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(54) PROTECTIVE COVER CAPABLE OF FASTENING PIVOT SHAFT OF SCREEN COVER OF TABLET PC

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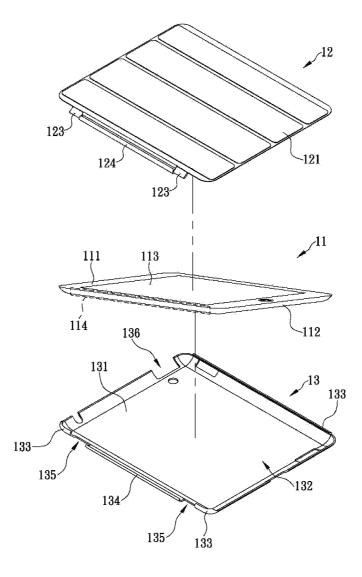
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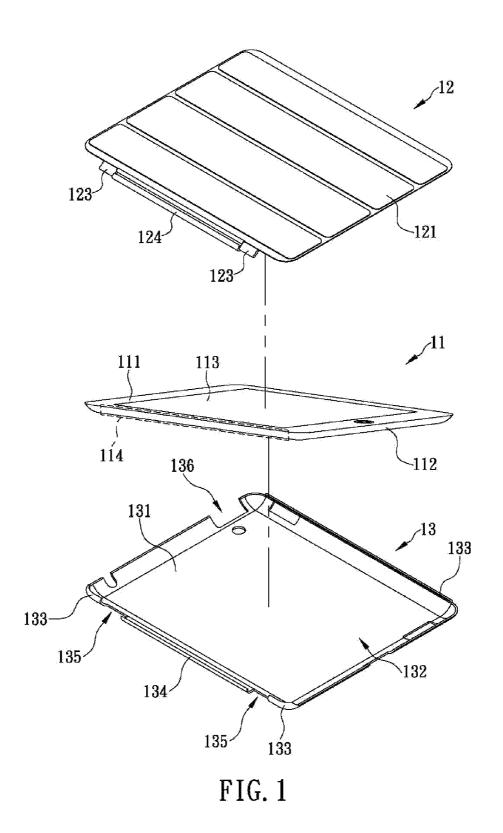
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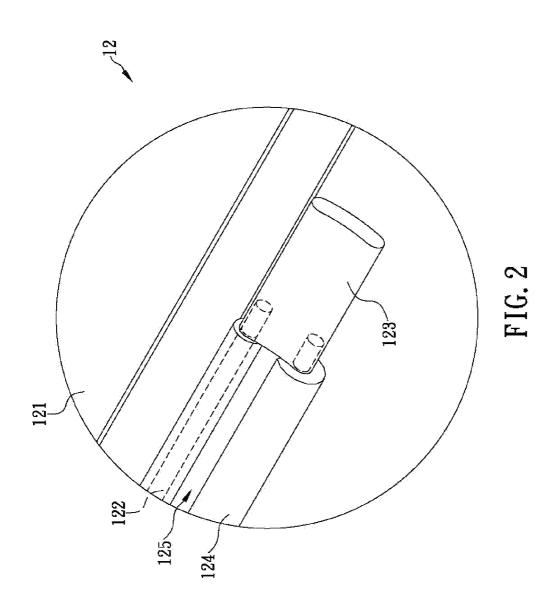
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(57) **ABSTRACT**

The present invention is to provide a protective cover capable of fastening a pivot shaft of a screen cover of a tablet PC, wherein the pivot shaft is connectable to a connecting portion between front and back covers of the tablet PC, so that the screen cover can be turned about the pivot shaft to cover the front cover. The protective cover includes a cover body having one side concavely provided with a receiving space for receiving and protecting the back cover, at least one gripping portion having a hook-shaped configuration formed by the periphery of the cover body for hooking to the peripheral edge of the tablet PC after the back cover is received in the receiving space, and a fastening portion formed by an extension of the periphery of the cover body for fastening the pivot shaft while the screen cover is being turned about the pivot shaft.







