ELECTRONIC DEVICE AND SUPPORTING MODULE THEREOF

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Abstract

An electronic device. The electronic device comprises a body, a first supporting member, a second supporting member, and a third supporting member. The body is abutted the first supporting member. The second supporting member is detachably connected to the first supporting member, forming a first angle. The third supporting member is detachably connected to the second supporting member, forming a second angle. The electronic device is selectively positioned upright on a horizontal plane or hung on a vertical plane. The first and second supporting members are connected to support the body in an upright position on a horizontal plane. When the first, second, and third supporting members are connected to form a hook for hanging on the vertical plane, the first supporting member is engaged with the body such that the body is hung on the vertical surface.
ELECTRONIC DEVICE AND SUPPORTING MODULE THEREOF

BACKGROUND

[0001] The invention relates to an electronic device, and in particular to an electronic device and a supporting module thereof.

[0002] Electronic devices such as scanners, monitors, notebooks, are required to be light, have a thin profile, and be of high quality. Convenient operation is also critical.

[0003] For example, as shown in FIG. 1, a conventional scanner 10 is often used in an office or home and resides on a flat surface such as a desk. Other devices such as displays and printers may also be resident in the same area. Due to limited space, however, if the scanner is positioned horizontally, it may occupy an excessive amount of the work area.

SUMMARY

[0004] The invention provides an electronic device that can be deployed in various orientations.

[0005] Also provided is an electronic device, comprising a body, a first supporting member, a second supporting member, and a third supporting member. The body is abutted by the first supporting member. The second supporting member is detachably connected to the first supporting member, forming a first angle. The third supporting member is detachably connected to the second supporting member, forming a second angle. The electronic device is selectively positioned upright on a horizontal plane or hung on a vertical plane. The first and second supporting members are connected to support the body in an upright position on a horizontal plane. When the first, second, and third supporting members are connected to form a hook for hanging on the vertical plane, the first supporting member is engaged with the body such that the body is hung on the vertical surface.

[0006] The first supporting member comprises at least one first fixing portion, and the second supporting member comprises at least one second fixing portion to be inserted into the first fixing portion for connecting the first supporting member and the second supporting member.

[0007] The first fixing portion of the first supporting member comprises two holes, and the second fixing portion of the second supporting member comprises two end portions to be inserted into the two holes such that the second supporting member is connected to the first supporting member.

[0008] When the third supporting member is connected to the second supporting member, the third supporting member is movable with respect to the second supporting member.

[0009] The third supporting member comprises at least one third fixing portion, and the second supporting member comprises at least one second fixing portion. When the body is hung, the second fixing portion passes through the third fixing portion and is disposed on the first supporting member.

[0010] The third fixing portion comprises two through holes, and the second fixing portion comprises two end portions to pass through the through holes such that the third supporting member is disposed on the second supporting member.

[0011] The first supporting member comprises at least two first fixing portions, and the second supporting member comprises at least one second fixing portion to be selectively inserted into one of the first fixing portions.

[0012] When the second supporting member and the first supporting member are connected, the first angle is substantially 90°.

[0013] When the third supporting member is connected to the second supporting member, the second angle is substantially 90°.

[0014] The body comprises a positioning portion, the positioning portion comprises a groove, and the first supporting member is engaged with the groove of the positioning portion such that the electronic device is hung on a wall.

[0015] The first supporting member comprises a plate and a protrusion, the plate connected to the protrusion; wherein when the body is disposed on the horizontal plane, the body leans against the plate and protrusion. When the body is disposed on the vertical plane, the protrusion is engaged with the positioning portion of the body. The plate and the protrusion form an L-shape. The electronic device comprises a scanner.

