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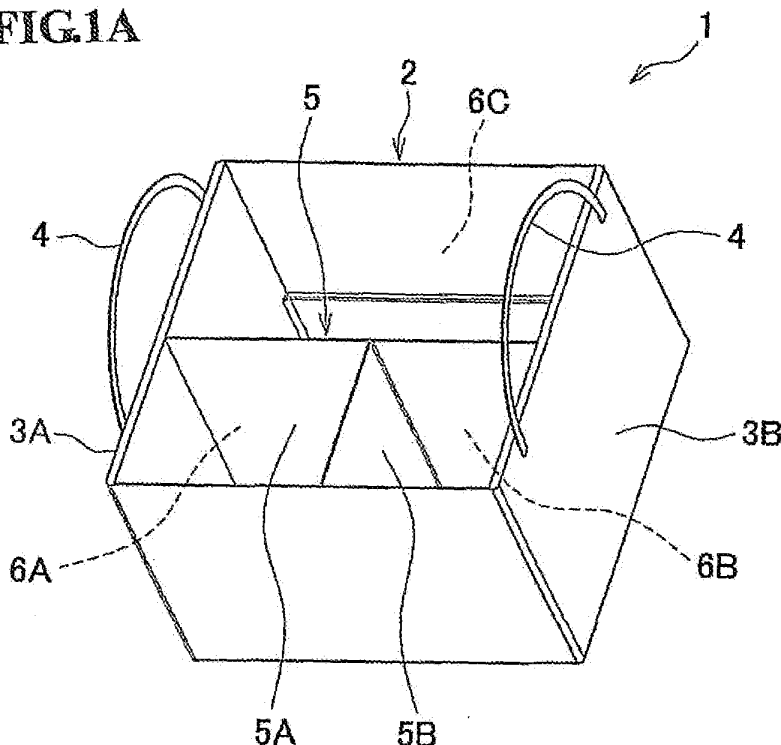
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(54) **Tool storage bag and tool storage bag set**

(57) The purpose of the present invention is to provide a tool storage bag (20) and tool storage bag set having versatility and to reduce manufacturing cost. The tool storage bag (20) includes an inner tray (1) that is disposed inside the tool storage bag (20) and is in a shape of a box with a bottom and an open top to store a power

tool. The inner tray (1) is made of a fabric material. The inner tray (1) is detachably disposed inside the tool storage bag (20) where an outer surface of the inner tray (1) is supported by an inner surface of the tool storage bag (20), or is detachably disposed with a positioning unit provided between the inner surface of the tool storage bag (20) and the outer surface of the inner tray (1).

FIG.1A



Description

Background of the Invention

Field of the Invention

[0001] This invention relates to a tool storage bag and a tool storage bag set, where the tool storage bag includes an inner tray disposed inside the bag, the inner tray being in the shape of a box with a bottom and an open top to store power tools.

Description of the Related Art

[0002] Japanese Patent Application Publication No. 2009-248262 discloses a tool storage box that stores a hand-held power tool with a grip extending from a side of the main tool body so as to accommodate the power tool with a forward leaning posture holding the forward end of the main tool body and the rear end of the grip. According to the tool storage box of the above-mentioned Publication, the hand-held power tool can be stored in the tool storage box with a forward leaning posture which is almost the same posture as when it is in use. Thus, it is not necessary for a user to shift the hand-held power tool from one hand to the other to change his working posture when storing the power tool in the tool storage box. Further, the user is able to start using the hand-held power tool with the same posture as that when the power tool is taken out from the tool storage box.

Summary of the Invention

[0003] The above-described tool storage box includes a mount, made of a hard resin or other like materials, that is formed to match the shape of a power tool, such as the hand-held power tool, to maintain the forward leaning posture of the power tool. Various shaped mounts are required to form mounts to fit various shapes of a power tool respectively, which increases manufacturing costs for the tool storage box.

[0004] In addition, the mount is integrally provided in the tool storage box. Therefore, it cannot be detached from the tool storage box. As a result, different tool storage boxes need to be prepared for different power tools, which reduces the versatility of the tool storage box.

[0005] The present invention has been made in view of the above circumstances, which provides a tool storage bag and a tool storage bag set having excellent versatility and reducing manufacturing costs.

[0006] A tool storage bag according to a first aspect of the present invention includes an inner tray that is disposed inside the tool storage bag and is in the shape of a box with a bottom and an open top to store power tools. The inner tray is made of fabric members. The inner tray is detachably disposed inside the tool storage bag where an outer surface of the inner tray is supported by an inner surface of the tool storage bag, or is detachably disposed

with a positioning unit provided between the inner surface of the tool storage bag and the outer surface of the inner tray.

[0007] According to a second aspect of the invention, the inner tray has handles on the side faces in the first aspect.

[0008] According to a third aspect of the invention, oil resistant coating is applied to at least an inner bottom surface of the inner tray in the first and second aspects.

[0009] According to a forth aspect of the invention of the first and second aspects, the inner tray includes one pair of opposed side faces with core members, and the other pair of opposed side faces connected to the one pair of side faces and not having core members, and the inner tray is collapsed by folding the other pair of side faces toward the inside of the inner tray to cause the one pair of side faces to overlie the other pair of side faces.

[0010] A tool storage bag set according of the invention includes plural tool storage bags made of different materials in the above-mentioned embodiment, and the inner tray can be mutually used among the tool storage bags in the first and second aspects.

[0011] According to the tool storage bag of the first aspect of the invention, as the inner tray disposed in the tool storage bag is made of a fabric material, a mold to manufacture the inner tray is not necessary. As a result, costs for manufacturing the tool storage bag can be reduced.

[0012] In addition, as the inner tray can be fixed inside the tool storage bag in an attachable and detachable manner so that the inner tray can be detached from the tool storage bag, a single inner tray can be disposed in plural different tool storage bags. Therefore, the versatility of the tool storage bag is increased.

[0013] Further, a user can easily put the inner tray into the tool storage bag and take it out from the tool storage bag while holding the handles.

[0014] Furthermore, according to the second aspect of the invention, even if lubricant oil or the like used in the power tool stored in the inner tray leaks, the oil-proof coating applied on the inner bottom surface of the inner tray can prevent the oil from spreading to the interior of the tool storage bag.

[0015] Moreover, according to the third aspect of the invention, when the other pair of opposed faces are folded toward the inside of the inner tray, the one pair of opposed faces connected with the other pair of faces can overlie the inwardly collapsed other pair of opposed faces. Thus, the inner tray can be compactly folded up for transportation.

[0016] Further, according to the fifth aspect of the invention, the tool storage bags do not require their own dedicated inner trays, thereby increasing the versatility of the tool storage bags.

