AIR DIRECTOR FOR ELECTRONIC DEVICE

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Filed: Apr. 28, 2012

Foreign Application Priority Data
Aug. 30, 2011 (TW) ................................. 100131166

Publication Classification

Int. Cl.
F24F 13/08 (2006.01)

U.S. Cl. .................................................. 454/245

ABSTRACT

An exemplary air director includes a top plate, a bottom plate, side plates, an air baffle, an air inlet, and an air outlet. The bottom plate is opposite to the top plate. The plurality of side plates is connected together end to end between the top plate and bottom plate. The top plate, the bottom plate and the plurality of side plates cooperatively define a receiving chamber therebetween. The air baffle substantially vertically extends along an outer surface of one side plate of the plurality of side plates. The air inlet and the air outlet are respectively provided at opposite lateral sides of the air baffle.
AIR DIRECTOR FOR ELECTRONIC DEVICE

BACKGROUND

[0001] 1. Technical Field

[0002] The present disclosure generally relates to air directors for electronic devices, and particularly to an air director with a baffle for avoiding unwanted flow of heated air.

[0003] 2. Description of Related Art

[0004] Recent further development of electronic devices has sought to satisfy the elevated consumer demand for faster operation speeds and more compact portable electronic devices. As a result, the heat dissipation performance of many electronic devices is now of vital importance. Common electronic devices employ fans for driving air to flow over heat generating components, with the airflow passing through an air inlet and an air outlet located in an outer shell of the electronic device. However, for achieving compactness and an aesthetic design, the air inlet and air outlet are usually configured on a common sidewall of the outer shell. This allows heated air exiting the air outlet to be drawn back into the air inlet, which decreases the heat dissipating efficiency of the airflow system.

[0005] Therefore, it is necessary to provide a means for overcoming the above-mentioned shortcomings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Many aspects of the disclosure can be better understood with reference to the following drawings. The components in the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the disclosure.

[0007] FIG. 1 is a schematic, isometric view of an air director in accordance with an exemplary embodiment of the present disclosure.

[0008] FIG. 2 is a view of the air director of FIG. 1 with a top plate thereof removed, and showing an electronic device capable of being received in the air director.

DETAILED DESCRIPTION

[0009] Reference will now be made to the drawings to describe an exemplary embodiment of the present air director.

[0010] Referring to FIG. 1 and FIG. 2, an air director 10, in this embodiment, includes a top plate 11, a bottom plate 12, four side plates 13, an air baffle 14, an air inlet 15 and an air outlet 16.

[0011] The top plate 11 and the bottom plate 12 are general planar and opposite to each other. In this embodiment, the top plate 11 is parallel to the bottom plate 12.

[0012] The four side plates 13 are connected together end to end, and connected between the top plate 11 and the bottom plate 12. The four side plates 13 have their upside edges and downside edges respectively connected with the top plate 11 and the bottom plate 12. Thereby, the top plate 11, the bottom plate 12 and the four side plates 13 cooperatively define a receiving chamber 100 therebetween. The receiving chamber 100 is for receiving an electronic device 20, thereby protecting the electronic device 20. It is to be noted that the air director 10 is not limited to including the four side plates 13. The air director 10 can instead be equipped with three, five, six or more side plates.

[0013] The air baffle 14 is configured on an outer surface 130 of one side plate 13. The air baffle 14 longitudinally extends along the outer surface 130, respectively towards the top plate 11 and the bottom plate 12. In this embodiment, the air baffle 14 is integrally formed with the side plate 13. It is noted that the air baffle 14 can have a profile of a straight line or a curved line. In this embodiment, the air baffle 14 has a profile of a straight line, and extends along an axis perpendicular to the top plate 11 and the bottom plate 12.

[0014] The air inlet 15 and the air outlet 16 are both configured at the outer surface 130 of the side plate 13 which supports the air baffle 14. The air inlet 15 is located on one side of the air baffle 14, and the air outlet 16 is located on another opposite side of the air baffle 14. That is, the air inlet 15 and the air outlet 16 are respectively located at opposite lateral sides of the air baffle 14.

[0015] Due to the air baffle 14 being located between the air inlet 15 and the air outlet 16, the air baffle 14 blocks heated air exiting the air outlet 16 from being drawn back into the air inlet 15. Thereby, a decrease in the heat dissipating efficiency of the electronic device 20 caused by recirculation of heated air is avoided.

[0016] It is to be noted that the air director 10 can further include a first air guiding plate 17 and a second air guiding plate 18 configured on the outer surface 130 of the side plate 13 which supports the air baffle 14. The first air guiding plate 17 and the second air guiding plate 18 are respectively located at opposite top and bottom ends of the air baffle 14. In this embodiment, the first air guiding plate 17 is adjacent to the top plate 11, and the second air guiding plate 18 is adjacent to the bottom plate 12. Also, in this embodiment, the first air guiding plate 17 and the second air guiding plate 18 are both integrally formed with the air baffle 14.

[0017] It is also to be noted that the first and second air guiding plates 17, 18 each can have a profile of a straight line or a curved line, as long as the first and second air guiding plates 17, 18 guide heated air along directional paths leading away from the air inlet 15, and further guide air in the vicinity of the air inlet 15 along directional paths leading away from the heated air.

[0018] In this embodiment, the first air guiding plate 17 has a profile of a straight line, and extends along an axis parallel to the top plate 11. The second air guiding plate 18 has a profile of a straight line, and extends along an axis parallel to the bottom plate 12. Detailledly, the first air guiding plate 17 perpendicularly extends in two opposite directions from the top end of the air baffle 14, and the second air guiding plate 18 perpendicularly extends in two opposite directions from the bottom end of the air baffle 14.

