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COVER AND SYSTEM INCLUDING COVER

Abstract

A system includes an electronic apparatus and a cover. The electronic apparatus include: a front surface provided with a display; control parts protruding from the front surface; a back surface opposite to the front surface; a first and second magnetic member provided at edge parts on the front surface side and the back surface side. The back surface has a shape bulging out to a back. The cover includes: a third magnetic member attracted to the first and second magnetic members, and is configured to be attachable to the front and back surfaces of the electronic apparatus by the magnetic members. The cover includes an outer surface which is exposed when the cover is attached to the front or back surface and an inner surface facing the front surface when the cover is attached to the front surface. The inner surface has a shape bulging out in the outer surface direction.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION [0001] The present application is a continuation of International Patent Application No. PCT/JP2022/042091 filed on Nov. 11, 2022, which is incorporated herein by reference in their entirety.

FIELD
[0002] The present disclosure relates to a cover and a system including a cover.
BACKGROUND
[0003] Known in the past has been a cover for a portable electronic apparatus (for example, JP 2021-012652 A). The cover described in JP 2021-012652 A has a front cover and back cover connected with each other through a connecting part. In the closed state of this cover accommodating the electronic apparatus therein, the front cover covers the front surface of the electronic apparatus, while the back cover covers the back surface of the electronic apparatus. On the other hand, in the open state of this cover as attached to the electronic apparatus, the back cover is arranged so as to cover the back surface of the electronic apparatus while the front cover is raised up to be separated from the front surface of the electronic apparatus.
SUMMARY
[0004] A cover used for an electronic apparatus is required to be user friendly.
[0005] The gist of the present disclosure is as follows. [0006] (1) A system comprising an electronic apparatus and a cover, wherein [0007] the electronic apparatus include: [0008] a front surface provided with a display; [0009] control parts protruding forward from the front surface; [0010] a back surface provided at an opposite side from the front surface; [0011] a first magnetic member provided at an edge part on the front surface side; and [0012] a second magnetic member provided at an edge part on the back surface side, the back surface has a shape bulging out backward, the cover includes: [0013] a third magnetic member attracted to either the first magnetic member or the second magnetic member, the cover being configured to be detachably attached the front surface of the electronic apparatus by the third magnetic member being attracted to the first magnetic member and to be detachably attached to the back surface of the electronic apparatus by the third magnetic member being attracted to the second magnetic member; [0014] an outer surface which is exposed when the cover is attached to the front surface of the electronic apparatus and when the cover is attached to the back surface of the electronic apparatus; and [0015] an inner surface facing the front surface of the electronic apparatus when the cover is attached to the front surface and facing the back surface of the electronic apparatus when the cover is attached to the back surface, and [0016] the inner surface having a shape bulging out in a outer surface direction which is a direction from the inner surface toward the outer surface side. [0017] (2) The system according to above (1), wherein the outer surface of the cover has a shape bulging out in the outer surface direction corresponding to the shape of the inner surface. [0018] (3) The system according to above (2), wherein [0019] the control parts protrude to the front at both sides across the display, and [0020] the outer surface and the inner surface of the cover have shapes wherein, compared with a region facing the display when the cover is attached to the front surface, specific regions positioned at both sides across the region bulge out further in the outer surface direction. [0021] (4) The system according to above (3), wherein [0022] the specific regions extend symmetrical across the region facing the display and in directions perpendicular to a direction across the region facing the display. [0023] (5) The system according to above (3) or (4), wherein [0024] the inner surface

and the outer surface of the cover bulge out entirely in the outer surface direction and have shapes bulging out further at the specific regions in the outer surface direction compared with other regions of the inner surface and the outer surface. [0025] (6) The system according to above (1) or (2), wherein [0026] the back surface of the electronic apparatus has a shape bulging out backward entirely and the inner surface of the cover has a shape bulging out entirely in the outer surface direction. [0027] (7) The system according to any one of above (1) to (6), wherein [0028] the first magnetic members are arranged along each of opposite sides of the front surface, [0029] the second magnetic members are arranged along each of opposite sides of the back surface, and [0030] the third magnetic members are arranged along each of opposite sides of the cover. [0031] (8) The system according to above (7), wherein [0032] a plurality of the first magnetic members are arranged along each of the opposite sides of the front surface, [0033] a plurality of the second magnetic members are arranged along each of the opposite sides of the back surface, [0034] a plurality of the third magnetic members are arranged along each of the opposite sides of the cover, and [0035] the first magnetic members, the second magnetic members, and the third magnetic members are all magnets, and adjoining magnetic members among the plurality of the magnetic members arranged along each side differ in polarities. [0036] (9) The system according to above (8), wherein [0037] odd numbers of the first magnetic members are arranged along each of the opposite sides of the front surface, [0038] odd numbers of the second magnetic members are arranged along each of the opposite sides of the back surface, and [0039] odd numbers of the third magnetic members are arranged along each of the opposite sides of the cover. [0040] (10) The system according to above (9), wherein [0041] the center-most magnetic member among the odd number of magnetic members arranged along each side are positioned at center of the side. [0042] (11) The system according to above (9) or (10), wherein [0043] a pair of the magnetic members arranged at both sides of the center-most magnetic member among the odd number of magnetic members arranged along each side are positioned at the equal intervals with each other from the center-most magnetic member. [0044] (12) The system according to any one of above (8) to (11), wherein [0045] distances between adjoining magnetic members among magnetic members including the first magnetic members, the second magnetic members, and the third magnetic members are shorter than lengths of the magnetic members along the corresponding sides. [0046] (13) The system according to any one of claims 7 to 12, wherein [0047] the plurality of the first magnetic members are arranged point symmetrically about the center of the front surface, the plurality of the second magnetic members are arranged point symmetrically about the center of the back surface, and the plurality of the third magnetic members are arranged point symmetrically about the center of the cover. [0048] (14) The system according to any one of above (1) to (13), wherein [0049] the electronic apparatus further has a side surface provided between the front surface and the back surface so as to connect the front surface and the back surface, a housing defining the front surface, back surface, and side surface, and a fan provided inside the housing, [0050] the housing has a back wall defining the back surface and bulging out to the back, [0051] the fan is arranged at a region formed inside the housing by the back wall bulging out, and [0052] an air ventilation opening is provided at the side surface, and the air ventilation opening is arranged at a position at least partially overlapping the air ventilation port of the fan when viewing the electronic apparatus from the side surface side where that air ventilation opening is provided. [0053] (15) A cover able to be attached to an electronic apparatus having a front surface provided with a display and a back surface provided at an opposite side from the front surface, which cover: [0054] is configured to be detachably attached to the front surface of the electronic apparatus and to be detachably attached to the back surface of the electronic apparatus, [0055] includes an outer surface which is exposed when the cover is attached to the front surface of the electronic apparatus and when the cover is attached to the back surface of the electronic apparatus, [0056] includes an inner surface facing the front surface and back surface when the cover is attached to the front surface of the electronic apparatus and when the cover is attached to the back surface of the

electronic apparatus and having a shape bulging out in an outer surface direction which is a direction toward the outer surface side with respect to the cover, and [0057] third magnetic member attracted to first magnetic member provided at an edge part of a front surface side of the electronic apparatus and to second magnetic member provided at an edge part at a back surface side of the electronic apparatus.

Description

BRIEF DESCRIPTION OF DRAWINGS

[0058] Embodiments of the present disclosure are best understood from the following detailed description when read with the accompanying figures. It is noted that, in accordance with the standard practice in the industry, various features are not drawn to scale. In fact, the dimensions of the various features may be arbitrarily increased or reduced for clarity of discussion.

[0059] FIG. **1** is a perspective view schematically showing an apparatus-cover system.

[0060] FIG. **2** is a perspective view schematically showing an apparatus-cover system.

[0061] FIG. **3** is a front view, top view, bottom view, and left side view of an electronic apparatus.

[0062] FIG. **4** is a perspective view of the electronic apparatus seen from the left rear.