[0017] In addition, the user can choose an appropriately sized inner tray for the power tool and dispose the inner tray into any one of the plural tool storage bags. In other words, the user can freely select and use an ap-

propriate tool storage bag from the plural tool storage bags depending on intended use.

Brief Description of the Drawings

[0018] Embodiments of the present invention will be described in detail based on the following figures.

FIG. 1A is a perspective view of a first inner tray of the first embodiment of the present invention.

FIG. 1B illustrates the outer bottom surface of the first inner tray in which a hook-and-loop fastener is provided.

FIG. 2A is a perspective view of a second inner tray. FIG. 2B illustrates the outer bottom surface of the second inner tray in which hook-and-loop fasteners are provided.

FIG. 3A is a perspective view of a tool storage bag in a state where the first and second inner trays are not disposed.

FIG. 3B illustrates the inner bottom surface of the tool storage bag in which hook-and-loop fasteners are provided.

FIG. 4A is a perspective view of the tool storage bag in a state where the first and second inner trays are disposed.

FIG. 4B illustrates the interior of the tool storage bag with the first and second inner trays disposed as viewed from the above.

FIG. 5A is a side view of the first inner tray with side faces folded inward.

FIG. 5B is a perspective view of the first inner tray with the side faces folded inward.

FIG. 6A is a perspective view of a hard case bag, which makes up a tool storage bag set, in a state where a third inner tray is not disposed.

FIG. 6B is a perspective view of the hard case bag in a state where the third inner tray is disposed.

FIG. 7A is a perspective view of a soft case bag, which makes up the tool storage bag set, in a state where the third inner tray is not disposed.

FIG. 7B is a perspective view of the soft case bag in a state where the third inner tray is disposed.

Detailed Description of the Invention

[First Embodiment]

[0019] A first embodiment of the present invention will be described with reference to FIGS. 1 to 5. FIG. 1 shows a first inner tray 1 that is made of fabric pieces (fabric members) and is to be disposed inside a tool storage bag 20 which will be described later. The first inner tray 1 includes a tray body 2 and a partition unit 5.

[0020] The tray body 2, as shown in FIG. 1A, is in the shape of a box with a substantially square bottom and an open top and is formed by the fabric pieces sewed together. As shown in FIG. 1B, a thin strip-shaped hook-

and-loop fastener T1 is affixed on an outer bottom surface 2A of the tray body 2. The tray body 2 includes a pair of side faces 3A, 3B and arc-shaped handles 4, 4 sewed so as to extend upward from the upper ends of the side faces 3A, 3B.

[0021] The partition unit 5 includes a fabric partition 5A placed in parallel with the lateral direction of the tray body 2 and a fabric partition 5B substantially-orthogonally sewed to the fabric partition 5A, the fabric partitions 5A and 5B forming a substantially T shape. The partition unit 5 divides the interior of the tray body 2 into three compartments 6A to 6C. The compartments 6A and 6B can be used to store battery packs, while the compartment 6C can be used to store a charger, for example.

[0022] FIG. 2 shows a second inner tray 10 formed by sewing fabric pieces so as to have a box shape with a substantially square bottom and an open top. The second inner tray 10 has a height less than the height of the first inner tray 1, and inner surfaces 11 of the second inner tray 10 covered with an oil resistant layer. The oil resistant layer is typically formed by enamel coating which is applied on the inner bottom surface and inner side surfaces. As shown in FIG. 2B, two thin strip-shaped hook-and-loop fasteners T2, T2 are affixed at an interval on an outer bottom surface 12 of the second inner tray 10. In this embodiment, the second inner tray 10 stores a main body of a chain saw. It should be noted that the chain saw is an example of a power tool in the present invention.

[0023] A tool storage bag 20 for storing power tools therein in FIGS. 3 and 4 is a soft case bag made of fabric materials. The tool storage bag 20 includes a bag body 21 and a cover 22.

[0024] The bag body 21 is shaped into a substantially rectangular box and has a slide fastener (not shown) on the upper edges of three faces, except for the back face, of the bag body 21 so that the top face of the bag body 21 serves as a cover 22 openable and closable with the slide fastener. As shown in FIG. 3B, thin strip-shaped hook-and-loop fasteners T3, T4 are affixed to the inner bottom surface 23 of the bag body 21.

[0025] Referring to FIG. 4, a procedure for disposing the first and second inner trays 1, 10 in the bag body 21 is explained. Firstly, the first inner tray 1 is disposed inside the bag body 21. For example, a user guides the first inner tray 1 from the top opening of the bag body 21 into the interior of the bag body 21, while holding the handles 4, 4, and presses the tray so as to attach the hook-and-loop fastener T1 of the tray body 2 to the hook-and-loop fastener T3 of the bag body 21. As the hook-and-loop fasteners T1 and T3 are attached each other, the outer bottom surface 2A of the tray body 2 and the inner bottom surface 23 of the bag body 21 are securely coupled. Secondly, the second inner tray 10 is disposed in the bag body 21. The hook-and-loop fasteners T2, T2 and hook-and-loop fasteners T4, T4 are pressed together so that the outer bottom surface 12 of the second inner tray 10 is securely coupled to the inner bottom surface 23 of the bag body 21.

[0026] On the other hand, when the first and second inner trays 1, 10 are taken out from the bag body 21, the user unhooks the hook-and-loop fastener T1 of the tray body 2 from the hook-and-loop fastener T3, while holding the handles 4, 4, to detach the outer bottom surface 2A of the tray body 2 away from the inner bottom surface 23 of the bag body 21. The user then holds the side faces or any other portions of the second inner tray 10 by hand and unhooks the hook-and-loop fasteners T2, T2 from the hook-and-loop fasteners T4, T4 to detach the outer bottom surface 12 of the second inner tray 10 away from the inner bottom surface 23 of the bag body 21.

[0027] In the above-described manner, the first and second inner trays 1, 10 can be attached to and detached from the interior of the tool storage bag 20. It should be noted that the inner bottom surface 23 of the bag body 21 merely shows an example of an inner surface of the tool storage bag of the present invention, and the outer bottom surface 2A of the tray body 2 and the outer bottom surface 12 of the second inner tray 10 are just an example of an outer surface of the inner tray of the present invention. Further, each of the hook-and-loop fasteners T1 to T4 merely shows an example of a positioning unit of the present invention.

[0028] As shown in FIG. 5, the first inner tray 1 is collapsible. The first inner tray 1 is formed of a base material 8, such as cardboard, covered with fabric pieces. A pair of opposed side faces 3A, 3B made of fabric pieces includes core members (not shown) made of cardboard. On the contrary, the other pair of opposed side faces 3C, 3D made of fabric pieces does not include core members. The pair of side faces 3A, 3B and the other pair of side faces 3C, 3D are continuously connected to one another.