[0016] Embodiments of the invention further provide a supporting module, selectively supporting an object on a horizontal plane or hang the object on a vertical plane. A first supporting member is detachably abutted the object. A second supporting member is detachably connected to the first supporting member. A third supporting member is detachably connected to the second supporting member. The first and second supporting members are connected to support the object to an upright position on a horizontal plane. When the first, second, and third supporting members are connected to form a hook for hanging on a vertical plane, the first supporting member is engaged with the object such that the object is hung on the vertical surface.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The invention can be more fully understood by reading the subsequent detailed description in conjunction with the examples and references made to the accompanying drawings, wherein:

[0018] FIG. 1 is a schematic view of a conventional scanner;

[0019] FIG. 2 is a perspective rear view of an embodiment of an electronic device in an upright position;

[0020] FIG. 3 is an exploded view of an electronic device of the invention;

[0021] FIG. 4A is a perspective view of an electronic device of the invention in a hanging position;

[0022] FIG. 4B is a perspective view of an electronic device of the invention when hung on a partition wall.

DETAILED DESCRIPTION

[0023] While electronic devices disclosed in embodiments of the invention are scanners, the characteristics of the
embodiments are applicable in other electronic devices such as flat panel displays, lightweight copiers, multifunction printers, notebook computers, and other devices.

[0024] FIG. 2 is a perspective rear view of an embodiment of an electronic device 200 in an upright position.

[0025] The electronic device 200 comprises a body 21, a cover 23, a supporting module 30. The electronic device 200 can be selectively disposed on a horizontal or vertical plane, for example, a desk D or a partition wall W (as shown in FIG. 4B). The body 21 abuts the supporting module 30. The cover 23 is rotatably disposed on the body 21. The cover 23 and the supporting module 30 are disposed on two opposing sides of the body 21 respectively. That is, the supporting module 30 is at rear side of the body 21.

[0026] FIG. 3 is an exploded view of an electronic device 200 of the invention. Please refer to FIGS. 2, 3, 4A and 4B. In FIG. 3, the supporting module 30 comprises a first supporting member 31, a second supporting member 32, and a third supporting member 33. As shown in FIG. 2, the second supporting member 32 is detachably connected to the first supporting member 31, forming a first angle $\theta_1$. When the second supporting member 32 and the first supporting member 31 are connected, the first angle $\theta_1$ is about 90°. The third supporting member 35 is detachably connected to the second supporting member 32, forming a second angle $\theta_2$. When the third supporting member 35 is connected to the second supporting member 32, the second angle $\theta_2$ is about 90°, as shown in FIG. 4B. When the first and second supporting members 31 and 32 are connected and disposed on the horizontal plane D, the first and second supporting members 31 and 32 support the body 21 in an upright position, as shown in FIG. 2. The first, second, and third supporting members 31, 32, and 35 are connected to form a hook hung on the vertical plane W, as shown in FIGS. 4A and 4B. The first supporting member 31 is engaged with the body 21 such that the body 21 is hung close to the vertical surface W. Thus, the body 21 of the electronic device 200 is selectively positioned upright (FIG. 2) or hung on a vertical plane (FIG. 4B).

[0027] The supporting module 30 is described in the following, as shown in FIG. 3. The first supporting member 31 comprises at least one first fixing portion 310. In this embodiment, the first supporting member 31 comprises two first fixing portions 310, a plate 311, and a protrusion 312 connected to the plate 311. The plate 311 and the protrusion 312 form an L-shape. The plate 311 and the protrusion 312 of the first supporting member 31 can be integrally formed as a unit. One first fixing portion 310 comprises two holes 31a and 31b. Another first fixing portion 310 comprises two holes 31c and 31d. Moreover, the second fixing member 32 comprises a second fixing portion 320. In this embodiment, the second fixing portion 320 comprises two end portions 32a and 32b. Thus, the second fixing portion 320 of the second supporting member 32 is selectively engaged with one of the first fixing portion 310. For example, the end portions 32a and 32b are inserted into the holes 31a and 31b of the first fixing portion 310 for positioning upright, thereby connecting the first and the second fixing members 31 and 32. The second fixing portion 32 is L-shaped. Note that, the invention does not limit the shape of the first and second supporting members. Furthermore, the invention does not limit the shape of the first fixing portion 310 of the first supporting member 31. For example, the first fixing portion 310 can comprise a slot. The second fixing portion 320 can comprise a protrusion or other structure corresponding to the first fixing portion 310.