[0063] FIG. **5** is a plan view of an electronic apparatus.

[0064] FIG. **6** is an enlarged cross-sectional view of an electronic apparatus seen along a line VI-VI of FIGS. **4** and **5**.

[0065] FIG. **7** is a cross-sectional view of an electronic apparatus seen along a line VII-VII of FIG. **5**.

[0066] FIG. **8** is a perspective view of an inner surface side of a cover.

[0067] FIG. **9** is a plan view of a cover.

[0068] FIG. **10** is an enlarged cross-sectional view of a cover seen along a plane X-X of FIGS. **8** and **9**.

[0069] FIG. **11** is a cross-sectional view of an electronic apparatus and cover when the cover is attached to a front surface of the electronic apparatus.

[0070] FIG. **12** is a cross-sectional view of an electronic apparatus and cover when the cover is attached to a back surface of the electronic apparatus.

[0071] FIG. **13** is a plan view, similar to FIG. **5**, of an electronic apparatus.

[0072] FIG. **14** is a plan view, similar to FIG. **9**, of a cover.

[0073] FIG. **15** is a perspective view, similar to FIG. **8**, of an inner surface side of a cover according to a second embodiment.

[0074] FIG. **16** is an cross-sectional view of a cover according to the second embodiment seen along a plane XVI-XVI of FIG. **15**.

DESCRIPTION OF EMBODIMENTS

[0075] Below, referring to the drawings, embodiments will be explained in detail. It should be noted that in the following explanation, similar component elements will be assigned the same reference numerals.

First Embodiment

Apparatus-Cover System

[0076] Referring to FIGS. **1** and **2**, the overall configuration of an apparatus-cover system **1** according to a first embodiment will be explained. The apparatus-cover system **1** includes an electronic apparatus **10** and a cover **50**. The electronic apparatus **10** is an apparatus including a display **15** and having a substantially cuboid shape with rounded corners. In particular, in the present embodiment, the electronic apparatus **10** is a portable apparatus which a user can use while holding it. The electronic apparatus **10** is for example a portable game machine, tablet, etc.

[0077] FIGS. **1** and **2** are perspective views schematically showing an apparatus-cover system **1**. In

FIG. **1**, a front surface of the electronic apparatus **10** is shown, while in FIG. **2**, a back surface of the electronic apparatus **10** is shown. As shown in FIGS. **1** and **2**, the display **15** is provided at one surface of the electronic apparatus **10** having the substantially cuboid shape.

[0078] In this Description, the direction at which the display **15** is provided at the electronic apparatus **10** is referred to as the "front", while the opposite direction to the direction at which the display **15** is provided is referred to as the "back". Further, the top direction, bottom direction, left direction, and right direction seen from the front when the user is holding the electronic apparatus **10** and viewing the display **15** are respectively referred to as the "top", "bottom", "left", and "right" of the electronic apparatus **10**.

[0079] As shown in FIGS. **1** and **2**, the electronic apparatus **10** has a front surface **11** provided with the display **15**, a back surface **12** provided at an opposite side to the front surface, and a side surface **13** formed between the front surface **11** and back surface **12** so as to connect the front surface **11** and back surface **12**. The side surface **13** includes a top surface **13***a* provided at the top of the electronic apparatus **10**, a bottom surface **13***b* provided at the bottom of the electronic apparatus **10**, a left surface **13***c* provided at the left of the electronic apparatus **10**, and a right surface **13***d* provided at the right of the electronic apparatus **10**. It should be noted that, if changing the way of looking at it, the direction of the front surface **11** side of the electronic apparatus **10** can be referred to as the "front" and the direction of the back surface **12** side of the electronic apparatus **10** can be referred to as the "back".

[0080] The cover **50** is configured to be detachably attached to the front surface **11** of the electronic apparatus **10**. Therefore, by being moved from the state shown in FIG. **1** in the direction shown by the arrow in the figure, the cover **50** can be attached to the front surface **11** of the electronic apparatus **10** so as to cover the front surface **11**. By the cover **50** being attached to the front surface **11** of the electronic apparatus **10** in this way, the display **15** or the like provided at the front surface **11** of the electronic apparatus **10** can be protected.

[0081] Similarly, the cover **50** is configured to be detachably attached to the back surface **12** of the electronic apparatus **10**. Therefore, by being moved from the state shown in FIG. **2** in the direction shown by the arrow in the figure, the cover **50** can be attached to the back surface **12** of the electronic apparatus **10** so as to cover the back surface **12**. By the cover **50** being attached to the back surface **12** of the electronic apparatus **10** in this way, the user can hold the cover **50** integrally with the electronic apparatus **10** while he or she is using the electronic apparatus **10** and, accordingly, the cover **50** can be kept from being lost. Further, depending on the material or shape of the cover **50**, the user can comfortably hold the electronic apparatus **10** and the cover **50**.

Electronic Apparatus

[0082] Next, referring to FIGS. **3** to **7**, the configuration of the electronic apparatus **10** will be explained. FIG. **3** is a front view, top view, bottom view, and left view of the electronic apparatus **10**. As shown in FIG. **3**, the electronic apparatus **10** has a housing **20**, display **15**, a plurality of control parts **30**, and magnets **41**, **42**.

[0083] The housing **20** accommodates a circuit board and electronic components forming the electronic apparatus **10**. The electronic components include a control device (processor or the like) of the electronic apparatus **10** controlling the display or the like, a memory storing various data used in the control device, a battery supplying power to the display **15**, control device and the like (all not shown), a fan **35** ventilating air inside the housing (see FIG. **7**), etc. The housing **20** has a front wall **21** provided at the front side of the electronic apparatus **10**, a back wall **22** provided at the back side of the electronic apparatus **10**, and a side wall **23** provided between the front wall **21** and the back wall **22**. The side wall **23** includes a top wall **23***a* provided at the top of the electronic apparatus **10**, a bottom wall **23***b* provided at the bottom of the electronic apparatus **10**, a left wall **23***c* provided at the left of the electronic apparatus **10**, and a right wall **23***d* provided at the right of the electronic apparatus **10**.

[0084] In the present embodiment, the surface at the front of the front wall **21** defines the front

surface **11** of the electronic apparatus **10** while the surface at the back of the back wall **22** defines the back surface **12** of the electronic apparatus **10**. Further, in the present embodiment, the surface at the top of the top wall **23***a*, the surface at the bottom of the bottom wall **23***b*, the surface at the left of the left wall **23***c*, and the surface at the right of the right wall respectively define the top surface **13***a*, bottom surface **13***b*, left surface **13***c*, and right surface **13***d* of the electronic apparatus **10**. Therefore, the housing **20** defines the front surface **11**, back surface **12**, and side surface **13** of the electronic apparatus **10**. In the present embodiment, the front wall **21** and the side wall **23** are integrally formed. The housing **20** is formed by attaching a separate back wall **22** to the side wall **23**. In another embodiment, the front wall **21** and part of the side wall **23** are integrally formed, the back wall **22** and the remaining part of the side wall **23** are integrally formed, and the part of the side wall **23** integrally formed with the front wall **21** and the part of the side wall **23** integrally formed with the back wall **22** can be connected to thereby form the housing **20**.

[0085] The front surface **11** of the electronic apparatus **10** is formed substantially flat entirely. Further, the front surface **11** of the electronic apparatus **10**, when viewed from the front, has a rectangular shape with rounded corners. The sides positioned at the top and bottom form long sides while the sides positioned at the left and right form short sides. At the center of the rectangular shaped front surface **11**, the display **15** is provided. Further, in the present embodiment, the front surface **11** is provided with the later explained control parts **30**.