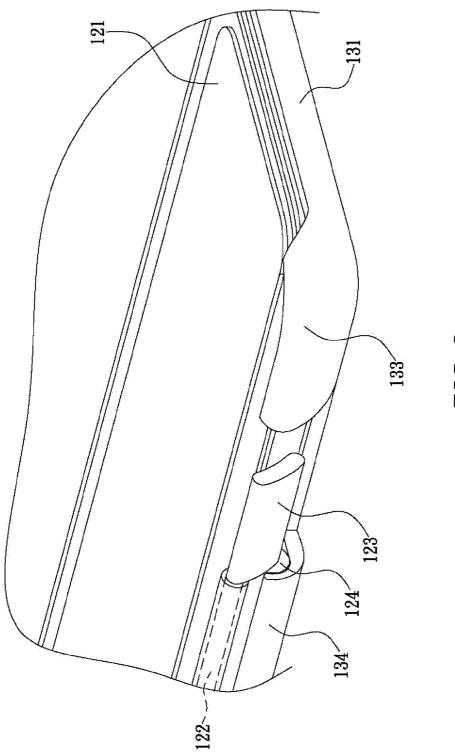
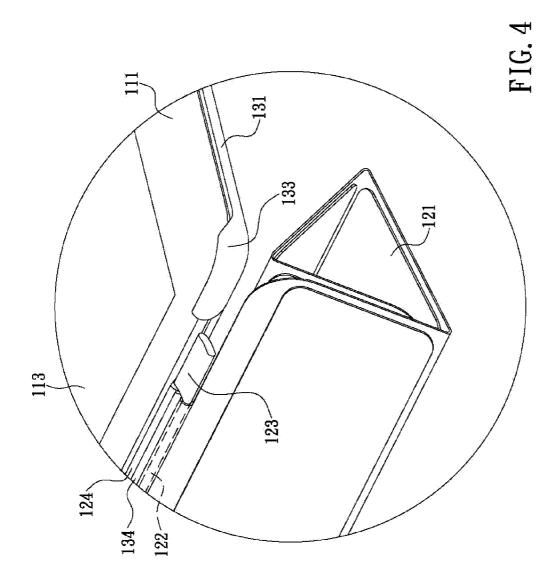


FIG. 3



PROTECTIVE COVER CAPABLE OF FASTENING PIVOT SHAFT OF SCREEN COVER OF TABLET PC

FIELD OF THE INVENTION

[0001] The present invention relates to a protective cover, more particularly to a protective cover capable of fastening a pivot shaft of a screen cover of a tablet PC, wherein the protective cover includes a cover body having one side concavely provided with a receiving space for receiving and protecting a back cover of the tablet PC, and a fastening portion formed by an extension of the periphery of the cover body for fastening the pivot shaft to cover a front cover of the tablet PC.

BACKGROUND OF THE INVENTION

[0002] Recently, with the significant advancements in hardware and software technologies and the continuous improvement of ergonomics, the research and development of electronic devices are no longer focused only on such performance indicators as operation speed. The provision of better user-device interaction is nowadays an even more important issue in the development of industrial competitiveness. As can be seen in the evolution of computers from desktops to laptops to palmtops and tablets, the reduction in weight and size of hardware has made electronic devices highly portable. In addition, intuitive operation has been a major trend in software engineering. The core spirit of today's industrial development is to employ all applicable hardware and software means to the design and production of electronic devices with which users can interact more conveniently and more intuitively.

