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(54) **HEAT DISPENSING UNIT FOR MEMORY CHIP**

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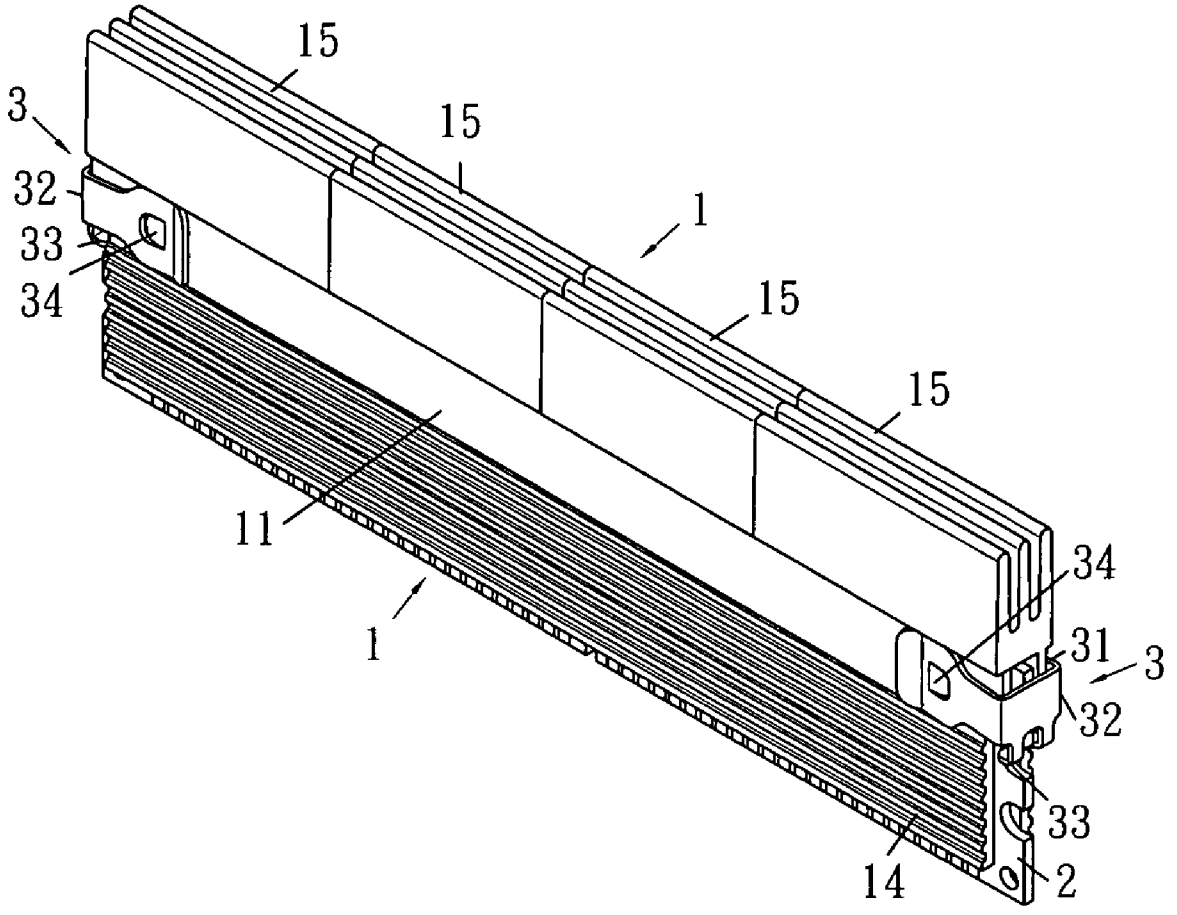
(57) **ABSTRACT**

A heat dispensing unit includes two heat dispensing plates between which the chip is clamped. Each heat dispensing plate includes multiple ridges extending from an outside thereof and two clamps clamp two ends of the two heat dispensing plates. Each clamp includes two side plates and a flexible plate which is connected between the two side plates, two protrusions extend from two respective insides of the two side plates so as to be engaged with two holes in the two heat dispensing plates to securely connect the two heat dispensing plates. The clamps each have two hooks to hook the notches in two ends of the chip.



