



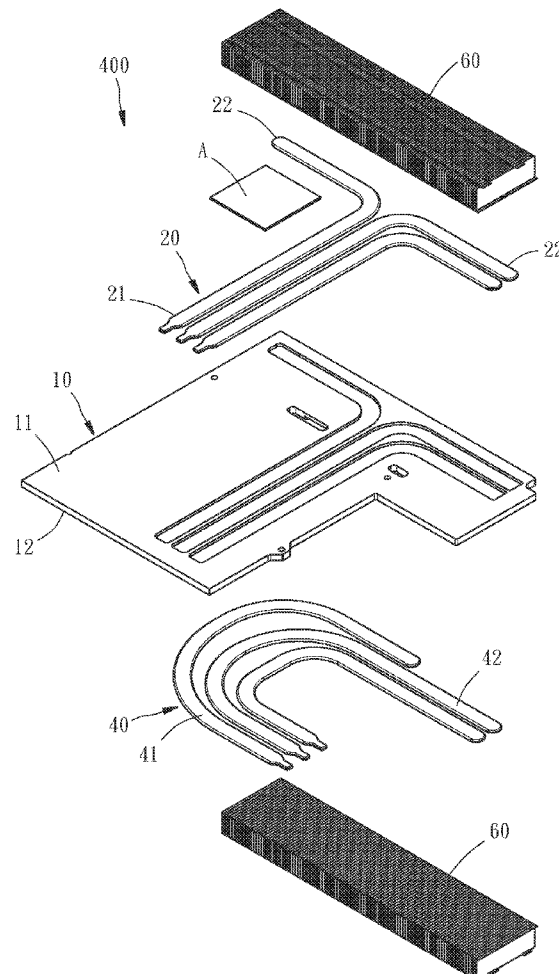
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(19) **United States**(12) **Patent Application Publication**
YEH et al.(10) **Pub. No.: US 2016/0209121 A1**(43) **Pub. Date: Jul. 21, 2016**(54) **HEAT-DISSIPATING STRUCTURE**(71) Applicant: **TAI-SOL ELECTRONICS CO., LTD.**,
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Sheng-Chin CHAN, TAIPEI CITY (TW)(73) Assignee: **TAI-SOL ELECTRONICS CO., LTD.**(21) Appl. No.: **14/657,894**(22) Filed: **Mar. 13, 2015**(30) **Foreign Application Priority Data**

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F28D 15/02 (2006.01)(52) **U.S. Cl.**CPC **F28D 15/0275** (2013.01)(57) **ABSTRACT**

A heat-dissipating structure includes a heat-dissipating partition, a first heat-dissipating layer, and a second heat-dissipating layer. The heat-dissipating partition has a first surface and a second surface that are opposite to each other. The first heat-dissipating layer includes a plurality of first heat pipes, each of which is disposed on the first surface of the heat-dissipating partition. The second heat-dissipating layer includes a plurality of second heat pipes, each of which is disposed on the second surface of the heat-dissipating partition. Each of the first heat pipes of the first heat-dissipating layer has at least one part overlapping at least one part of one of the second heat pipes of the second heat-dissipating layer. Thereby, heat from a to-be-cooled article can be quickly dissipated through the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.