[0029] In order to fold the first inner tray 1, the other pair of side faces 3C, 3D, which does not include the core members, is folded to the inside of the first inner tray 1 as shown in FIGS. 5A, 5B, resulting in the inwardly collapsed side faces 3C, 3D. The movement of the side faces 3C, 3D pulls the pair of side faces 3A, 3B connecting to the side faces 3C, 3D inward, and the side faces 3A, 3B lie on top of the collapsed side faces 3C, 3D while pushing down the fabric partitions 5A, 5B from above. In this way, the first inner tray 1 is completely folded.

[Effect of First embodiment]

[0030] According to the tool storage bag 20 in the first embodiment, the first and second inner trays 1, 10 are formed by the fabric pieces sewed together. Therefore, molds for manufacturing the inner trays 1, 10 are not necessary, which leads to reducing the cost for manufacturing the tool storage bag 20 with the inner trays 1, 10 disposed therein. Additionally, the use of the hook-and-loop fasteners T1 to T4 to affix the outer bottom surface 2A of the tray body 2 (first inner tray 1) and the outer bottom surface 12 of the second inner tray 10 to the inner bottom surface 23 of the tool storage bag 20 allows to be attachable to and detachable from each other so that

the inner trays 1, 10 can be taken out from the inner bottom surface 23. Accordingly, the inner trays 1, 10 can be disposed in plural and different tool storage bags, thereby providing a highly versatile tool storage bag 20.

[0031] The handles 4, 4 can be used to guide the first inner tray 1 to the inner bottom surface 23 of the tool storage bag 20 and to pull it away from the inner bottom surface 23. Thus, it is easy to facilitate placement of the first inner tray 1 into and out of the tool storage bag 20.

[0032] Further, even if lubricating oil or the like used in a chain saw leaks from the main body of the chain saw stored in the second inner tray 10, the oil resistant layer applied on at least the inner bottom surface of the tray prevents the oil from spreading from the second inner tray 10 to the interior of the tool storage bag 20.

[0033] Furthermore, folding of the other pair of the opposed side faces 3C, 3D inward the first inner tray 1 causes the pair of side faces 3A, 3B connected with the side faces 3C, 3D to overlie the inwardly collapsed side faces 3C, 3D. Therefore, the first inner tray 1 can be folded, making it compact and easy to carry.

[Second Embodiment]

[0034] With reference to FIGS. 6 and 7, a second embodiment of the present invention will be described. The second embodiment directs a tool storage bag set including a hard case bag and a soft case bag. A tool storage bag 20A shown in FIGS. 6A, 6B is a hard case bag made of, for example, plastic or synthetic resin, and stores a power tool therein. The tool storage bag 20A includes a case body 21A and a case cover 22A.

[0035] The case body 21A is in the shape of a box with a substantially square bottom and an open top. A side at an upper edge of a side face of the case body 21A is connected to a side of the case cover 22A with hinges or the like so that the case cover 22A can vertically rotate around the side as an axis to open and close. When the case cover 22A is lifted, the top of the case body 21A will be in an open state.

[0036] As shown in FIGS. 6A and 6B, a third inner tray 30 whose outer dimension is slightly smaller than the inner dimension of the case body 21A is disposed in the interior 23A of the case body 21A in an insertable and removable manner. The third inner tray 30 is shaped into a box with an open top, made of fabric pieces, and, instead of handles, has handhold portions 32, 32 near the upper ends of the right and left side faces. The handhold portions 32, 32 are ellipse openings used by a user to insert his/her fingers to hold the third inner tray 30. Plural fabric partitions 31A to 31F form plural storage compartments inside the third inner tray 30. Each storage compartment can contain an impact driver and a battery pack, for example.

[0037] To dispose the third inner tray 30 in the interior 23A, the user puts his/her fingers into the handhold portions 32, 32 to hold the third inner tray 30, and then inserts the third inner tray 30 from the top opening of the case

body 21A toward the interior 23A to place the outer bottom surface of the third inner tray 30 on the inner bottom surface 24A of the case body 21A. At this time, the outer side faces of the third inner tray 30 are supported by the inner side surfaces 25A of the case body 21A, thereby securing the third inner tray 30 in the interior 23A. On the other hand, the user puts his/her fingers into the handhold portions 32, 32 of the third inner tray 30 and pulls out the third inner tray 30 along the inner side surfaces 25A to remove the third inner tray 30 through the top opening of the case body 21A. In the above-described manner, the third inner tray 30 can be configured to be insertable to and removable from the interior 23A of the tool storage bag 20A. It should be noted that the outer bottom surface and outer side faces of the third inner tray 30 are just an example of outer faces of an inner tray of the present invention, and the inner bottom surface 24A and inner side surfaces 25A of the case body 21A are also just an example of inner faces of the tool storage bag of the present invention.

[0038] FIG. 7 shows a tool storage bag 20B that is a soft case bag made of, for example, a fabric material, and is used to store a power tool therein. This tool storage bag 20B has approximately the same inner dimension as that of the tool storage bag 20A, and has a case body 21 B and a case cover 22B.

[0039] The case body 21B is in the shape of a box similar to the case body 21A. As with the tool storage bag 20 in FIG. 3, a slide fastener is attached to the upper edges of the case body 21B whose top face serves as an openable and closable case cover 22B.

[0040] The third inner tray 30 can be used for both the tool storage bag 20A and tool storage bag 20B of different types. To dispose the third inner tray 30 in the interior 23B of the case body 21B, the outer bottom surface of the third inner tray 30 is placed on the inner bottom surface 24B of the case body 21B to arrange the outer side faces of the third inner tray 30 along the inner side surfaces 25B of the case body 21B, similar to the case of inserting the third inner tray 30 into the interior 23A of the case body 21A. The third inner tray 30 can be taken out through the top opening of the case body 21B just as in the case where the third inner tray 30 is taken out through the top opening of the case body 21A. It should be noted that the inner bottom surface 24B and inner side surfaces 25B of the case body 21B are an example of inner faces of the tool storage bag of the present invention.

[Effect of Second Embodiment]

[0041] According to the tool storage bags 20A, 20B of the second embodiment, the third inner tray 30 can be secured in the interiors 23A, 23B of the tool storage bags 20A, 20B, respectively, while the third inner tray 30 can be taken out from the tool storage bags 20A, 20B. The third inner tray 30 can be disposed in both the tool storage bags 20A, 20B, which increases the versatility of both the tool storage bags 20A, 20B.

[0042] Additionally, the user can put his/her fingers into the handhold portions 32, 32 to insert the third inner tray 30 into the interiors 23A, 23B of the tool storage bags 20A, 20B and to take it out from the interiors 23A, 23B, thereby allowing the third inner tray 30 to be easily put in and taken out from the interiors 23A, 23B.

