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(54) **LIQUID COOLING HEAT DISSIPATING DEVICE**

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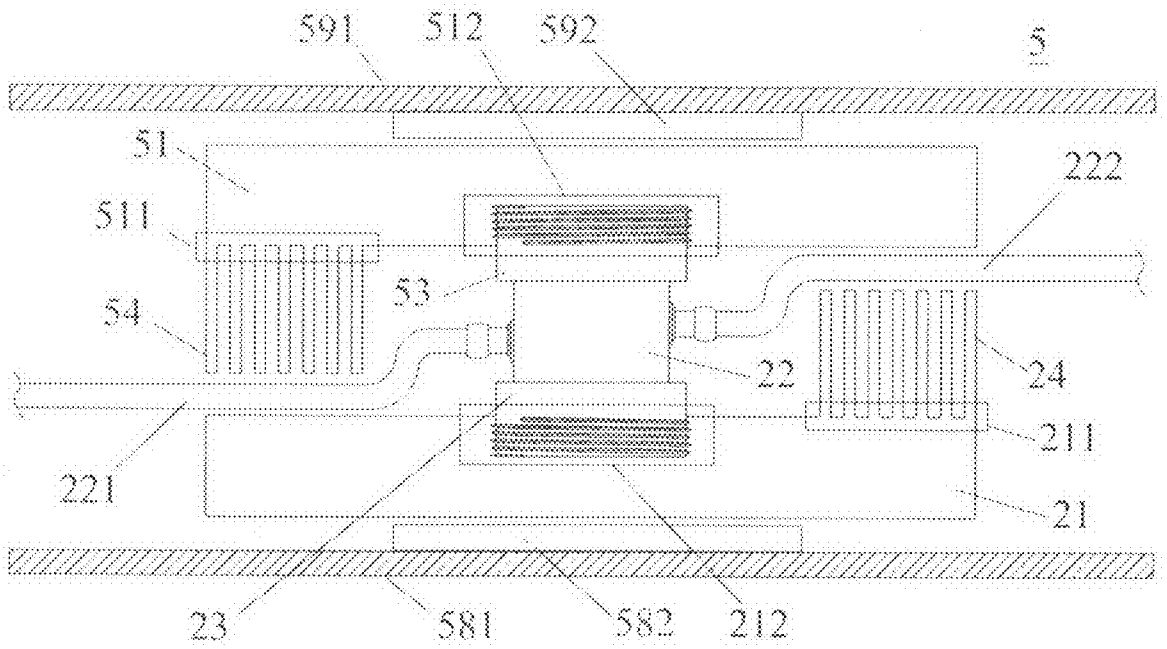
(57) **ABSTRACT**

The present invention discloses a liquid cooling heat dissipating device for at least one heat source. The liquid cooling heat dissipating device comprises a base, at least a cooling fin and a liquid cooling module. The device is characterized in that the cooling fin is disposed on the first area of surface of the base, and the liquid cooling module is removably installed on the first area of surface of the base. By this way, the users can optionally install the liquid cooling module according to the degrees of the generated heat. Computer suppliers can also reduce the cost effectively.



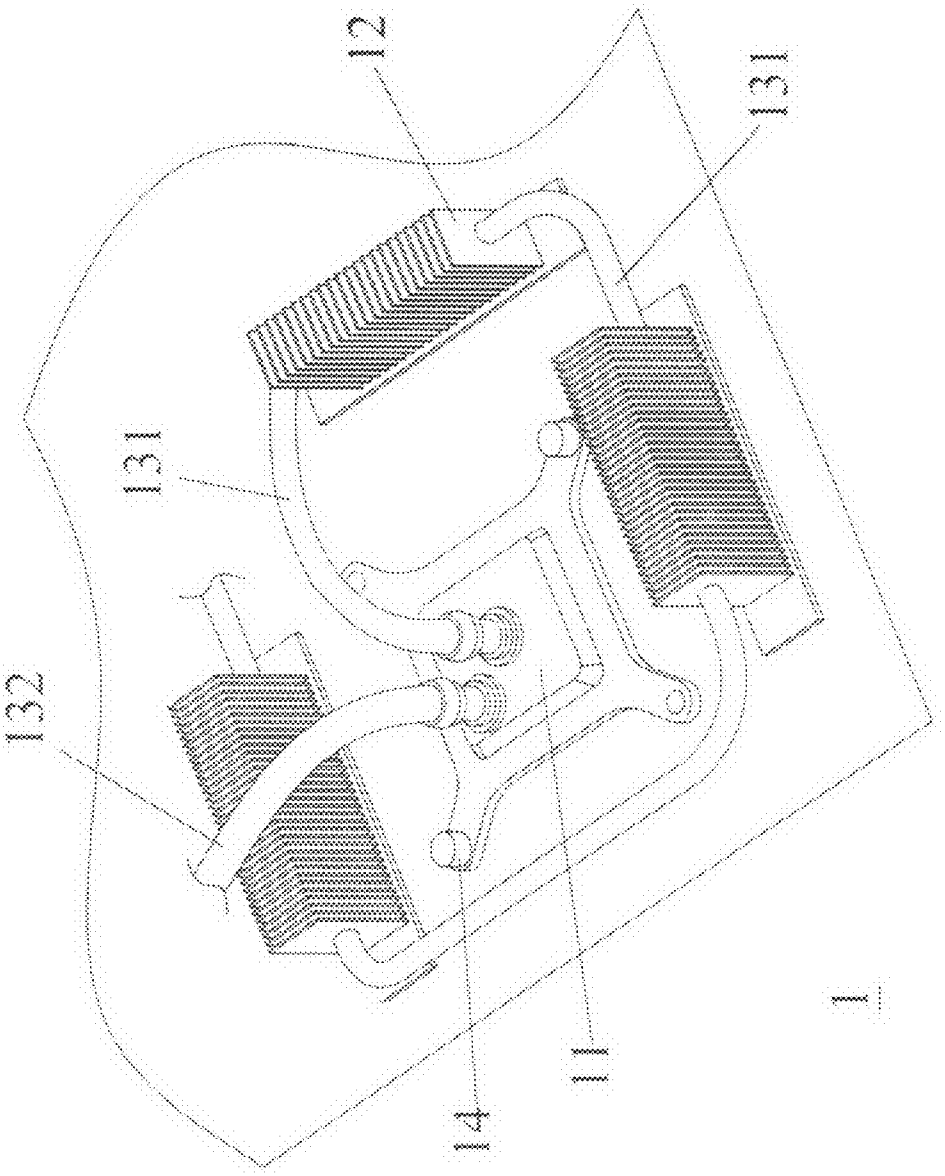


FIG.1(PRIOR ART)