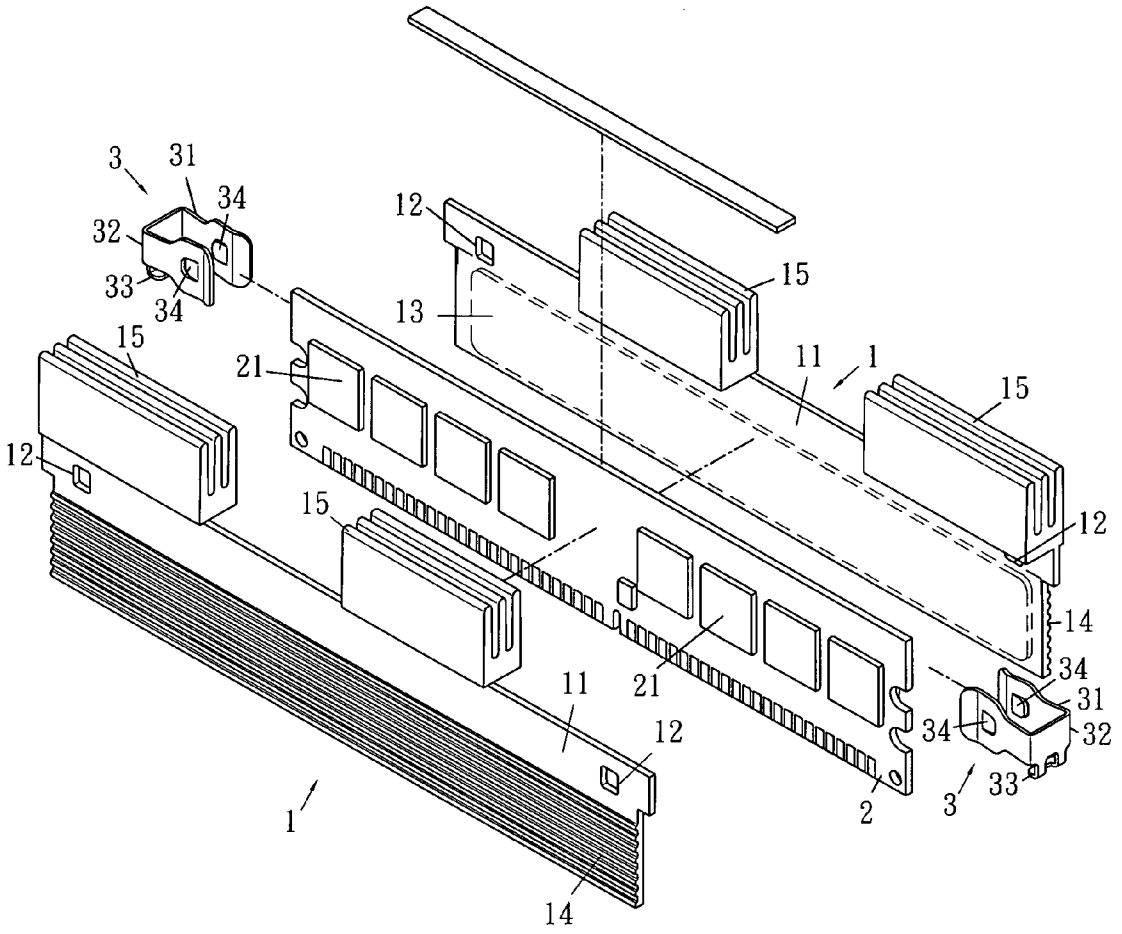

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FIG. 1

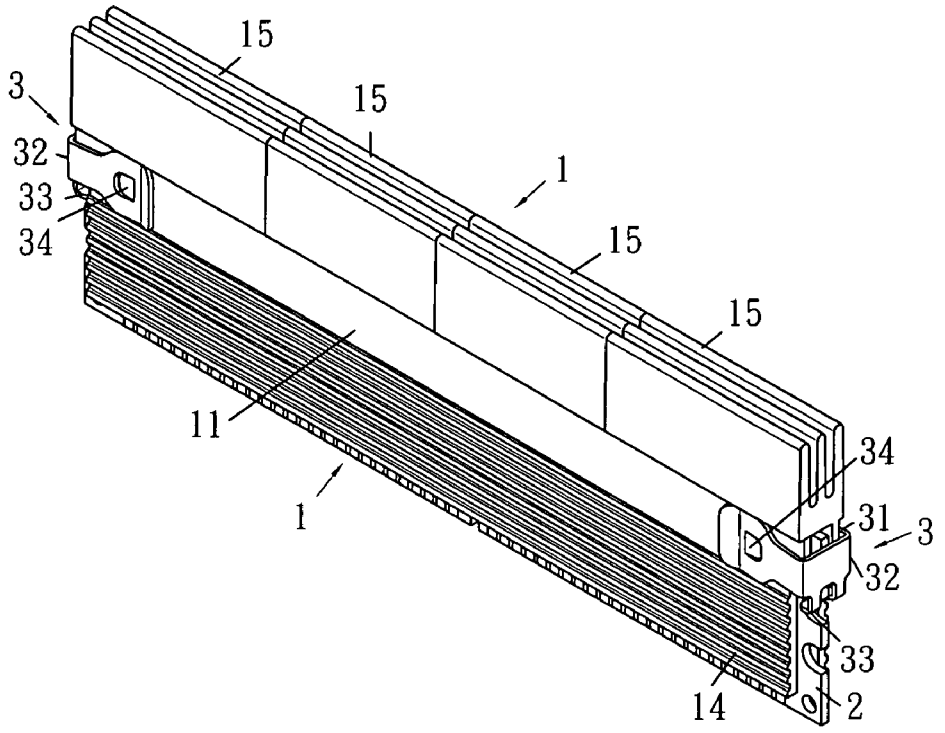

FIG. 2

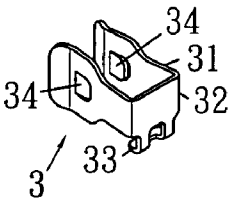

FIG. 3

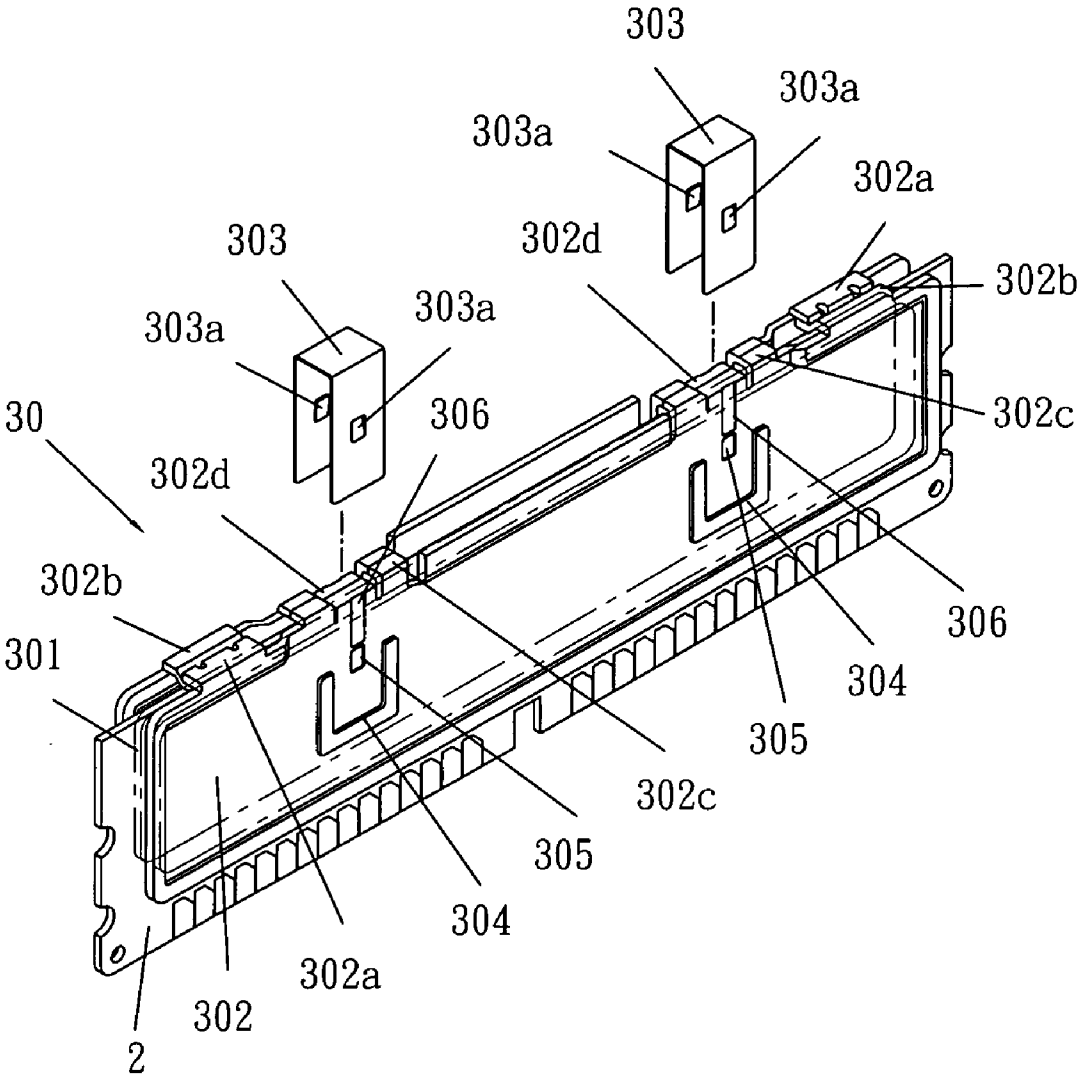

FIG. 4
Prior Art

HEAT DISPENSING UNIT FOR MEMORY CHIP

BACKGROUND OF THE INVENTION

[0001] (1) Field of the Invention

[0002] The present invention relates to a heat dispensing unit for removing heat from memory chips and the heat dispensing unit includes two clamps clamping tow ends of the heat dispensing unit.

[0003] (2) Description of the Prior Art

[0004] A conventional heat dispensing unit **30** for memory chips is shown in FIG. **4** and generally includes two heat conductive pads **301**, two heat dispensing plates **302** and two clamps **303**, wherein the heat conductive pads **301** are attached to in sides of the two heat dispensing plates **302** which have hooks **302***a*, engaging holes **302***b* and engaging pieces **302***c* on a top thereof. When the two heat dispensing plates **302** are combined, a space is defined therebetween and the memory chip **2** is clamped. The engaging pieces **302***c* each have a downward positioning plates **302***d* which are located corresponding to the U-shaped restriction slots **304** on outsides of the heat dispensing plates **302**. A through hole **305** is located above the restriction slot **304** and a guide slot **306** is located above the through hole **305** so that when the two clamps **303** clamp the two heat dispensing plates **302**, the two clamps **303** are mounted onto the two positioning plates **302***d* and the hoods **303***a* are engaged with the through hole **305** via the guide slots **306** so that the two heat dispensing plates **302** can clamp the memory chip **20**. The heat generated from the memory chip **2** is conducted to the heat dispensing unit **30** and releases to air.

[0005] However, the conventional heat dispensing unit **30** includes a complicated structure which includes hooks **303***a*, restriction slots **304**, through holes **305** and guide slots **306**. The complicated structure makes the heat dispensing unit **30** to be expensive and time consuming when manufacturing. Besides, the two clamps **303** clamp at the top edges of the two heat dispensing plates **302** so that it is impossible to add extra heat dispensing plates **302** onto the top edges.

[0006] The existed heat dispensing unit cannot efficiently dispense the high temperature generated from the latest chips which operate at very high speed and the low efficient heat dispensing unit restricts the use of the high end CPU in computers.

[0007] The present invention intends to provide a heat dispensing unit for memory chips wherein the heat dispensing plates are securely connected to each other by two clamps clamping two ends of the heat dispensing plates. The clamps further hook the notches of the chip.