[0086] On the other hand, in the same way as the front surface **11**, the back surface **12** of the electronic apparatus **10**, when viewed from the back, has a rectangular shape with rounded corners. The sides positioned at the top and bottom form long sides while the sides positioned at the left and right form short sides. Further, the back surface **12**, as will be understood from the bottom view and left side view of FIG. **3**, has a shape entirely bulging out toward the back (that is, in the electronic apparatus **10**, toward the direction of the back surface **12** side). In the present embodiment, the back surface **12** has a shape with a large curvature near the peripheral edges and with a curvature becoming smaller toward the center from the peripheral edges. In particular, in the present embodiment, the back surface **12** has a shape with a relatively large curvature at regions within a certain distance from the long sides and short sides, and with a relatively small or zero curvature at regions separated by greater than or equal to a certain distance from the long sides and short sides. Further, in the present embodiment, the back wall **22** also has a shape bulging out toward the back corresponding to the bulging shape of the back surface **12**.

[0087] The side surface **13** of the electronic apparatus **10** extends substantially perpendicular with respect to the front surface **11** between the edge of the front surface **11** and the edge of the back surface **12**. The top surface **13***a* extends between the long sides of the top sides of the front surface **11** and back surface **12**, while the bottom surface **13***b* extends between the long sides of the bottom sides of the front surface **11** and back surface **12**. The left surface **13***c* extends between the short sides of the left sides of the front surface **11** and back surface **12**, while the right surface **13***d* extends between the short sides of the right sides of the front surface **11** and back surface **12**. In the present embodiment, the top surface **13***a* is curved toward the left surface **13***c* and the right surface **13***d* so as to match the shapes of the rounded corner parts of the front surface **11** and back surface **12**. Similarly, the bottom surface **13***b* is curved toward the left surface **13***c* and the right surface **13***d* so as to match the shapes of the rounded corner parts of the front surface **11** and back surface **12**.

[0088] In the present embodiment, as will be understood from the top surface view of FIG. **3**, the top surface **13***a* is provided with exhaust openings **16** for exhausting air inside the electronic apparatus **10** to the outside. The exhaust openings **16** are arranged at the center of the top surface **13***a* in the left-right direction. The exhaust openings **16** pass through the top wall **23***a* and are formed at the top wall **23***a* so that the inside of the electronic apparatus **10** is communicated with the outside. In the present embodiment, a plurality of exhaust openings **16** are provided at the top surface **13***a*, but other shape of exhaust opening, such as one large exhaust opening, may be provided.

[0089] Further, as will be understood from the bottom view of FIG. **3**, the bottom surface **13***b* is provided with an intake opening **17** for intaking outside air to the inside of the electronic apparatus **10**. In the present embodiment, a single intake opening **17** extending to the left and right is provided at the center of the bottom surface **13***b* in the left-right direction. Further, in the present embodiment, the intake opening **17** is arranged at the back surface side in the front-back direction, in particular adjoining the back surface. Specifically, in the present embodiment, a cutaway **24** extending in the left-right direction is provided at the center in the left-right direction at the back surface side of the bottom wall **23***b*. This cutaway **24** extends from the back end of the bottom wall **23***b* toward the front. Therefore, when the back wall **22** is attached to the side wall **23**, the back of the cutaway **24** is closed by the back wall **22**. As a result, the cutaway **24** and the back wall **22** define the intake opening **17**. It should be noted that, in another embodiment, an intake opening passing through the bottom wall **23***b* (that is, an intake opening defined by only the bottom wall **23***b*) may be provided between the outside space and the inside space of the housing **20**.
[0090] It should be noted that, exhaust openings for exhausting air inside of the electronic apparatus **10** to the outside may be provided at the position of the intake opening **17** instead of the intake opening **17**. Similarly, an intake opening for intaking outside air into the electronic apparatus **10** may be provided at the position of the exhaust openings **16** instead of the exhaust openings **16**. Therefore, it can be said that air ventilation openings are provided for ventilating air between the inside of the electronic apparatus **10** (inside of the housing **20**) and the outside thereof at the positions of the ventilation opening **16** and intake opening **17**. Further, air exchange openings may be provided at side surfaces **13** other than the top surface **13***a* and the bottom surface **13***b* or at the back surface **12**.
[0091] In addition, in the present embodiment, later explained control parts **30** are arranged at the side surface **13**. Furthermore, various other elements may be provided at the side surface **13**. For example, a headphone jack terminal, connection terminal such as USB terminal, a slot for insertion of a storage medium (memory card or the like) for storing a game program or data, openings for a speaker built into the electronic apparatus **10**, etc., my be provided at the side surface **13**.
[0092] The display **15** is an apparatus connected to a control device arranged inside the housing **20** and showing an image corresponding to a signal from the control device (still image or moving image). The display **15** is mounted at the front surface of a recess recessed to the back in the front wall **21** of the housing **20** and forms part of the front surface **11** of the electronic apparatus **10**. The display **15** has a substantially flat surface. The display **15** is for example a liquid crystal display, EL (electroluminescence) display, or plasma display. The display **15** may be provided on its surface with a touch panel functioning as an input device. Further, the display **15** may be suitably attached to the electronic apparatus **10** so that the display surface thereof is exposed from an aperture provided at the front wall **21**.
[0093] The control parts **30** are operated by the user and function as input devices for input to the electronic apparatus **10**. The control parts **30** are connected to a control device inside the electronic apparatus **10** and input signals corresponding to operations by the user to the control device. The control parts **30** can for example include buttons, switches, levers, a joystick, etc. Further, the buttons may be shaped as circular, rectangular, oval, crossed, and various other shapes.
[0094] As shown in FIG. **3**, in the present embodiment, the electronic apparatus **10** includes a plurality of control parts **30**. In the example shown in FIG. **3**, at the front surface **11**, a plurality of first control parts **31** are provided at the left side of the display **15** and a plurality of second control parts **32** are provided at the right side of the display **15**. Therefore, at the front surface **11**, control parts **30** are provided at both of the left and right sides across the display **15**. These first control parts **31** and second control parts **32** are arranged so as to protrude from the front surface **11** to the front. Further, the first control parts **31** and second control parts **32** are arranged at substantially equal distances from the center of the front surface **11** in the left-right direction.
[0095] Further, in the example shown in FIG. **3**, at the top surface **13***a* positioned at the left side

from the display **15**, in particular at the part curved to the left surface **13***c*, a plurality of third control parts **33** are provided. In addition, at the top surface **13***a* positioned at the right side from the display **15**, in particular at the part curved to the right surface **13***d*, a plurality of fourth control parts **34** are provided. Therefore, at the side surface **13**, the control parts **30** are provided at both of the left and right sides of the display **15**. It should be noted that, in another embodiment, the third control parts **33** and the fourth control parts **34** may be provided at only the flat region at the inside from the curved parts in the top surface **13***a*.

[0096] Next, referring to FIGS. **4** to **6**, the magnets **41**, **42** provided at the electronic apparatus **10** will be explained. FIG. **4** is a perspective view of the electronic apparatus **10** seen from the left rear. FIG. **5** is a plan view of the electronic apparatus **10**. FIG. **6** is an enlarged cross-sectional view of the electronic apparatus **10** seen along the line VI-VI of FIGS. **4** and **5**. The broken lines in FIGS. **4** and **5** show the magnets **41**, **42**.

[0097] The magnets **41**, **42** of the electronic apparatus **10** are used for attaching the cover **50** to the electronic apparatus **10**. That is, the cover **50** is attached to the electronic apparatus **10** by the later mentioned magnets **61** of the cover **50** being attracted to the magnets **41**, **42** of the electronic apparatus **10**. In the present embodiment, as shown in FIGS. **4** and **6**, the electronic apparatus **10** has the first magnets **41** provided at edge parts of the front surface **11** side (front side from center in front-back direction) of the electronic apparatus **10** (region including edge of front surface **11** side of the electronic apparatus **10** and its vicinity) and second magnets **42** provided at edge parts of the back surface **12** side (back side from center in front-back direction) of the electronic apparatus **10** (region including edge of back surface **12** side of the electronic apparatus **10** and its vicinity).

