ENCLOSURE WITH FIXING STRUCTURE

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ABSTRACT

An enclosure with fixing structure for an electronic device includes: a cover member having a plurality of hook portions formed on the cover member; and a case member having a plurality of groove portions formed on the case member and corresponding to the plurality of hook portions, wherein each of the groove portions further includes a receiving space and a stop portion, such that when a horizontal force is exerted, the hook portions subsequently deposed in the receiving spaces are coupled to the stop portions, for fixing the cover member to the case member. The enclosure with fixing structure is easy to be assembled and disassembled, and has a stable and reliable fixing effect.
ENCLOSURE WITH FIXING STRUCTURE

FIELD OF THE INVENTION

[0001] The present invention relates to enclosures with fixing structure, and more particularly, to an enclosure with fixing structure, for being applied to an electronic device.

BACKGROUND OF THE INVENTION

[0002] With the development of science and technology, portable or handheld electronic devices such as notebook computers, MP3, mobile disks, mobile phones, PDAs etc., which are much lighter thinner shorter and smaller, have multiple functions and are easy to use, are becoming more and more popular.

[0003] However, as the size of an electronic device shrinks, available spaces for each component of the electronic device are limited. As a result, the prior art technique that uses a metal enclosure fixing structure composed of screws or the like to fix each component has some defects: firstly, because of the limited spaces, in some certain circumstances, such a metal enclosure fixing structure can not be used; secondly, such a metal enclosure fixing structure can not prevent short circuits from happening; thirdly, such a metal enclosure fixing structure often abrades the components, especially those formed of plastic materials or the like; finally, such a metal enclosure is not easy to assemble and disassemble.

[0004] According to these defects, an improved fixing structure to fix components by hooks and grooves is proposed. Referring to FIG. 7, an enclosure fixing structure to fix an enclosure of a notebook computer is shown. The enclosure includes a switch cover 70 and an upper case member 72.

[0005] Therein, a plurality of hook portions 700 are disposed on the switch cover 70, a plurality of groove portions 720 corresponding to the hook portions 700 are disposed on the upper case member 72. Each of the groove portions 720 has a receiving space having the same length as that of the hook portions 700. To assemble the switch cover 70 and the upper case member 72, first, the switch cover 70 is positioned, that is, the hook portions 700 are aligned with the corresponding groove portions 720, then, the hook portions 700 are inserted in the groove portions by a vertical force to fix the switch cover 70 to the upper case member 72.

[0006] While inserting the hook portions 700 to the groove portions by the vertical force, because the upper case member 72 formed of metal such as Mg alloy is not easy to be deformed to provide enough spaces to the hook portions 700, a large vertical forces is needed to counteract the high resistance force coming from the upper case member 72, which often results in permanent deformation and even damage of the hook portions 700 and accordingly results in failure of fixing. Further, material fatigue is easy to occur to a part of the hook portions 700 where the stress focuses when the enclosure fixing structure is assembled and disassembled several times.

[0007] Accordingly, there is a need to develop an enclosure fixing structure which is easy to assemble and disassemble and has a good fixing effect.

SUMMARY OF THE INVENTION

[0008] According to the above defects, a primary objective of the present invention is to provide an enclosure with fixing structure, which is easy to be assembled and disassembled, for an electronic device.

[0009] Another objective of the present invention is to provide an enclosure with fixing structure, which is not easy to be damaged during assembling and disassembling, for an electronic device.

[0010] A further objective of the present invention is to provide an enclosure with fixing structure, which has a stable and reliable fixing effect, for an electronic device.

[0011] To achieve the above and other objectives, an enclosure with fixing structure according to the present invention comprises: a cover member having a plurality of hook portions; and a case member having a plurality of groove portions, wherein each of the groove portions further comprises a receiving space and a stop portion, such that when a horizontal force is exerted (being the same as the direction of Arrow X of FIG. 1), the hook portions subsequently deposed in the receiving spaces are coupled to the stop portions, for fixing the cover member to the case member.

[0012] Preferably, the hook portions are wedge-shaped hooks or right-angle hooks. Each of the hook portions may be formed facing an edge of the cover member, formed with its backside facing an edge of the cover member, or formed in a direction the horizontal force exerted. Further, each of the hook portions may have a wedge-shaped side, which allows the hook portions to be easily guided and coupled to the stop portions in a horizontal direction.

[0013] Preferably, the stop portions of the groove portions are formed corresponding to the hook portions such that the stop portions may be coupled with the corresponding hook portions. In addition, each of the stop portions has a wedge-shaped opening, which allows the hook portions to be easily guided and coupled to the stop portions in a horizontal direction.

