114 does not correspond to the bracket apparatus 120. The fifth connecting member 114 and the mating connecting member 2335 may be a magnetic snap assembly. The mating connecting member 2335 may be connected to the canopy assembly 200 (e.g., canopy 22) by a connecting strap 236. After the mating connecting member 2335 is flipped downwardly and connected to the fifth connecting member 114, the aforementioned protective cover 300 is placed over the canopy assembly 200, and the protective cover 300 may cover the mating connecting member 2335 and the fifth connecting member 114.

In connection with the foregoing, it will be understood that when the carrier 1000 is mounted on the vehicle seat, the left or right side of the accommodating body 100 abuts against the vehicle seat, and the front or rear side of the accommodating body 100 faces the vehicle door. In the event of a side impact of the carrier 1000 mounted on the vehicle seat (i.e., when the front or rear side of the accommodating body 100 is impacted), the carrier 1000 is impacted in the order of the protective cover 300, the magnetic snap assembly (the mating connecting member 2335 and the fifth connecting member 114), and the box body (e.g., made of foam material) 110. In some embodiments, the protective cover 300 in the use state does not cover the magnetic snap assembly, and in the event of a side impact of the carrier 1000 mounted on the vehicle seat, the carrier 1000 is impacted in the order of the magnetic snap assembly (the mating connecting member 2335 and the fifth connecting member 114), and the box body (e.g., made of foam) 110. The magnetic snap assembly of this embodiment is used as a side impact protection block (side impact protection structure), without a need for an additional side impact protection block, which is conducive to cost reduction.

Certainly, in some embodiments, the fifth connecting member 114 may be secured to the seat fabric 150, and the fifth connecting member 114 corresponds to the bracket apparatus 120, and more specifically, for example, to the first bracket 121 (referring to FIG. 19). The mating connecting members 2335 are connected to the canopy assembly 200, and more specifically, the mating connecting members 2335 may be connected to the canopy 22 by the connecting strap 236. The protective cover 300 may cover the mating connecting member 2335 and the fifth connecting member 114 connected to each other. When the carrier 1000 is mounted on a vehicle seat and a side impact occurs, the carrier 1000 is impacted in the order of the protective cover 300, the magnetic snap assembly (mating connecting member 2335 and fifth connecting member 114), and the bracket apparatus 120.

Fifth embodiment of the first aspect

FIG. 23 shows a perspective view of a carrier 1000 provided in accordance with the fifth embodiment of the first aspect of the present disclosure. The carrier 1000 includes, for example, an

accommodating body 100 and a canopy assembly 200. The carrier 1000 may be configured with the protective cover 300 in the above embodiment or may not be configured with the protective cover 300. In the absence of conflict, the structure of the accommodating body 100 and the canopy assembly 200 of this embodiment may be referred to as described in the above second embodiment, and the following primarily describes the differences between this embodiment and the aforementioned second embodiment.

Referring to FIG. 23, each of the front and rear sides of the accommodating body 100 is provided with a fifth connecting member 114. The fifth connecting member 114 may be secured to the seat fabric 150 or may be fixed directly to the box body 110 and exposed from the seat fabric 150. The canopy assembly 200 is provided with a mating connecting member 2335 corresponding to each fifth connecting member 114, the mating connecting member 2335 is connected to the canopy 22 of the canopy assembly 200, for example, by means of a connecting strap 236. As described in the second embodiment, the fifth connecting member 114 is detachably connected to the mating connecting member 2335. When the fifth connecting member 114 is connected to the mating connecting member 2335, the canopy assembly 200 may be prevented from accidentally opening due to the canopy frames 211 flipping upwards by mistake, so that the canopy assembly 200 may be kept in the unfolded state. When it is necessary to remove the canopy assembly 200 from the accommodating body 100, the fifth connecting members 114 is disengaged from the mating connecting members 2335. In some embodiments, one of each fifth connecting member 114 and each mating connecting member 2335 may be a male connector and the other may be a female connector, and the canopy assembly 200 is kept in the unfolded state when the male connectors are connected to the female connectors. The male connector and the female connector may be, but not limited to, magnetic snap assemblies, buckle assemblies that are engaged with each other.

As can be seen in FIG. 23, in some embodiments, the carrier 1000 may include a side impact protection structure 500 (also referred to as a “protection apparatus” or as an example or a part of the “protection apparatus”), the side impact protection structure 500 may be located on the accommodating body 100 and/or the canopy assembly 200, and the side impact protection structure 500 includes, for example, a side impact protection block 5. When the carrier 1000 is in the use state shown in FIG. 23, the canopy assembly 200 is in the unfolded state, and the side impact protection block 5 is in the use state and corresponds to a side of the accommodating body 100 (more specifically, to at least one of the front and rear sides of the accommodating body 100). Referring to FIG. 24, when the carrier 1000 is secured to the vehicle seat and is subjected to a side impact, the side impact protection block 5 reduces the effect of the side impact (e.g., an impact from a vehicle door) on the accommodating body 100 (in particular, the box body 110) and ensures the

side safety of the pet in the accommodating space 113.

The mating connecting member 2335, in FIG. 23, is connected to the canopy 22 by means of a connecting strap 236. When the mating connecting member 2335 is connected to the fifth connecting member 114, the mating connecting member 2335 is located on the outer side of the fifth connecting member 114. The side impact protection structure 500 includes, for example, a side impact protection block 5 integrated on the housing of the mating connecting member 2335. That is, the side impact protection block 5 is attached to or integrally formed with or formed directly from the housing of the mating connecting member 2335. Alternatively, in some embodiments, the side impact protection block 5 may protrude outwardly relative to the housing of the mating connecting member 2335 as described in the second embodiment of this aspect.

In some embodiments, the housing of the mating connecting member 2335 itself may be used as the side impact protection block 5 by means of changing dimensions of the housing of the mating connecting member 2335.

In some embodiments, for example, in conjunction with FIG. 21, the mating connecting member 2335 is connected, for example, directly to the canopy 22 of the canopy assembly 200, and the fifth connecting member 114 may be connected to the seat fabric 150 of the accommodating body 100 or to the box body 110 by the connecting strap 237. When the mating connecting member 2335 is connected to the fifth connecting member 114, the fifth connecting member 114 is located on the outer side of the mating connecting member 2335. The side impact protection structure 500 may include a side impact protection block 5 integrated onto the housing of the fifth connecting member 114, i.e., the side impact protection block 5 is attached to or integrally formed with the housing of the fifth connecting member 114. Similarly, the housing of the mating connecting member 114 itself may be used as the side impact protection block 5 by means of changing dimensions of the housing of the mating connecting member 114. Alternatively, the side impact protection block 5 may protrude outwardly relative to the housing of the fifth connecting member 114.

In some embodiments, as shown in FIG. 23, the housing of the mating connecting member 2335 or the housing of the fifth connecting member 114 used as the side impact protection block 5 has, for example, a great thickness T and a large side-impact contact area (area of the side-impact contact surface subjected to the side impact) S to achieve a side impact protection effect. In some embodiments, the side-impact contact area S is preferably 40 cm^2 to 80 cm^2. In some embodiments, a height of the housing of the mating connecting member 2335 or the housing of the fifth connecting member 114 used as the side impact protection block 5 that protrudes relative to the accommodating body 100, which is oriented in the same direction as a direction of the thickness T,

may be in a range of 10 mm to 30 mm.

It should be noted that in some embodiments, when the mating connecting member 2335 is connected to the fifth connecting member 114, the mating connecting member 2335 and the fifth connecting member 114 may undergo a relative rotation when subjected to the side impact under the action of the connecting strap 236 or the connecting strap 237. This relative rotation may disperse an instantaneous force direction, so that the mating connecting member 2335 and the fifth connecting member 114 are not easily separated from each other. As a result, in the event of an impact, the canopy assembly 200 can still securely cover the accommodating body 100 without opening the top opening 10 of the accommodating body 100, thereby protecting the pet in the accommodating space 113 from falling out of the accommodating body 100.

Continuing to refer to FIG. 23, in some embodiments, the seat fabric 150 wrapped around the outer surface of the box body 110 may be provided with an open pocket 151 and/or a pocket 153 having a closing member 1531 to provide the user with a plurality of spaces for storing objects. The closing member 1531 may be, but not limited to, for example, a zipper. The pocket 153 may, for example, be a hidden pocket hidden within the seat fabric 150.

Refer to FIG. 24 for a perspective view of the box body 110 and bracket apparatus 120 of the accommodating body 100, and the canopy frame 211 of the canopy assembly 200, and FIG. 25 for a sectional view. In some embodiments, the side impact protection structure 500 may also include a cushioning block 55, the cushioning block 55 is disposed on an inner side 112b of the peripheral wall 112 of the box body 110, and more specifically, on the inner side 112b of the peripheral wall 112 on a front side and/or a rear side (i.e., either side along the longitudinal direction) of the box body 110. The cushioning block 55 is configured to cushion a side impact between the pet in the accommodating space 113 and the box body 110. In some embodiments, the box body 110 is, for example, made of foam material, and the cushioning block 55 is, for example, integrally formed with the box body 110. In some embodiments, a first side of the cushioning block 55 may be attached to the box body 110 by bonding or other ways. The material of the cushioning block 55 may be selected from a material having an elastic shock-absorbing effect, and the cushioning block 55 may have a large area as well as an appropriate thickness.

In some embodiments, when the cushioning block 55 is a single-layer structure, it may, for example, be made of inert memory foam or other suitable materials. When the cushioning block 55 is the multi-layer structure, it may, for example, be a combination of an EPP (expanded polypropylene) material layer, an EPS (expanded polystyrene) material layer, and an EPE (pearl cotton) material layer, or a combination of an inert memory foam material layer and a PE (polyethylene) material layer, or a combination of other suitable material layers.

In some embodiments, a second side of the cushioning block 55 opposite to the first side may be provided with a hard sheet (see FIGS. 41 and 44 for relative relationships between the hard sheet 56 and the box body 110, the accommodating space 113), the hard sheet may be a plastic sheet made of PE (polyethylene), PC (polycarbonate), PP (polypropylene), PVC (polyvinyl chloride), PET (polyethylene terephthalate), PMMA (polymethylene terephthalate), PUMA (polyphenylene terephthalate), PUMA (polyphenylene terephthalate), and PUMA (polypropylene). ester), PMMA (polymethylmethacrylate), etc. Alternatively, the hard sheet may be a metal sheet having high hardness, deformability and toughness. When a pet is impacted with the cushioning block 55 of the accommodating body 100, the hard sheet on the inner surface of the cushioning block 55 can quickly disperse the impact force and avoid over-concentration of the impact force.

In some embodiments, the peripheral wall 112 of the box body 110 and the cushioning block 55 may be provided with a hole structure for ventilation. The hard sheet on the inner surface of the cushioning block 55 may be, for example, T-shaped or H-shaped, and the hard sheet of this configuration may avoid the hole structure on the cushioning block 55.

Sixth embodiment of the first aspect

FIG. 26 shows a perspective view of a carrier 1000 according to a sixth embodiment of the first aspect of the present disclosure, and this embodiment is a variant of the carrier 1000 provided in the above fifth embodiment. In the absence of conflict, the structure of the accommodating body 100 and the canopy assembly 200 of this embodiment may be referred to as described in the above fifth embodiment, and the following primarily describes the differences between this embodiment and the aforementioned fifth embodiment.

Referring to FIG. 26, in this embodiment, an open pocket 152 is provided on the front and/or rear side of the seat fabric 150 wrapped around the outer surface of the box body 110. The pocket 152 is, for example, pasted or sewn to the seat fabric 150 for placing a small object such as a strap. In addition, the pocket 152 may at least partially accommodate the corresponding side impact protection block 5 to avoid the side impact protection block 5 from affecting the appearance or being damaged due to a collision. In some embodiments, an opening edge 1521 of the pocket 152 may be provided as an elastic structure that is elastically extendable, thereby facilitating better placement of the object.

In some embodiments, the fifth connecting member 114 is disposed within the corresponding pocket 152, and the side impact protection block 5 is provided on the mating connecting member 2335. When the mating connecting member 2335 is connected to the fifth connecting member 114, the mating connecting member 2335 and the side impact protection block 5 in the use state are at least partially stowed within the pocket 152.