[0003] Among the aforementioned electronic devices, tablet personal computers, or tablet PCs, feature a good balance between portability and performance and, thanks to their mode of operation that suits people's reading habits, have stepped from the PC market into the market of electronic readers. Hence, tablet PCs have lately been a major product category for a good number of companies and the first choice among consumers wishing to buy the foregoing electronic devices. Now that the main features of tablet PCs are portability and flexibility in operation, most users would carry their tablet PCs with them and are more likely to operate the tablet PCs on the move than they would other electronic devices. Because of that, tablet PCs require more protection. [0004] Currently, the market is supplied with a variety of protective elements for use with tablet PCs. According to the part to be directly protected, these protective elements can be generally divided into the following: protectors for the entire tablet, such as film wraps and protective cases; screen protectors, such as protective adhesive films and screen covers; and protective covers for the back cover of a tablet PC. Protective elements like film wraps and protective adhesive films are chiefly designed to protect tablet PCs from being scratched by a pointed object or by friction and therefore provide little protection against external impact, which nevertheless may easily damage a tablet PC if the part being hit is the screen. In consideration of this, tablet PC users tend to choose a protective element that can protect the screen. Some users prefer a screen cover to a protective case, which covers the entire tablet, as the major protective element, with a view to keeping their tablet PCs easy-to-use and esthetically pleasing. In coping with such preference, screen covers are typically designed to be readily detachable and adaptive to the features of tablet PCs, thus not only allowing a tablet PC to be gracefully used in a stationary state, but also allowing a screen cover to be easily removed from the tablet PC with which it is used and be put aside, so as to restore the structural simplicity and compactness of the tablet PC. However, a screen cover alone cannot protect the back cover of a tablet PC against collision or friction while the tablet PC is being carried around. Further, as screen covers are mostly configured for easy detachment, a screen cover may separate from the tablet PC to be protected should the tablet PC be operated with big hand movements. If, in that case, the user grasps the screen cover only, the tablet PC is very likely to drop to the ground and be damaged. To prevent such accidents, the user must pay extra attention when operating the tablet PC, which is against the aforesaid core spirit of enabling easy and intuitive use of tablet PCs.

[0005] In a nutshell, although it is generally desired to use tablet PCs under different circumstances, so far there are no easy and practical solutions that can simultaneously satisfy the different needs to use tablet PCs under various conditions. The issue to be addressed by the present invention is to provide a simple and practical device that serves the purpose.

BRIEF SUMMARY OF THE INVENTION

[0006] In view of the aforementioned shortcomings of the conventional protective elements for use with tablet PCs, the inventor of the present invention incorporated years of practical experience into extensive research and development and finally succeeded in creating a protective cover that can fasten a pivot shaft of a screen cover of a tablet PC. With the assistance of the present invention, one can operate a tablet PC conveniently and intuitively while holding the tablet PC or its screen cover at any desired position.

[0007] It is an object of the present invention to provide a protective cover capable of fastening a pivot shaft of a screen cover of a tablet PC. The protective cover is applicable to a tablet PC, wherein the tablet PC includes a front cover and a back cover and is provided with a connecting portion. The connecting portion is adjacent to a lateral edge of the tablet PC where the front cover and the back cover are connected. A screen cover has a pivot shaft that is connectable to the connecting portion by engagement or attraction therebetween, so that the screen cover can be turned about the pivot shaft to cover or not cover a screen on the front cover. The protective cover includes a cover body, at least one gripping portion, and a fastening portion. The cover body is made of a resilient material such as polycarbonate (PC), polyvinyl chloride (PVC), or polyethylene terephthalate (PET). One side of the cover body is concavely provided with a receiving space for receiving the back cover and thereby protecting the back cover from being scratched or indented by an external force which may otherwise rub against or hit the back cover. The cover body is formed with an aperture corresponding in position to each part of the tablet PC that is configured for interaction with the outside, such as the parts where a loudspeaker, a camera lens, various pushbuttons, and various peripheral connectors are respectively provided. The at least one gripping portion is provided at a periphery of the cover body that is adjacent to the receiving space. More specifically, each gripping portion has a hook-shaped configuration formed by the periphery of the cover body extending toward the receiving space. In addition, each gripping portion corresponds in

shape to the peripheral edge of the tablet PC and can hook to the peripheral edge of the tablet PC after the back cover is received in the receiving space, thus connecting the cover body and the back cover as a single piece. The fastening portion is provided on the cover body, corresponds in position to the connecting portion, and is formed by an extension of the periphery of the cover body. Once the cover body and the back cover are connected as a single piece, the fastening portion fastens the pivot shaft of the screen cover, ensuring that the pivot shaft will not come off the connecting portion while the screen cover is being turned.