[0098] As shown in FIG. **5**, a plurality of first magnets **41** are arranged along the left short side of the front surface **11** and a plurality of first magnets **41** are arranged along the right short side of the front surface **11**. Therefore, the first magnets **41** are respectively arranged at the opposite short sides of the front surface **11**. These first magnets **41** are arranged at the outside from the control parts **30** provided at the front surface **11**. In particular, in the present embodiment, three first magnets **41** are arranged along either of the short sides. It should be noted that, odd numbers of first magnets **41** of other than three may be arranged respectively along each corresponding short side. Further, the second magnets **42** are arranged in positional relationships similar to the first magnets **41** (interval in left-right direction and interval in top-bottom direction).

[0099] A plurality of second magnets **42** are arranged along the left short side of the back surface **12** and a plurality of second magnets **42** are arranged along the right short side of the back surface **12**. Therefore, the second magnets **42** are respectively arranged at the opposite short sides of the back surface **12**. In particular, in the present embodiment, three second magnets **42** are arranged along either of the short sides. It should be noted that, odd numbers of second magnets **42** of other than three may be arranged respectively along each corresponding short side.

[0100] In the present embodiment, as shown in FIG. **6**, the first magnets **41** are attached at the inside of the front wall **21** defining the front surface **11**. Further, the first magnets **41** are attached so as to extend in the left-right direction in parallel with the front surface **11**. In particular, in the present embodiment, first recesses **24** are formed at the inner surface of the front wall **21** in proximity to the side wall **23** along the side wall **23**. The first magnets **41** are fastened inside the first recesses **24**. It should be noted that, the first magnets **41** may be attached at the inside of the side wall **23** in the vicinity of the front wall **21** or may be attached at corner parts defined by the inner surface of the front wall **21** and the inner surface of the side wall **23**.

[0101] Similarly, in the present embodiment, the second magnets **42** are attached at the inside of the back wall **22** defining the back surface **12**. Further, the seconds magnets **42** are attached so as to extend along the curved back surface **12** with an angle with respect to the left-right direction. In particular, in the present embodiment, second recesses **25** are formed at the inner surface of the back wall **22** in proximity to the side wall **23** along the side wall **23**. The second magnets **42** are fastened inside the second recesses **25**. It should be noted that, the first magnets **41** may be attached

at the inside of the side wall **23** in the vicinity of the front wall **21** or may be attached to the corner parts defined by the inner surface of the front wall **21** and the inner surface of the side wall **23**. It should be noted that, the specific arrangement of the first magnets **41** and second magnets **42** will be explained later.

[0102] It should be noted that, elements besides the display **15** and control parts **30** may be provided at the front surface **11** or back surface **12** of the electronic apparatus **10**. Specifically, for example, a camera (not shown) may be provided at the front surface **11** or back surface **12** or both of the front surface **11** and back surface **12**.

[0103] Next, referring to FIG. **7**, the fan **35** provided in the housing **20** will be explained. FIG. **7** is a cross-sectional view of the electronic apparatus **10** seen along the line VII-VII of FIG. **5**. It should be noted that, in FIG. **7**, to facilitate understanding of the drawings, only a fan **35** is drawn as electronic components provided inside the housing **20**. However, as explained above, other electronic components, such as a processor and memory, circuit board, and the like are housed inside the housing **20**.

[0104] The fan **35** ventilates air inside the housing **20**. The fan **35** sucks in outside air to the inside of the housing through the intake opening **17** formed in the bottom surface **13***b* of the electronic apparatus **10**. Further, the fan **35** exhausts air inside the housing **20** to the outside through exhaust openings **16** formed in the top surface **13***a*. As a result, the electronic components inside the housing **20** are cooled.

[0105] As shown in FIG. **7**, the fan **35** is provided inside the housing **20** at the back surface **12** side. In particular, in the present embodiment, the fan **35** is provided adjoining the back wall **22** defining the back surface **12**. Further, in the present embodiment, the fan **35** is arranged in the top-bottom direction separated by a certain extent from both the top wall **23***a* and the bottom wall **23***b*. For this reason, in the present embodiment, the fan **35** is arranged in a region inside the back wall **22** formed by the back wall **22** having the shape bulging out toward the back.

[0106] The fan **35** has an intake port **36** for intake and an exhaust port **37** for exhaust. In the present embodiment, the intake port **36** is arranged below the fan **35**, while the exhaust port **37** is arranged above the fan **35**. Therefore, the intake port **36** is arranged so as to face the intake opening **17**. In addition, in the present embodiment, the fan **35** is arranged so that, when viewed in the top-bottom direction (in particular, when viewed from the bottom surface **13***b* side where the intake opening **17** is provided), the intake port **36** of the fan **35** partially overlaps the intake opening **17**. It should be noted that, it may be configured so that the intake port **36** of the fan **35** completely overlaps the intake opening **17**.

[0107] It should be noted that, in the present embodiment, the intake port **36** is arranged so as to face the intake opening **17**. However, the exhaust port **37** may be arranged so as to face the intake opening (air ventilation opening) **17**. In this case as well, when viewed from the side surface where the air ventilation opening **17** is provided, the fan **35** is arranged so that the exhaust port **37** of the fan **35** at least partially overlaps the air ventilation opening **17**. That is, the air ventilation opening **17** is arranged at a position at least partially overlapping the air ventilation port of the fan **35**.

Cover

[0108] Next, referring to FIGS. **1**, **2**, and **8** to **10**, the configuration of the cover **50** will be explained. FIG. **8** is a perspective view of an inner surface side of the cover **50**, FIG. **9** is a plan view of the cover **50**, and FIG. **10** is an enlarged cross-sectional view of the cover **50** seen along a plane X-X of FIGS. **8** and **9**. It should be noted that, in FIGS. **8** and **9**, the cover **50** has a sheet covering the entire cover **50**. For this reason, in FIGS. **8** and **9**, the magnets **61** do not appear at the surface of the cover **50** and accordingly are shown by broken lines. On the other hand, FIG. **10** shows the cover in the state not having the sheet. Accordingly, the magnets **61** are exposed to the outside.

[0109] The cover **50** is a plate-shaped member and has an outer surface **51**, an inner surface **52** at the opposite side from the outer surface **51**, and a side surface **53** formed between these outer

surface **51** and inner surface **52** so as to connect the outer surface **51** and inner surface **52**. As will be understood from FIGS. **1** and **2**, the outer surface **51** is exposed to the outside when the cover **50** is attached to the front surface **11** or back surface **12** of the electronic apparatus **10**. On the other hand, the inner surface **52** faces the front surface **11** or back surface **12** when the cover **50** is attached to the front surface **11** or back surface **12** of the electronic apparatus **10**. It should be noted that, in this Description, the direction of the outer surface **51** side from the cover **50** will be referred to as the "outer surface direction" and the direction of the inner surface **52** side at the cover **50** will be referred to as the "inner surface direction."

[0110] When viewed in the outer surface direction and inner surface direction, the cover **50** has a rectangular shape with rounded corners similarly to the electronic apparatus **10**. Therefore, the outer surface **51** and inner surface **52** of the cover **50** have rectangular shapes with rounded corners. Further, as will be understood from FIG. **8**, the cover **50** has a shape bulging out entirely in the outer surface direction. Therefore, in the present embodiment, each of the outer surface **51** and inner surface **52** has a shape bulging out entirely in the outer surface direction. In particular, in the present embodiment, the bulging shapes of the outer surface **51** and inner surface **52** have shapes similar to the bulging shape of the back surface **12** of the electronic apparatus **10**. Further, in the present embodiment, the outer surface **51** and inner surface **52** have shapes with large curvature near the peripheral edges and with curvature becoming smaller from the peripheral edges toward the centers. In particular, in the present embodiment, the outer surface **51** and inner surface **52** have shapes with relatively large curvature at regions within certain distances from the long sides and short sides and with relatively small or zero curvature at regions separated from the long sides and short sides by certain distances or more. Further, in the present embodiment, the inner surface **52** has a shape complementary with the bulging shape of the back surface **12** of the electronic apparatus **10**.