Seventh embodiment of the first aspect

FIG. 27 shows a side view of a carrier 1000 provided in accordance with the seventh embodiment of the first aspect of the present disclosure. This embodiment is a variant of the carrier 1000 provided in the above fifth embodiment, and the main difference between this embodiment and the fifth embodiment is the implementation of the side impact protection structure 500. In the absence of conflict, the structure of the accommodating body 100 and the canopy assembly 200 of this embodiment may be referred to as described in the above fifth embodiment, and the following primarily describes the differences between this embodiment and the aforementioned fifth embodiment.

Referring to FIG. 27, in this embodiment, a holding pocket 155 is provided on the front and/or rear side of the seat fabric 150 wrapped around the outer surface of the box body 110, the side impact protection structure 500 includes a side impact protection block 5, and the side impact protection block 5 is wrapped within the holding pocket 155. The side impact protection block 5 is disposed below the first bracket 121 of the bracket apparatus 120. The side impact protection block 5 may be a plastic block, and the material of the plastic block is selected, for example, from PC (polycarbonate) plastic, PP (polypropylene) plastic, and the like. Alternatively, the side impact protection block 5 may be made of foam material. The foam material is selected, for example, from EPS, EPP, EPE, inert memory foam (also referred to as inert foam), sponge, and the like. Alternatively, the side impact protection block 5 may be made of a soft gel (the soft gel is for example selected from silicone or rubber). In some embodiments, the side impact protection block 5 may, for example, be made of an elastic member (e.g., a spring, a sheet spring, etc.). When the carrier 1000 is subjected to a side impact. The side impact is transmitted to the box body 110 and/or the bracket apparatus 120 through the side impact protection block 5.

In some embodiments, the holding pocket 155 may be formed by a fabric piece sewn onto an outer surface of the seat fabric 150. The side impact protection block 5 is sandwiched between the fabric piece and the seat fabric 150.

In some embodiments, the holding pocket 155 may be connected to the seat fabric 150 to form a pocket opening, the pocket opening may be provided with a closing member (not shown), and the closing member is, for example, a zipper. The closing member may open or close the pocket opening, such that the side impact protection block 5 is secured within or taken out from the holding pocket 155. In some embodiments, the holding pocket 155 is detachably connected to the seat fabric 150 by the closing member. For example, when the closing member utilizes a zipper, the zipper may be disposed around a periphery of the holding pocket 155 and allow the holding pocket 155 to be detached from the seat fabric 150, which facilitates cleaning the holding pocket 155 and

the replacement of the side impact protection block 5.

In some embodiments, the holding pocket 155 may utilize a cloth pocket, the pocket opening of the cloth pocket is closed by means of sewing or closed by means of an openable closing member after the side impact protection block 5 is loaded into the cloth pocket, and then the cloth pocket is sewn to the outer surface of the seat fabric 150.

It should be noted that based on a different material of the side impact protection block 5, an area of a side-impact contact surface S of the side impact protection block 5, a height of the side impact protection block 5 protruding relative to the seat fabric 150 (also referred to as a thickness of the side impact protection block 5) may be different. For example, when the side impact protection block 5 is made of a plastic block, the area S of the side-impact contact surface of the side impact protection block 5 may be small due to the high hardness and the good impact resistance of the plastic block, for example, in the range of 20 cm^2 to 60 cm^2; and the height of the side impact protection block 5 protruding relative to the seat fabric 150 may be in the range of 40 mm to 100 mm, preferably 75 mm. When the side impact protection block 5 is made of the foam material, the hardness of the side impact protection block 5 is relatively low. In this case, the area S of the side-impact contact surface of the side impact protection block 5 may be large, for example, in the range of 80 cm^2 to 180 cm^2; and the height of the side impact protection block 5 protruding relative to the seat fabric 150 may be in the range of 20 mm to 60 mm, and preferably 40 mm.

Eighth embodiment of the first aspect

FIG. 28 shows a perspective view of a carrier according to an eight embodiment of the first aspect of the present disclosure, and FIG. 29 shows a sectional structure of FIG. 28. As shown, this embodiment is a variant of the carrier 1000 provided in the above seventh embodiment, and the main difference between this embodiment and the seventh embodiment is the implementation of the side impact protection structure 500. In the absence of conflict, the structure of the accommodating body 100 and the canopy assembly 200 of this embodiment may be referred to as described in the above second embodiment, and the following primarily describes the differences between this embodiment and the aforementioned second embodiment.

Referring to FIGS. 28 and 29, in this embodiment, the side impact protection structure 500 may include a side impact protection block 5, the side impact protection block 5 is disposed, for example, on an outer side 112a of a peripheral wall 112 of the box body 110, and more specifically, on an outer side 112a of a peripheral wall 112 of a front side and/or a rear side of the box body 110. When the box body 110 is made of foam material, the side impact protection block 5 may, for example, be integrally formed with the box body 110. Certainly, in some embodiments, the side impact protection block 5 may be attached to the box body 110, for example, by bonding, secondary

forming, snap-fitting, etc. In some embodiments, the box body 110 may be provided with a plurality of hole structures 1101.

In some embodiments, the side impact protection block 5 may be made of foam material, and the side impact protection block 5 may be, for example, rectangular in shape, but not limited to such shape. An area of the side-impact contact surface S of the side impact protection block 5 may be in the range of 80 cm^2 to 180 cm^2, and a thickness D thereof may be within 60 mm, preferably 40 mm. It will be appreciated that the materials, the shapes and the dimensions of the side impact protection block 5 are not limited to the above examples.

For example, in some embodiments, the side impact protection block 5 may include a side-impact contact surface S in a planar shape, and the side-impact contact surface S may be provided with a plurality of bulges evenly spaced apart. In some embodiments, the side-impact contact surface S of the side impact protection block 5 may not be planar, and may for example be a spherical or hemispherical surface.

FIG. 30 shows a variant implementation of the sectional structure shown in FIG. 29, in which a side impact protection structure 500 may further include a cushioning block 55, the cushioning block 55 is disposed on the inner side 112b of the peripheral wall 112 of the box body 110, and more specifically, on the inner side 112b of the peripheral wall 112 on the front and/or rear side of the box body 110. In some embodiments, the positions of the cushioning blocks 55 correspond, for example, with the positions of the side impact protection blocks 5 in one-to-one correspondence. The material of the cushioning block 55 may be referred to the relevant description of the cushioning block 55 in the fifth embodiment. In some embodiments, an inner side of the cushioning block 55 facing the accommodating space 113 may be provided with a hard sheet (referring to the hard sheet 56 in FIG. 34).

It will be appreciated that the accommodating body 100 may further include a seating fabric 150, the seating fabric 150 wrapped around an outer surface of the box body 110 may be wrapped around the side impact protection block 5, and the seating fabric 150 wrapped around an inner surface of the box body 110 may be wrapped around the cushioning block 55, leading to a neat appearance of the accommodating body 100.

Ninth embodiment of the first aspect

FIG. 31 shows the structure of a carrier 1000 according to a ninth embodiment of the first aspect of the present disclosure, and this embodiment is a variant of the carrier 1000 provided in the above fifth embodiment. In the absence of conflict, the structure of the accommodating body 100 and the canopy assembly 200 of this embodiment may be referred to as described in the above fifth embodiment, and the following primarily describes the differences between this embodiment and

the aforementioned fifth embodiment. For example, in this embodiment, it is also possible to include a side impact protection structure provided at the canopy, or additionally another side impact protection structure and the like based on the structure of the aforementioned fifth embodiment is provided, which will be described hereinafter.

In conjunction with FIGS. 31 and 32, in this embodiment, the side impact protection structure 500 includes a side impact protection block 5 connected to a front and/or a rear portion of the canopy 22. When the canopy assembly 200 is in the unfolded state, surfaces of the side impact protection blocks 5 and the canopy 22 in contact with each other are matched with each other in shape.

Referring to the foregoing, it will be appreciated that in some embodiments, the canopy 22 of the canopy assembly 200 may include a shading area 221 and an observation area 222. At least one side impact protection block 5 may be provided at an area of the shading area 221 away from the observation area 222 (corresponding to the front of the canopy 22 in FIG. 31). And/or, at least one side impact protection block 5 may be provided in an area of the observation area 222 away from the shading area 221 (for example, corresponding to the rear of the canopy 22).

Referring to the exemplary structure of the side impact protection block 5 shown in FIG. 32, in some embodiments, the respective side impact protection block 5 may include a sheet integrally formed, and the sheet may be made of foam material (the foam material being selected, for example, from EPS, EPP, EPE, inert memory foam, sponge, or a combination thereof, etc.). The side impact protection block 5 may be secured to the inner side of the canopy 22 by means of sewing. The thickness of the side impact protection block 5 may be in the range of 20 mm to 60 mm, preferably 40 mm. When the canopy assembly 200 is folded, the sheet may be folded along with the canopy 22.

Continuing to refer to FIG. 32, when the side impact protection block 5 in the form of the sheet corresponds to at least two shading sheets 2211 or at least two observation sheets 2221, the side impact protection block 5 accordingly includes at least two sheet parts 511, and a bending part 512 formed between two adjacent sheet parts 511. The dimensions of the respective sheet parts 511 are, for example, approximate to the dimensions of the corresponding shading sheets 2211 or observation sheets 2221. The bending part 512 corresponds to the U-shaped bracket 21 and a transversely extending slit may be included at the bending part 512, allowing the side impact protection block 5 to fit more closely into the arched shape of the protective cover 300 and the canopy 22. Certainly, in some embodiments, the side impact protection block 5 in the form of the sheet may include only one sheet part 511, the shape of the sheet part 511 is matched with the shape of a corresponding shading sheet 2211 or a corresponding observation sheet 2221.

Tenth embodiment of the first aspect

FIG. 33 shows a perspective view of a carrier 1000 provided in accordance with the tenth embodiment of the first aspect of the present disclosure. The carrier 1000 primarily performs a variant of the canopy 22 of the canopy assembly 200 of the carrier 1000 provided in any one of the above embodiments. In the absence of conflict, the structure of the various components of the carrier 1000 of this embodiment and the connection relationships between the components may be described with reference to the above description and will not be repeated herein.

Referring to FIG. 33, a portion of the canopy 22 (e.g., the shading area 221) is provided with a canopy opening 201, and a closing member 223 is provided at the canopy opening 201 and is capable of closing or opening the canopy opening 201. The canopy opening 201 is not in communication with the accommodating space 113 after being opened, but rather exposes the extended observation area 224, and the material and function of the extended observation area 224 may be referred to those of the observation area 222 as described previously. When the extended observation area 224 is not required for use, the canopy opening 201 is closed by the closing member 223, and the extended observation area 224 is then covered by the shading sheets 2211.

In some embodiments, the closing member 223 includes, for example, a zipper chain 2231, a zipper chain 2232 and a zipper head 2233. The zipper chain 2231 and the zipper chain 2232 are connected by the zipper head 2233 to close the canopy opening 201. As can be seen in FIG. 33, the zipper chain 2232 is mounted at an edge 22111 of the shading sheet 2211 for covering the extended observation area 224, and edges 22112 of the shading sheet 2211 adjacent to two ends of the zipper chain 2232 are separated from the skirt 25. In this way, when the closing member 223 fully opens the canopy opening 201, the zipper chain 2231 and the zipper chain 2232 are separated from each other, and the shading sheet 2211 for covering the extended observation area 224 may be folded downwardly to expose the extended observation area 224. It will be appreciated that the implementation of the closing member 223 is not limited to the zipper structure described above.

Furthermore, in this embodiment, the first connecting member 41, which is configured to be connected with the second connecting member 32 of the protective cover 300, may be provided at a suitable location of the skirt 25. The first connecting member 41 may, for example, be a metal loop or a plastic loop, which may be connected to the skirt 25 by a webbing 411.

Referring to FIGS. 33 to 35, in this embodiment, the fifth connecting members 114 are provided on two opposite sides (front and rear sides) of the box body 110. The fifth connecting members 114 may be secured to the seat fabric 150 or may be secured directly to the box body 110 and exposed from the seat fabric 150. Mating connecting members 2335 are provided on corresponding sides of the canopy 22 of the canopy assembly 200 (front and rear of the canopy 22).