[0008] Another object of the present invention is to provide a protective cover capable of fastening a pivot shaft of a screen cover of a tablet PC, wherein the protective cover is applicable to a tablet PC and a screen cover of the tablet PC. The tablet PC includes a front cover and a back cover and is provided with a connecting portion adjacent to a lateral edge of the tablet PC where the front cover and the back cover are connected. The screen cover includes a pivot shaft, two bearing seats, a turning rod, and a covering portion. The pivot shaft of the screen cover and the connecting portion can be connected by engagement or attraction therebetween. The two ends of the pivot shaft are respectively and pivotally connected in the bearing seats, and so are the two ends of the turning rod. The turning rod is spaced from the pivot shaft by a gap and has an axis parallel to that of the pivot shaft. The covering portion has one end covering the surface of the turning rod and is turnable about the turning rod so as to cover or not cover a screen on the front cover. The protective cover includes a cover body, at least one gripping portion, and a fastening portion. The cover body, which is made of a resilient material, has one side concavely provided with a receiving space for receiving the back cover and thereby protecting the back cover from being scratched or indented by an external force which may otherwise rub against or hit the back cover. The cover body is formed with an aperture corresponding in position to each part of the tablet PC that is configured for interaction with the outside. Also, the cover body is formed with an opening corresponding in position to each bearing seat of the screen cover. The at least one gripping portion is provided at a periphery of the cover body that is adjacent to the receiving space. More particularly, each gripping portion has a hook-shaped configured formed by the periphery of the cover body extending toward the receiving space. Additionally, each gripping portion corresponds in shape to the peripheral edge of the tablet PC and can hook to the peripheral edge of the tablet PC after the back cover is received in the receiving space, thus connecting the cover body and the back cover as a single piece. The fastening portion is provided on the cover body, corresponds in position to the connecting portion, and is formed by an extension of the periphery of the cover body. Once the cover body and the back cover are connected as a single piece, the fastening portion is inserted in between the pivot shaft and the turning rod from outside the pivot shaft. This ensures that the pivot shaft will not come off the connecting portion while the screen cover is being turned. When the bearing seats are pivoted simultaneously about the pivot shaft, the turning rod is moved about the pivot shaft outside the fastening portion.

[0009] Hence, even if the user takes hold only of the screen cover while using the tablet PC and thus causes the tablet PC to swing, the pivot shaft is prevented from coming off the connecting portion. Consequently, the tablet PC is kept form damage which may otherwise occur if the tablet PC is

dropped to the ground. In other words, with the assistance of the protective cover, the user may hold the tablet PC or the screen cover at any desired position when using the tablet PC. Furthermore, due to its easy installation and removal, the protective cover can be temporarily detached, even along with the screen cover, if the tablet PC is used in a stationary state, e.g., when used in a bedroom or study of the user's home. This allows the tablet PC to be operated in its most compact form. When it is desired to carry the tablet PC around or use the tablet PC during commute or in a place where people come and go, the tablet PC, the screen cover, and the protective cover can be readily put together to provide enhanced protection for the tablet PC. It is also feasible to connect the protective cover directly to the tablet PC in the absence of the screen cover. Therefore, the protective cover can be used in different combinations and has more flexibility in use than a protective case designed to cover the entire tablet PC. Moreover, the protective cover may come with different external designs so that users can show their personal styles with the protective covers they choose.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0010] The structure as well as a preferred mode of use, further objects, and advantages of the present invention will be best understood by referring to the following detailed description of some illustrative embodiments in conjunction with the accompanying drawings, in which:

[0011] FIG. **1** is an exploded perspective view of a preferred embodiment of the present invention;

[0012] FIG. **2** schematically shows certain structural features of a screen cover;

[0013] FIG. **3** is a partial view showing the preferred embodiment of the present invention in use; and

[0014] FIG. **4** is another partial view showing the preferred embodiment of the present invention in use.

DETAILED DESCRIPTION OF THE INVENTION

[0015] The present invention discloses a protective cover capable of fastening a pivot shaft of a screen cover of a tablet PC. The protective cover is applicable to a tablet PC 11 and serves as an auxiliary device for providing protection. Please refer to FIGS. 1 and 2 for a preferred embodiment of the present invention. In this embodiment, the tablet PC 11 is exemplified by a product of Apple Inc. and includes a front cover 111 and a back cover 112. The front cover 111 is provided with a screen 113. The tablet PC 11 is also provided with a connecting portion 114 which is adjacent to a lateral edge of the tablet PC 11 where the front cover 111 and the back cover 112 are connected. In this embodiment, the connecting portion 114 is so configured that a screen cover 12 can be connected to the connecting portion 114 by a magnetic force, and this is why the connecting portion 114 is indicated in FIG. 1 only as a specific range. In other feasible embodiments, however, the connecting portion 114 may be an engaging portion or a pivot seat. The connecting portion 114 may take various forms, provided that it serves to connect the screen cover 12 and the tablet PC 11. Referring now to FIG. 2 for a partial view of the screen cover 12, which is exemplified by one produced by Apple Inc., the screen cover 12 includes a pivot shaft 124, two bearing seats 123, a turning rod 122, and a covering portion 121. In this embodiment, the screen cover 12 is connected to the connecting portion 114