[0028] When the body 21 of the electronic device 200 is disposed on the horizontal plane D, as shown in FIG. 2, the body 21 leans against the plate 311 and protrusion 312 of the first supporting member 31 such that the second supporting member 32 is substantially perpendicular to the first supporting member 31. In this embodiment, two end portions 32a and 32b of the second supporting member 32 are inserted in the lower two holes 31c and 31d. Thus, the first and second supporting members 31 and 32 support the body 21 in an upright position at the horizontal plane D. Note that, when the electronic device 200 is in an upright position on the desk D, the third supporting member 35 is not used and can be detached and stored.

[0029] FIGS. 4A and 4B are perspective views of an electronic device 200 of the invention in a hanging position. When the electronic device 200 is hung vertically, the third supporting member 35 of the supporting module 30 must be attached. The third supporting member 35 comprises a third fixing portion 350, and the second fixing portion 32 passes through the third fixing portion 35 and forms a second angle $\theta_2$ of about 90 degrees with the third fixing portion 35. The third fixing portion 350 comprises two holes 35a and 35b, as shown in FIG. 3. The body 21 comprises a positioning portion 22, and the first supporting member 31 is engaged with the positioning portion 22. The positioning portion 22 comprises a groove. When the body 21 is disposed on the vertical plane W, two end portions 32a and 32b of the second supporting member 32 pass through the holes 35a and 35b of the third supporting member 35 and then are inserted into the holes 31a and 31b of the first supporting member 31. Thus, the third supporting member 35 is connected to the first supporting member 31 via the second supporting member 32. The protrusion 312 of the first supporting member 31 is engaged with the positioning portion or groove 22 of the body 21. Note that the invention does not limit the method of connection between the second and the third supporting members 32 and 35. Other embodiments utilizing other connection methods can also be applied in the invention.

[0030] After the supporting module 30 is assembled, as shown in FIG. 4A, a gap $G$ is formed between the first supporting member 31 and the third supporting member 35. The supporting module 30 is installed in the direction of the arrow in FIG. 4B for positioning on the partition wall W. That is, the gap $G$ corresponds to the partition wall W such that the body 21 can be hung thereon. Thus, the partition wall W is clamped between the first supporting member 31 and the third supporting member 35. The gap $G$ can be adjusted by moving the third supporting member 35 with respect to the second supporting member 32 to hang the body 21 on the partition wall W. Thus, the electronic device 200 is hung thereon. Users can scan a paper P on a hanging device, thus reducing occupied work area.

[0031] Hence, the body 21 of the electronic device 200 can be positioned upright (FIG. 2) or hung vertically (FIG. 4B). When the electronic device 200 is hung vertically, the electronic device 200 does not occupy desk space, and provides various operating angles.
Additionally, the supporting module of the invention is not limited to supporting the described electronic device. The supporting module can also support other objects in an upright position or hang the object vertically.

While the invention has been described by way of example and in terms of 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 (as would be apparent to those skilled in the art). Therefore, the scope of the appended claims should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements.

What is claimed is:

1. An electronic device, selectively positioned upright on a horizontal plane or hung on a vertical plane, comprising:
   a body;
   a first supporting member, detachably abutted the body;
   a second supporting member, detachably connected to the first supporting member, forming a first angle with the first supporting member; and
   a third supporting member, detachably connected to the second supporting member, forming a second angle with the second supporting member;
   wherein the first and second supporting members are connected to support the body in an upright position on a horizontal plane; and when the first, second, and third supporting members are connected to form a hook for hanging on a vertical plane, the first supporting member is engaged with the body such that the body is hung on the vertical surface.

2. The electronic device as claimed in claim 1, wherein the first supporting member comprises at least one first fixing portion, and the second supporting member comprises at least one second fixing portion to be inserted in the first fixing portion for connecting the first supporting member and the second supporting member.