SUMMARY OF THE INVENTION

[0008] The present invention relates to a heat dispensing unit which comprises two heat dispensing plates between which the chip is clamped. Each heat dispensing plate has multiple ridges extending from an outside thereof and two holes are defined through two ends of each heat dispensing plate. Two clamps clamp the two ends of the two heat dispensing plates. Each clamp having two side plates and a flexible plate connected between the two side plates, two protrusions extend from two respective insides of the two side plates. The two protrusions are engaged with the holes of the two heat dispensing plates.

[0009] The primary object of the present invention is to provide a heat dispending unit for chips wherein the two heat dispensing plates are securely connected to each other by two clamps from two ends of the heat dispensing plates.

[0010] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. **1** is an exploded view to show the heat dispensing unit of the present invention;

[0012] FIG. **2** is a perspective view to show that the chip is clamped between the two heat dispensing plates of the heat dispensing unit of the present invention;

[0013] FIG. **3** is a perspective view to show the clamp for clamping the two heat dispensing plates of the present invention, and

[0014] FIG. **4** is an exploded view to show the conventional heat dispensing unit.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0015] Referring to FIGS. **1** to **3**, the heat dispensing unit **1** of the present invention comprises two heat dispensing plates **1** and each heat dispensing plate **1** includes multiple parallel ridges **14** extending from an outside thereof. Each of the heat dispensing plates **1** is an aluminum extruding plate. A heat conductive pad **13** is attached to the inside of each heat dispensing plate **1** and two holes **12** are defined through two ends of each of the two heat dispensing plates **1**. The chip **2** that is clamped between the two heat dispensing plates **1** includes circuit pieces **21** extending therefrom which are in contact with the heat conductive pad **13**. Two notches are defined in two ends of the chip **2**.

[0016] Two clamps **3** clamp the two ends of the two heat dispensing plates **1** and each clamp **3** has two side plates **31** and a flexible plate **32** connected between the two side plates **31**. Two protrusions **34** extend from two respective insides of the two side plates **31** so that the two protrusions **34** are engaged with the holes **12** of the two heat dispensing plates **1** to connect the two heat dispensing plates **1**. Two hooks **33** extend from a lower edge of the flexible plate **32** and hook the two notches defined in two ends of the chip **2**. By this arrangement, the heat dispensing plates **1**, the chip **2** and the two clamps **3** are securely connected to each other.

[0017] Two heat dispensing parts **15** extend from a top of each of the heat dispensing plates **1** and the heat dispensing parts **15** extend inward from the top of each of the heat dispensing plates **1**. Each heat dispensing part **15** includes three fins so as to increase the efficiency of removal of heat. The heat dispensing parts **15** of the two heat dispensing plates **1** are located so that when the two heat dispensing plates **1** are connected to each other by the clamps **3**, the four heat dispensing part **15** are located head-to-tail to form a row of fins.

[0018] The heat dispensing plates **1** include the ridges **14**, the heat conductive pad **13**, the fins of the heat dispensing parts **15** to effectively remove heat from the chip **2**. The clamps **3** are easily used and able to securely connect the heat dispensing plates **1** and the chip **2** to ensure that the chip **2** is in contact with the heat dispensing plates **1**.

[0019] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

What is claimed is:

1. A heat dispensing unit comprising:

two heat dispensing plates and a chip being clamped between the two heat dispensing plates, each heat dispensing plate having multiple ridges extending from an outside thereof and two holes defined through two ends thereof, and

Two clamps clamping the two ends of the two heat dispensing plates, each clamp having two side plates and a flexible plate connected between the two side plates, two protrusions extending from two respective insides of the two side plates, the two protrusions engaged with the holes of the two heat dispensing plates.

2. The heat dispensing unit as claimed in claim **1**, wherein two hooks extending from a lower edge of the flexible plate and hook two notches defined in two ends of the chip.

3. The heat dispensing unit as claimed in claim **1**, wherein a heat conductive pad is applied to an inside of each of the heat dispensing plates.

4. The heat dispensing unit as claimed in claim **1**, wherein two heat dispensing parts extend from a top of each of the heat dispensing plates and the heat dispensing parts extend inward from the top of each of the heat dispensing plates.

5. The heat dispensing unit as claimed in claim **1**, wherein each of the heat dispensing plates is an aluminum extruding plate.

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