More specifically, the mating connecting members 2335 are connected, for example to the skirt 25 of the canopy 22 by means of connecting straps 236. The mating connecting members 2335 are detachably connected to the corresponding fifth connecting members 114. As described in the fifth embodiment, when the mating connecting members 2335 is connected to the fifth connecting members 114, the canopy assembly 200 is kept in the unfolded state and the canopy 22 closes the top opening 10 of the accommodating body 100. In some embodiments, one of the fifth connecting member 114 and the mating connecting member 2335 may be a male connector and the other may be a female connector, and the canopy assembly 200 is kept in the unfolded state when the male connectors are connected to the female connectors. The male connector and the female connector may be, but not limited to, magnetic snap assemblies, buckle assemblies that are engaged with each other.

Referring to FIG. 34, when the mating connecting members 2335 is connected to the fifth connecting members 114 in this embodiment, a mating connecting member 333 located on either the front side or the rear side of the accommodating body 100 itself may be used as a side impact protection block, without the need to configure the mating connecting member 2335 with the side impact protection block 5 shown in FIG. 14 protruding outwardly relative to the housing of the mating connecting member 2335, and without the need to additionally change the dimensions of the housing (e.g., the thickness and the surface area of the housing) of the mating connecting member 2335. In some embodiments, the mating connecting member 2335 protrudes outwardly, for example, relative to the canopy frame 211 by a certain distance Q1 (i.e., a first distance), or the mating connecting member 2335 protrudes outwardly relative to the accommodating body 100 (more specifically, relative to the first bracket 121) by a certain distance Q2 (i.e., a second distance), or relative to the box body 110 by a certain distance Q3 (i.e., a third distance), with $Q1 < Q2 < Q3$, so as to allow the mating connecting member 2335 to provide better side impact protection.

Referring to FIGS. 36 to 38, the structure of a fifth connecting member 114 as well as the connection manner between the fifth connecting member 114 and the accommodating body 100 are exemplarily shown.

Referring to FIG. 38, the housing of the fifth connecting member 114 includes a first buckling body 1141, two first connecting holes 1140 disposed on two opposite sides of the first buckling body 1141, and two first connecting tongues 1143 extending outwardly from two opposite sides of the first buckling body 1141. A magnetic member may be provided within the first buckling body 1141. The first buckling body 1141 has a protrusion 1142 at a central part of the first buckling body 1141, and the protrusion 1142 is, for example, a rounded protrusion. The two first connecting tongues 1143 are adjacent to the two first connecting holes 1140, respectively, and the housing of

the first buckling body 1141 is, for example, integrally injection molded with the two first connecting tongues 1143.

Referring to FIGS. 36 and 37, the fifth connecting member 114 may be connected to the accommodating body 100 by a connecting strap 238. More specifically, two ends 2380 of the connecting strap 238 are folded over after passing through the two first connecting holes 1140 from a side of the first buckling body 1141 facing away from the protrusion 1142, while the two first connecting tongues 1143 are sandwiched within the connecting strap 238, and then the first connecting tongues 1143, the connecting strap 238, and the seating fabric 150 are connected together, e.g., by means of sewing or riveting or the like. In this embodiment, the connecting strap 238, the first connecting tongues 1143, and the seat fabric 150 are specifically connected together by a sewing line 2381 and a sewing line 2382. The first connecting tongues 1143 can effectively prevent the fifth connecting member 114 from flipping around the connecting strap 238, thereby avoiding that the fifth connecting member 114 is flipped over by 180° to cause the protrusion 1142 to face the seat fabric 150.

With reference to FIGS. 34 and 39, in some embodiments, a rigid protective sheet 1181 may also be provided between the seat fabric 150 and the box body 110, and a position of the protective sheet 1181 corresponds to that of the fifth connecting member 114. The protective sheet 1181 may, for example, be a hard sheet, and the hard sheet may, for example, refer to the description of the hard sheet in the fifth embodiment. In this way, when the fifth connecting member 114 is subjected to a side impact, the protective sheet 1181 can quickly disperse the impact force, to avoid the impact force from being too concentrated to possibly damage the box body 110 made of foam material.

Referring to FIG. 39, in some embodiments, the sewing line 2381 and sewing line 2382 for sewing the connecting strap 238, the first connecting tongue 1143, and the seat fabric 150 may also be connected to the protective sheet 1181, which ensures a relative position of the protective sheet 1181 and the fifth connecting member 114. In some embodiments, the protective sheet 1181 may, for example, be secured to a pad 1182. The pad 1182 may include, for example, a single-layer or multi-layer structure made of fabric. In this embodiment, the protective sheet 1181 (shown in dashed lines in FIG. 39) is connected to the pad 1182, for example, by the sewing line 1081, and the sewing line 1081 is routed, for example, around a periphery of the protective sheet 1181. In some embodiments, the protective sheet 1181 may be connected to the pad 1182, for example, by adhesive bonding or riveting. In some embodiments, the pad 1182 is adjacent to the box body 110, the protective sheet 1181 is adjacent to the seat fabric 150, and an area of the pad 1182 is not smaller than that of the protective sheet 1181, which prevents the protective sheet 1181 from directly contacting the box body 110 made of foam material and causing wear of the box body 110.

Certainly, in some embodiments, the area of the pad 1182 may also be smaller than that of the protective sheet 1181.

Continuing to refer to FIG. 39, in some embodiments, the seat fabric 150 includes, for example, a sewing line 1501, a sewing line 1502, a sewing line 1503, and a sewing line 1504 arranged in a top-to-bottom sequence, and the respective sewing lines are configured to sew two adjacent portions (include but not limited to, the fabric) of the seat fabric 150 together. The sewing line 1502 is connected, for example, to both of the protective sheet 1181 and the pad 1182. The fabric disposed between the sewing line 1503 and the sewing line 1504 corresponds, for example, to a turning portion between the peripheral wall 112 and the bottom part 111 of the box body 110, and a bottom edge of the protective sheet 1181 is disposed, for example, above the sewing line 1503. At this point, the sewing line 1081 may be broken at the bottom of the protective sheet 1181 without forming a closed loop, so that the pad 1182 can be easily bent and connected to the seat fabric 150 by the sewing line 1503, while the sewing line 1503 need not to be connected to the protective sheet 1181. Certainly, in other embodiments, the seat fabric 150 may be implemented in other ways, and the manner in which the pad 1182 is connected to the protective sheet 1181 and the pad 1182 is connected to the seat fabric 150 is not limited to the above examples.

Referring to FIG. 40, a mating connecting member 2335 structure is exemplarily shown. The mating connecting member 2335 includes, for example, a second buckling body 23351, a second connecting hole 23350 located on one side of the second buckling body 23351, and a second connecting tongue 23353 extending outwardly from the side on which the second connecting hole 23350 is disposed. A magnetic member may be provided within the second buckling body 23351. The central part of the second buckling body 23351 has a recess 23352, and the recess 23352 is configured to be buckled with the protrusion 1142 of the first buckling body 1141 in a magnetically attractive manner. In conjunction with FIG. 34 and 35, the mating connecting member 2335 may be connected to the skirt 25 by the connecting strap 236. More specifically, the connecting strap 236 passes through the second connecting hole 23350 and has portions respectively disposed on two sides of the second connecting tongue 23353. The portions of the connecting strap 236 disposed on the two sides of the second connecting tongue 23353 may be connected to the second connecting tongue 23353 by means of sewing or riveting. In this embodiment, the connecting strap 236 is connected to the second connecting tongue 23353 by sewing 2361.

Referring again to FIGS. 33 and 35, when the mating connecting member 2335 and the fifth connecting member 114 are connected and subjected to a side impact, a middle portion of the canopy 22 is securely connected to a canopy locking part 124 of the accommodating body 100 by the canopy locking apparatus 24 (referring to the description in the above second embodiment), and

the canopy 22 is relatively easy to be detached from the accommodating body 100 from the front or from the rear. In this embodiment, since the front or the rear of the canopy 22 is connected to the mating connecting member 2335 by the connecting strap 236, the mating connecting member 2335 is rotatable in a direction of N1 or N2 relative to the fifth connecting member 114 (the connecting strap 236 may limit a rotation angle of the mating connecting member 2335 in the direction of N1 or N2 to be less than 90 degrees). This relative rotation may disperse an instantaneous force direction, so that the mating connecting member 2335 and the fifth connecting member 114 are not easily separated from each other, thereby avoiding separation of the front or rear of the canopy 22 from the accommodating body 100.

Eleventh embodiment of the first aspect

FIG. 41 shows a partially sectional view of a carrier 1000 according to an eleventh embodiment of the first aspect of the present disclosure. In the absence of conflict, the structure of the carrier 1000 shown in this embodiment may be referred to the above description of the carrier 1000 shown in FIG. 34. It should be noted that the structure of the carrier 1000 shown in FIG. 34 is generally used in small to medium sized carriers. For the small to medium sized carriers, since the accommodating body 100, the canopy assembly 200, and the protective cover 300 are all small in size and light in weight, a carrying handle 23 may be provided on the canopy 22 and the user may lift the carrier 1000 by using the carrying handle 23. The structure of the carrier 1000 shown in FIG. 41 is generally used in medium to large sized carriers 1000. For the medium to large sized carriers, since the accommodating body 100, the canopy assembly 200, and the protective cover 300 are all large in size and heavy in weight, a handle 29 may be mounted on the accommodating body 100, and the user may lift the carrier 1000 by using the handle 29.

Referring to FIG. 41, an outer side 112a of the peripheral wall 112 of the box body 110 may be provided with a side impact protection block 5, and the implementation of the side impact protection block 5 may be referred to the description of the side impact protection block 5 in the eighth embodiment of this aspect. In this embodiment, the position of the side impact protection block 5 corresponds to that of the fifth connecting member 114 and the protective sheet 1181, the side impact protection block 5 may be made of energy-absorbing foam and located below the first bracket 121, and the side impact protection block 5 may further enhance the side impact protection performance of the accommodating body 100.

With reference to FIGS. 41 and 44, in some medium to large carriers 1000, a slot structure 1112 may be provided on an inner side 112b of the peripheral wall 112 of the box body 110 of the accommodating body 100, and a cushioning block 55 may be mounted in the slot structure 1112 and protrudes relative to the inner side 112b. The cushioning block 55 is configured to cushion a side

impact between the pet in the accommodating space 113 and the box body 110. In some embodiments, an inner side 55b of the cushioning block 55 facing away from the peripheral wall 112 may be provided with a hard sheet 56, and the hard sheet 56 may be a plastic sheet made of PE (polyethylene), PC (polycarbonate), PP (polypropylene), PVC (polyvinyl chloride), PET (polyethylene terephthalate), PMMA (polymethylene terephthalate), PUMA (polyphenylene terephthalate), PUMA (polyphenylene terephthalate), and PUMA (polypropylene). ester), PMMA (polymethylmethacrylate), etc. In some embodiments, the cushioning block 55 and the hard sheet 56 may both be T-shaped. Alternatively, for the medium to large carriers 1000, instead of providing a carrying handle on the canopy 22, it may be possible to mount a rigid handle 29 on the bracket apparatus 120, by which the accommodating body 100 may be easily moved.

It should be noted that the fifth connecting member 114 and its protrusion 1142 may also be used as a side impact protection block when the canopy 22 is not connected to the accommodating body 100. When the fifth connecting member 114 is subjected to a side impact, the protrusion 1142 may transmit the impact force toward the protective sheet 1181, the side impact protection block 5, and the box body 110. The protective sheet 1181 may quickly disperse the impact force, the side impact protection block 5 may cushion the impact force and absorb energy, and the box body 110 made of foam material itself may also absorb the impact force. When the canopy 22 is connected to the accommodating body 100, the mating connecting member 2335 is connected to the fifth connecting member 114 , and the recess 23352 of the mating connecting member 2335 and the protrusion 1142 of the fifth connecting member 114 are engaged in a concave-convex manner to increase the surface area for transmitting the impact force (for the integrally formed side impact protection block, no such transmitting transition area is provided), which improves the impact force transmitting and dispersion effect. In addition, the interior of the protrusion 1142 may include a metal structure to stabilize the structure of the protrusion 1142, thereby better transmitting the impact force.

Additionally, the bracket apparatus 120 of the accommodating body 100 may also provide side impact protection. For example, when the accommodating body 100 is subjected to a large side impact that deforms the box body 110, the deformed box body 110 transmits the impact force to the bracket apparatus 120 and may transmit the impact force to the snap-in seat by the third bracket 123 of the bracket apparatus 120.