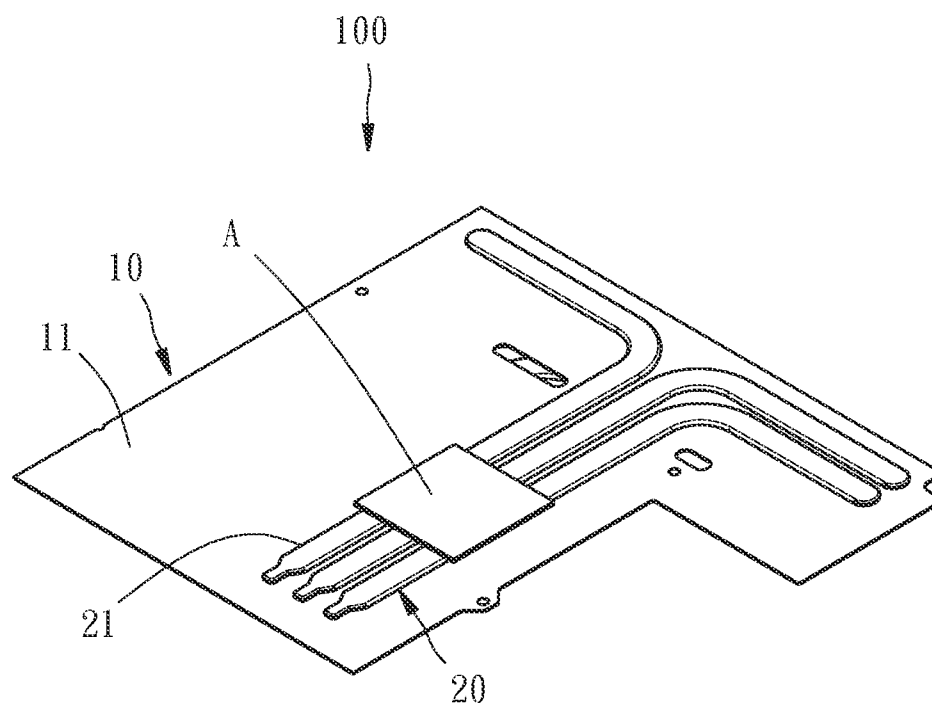


FIG 1

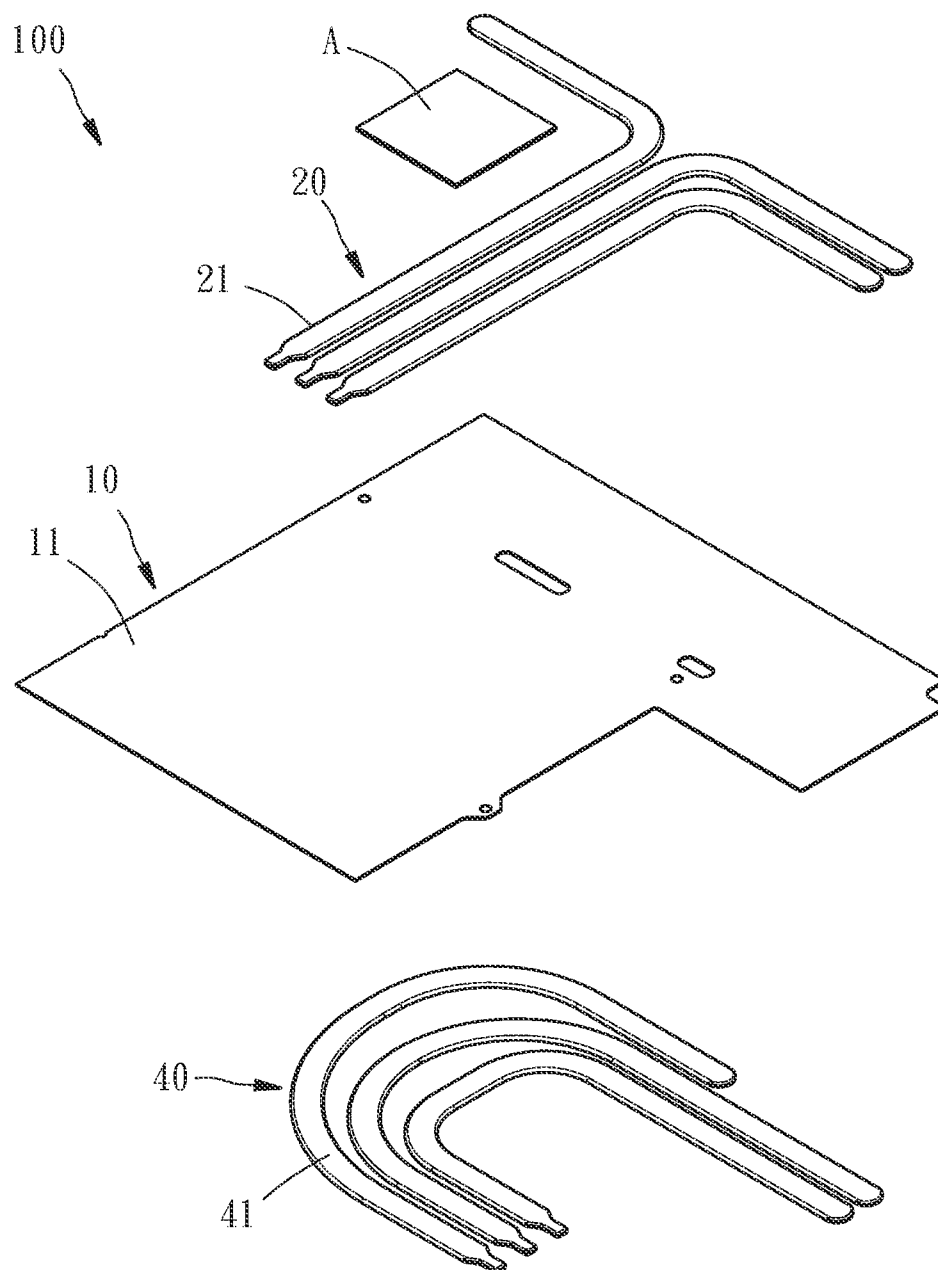


FIG 2

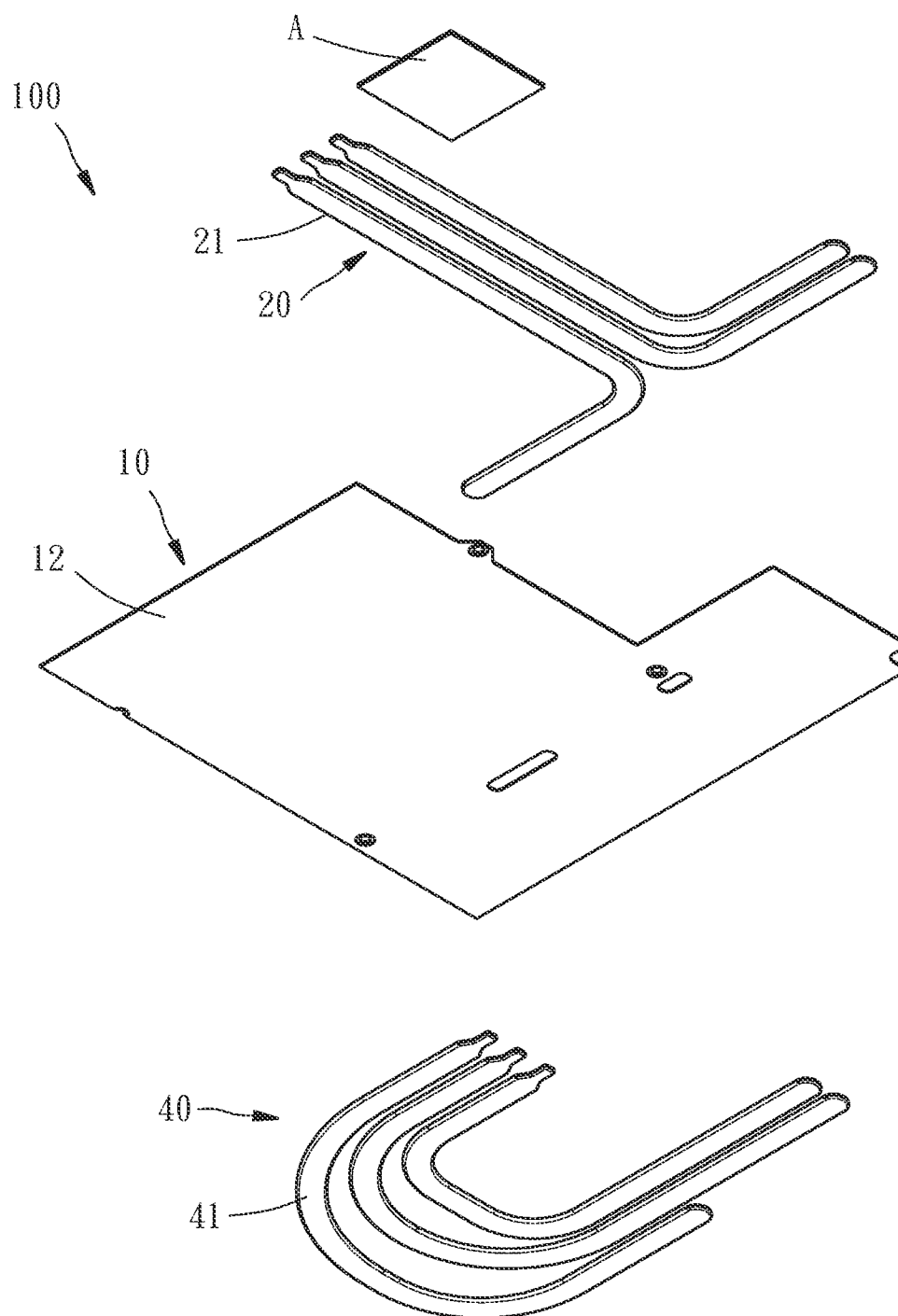


FIG 3

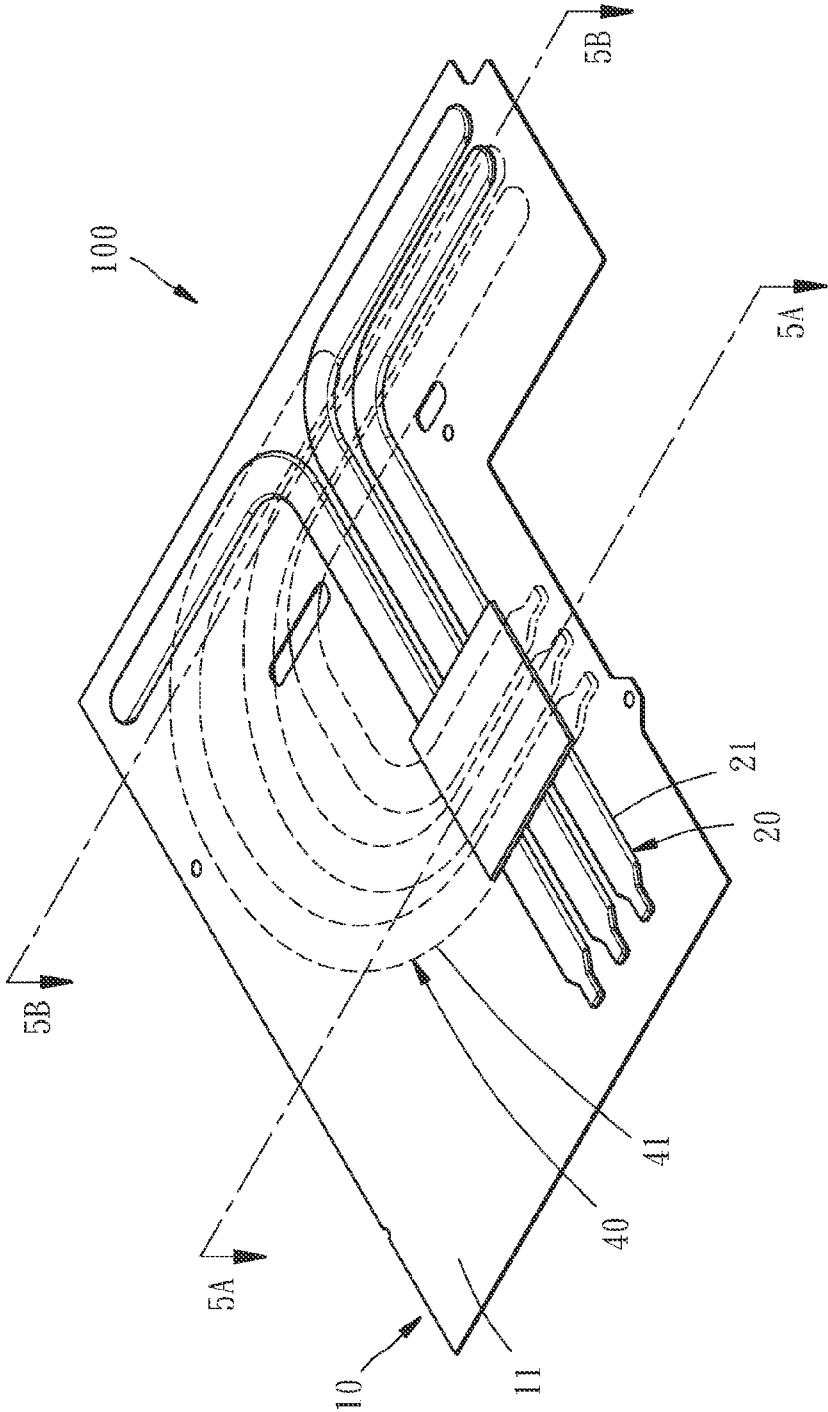


FIG 4

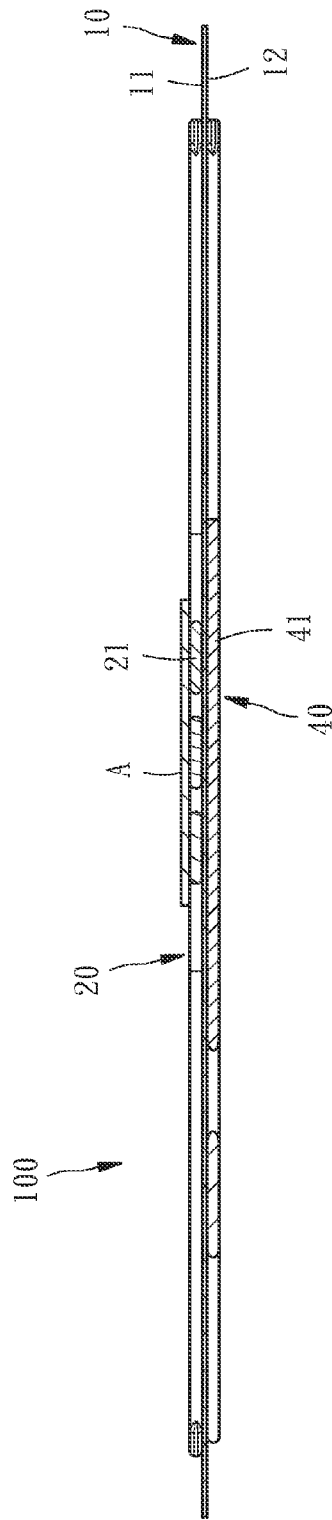


FIG 5A

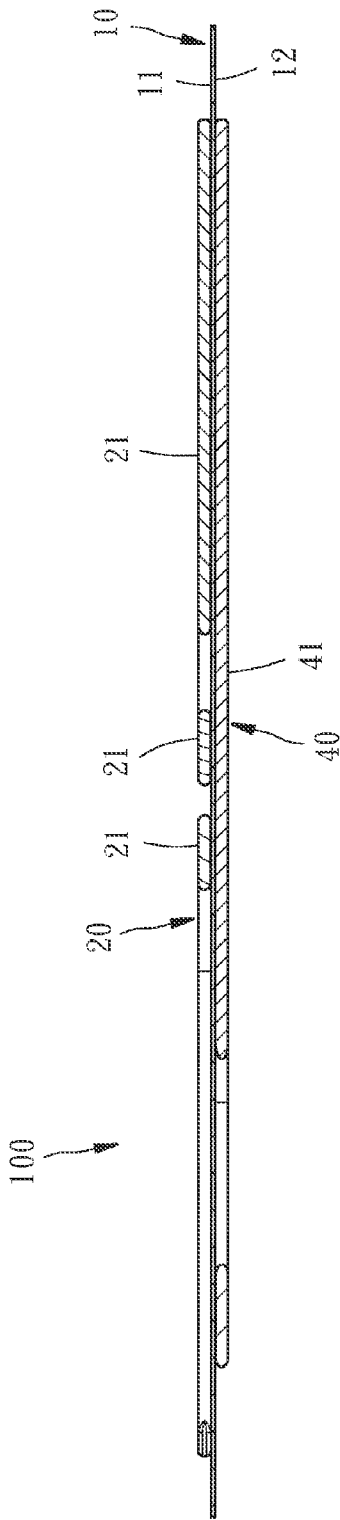


FIG 5B

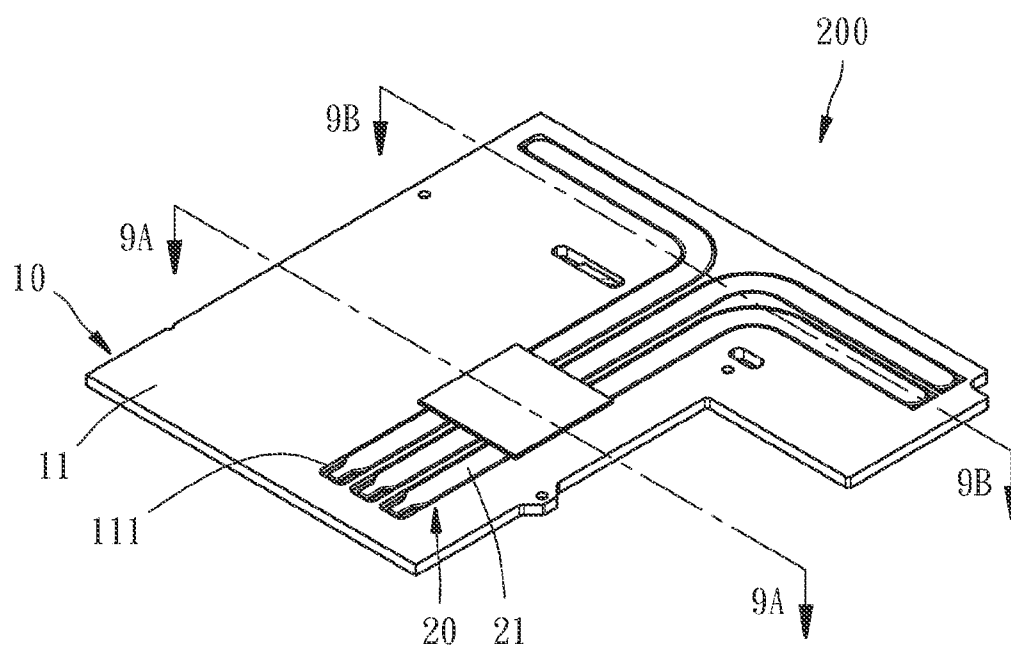


FIG 6

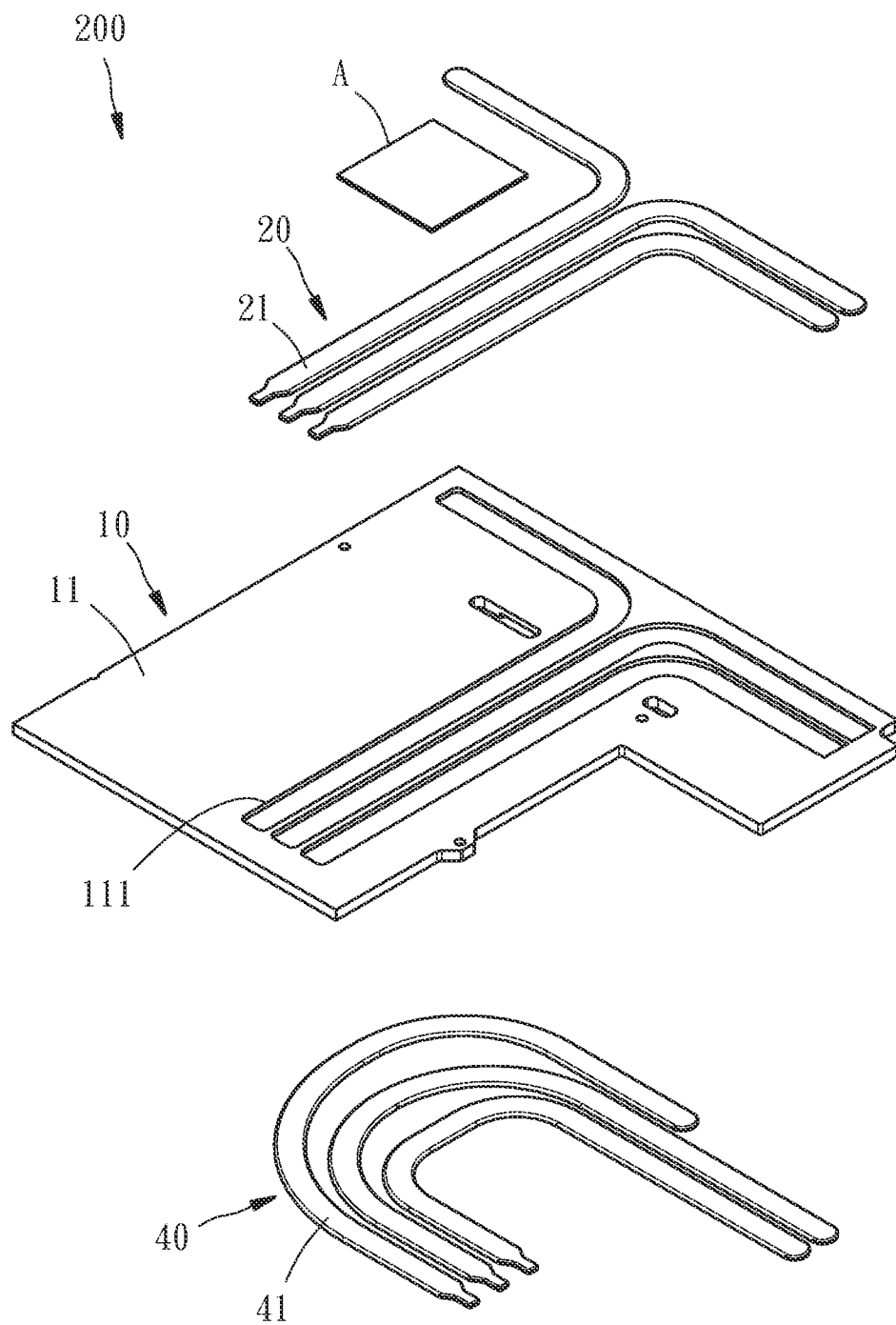


FIG 7

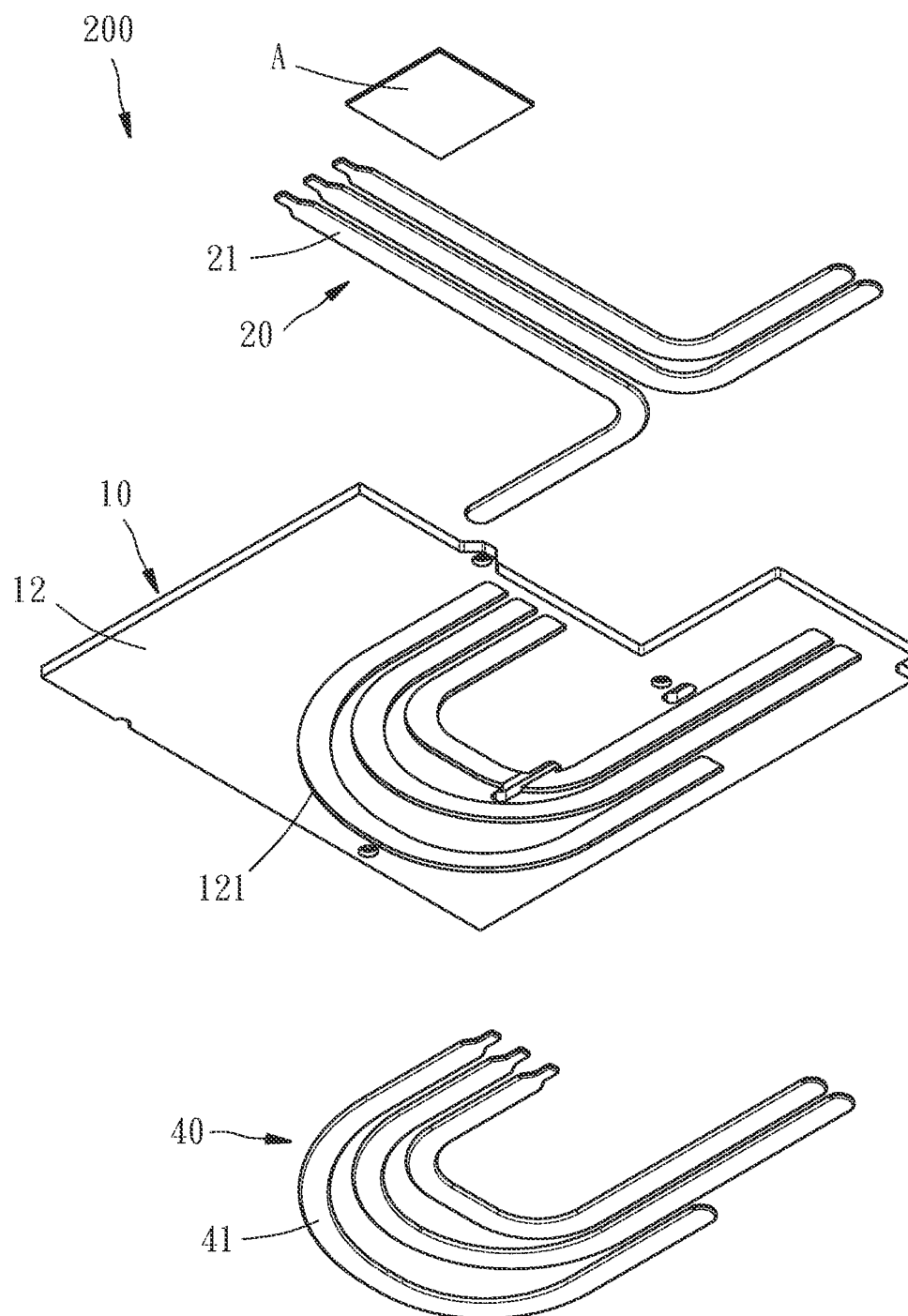


FIG 8

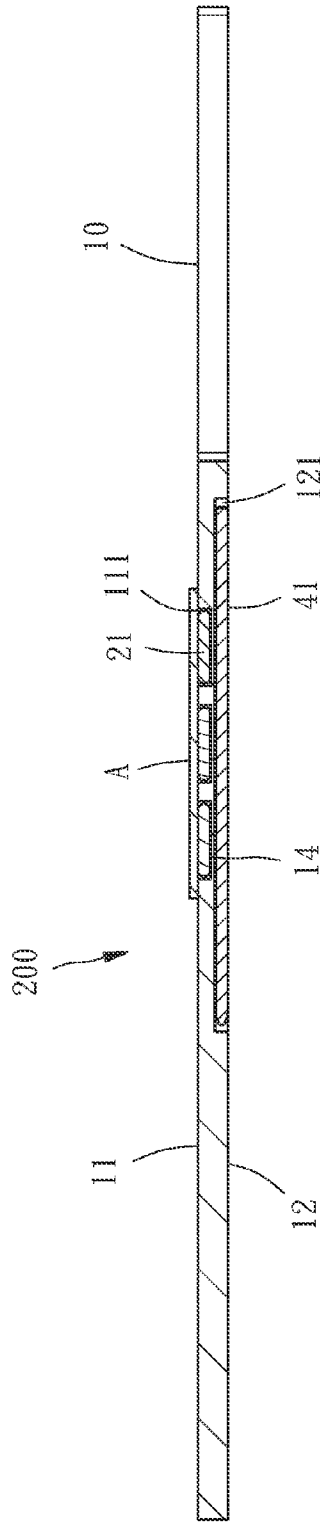


FIG 9A

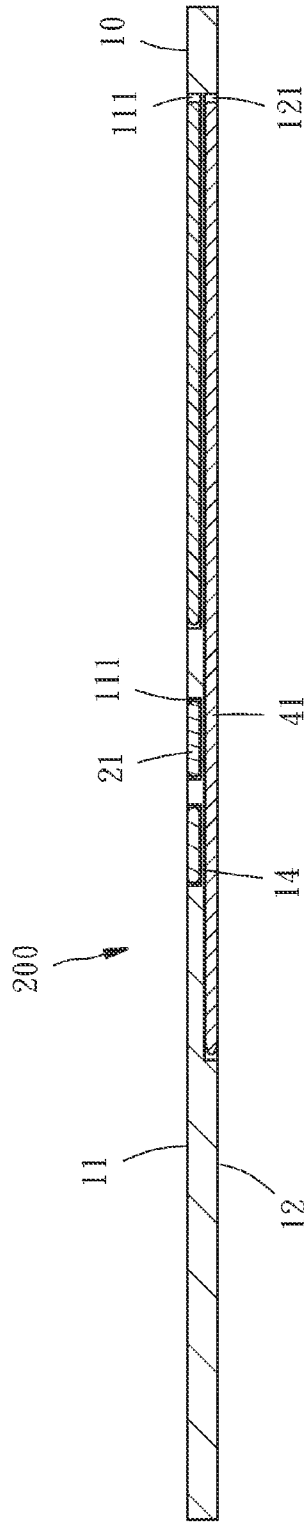


FIG 9B

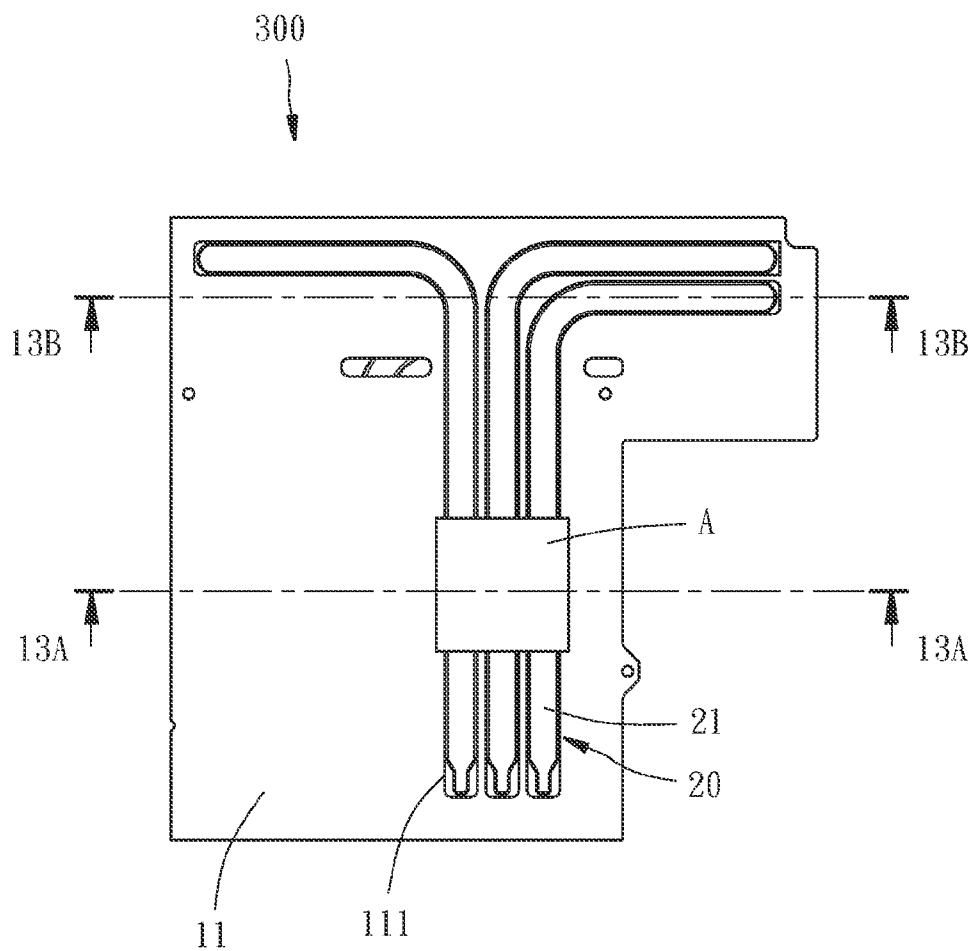


FIG 10

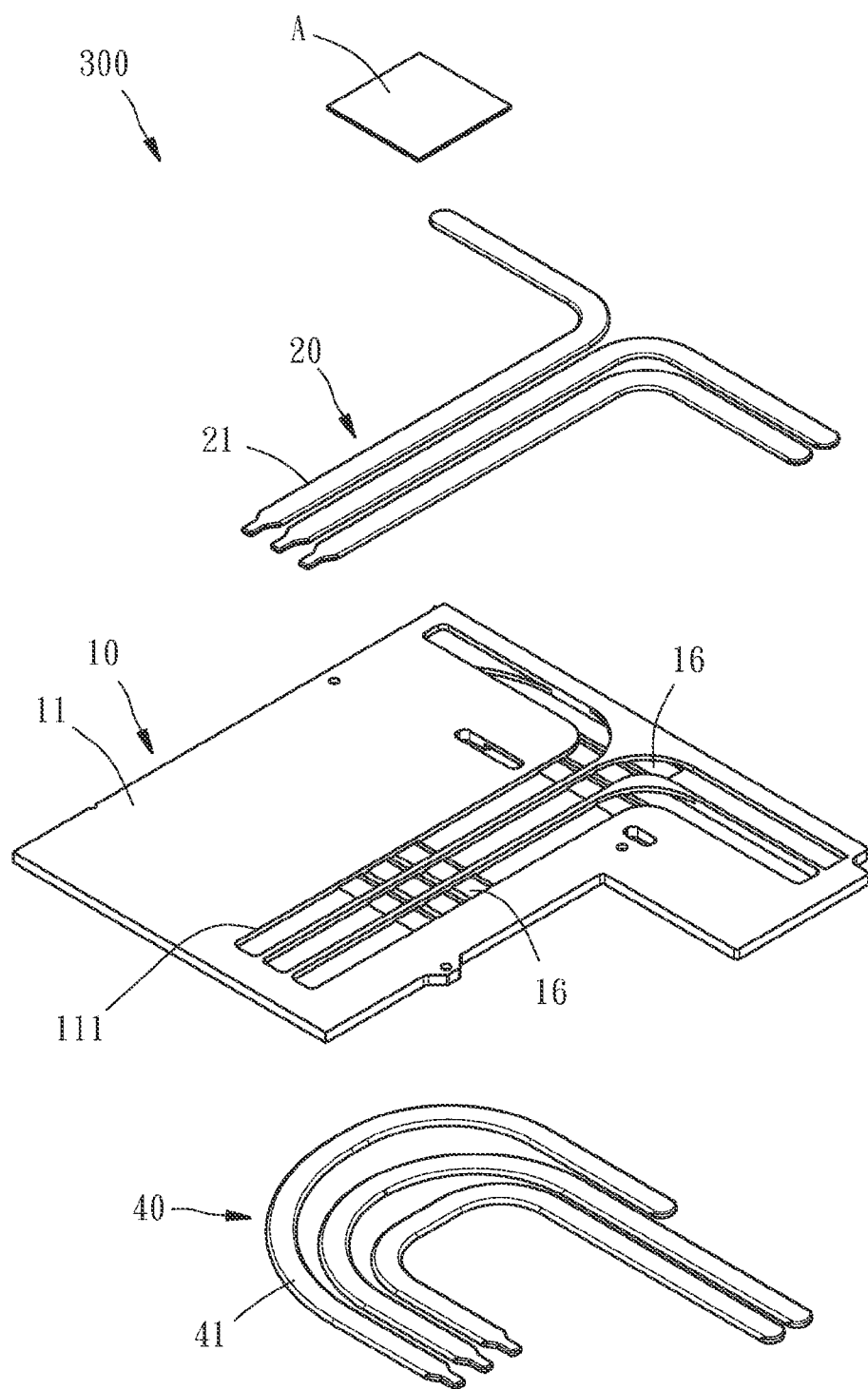


FIG 11

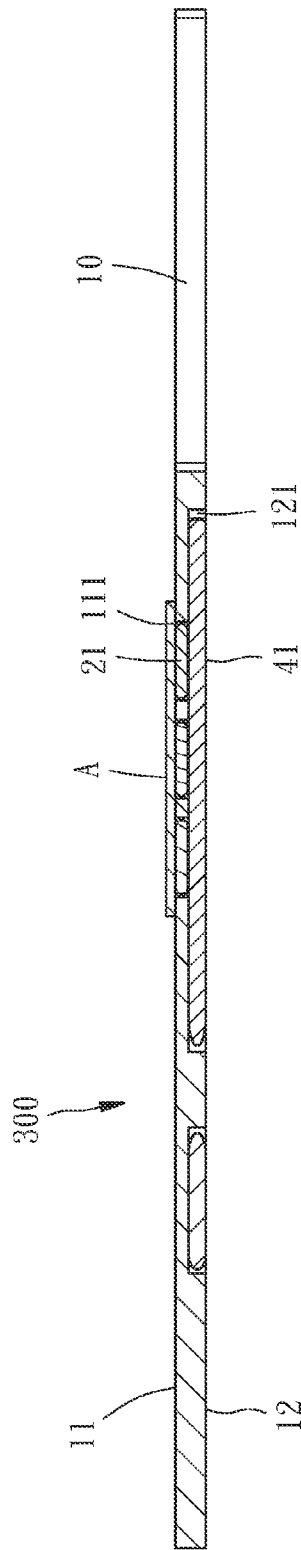


FIG 13A

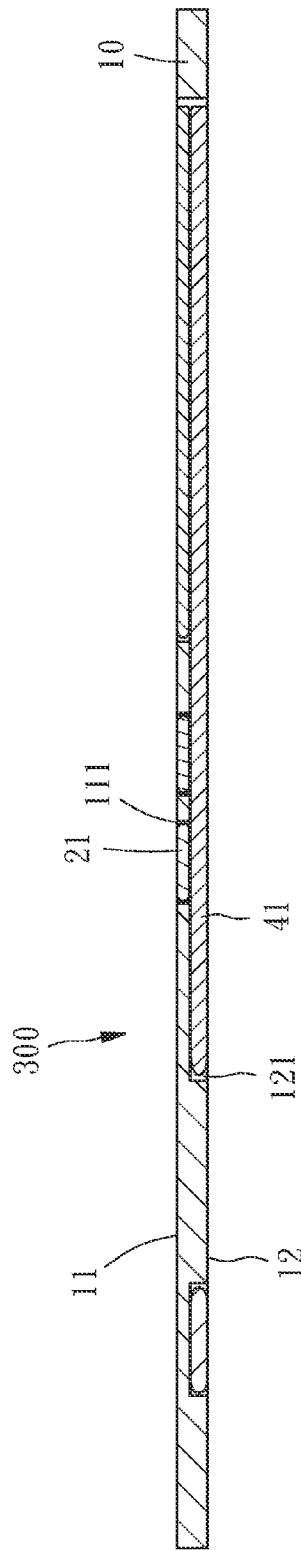


FIG 13B

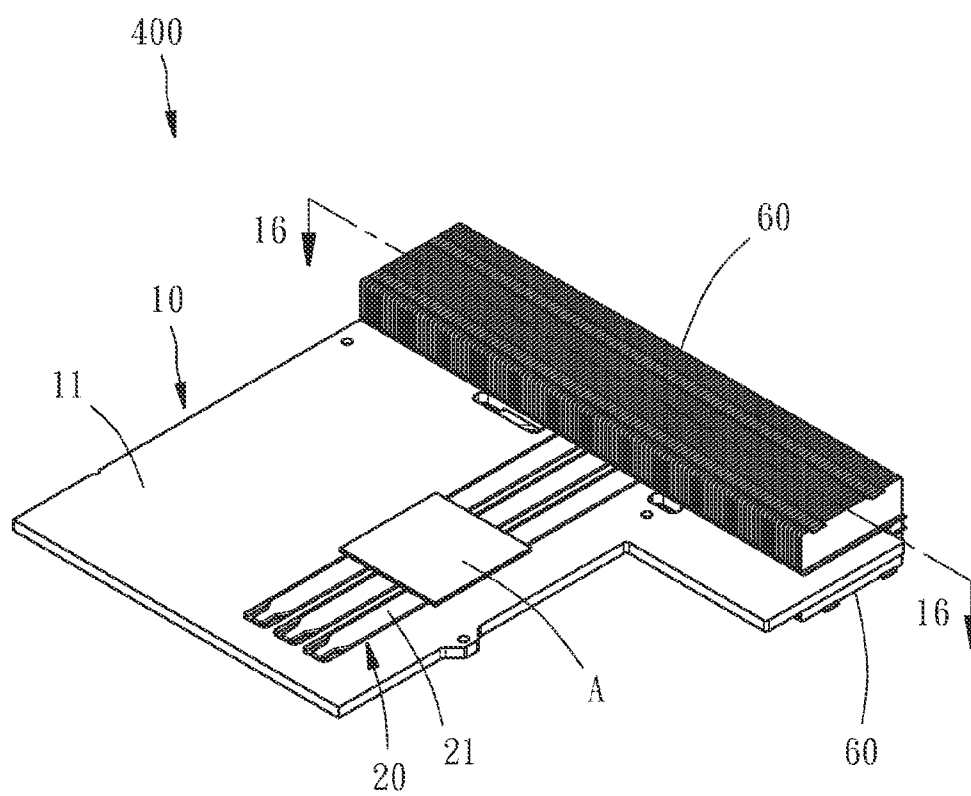


FIG 14

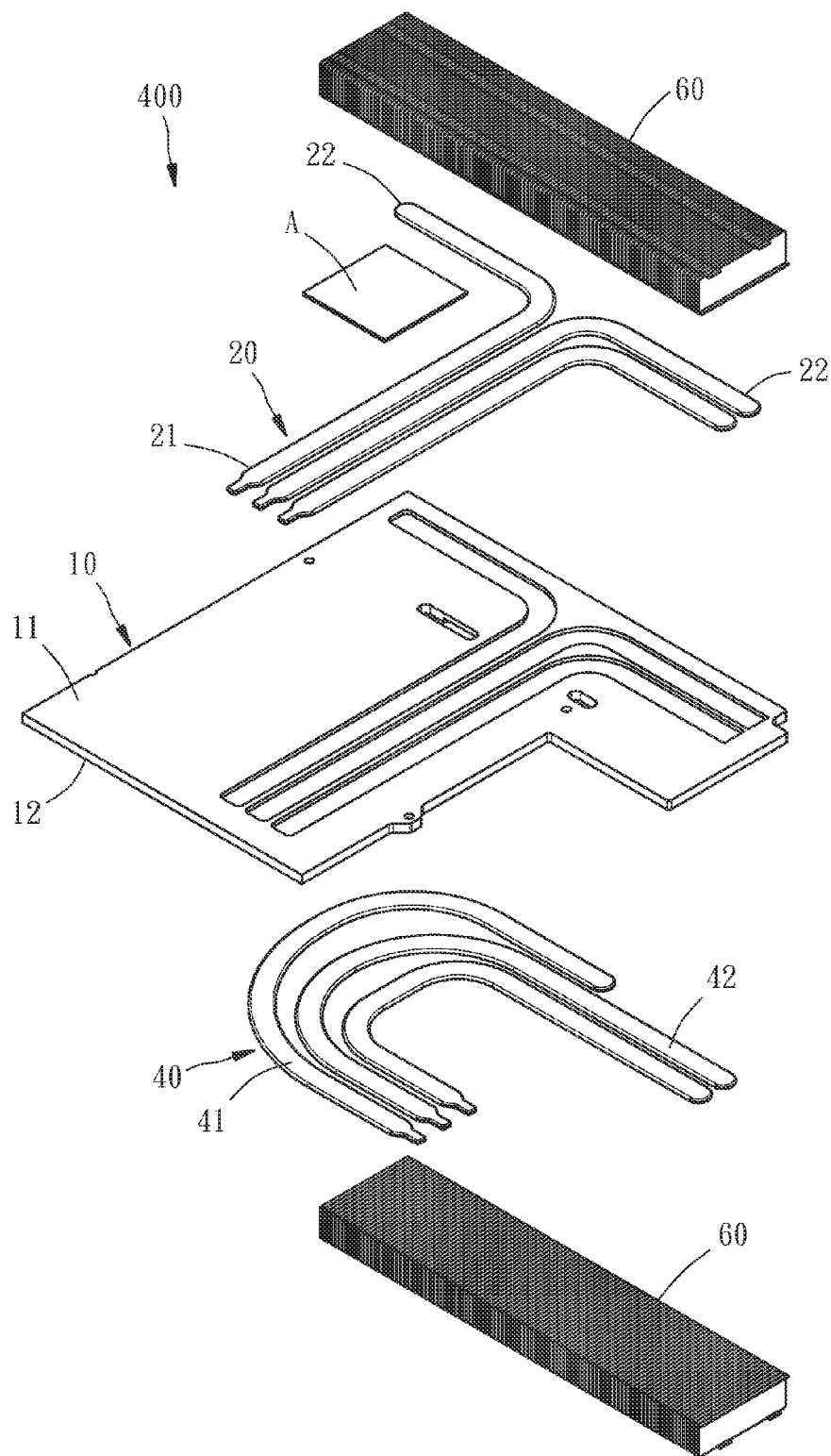


FIG 15

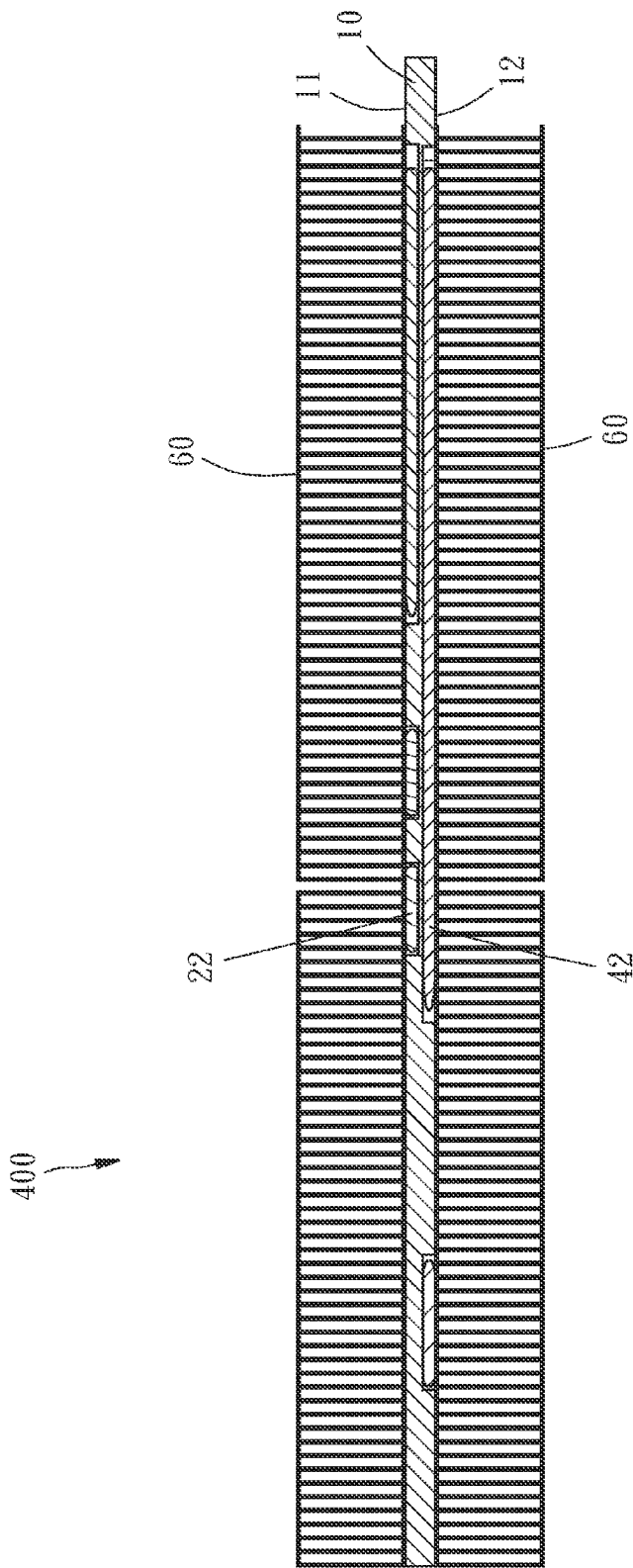


FIG 16