[0043] In addition to the above-described increased versatility of the tool storage bags 20A, 20B, the tool storage bag set can offer the user free choices of an appropriate bag from the tool storage bags 20A, 20B depending on intended use. Specifically, the user can put an appropriately sized third inner tray 30 for an impact driver into either the interior 23A of the tool storage bag 20A or the interior 23B of the tool storage bag 20B.

[0044] The present invention is not limited to the above-described embodiments and can be implemented with partial modifications within the scope while not departing from the gist of the invention. For example, the two inner trays 1, 10 are detachably disposed inside the tool storage bag 20 in the above embodiment; however, the present invention is not limited thereto and one or three or more inner trays can be detachably disposed inside the tool storage bag 20.

[0045] The hook-and-loop fasteners T1 to T4 are provided on the outer bottom surfaces 2A, 12 of the inner trays 1, 10 and the inner bottom surface 23 of the tool storage bag 20 in the above embodiment. In addition to this, the outer side surfaces of the inner trays 1, 10 and the inner side surfaces of the tool storage bag 20 can be provided with hook-and-loop fasteners to securely couple the outer side surfaces of the inner trays 1, 10 and the inner side surfaces of the tool storage bag 20. Furthermore, although the hook-and-loop fasteners are shaped into a thin strip in the above embodiments, the fasteners can be in any other shapes, for example, a circle.

[0046] In addition, instead of the hook-and-loop fastener used in the embodiments, a button or the like can be used to detachably couple the inner tray with the interior of the tool storage bag 20. Further, by attaching hook-and-loop fasteners to the handles 4, 4 and the outer side surfaces of the first inner tray 1 and pressing both the hook-and-loop fasteners together, the handles 4, 4 can be secured on the outer side surfaces of the first inner tray 1, thereby preventing damages to the handles 4, 4 due to metal members or the like snagging on the handles 4, 4 while the first inner tray 1 is stored.

[0047] Furthermore, in the above embodiments, the enamel coating is used to form an oil resistant layer on the inner surfaces 11 of the second inner tray 10 as oil resistant coating; however, the present invention is not limited thereto and an oil-blocking sheet made of, for example, polyvinyl chloride can be adhered to the inner surfaces 11 as the oil resistant coating. In addition to the inner surfaces 11, the oil resistant coating can be applied to the interior of the tool storage bag 20.

[0048] Furthermore, the tool storage bag set in the above embodiment includes a single hard case bag and

a single soft case bag; however, the present invention is not limited thereto. The tool storage bag set can include two or more hard case bags of different sizes, two or more soft case bags, each of which having the same size as each of the hard case bags, and plural inner trays that can be shared between the hard case bags and the soft case bags of the same size. With such a tool storage bag set, the user can choose an inner tray suitable for each of various power tools from the plural inner trays and dispose the chosen inner tray inside a hard case bag or soft case bag depending on intended use, and thus the user can freely choose an appropriate bag.

[0049] It is explicitly stated that all features disclosed in the description and/or the claims are intended to be disclosed separately and independently from each other for the purpose of original disclosure as well as for the purpose of restricting the claimed invention independent of the composition of the features in the embodiments and/or the claims.

Claims

1. A tool storage bag (20) comprising:

an inner tray (1, 10) disposed inside the tool storage bag (20) and being in the shape of a box with a bottom and an open top to store a power tool, wherein

the inner tray (1, 10) is made of fabric members, and

the inner tray (1, 10) is detachably disposed inside the tool storage bag (20) where an outer surface of the inner tray (1, 10) is supported by an inner surface of the tool storage bag (20), or is detachably disposed with a positioning unit provided between the inner surface of the tool storage bag (20) and the outer surface of the inner tray (1, 10).

2. The tool storage bag according to claim 1, wherein the inner tray (1) has handles (4) on side faces.

3. The tool storage bag (20) according to claim 2, wherein

the handles (4) are attached on a pair of opposed side faces of the inner tray (1) by being sewed, respectively, so as to extend from upper edges of the side faces.

4. The tool storage bag according to any one of claims 1 to 3, wherein

oil resistant coating is applied to at least an inner bottom surface of the inner tray (1, 10).

5. The tool storage bag (20) according to claim 4, wherein

the oil resistant coating is an oil resistant layer formed

on inner side surfaces and the inner bottom surface of the inner tray (1, 10) by applying and drying enamel coating.

6. The tool storage bag (20) according to any one of claims 1 to 5, wherein

the inner tray (1) includes one pair of opposed side faces with core members and the other pair of opposed side faces connected to the one pair of side faces and not having core members, and the inner tray (1) is collapsed by folding the other pair of side faces toward the inside of the inner tray (1) to cause the one pair of side faces to overlie the other pair of side faces.

7. The tool storage bag (20) according to any one of claims 1 to 6, wherein

a plurality of the inner trays (1, 10) are detachably disposed inside the tool storage bag (20).

8. The tool storage bag (20) according to any one of claims 1 to 7, wherein

the positioning unit includes a first hook-and-loop fastener attached to the inner bottom surface of the tool storage bag (20) and a second hook-and-loop fastener attached to the outer bottom surface of the inner tray (1, 10) and being attachable to the first hook-and-loop fastener by applying pressure.

9. The tool storage bag (20) according to any one of claims 1 to 8, wherein

the inner tray (1) includes a plurality of storage compartments defined by a fabric partition.

10. A tool storage bag set comprising:

a plurality of tool storage bags (20, 20A, 20B) of different materials according to claim 1 or 2, wherein

the inner tray (1, 10) can be mutually used among the tool storage bags (20; 20A; 20B).

11. The tool storage bag set according to claim 10, wherein

the plurality of tool storage bags (20, 20A, 20B) include the tool storage bag (20A) having a hard case and the tool storage bag (20, 20B) having a soft case.