Twelfth embodiment of the first aspect

FIGS. 45 to 47 shows perspective views of a protective cover provided according to the twelfth embodiment of the first aspect of the present disclosure. FIG. 48 shows the internal structure of the cover body 31 of the protective cover 300. FIGS. 49 and 50 show perspective views of two

impact resistant bodies 311. The protective cover 300 provided in this embodiment serves the same function as the protective cover 300 in the first embodiment. The protective cover 300 is configured to cover at least a part of the canopy assembly 200 of the carrier 1000, to improve the impact resistance of the covered area of the canopy assembly 200. In addition, similar to the first embodiment, the "protective cover" of this embodiment may also serve as an example or a part of a "protection apparatus".

Referring to FIGS. 45 to 47, the protective cover 300 may include a cover body 31 and at least one second connecting member 32. The cover body 31 extends in the transverse direction (i.e., the left-right direction of the accommodating body 100) to cover the front or the rear of the canopy assembly 200 in the transverse direction. The cover body 31 in this embodiment has a shape of narrow at both ends and wide in the middle, and two hook clasps are provided at two ends of the cover body 31, and the two hook clasps are used as two second connecting members 32. The two second connecting members 32 are configured to be detachably connected to the two first connecting members 41 on the accommodating body 100 or on the canopy assembly 200. As can be seen in conjunction with the description of the above first embodiment, the implementation of the second connecting members 32 is not limited to hook clasps.

Referring to FIGS. 45 and 47, the cover body 31 includes an outer fabric layer 301 and an inner fabric layer 302. When the protective cover 300 is in a use state, the cover body 31 is arched, with the outer material layer 301 facing away from the canopy assembly 200 and the inner fabric layer 302 facing the canopy assembly 200. Both of the outer fabric layer 301 and the inner fabric layer 302 may be made of fabric. In some embodiments, the outer fabric layer 301 and the inner fabric layer 302 may both be formed by a plurality of fabric pieces joined together. In this embodiment, the outer fabric layer 301 may be formed by a fabric piece 3a, a fabric piece 3b, and a fabric piece 3c joined together. The fabric piece 3c corresponds, for example, to the skirt 35 of the cover body 31. The second connecting member 32 is connected, for example, to the fabric piece 3c. Two ends of the fabric piece 3a are connected to two ends of the fabric piece 3c, and the fabric piece 3b is connected between the fabric piece 3a and the fabric piece 3c. The inner fabric layer 302 may be formed by a fabric piece 3d and a fabric piece 3e joined together. In some embodiments, the fabric piece 3d corresponds, for example, to the fabric piece 3a. The fabric piece 3e corresponds, for example, to the fabric piece 3b and the fabric piece 3c. Certainly, in other embodiments, the implementations of the outer fabric layer 301 and the inner fabric layer 302 are not limited to those described above.

Referring to FIG. 48, the outer fabric layer 301 and the inner fabric layer 302 define one or more receiving spaces 313 in which one or more impact resistant bodies 311 are disposed (the

contour of the respective impact resistant bodies 311 are shown with dashed lines in FIG. 48), and the sizes of the outer contours of the respective impact resistant bodies 311 correspond, for example, to those of the corresponding receiving spaces 313. When the protective cover 300 is in the use state, the respective impact resistant bodies 311 of the protective cover 300 may provide better impact protection for the canopy assembly 200.

Continuing to refer to FIG. 48 and in conjunction with FIG. 34, in some embodiments, when the size of the protective cover 300 is matched with a small to medium sized carrier 1000 of a small size, the outer fabric layer 301 and the inner fabric layer 302 define, for example, two receiving spaces 313. The two receiving spaces 313 are a first receiving space 3131 and a second receiving space 3132. Both of the first receiving space 3131 and the second receiving space 3132 extend substantially in a transverse direction. The first receiving space 3131 and the second receiving space 3132 are arranged sequentially along a longitudinal direction. The first receiving space 3131 corresponds, for example, to an area covered by the fabric piece 3d, and the second receiving space 3132 corresponds, for example, to an area covered by the fabric piece 3e. Two impact resistant bodies 311 are provided in the two receiving spaces 313, respectively, and the two impact resistant bodies 311 are a first impact resistant body 3111 and a second impact resistant body 3112. The first impact resistant body 3111 is located in the first receiving space 3131 and the second impact resistant body 3112 is located in the second receiving space 3132. The two receiving spaces 313 are spaced apart, for example, by a structure such as a sewing line 317 or a bond line connecting the outer fabric layer 301 and the inner fabric layer 302. In this way, the respective impact resistant bodies 311 are located within the corresponding receiving spaces 313 and are not easily displaced into other receiving spaces 313. In some embodiments, the sewing line 317 extends, for example, along the junction between the fabric piece 3d and the fabric piece 3e.

Referring to FIGS. 48 and 49, in some embodiments, the first impact resistant body 3111 may be in a single-layer structure, for example, made of a single-layer sheet. The first impact resistant body 3111 extends in a transverse direction to act as a support for the outer fabric layer 301 and the inner fabric layer 302 while providing impact protection. The single-layer sheet may, for example, be a soft sheet made of a cushioning material. In some embodiments, the soft sheet may, for example, be made of foam material. The foam material may, for example, be EPP, EPS, EPO (expanded polystyrene polyethylene blend), EPE, etc. In some embodiments, the soft sheet may be made of foam (e.g., inert memory foam). Certainly, in other embodiments, the first impact resistant body 3111 as a whole may be in a multi-layer structure, or a transverse middle area of the first impact resistant body 3111 (corresponding to the transverse middle area of the cover body 31) may be in a multi-layer structure. The multi-layer structure may be formed by stacking multiple layers of

sheets. The multiple layers of sheets may include at least one soft sheet and at least one hard sheet. Alternatively, the multiple layers of sheets may all be soft or hard sheets. Adjacent sheets may be secured together by adhesive bonding, or the multiple layers may be bound together by straps. Certainly, in some embodiments, the first impact resistant body 3111 may also be made of a single-layer hard sheet, which may, for example, be a plastic sheet.

Referring to FIGS. 48 and 50, at least a portion of the second impact resistant body 3112 may be in a multi-layer structure, to at least partially enhance the impact protection of the second impact resistant body 3112. Certainly, in some embodiments, the second impact resistant body 3112 may also be made of a single-layer soft sheet or a single-layer hard sheet. Alternatively, in some embodiments, the second impact resistant body 3112 as a whole may be the multi-layer structure. Specific embodiments of the multi-layer structure may be referred to the above description of the multi-layer structure of the first impact resistant body 3111.

In this embodiment, it is considered that when the pet's head is located below the protective cover 300, the transverse middle area of the second impact resistant body 3112 is closer to the pet's head and is more susceptible to impact. In this way, a middle impact resistant part 3110 is provided at the transverse middle area of the second impact resistant body 3112, and the middle impact resistant part 3110 is a multi-layer structure, which can partially enhance the impact resistant protection effect of the transverse middle area of the second impact resistant body 3112 and effectively reduce costs.

FIG. 50 shows an exemplary embodiment of the second impact resistant body 3112. The second impact resistant body 3112 includes a transversely extending sheet 31121, a sheet 31122 is provided at the transverse middle area of the sheet 31121, and the sheet 31122 is provided with a sheet 31123. Both of the sheet 31121 and the sheet 31122 may be soft sheets, and the sheet 31123 may be a hard sheet. The multi-layer structure of the middle impact resistant part 3110 includes a sheet 31121, a sheet 31122, and a sheet 31123 stacked together, with adjacent sheets fixed together, for example, by adhesive bonding. The sheet 31121 is adjacent to the outer fabric layer 301 and the sheet 31123 is adjacent to the inner fabric layer 302. The size of the outer contour of the sheet 31121 corresponds to the size of the second receiving space 3132, and the transversely extending sheet 31121 provides the outer material layer 301 a relatively flat appearance while supporting the outer material layer 301 and the inner fabric layer 302. A periphery of the sheet 31122, for example, does not protrude relative to the sheet 31121. A periphery of the sheet 31123, for example, does not protrude relative to the sheet 31122, which prevents the edges of the hard sheet 31123 from wearing through the inner fabric layer 302 when pressed. Certainly, in some embodiments, the periphery of the sheet 31123 may also protrude from the sheet 31122, i.e., the size of the sheet 31123 may be

larger than that of the sheet 31122. In some embodiments, corners of the sheet 31123 are circular arc-shaped. In some embodiments, a portion of the middle impact resistant part 3110 extends to the skirt 35 and may provide side impact protection.

In some embodiments, the sheet 31121 may, for example, be made of foam material, which may, for example, be EPP, EPS, EPO (expanded polystyrene polyethylene blend), EPE, etc. The sheet 31122 may be made of foam (e.g., inert memory foam). The sheet 31123 is, for example, a plastic sheet. In some embodiments, the rigid plastic sheet may be made of PE (polyethylene), PC (polycarbonate), PP (polypropylene), PVC (polyvinyl chloride), PET (polyethylene terephthalate), PMMA (polymethyl methacrylate), etc. In the case where the sheet 31123 is a hard sheet, the sheet 31123 can disperse the impact force and avoid the impact force from being too concentrated when the pet is impacted with the sheet 31123.

FIGS. 51 and 52 show a variant implementation of the second impact resistant body 3112 shown in FIG. 50, and FIG. 53 shows a partially sectional view of a carrier 1000 configured with a protective cover 300 including this second impact resistant body 3112. Referring to FIGS. 51 and 52, in the variant implementation of the second impact resistant body 3112, a sheet 31122 is provided in a transverse middle area of the sheet 31121, a sheet 31123 is provided on the sheet 31122, a sheet 31124 is provided on the sheet 31123, and a sheet 31125 is provided on the sheet 31124.

In some embodiments, the sheets of the second impact resistant body 3112 adjacent to each other are fixed together, for example, by means of adhesive. The sheet 31121 is, for example, a flexible sheet (include but not limited to, an EPP sheet). A transverse dimension of the sheet 31122 may be smaller than that of the sheet 31121 and a longitudinal dimension of the sheet 31122 is not larger than that of the sheet 31121. The material of the sheet 31122 is, for example, the same as that of the sheet 31124, and both of the sheet 31122 and the sheet 31124 are soft sheets (include but not limited to, foam sheets) having a thick thickness. The material of the sheet 31123 is, for example, the same as that of the sheet 31125, and both of the sheet 31123 and the sheet 31125 are hard sheets (include but not limited to, PE sheets) having a thin thickness. A dimension of the sheet 31123 may be smaller than that of the sheet 31122. A transverse dimension of the sheet 31124 may be larger than that of the sheet 31123, but not larger than that of the sheet 31122. A dimension of the sheet 31125 may be smaller than that of the sheet 31124. With reference to FIGS. 51 to 53, the second impact resistant body 3112 is, for example, step-shaped. The sheet 31124 is positioned, in a longitudinal direction, corresponding to an upper offset position of the sheet 31121 and substantially above the box body 110.

Certainly, the implementation of the second impact resistant body 3112 is not limited to the

above examples. Referring to FIGS. 54 and 55, in some alternative embodiments, upper ends of the respective sheets of the second impact resistant body 3112 are flush with one another, and/or lower ends of the respective sheets of the second impact resistant body 3112 are flush with one another. In FIG. 54, the upper ends of the respective sheets of the second impact resistant body 3112 are flush. In FIG. 55, both the upper ends and the lower ends of the respective sheets of the second impact resistant body 3112 are flush with one another.

In some embodiments, the sheet 31123 and the sheet 31125 may all be designed with rounded corners, which prevents the edges of the hard sheet 31123 from wearing through the inner fabric layer 302 when pressed. The periphery of the sheet 31123, for example, does not extend beyond the periphery of the sheet 31122, and the periphery of the sheet 31125, for example, does not extend beyond the periphery of the sheet 31124. Certainly, in some alternative embodiments, at least a portion of the periphery of the sheet 31123 may extend beyond the periphery of the sheet 31122 and at least a portion of the periphery of the sheet 31125 may extend beyond the periphery of the sheet 31124.

Thirteenth embodiment of the first aspect

FIGS. 56 to 58 shows perspective views of a protective cover provided according to the thirteenth embodiment of the first aspect of the present disclosure. FIG. 59 schematically shows an internal structure of the protective cover shown in FIG. 58. FIGS. 60 to 62 show perspective views of three impact resistant bodies 311. The protective cover 300 provided in this embodiment is a variant of the protective cover 300 provided in the above twelfth embodiment, and the following primarily describes the differences between the protective cover 300 of this embodiment and the protective cover 300 of the twelfth embodiment. In addition, the “protective cover” of this embodiment may also serve as an example or a part of a “protection apparatus”.