[0111] It should be noted that, in the present embodiment, the outer surface **51** of the cover **50** has a shape bulging out in the outer surface direction corresponding to the shape of the inner surface **52**. However, so long as the inner surface **52** has a shape bulging out in the outer surface direction, the cover **50** may have a different shape such as a flat shape. Therefore, in the present embodiment, the cover **50** has entirely an even thickness, but it may have thicknesses differing depending on the region.

[0112] Further, the cover **50** has third magnets **61** used for attaching the cover **50** to the electronic apparatus **10**. The third magnets **61** are provided at the edge parts of the cover **50** on the inner surface **52** side (regions including edges of inner surface **52** and their vicinity).

[0113] A plurality of third magnets **61** are arranged along one short side of the inner surface **52** and a plurality of third magnets **61** are also arranged along the other short side of the inner surface **52**. Therefore, the third magnets **61** are arranged at each of opposite sides of the inner surface **52** of the cover **50**. In particular, in the present embodiment, three third magnets **61** are arranged along each of the short sides. It should be noted that, odd numbers of other than three third magnets **61** may be arranged along each short side. Further, the third magnets **61** are arranged in positional relationships similar to the first magnets **41** and second magnets **42** (intervals in long side direction and intervals in short side direction).

[0114] Further, in the present embodiment, the third magnets **61** are attached to the cover **50** at the inner surface **52** side. The third magnets **61** are attached so as to extend by an angle with respect to a plane defined by the edges as a whole of the inner surface **52** (that is, a plane when placing the cover **50** on the plane so that the inner surface **52** contacts the plane) along the curved inner surface **52**. In particular, in the present embodiment, as shown in FIG. **10**, third recesses **54** are formed at the inner surface **52** of the cover **50** along the side surface **53** in proximity to the side surface **53**. The third magnets **61** are fixed inside the third recesses **54**. It should be noted that, the third magnets may be attached to the cover **50** at the outer surface **51** side. In this case, the third magnets are fixed inside recesses provided at the outer surface **51** of the cover **50**. Further, the third magnets

may be attached to the cover **50** at the side surface **53**.

Arrangement of Magnets

[0115] Next, referring to FIG. **4** to FIG. **9**, the arrangement of the magnets **41**, **42**, **61** will be explained. As explained above, in the present embodiment, three the magnets **41**, **42**, **61** are arranged along the corresponding each short side (that is, the short sides of the front surface **11**, the short sides of the back surface **12**, and the short sides of the inner surface **52**). Below, the three magnets arranged aligned are have "a", "b", and "c" appended to their notations in that order (for example, the first magnets **41** arranged along one side are represented as **41***a*, **41***b*, **41***c* in that order. Further, the magnets of the electronic apparatus **10** are represented by "a", "b", and "c" from below to above in that order).

[0116] In the present embodiment, as shown in FIGS. **4**, **5**, **8**, and **9**, the center-most magnet **41***b*, **42***b*, **61***b* among the odd numbers of magnets **41**, **42**, and **61** arranged along the each short side are arranged so as to be positioned at the center of the short side. In addition, the odd numbers of magnets **41**, **42**, **61** arranged along each short side are arranged so that adjoining magnets **41**, **42**, **61** are positioned at equal intervals from each other. Therefore, in the present embodiment, the odd numbers of magnets **41**, **42**, **61** arranged along each side are arranged so that a pair of magnets arranged at both sides of the center-most magnets **41***b*, **42***b*, **61***b* (a magnet positioned at center of short side) (in the example shown in FIG. **4**, the pair of the magnets adjoining, in top and bottom sides, the magnet positioned at the centers, therefore, the pair of **41***a* and **41***c*, the pair of **42***a* and **42***c*, and the pair of **61***a* and **61***c*) are positioned at equal intervals from the center-most magnets **41***b*, **42***b*, **61***b*. It should be noted that, when the number of magnets **41**, **42**, **61** arranged along each short side is odd numbers greater than **3**, they are arranged so that a plurality of pairs are formed for each side and the plurality of pairs are all positioned at equal intervals from the center-most magnet.

[0117] In addition, in the present embodiment, the magnets **41**, **42**, or **61** are formed in cuboid shapes. In the present embodiment, the first magnets **41**, second magnets **42**, and third magnets **61** all have exactly the same shapes and are arranged so as to extend along the short sides of the front surface **11**, back surface **12**, or inner surface **52**. That is, the magnets **41**, **42**, **61** are respectively arranged so that their longest sides extend in parallel with the short sides of the front surface **11**, back surface **12**, or inner surface **52**. In addition, the magnets **41**, **42**, or **61** are arranged so that the distances between adjoining magnets become shorter than the lengths of the magnets **41**, **42**, **61** along the corresponding short sides (in the present embodiment, the lengths of the longest sides of the magnets **41**, **42**).

[0118] Further, in the present embodiment, the adjoining magnets among the magnets **41**, **42**, **61** arranged along each short side are arranged so that their polarities differ. Specifically, in the present embodiment, they are arranged so that the polarities of the front surface **11** sides of the magnets **41**, the back surface **12** sides of the magnets **42**, and the inner surface **52** sides of the magnets **61** are different between adjoining magnets. Therefore, for example, if the front surface **11** sides of the center-most first magnets **41***b* are S poles, the front surface **11** sides of the first magnets **41***a*, **41***c* positioned at the two sides are N poles.

[0119] Furthermore, in the present embodiment, when the cover **50** is positioned at the attachment position on the front surface **11** of the electronic apparatus **10**, the first magnets **41** have polarities different from the corresponding third magnets **61**. Specifically, the polarity of the front side of the center-most first magnet **41***b* among the first magnets **41** arranged along each side differ from the polarity of the inner surface side of the center-most magnet **61***b* among the third magnet **61** arranged along each side of the cover **50**. Further, the polarities of the front side of the first magnets **41***a*, **41***c* at both ends among the first magnets **41** arranged along each side differ from the polarities of the inner surface sides of the third magnets **61***a*, **61***c* at the both ends among the third magnets **61** arranged along each side of the cover **50**. Similarly, when the cover **50** is positioned at the attachment position on the back surface **12** of the electronic apparatus **10**, each second magnet **42**

has polarity different from that of the corresponding third magnet **61**.

[0120] In addition, in the present embodiment, when viewed in the front-back direction (when viewed in direction of FIG. **5**), the first magnets **41** are arranged point symmetrically about a center of the front surface **11**, and the second magnets **42** are arranged point symmetrically about a center of the back surface **12**. Further, when viewed in the inner surface/outer surface direction (when viewed in direction of FIG. **9**), the third magnets **61** are arranged point symmetrically about a center of the inner surface **52** (that is, about the center of the cover **50**). As a result, in the present embodiment, even if the electronic apparatus **10** is rotated by 180° about the center of the front surface **11** and back surface **12**, the first magnets **41** and second magnets **42** become arranged the same. Similarly, even if the cover **50** is rotated by 180° about the center of the cover **50**, the arrangement of the third magnets **61** becomes the same.

Attachment of Cover

[0121] Next, referring to FIGS. **11** and **12**, the state of the cover **50** and electronic apparatus **10** when the cover **50** is attached to the front surface **11** and back surface **12** of the electronic apparatus **10** will be explained.

[0122] FIG. **11** is a cross-sectional view of the electronic apparatus **10** and the cover **50** when the cover **50** is attached to the front surface **11** of the electronic apparatus **10**. As shown in FIG. **11**, when attached to the front surface **11**, the cover **50** is configured to contact the front surface **11** at the edges of the inner surface **52** and not to contact the front surface **11** at other regions. As a result, when the cover **50** is attached to the front surface **11**, a space is formed between the front surface **11** and the inner surface **52** of the cover **50**. In particular, in the present embodiment, the inner surface **52** is made to bulge out so that the cover **50** does not interfere with the control parts **30** or the cover **50** does not excessively interfere with the control parts **30** when the cover **50** is attached to the front surface **11**.