FIG.1A

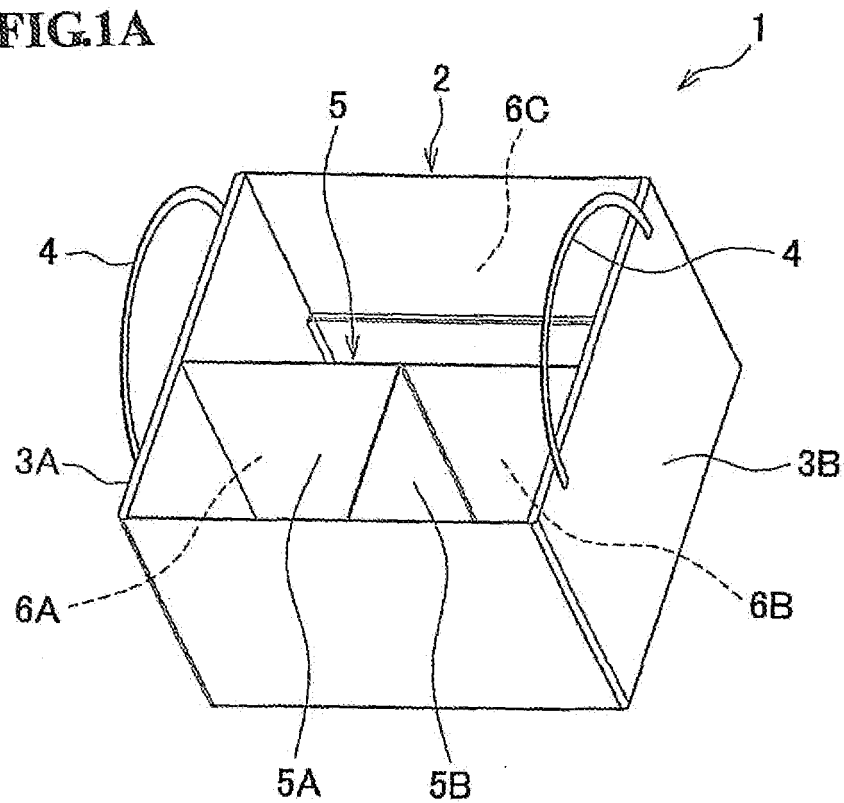


FIG.1B

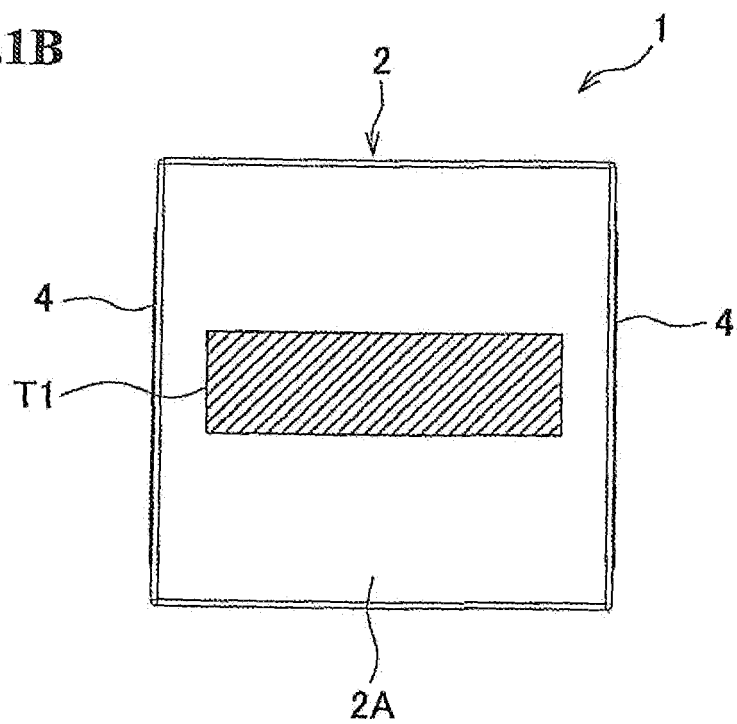


FIG.2A

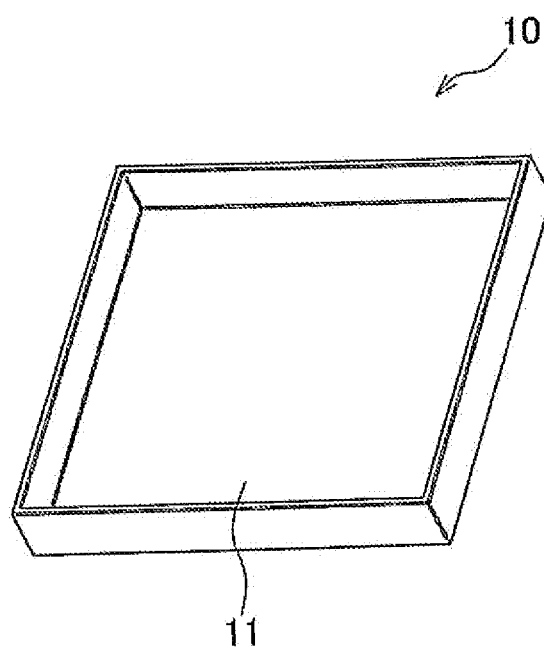


FIG.2B

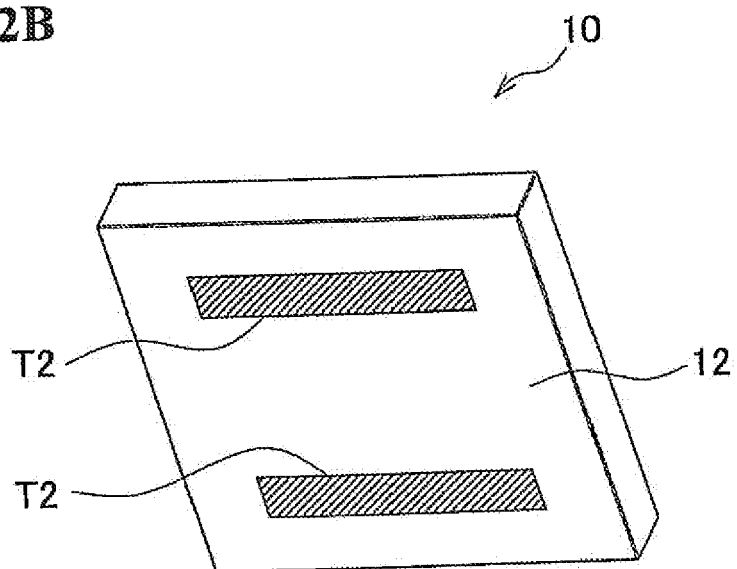