Referring to FIGS. 56 to 58, a cover body 31 of the protective cover 300 includes an outer fabric layer 301 and an inner fabric layer 302. The outer fabric layer may include a fabric piece 3f, a fabric piece 3g, a fabric piece 3h and a fabric piece 3i. The fabric piece 3i corresponds, for example, to the skirt 35 of the cover body 31, and the second connecting member 32 is connected, for example, to the fabric piece 3i. Two ends of the fabric piece 3f are connected to two ends of the fabric piece 3i, respectively. The fabric piece 3g and the fabric piece 3h are sequentially arranged along the longitudinal direction and connected between the fabric piece 3f and the fabric piece 3i. The inner fabric layer 302 may be formed by the fabric piece 3j, the fabric piece 3k and the fabric piece 3m joined together. Two ends of the fabric piece 3j are connected to two ends of the fabric piece 3m, respectively, and the fabric piece 3k is connected between the fabric piece 3j and the fabric piece 3m. In some embodiments, the fabric piece 3j corresponds, for example, to the fabric

piece 3f, the fabric piece 3k corresponds, for example, to the fabric piece 3g and the fabric piece 3h, and the fabric piece 3m corresponds, for example, to the fabric piece 3i. Certainly, in other embodiments, the implementations of the outer fabric layer 301 and the inner fabric layer 302 are not limited to those described above.

Referring to FIG. 59 and in conjunction with FIGS. 41 to 43, in some embodiments, the outer fabric layer 301 and the inner fabric layer 302 define, for example, three receiving spaces 313 when the protective cover 300 is matched with to a medium to large sized carrier 1000 of a large size. The three receiving spaces 313 are a third receiving space 3133, a fourth receiving space 3134, and a fifth receiving space 3135. Each of the three receiving spaces 313 extends along a transverse direction, and the three receiving spaces 313 are sequentially arranged along a longitudinal direction. The third receiving space 3133 corresponds, for example, to an area covered by the fabric piece 3j, the fourth receiving space 3134 corresponds, for example, to an area covered by the fabric piece 3k, and the fifth receiving space 3135 corresponds, for example, to an area covered by the fabric piece 3m.

The three receiving spaces 313 are provided with three impact resistant bodies 311 (the contour of each impact resistant body 311 is shown with dashed lines in FIG. 59), and the three impact resistant bodies 311 are respectively a third impact resistant body 3113, a fourth impact resistant body 3114, and a fifth impact resistant body 3115. The third impact resistant body 3113 is located within the third receiving space 3133, the fourth impact resistant body 3114 is located within the fourth receiving space 3134, and the fifth impact resistant body 3115 is located within the fifth receiving space 3135. The dimensions of the outer contour of the respective impact resistant bodies 311 correspond, for example, to the dimensions of the corresponding receiving spaces 313. Adjacent receiving spaces 313 are spaced apart, for example, by a structure such as a sewing line 318, a sewing line 319, or a bond line connecting the outer fabric layer 301 and the inner fabric layer 302. In some embodiments, the sewing line 318 extends along the junction between the fabric piece 3j and the fabric piece 3k, and the sewing line 319 extends along the junction between the fabric piece 3m and the fabric piece 3j, the fabric piece 3k.

Referring to FIGS. 59 and 60, and in conjunction with FIG. 41, the third impact resistant body 3113 may be in a single-layer structure, i.e., a better impact protection effect can be achieved. The third impact resistant body 3113 of the single-layer structure may be a single-layer soft sheet or a single-layer hard sheet, and the specific implementation of the single-layer soft sheet or the single-layer hard sheet may be referred to the above description of the first impact resistant body 3111 in the twelfth embodiment. In this embodiment, the third impact resistant body 3113 is, for example, a single-layer soft sheet that extends transversely. Certainly, in some embodiments, the

transverse middle area of the third impact resistant body 3113 may be in a multi-layer structure to partially enhance the impact resistance of the transverse middle area of the third impact resistant body 3113. Alternatively, in some embodiments, the third impact resistant body 3113 as a whole may be in a multi-layer structure. Specific implementation of the multi-layer structure may be referred to the description of the multi-layer structure in the twelfth embodiment.

Referring to FIGS. 59 and 61, and in conjunction with FIGS. 41 and 42, in some embodiments, either the fourth impact resistant body 3114 as a whole or a transverse middle area of the fourth impact resistant body 3114 is in a multi-layer structure, to at least partially enhance the impact resistance of the fourth impact resistant body 3114. Specific implementation of the multi-layer structure may be referred to the description of the multi-layer structure in the twelfth embodiment.

In this embodiment, the fourth impact resistant body 3114 may include a sheet 31141, a sheet 31142, and a sheet 31143. The sheet 31141 is adjacent to the outer fabric 301 and the sheet 31143 is adjacent to the inner fabric 302. The sheet 31141 may be a soft sheet, the material of which may be, but not limited to, for example, EPP. The sheet 31141 extends transversely inside the fourth receiving space 3134, an outer contour size of the sheet 31141, for example, corresponds to the size of the corresponding fourth receiving space 3134, to support the outer fabric layer 301 and the inner fabric layer 302, as well as to provide the outer fabric layer 301 a flat appearance. The sheet 31142 may also be a soft sheet, the material of which may be, but not limited to, for example, inert memory foam. The sheet 31142 may have a smaller area than the sheet 31141 and is secured to the lateral center of the sheet 31141, for example, by adhesive bonding. The sheet 31143 may be a hard sheet, so that when the pet is impacted with the sheet 31143, the hard sheet 31143 disperses the impact force to avoid over-concentration of the impact force.

In some embodiments, the size of the outer contour of the sheet 31143 corresponds, for example, to the size of the fourth receiving space 3134, and the sheet 31143 has a shape that is narrow at both ends and wide in the middle. As required, a plurality of sheets of the fourth impact resistant body 3114 may be stacked without being secured to each other, e.g., by adhesive bonding, alternatively, at least some of the adjacent sheets of the fourth impact resistant body 3114 may be secured together by adhesive bonding. For example, in some embodiments, when the protective cover 300 is matched with accommodating body 100 and the canopy assembly 200 has small sizes, the protective cover 300 also has a small size, and all or at least a portion of the adjacent sheets of the fourth impact resistant body 3114 may be secured together by means of adhesive bonding. The plurality of sheets of the fourth impact resistant body 3114 secured by adhesive bonding are also less prone to debonding when the protective cover 300 of a small size is squeezed or bent. When the protective cover 300 is matched with the accommodating body 100 and the canopy assembly 200

having large sizes, the protective cover 300 also has a large size, and some sheets (e.g., but not limited to a hard sheet) of the fourth impact resistant body 3114 and their adjacent sheets on at least one side may be stacked together without being secured together by adhesive bonding or the like, which prevents the hard sheet from debonding due to arcing of deformation when the protective cover 300 is squeezed or bent. The connection manner of the plurality of sheets of the fourth impact resistant body 3114 is configured as required, so that the fourth impact resistant body 3114 can better fit and support the outer and inner fabric layers of the protective cover 300 to avoid wrinkles.

In some embodiments, notches 31140 extending toward the middle of the sheet 31143 are provided at two ends of the sheet 31143, and the notches 31140 provide deformation allowance for the sheet 31143, avoiding wrinkles that may cause the protective cover 300 to be uneven. In some embodiments, corners of the sheet 31143 are circular arc-shaped to avoid puncturing the inner fabric layer 302. Moreover, in some embodiments, the periphery of the sheet 31143, for example, does not protrude relative to the sheet 31141, which prevents the edges of the hard sheet 31143 from wearing through the inner fabric layer 302 when pressed.

Referring to FIGS. 61 and 63, in some embodiments, a transversely extending slit 311420 may be provided at the middle of the sheet 31142, and the slit 311420 may be deformed according to a morphology change of the sheet 31143, so as to facilitate a better fit of the soft sheet 31142 and the hard sheet 31143, as well as a better fit of the sheet 31142 and the sheet 31141, such that the fourth impact resistant body 3114 fits more closely into the arched shape of the protective cover 300 and the canopy 22.

Referring to FIGS. 59, 61, and 63, in some embodiments, when the same impact resistant body 311 includes a plurality of sheets and the sheets in the plurality of sheets are not secured together, at least one spacer layer 315 may be disposed in the receiving space 313 accommodating the plurality of sheets, and the spacer layer 315 is an intermediate fabric layer disposed between the inner fabric layer 302 and the outer fabric layer 301 and may be an inner fabric. The spacer layer 315 may divide the receiving space 313 into at least two layered spaces, and the sheets that are not secured together are mounted into the corresponding layered spaces. The respective spacer layers 315 help to locate the positions of the sheets that are not secured together. Specifically in this embodiment, one spacer layer 315 may be provided in the fourth receiving space 3134, and the spacer layer 315 divides the fourth receiving space 3134 into a layered space 31341 and a layered space 31342. The sheets 31141 and the sheet 31142 secured together are accommodated in the layered space 31341, and the sheets 31143 are accommodated in the layered space 31342. Certainly, in some embodiments, no spacer layer 315 is provided in the receiving space 313, the impact resistant body 311 corresponding to the receiving space 313 with no spacer layer 315 may include a plurality of

sheets, the plurality of sheets may be unbonded to each other, or sequentially bonded, or partially bonded and partially unbonded, and the impact resistant body 311 may be accommodated directly in the receiving space 313 with no spacer layer 315.

Referring to FIGS. 59 and 62, and in conjunction with FIGS. 41 and 43, the skirt 35 is wrapped around the outside of the top opening 10 of the accommodating body 100 when the protective cover 300 is in the use state. The fifth impact resistant body 3115 corresponds to the skirt 35. In some embodiments, the fifth impact resistant body 3115 may be a single-layer structure, such as a single-layer soft sheet or a single-layer hard sheet. The specific implementation of the single-layer soft sheet or the single-layer hard sheet may be referred to the above description of the first impact resistant body 3111 in the twelfth embodiment. In some embodiments, the fifth impact resistant body 3115 may also have a multi-layer structure overall or a multi-layer structure in the transverse middle area. Specific implementation of the multi-layer structure may be referred to the description of the multi-layer structure in the twelfth embodiment of this aspect. By making the transverse middle area of the fifth impact resistant body 3115 in the multi-layer structure, the fifth impact resistant body 3115 may also provide side impact protection.

Referring to FIG. 62, specifically in this embodiment, the fifth impact resistant body 3115 may include a transversely extending sheet 31151, a sheet 31152 stacked on a transverse middle area of the sheet 31151, and a sheet 31153 stacked on the sheet 31152. The sheet 31151 is, for example, adjacent to the outer fabric layer 301, and the size of the outer contour of the sheet 31151 corresponds to the size of the fifth receiving space 3135 to serve to support the outer fabric layer 301 and the inner fabric layer 302. The sheet 31153 is, for example, adjacent to the inner fabric layer 302.

The respective sheets (the sheet 31151, the sheet 31152, and sheet 31153) of the fifth impact resistant body 3115 may be secured together by adhesive bonding, or the respective sheets may be bound together by strips 31154. The sheet 31151 and the sheet 31153 may be soft sheets of the same material, the material of which may be, but not limited to, for example, EPP. The sheet 31152 may also be a soft sheet, and the material of sheet 31152 may be, but not limited to, for example, inert memory foam. In some embodiments, the materials of sheet 31151, sheet 31152, and sheet 31153 may be the same or completely different.

FIGS. 64 and 65 show a variant implementation of the fourth impact resistant body 3114 shown in FIG. 61. Referring to FIGS. 64 and 65, the hard sheet 31143 may be further provided with a sheet 31145 and a sheet 31146, both of which are, for example, soft sheets. The sheet 31145 is secured to the sheet 31143 for example by adhesive bonding, and the sheet 31146 is secured to the sheet 31145 for example by adhesive bonding. The material of the sheet 31145 is, for example, the

same as the material of the sheet 31142 (include but not limited to, foam), and the material of the sheet 31146 is, for example, the same as the material of the sheet 31141 (include but not limited to, EPP sheet). A notch 31140 divides sheet 31143 into two portions of upper and lower portions, which are respectively an upper portion 311431 and a lower portion 311432. Transverse middle positions of the upper portion 311431 and the lower portion 311432 are connected, and lower portion 311432 is closer to the skirt 35 relative to the upper portion 311431. Referring to FIGS. 64 to 66, the sheet 31145 and sheet 31146 are located, for example, at the transverse middle position of the lower portion 311432 and may have an intermediate protrusion 31147 extending towards the upper portion 311431, and the intermediate protrusion 31147 is configured not to shield the notch 31140 so as not to be affect sheet 31143 to be deformed in accordance with the shape of the protective cover.