[0123] It should be noted that, in the present embodiment, when attached to the front surface **11**, the cover **50** linearly contacts the front surface **11** at the edges of the inner surface **52**, but it may planarly contact the front surface **11** at the edge parts of the inner surface **52** (regions including edges and their vicinity). Alternatively, the cover **50** may linearly contact the edges of the side surface **53** or planarly contact the front surface **11** at the side surface **53** as a whole.

[0124] FIG. **12** is a cross-sectional view of the electronic apparatus **10** and the cover **50** when the cover **50** is attached to the back surface **12** of the electronic apparatus **10**. As shown in FIG. **12**, the inner surface **52** of the cover **50** extends along the back surface **12** bulging out from the electronic apparatus **10**. Further, in the present embodiment, when attached to the back surface **12**, the cover **50** contacts the back surface **12** at the edge parts of the inner surface **52** of the cover **50** and does not contact the back surface **12** at other regions. However, the back surface **12** of the electronic apparatus **10** bulges out to the back, therefore even in regions where the inner surface **52** of the cover **50** and the back surface **12** do not contact, the gap therebetween is small.

[0125] It should be noted that, in the present embodiment, when the cover **50** is attached to the back surface **12**, it contacts the back surface **12** planarly at the edge parts of the inner surface **52**, but it may contact the back surface **12** linearly at the edges of the inner surface **52**. Alternatively, the cover **50** may contact the back surface **12** linearly at the edges of the side surface **53** or planarly at the side surface **53** as a whole.

Action and Effects

[0126] In the apparatus-cover system **1** configured as above, if the cover **50** is positioned at the position of attachment on the front surface **11** of the electronic apparatus **10**, each third magnet **61** of the cover **50** will have polarity different from the facing first magnet **41**. For this reason, the third magnet **61** of the cover **50** is attracted to the first magnet **41** of the electronic apparatus **10** and, as a result, the cover **50** is attached to the front surface **11** of the electronic apparatus **10**. Similarly, if the cover **50** is positioned at the position of attachment on the back surface **12** of the electronic apparatus **10**, each third magnet **61** of the cover **50** will have polarity different from the

facing second magnet **42**. For this reason, the third magnet **61** of the cover **50** is attracted to the second magnet **42** of the electronic apparatus **10** and, as a result, the cover **50** is attached to the back surface **12** of the electronic apparatus **10**.

[0127] In this way, in the present embodiment, the cover **50** can be attached to the front surface **11** and the back surface **12** of the electronic apparatus **10**. For this reason, when the electronic apparatus **10** is not being used, the cover **50** may be attached to the front surface **11** to protect the display **15** and the control parts **30** provided at the front surface **11**. Further, when the electronic apparatus **10** is being used, the cover **50** can be attached to the back surface **12** and accordingly the cover **50** no longer has to be separately kept from the electronic apparatus **10**. Therefore, according to the present embodiment, a user friendly apparatus-cover system **1** is provided.

[0128] Further, in the present embodiment, the inner surface **52** of the cover **50** has a shape bulging out in the outer surface direction. For this reason, in the present embodiment, as explained above, when the cover **50** is attached to the front surface **11**, a gap is formed between the front surface **11** and the inner surface of the cover **50**. As a result, in the present embodiment, when the cover **50** is attached to the front surface **11**, the cover **50** can be kept from interfering with the control parts **30** or the cover **50** can be kept from excessively interfering with the control parts **30**.

[0129] On the other hand, as shown in the cross-sectional view of FIG. **12**, when the cover **50** is attached to the back surface **12**, the inner surface **52** of the cover **50** extends corresponding to the back surface **12** bulging out from the electronic apparatus **10**. If the back surface of the electronic apparatus **10** were flat in shape, when the cover **50** was attached to the back surface, a large gap would be formed between the cover **50** and back surface. As opposed to this, in the present embodiment, the back surface **12** of the electronic apparatus **10** bulges out to the back, therefore it is possible to keep such a gap small and as a result make the volume of the inside of the housing **20** of the electronic apparatus **10** larger and improve the mountability of parts to inside the housing **20**. For example, in the present embodiment, the fan **35** is arranged at the region formed by the back surface **12** of the electronic apparatus **10** bulging out to the back, and therefore the space inside the electronic apparatus **10** is effectively used. Therefore, according to the present embodiment, it is possible to make the apparatus-cover system **1** including the cover **50** a compact configuration overall. On this point as well, a user friendly apparatus-cover system **1** is provided. In particular, in the present embodiment, the inner surface **52** of the cover **50** bulges out entirely in the outer surface direction and the back surface **12** of the electronic apparatus **10** bulges out entirely to the back corresponding to the bulge of the inner surface **52**, therefore it is possible to further enhance the mountability of parts to the inside of the housing **20**.

[0130] Further, in the present embodiment, as shown in FIG. **12**, when attached to the back surface **12**, the cover **50** contacts the back surface **12** at the edge parts of the inner surface **52** of the cover **50** and does not contact the back surface **12** at other regions. If the bulging shape of the inner surface **52** of the cover **50** were made completely the same as the bulging shape of the back surface **12**, when the cover **50** were attached to the back surface **12**, the locations of contact might become uneven and rattling at the cover **50** might occur due to manufacturing error of the cover **50** or slight deformation occurring along with use. As opposed to this, in the present embodiment, since the back surface **12** is contacted only at the edge parts of the inner surface **52** of the cover **50**, the occurrence of rattling at the time of manufacturing error and slight deformation is reduced.

[0131] Further, in the present embodiment, the outer surface **51** of the cover **50** also has a shape bulging out in the outer surface direction. For this reason, when the cover **50** is not attached to the back surface **12** of the electronic apparatus **10**, the back surface **12** bulges out to the back, and when the cover **50** is attached to the back surface **12** of the electronic apparatus **10**, the outer surface **51** of the cover **50** attached to the back surface **12** bulges out to the back. Therefore, when the user holds the electronic apparatus **10**, there is little feeling of strangeness over whether the cover **50** is attached or not. In particular, in the present embodiment, the bulging shape of the outer surface **51** of the cover **50** has a shape similar to the bulging shape of the back surface **12** of the

electronic apparatus **10**, therefore there is particularly little feeling of strangeness over this.
[0132] Further, in the present embodiment, the magnets **41**, **42**, **61** are respectively arranged along the short sides of the front surface **11**, back surface **12**, and inner surface **52**. By the magnets **41**, **42**, **61** being arranged along the short sides in this way, when the cover **50** is attached to the electronic apparatus **10**, the cover **50** is fixed at positions separated from each other, therefore the cover **50** can be stably fixed to the electronic apparatus **10**.
[0133] In addition, in the present embodiment, a plurality of the magnets **41**, **42**, **61** are arranged along the corresponding side and the adjoining magnets have different polarities. By the adjoining magnets having different polarities in this way, if the cover **50** is placed on the electronic apparatus **10** offset from the attachment position, the third magnets **61** of the cover **50** and the first magnets **41** or second magnets **42** of the electronic apparatus **10** facing the third magnets **61** will have the same polarities, therefore will repel each other. As a result, the cover **50** can be guided to the correct attachment position. In particular, in the present embodiment, odd numbers of magnets **41**, **42**, **61** are arranged along the corresponding side. For this reason, even when the cover **50** is offset to either the top or bottom of the electronic apparatus **10**, the cover **50** can be guided to the correct attachment position.
[0134] Further, in the present embodiment, the distances between adjoining magnets **41**, **42**, **61** are shorter than the lengths of the magnets extending along the corresponding sides. As a result, even if the cover **50** is placed on the electronic apparatus **10** slightly offset from the attachment position, a large repulsive force will act and the cover **50** will be guided to the correct attachment position. In addition, in the present embodiment, the center-most magnet among the odd number of magnets **41**, **42**, **61** arranged along each side are arranged at the center of the side and the magnets arranged at both sides of the center-most magnet are positioned at equal distances therefrom. Further, in the present embodiment, the first magnets **41**, second magnets **42**, and third magnets **61** are arranged respectively point symmetrically. By the magnets **41**, **42**, **61** being arranged in this way, even if the cover **50** is reversed right and left from a certain attachment position (that is, even if the cover **50** is rotated 180°), the cover **50** can be attached to the electronic apparatus **10**. Therefore, the user friendliness when attaching the cover **50** to the electronic apparatus **10** becomes better.