FIG.3A

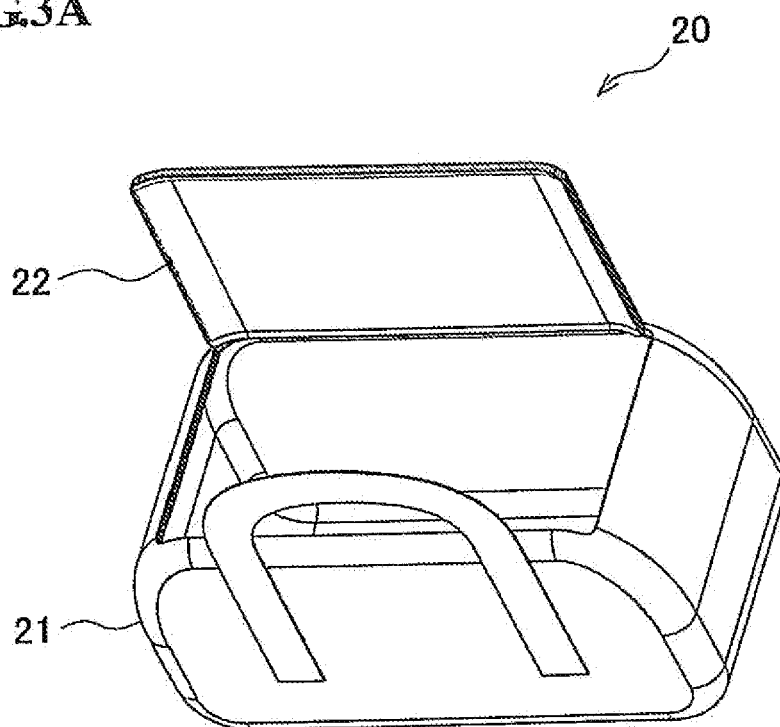


FIG.3B

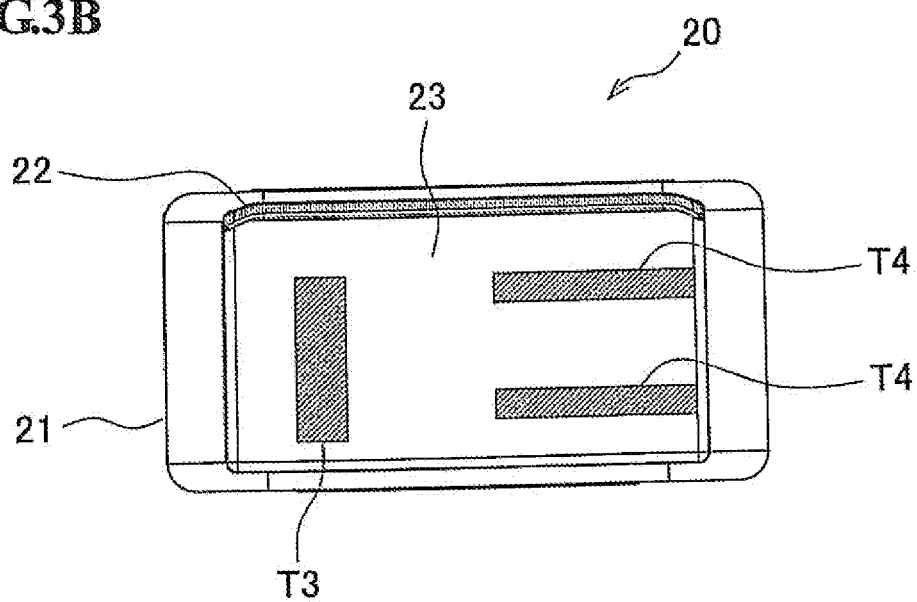


FIG.4A

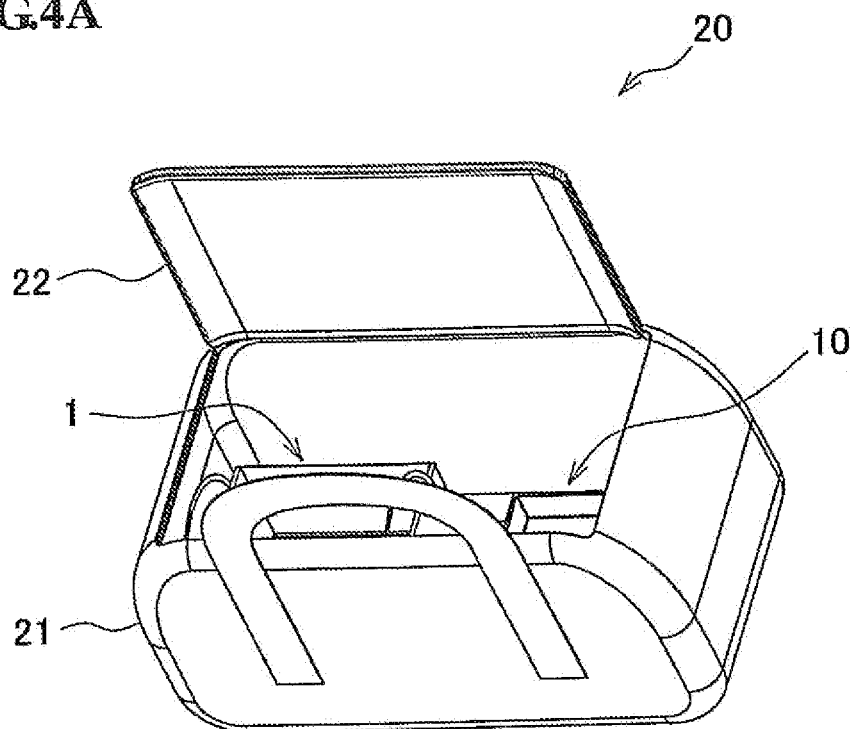


FIG.4B

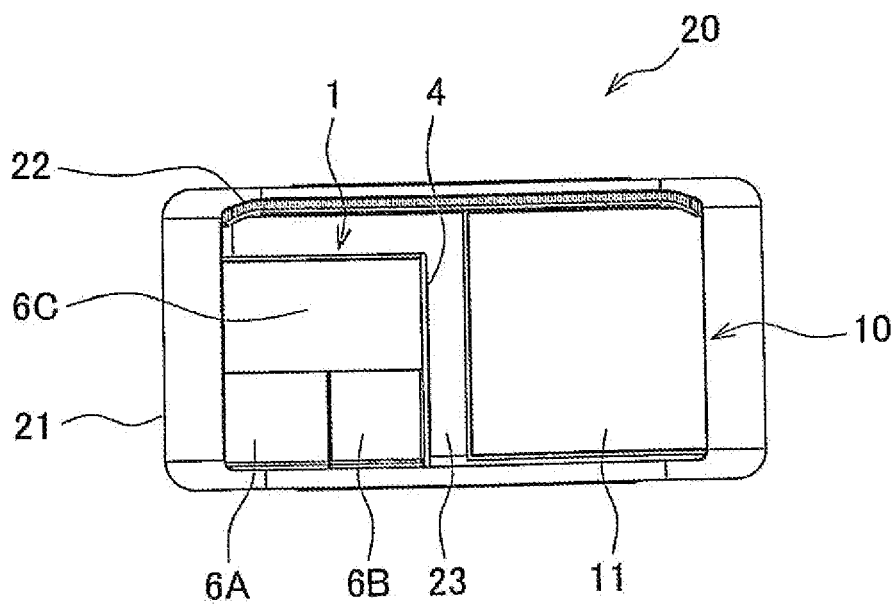