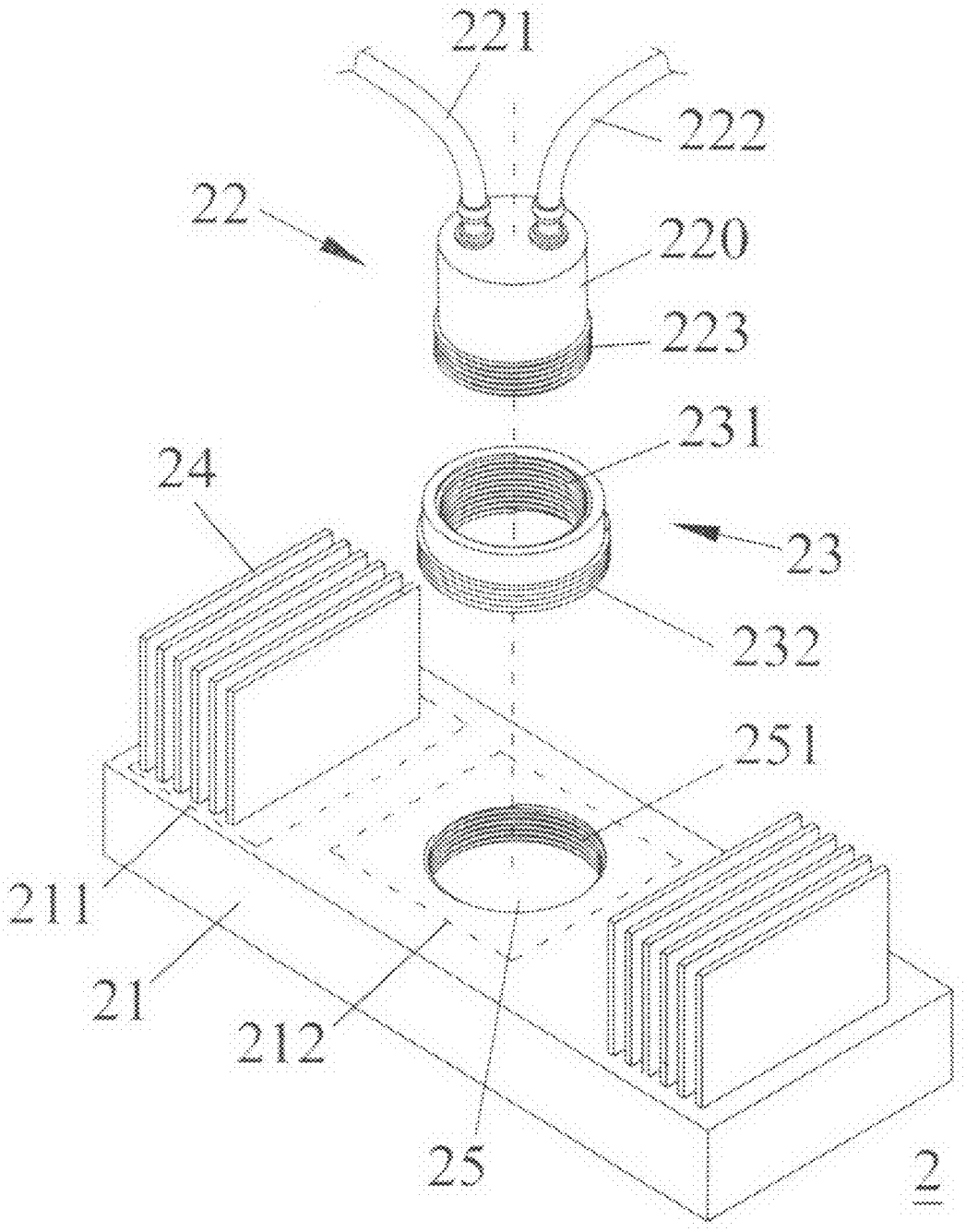


FIG.2

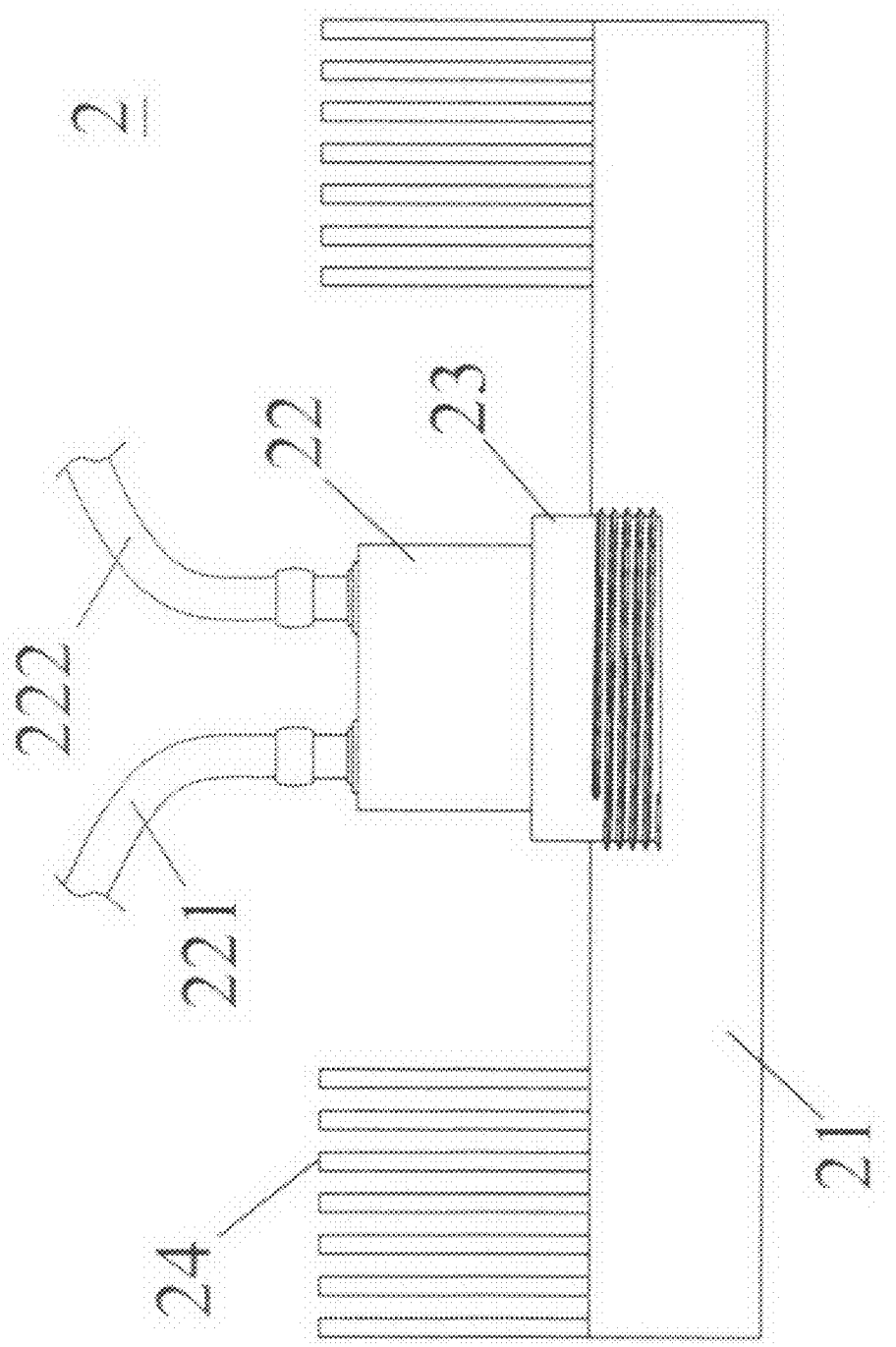


FIG.3

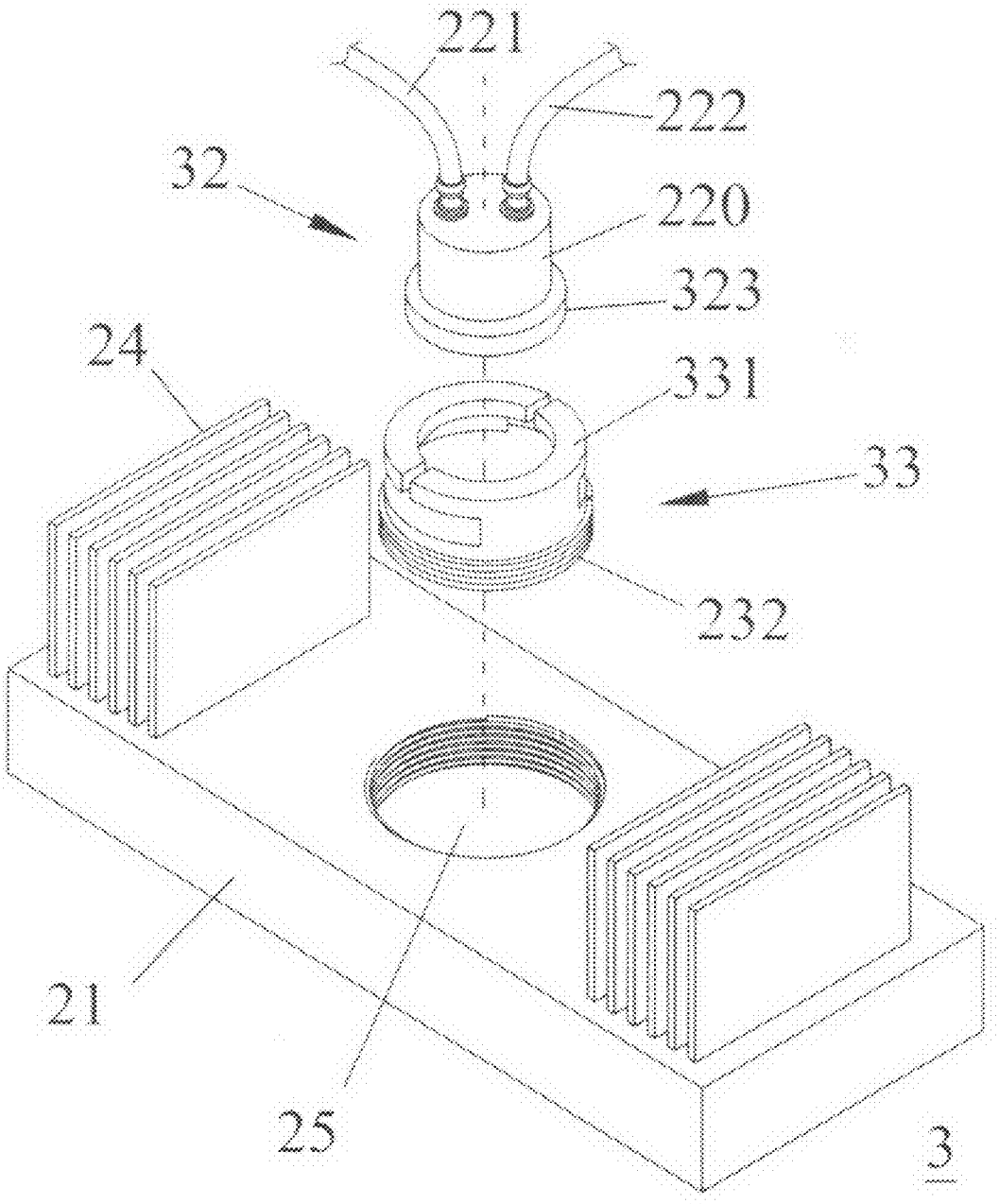


FIG.4

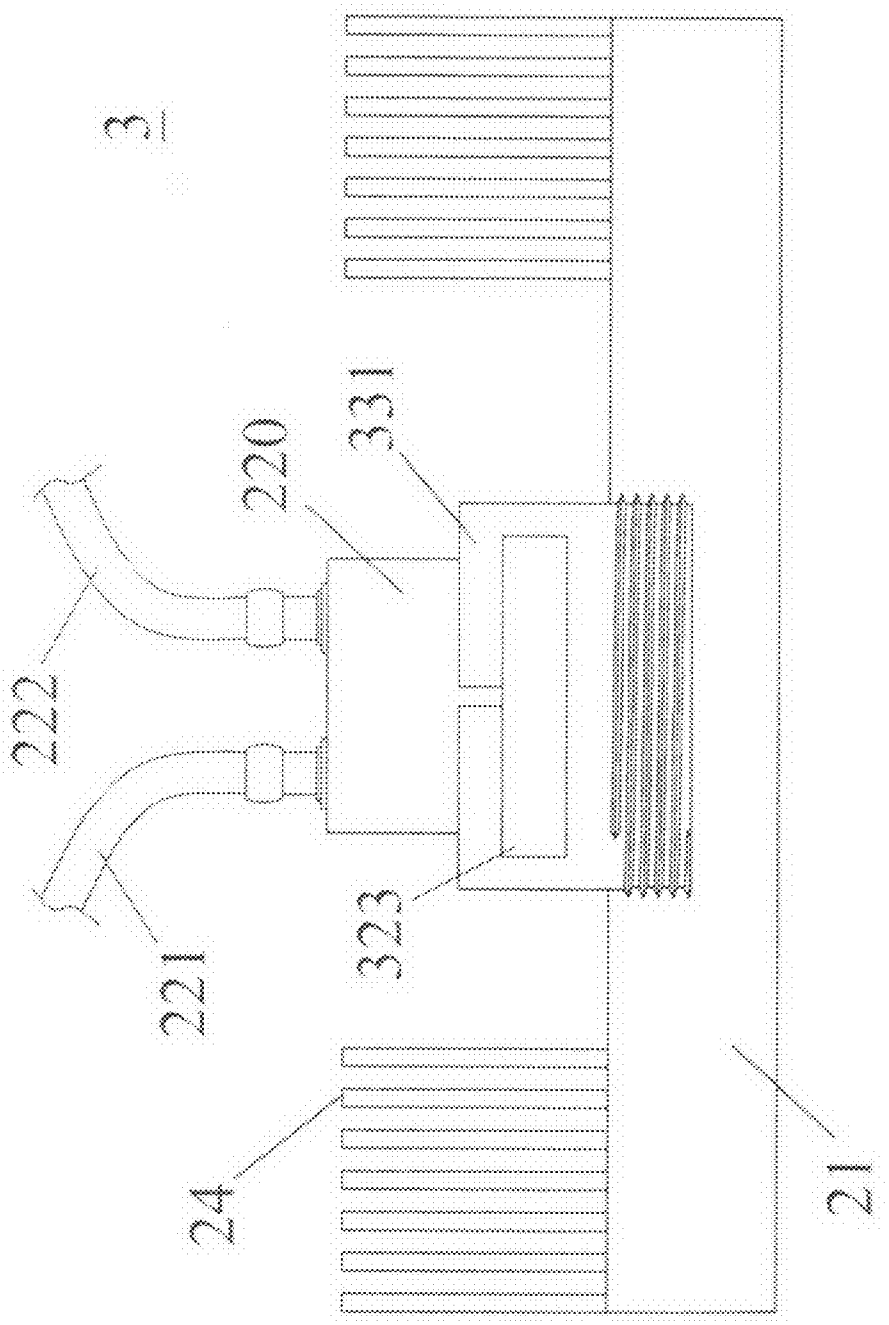


FIG.5

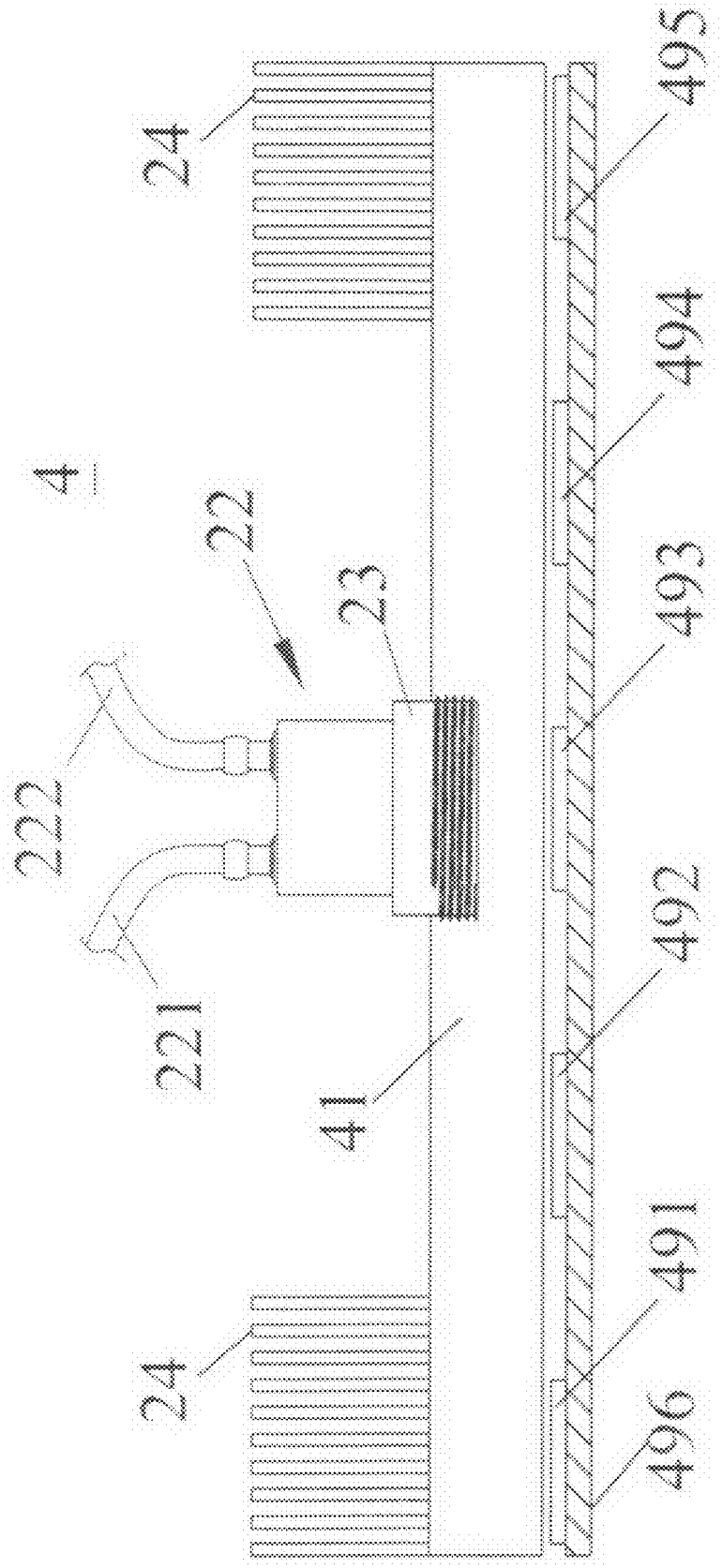


FIG.6

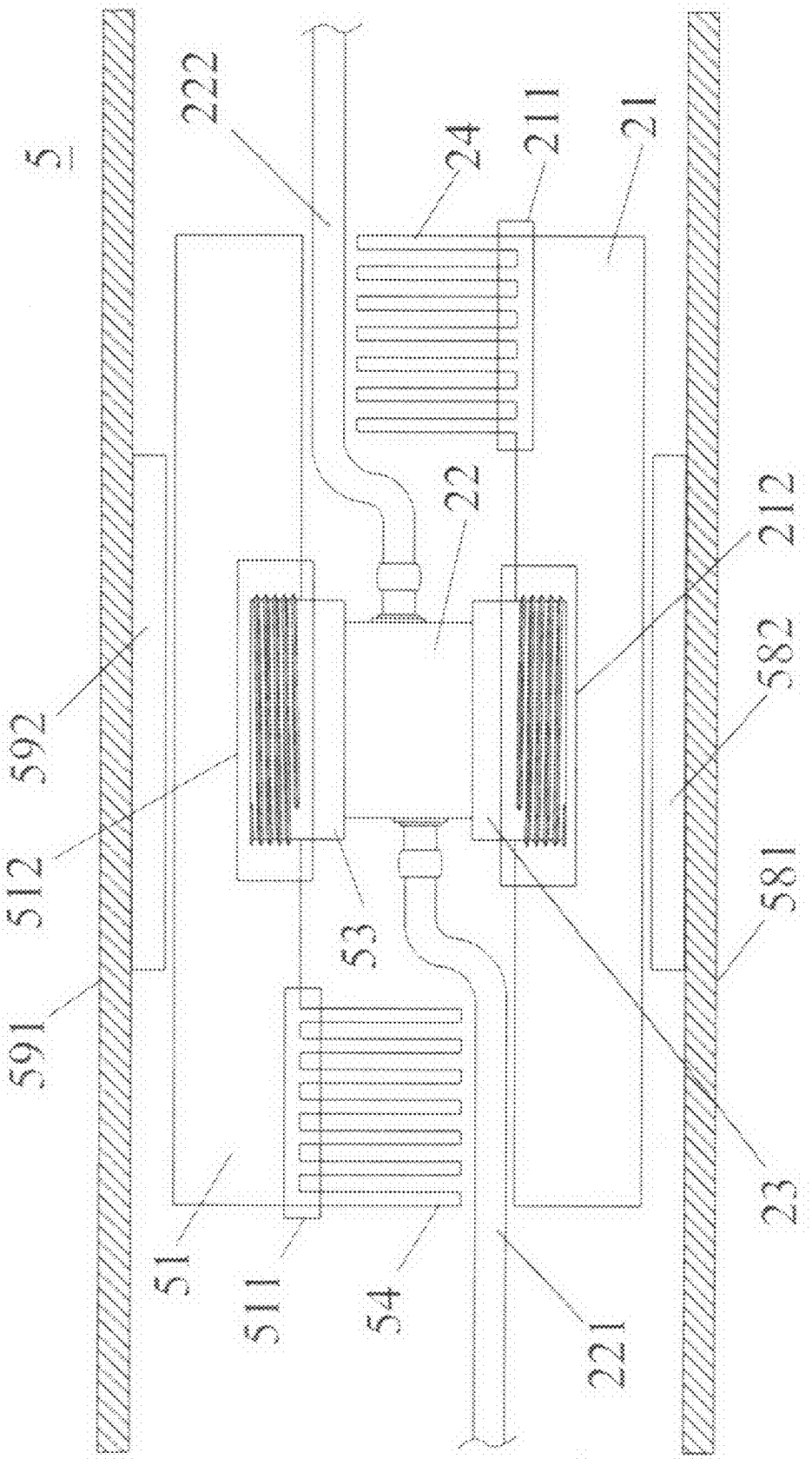


FIG.7

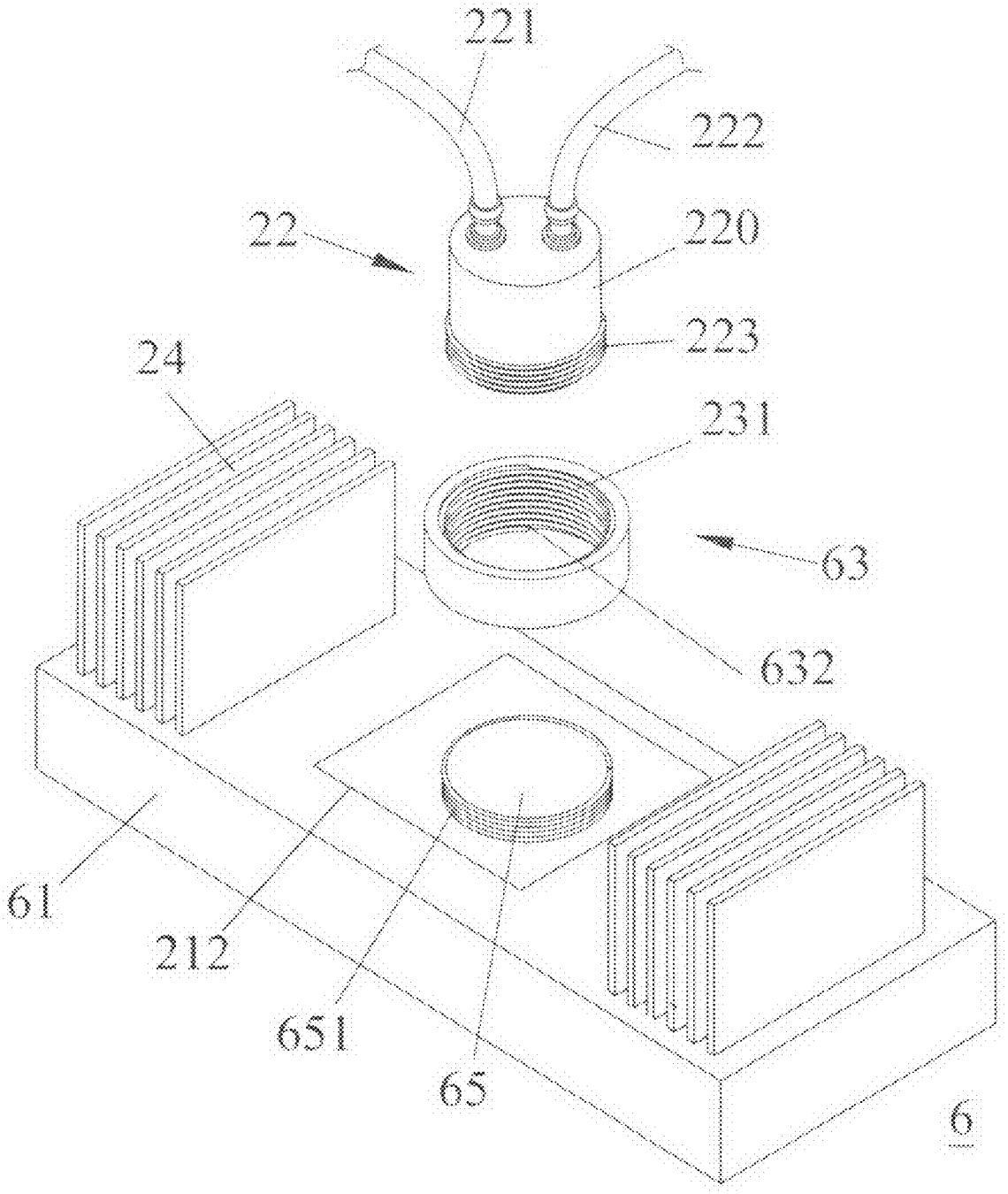