Modifications

[0135] In the above embodiments, odd number of magnets **41**, **42**, **61** are arranged along the corresponding side. However, even number of magnets **41**, **42**, **61** may be arranged along the side such as shown in FIGS. **13** and **14**. FIG. **13** is a plan view, similar to FIG. **5**, of an electronic apparatus **10** in which two first magnets **41** are arranged along each side. The second magnets **42** are arranged at the same positions as the first magnets **41** in the plan view of FIG. **13** (deep behind first magnets **41**). Further, FIG. **14** is a plan view, similar to FIG. **9**, of a cover **50** in which two third magnets **61** are arranged along each side.
[0136] In the example shown in FIGS. **13** and **14**, the two magnets **41**, **42**, **61** arranged along each side are arranged at both sides from the center of the short side so that the distances from the center of the short side are equal to each other. Further, if there are even numbers of greater or equal to four magnets arranged along each side, the pairs of magnets arranged along each side are arranged at both sides from the center of the short side so that the distances from the center of the short side are equal to each other. In this case as well, the adjoining magnets are arranged to be different in polarities.
[0137] Further, in the above embodiment, a plurality of the magnets **41**, **42**, **61** are arranged along the corresponding side, but just single one may be arranged along the side. Furthermore, in the above embodiments, the magnets **41**, **42**, **61** are arranged along the short sides of the front surface **11**, back surface **12**, and inner surface **52**, but may be arranged along the long sides of the same. In addition, in the above embodiments, the magnets **41**, **42**, **61** are arranged along the short sides of the front surface **11**, back surface **12**, and inner surface **52**, that is, along the outer peripheries of the front surface **11**, back surface **12**, and inner surface **52**, but may be arranged at the relatively inside

regions.
[0138] Further, in the above embodiment, the distances between adjoining magnets **41**, **42**, **61** are shorter than the lengths of the magnets along the corresponding side. However, the distances between adjoining magnets may be longer than the lengths of the magnets along the corresponding side. Further, in the above embodiments, the magnets **41**, **42**, **61** arranged along each short side are arranged so that the center-most magnet among them are positioned at the center of the short sides. However, the center-most magnet may not be positioned at the center of each short side but be arranged at a position offset to a side toward one of the long sides. In this case, the magnets **41**, **42**, **61** may be arranged point symmetrically as explained above. If arranged point symmetrically, even if the electronic apparatus **10** or the cover **50** is rotated 180°, the arrangement of the magnets **41**, **42**, **61** is the same.
[0139] Further, in the above embodiment, all of the first magnets **41**, second magnets **42**, and third magnets **61** are magnets (hard magnetic members), but some of these may be soft magnetic members. However, the first magnetic members, second magnetic members, and third magnetic members respectively corresponding to the first magnets **41**, second magnets **42**, and third magnets **61** have to be configured so that the third magnetic members are attracted to the first magnetic members or second magnetic members. Therefore, if the first magnetic members and second magnetic members are soft magnetic members, the third magnetic members are hard magnetic member, while if the third magnetic members are soft magnetic member, the first magnetic members and second magnetic members are hard magnetic member. Further, in other embodiments, some or all of the magnetic members may be electromagnets.
[0140] Further, the electronic apparatus **10** may have a Hall sensor (not shown) detecting a magnetic field formed by the third magnets **61**. The Hall sensor can detect whether the cover **50** is attached to the front surface **11** or back surface **12** of the electronic apparatus **10** based on a detected magnetic field. By such a Hall sensor being connected to the control device of the electronic apparatus **10**, the control device may control the electronic components of the electronic apparatus **10** including the display **15** based on the state of attachment of the cover **50** to the front surface **11** or back surface **12**.
[0141] Specifically, for example, the control device may awaken the electronic apparatus **10** from a sleep state when it is detected that the cover **50** has been detached from the front surface **11** of the electronic apparatus **10**. Alternatively, the control device may awaken the electronic apparatus **10** from a sleep state when it is not detected that the cover **50** has been attached to the front surface **11** of the electronic apparatus **10** and it is detected that the cover **50** is attached to the back surface **12**. Further, the control device may render the electronic apparatus **10** the sleep state when it is detected that the cover **50** has been attached to the front surface **11** of the electronic apparatus **10**. Alternatively, the control device may render the electronic apparatus **10** the sleep state when it is detected that the cover **50** is attached to the front surface **11** of the electronic apparatus **10** and the cover **50** is not attached to the back surface **12**.
[0142] In addition, if a camera is provided at the back surface **12** of the electronic apparatus **10**, the control device connected to the camera may start up the camera when it is not detected that the cover **50** is attached to the front surface **11** of the electronic apparatus **10** and it is detected that the cover **50** has been detached from the back surface **12**. Further, the control device may make the operation of the camera stop when it is detected that the cover **50** has been attached to the back surface **12** during operation of the camera. Alternatively, the control device may make the operation of the camera stop when it is detected that the cover **50** has been attached to the front surface **11** during operation of the camera.
[0143] Further, in the above embodiment, a set of first magnets **41** are provided at the front surface **11** side of the electronic apparatus **10**, while a set of second magnets **42** are provided at the back surface **12** side. Accordingly, two sets of magnets are provided. However, just one set of magnets may be provided between the front surface **11** and back surface **12**. In this case, the third magnets

61 provided at the cover **50** are attracted to the same magnets of the electronic apparatus **10** both when the cover **50** is attached to the front surface **11** side of the electronic apparatus **10** and when the cover **50** is attached to the back surface **12** side thereof.
[0144] Furthermore, in the above embodiment, the fan **35** is arranged at a region of the inside of the back wall **22** formed by the back wall **22** having a shape bulging out toward the back. However, other components may be arranged in this region in addition to the fan **35** or in place of the fan **35**.
[0145] Further, in the above embodiment, the cover **50** is configured to contact the front surface **11** or back surface **12** of the electronic apparatus **10** at the edges or edge parts of the inner surface **52** when attached to the electronic apparatus **10**. However, the cover **50** may be configured to contact the front surface **11** or back surface **12** of the electronic apparatus **10** not only at the edges or edge parts, but also at the inner surface **52** other than the edges and edge parts.
[0146] Furthermore, in the above embodiment, the cover **50** has a shape bulging out entirely in the outer surface direction gently. However, the cover **50** may have a shape having, in addition to a portion having such a shape, a ring shaped portion extending from the edge thereof to the inner surface direction (see FIGS. **8** and **10**). In a cover **50** configured in this way, when the cover **50** is attached to the electronic apparatus **10**, the ring shaped part is positioned on the side surface **13** of the electronic apparatus **10**.
Second Embodiment
[0147] Next, referring to FIGS. **15** and **16**, an apparatus-cover system **1** according to a second embodiment will be explained. The configuration of the apparatus-cover system **1** according to the second embodiment is basically similar to the configuration of the apparatus-cover system **1** according to the first embodiment. Below, the points different from the apparatus-cover system **1** according to the first embodiment will be focused on in the explanation.
[0148] FIG. **15** is a perspective view, similar to FIG. **8**, of an inner surface side of a cover **50** according to a second embodiment. Further, FIG. **16** is a cross-sectional view of a cover **50** according to the second embodiment seen along a plane XVI-XVI of FIG. **15**.
[0149] As shown in FIGS. **15** and **16**, in the same way as the cover of the first embodiment, the cover **50** has a shape bulging out entirely in the outer surface direction. In addition, the cover **50** has specific regions **55** bulging out in the outer surface direction compared with the region facing the display **15** when the cover **50** is attached to the front surface of the electronic apparatus **10** (region **56** shown by the broken lines in FIG. **15**, below, referred to as the “facing region”).
[0150] Therefore, the outer surface **51** and inner surface **52** of the cover **50** have specific regions **55** bulging out toward the outer surface direction compared with the facing region **56**. In particular, in the present embodiment, the outer surface **51** and inner surface **52** have shapes bulging out, in the specific regions **55**, further to the outer surface direction compared with regions other than the specific regions **55**. Further, in the present embodiment, the specific regions **55** are respectively positioned at both sides across the facing region **56**. Further, the specific regions **55** extend in the direction of the short sides of the cover **50**. In other words, the specific regions **55** extend in the top-bottom direction, that is, in a direction perpendicular to the direction in which the specific regions **55** are arranged across the facing region **56** (long side direction) when the cover **50** is attached to the front surface of the electronic apparatus **10**.
[0151] Further, in the present embodiment, two specific regions **55** are positioned symmetrically across the facing region **56**. Specifically, two specific regions **55** are positioned symmetrically about the center of the cover **50** in the long side direction. Further, in the present embodiment, two specific regions **55** are positioned point symmetrically about the center of the cover **50**. In particular, in the present embodiment, the specific regions **55** are arranged at positions facing the first control parts **31** and second control parts **32** provided at the front surface **11** when the cover **50** is attached to the front surface **11** of the electronic apparatus **10**.
[0152] In the present embodiment, the specific regions **55** are arranged at both sides across the facing region **56**. Further, the first control parts **31** and second control parts **32** are provided at both