3. The electronic device as claimed in claim 2, wherein the first fixing portion of the first supporting member comprises two holes, and the second fixing portion of the second supporting member comprises two end portions to be inserted into the two holes such that the second supporting member is connected to the first supporting member.

4. The electronic device as claimed in claim 1, wherein when the third supporting member is connected to the second supporting member, the third supporting member is movable with respect to the second supporting member.

5. The electronic device as claimed in claim 4, wherein the third supporting member comprise at least one third fixing portion, and the second supporting member comprises at least one second fixing portion; when the body is hung, the second fixing portion passes through the third fixing portion and is disposed on the first supporting member.

6. The electronic device as claimed in claim 5, wherein the third fixing portion comprises two through holes, and the second fixing portion comprises two end portions to pass through the through holes such that the third supporting member is disposed on the second supporting member.

7. The electronic device as claimed in claim 1, wherein the first supporting member comprises at least two first fixing portions, and the second supporting member comprises at least one second fixing portion to be selectively inserted into one of the first fixing portions.

8. The electronic device as claimed in claim 1, wherein when the second supporting member and the first supporting member are connected, the first angle is substantially 90°.

9. The electronic device as claimed in claim 1, wherein when the third supporting member is connected to the second supporting member, the second angle is substantially 90°.

10. The electronic device as claimed in claim 1, wherein the body comprises a positioning portion, and the positioning portion comprises a groove, and the first supporting member is engaged with the groove of the positioning portion such that the electronic device is hung on a wall.

11. The electronic device as claimed in claim 10, wherein the first supporting member comprises a plate and a protrusion, the plate connected to the protrusion; wherein when the body is disposed on the horizontal plane, the body leans against the plate and protrusion; and when the body is disposed on the vertical plane, the protrusion is engaged with the positioning portion of the body.

12. The electronic device as claimed in claim 11, wherein the plate and the protrusion form an L-shape.

13. The electronic device as claimed in claim 1, wherein the electronic device comprises a scanner.

14. A supporting module, selectively supporting an object on a horizontal plane or hang the object on a vertical plane, comprising:
   a first supporting member, detachably abutted the object;
   a second supporting member, detachably connected to the first supporting member; and
   a third supporting member, detachably connected to the second supporting member;
   wherein the first and second supporting members are connected to support the object in an upright position on a horizontal plane; and when the first, second, and third supporting members are connected to form a hook for hanging on a vertical plane, the first supporting member is engaged with the object such that the object is hung on the vertical surface.

15. The supporting module as claimed in claim 14, wherein the first supporting member comprises at least one first fixing portion, and the second supporting member comprises at least one second fixing portion to be inserted in the first fixing portion for connecting the first supporting member and the second supporting member.

16. The supporting module as claimed in claim 15, wherein the first fixing portion of the first supporting member comprises two holes, and the second fixing portion of the second supporting member comprises two end portions to be inserted into the holes such that the second supporting member is connected to the first supporting member.

17. The supporting module as claimed in claim 14, wherein when the third supporting member is connected to the second supporting member, the third supporting member is movable with respect to the second supporting member.

18. The supporting module as claimed in claim 17, wherein the third supporting member comprise at least one third fixing portion, and the second supporting member comprises at least one second fixing portion; when the object
is hung, the second fixing portion passes through the third fixing portion and is disposed on the first supporting member.

19. The supporting module as claimed in claim 18, wherein the third fixing portion comprises two through holes, and the second fixing portion comprises two end portions to pass through the through holes such that the third supporting member is disposed on the second supporting member.

20. The supporting module as claimed in claim 14, wherein the first supporting member comprises at least two first fixing portions, and the second supporting member comprises at least one second fixing portion to be selectively inserted into one of the first fixing portions.

21. The supporting module as claimed in claim 14, wherein the first supporting member comprises a plate and a protrusion, the plate connected to the protrusion; when the object is disposed on the horizontal plane, the object leans against the plate and protrusion; when the object is disposed on the vertical plane, the protrusion is engaged with a positioning portion of the object.