FIG.8

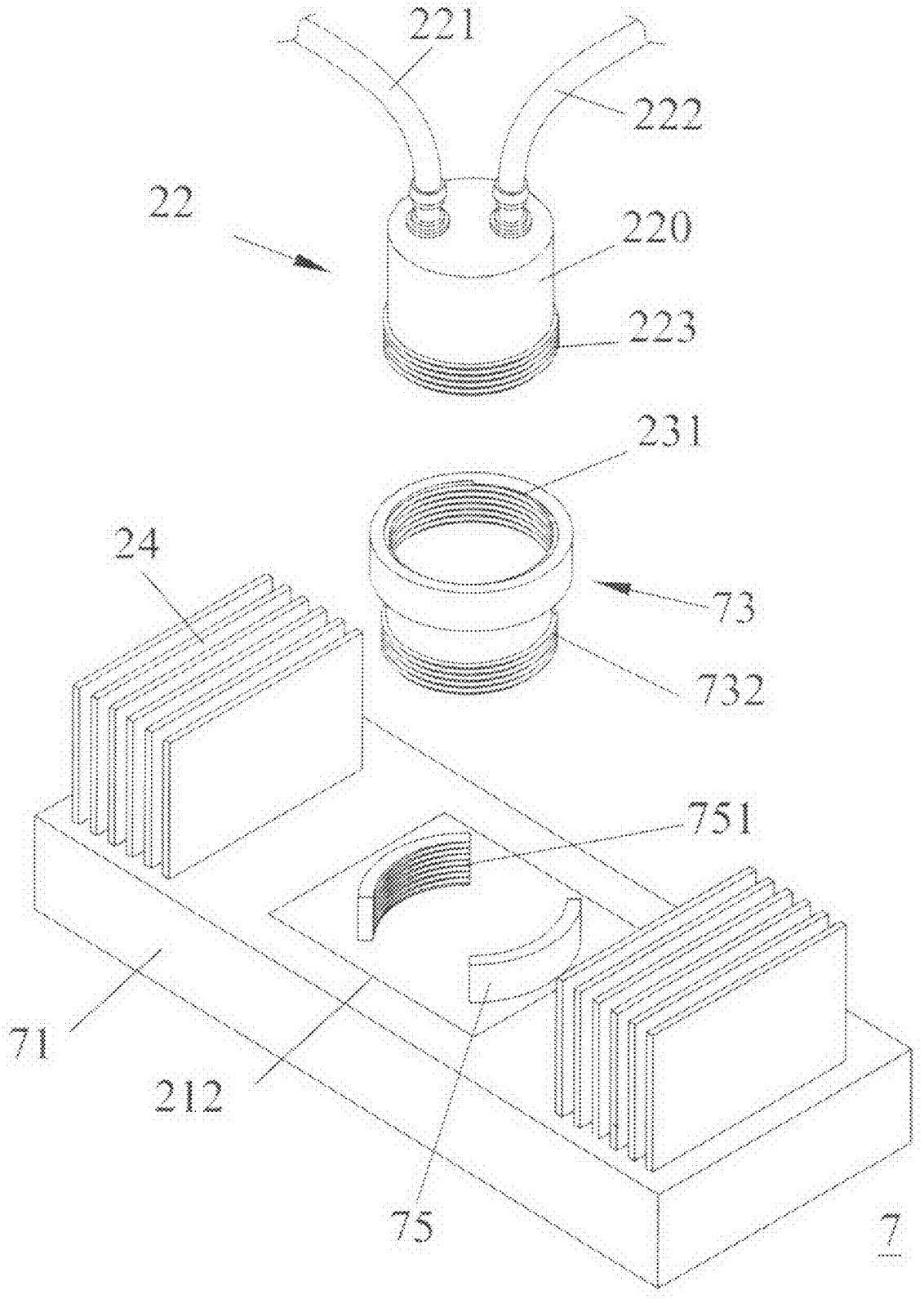


FIG.9

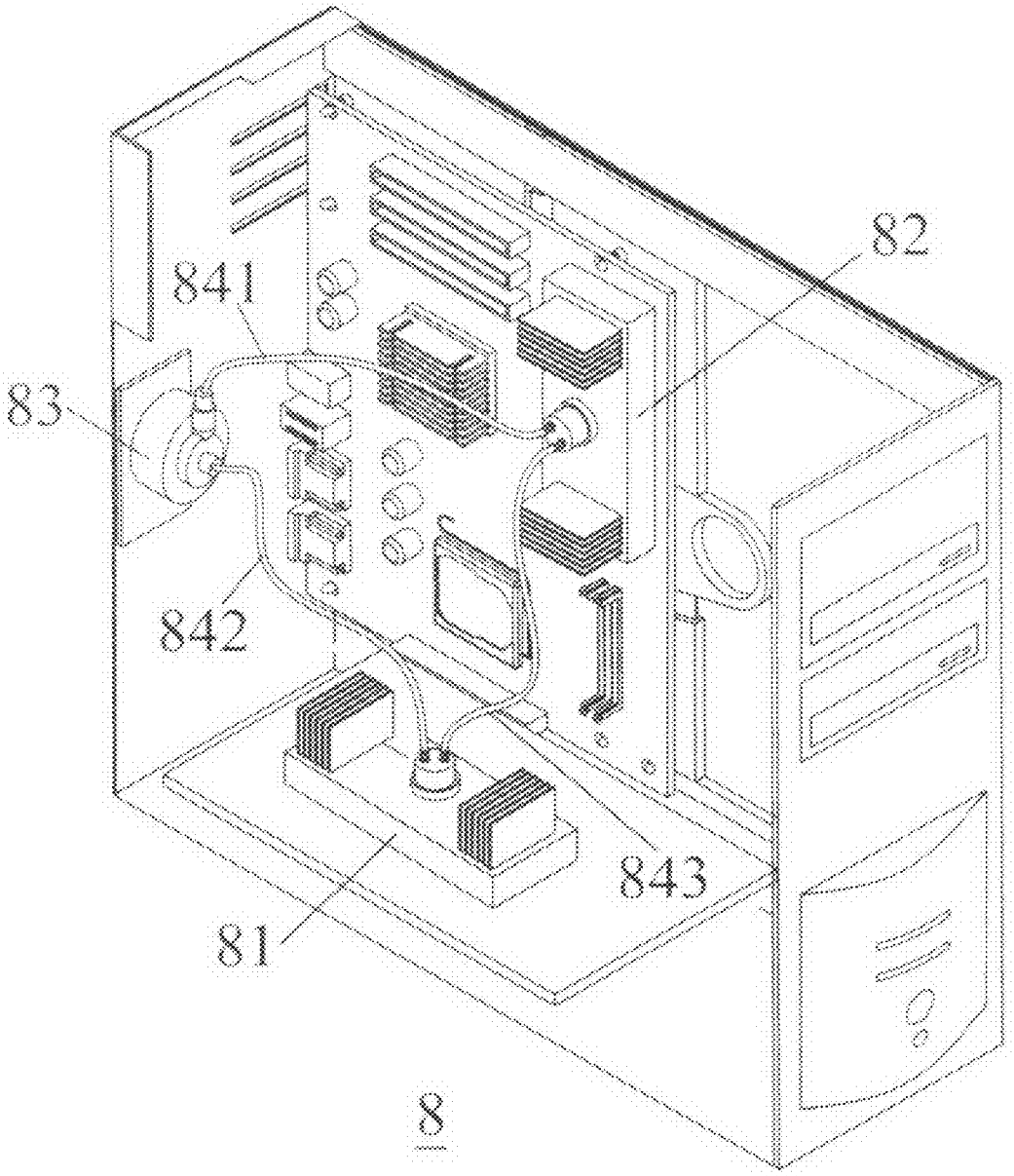


FIG.10

LIQUID COOLING HEAT DISSIPATING DEVICE

FIELD OF THE INVENTION

[0001] The present invention is related to a liquid cooling heat dissipating device, particularly to a heat dissipating device which has a cooling fin and a removable liquid cooling module both.

BACKGROUND OF THE INVENTION

[0002] At present, the manufacture procedure of semiconductor and the technology of circuit design progress rapidly, so the efficiency of integrated circuit chip grows largely and the product cycle becomes shorter. When efficiency of chip becomes better or the working frequency of chip becomes higher, the generated heat energy is larger. If the heat energy can't be dispelled immediately for lowering the temperature of chip to the preset extent, the efficiency of chip will be affected significantly, even results in the damage of chip. Therefore, the importance of heat dissipating device for computer system increases day by day.