(see FIG. 1) by magnetic attraction between the pivot shaft 124 and the connecting portion 114. The two ends of the pivot shaft 124 are respectively and pivotally connected in the bearing seats 123. The two ends of the turning rod 122 are also respectively and pivotally connected in the bearing seats 123. The turning rod 122 is spaced from the pivot shaft 124 by a gap 125, and the axis of the turning rod 122 is parallel to the axis of the pivot shaft 124. The covering portion 121 has one end covering the surface of the turning rod 122 and can turn about the turning rod 122 so as to cover or not cover the screen 113.

[0016] As shown in FIG. 1, the protective cover 13 includes a cover body 131, at least one gripping portion 133, and a fastening portion 134. The cover body 131 is made of polycarbonate (PC), and yet the material of the cover body 131 is not limited thereto. The cover body 131 has one side concavely provided with a receiving space 132 for receiving the back cover 112. Thus, the cover body 131 provides protection for the back cover 112 and prevents it from being scratched or indented by an external force which may otherwise rub against or hit the back cover 112. In addition, the cover body 131 is formed with an aperture 136 corresponding in position to each part of the tablet PC 11 that is designed for interacting with the outside, such as the parts where a loudspeaker, a camera lens, various pushbuttons, and various peripheral connectors are respectively provided. Moreover, since the bearing seats 123 of the screen cover 12 will contact with the tablet PC 11, the cover body 13 is formed with openings 135 which correspond in position respectively to the bearing seats 123. The gripping portions 133 are provided at a periphery of the cover body 131 that is adjacent to the receiving space 132. More specifically, each gripping portion 133 has a hookshaped configuration extending toward the receiving space 132 and corresponds in shape to the peripheral edge of the tablet PC 11. Hence, once the back cover 112 is received in the receiving space 132, each gripping portion 133 hooks to the peripheral edge of the tablet PC 11 and thereby connects the cover body 131 and the back cover 112 as a single unit. The fastening portion 134 is provided on the cover body 131 and corresponds in position to the connecting portion 114. When the cover body 131 and the back cover 112 are connected as a single unit, the fastening portion 134 is inserted in the gap 125 (see FIG. 2) between the pivot shaft 124 and the turning rod 122 from outside the pivot shaft 124. This ensures that the pivot shaft 124 will not come off the connecting portion 114 while the screen cover 12 is being turned.

[0017] The relative positions of the fastening portion 134 and the pivot shaft 124 after the screen cover 12 has been connected to the connecting portion 114 via the pivot shaft 124 and the cover body 131 has been connected to the back cover 112 via the gripping portions 133 are further described with reference to FIGS. 3 and 4. FIG. 3 schematically shows a state in which the screen 113 is covered by the covering portion 121, and FIG. 4 schematically shows a state in which the covering portion 121 has been pivoted to the side of the tablet PC 11 where the back cover 112 (see FIG. 1) is located. As the fastening portion 134 is inserted into the gap 125 (see FIG. 2) between the pivot shaft 124 and the turning rod 122 from outside the pivot shaft 124, the bearing seats 123 can be turned simultaneously about the pivot shaft 124 and thereby drive the turning rod 122, which is pivotally connected to the bearing seats 123, to turn about the pivot shaft 124 outside the fastening portion 134. The turning rod 122 and the covering portion 121 covering the turning rod 122 can be rotated as a whole either from the side where the front cover **111** is located to the side where the back cover **112** is located, or in the opposite direction.