[0014] To fix the cover member to the case member, the hook portions of the cover member is first deposed in the receiving spaces for positioning, then the hook portions are guided and coupled to the stop portions, when exerting an horizontal force.

[0015] Compared with the prior art, the enclosure with fixing structure of the present invention effectively reduces the resistance force while inserting the hook portions into the groove portions, thus it is easy to be assembled and disassembled without strain. Moreover, the present invention is capable of provide a stable and reliable effect without damaging the structure.

BRIEF DESCRIPTION OF DRAWINGS

[0016] FIG. 1 is a structure diagram of an enclosure with fixing structure according to a first embodiment of the present invention;

[0017] FIGS. 2A to 2D are structure diagrams of hook portions of a cover member and groove portions of a case member;

[0018] FIGS. 3A and 3B are diagrams showing engaging process of the enclosure with fixing structure according to the first embodiment of the present invention;
[0019] FIGS. 4A to 4D are structure diagrams of the enclosure with fixing structure according to a second embodiment of the present invention;

[0020] FIGS. 5A and 5B are structure diagrams of the enclosure with fixing structure according to a third embodiment of the present invention;

[0021] FIG. 6 is a modified structure diagram of the enclosure with fixing structure according to the present invention; and

[0022] FIG. 7 is a structure diagram of an enclosure with fixing structure of the prior art.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0023] Hereunder, embodiments of the present invention will be described in full detail with reference to the accompanying drawings.

First Embodiment

[0024] FIGS. 1 to 3B are structure diagrams of an enclosure with fixing structure applied to an electronic device according to a first embodiment of the present invention, wherein the electronic device could be a notebook computer.

[0025] As shown in FIG. 1, the enclosure of the electronic device includes: a cover member 10 having a plurality of hook portions 100, which could be a switch cover of a keyboard module; and a case member 20 having a plurality of groove portions 200 corresponding to the hook portions 100, which could be an upper case member of the keyboard module, each of the groove portions 200 having a receiving space 201 and a stop portion 203, wherein the receiving spaces 201 allow the hook portions 100 to be received and moved therein, such that when a force is exerted horizontally, as the direction of Arrow X (as shown in FIG. 1), the stop portions 203 engage with the hook portions 100 that has been received in the receiving spaces and guided to the stop portions 203 by the horizontal force, thereby fixing the cover member 10 to the case member 20. FIGS. 2A to 2C are sectional views of the hook portions 100 of the cover member 10.

[0026] As shown in FIGS. 2A to 2B, the hook portions 100 are disposed facing a lateral side of the cover member 10, which could be wedge-shaped hooks 101a or right-angle hooks 101b. In the present embodiment, the right-angle hooks 101b are used as the hook portions 100, which not only enhance the fixing effect but also are not easy to be damaged. Moreover, each of the hook portions 100 has a wedge-shaped side 103 which allows the hook portions 100 to be easily guided to the stop portions 203 in a horizontal direction.

[0027] FIG. 2D shows structure of the groove portions 200 disposed on the case member 20 and corresponding to the hook portions 100. As mentioned above, each of the groove portions 200 has a receiving space 201 and a stop portion 203. Each of the stop portions 203 is formed at one side of the corresponding groove portion 200 relatively close to a lateral side of the case member 20 and partially covers the corresponding receiving space 201. Each of the stop portions 203 has a wedge-shaped opening 205 which allows the hook portions 100 to be easily guided to the stop portions 203. The receiving spaces 201 that are not covered by the stop portions 203 at least allow the hook portions 100 to be received and move therein when a horizontal force is exerted.

[0028] FIGS. 3A and 3B show an engaging process according to the first embodiment of the present invention. As shown in FIG. 3A, to fix the cover member 10 to the case member 20, first, the hook portions 100 of the cover member 10 are inserted inside the receiving spaces 201 of the groove portions 200; then, the hook portions 100 are guided to the stop portions 203 by a horizontal force until the hook portions 100 are fully engaged with the stop portions 203, as shown in FIG. 3B.

[0029] Therefore, the enclosure with fixing structure according to the present invention is easy to assemble and disassemble without strain, which achieves a stable and reliable fixing effect without damaging the structure.

Second Embodiment

[0030] FIGS. 4A to 4D are structure diagrams of an enclosure with fixing structure according to a second embodiment of the present invention. To make the description more clear, components that are identical or similar to that of the first embodiment are represented with identical or similar reference numerals and detailed description of them are omitted.