FIG.5A

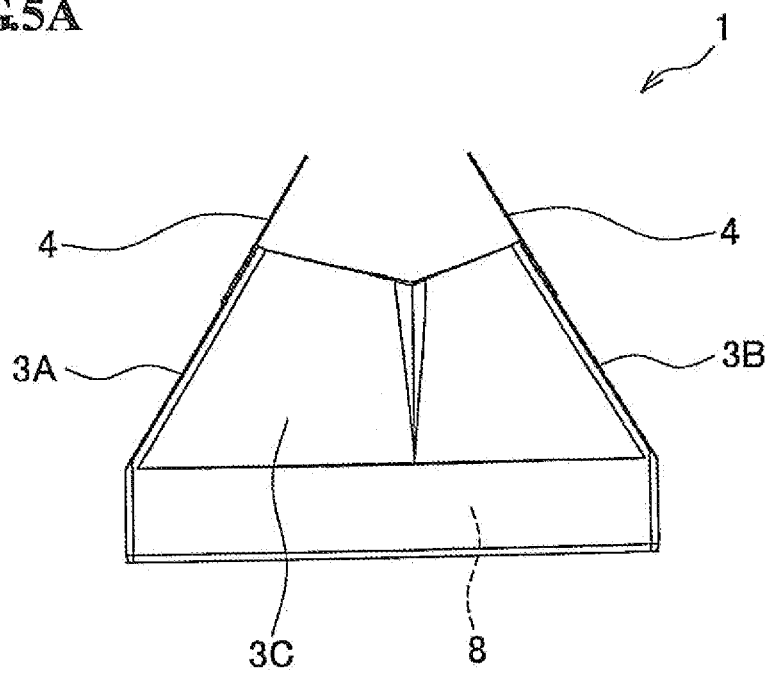


FIG.5B

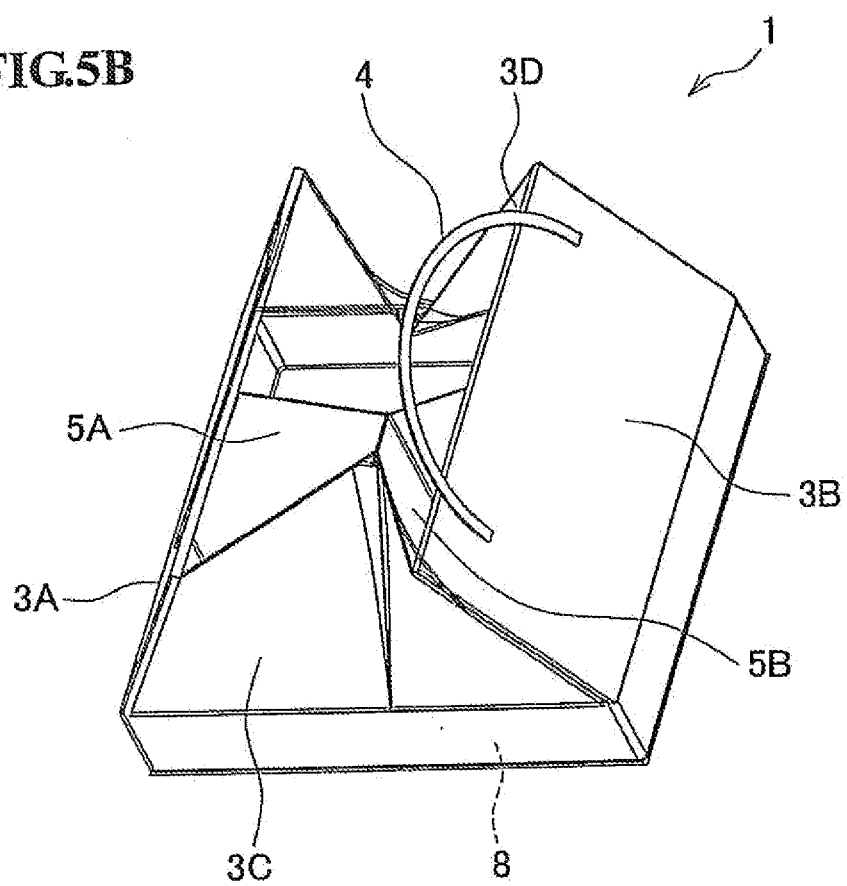


FIG.6A

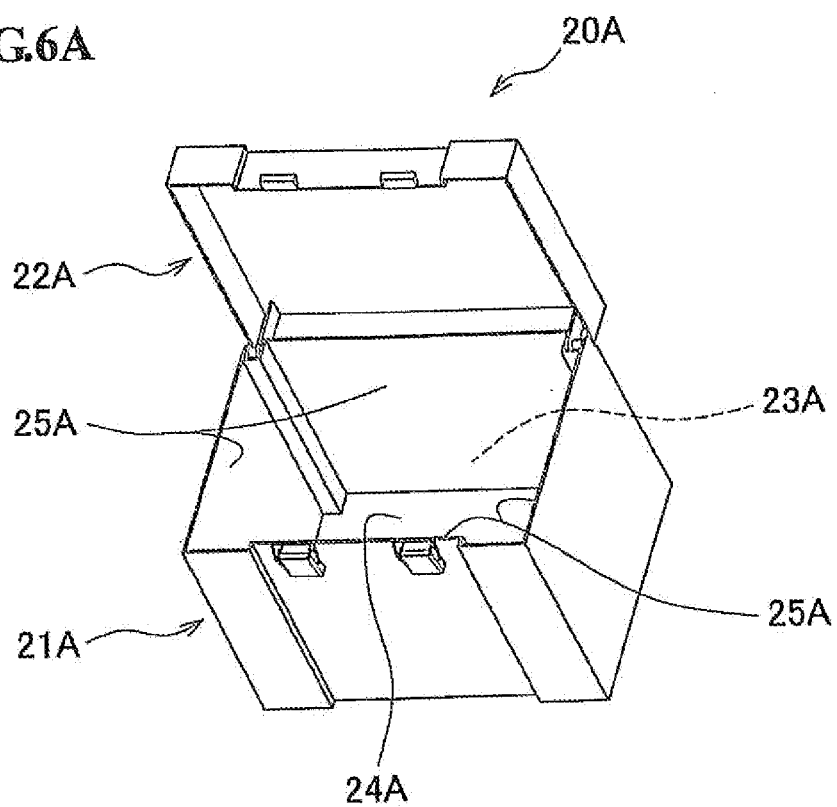


FIG.6B

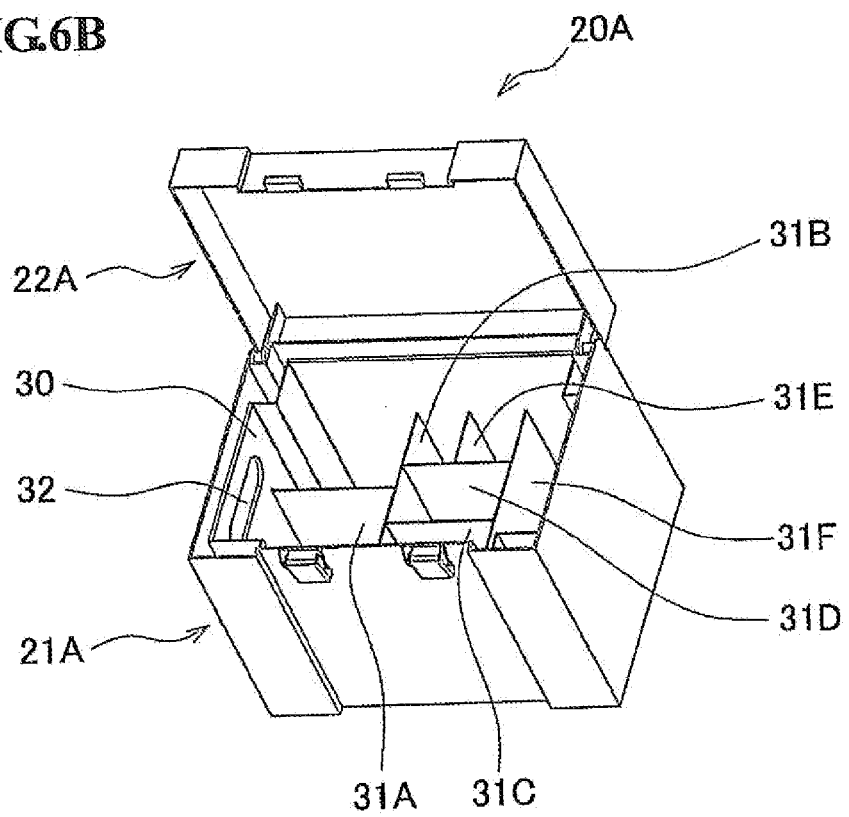