[0003] Besides, most computers are required to have expandability, users are allowed to replace better processing chip or display card chip by themselves. Therefore, at the initial stage, user may have less demand and buy a computer with lower effects. As the demand increases, the user can overclock the processing chip or display card chip, or directly replace the original chip by a higher efficiency chip. However, the higher efficiency chip usually generates more heat energy, so users have to install a better heat dissipating device for enabling the higher efficiency chip running in complete efficiency.

[0004] Heat dissipating devices can be approximately divided into two types, one type is passive heat dissipating device, such as a cooling fin, which doesn't need power and conducts the heat energy from the heat source to the outside only depending on thermal convection. The other type is active heat dissipating device, such as a fan or a liquid cooling heat dissipating device, which requires power to drive fluid, such as gas or liquid, to exchange heat with the heat source, and conducts the heat energy away from the heat source. Generally speaking, the heat dissipation effect of active heat dissipating device is better than that of passive heat dissipating device, and the liquid cooling heat dissipating device is further better than the fan. Therefore, most low level computers are only provided with passive heat dissipating devices and fans, and high level computers are provided with liquid cooling heat dissipating devices.

[0005] Referring to FIG. **1** for a schematic diagram of a liquid cooling heat dissipating device in prior art, the liquid cooling heat dissipating device **1** comprises a liquid cooling module **11** and cooling fins **12**. The liquid cooling module **11** is disposed to cover on a chip, and locked on the circuit board with a screw **14**. The liquid coolant flows into the liquid cooling module **11** through a liquid entry channel **132** to exchange heat and flows out from the liquid cooling module **11** through a liquid exit channel **131**. The cooling fin **12** is disposed on the liquid exit channel **131** for dissipating heat energy inside water. The liquid cooling heat dissipating device **1** can provide better dissipation function, but has poor expandability. If the user wants to displace a higher efficiency chip, he/she has to change the entire liquid cooling heat dissipating device **1**. Besides, the users can't upgrade their lower level heat dissipating device to high level liquid cooling heat dissipating device. Because of the poor expandability of the cooling fin and liquid cooling heat dissipating device, the computer suppliers have to prepare both various liquid cooling heat dissipating devices for high level computers and various cooling fins for low level computers at the same time, the cost of preparing materials is a tremendous burden to the computer suppliers.

[0006] At present, the product cycle of processing chip and graphic chip become shorter, thus, more users have demand for changing heat dissipating device. Therefore, how to provide a heat dissipating device with expandability is an urgent problem to be solved.

SUMMARY OF THE INVENTION

[0007] Therefore, one of objects of the present invention is to provide a liquid cooling heat dissipating device to enhance the expandability and assembly convenience of the heat dissipating device.

[0008] To achieve the above-mentioned object, the present invention provides a liquid cooling heat dissipating device for at least a heat source. The liquid cooling heat dissipating device comprises a base, at least a cooling fin and a liquid module. One side of the base contacts the surface of the heat source, and the surface of the other side of the base has a first area and second area. The cooling fin is disposed on the first area, and the liquid cooling module is removably installed on the second area.

[0009] Preferably, the liquid cooling heat dissipating device further comprises an adapter. One end of the adapter combines the liquid cooling module, and the other end combines the base, so that the liquid cooling module can be fixed on the second area through the adapter.

[0010] Besides, the present invention further provides a liquid cooling heat dissipating device for a first heat source and a second heat source. The liquid cooling heat dissipating device comprises a first base, a second base, at least a first cooling fin, at least a second cooling fin and a liquid cooling module. One side of the first base contacts the surface of the first heat source, and the surface of the other side of the first base has a first area and second area. One side of the second base contacts the surface of the second heat source, and the surface of the other side of the second base has a third area and fourth area. The first cooling fin and the second cooling fin are respectively disposed on the first area and the third area. The liquid cooling module is removably installed on the second area and the fourth area.

[0011] Preferably, the liquid cooling heat dissipating device further comprises two adapters. Two ends of the liquid cooling module are respectively fixed on the second area and the fourth area through the adapters.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The subject matter regarded as the invention is particularly pointed out and distinctly claimed in the concluding portion of the specification. The invention together with features and advantages thereof may best be understood by reference to the following detailed description with the accompanying drawings in which:

[0013] FIG. **1** is a schematic diagram of a liquid cooling heat dissipating device in prior art;

[0014] FIG. **2** is a three dimensional exploded diagram of a liquid cooling heat dissipating device of first embodiment of the present invention;

[0015] FIG. **3** is an assembling side view of a liquid cooling heat dissipating device of first embodiment of the present invention;

[0016] FIG. **4** is a three dimensional exploded diagram of a liquid cooling heat dissipating device of second embodiment of the present invention;

[0017] FIG. **5** is an assembling side view of a liquid cooling heat dissipating device of second embodiment of the present invention;

[0018] FIG. **6** is an assembling side view of a liquid cooling heat dissipating device of third embodiment of the present invention;

[0019] FIG. **7** is an assembling side view of a liquid cooling heat dissipating device of fourth embodiment of the present invention;

[0020] FIG. **8** is a three dimensional exploded diagram of a liquid cooling heat dissipating device of fifth embodiment of the present invention;

[0021] FIG. **9** is a three dimensional exploded diagram of a liquid cooling heat dissipating device of sixth embodiment of the present invention;

[0022] FIG. **10** is a schematic diagram of an application of a liquid cooling heat dissipating device of the present invention.

DETAILED DESCRIPTION

[0023] Exemplary embodiments of the present invention are described herein in the context of liquid cooling heat dissipating device. Those of ordinary skilled in the art will realize that the following detailed description of the exemplary embodiment(s) is illustrative only and is not intended to be in any way limiting. Other embodiments will readily suggest themselves to such skilled persons having the benefit of this disclosure. Reference will now be made in detail to implementations of the exemplary embodiment(s) as illustrated in the accompanying drawings. The same reference indicators will be used throughout the drawings and the following detailed description to refer to the same or like parts.

[0024] Referring to FIG. **2** and FIG. **3** for a three dimensional exploded diagram and an assembling side view of a liquid cooling heat dissipating device of first embodiment of the present invention, respectively, liquid cooling heat dissipating device **2** further comprises a base **21**, a plurality of cooling fins **24**, an adapter **23** and a liquid cooling module **22**. One side of the base **21** is configured to contact with heat source in a thermally conductive manner, for example, the base **21** contacts with a surface of a chip via thermal grease. The surface of the other side of the base **21** has a first area **211** and a second area **212**. The cooling fin **24** is disposed on the first area **211**. Preferably, the cooling fin **24** and the base **21** are integrated conduction.

[0025] The second area **212** has an accommodating tank **25**, in the inner wall of which has a thread **251**. The outer wall of the adapter **23** has a thread **232** which is matched with the thread **251**. Besides, the adapter **23** has an opening **25**, and the inner wall of the opening **25** has a thread **231**.

[0026] The liquid cooling module **22** comprises a body **220**, a liquid entry channel **221** and a liquid exit channel **222**. Liquid coolant flows into the liquid entry channel **221** and the liquid exit channel **222** to exchange heat with the body **220**. One end of the body **220** has a thread **223** which is matched with the thread **231**.

[0027] While assembling, the user first plugs the liquid cooling module **22** into the adapter **23** to make the thread **231** partially occlude the thread **223**, and then disposes the adapter **23** into the accommodating tank **25** to make the thread **232** partially occlude the thread **251**. Next, the user rotates the adapter **23** to lock the thread **251** and the thread **232**, and lock the thread **231** and the thread **223**. By this way, the liquid cooling module **22** can be removably installed on the second area **212**, as FIG. **3** illustrates.

[0028] Preferably, the base **21**, the cooling fin **24**, the adapter **23**, and the body **220** of the liquid cooling module **22** are made of metal having good conduction. The base **21** can conduct the heat energy generated by the heat source to the cooling fin **24** for heat dissipation. If the liquid cooling module **22** is installed, the heat energy generated by the heat source is conducted to the body **220** of the liquid cooling module **22** through the adapter **23**, and liquid coolant flows into the liquid entry channel **221** and the liquid exit channel **222** to exchange heat with the body **220**.