FIGS. 66 and 67 show a variant implementation of the fourth impact resistant body 3114 shown in FIG. 64. As can be seen from FIGS. 66 and 67, in addition to the sheet 311445 and the sheet 31146 provided on the lower portion 311432, a sheet 31148 and a sheet 31149 are provided at the transverse middle position of the upper portion 311431, and the sheet 31148 and the sheet 31149 are, for example, soft sheets. The sheet 31148 is secured to the upper portion 311431 for example by adhesive bonding, and the sheet 31149 is secured to the sheet 31148 for example by adhesive bonding. The material of the sheet 31148 is for example the same as the material of sheet 31145. The material of the sheet 31149 is for example the same as the material of sheet 31146.

Fourteenth embodiment of the first aspect

FIG. 68 shows a partially sectional view of a carrier 1000 provided in accordance with the fourteenth embodiment of the first aspect of the present disclosure. The carrier 1000 is mounted with a protective cover 300, the protective cover 300 includes a third impact resistant body 3113 shown in FIG. 60, a fourth impact resistant body 3114 shown in FIG. 64, and a fifth impact resistant body 3115 shown in FIG. 62. In the absence of conflict, the structure of the carrier 1000 provided in this embodiment may be referred to the above description of the carrier 1000 shown in FIG. 41 and will not be repeated herein.

It should be noted that the carrier 1000 provided in any of the embodiments (include but not limited to, the fifth embodiment to the tenth embodiment) of the present disclosure may be configured with a protective cover 300 provided in accordance with the embodiments of the present disclosure. The structure of the protective cover 300 and the engaging relationships thereof with the accommodating body 100 and the canopy assembly 200 may be referred to the above description, and will not be repeated herein. It should be understood that it is sufficient that the protective cover 300 is capable of being connected with the accommodating body 100 and/or the canopy assembly

for covering at least a part of the canopy assembly (preferably, the front and/or the rear of the canopy assembly) when the canopy assembly is in the unfolded state. The protective cover 300 may be, but not limited to, the specific implementations exemplified in the above embodiments.

In a second aspect of the present disclosure, provided are a travel device and a carrier and a protection apparatus thereof, various specific embodiments of which will be described below in conjunction with the accompanying drawings.

First, in the context of the second aspect of the present disclosure, the travel device includes a carrier and a protection apparatus, and the carrier is configured to carry an animal, such as a pet, and confine the animal therein. When viewed from the top of the carrier, the carrier may be substantially rectangular-shaped, with a longitudinal axis/direction (indicated by the arrow A in the figures) and a transverse axis/direction (indicated by the arrow B in the figures). In the present disclosure, the carrier may be exemplarily arranged and mounted on a back seat in the vehicle with its longitudinal axis parallel to the vehicle seat, that is, with its transverse axis parallel to a traveling direction (the direction B6) of the vehicle. The protection apparatus provides the travel device with improved impact resistance to prevent the animal confined therein from impact or injury caused by side collision, and such side collision may be caused by hitting by an external object in an accident, or by a sudden change in vehicle speed or direction in traveling. It should be noted that the “side impact protection block” and/or “cushioning block” and/or “impact resistant body” and/or “protective cover” in the aforementioned embodiments of the first aspect may also be considered as examples of protection apparatuses.

First embodiment of a second aspect

Referring to FIG. 69, FIG. 69 is a perspective view schematically showing a travel device 61 according to a first embodiment of a second aspect of the present disclosure. The travel device 61 includes a carrier 6100 and a protection apparatus 6101. The carrier 6100 is configured to accommodate an animal therein, and the protection apparatus 6101 is attached to the carrier 6100 at a side of the carrier 6100. According to the present disclosure, the carrier 6100 may be mounted to a base (not shown) that is installed in a vehicle. According to the present disclosure, the protection apparatus 6101 may be constructed as a cushioning structure absorbing the energy or shock caused by side collision or by a sudden change in the vehicle direction or speed. In this manner, the animal may be stably supported in the carrier 6100 so as not to shake or move therein, and the carrier 6100 may be provided with the improved impact resistance to keep the animal therein from injury.

As mentioned above, in the present disclosure, the carrier 6100 may be mounted to a base (not shown) that is installed in the vehicle. It is not specifically shown herein how the carrier is mounted to the base to avoid obscuring the present disclosure.

In this embodiment, the carrier 6100 includes a box portion 6102 (also referred to as a "box body" and optionally including a "seat fabric" wrapped around the exterior of the box body), a canopy portion 6104 (e.g., serve as or include a "canopy assembly" as described in the aforementioned first aspect, i.e., may include a "canopy frame" and a "canopy") and a carrying handle 6106. The box portion defines an accommodating space for the animal. The canopy portion 6104 is detachably attached to the box portion 6102 of the carrier 6100. Two ends of the carrying handle 6106 are pivotally and detachably attached to opposite sides of the box portion 6102. The carrier 6100 further includes a bracket assembly 6108 (also referred to as a "bracket apparatus") connected to the outer bottom of the box portion 6102, through which the carrier 6100 may be mounted to the base (not shown) installed in the vehicle. It should also be noted that, similar to the first aspect, the "box portion" and the "bracket assembly" in the embodiments of the second aspect may also be considered to be constituent parts of the "accommodating body", i.e., the accommodating body may include the box portion and the bracket assembly, which will not be repeated hereinafter.

The box portion 6102 may be rectangular-shaped when viewed from the top thereof, defined by a pair of opposite long sides extending in the longitudinal direction A6 and a pair of opposite short sides extending in the transverse direction B6. In this embodiment, the protection apparatus 6101 may be attached to the carrier 6100 at the side surface of the carrier 6100 corresponding to one of the short sides. In alternative embodiments, the protection apparatus 6101 may be alternatively or additionally attached to the carrier 6100 at the side surface corresponding to one of the long sides, which will be further described with reference to the embodiments as shown in FIGS. 85A to 85C, and FIGS. 86A to 86C.

In this embodiment, the canopy portion 6104 is dome-shaped. The canopy portion 6104 has a lower periphery 6104A (also configured as or provided with a "canopy frame", e.g., referring to corresponding portions in the first aspect), and the lower periphery 6104A corresponds to an upper periphery 6102A of the box portion 6102. The canopy portion 6104 may be detachably attached to the upper periphery 6102A of the box portion 6102 at the lower periphery 6104A thereof. In this embodiment, the canopy portion 6104 may be attached to the box portion 6102 by, for example, a buckle assembly 6110 (which may also be considered as an example of a "canopy locking part"). As shown, the canopy portion 6104 is foldable, from its opposite short sides to the central (or folded from the central to the opposite short sides), to have the box portion 6102 uncovered by the canopy portion 6104 in a folded state, or to have the box portion 6102 closed with the canopy portion 6104 in an unfolded state. The interior of the box portion 6102 is open and accessible for the animal when the canopy portion 6104 is in the folded state. The structure of the canopy of the carrier

according to the present disclosure will be further illustrated with reference to FIGS. 87 to 93.

In this embodiment, the protection apparatus 6101 is formed as a plate-like member. As mentioned, the protection apparatus 6101 is attached to the carrier 6100 at the side surface of the carrier 6100 corresponding to one of the short sides. Preferably, the protection apparatus 6101 is attached to the carrier 6100 in such a manner that the protection apparatus 6101 may be located between the carrier 6100 and a rear door (not shown) of the vehicle. In this manner, it is possible to avoid the carrier 6100 from hitting the rear door, or to avoid the animal confined in the carrier 6100 from being impacted or injured by side collision or by a sudden change in vehicle speed or direction while traveling.

Second embodiment of the second aspect

Referring to FIG. 70, FIG. 70 schematically shows a side view of a travel device 62 according to a second embodiment of the second aspect of the present disclosure. The travel device 2 includes a carrier 6200, and a protection apparatus 201 attached to the carrier 6200 at a side surface thereof. The carrier 6200 has a structure and a configuration similar to those of the carrier 6100 as shown in FIG. 69, including the box portion 6202, the canopy portion 6204 detachably attached to the box portion 6202 by the buckle assembly 6210, the carrying handle 6206 detachably and pivotably connected to opposite sides of the box portion 6202, and the bracket assembly 6208 connected to the outer bottom of the box portion 6202. In this embodiment, the carrier 6200 is provided with a first attaching portion 6212 on one outer side surface of the box portion 6202. The protection apparatus 6201 is constructed mainly by a plate-like body 6203 made of an energy-absorbing or shock-absorbing material. The protection apparatus 6201 is provided with a second attaching portion 6205, corresponding to the first attaching portion 6212 of the carrier 6200, on the plate-like body 6203. In this embodiment, the protection apparatus 6201 is attached to the carrier 6200 with the cooperation of the first and second attaching portions 6212, 6205. In this embodiment, the protection apparatus 6201 may be pushed to attach to the carrier 6200 along the longitudinal direction A6. It should be noted that the “first attaching portion” and the “second attaching portion” in the second aspect of the present disclosure may be referred to as a “coupling apparatus”, or used as an example of or a part of the “coupling apparatus”. It should also be noted that the “plate-like body” described herein refers to a body having a certain thickness, but not limited to the shape of a “plate”, for example, may have a spherical shape or a concave-convex shape having a different thickness.

Referring to FIGS. 70A and 70B, FIGS. 70A and 70B are perspective views schematically showing the respective attaching portion of the protection apparatus according to the embodiments of the present disclosure.

As shown in FIG. 70A, the second attaching portion configured on the plate-like body 6203A may be a hook and loop tape, or a so-called hook and loop fastener, a so-called touch fastener and a so-called magic tape. To be more specific, the second attaching portion may be a hook portion 6205A of the hook and loop tape, while the first attaching portion (not shown) of the carrier may be correspondingly a loop portion (and vice versa). In this manner, the protection apparatus 6201A may be attached to the carrier by fastening the loop portion (the first attaching portion) and hook portion 6205A (the second attaching portion).

Alternatively, as shown in FIG. 70B, the second attaching portion configured on the plate-like body 6203B may be a magnetic part 6205B, and the first attaching portion (not shown) of the carrier may be a corresponding magnetic part, so that the protection apparatus 6201B may be attached to the carrier by the magnetic attraction of the first and second magnetic parts. In the embodiment of FIG. 70B, the protection apparatus 6201B is shown as including two magnetic parts 6205B as the second attaching portions; however, the present disclosure is not limited thereto. In alternative embodiments, the number of second attaching portions of the protection apparatus may be varied, while the number of first attaching portions of the carrier may also be correspondingly varied. In addition, the number of first attachment portions may be different from the number of second attachment portions, e.g., one first attachment portion may be provided corresponding to two or more second attachment portions, or two or more attachment portions may be provided corresponding to one second attachment portion, etc., i.e., as long as the first attachment portions and the second attachment portions may be cooperated with each other to allow the protection apparatus 6201B to be attached to the carrier.

Third embodiment of the second aspect

Referring to FIG. 71, FIG. 71 schematically shows a side view of a travel device 63 according to a third embodiment of the second aspect of the second aspect of the present disclosure. The travel device 63 includes a carrier 6300, and a protection apparatus 6301 attached to the carrier 6300 to provide improved impact resistance to the carrier 6300. The carrier 6300 has a structure and a configuration similar to those of the carrier 6100 as shown in FIG. 69 and the carrier 6200 as shown in FIG. 70, including the box portion 6302 with the buckle assembly 6310, the canopy portion 6304 detachably attached to the box portion 6302, the carrying handle 6306 detachably and pivotably connected to opposite sides of the box portion 6302, and the bracket assembly 6308 connected to the outer bottom of the box portion 6302.

The carrier 6300 is different from the carrier 6200 in that, in this embodiment, the first attaching portion of the carrier 6300 is formed as a recess 6312. Correspondingly, the second attaching portion of the protection apparatus 6301 is formed as a bump or block 6305 that is fitted

with the recess 6312 of the carrier 6300. In this embodiment, the protection apparatus 6301 may be attached to the carrier 6300 with the interference fit of the bump or block 6305 to the recess 6312. In this embodiment, the protection apparatus 6301 may be pushed to attach to the carrier 6300 along the longitudinal direction A6.