FIG. 7A

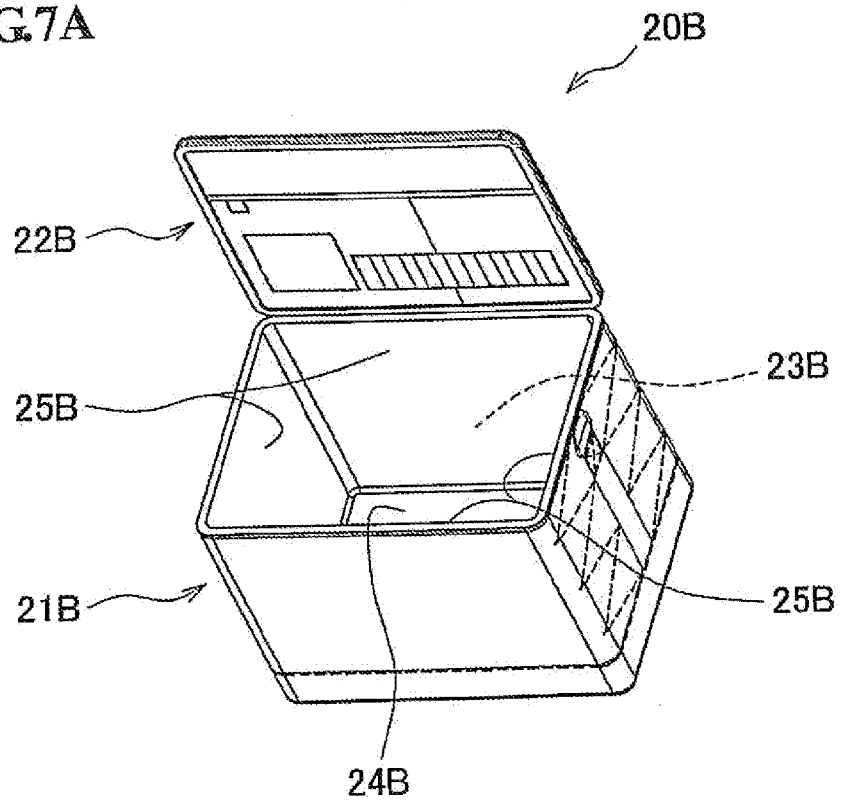
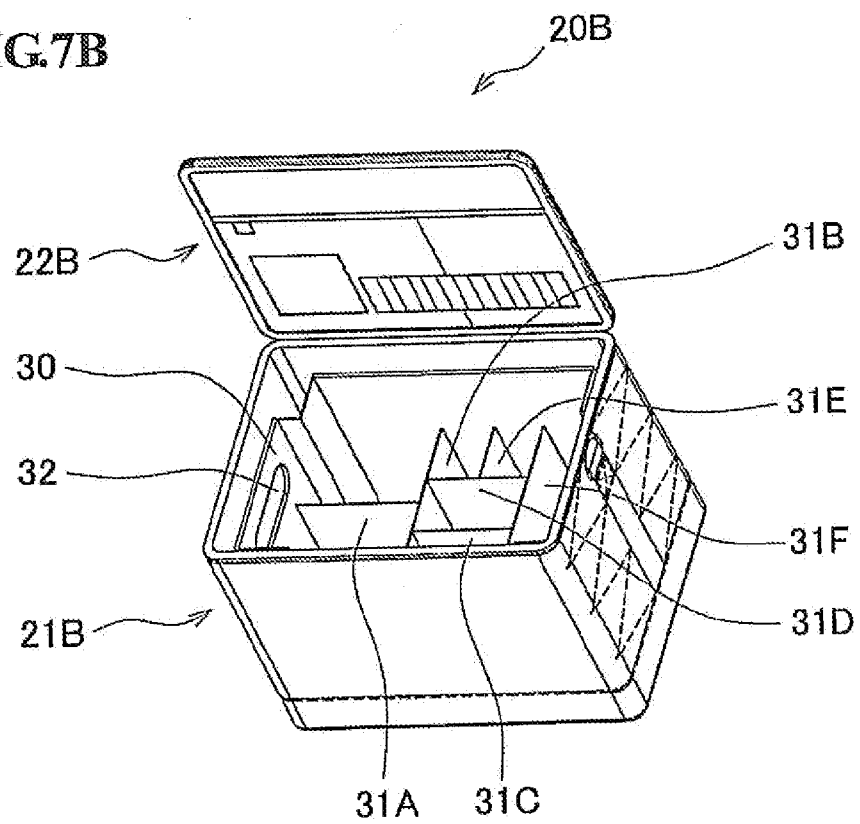


FIG. 7B



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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