[0031] The main difference of the second embodiment from the first embodiment is that each of the hook portions 100 is disposed with its backside facing a lateral side of the cover member 10 and each of the stop portions 203 is formed at one side of the corresponding groove portion 200 far away from a lateral side of the case member 20.

Third Embodiment

[0032] FIGS. 5A and 5B are structure diagrams of an enclosure with fixing structure according to a third embodiment of the present invention. To make the description more clear, components that are identical or similar to that of the first embodiment are represented with identical or similar reference numerals and detailed description of them are omitted.

[0033] The main difference of the third embodiment from the first embodiment is that each of the hook portions 100 is disposed to the cover member 10 in the same direction as that of the horizontal force and each of the stop portions 203 is formed at the end of the corresponding groove portion 200 in the direction of the horizontal force.

[0034] FIG. 6 shows another different structure of the enclosure with fixing structure. As a result, the hook portions and the corresponding groove portions could be disposed in different positions or in different directions, which are not limited to the embodiments.

[0035] The main feature of the present invention is that the receiving spaces of the groove portions allow the hook portions to move therein when a horizontal force is exerted. Accordingly, the resistance force produced during inserting the hook portions to the groove portions is greatly reduced. Meanwhile, the large vertical force of the prior art is avoided. Compared with the prior art, the enclosure with fixing structure of the present invention is much easier to
assemble and disassemble without strain. Meanwhile, a stable and reliable fixing effect is achieved without damaging the structure.

[0036] The invention has been described using exemplary preferred embodiments. However, it is to be understood that the scope of the invention is not limited to the disclosed embodiments. On the contrary, it is intended to cover various modifications and similar arrangements. The scope of the claims, therefore, should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements.

What is claimed is:
1. An enclosure with fixing structure, for being applied to an electronic device, comprising:
   a cover member having a plurality of hook portions formed on the cover member; and
   a case member having a plurality of groove portions formed on the case member and corresponding to the plurality of hook portions, wherein each of the groove portions further comprises a receiving space and a stop portion, such that when a horizontal force is exerted, the hook portions subsequently deposed in the receiving spaces are coupled to the stop portions, for fixing the cover member to the case member.
2. The enclosure with fixing structure of claim 1, wherein the stop portions are formed in the groove portions and in positions close to an edge of the case member, such that when the force is exerted, the stop portions are subsequently deposed in the receiving spaces and are coupled to the stop portions, for fixing the cover member to the case member.
3. The enclosure with fixing structure of claim 1, wherein each of the stop portions is one selected from the group consisting of a wedge-shaped hook and a right-angle hook.
4. The enclosure with fixing structure of claim 1, wherein each of the hook portions has a wedge-shaped side.
5. The enclosure with fixing structure of claim 1, wherein the hook portions are formed in a manner facing an edge of the cover member.
6. The enclosure with fixing structure of claim 1, wherein the stop portions are formed in the groove portions and in positions close to an edge of the case member, such that when the force is exerted, the hook portions subsequently deposed in the receiving spaces are coupled to the stop portions, for fixing the cover member to the case member.
7. The enclosure with fixing structure of claim 5, wherein the stop portions are formed in the groove portions and in positions close to an edge of the case member, such that when the force is exerted, the hook portions subsequently deposed in the receiving spaces are coupled to the stop portions, for fixing the cover member to the case member.
8. The enclosure with fixing structure of claim 1, wherein the hook portions are formed in a manner with its backside facing to an edge of the cover member.
9. The enclosure with fixing structure of claim 1, wherein the stop portions are formed in the groove portions and in positions away from an edge of the case member, such that when the force is exerted, the hook portions subsequently deposed in the receiving spaces are coupled to the stop portions, for fixing the cover member to the case member.
10. The enclosure with fixing structure of claim 8, wherein the stop portions are formed in the groove portion and in positions away from an edge of the case member, such that when the force is exerted, the hook portions subsequently deposed in the receiving spaces are coupled to the stop portions, for fixing the cover member to the case member.
11. The enclosure with fixing structure of claim 1, wherein the hook portions are formed in a direction the horizontal force exerted.
12. The enclosure with fixing structure of claim 1, wherein each of the stop portions is formed at an end of each of the groove portions in a direction the horizontal force exerted, such that the hook portions subsequently deposed in the receiving spaces are coupled to the stop portions, for fixing the cover member to the case member.
13. The enclosure with fixing structure of claim 1, wherein the electronic device is a notebook computer.