Fourth embodiment of the second aspect

Referring to FIG. 72, FIG. 72 schematically shows a side view of a travel device 64 according to a fourth embodiment of the second aspect of the second aspect of the present disclosure. The travel device 64 includes a carrier 6400, and a protection apparatus 6401 attached to the carrier 6400 to provide improved impact resistance to the carrier 6400. The carrier 6400 has a structure and a configuration similar to those of the carrier 6300 as shown in FIG. 71, including the box portion 6402 with the buckle assembly 6410, the canopy portion 6404 detachably attached to the box portion 6402, the carrying handle 6406 detachably and pivotably connected to opposite sides of the box portion 6402, and the bracket assembly 6408 connected to the outer bottom of the box portion 6402.

The carrier 6400 is different from the carrier 6300 in that, the carrier 6400 according to this embodiment is provided with a first attaching portion having a specific shape or contour other than that of the carrier 6300. This corresponds to the specific contour of the second attaching portion of the protection apparatus 6401. To be more specific, the second attaching portion 6405 formed on the plate-like body 6403 of the protection apparatus 6401 is formed with a curled end portion. The first attaching portion 6412 of the carrier 6400 is formed as a recess having a contour corresponding to that of the curled end portion of the second attaching portion 6405. In this embodiment, the protection apparatus 6401 may be attached to the carrier 400 in a transverse direction of the carrier, i.e. a direction parallel to a direction from the front of the vehicle to the rear. With the curled end portion, the second attaching portion 6405 may be engaged with the first attaching portion 6412 of the carrier 6400 in a relatively firm manner, so that the attachment of the protection apparatus 6401 to the carrier 6400 may be further secured. In this embodiment, the protection apparatus 6401 may be pushed to be attached to the carrier 6400 along the transverse direction B, in a direction from the front seat to the back seat of the vehicle.

Fifth embodiment of the second aspect

Referring to FIGS. 73A to 73C, FIGS. 73A to 73C are side views schematically showing a travel device 65 according to a fifth embodiment of the second aspect of the second aspect of the present disclosure. The travel device 65 includes a carrier 6500, and a protection apparatus 6501 attached to the carrier 6500 to provide improved impact resistance to the carrier 6500. The carrier 6500 has a structure and a configuration similar to those of the carriers 6100, 6200, 6300, and 6400

as mentioned, including the box portion 6502 with the buckle assembly 6510, the canopy portion 6504 detachably attached to the box portion 6502, the carrying handle 6506 detachably and pivotably connected to opposite sides of the box portion 6502, and the bracket assembly 6508 connected to the outer bottom of the box portion 6502.

Referring to FIG. 73A, the protection apparatus 6501 of the travel device 65 includes a plate-like body 6503 made of an energy-absorbing or shock-absorbing material. The plate-like body 6503 is connected to a guiding member 6507 by a pivot shaft 6505 at the lower side thereof, such that the plate-like body 6503 may be caused to pivot in relation to the guiding member 6507. One end of the guiding member 6507 is connected to the plate-like body 6503 by the pivot shaft 6505, and a distal end (i.e., another end) of the guiding member 6507 is fixed to the outer bottom of the box portion 6502 of the carrier 6500 by a connection part 6509. In this embodiment, the guiding member 6507 is arranged in a space defined between the outer bottom of the box portion 6502 and the bracket assembly 6508. It should be noted that the "guiding member 6507" and the "pivot shaft 6505" in this embodiment may be used as an example or a part of the "coupling apparatus".

When the protection apparatus 6501 is attached to the carrier 6500 to give the impact resistance, as shown in FIG. 73A, the plate-like body 6503 and thus the protection apparatus 6501 are pivoted to upstand, and are pushed along the longitudinal direction A6 to be attached to the carrier 6500. The attached protection apparatus 6501 is positioned between the carrier 6500 and the rear door of the vehicle, to prevent the carrier 6500 from unexpectedly hitting the rear door of the vehicle (not shown) due to the side collision or a sudden change in vehicle speed or direction while traveling. When the protection apparatus 6501 is detached (i.e., separated) from the carrier 6500, the plate-like body 6503 is first pivoted to a horizontal position by the pivot shaft 6505. That is, the plate-like body 6503 will be parallel to the outer bottom surface of the carrier 6500, as shown in FIG. 73B. Then, the plate-like body 6503 may be pushed and guided to move along the guiding member 6507 towards the carrier 6500, until fully located under the bottom of the carrier 6500. In this manner, the plate-like body 6503 may be received and contained in the space between the outer bottom of the box portion 6502 and the bracket assembly 6508, as shown in FIG. 73C.

Sixth embodiment of the second aspect

FIGS. 74A and 74B are side views schematically showing a travel device 66 according to a sixth embodiment of the second aspect of the present disclosure. To be more specific, FIG. 74A shows that the protection apparatus 6601 is attached to the carrier 6600 to provide improved impact resistance to the carrier 6600, while FIG. 74B shows that the protection apparatus 6601 is separated from the carrier 6600. The carrier 600 has a structure and a configuration similar to those of the carriers 6100, 6200, 6300, 6400 and 6500 as mentioned, including the box portion 6602 with the

buckle assembly 6610, the canopy portion 6604 detachably attached to the box portion 6602, the carrying handle 6606 detachably and pivotably connected to opposite sides of the box portion 6602, and the bracket assembly 6608 connected to the outer bottom of the box portion 6602.

In this embodiment, the protection apparatus 6601 to be attached to the carrier 6600 includes a plate-like body 6603 and a coupling member 6605 arranged at the bottom of the plate-like body 6603. The coupling member 6605 has its one end connected to the bottom of the plate-like body 6603, and is provided with a coupling portion 6607 such as a clamping structure at a distal end thereof. The coupling portion 6607 has a contour corresponding to the rod structure of the bracket assembly 6608, such that the protection apparatus 6601 may be attached to the carrier 6600 by coupling or clamping the coupling portion 6607 to the bracket assembly 6608. Preferably, the length La of the coupling member 6605 is dimensioned to allow the plate-like body 6603 to abut against the side surface of the carrier 6600 when the protection apparatus 6601 is attached to the carrier 6600, so that the animal in the carrier 6600 may be supported and protected in a relatively safe and stable manner. In this embodiment, the protection apparatus 6601 is pushed to be attached to the carrier 6600 along the longitudinal direction A6. It should be noted that the "coupling member 6605" and/or the "coupling portion 6607" in this embodiment may be used as an example or a part of the "coupling apparatus".

Seventh embodiment of the second aspect

Referring to FIG. 7, FIG. 7 is a side view schematically showing a travel device 67 according to a seventh embodiment of the second aspect of the present disclosure. The travel device 67 includes a carrier 6700, and a protection apparatus 6701 attached to the carrier 6700 to provide improved impact resistance to the carrier 6700. The carrier 6700 has a structure and a configuration similar to those of the carriers as mentioned, including the box portion 6702 with the buckle assembly 6710, the canopy portion 6704 detachably attached to the box portion 6702, the carrying handle 6706 detachably and pivotably connected to opposite sides of the box portion 6702, and the bracket assembly 6708 connected to the outer bottom of the box portion 6702. In the embodiment as shown, the carrier 6700 is mounted to a base 6750 that is installed in the vehicle (not shown). The details of structure and configuration of the base 6750 and the mounting of the carrier 6700 to the base 6750 are not the object of the present disclosure, and are thus omitted herein to avoid obscuring the present disclosure.

In this embodiment, the protection apparatus 6701 is attached to the base 6750 instead of the carrier 6700. The protection apparatus 6701 includes a plate-like body 6703 made of an energy-absorbing or shock-absorbing material, and a connecting rod 6705 connecting to the bottom of the plate-like body 6703. A distal end of the connecting rod 6705 is connected to the base 6750.

The length Lb of the connecting rod 6705 is sized to allow the plate-like body 6701 to abut against the side surface of the carrier 6700 when the protection apparatus 6701 is attached to the base 6750, so that the animal in the carrier 6700 may be supported and protected in a relatively safe and stable manner.

Eighth embodiment of the second aspect

Referring to FIG. 76, FIG. 76 schematically shows a side view of a travel device 68 according to an eighth embodiment of the second aspect of the present disclosure. The travel device 68 includes a carrier 6800, and a protection apparatus 6801 attached to the carrier 6800 to provide improved impact resistance to the carrier 6800. The carrier 6800 has a structure and a configuration similar to those of the carriers as mentioned, including the box portion 6802 with the buckle assembly 6810, the canopy portion 6804 detachably attached to the box portion 6802, the carrying handle 6806 detachably and pivotably connected to opposite sides of the box portion 6802, and the bracket assembly 6808 connected to the outer bottom of the box portion 6802.

The carrier 6800 is different from the above-mentioned carriers in that, in this embodiment, the carrier 6800 includes connectors 820, and the connectors 820 are arranged on opposite sides, in particular the opposite short sides, of the upper periphery 6802A of the box portion 6802. In this manner, the canopy portion 6804 in an unfolded state may be connected to the box portion 6802 by the connectors 6820 of the carrier 6800. To be more specific, the connector 6820 may be arranged on the accommodating body and/or the canopy assembly, and may be a magnetic connector including a pair of magnets that are able to attract to each other, with one of the magnets arranged on the short side of the upper periphery 6802A of the box portion 6802, and the other of the magnets arranged on the short side of the lower periphery 6804A of the canopy portion 6804. In this manner, the canopy portion 6804 may be attached to the box portion 6802 with such magnetic attraction. In order to avoid the protection apparatus 6801 from impeding or obstructing the connection between the canopy portion 6804 and the box portion 6802, the plate-like body 6803 may be formed with an opening or a recess (or a groove) corresponding to the connectors 6820.

With reference to FIGS. 76A to 76C, various designs for the plate-like body of the protection apparatus. As shown in FIG. 76A, the plate-like body 6803A of the travel device 68A is formed with a vertical through opening, or a vertical recess (e.g., a sliding groove, or a notch) 68031 to allow the plate-like body 6803A to be mounted in a direction from the top to the bottom of the carrier 6800A, so that the plate-like body 6803A including the protection apparatus is attached to the carrier 6800A. When the protection apparatus including the plate-like body 6803A is attached to the carrier 6800A, the connector 6820A may be disposed within the top of the vertical recess 68031 or may be disposed at an end of the vertical recess 68031 adjacent to a central position of the

protection apparatus. On the periphery of the top of the vertical recess 68031, it is possible to arrange a magnetic strip or tape 68031A that is corresponding to the magnetic connector 6820A of the carrier 6800A. In this manner, the protection apparatus may be attached to the carrier 6800A with the magnet attractive force between the magnet strip or tape 68031A of the plate-like body 6803A and the magnetic connector 6820A of the carrier 6800A. It should be noted that the "connector 6820" and the "vertical recess 68031" in this embodiment may be used as an example or a part of the "coupling apparatus", and the "magnetic connector 6820A" and the "magnetic strip or tape 68031A" may also be used as an example or a part of the "coupling apparatus".

Alternatively, as shown in FIG. 76B, the plate-like body 6803B of the travel device 68B is formed with a horizontal through opening, or a horizontal recess (e.g., a sliding groove, or a notch) 68033 to allow the plate-like body 6803B to be mounted in a direction from the right to the left of the carrier 6800B, so that the plate-like body 6803B including the protection apparatus is attached to the carrier 6800B. When the protection apparatus including the plate-like body 6803B is attached to the carrier 6800B, the connectors 6820B may be located within the right end of the horizontal recess 68033. On the periphery of the right end of the horizontal recess 68033, it is possible to arrange the magnetic strip or tape 68033A that is corresponding to the magnetic connector 6820B of the carrier 6800B. In this manner, the protection apparatus may be attached to the carrier 6800B with the magnet attractive force between the magnet strip or tape 68033A of the plate-like body 6803B and the magnetic connector 6820B of the carrier 6800B.