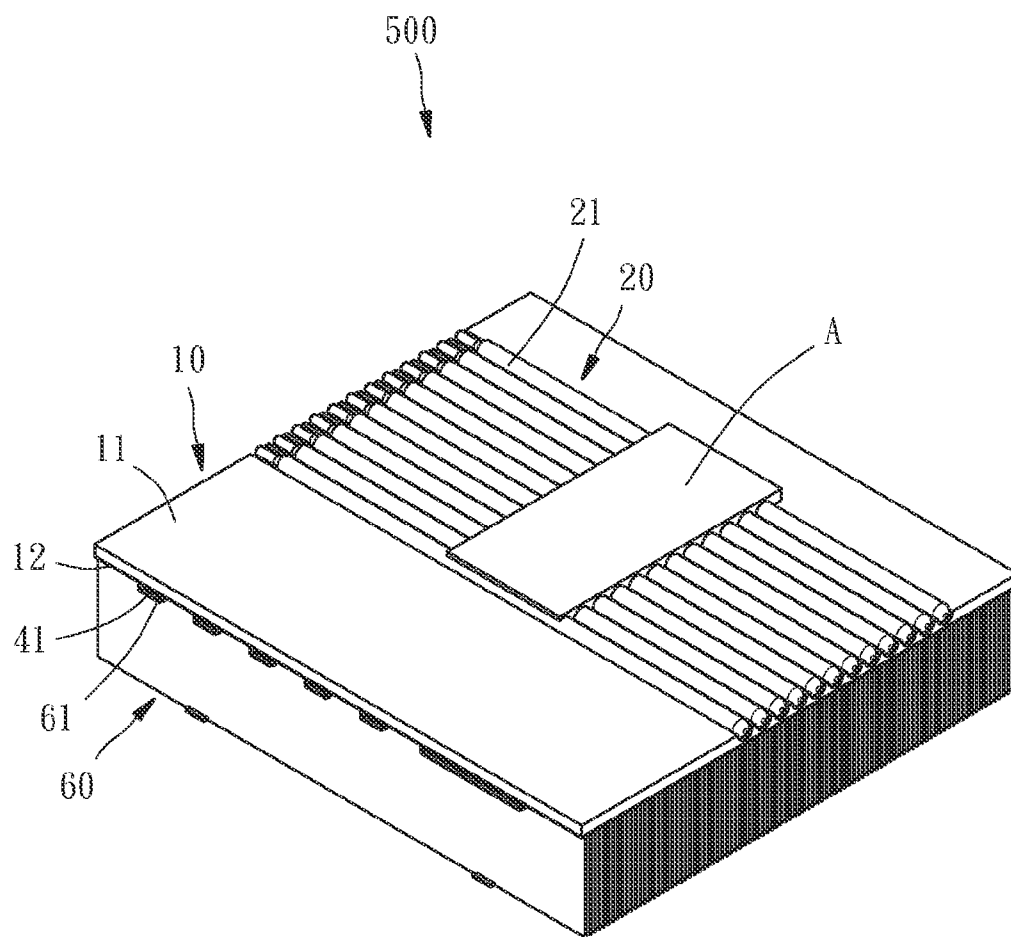


FIG 17

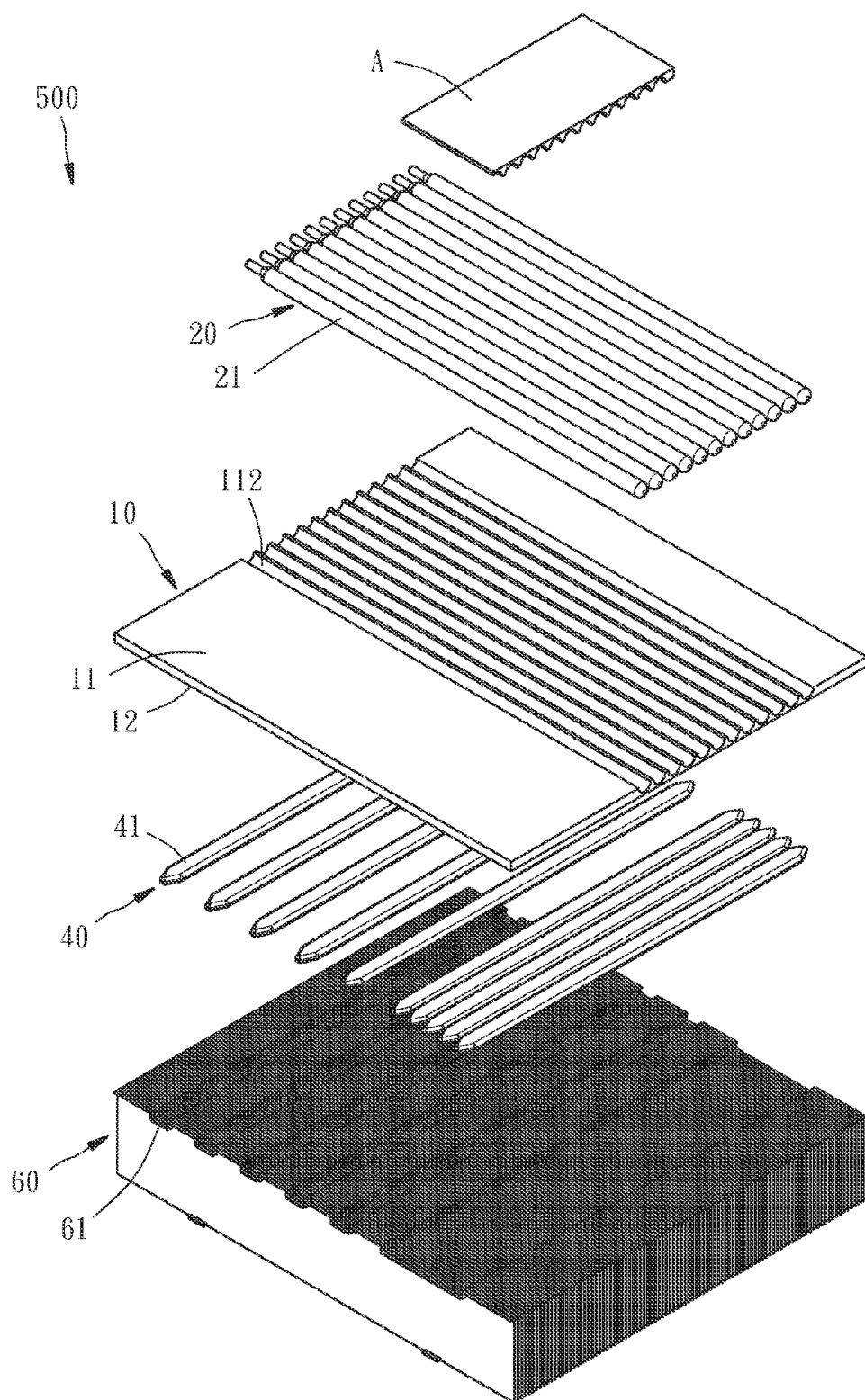


FIG 18

HEAT-DISSIPATING STRUCTURE

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates to heat-dissipating structures, and more particularly to a heat-dissipating structure featuring for two layers of heat pipes that are separated and overlap each other.

[0003] 2. Description of Related Art

[0004] US Patent Application Publication No. 20120305221A1 discloses a heat pipe-attached heat sink, which comprises a radiation fin module (denoted by the numeral 10 in the patent drawing), a plurality of heat pipes (denoted by the numeral 20 in the patent drawing), and a bottom block (denoted by the numeral 30 in the patent drawing). The radiation fin module is composed of a plurality of first radiation fins (denoted by the numeral 1 in the patent drawing) and a plurality of second radiation fins (denoted by the numeral 1a in the patent