of the left and right sides across the display **15**. For this reason, the specific regions **55** bulging out toward the outer surface direction are positioned on the first control parts **31** and second control parts **32** when the cover **50** is attached to the front surface **11** of the electronic apparatus **10**. Therefore, the cover **50** can be attached entirely without interfering with or without excessively interfering with the first control parts **31** and second control parts **32** protruding to the front. In addition, when the cover **50** is attached to the back surface **12** of the electronic apparatus **10**, at the specific regions **55**, the outer surface **51** protrudes to the back. As a result, the user more easily grips the electronic apparatus **10** to which the cover **50** is attached. In particular, when the cover **50** is attached to the back surface **12** of the electronic apparatus **10**, the specific regions **55** extend in the top-bottom direction, therefore the user holding the electronic apparatus **10** from the both of the left and right sides of the electronic apparatus **10** easily holds the electronic apparatus **10**.
[0153] Further, in the present embodiment, the outer surface **51** and inner surface **52** of the cover **50** bulge out entirely toward the outer surface direction and bulge out toward the further outer surface direction in the specific regions compared with other regions. Therefore, according to the cover **50** of the present embodiment, it is possible to further improve the mountability of components in the housing **20** while the user can easily hold the electronic apparatus **10**.
[0154] It should be noted that, in the above embodiments, the cover **50** is formed so as to bulge out entirely toward the outer surface direction. However, the cover **50** may be formed so as to bulge out toward the outer surface direction at only the specific regions **55**.
[0155] Above, preferred embodiments according to the present invention were explained, but the present invention is not limited to these embodiments and can be corrected and changed in various ways within the language of the claims.

Claims

1. A system comprising an electronic apparatus and a cover, wherein the electronic apparatus include: a front surface provided with a display; control parts protruding forward from the front surface; a back surface provided at an opposite side from the front surface; a first magnetic member provided at an edge part on the front surface side; and a second magnetic member provided at an edge part on the back surface side, the back surface has a shape bulging out backward, the cover includes: a third magnetic member attracted to either the first magnetic member or the second magnetic member, the cover being configured to be detachably attached to the front surface of the electronic apparatus by the third magnetic member being attracted to the first magnetic member and to be detachably attached to the back surface of the electronic apparatus by the third magnetic member being attracted to the second magnetic member; an outer surface which is exposed when the cover is attached to the front surface of the electronic apparatus and when the cover is attached to the back surface of the electronic apparatus; and an inner surface facing the front surface of the electronic apparatus when the cover is attached to the front surface and facing the back surface of the electronic apparatus when the cover is attached to the back surface, and the inner surface having a shape bulging out in a outer surface direction which is the direction from the inner surface toward the outer surface.
2. The system according to claim 1, wherein the outer surface of the cover has a shape bulging out in the outer surface direction corresponding to the shape of the inner surface.
3. The system according to claim 2, wherein the control parts protrude forward at both sides across the display, and the outer surface and the inner surface of the cover have shapes wherein, compared with a region facing the display when the cover is attached to the front surface, specific regions positioned at both sides across the region bulge out further in the outer surface direction.
4. The system according to claim 3, wherein the specific regions extend symmetrical across the region facing the display and in directions perpendicular to a direction across the region facing the display.

5. The system according to claim 3, wherein the inner surface and the outer surface of the cover bulge out entirely in the outer surface direction and have shapes bulging out further at the specific regions in the outer surface direction compared with other regions of the inner surface and the outer surface.
6. The system according to claim 1, wherein the back surface of the electronic apparatus has a shape bulging out backward entirely and the inner surface of the cover has a shape bulging out entirely in the outer surface direction.
7. The system according to claim 1, wherein the first magnetic members are arranged along each of opposite sides of the front surface, the second magnetic members are arranged along each of opposite sides of the back surface, and the third magnetic members are arranged along each of opposite sides of the cover.
8. The system according to claim 7, wherein a plurality of the first magnetic members are arranged along each of the opposite sides of the front surface, a plurality of the second magnetic members are arranged along each of the opposite sides of the back surface, a plurality of the third magnetic members are arranged along each of the opposite sides of the cover, and the first magnetic members, the second magnetic members, and the third magnetic members are all magnets, and adjoining magnetic members among the plurality of the magnetic members arranged along each side differ in polarities.
9. The system according to claim 8, wherein odd numbers of the first magnetic members are arranged along each of the opposite sides of the front surface, odd numbers of the second magnetic members are arranged along each of the opposite sides of the back surface, and odd numbers of the third magnetic members are arranged along each of the opposite sides of the cover.
10. The system according to claim 9, wherein the center-most magnetic member among the odd number of magnetic members arranged along each side are positioned at center of the side.
11. The system according to claim 9, wherein a pair of the magnetic members arranged at both sides of the center-most magnetic member among the odd number of magnetic members arranged along each side are positioned at the equal intervals with each other from the center-most magnetic member.
12. The system according to claim 8, wherein distances between adjoining magnetic members among magnetic members including the first magnetic members, the second magnetic members, and the third magnetic members are shorter than lengths of the magnetic members along the corresponding sides.
13. The system according to claim 7, wherein the plurality of the first magnetic members are arranged point symmetrically about the center of the front surface, the plurality of the second magnetic members are arranged point symmetrically about the center of the back surface, and the plurality of the third magnetic members are arranged point symmetrically about the center of the cover.
14. The system according to claim 1, wherein the electronic apparatus further has a side surface provided between the front surface and the back surface so as to connect the front surface and the back surface, a housing defining the front surface, back surface, and side surface, and a fan provided inside the housing, the housing has a back wall defining the back surface and bulging out to the back, the fan is arranged at a region formed inside the housing by the back wall bulging out, and an air ventilation opening is provided at the side surface, and the air ventilation opening is arranged at a position at least partially overlapping the air ventilation port of the fan when viewing the electronic apparatus from the side surface side where that air ventilation opening is provided.
15. A cover able to be attached to an electronic apparatus having a front surface provided with a display and a back surface provided at an opposite side from the front surface, which cover: is configured to be detachably attached to the front surface of the electronic apparatus and to be detachably attached to the back surface of the electronic apparatus, includes an outer surface which is exposed when the cover is attached to the front surface of the electronic apparatus and when the

cover is attached to the back surface of the electronic apparatus, includes an inner surface facing the front surface and back surface when the cover is attached to the front surface of the electronic apparatus and when the cover is attached to the back surface of the electronic apparatus and having a shape bulging out in an outer surface direction which is a direction toward the outer surface side with respect to the cover, and third magnetic member attracted to first magnetic member provided at an edge part of a front surface side of the electronic apparatus and to second magnetic member provided at an edge part at a back surface side of the electronic apparatus.