tightly in the mounting hole of the base, made of resilient material, and having:
 - an outer diameter decreased gradually;
 - a top side; and
 - a bottom side.
2. The strip heatsink as claimed in claim 1, wherein the top ends of the strip parts of the dissipating strips are bent outward.
3. The strip heatsink as claimed in claim 1 further comprising a periphery dissipating assembly and a central dissipating assembly, wherein
 - the periphery dissipating assembly comprises some of the dissipating strips; and
 - the central dissipating assembly is surrounded by the periphery dissipating assembly, comprises the rest of the dissipating strips, and each dissipating strip of the central dissipating assembly is shorter than each dissipating strip of the periphery dissipating assembly.
4. The strip heatsink as claimed in claim 3, wherein the top ends of the strip parts of the dissipating strips of the periphery dissipating assembly are bent outward.
5. The strip heatsink as claimed in claim 1, wherein
 - the mounting parts of the dissipating strips protrude through the base; and
 - the fastening loop is mounted below the base, and the fastening loop is narrower from the bottom side to the top side.
6. The strip heatsink as claimed in claim 4, wherein
 - the mounting parts of the dissipating strips protrude through the base; and
 - the fastening loop is mounted below the base, and the fastening loop is narrower from the bottom side to the top side.
7. The strip heatsink as claimed in claim 1, wherein the base has multiple connecting holes formed through the base, and arranged surrounding the mounting hole.
8. The strip heatsink as claimed in claim 6, wherein the base has multiple connecting holes formed through the base, and arranged surrounding the mounting hole.
9. The strip heatsink as claimed in claim 1, wherein
 - the mounting hole of the base is rectangular;
 - a cross section of the mounting part of each dissipating strip is rectangular; and
 - a cross section of an inner space surrounded by the fastening loop is rectangular.
10. The strip heatsink as claimed in claim 8, wherein
 - the mounting hole of the base is rectangular;
 - a cross section of the mounting part of each dissipating strip is rectangular; and

a cross section of an inner space surrounded by the fastening loop is rectangular.

11. The strip heatsink as claimed in claim **1**, wherein the mounting hole of the base is rectangular;

a cross section of the mounting part of each dissipating strip is hexagonal; and

a cross section of an inner space surrounded by the fastening loop is rectangular.

12. The strip heatsink as claimed in claim **8**, wherein the mounting hole of the base is rectangular;

a cross section of the mounting part of each dissipating strip is hexagonal; and

a cross section of an inner space surrounded by the fastening loop is rectangular.

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