[0029] Because the liquid cooling module **22** has the liquid entry channel **221** and the liquid exit channel **222**, the user can use the adapter **23** for assembly without rotating the liquid cooling module **22**, so as to prevent the liquid entry channel **221** and the liquid exit channel **222** from being knotted, and further facilitate the assembly.

[0030] Therefore, when the heat source is a chip having lower working frequency, the generated heat energy is lower, the users can remove the liquid cooling module **22** from the liquid cooling heat dissipating device **2** and only the cooling fin **24** is used to dissipate heat passively to save the energy consumption of liquid cooling dissipating device **2**. When the heat source is a chip having higher working frequency, the users can install the liquid cooling module **22** to actively dissipate heat for enabling better performance of the chip.

[0031] The location of the first area **211** and the second area **212** shown in the drawings are for examples only, not a limitation. On the surface of the base, the area for installing the liquid module **2** is defined as the second area. The area beyond the second area is defined as the first area. This definition is in the protective scope of the present invention.

[0032] Besides, the cooling fins **24** illustrated in the drawing are respectively disposed at two sides of the liquid cooling module **2**, and face the liquid cooling module **2**, and arranged in spaced-apart order. This is for an example only, not a limitation. For example, the cooling fins can also be arranged in a sunflower shape surrounding the liquid cooling module **2**, or other arrangement which can achieve the heat dissipating effects, which all are in the protective scope of the present invention.

[0033] FIG. **4** and FIG. **5** illustrate a three dimensional exploded diagram and an assembling side view of second embodiment of the liquid cooling heat dissipating device of the present invention respectively. The differences between the liquid cooling heat dissipating device **3** and liquid cooling heat dissipating device **2** are that the adapter **33** has a wedge **331**, and one side of the liquid cooling module **32** has a protruded edge **323** which is matched with the wedge **331**.

[0034] While assembling, the user can lock the adapter **33** on the accommodating tank **25** first, and then push the wedge **331** aside, and dispose the protruded edge **323** of the liquid cooling module **32** into the space surrounded by the wedge

331, and then release the wedge 331. The wedge 331 leans tightly against the body 220 due to the flexibility of the material of the wedge 331, and wedges the protruded edge 323 to fix the liquid cooling module 32, as shown in FIG. 5. By This way, the heat energy generated by the heat source can be conducted from the base 21 to the adapter 33, and then further conducted to the liquid cooling module 32.

[0035] FIG. 6 illustrates an assembling side view of third embodiment of the liquid cooling heat dissipating device of the present invention. When heat dissipation for a plurality of heat source is required, a larger base can be used. One side of a base 41 of liquid cooling heat dissipating device 4 covers chips 491~495, and the other side of the base 41 has a cooling fin 24 and a liquid cooling module 22. The users can remove the liquid cooling module 22 or install the liquid cooling module 22 on the base 41 according to their demand. The liquid cooling heat dissipating device 4 can be fixed on a circuit board 496 by using screw or tenon. For example, when a processing chip and a graphic chip are installed on main board, the liquid cooling heat dissipating device 4 of the present invention can used to dissipate the heat generated by the processing chip and the graphic chip. By using the liquid cooling heat dissipating device of the present invention and selecting the liquid cooling module 22 corresponding to bases of various sizes, the problem of dissipate the heat of one heat source or a plurality of heat sources can be solved and the required cost is reduced.

[0036] FIG. 7 illustrates an assembling side view of fourth embodiment of the liquid cooling heat dissipating device of the present invention. The liquid cooling heat dissipating device 5 is used to dissipate the heat of two heat source facing each other. The cooling heat sink 5 comprises a base 21, a base 51, a cooling fin 24, a cooling fin 54, an adapter 23, an adapter 53, and a liquid cooling module 22. One side of the base 21 contacts the surface of a heat source 582, and a surface of the other side of the base 21 has a first area 211 and a second area 212. The cooling fin 24 is disposed on the first area 211. One side of the base 51 contacts the surface of a heat source 592, and a surface of the other side of the base 51 has a third area 511 and a fourth area 512. The cooling fin 54 is disposed on the third area 511. Preferably, the cooling fin 24 and the base 21, the cooling fin 54 and the base 51 are integrated conduction.

[0037] The second area 212 and the fourth area 512 respectively have an accommodating tank to accommodate the adapter 23 and the adapter 53. The combination manner between the accommodating tank and the adapter, and the combination manner between the liquid cooling module and the adapter are the same as the said embodiments. So, the details are no longer described. When the user installs two display cards in computer, they can use the liquid cooling heat dissipating device 5 to dissipate the heat generated by two graphic chips at the same time.

[0038] The liquid entry channel 221 and the liquid exit channel 222 of the liquid cooling module 22 are disposed at sides of the body 22. The layout of the liquid entry channel 221, the liquid exit channel 222, the cooling fin 24 and the cooling fin 54 shown in FIG. 6 is just an example, not a limitation. All layouts which can allow the liquid cooling module 22 to be removed from the base are within the protective scope of the present invention.

[0039] Besides, the above-mentioned combination manner for the accommodating tank and the adapter is just an example, not a limitation. Any mechanism capable of stably combining is within the protective scope of the present invention, for example, the mechanisms shown in FIG. 8 and FIG. 9. In FIG. 8, the differences between the liquid cooling heat dissipating device 6 and other embodiments are that the second area 212 on the base 61 has a protrusion 65, and the outer wall of the protrusion 65 has a thread 651, and two sides of the inner wall of the opening of the adapter 63 respectively has a thread 231 and a thread 632. The thread 632 is matched with the thread 651. While assembling, the users can first plug the liquid module 22 into the adapter 63 to partially occlude the thread 231 and the thread 223, and plug the protrusion 65 onto the adapter 63 to partially occlude the thread 651 and the thread 632. Next, the user can rotate the adapter 63 to lock the thread 231 and the thread 223 tightly and lock the thread 651 and the thread 632 tightly. By this way, the liquid cooling module 22 can be tightly fixed on the second area 212 through the adapter 63.

[0040] In FIG. 9, the differences between the liquid cooling heat dissipating device 7 and other embodiments are that the second area 212 on the base 71 has a plurality of protruded posts 75, and these protruded posts 75 are arranged in a ring-like shape, and their sides faced to the inner ring-like shaped center have threads 751. The outer wall of the adapter 73 has a thread 732 which is matched with the thread 751. The combination manner of the adapter 73 and the protruded posts 75 is the same as the embodiments.

[0041] Besides, the thread 751 can be disposed the outer sides of protruded posts 75, which are corresponding to center of the ring-like shape, and correspondingly, the thread 732 is disposed on the inner wall of the opening of the adapter 73.

[0042] FIG. 10 illustrates a schematic diagram of an application of the liquid cooling heat dissipating device of the present invention. The processing chip and graphic chip of a computer system 8 need heat dissipation. The users can respectively install the liquid cooling heat dissipating device 81 and the liquid cooling heat dissipating device 82 of the present invention on the processing chip and graphic chip, and then tandem connect the channel 841~843 of the liquid module to a water outlet and a water inlet of a pump 83 respectively. The pump 83 drives the liquid in the channel 841~843 to cycle constantly, so that the liquid can absorb and take away the heat energy generated by the processing chip and graphic chip.

[0043] The liquid cooling module of the liquid cooling heat dissipating device of the present invention is removably attached on the base, for example, the means of locking or wedging described in the above embodiments, this is different from the liquid cooling module of the traditional liquid cooling heat dissipating device which is immobily fixed on the base. Therefore, the liquid cooling heat dissipating device of the present invention can provide better expandability and better control of the cost of preparing materials.

[0044] At present, most personal computers have expandability, so the user can change processing chip or display card having better effects by himself/herself. Therefore, at the initial stage the users buy a computer system having lower effects, the heat energy generated by the chip of system is lower, so users can just install the base of the present invention on the chip first, and cooling fin is enough to dissipate the heat energy generated by the chip. Later, if the user wants to upgrade the original chip to a chip having higher working efficiency and better performance, and only cooling fin is not enough to dissipate the heat energy generated by the upgraded chip, the user can further install the liquid cooling module on

the base to fulfill the heat dissipation required by the upgraded chip. This means that liquid cooling heat dissipating device of the present invention has significantly great expandability.