drawing). The radiation fin module has two protruding blocks (denoted by the numeral 101 in the patent drawing) and a plurality of locating grooves (denoted by the numeral 112 in the patent drawing). The bottom block has an opening (denoted by the numeral 31 in the patent drawing) and a plurality of locating grooves (denoted by the numeral 32 in the patent drawing) provided at two sides of the opening. To assemble the heat sink, the protruding blocks of the radiation fin module are located at the opening of the bottom block, and firmly affixed to the bottom block. Each said locating groove of the radiation fin module is aligned with each said locating groove of the bottom block. Then each said heat pipe is disposed on the radiation fin module and the bottom block, and received in the corresponding locating groove. In use, the heat pipes are in direct contact with a heat source, so the heat pipes can dissipate heat.

[0005] The prior-art device uses the heat pipes to dissipate heat from the heat source. However, since the heat pipes are arranged into a single layer, the resultant heat dissipation is poor. Hence, the known heat pipe-attached heat sink needs to be improved.

SUMMARY OF THE INVENTION

[0006] The primary objective of the present invention is to provide a heat-dissipating structure that features for two layers of heat pipes that are separated and overlap each other and is capable of dissipating heat from a to-be-cooled article quickly.

[0007] Therefore, the heat-dissipating structure of the present invention comprises: a heat-dissipating partition, a first heat-dissipating layer, and a second heat-dissipating layer. The heat-dissipating partition has two opposite surfaces, wherein one said surface is defined as a first surface, and the other surface is defined as a second surface. The first heat-dissipating layer is composed of a plurality of first heat pipes. Each said first heat pipe is disposed on the first surface of the heat-dissipating partition. The second heat-dissipating layer is composed of a plurality of second heat pipes. Each said second heat pipe is disposed on the second surface of the heat-dissipating partition. Each said first heat pipe of the first heat-dissipating layer has at least one part overlapping at least one part of each said second heat pipe of the second heat-dissipating layer.

[0008] Thereby, with the overlaps between the first heat pipes and the second heat pipes, the heat from a to-be-cooled

article can be transmitted successively to the first heat-dissipating layer, the heat-dissipating partition, and then the second heat-dissipating layer, thereby achieving fast heat dissipation.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view of a first preferred embodiment of the present invention.