[0019] Furthermore, the air baffle 14 can be configured with the top end thereof contacting the top plate 11. In this case, the first air guiding plate 17 is configured on a joint of the top plate 11 and the side plate 13 where the top end of the air baffle 14 is located. Moreover, the air baffle 14 can be configured with the bottom end thereof contacting the bottom plate 12. In this case, the second air guiding plate 18 is configured on a joint of the bottom plate 12 and the side plate 13 where the bottom end of the air baffle 14 is located.

[0020] In the present embodiment, one reason for the first and second air guiding plates 17, 18 being configured to extend along directions perpendicular to the air baffle 14 is for aesthetic design. It is to be noted that in alternative embodiments, the first and second air guiding plates 17, 18 can be configured to extend along slantwise directions relative to the air baffle 14.

[0021] In addition, the air director 10 can further include a baffle plate 19 extending from an interior surface 132 of the
side plate 13 which supports the air baffle 14. The baffle plate 19 contacts a portion of the interior surface 132 of the side plate 13 between the air inlet 15 and the air outlet 16. The baffle plate 19 extends into the receiving chamber 100 and divides the receiving chamber 100 into two chamber portions 102, 104 respectively on the left side and the right side of the baffle plate 19. The two chamber portions 102, 104 communicate with each other at a distal end of the baffle plate 19. In this case, a length of the passage for airflow in the receiving chamber 100 is extended, thereby increasing the heat exchange utilization efficiency of the airflow. In the present embodiment, the baffle plate 19 is integrally formed with both the side plate 13 and the bottom plate 12.

[0022] It is to be understood that the above-described embodiments are intended to illustrate rather than limit the disclosure. Variations may be made to the embodiments without departing from the spirit of the disclosure as claimed. The above-described embodiments illustrate the scope of the disclosure but do not restrict the scope of the disclosure.

What is claimed is:

1. An air director comprising:
a top plate;
a bottom plate opposite to the top plate;
a plurality of side plates connected between the top plate and the bottom plate, the plurality of side plates being connected together end to end, the top plate, the bottom plate and the plurality of side plates cooperatively defining a receiving chamber therebetween;
an air baffle substantially vertically extending along an outer surface of one side plate of the plurality of side plates;
an air inlet; and
an air outlet, wherein the air inlet and the air outlet are provided on the side plate at opposite lateral sides of the air baffle.

2. The air director of claim 1, further comprising a first air guiding plate and a second air guiding plate, the air baffle extending respectively towards the top plate and the bottom plate, the first air guiding plate being located at a top end of the air baffle and adjacent to the top plate, the second air guiding plate being located at a bottom end of the air baffle and adjacent to the bottom plate.

3. The air director of claim 2, wherein the first air guiding plate perpendicularly extends in two opposite directions from the top end of the air baffle.

4. The air director of claim 3, wherein the second air guiding plate perpendicularly extends in two opposite directions from the bottom end of the air baffle.

5. The air director of claim 2, wherein the first air guiding plate extends along an axis parallel to the top plate.

6. The air director of claim 5, wherein the second air guiding plate extends along an axis parallel to the bottom plate.

7. The air director of claim 6, wherein the first air guiding plate is configured on a joint of the top plate and the side plate where the top end of the air baffle is located.

8. The air director of claim 7, wherein the second air guiding plate is configured on a joint of the bottom plate and the side plate where the bottom end of the air baffle is located.

9. The air director of claim 2, wherein the top plate is parallel to the bottom plate, the air baffle extending along an axis perpendicular to the top plate and the bottom plate.

10. The air director of claim 9, wherein the first air guiding plate extends along an axis perpendicular to that of the air baffle.

11. The air director of claim 10, wherein the second guiding plate extends along an axis perpendicular to that of the air baffle.

12. The air director of claim 1, further comprising a baffle plate extending from an interior surface of the first side plate, wherein the baffle plate contacts a portion of the interior surface of the side plate between the air inlet and the air outlet, the baffle plate extending into the receiving chamber and dividing the receiving chamber into two communicated space.

13. An air director comprising:
a chamber;
an air baffle substantially vertically extending along an outer surface of a sidewall of the chamber; and
an air inlet and an air outlet provided in the sidewall of the chamber at opposite lateral sides of the air baffle, respectively.

14. The air director of claim 13, further comprising a first air guiding plate and a second air guiding plate, the first air guiding plate being located at a top end of the air baffle, the second air guiding plate being located at a bottom end of the air baffle.

15. The air director of claim 14, wherein the first air guiding plate perpendicularly extends in two opposite directions from the top end of the air baffle.

16. The air director of claim 15, wherein the second air guiding plate perpendicularly extends in two opposite directions from the bottom end of the air baffle.

17. The air director of claim 14, wherein the first air guiding plate extends along an axis perpendicular to that of the air baffle.

18. The air director of claim 17, wherein the second guiding plate extends along an axis perpendicular to that of the air baffle.

19. The air director of claim 13, further comprising a baffle plate extending from an interior surface of the chamber, wherein the baffle plate contacts a portion of the interior surface of the chamber between the air inlet and the air outlet, the baffle plate extending into the chamber and dividing the chamber into two communicated space.

20. An air director comprising:
a top plate;
a bottom plate;
a plurality of side plates connected end to end between the top plate and the bottom plate, the top plate, the bottom plate and the side plates cooperatively defining a chamber therebetween;
an air inlet provided in one of the side plates;
an air outlet provided in one of the side plates; and
an elongated air baffle extending along an outer surface of the side plates between the top plate and the bottom plate, the air baffle located between the air inlet and the air outlet.