[0018] Therefore, with the assistance of the protective cover 13, the screen cover 12 can be turned at will while the tablet PC 11 is used, without causing the pivot shaft 124 to come off the connecting portion 114. Even if the tablet PC 11 is held only by the screen cover 12, there is no need to worry that the tablet PC 11 might separate from the screen cover 12 and end up falling to the ground and damaged. This allows the user to hold the tablet PC 11 or the screen cover 12 at any desired position that suits intuitive operation of the tablet PC 11.

[0019] While the invention herein disclosed has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope of the invention set forth in the claims.

What is claimed is:

1. A protective cover capable of fastening a pivot shaft of a screen cover of a tablet personal computer (tablet PC), wherein the protective cover is applicable to a tablet PC and a screen cover of the tablet PC, the tablet PC including a front cover and a back cover and being provided with a connecting portion, the screen cover having a pivot shaft connectable to the connecting portion by engagement or attraction therebetween, the protective cover comprising:

- a cover body having a side concavely provided with a receiving space for receiving the back cover of the tablet PC;
- at least a gripping portion provided at a periphery of the cover body that is adjacent to the receiving space, wherein each said gripping portion has a hook-shaped configuration curving toward the receiving space and corresponds in shape to a peripheral edge of the tablet PC such that, once the back cover is received in the receiving space, each said gripping portion hooks to the peripheral edge of the tablet PC and thereby connects the cover body and the back cover together; and
- a fastening portion provided on the cover body and corresponding in position to the connecting portion such that, once the cover body and the back cover are connected together, the fastening portion fastens the pivot shaft.

2. The protective cover of claim 1, wherein the cover body is formed with an aperture corresponding in position to each part of the tablet PC that is configured for interacting with outside.

3. The protective cover of claim **2**, wherein the cover body is made of a resilient material.

4. The protective cover of claim 3, wherein the fastening portion is formed by an extension of the periphery of the cover body.

5. The protective cover of claim 4, wherein each said gripping portion is formed by an extension of the periphery of the cover body toward the receiving space.

6. A protective cover capable of fastening a pivot shaft of a screen cover of a tablet personal computer (tablet PC), wherein the protective cover is applicable to a tablet PC and a screen cover of the tablet PC, the tablet PC including a front cover and a back cover and being provided with a connecting portion adjacent to a lateral edge of the tablet PC where the front cover and the back cover are connected, the screen cover including a pivot shaft, two bearing seats, a turning rod, and a covering portion, the pivot shaft being connectable to the

connecting portion by engagement or attraction therebetween, the pivot shaft having two ends respectively and pivotally connected in the bearing seats, the turning rod having two ends respectively and pivotally connected in the bearing seats, the turning rod being spaced from the pivot shaft by a gap, the turning rod having an axis parallel to an axis of the pivot shaft, the covering portion having an end covering a surface of the turning rod such that the covering portion can be turned about the turning rod to cover or not cover a screen provided on the front cover, the protective cover comprising:

- a cover body having a side concavely provided with a receiving space for receiving the back cover of the tablet PC, the cover body being formed with an opening corresponding in position to each said bearing seat;
- at least a gripping portion provided at a periphery of the cover body that is adjacent to the receiving space, wherein each said gripping portion has a hook-shaped configuration curving toward the receiving space and corresponds in shape to a peripheral edge of the tablet PC such that, once the back cover is received in the receiving space, each said gripping portion hooks to the peripheral edge of the tablet PC and thereby connects the cover body and the back cover together; and

a fastening portion provided on the cover body and corresponding in position to the connecting portion such that, once the cover body and the back cover are connected together, the fastening portion fastens the pivot shaft.

7. The protective cover of claim $\mathbf{6}$, wherein the fastening portion fastens the pivot shaft from outside the pivot shaft, and wherein the fastening portion has an end inserted in the gap between the pivot shaft and the turning rod such that, when the bearing seats are turned about the pivot shaft, the turning rod is turned about the pivot shaft outside the fastening portion.

8. The protective cover of claim **7**, wherein the cover body is formed with an aperture corresponding in position to each part of the tablet PC that is configured for interacting with outside.

9. The protective cover of claim 8, wherein the cover body is made of a resilient material.

10. The protective cover of claim **9**, wherein the fastening portion is formed by an extension of the periphery of the cover body.

11. The protective cover of claim 10, wherein each said gripping portion is formed by an extension of the periphery of the cover body toward the receiving space.

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