[0010] FIG. 2 is an exploded view of the first preferred embodiment of the present invention, showing the perspective views of the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.

[0011] FIG. 3 is an exploded view of the first preferred embodiment of the present invention taken from another viewpoint, showing the perspective views of the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.

[0012] FIG. 4 is a perspective view of the first preferred embodiment of the present invention, showing that the second heat-dissipating layer is located below the heat-dissipating partition.

[0013] FIG. 5A is a cross-sectional view taken along Line 5A-5A of FIG. 4, showing that the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer overlap each other.

[0014] FIG. 5B is a cross-sectional view taken along Line 5B-5B of FIG. 4, showing that the first heat-dissipating layer, the heat-dissipating partition and the second heat-dissipating layer overlap each other.

[0015] FIG. 6 is a perspective view of a second preferred embodiment of the present invention.

[0016] FIG. 7 is an exploded view of the second preferred embodiment of the present invention, showing the perspective views of the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.

[0017] FIG. 8 is an exploded view of the second preferred embodiment of the present invention taken from another viewpoint, showing the perspective views of the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.

[0018] FIG. 9A is a cross-sectional view taken along Line 9A-9A of FIG. 6, showing that the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer overlap each other, and that spacing portions are provided between the first heat pipes and the second heat pipes.

[0019] FIG. 9B is a cross-sectional view taken along Line 9B-9B of FIG. 6, showing that the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer overlap each other and that spacing portions are provided between the first heat pipes and the second heat pipes.

[0020] FIG. 10 is a top view of a third preferred embodiment of the present invention, showing the structure assembled.

[0021] FIG. 11 is an exploded view of the third preferred embodiment of the present invention, showing the perspective views of the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.

[0022] FIG. 12 is an exploded view of the third preferred embodiment of the present invention taken from another

viewpoint, showing the perspective views of the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.

[0023] FIG. 13A is a cross-sectional view taken along Line 13A-13A of FIG. 10, showing that the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer overlap each other, and that the first heat pipe and the second heat pipe contact each other at where they overlap.

[0024] FIG. 13B is a cross-sectional view taken along Line 13B-13B of FIG. 10, showing that the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer overlap each other, and that the first heat pipe and the second heat pipe contact each other at where they overlap.

[0025] FIG. 14 is a perspective view of a fourth preferred embodiment of the present invention.

[0026] FIG. 15 is an exploded view of the fourth preferred embodiment of the present invention, showing the perspective views of the heatsink set, the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.

[0027] FIG. 16 is a cross-sectional view taken along Line 16-16 of FIG. 14, showing that the heatsink set, the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer overlap each other.

[0028] FIG. 17 is a perspective view of a fifth preferred embodiment of the present invention.

[0029] FIG. 18 is an exploded view of the fifth preferred embodiment of the present invention, showing the perspective views of the to-be-cooled article, the first heat-dissipating layer, the heat-dissipating partition, and the second heat-dissipating layer.

DETAILED DESCRIPTION OF THE INVENTION

[0030] The invention as well as a preferred mode of use, further objectives and advantages thereof will be best understood by reference to the following detailed description of illustrative embodiments when read in conjunction with the accompanying drawings.

[0031] Please refer to FIG. 1 through FIG. 5B. In a first preferred embodiment of the present invention, a heat-dissipating structure 100 primarily comprises a heat-dissipating partition 10, a first heat-dissipating layer 20, and a second heat-dissipating layer 40.

[0032] The heat-dissipating partition 10 has two opposite surfaces. One of the surfaces is defined as a first surface 11, and the other is defined as a second surface 12, as shown in FIG. 2 and FIG. 3.

[0033] The first heat-dissipating layer 20 is composed of a plurality of first heat pipes 21. Each said first heat pipe 21 is disposed on the first surface 11 of the heat-dissipating partition 10, as shown in FIG. 1. In the first preferred embodiment, each said first heat pipe 21 has one surface disposed on the first surface 11 of the heat-dissipating partition 10.

[0034] The second heat-dissipating layer 40 is composed of a plurality of second heat pipes 41. Each said second heat pipe 41 is disposed on the second surface 12 of the heat-dissipating partition 10, as shown in FIG. 3 and FIG. 4. In the first preferred embodiment, each said second heat pipe 41 has one surface disposed on the second surface 12 of the heat-dissipating partition 10.

[0035] Each said first heat pipe 21 of the first heat-dissipating layer 20 has at least one part overlapping at least one part of one said second heat pipe 41 of the second heat-dissipating layer 40, as shown in FIG. 4 through FIG. 5B. In the first preferred embodiment, each said first heat pipe 21 has two parts overlapping two parts of one said second heat pipe 41.

[0036] The above refers to the configuration of the first preferred embodiment of the present invention, and the following description will be directed to its use.

[0037] Please refer to FIG. 1 through FIG. 5B. Each said heat pipe 21 of the first heat-dissipating layer 20 has one surface disposed on the first surface 11 of the heat-dissipating partition 10, and each said second heat pipe 41 of the second heat-dissipating layer 40 has one surface disposed on the second surface 12 of the heat-dissipating partition 10, as shown in FIG. 5A and FIG. 5B. Then, a to-be-cooled article A is put in direct contact with the other surface of the first heat pipes 21 of the first heat-dissipating layer 20, as shown in FIG. 4 and FIG. 5A, so that the to-be-cooled article A overlaps one part of each said first heat pipe 21 and one part of each said second heat pipe 41. The to-be-cooled article A is, for example, a CPU. First, the to-be-cooled article A has its heat transmitted to the first heat pipes 21 of the first heat-dissipating layer 20, and then the heat is transmitted to the second surface 12 through the first surface 11 of the heat-dissipating partition 10. At last, the heat is transmitted to the second heat pipes 41 of the second heat-dissipating layer 40, so as to achieve fast heat dissipation.

[0038] It is thus learned from the above description that the present invention has the following effects. The present invention solves the problem of the prior art that a single layer heat pipes is insufficient for heat dissipation. In the present invention, each said first heat pipe 21 has two parts overlapping two parts of each said second heat pipe 41, so the heat of the to-be-cooled article A can be transmitted successively to the first heat-dissipating layer 20, the heat-dissipating partition 10, and the second heat-dissipating layer 40, thereby achieving fast heat dissipation.

[0039] As described above, in the first preferred embodiment, each said first heat pipe 21 has its two parts overlapping two parts of each said second heat pipe 41, as shown in FIG. 4 through FIG. 5B. However, the implementation of the present invention is not limited thereto, as long as each said first heat pipe 21 remains one part overlapping one part of each said second heat pipe 41. Since such a layout can be derived from the first preferred embodiment, no figure is made to show the same.

[0040] It is to be noted that, in the first preferred embodiment, the to-be-cooled article A is illustratively a cooper plate, but not limited thereto. In fact, the to-be-cooled article A may be any article that is thermally conductive. Alternatively, the to-be-cooled article A may be a CPU chip, but not limited thereto. The to-be-cooled article A may be any electronic device that generates heat.

[0041] Please refer to FIG. 6 through FIG. 9B. In a second preferred embodiment the present invention, a heat-dissipating structure 200 is generally similar to its counterpart as described in the first embodiment except for the following differences.

[0042] The first surface 11 of the heat-dissipating partition 10 further comprises a plurality of first grooves 111. The first grooves 111 are depressed from the first surface 11. Each said first heat pipe 21 is received in each said first groove 111, as shown in FIG. 6 and FIG. 7. The second surface 12 of the

heat-dissipating partition 10 further comprises a plurality of second grooves 121, as shown in FIG. 8. The second grooves 121 are depressed from the second surface 12. Each said second heat pipe 41 is received in each said second groove 121. Each said first groove 111 has at least one part overlapping at least one part of each said second groove 121, as shown in FIG. 9A and FIG. 9B. In addition, a spacing portion 14 is provided between at least one part of each said first groove 111 and at least one part of the second grooves 121 that overlap each other, as shown in FIG. 9A and FIG. 9B. In the second preferred embodiment, wherein the two parts of each said first groove 111 overlap the two parts of each said second groove 121, a spacing portion 14 is provided between one said part of each said first groove 111 and one said part of each said second groove 121 that overlap each other.

[0043] The above refers to the configuration of the second preferred embodiment of the present invention, and the following description will be directed to its use.

[0044] Please refer to FIG. 6 through FIG. 9B. Each said first heat pipe 21 of the first heat-dissipating layer 20 is disposed on the first surface 11 of the heat-dissipating partition 10, and is received in each said first groove 111, as shown in FIG. 6. Each said second heat pipe 41 of the second heat-dissipating layer 40 is disposed on the second surface 12 of the heat-dissipating partition 10, and is received in each said second groove 121, as shown in FIG. 9A and FIG. 9B. Two said spacing portions 14 are provided between the two parts of the first heat pipe 21 and the two parts of the second heat pipe 41 that overlap each other, respectively. Then, the to-be-cooled article A is put in direct contact with the other surface of the first heat pipes 21 of the first heat-dissipating layer 20 and the first surface 11 of the heat-dissipating partition 10, as shown in FIG. 6 and FIG. 9A. The to-be-cooled article A overlaps one part of each said first heat pipe 21 and one part of each said second heat pipe 41. First, the heat from the to-be-cooled article A is transmitted to the first heat pipes 21 of the first heat-dissipating layer 20 and the first surface 11 of the heat-dissipating partition 10, and then transmitted through the second surface 12 and the first surface of the heat-dissipating partition 10 and each said spacing portion 14, to the second heat pipes 41 of the second heat-dissipating layer 40, thereby achieving fast heat dissipation.

[0045] As described above, in the second preferred embodiment, the two parts of each said first groove 111 and the two parts of the corresponding second groove 121 overlap each other, as shown in FIG. 9A and FIG. 9B. However, the implementation of the present invention is not limited thereto, as long as each said first groove 111 remains its one part overlapping one part of the corresponding second groove 121. Since such a layout can be derived from the first preferred embodiment, no figure is made to show the same.

[0046] Since the rest of the configuration of the second preferred embodiment is similar to the first preferred embodiment, no repetition is provided herein.

[0047] Please refer to FIG. 10 and FIG. 13B. In a third preferred embodiment of the present invention, a heat-dissipating structure 300 is generally similar to its counterpart as described in the first embodiment except for the following differences.