[0045] Besides, for computer manufacturers, the liquid cooling heat dissipating device of the present invention also can reduce the stock costs of the elements. By using the liquid cooling heat dissipating device of the present invention, when computer manufacturers want to produce low class computers and high class computers, they don't have to prepare dissipating device for low class computers and high class computers respectively. Suppliers can install bases which have cooling fins in all computers. If high class computer is to be delivered, they can further install the liquid cooling module. This can reduce the cost for preparing materials and enhances the flexibility of preparing materials.

[0046] It should be noted that liquid cooling modules are attached on the bases through the adapters in the embodiments, but this is not a limitation. Though using the adapters can facilitate the installation, but the objective of removably installing the liquid cooling module on the base without using the adapter can also be achieved. The combination manner between the liquid module and the base can further comprises thread locking, wedging or other joint manners which can tightly joint two objects and the jointed objects can also be separated. If the liquid cooling heat dissipating device comprises the adapter, then the combination manner between the liquid module and the adapter, or between the adapter and the base, can comprise thread locking, wedging or other joint manners which can be tightly joint two objects and these jointed object can also be separated.

[0047] While the invention has been described by way of example and in terms of a preferred embodiment, it is to be understood that the invention is not limited thereto. To the contrary, it is intended to cover various modifications and similar arrangements and procedures, and the scope of the appended claims therefore should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements and procedures.

What is claimed is:

1. A liquid cooling heat dissipating device for dissipating heat from a heat source within a chassis of a computer system, said device comprising:

a base comprising thermally conductive material, wherein said base has an exterior surface with a first area, a second area, and a third area, and wherein said first area is configured to contact with said heat source in a thermally conductive manner;

at least one cooling fin disposed on said second area; and

a liquid cooling module removably attached on said third area.

2. The liquid cooling heat dissipating device of claim **1**, further comprising an adapter, and one end of said adapter for combining with the liquid cooling module, and the other end of said adapter for combining with the base, so that the liquid cooling module can be fixed on said third area through the adapter.

3. The liquid cooling heat dissipating device of claim **1**, wherein said third area has an accommodating tank, a protrusion or a plurality of protruded posts.

4. The liquid cooling heat dissipating device of claim **3**, wherein the inner wall of said accommodating tank has a first thread, and the outer wall of said adapter has a second thread, and said adapter is fixed on the base by locking and joining said first thread and said second thread.

5. The liquid cooling heat dissipating device of claim **3**, wherein the outer wall of said protrusion has a first thread, and said adapter has an opening, and at two ends of the inner wall of the opening respectively have a second thread, and said adapter is fixed on the base by locking and joining said first thread and said second thread.

6. The liquid cooling heat dissipating device of claim **3**, wherein said protrusion is ring-shaped, and the inner wall of said protrusion has a first thread, the outer wall of said adapter has a second thread, and said adapter is fixed on said base by locking and joining said first thread and said second thread.

7. The liquid cooling heat dissipating device of claim **3**, wherein said protruded posts are arranged in a ring-like shape, and one side faced to the inner ring-shaped center of said protruded post has a first thread, the outer wall of said adapter has a second thread, and said adapter is fixed on the base by locking and joining said first thread and said second thread.

8. The liquid cooling heat dissipating device of claim **2**, wherein said adapter has an opening, and the inner wall of said opening has a third thread, and one end of said liquid cooling module has a fourth thread, and said liquid cooling module is joined with the adapter by locking and joining said third thread and said fourth thread.

9. The liquid cooling heat dissipating device of claim **2**, wherein one end of the adapter has a wedge structure, and one end of the liquid cooling module has a protruded edge, so that said liquid cooling module is joined with the adapter by wedging said protruded edge with said wedge structure.

10. The liquid cooling heat dissipating device of claim **1**, wherein the liquid cooling module comprises a body, a liquid entry channel and a liquid exit channel, and the liquid coolant flows into said liquid entry channel and said liquid exit channel to exchange heat with said body.

11. A liquid cooling heat dissipating device for dissipating heat from a first heat source and a second heat source within a chassis of a computer system, said device comprising:

a first base comprising thermally conductive material, wherein said first base has an exterior surface with a first area, a second area, and a third area, and wherein said first area is configured to contact with said first heat source in a first thermally conductive manner;

a second base, comprising thermally conductive material, wherein said second base has an exterior surface with a fourth area, a fifth area, and a sixth area, and wherein said fourth area is configured to contact with said second heat source in second thermally conductive manner;

at least one first cooling fin disposed on the second area;

at least one second cooling fin disposed on the fifth area; and

a liquid cooling module removably attached on the third area and the sixth area.

12. The liquid cooling heat dissipating device of claim **11**, further comprising two adapters, and two ends of said liquid cooling module respectively fixed on the third area and the sixth area.

13. The liquid cooling heat dissipating device of claim **12**, wherein the third area or the sixth area has an accommodating tank, a protrusion or a plurality of protruded posts.

14. The liquid cooling heat dissipating device of claim **13**, wherein the inner wall of said accommodating tank has a first thread, and the outer wall of said adapter has a second thread, and said adapter is fixed on said base by locking and joining said first thread and said second thread.

15. The liquid cooling heat dissipating device of claim **13**, wherein the outer wall of said protrusion has a first thread, and said adapter has an opening, and two ends of the inner wall of the opening respectively have a second thread and said adapter is fixed on the base by locking and joining said first thread and said second thread.

16. The liquid cooling heat dissipating device of claim **13**, wherein said protrusion is ring-shaped, the inner wall of said protrusion has a first thread, and the outer wall of said adapter has a second thread, and said adapter is fixed on said base by locking and joining said first thread and said second thread.

17. The liquid cooling heat dissipating device of claim **13**, wherein said protruded post are arranged in a ring-like shape, and one side faced to the inner ring-shaped center of said protruded post has a first thread, the outer wall of said adapter has a second thread, and said adapter is fixed on said base by locking and joining said first thread and said second thread.

18. The liquid cooling heat dissipating device of claim **12**, wherein said adapter has an opening, the inner wall of said opening has a third thread, and one end of said liquid cooling module has a fourth thread, and said liquid cooling module is joined with said adapter by locking and joining said third thread and said fourth thread.

19. The liquid cooling heat dissipating device of claim **12**, wherein one end of said adapter has a wedge structure, and one end of said liquid cooling module has a protruded edge, so that said liquid cooling module is joined with said adapter by wedging said protruded edge with the wedge structure.

20. The liquid cooling heat dissipating device of claim **11**, wherein said liquid cooling module comprises a body, a liquid entry channel and a liquid exit channel, and liquid coolant flows into said liquid entry channel and said liquid exit channel to exchange heat with said body.

21. A liquid cooling heat dissipating device for dissipating heat from a heat source within a chassis of a computer system, said device comprising:

a base comprising thermally conductive material, wherein said base has an exterior surface with a first area, a second area, and a third area, and wherein said first area is configured to contact with said heat source in a thermally conductive manner;

at least one cooling fin disposed on said second area; and

means for removably attaching a liquid cooling module to said third area.

22. The liquid cooling heat dissipating device of claim **21**, wherein said means comprises an adapter, and one end of said adapter for combining with the liquid cooling module, and the other end of said adapter for combining with the base.

23. The liquid cooling heat dissipating device of claim **22**, wherein said third area has an accommodating tank, a protrusion or a plurality of protruded posts.

24. The liquid cooling heat dissipating device of claim **23**, wherein the inner wall of said accommodating tank has a first thread, and the outer wall of said adapter has a second thread, and said adapter is fixed on the base by locking and joining said first thread and said second thread.

25. A method for dissipating heat from a heat source within a chassis of a computer system, said method comprising:

removably attaching a liquid cooling module to a base comprising thermally conductive material, wherein said base has an exterior surface and at least one cooling fin disposed on a first area of said exterior surface, and wherein a second area of said exterior surface is connected in a thermally conductive manner to a heat source within said chassis; and

flowing liquid coolant into said liquid cooling module to conduct heat from said base.

26. The method of the claim **25**, wherein said liquid cooling module is attached to said base by an adapter.

27. The method of the claim **26**, wherein said base has an accommodating tank, a protrusion or a plurality of protruded posts on said exterior surface for attaching said adapter.

28. The method of the claim **27**, wherein the inner wall of said accommodating tank has a first thread, and the outer wall of said adapter has a second thread, and said adapter is fixed on the base by locking and joining said first thread and said second thread.

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