[0048] A hollowed portion 16 is provided at where at least one part of each said first groove 111 overlaps at least one part of one said second groove 121, as shown in FIG. 11 and FIG. 12, and at where at least one part overlap each other the grooves 111, 121 are communicated with each other. In the

third preferred embodiment, each said first groove 111 has two parts overlapping two parts of each said second groove 121, and a hollowed portion 16 is provided at where the part of each said first groove 111 overlaps the part of each said second groove 121, in which the first and second grooves 111, 121 are communicated with each other at where their parts overlap each other.

[0049] The above refers to the configuration of the third preferred embodiment of the present invention, and the following description will be directed to its use.

[0050] Please refer to FIG. 10 through FIG. 13B. Each said first heat pipe 21 of the first heat-dissipating layer 20 is disposed on the first surface 11 of the heat-dissipating partition 10, and is received in each said first groove 111, as shown in FIG. 11. Each said second heat pipe 41 of the second heat-dissipating layer 40 is disposed on the second surface 12 of the heat-dissipating partition 10, and is received in each said second groove 121, as shown in FIG. 12. Please refer to FIG. 13A and FIG. 13B. Two parts of each said first heat pipe 21 contact two parts of one said second heat pipe 41 through each said hollowed portion 16 (as shown in FIG. 11 and FIG. 12). Then, the to-be-cooled article A is put in direct contact with the other surface of the first heat pipes 21 of the first heat-dissipating layer 20 and the first surface 11 of the heat-dissipating partition 10, as shown in FIG. 10 and FIG. 13A. The to-be-cooled article A overlaps one part of each said first heat pipe 21 and one part of each said second heat pipe 41. First, the heat of the to-be-cooled article A is transmitted to the first heat pipes 21 of the first heat-dissipating layer 20 and the first surface 11 of the heat-dissipating partition 10, and is then transmitted to the second heat pipes 41 of the second heat-dissipating layer 40, thereby achieving fast heat dissipation.

[0051] Since the rest of the configuration of the third preferred embodiment is similar to the first preferred embodiment, no repetition is provided herein.

[0052] Please refer to FIG. 14 and FIG. 16. In a fourth preferred embodiment of the present invention, a heat-dissipating structure 400 is generally similar to its counterpart as described in the first embodiment except for the following differences.

[0053] Among the first heat pipes 21 of the first heat-dissipating layer 20, at least one said first heat pipe 21 has one end extending opposite to the corresponding ends of the other first heat pipes 21, so as to each extending in an opposite direction and form a first extended section 22, as shown in FIG. 15. The second heat pipes 41 of the second heat-dissipating layer 40 have their one ends extending to form a second extended section 42, as shown in FIG. 15. In the fourth preferred embodiment, the at least one first heat pipe 21 is one first heat pipe 21.

[0054] The disclosed structure further comprises at least one heatsink set 60, which is deposited on at least one of the other surface of the first extended section 22 and the other surface of the second extended section 42, as shown in FIG. 16. In the fourth preferred embodiment, the at least one heat-sink set 60 is, for example, two said heatsink sets 60. The two heatsink set 60 are disposed on the other surface of the second extended sections 22 and the other surface of the second extended section 42.

[0055] The above refers to the configuration of the fourth preferred embodiment of the present invention, and the following description will be directed to its use.

[0056] Please refer to FIG. 14 through FIG. 16. The to-be-cooled article A is put in direct contact with the other surface of the first heat pipes 21 of the first heat-dissipating layer 20, as shown in FIG. 14. The heat of the to-be-cooled article A is transmitted to the first heat pipes 21 and the second heat pipes 41, and then transmitted to the two heatsink sets 60 through the other surface of the first extended section 22 and the other surface of the second extended section 42, as shown in FIG. 16, thereby achieving fast heat dissipation.

[0057] As described above, in the fourth preferred embodiment of the present invention, the at least one first heat pipe 21 is, for example, one said first heat pipe 21, as shown in FIG. 15. However, the implementation of the present invention is not limited thereto, and the at least one first heat pipe 21 may alternatively be, for example, plural said first heat pipes 21.

[0058] It is to be noted that, in the fourth preferred embodiment of the present invention, the at least one heatsink set 60 is, for example, two said heatsink sets 60, as shown in FIG. 15. However, the implementation of the present invention is not limited thereto, and the at least one heatsink set 60 may alternatively be, for example, a single heatsink set 60 disposed on either the other surface of the first extended section 220, or the other surface of the second extended section 42. Since such a layout can be derived from the first preferred embodiment, no figure is made to show the same.

[0059] Since the rest of the configuration of the fourth preferred embodiment is similar to the first preferred embodiment, no repetition is provided herein.

[0060] Please refer to FIG. 17 and FIG. 18. In a fifth preferred embodiment of the present invention, a heat-dissipating structure 500 is generally similar to its counterpart as described in the first embodiment except for the following differences.

[0061] The disclosed structure further comprises a heatsink set 60, which has a plurality of heat-dissipating grooves 61, as shown in FIG. 18. Each said second heat pipe 41 is disposed on the heatsink set 60 and received in each said heat-dissipating groove 61. The second surface 12 of the heat-dissipating partition 10 contacts the heatsink set 60 at the surface of the heatsink set 60 having the heat-dissipating grooves 61. The first surface 11 of the heat-dissipating partition 10 further comprises a plurality of first grooves 112. Each said first heat pipe 41 is disposed on the first surface 11 of the heat-dissipating partition 10, and is received in each said first groove 112. In the fifth embodiment, the first heat pipe 21 has a round shape, and the second heat pipe 41 has a flattened shape.

[0062] The above refers to the configuration of the fifth preferred embodiment of the present invention, and the following description will be directed to its use.

[0063] Please refer to FIG. 17 through FIG. 18, the to-be-cooled article A is put in direct contact with the other surface of the first heat pipes 21 of the first heat-dissipating layer 20, as shown in FIG. 17. The heat of the to-be-cooled article A is transmitted to the first heat pipes 21. Then, the heat is transmitted to the second surface 12 through the first surface 11 of the heat-dissipating partition 10. At last, the heat is transmitted to the second heat pipes 41 and the heatsink set 60, thereby achieving fast heat dissipation.

[0064] Since the rest of the configuration of the fifth preferred embodiment is similar to the first preferred embodiment, no repetition is provided herein.

What is claimed is:

1. A heat-dissipating structure, comprising:

- a heat-dissipating partition, having two opposite surfaces, wherein one said surface is defined as a first surface, and the other surface is defined as a second surface;
- a first heat-dissipating layer, including a plurality of first heat pipes, each said first heat pipe being disposed on the first surface of the heat-dissipating partition; and
- a second heat-dissipating layer, including a plurality of second heat pipes, each said second heat pipe being disposed on the second surface of the heat-dissipating partition, wherein, each said first heat pipe of the first heat-dissipating layer has at least one part overlapping at least one part of each said second heat pipe of the second heat-dissipating layer.

2. The heat-dissipating structure of claim 1, wherein at least one said first heat pipe has one end extending opposite to corresponding ends of the other first heat pipes so as to each extending in an opposite direction and form a first extended section, and the second heat pipes of the second heat-dissipating layer have one ends thereof extending to form a second extended section.

3. The heat-dissipating structure of claim 2, further comprising at least one heatsink set that is disposed on at least one of the first extended section and the second extended section.

4. The heat-dissipating structure of claim 1, wherein each said first heat pipe has one surface disposed on the first surface of the heat-dissipating partition, and each said second heat pipe has one surface disposed on the second surface of the heat-dissipating partition.

5. The heat-dissipating structure of claim 4, wherein at least one said first heat pipe has one end extending opposite to corresponding ends of the other first heat pipes so as to each extending in an opposite direction and form a first extended section, and the second heat pipes of the second heat-dissipating layer have one ends thereof extending to form a second extended section.

6. The heat-dissipating structure of claim 5, further comprising at least one heatsink set that is disposed on at least one of the first extended section and the second extended section.

7. The heat-dissipating structure of claim 1, wherein the first surface of the heat-dissipating partition further comprises a plurality of first grooves, each of which is depressed from the first surface for receiving each said first heat pipe, and the second surface of the heat-dissipating partition further comprises a plurality of second grooves, each of which is depressed from the second surface for receiving each said second heat pipe, in which each said first groove has at least one part overlapping at least one part of one said second groove.

8. The heat-dissipating structure of claim 7, wherein at least one said first heat pipe has one end extending opposite to corresponding ends of the other first heat pipes so as to each extending in an opposite direction and form a first extended section, and the second heat pipes of the second heat-dissipating layer have one ends thereof extending to form a second extended section.

9. The heat-dissipating structure of claim 8, further comprising at least one heatsink set that is disposed on at least one of the first extended section and the second extended section.

10. The heat-dissipating structure of claim 7, wherein a spacing portion is provided between the at least one part of each said first groove and the at least one part of the corresponding second groove that overlap each other.

11. The heat-dissipating structure of claim **10**, wherein at least one said first heat pipe has one end extending opposite to corresponding ends of the other first heat pipes so as to each extending in an opposite direction and form a first extended section, and the second heat pipes of the second heat-dissipating layer have one ends thereof extending to form a second extended section.

12. The heat-dissipating structure of claim **11**, further comprising at least one heatsink set that is disposed on at least one of the first extended section and the second extended section.

13. The heat-dissipating structure of claim **7**, wherein a hollowed portion is formed between the at least one part of each said first groove and the at least one part of the corresponding second groove that overlap each other, so that the overlapping parts of the first and second grooves are communicated.

14. The heat-dissipating structure of claim **13**, wherein at least one said first heat pipe has one end extending opposite to corresponding ends of the other first heat pipes so as to each extending in an opposite direction and form a first extended

section, and the second heat pipes of the second heat-dissipating layer have one ends thereof extending to form a second extended section.

15. The heat-dissipating structure of claim **14**, further comprising at least one heatsink set that is disposed on at least one of the first extended section and the second extended section.

16. The heat-dissipating structure of claim **1**, further comprising a heatsink set that is depressed to form a plurality of heat-dissipating grooves, wherein each said second heat pipe is disposed on the heatsink set and received in each said heat-dissipating groove, and the second surface of the heat-dissipating partition is disposed on a surface of the heatsink set where the heat-dissipating grooves are formed, while the first surface of the heat-dissipating partition further comprises a plurality of first grooves, each of which receives each said first heat pipe.

17. The heat-dissipating structure of claim **16**, wherein the first heat pipe has a round shape and the second heat pipe has a flattened shape.

18. The heat-dissipating structure of claim **1**, further comprising a to-be-cooled article that is in direct contact with the first heat pipes of the first heat-dissipating layer.

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