Alternatively, as shown in FIG. 76C, the plate-like body 6803C of the travel device 68C is formed with a central through hole 68035 of a closed periphery, and the magnetic strip or tape 68035A is arranged on the periphery of the opening 68035. When the protection apparatus including the plate-like body 6803C is attached to the carrier 6800C, the connectors 6820C may be located within the central through hole 68035. In this manner, the plate-like body 6803C may be loaded to the inside of the vehicle from the door in the longitudinal direction A, and the protection apparatus may be attached to the carrier 6800C with the magnet attractive force between the magnet strip or tape 68035A of the plate-like body 6803C and the magnetic connector 6820C of the carrier 6800C.

Ninth embodiment of the second aspect

Referring to FIG. 77A and FIG. 77B. FIG. 77A schematically shows a travel device 69 according to a ninth embodiment of the second aspect of the present disclosure, and FIG. 77B is a schematic side view showing the protection apparatus attached to the carrier of the travel device of FIG. 77A. The travel device 69 includes a carrier 6900, and a protection apparatus 6901 attached to the carrier 6900 to provide improved impact resistance to the carrier 6900. The carrier 6900 has a

structure and a configuration similar to those of the carriers as mentioned, including the box portion 6902 with the buckle assembly 6910, the canopy portion 6904 detachably attached to the box portion 6902 with the buckle assembly 6910, the carrying handle 6906 detachably and pivotably connected to opposite sides of the box portion 6902, and the bracket assembly 6908 connected to the outer bottom of the box portion 6902. The canopy portion 6904 may be attached to the box portion 6902 by the magnetic attraction of the connectors 6920 arranged on the short sides of the box portion 6902 when unfolded. Also, in order to avoid the protection apparatus 6901 from impeding or obstructing the connection between the canopy portion 6904 and the box portion 6902, the plate-like body 6903 may be formed with an opening or a recess corresponding to the connectors 6920.

In this embodiment, the plate-like body 6903 is formed with a recess 69031 corresponding to the connectors 6920 instead of the above-mentioned through holes 68031, 68033 and 68035. The depth d of the recess 69031 is dimensioned to allow the connector 6920 to be unimpededly located therein when the protection apparatus 6901 is attached to the carrier 6900. On the top of the recess 69031, it is possible to arrange a magnetic connector 69031A that is corresponding to the magnetic connector 6920 of the carrier 6900. In this manner, the protection apparatus 6901 may be attached to the carrier 6900 by the magnet attractive force between the magnetic connector 69031A of the plate-like body 6903 and the magnetic connector 6920 of the carrier 6900. It should be noted that the “connector 6920” and the “opening or recess” in this embodiment may be used as an example or a part of the “coupling apparatus”, and the “magnetic connector 6920” and the “magnetic connector 69031A” may also be used as an example or a part of the “coupling apparatus”.

Tenth embodiment of the second aspect

Referring to FIGS. 78A and 78B, a travel device 610 according to a tenth embodiment of the second aspect of the present disclosure is schematically shown. FIG. 78A is a perspective view of the travel device 610, and FIG. 78B is a side view of the travel device 610. The travel device 610 includes a carrier 61000, and a protection apparatus 61001 attached to the carrier 61000 to provide improved impact resistance to the carrier 61000. The carrier 61000 has a structure and a configuration similar to those of the carriers as mentioned, including the box portion 61002 with the buckle assembly 61010, the canopy portion 61004 detachably attached to the box portion 61002, the carrying handle 61006 detachably and pivotably connected to opposite sides of the box portion 61002, and the bracket assembly 61008 connected to the outer bottom of the box portion 61002.

Alternatively or additionally, in this embodiment, the protection apparatus 61001 may be attached to the carrier 61000 with a securing strap 61009 that is connected to the upper portion of the plate-like body 61003 and extends outwardly therefrom. Optionally, the plate-like body 61003

may be covered with a cloth for the ease of being connected with the securing strap 61009. In more specific, as shown in FIG. 78B, one end of the securing strap 61009 is connected to the upper portion of the plate-like body 61003 of the protection apparatus 61001, and the securing strap 61009 extends and is connected to the carrying handle 61006 in the longitudinal direction A6 of the carrier 61000. Specifically, the carrying handle 61006 is provided with a connecting portion 61006A, and the connecting portion 61006A is, for example, a ring and provided at a middle position of the carrying handle 61006. The securing strap 61009 is provided with a connection member 61011 (for example a hook) at its distal end, and is connected to the connecting portion 61006A of the carrying handle 61006 by the connection member 61011. Optionally, the securing strap 61009 is provided with a secure member 61013, such as an adjusting buckle and a ladder lock, such that the length of the securing strap 61009 is fixed after adjustment. In an example, the secure member 61013 may include a length adjuster, or be constructed as a length adjuster, for adjusting the length of the securing strap 61009.

In this embodiment, the carrier 61000 may be supported and protected in a relatively stable manner by the connection between the plate-like body 61003 and the carrying handle 1006 in addition to the optional connection of the coupling member 61005 to the bracket assembly 61008 through the coupling portion 61007. Furthermore, it should be noted that the “guiding member 6605”, the “connecting portion 61006A” and/or the “connection member 61011” in this embodiment may be used as an example or a part of the “coupling apparatus”.

Eleventh embodiment of the second aspect

Referring to FIGS. 79A and 79B schematically showing a travel device 611 according to an eleventh embodiment of the second aspect of the present disclosure, in which FIG. 79A is a perspective view of the travel device 611, and FIG. 79B is a side view of the travel device 611. The travel device 611 includes a carrier 61100, and a protection apparatus 61101 attached to the carrier 61100 to provide improved impact resistance to the carrier 61100. The carrier 61100 has a structure and a configuration similar to those of the carriers as mentioned, including the box portion 61102 with the buckle assembly 61110, the canopy portion 61104 detachably attached to the box portion 61102, the carrying handle 61106 detachably and pivotably connected to opposite sides of the box portion 61102, and the bracket assembly 61108 connected to the outer bottom of the box portion 61102.

Alternatively or additionally, in this embodiment, the protection apparatus 61101 may be attached to the carrier 61100 with a securing strap 61109 that is connected to the upper portion of the plate-like body 61103 and extends outwardly therefrom. In more specific, as shown in FIG. 79B, one end of the securing strap 61109 is connected to the upper portion of the plate-like body 61103

of the protection apparatus 61101, and the protection device 61109 extends toward and over the carrying handle 61106 in the longitudinal direction A6 of the carrier 61100. Specifically, the carrying handle 61106 has a recess 61106A formed on the middle portion thereof to receive and keep the securing strap 61109 passing therethrough. The securing strap 61109 is provided with a connection member 61111 (e.g., a hook) that passes over the carrying handle 61106 at a distal end thereof, and is connected to the bracket assembly 61108 by the connection member 61111 at an outer bottom of the carrier 61100. Specifically, the protection device 61101 is provided on one side of the carrier 61100 in the longitudinal direction A6, and the connection member 61111 is connected to the other side of the carrier 61100 in the longitudinal direction, e.g., to the outer bottom of the carrier 61100 at the other side, such as the bracket assembly 61108. Optionally, the securing strap 61109 may be provided with a secure member 61113, such that the length of the securing strap 61109 is fixed after adjustment. In an example, the secure member 61113 may include a length adjuster, or be constructed as a length adjuster, such as an adjusting buckle, for adjusting the length of the securing strap 61109.

In this embodiment, the carrier 61100 may be supported and protected in a relatively stable manner by the securing strap 61109 in addition to the optional connection between the first attaching portion 61112 and the second attaching portion 61105. It should be noted that connection structures such as the “securing strap 61109”, the “connection member 61111” and/or the “recess 61106A” in this embodiment may be used as an example or a part of the “coupling apparatus”.

Twelfth embodiment of the second aspect

Referring to FIGS. 80A to 80C, a travel device 612 according to a twelfth embodiment of the second aspect of the present disclosure is schematically shown. FIG. 80A is a perspective view of the travel device 612, FIG. 80B is a side view of the travel device 612, and FIG. 80C is a perspective view of the travel device 612 to show the details of the securing strap thereof.

The travel device 612 includes a carrier 61200, and a protection apparatus 61201 attached to the carrier 61200 to provide improved impact resistance to the carrier 61200. The carrier 61200 has a structure and a configuration similar to those of the carriers as mentioned, including the box portion 61202 with the buckle assembly 61210, the canopy portion 61204 detachably attached to the box portion 61202, the carrying handle 61206 detachably and pivotably connected to opposite sides of the box portion 61202, and a bracket assembly 61208 connected to the outer bottom of the box portion 61202. Similar to the travel device 610 and the travel device 611, in this embodiment, the protection apparatus 61201 may be alternatively or additionally attached to the carrier 61200 by a securing strap 61209 extending outwardly from the upper portion of the plate-like body 61203. The difference is that, in this embodiment, the securing strap 61209 extends toward the carrying

handle 61206 and over the carrying handle 61206 in the longitudinal direction A6 of the carrier 61200, and then reverses in a direction toward the plate-like body 61203. The securing strap 61209 thus forms a loop 61215 by the attaching portion 61217, so as to loop at the carrying handle 61206 for connection. In this embodiment, the attaching portion 61217 may be provided by a hook and loop tape (or a so-called hook and loop fastener, a so-called touch fastener and a so-called magic tape) including a hook portion 61217A and a loop portion 61217B (and vice versa) as shown in FIG. 12C.

In this embodiment, the carrier 61200 may be supported and protected in a relatively stable manner by the connection between the plate-like body 61203 and the carrying handle in addition to the optional connection between the first attaching portion 61212 and the second attaching portion 61205. It should be noted that connection structures such as the “securing strap 61209” and/or the “attaching portion 61217” in this embodiment may be used as an example or a part of the “coupling apparatus”.

Thirteenth embodiment of the second aspect

Referring to FIGS. 81A and 81B, a travel device 613 according to a thirteenth embodiment of the second aspect of the present disclosure is schematically shown. FIG. 81A is a perspective view of the travel device 613, and FIG. 81B is a side view of the travel device 613. The travel device 613 includes the carrier 61300 and the protection apparatus 61301 attached to the carrier 61300 to provide a better impact resistance for the carrier 61300. The carrier 61300 has a structure and a configuration similar to those of the carriers as mentioned, including the box portion 61302 with the buckle assembly 61310, the canopy portion 61304 detachably attached to the box portion 61302, the carrying handle detachably and pivotably connected to opposite sides of the box portion 61302, and the bracket assembly 61308 connected to the outer bottom of the box portion 61302. It should be noted that, for the clarity purpose, the carrying handle of the carrier is omitted in FIGS. 81A and 81B.

Similar to the travel device 610, in this embodiment, the protection apparatus 61301 is alternatively or additionally attached to the carrier 61300 by a securing strap 61309 extending outwardly from the upper portion of the protection apparatus 61301. As shown in FIG. 81B, the carrier 61300 includes an additional handle 61314 that is attached to the top of the canopy portion 61304. One end of the securing strap 61309 is attached to the upper portion of the protection device 61301, and the other end thereof extends toward the handle 61314 and connected by a connection member 61311 (e.g., a hook) to the handle 61314, rather than a carrying handle attached to the opposite sides of the box portion 61302. In addition, the strap 61309 is optionally provided with a secure member 61313, such that the length of the securing strap 61309 is fixed after adjustment. In

an example, the secure member 61313 may include a length adjuster, or be constructed as a length adjuster, such as an adjusting buckle, for adjusting the length of the securing strap 61309.

Alternatively or additionally, the body 61303 of the protection device 61301 is inverted L-shape. That is, the body 61303 made of the energy-absorbing or shock-absorbing material is constructed by a first portion 61303A and a second portion 61303B that are integral with each other at a right angle. As shown in FIG. 81B, the second portion 61303B of the body 61303 extends from the top of the first portion 61303A in the longitudinal direction A6 and/or the horizontal direction (i.e., in a direction extending along a short side of the carrier 61300) of the carrier 61300 at a height slightly higher than the top of the canopy portion 61304, and one end of the securing strap 61309 is attached to an end face of the second portion 61303B. That is, the first portion 61303A extends in a height direction of the carrier 61300 and is provided on the side surface of the carrier 61300, while the second portion 61303B extends from the first portion 61303A in the longitudinal direction A6 at the top of the carrier 61300. In this manner, the other end of the securing strap 61309 attached to the handle 61314 can provide relatively sufficient and stable support for the carrier 61300.

In this embodiment, the carrier 61300 may be supported and protected in a relatively stable manner by the connection between the body 61303 of the protection apparatus 61301 and the handle 61314 on the top of canopy portion 61304 in addition to the optional connection between the first attaching portion 61312 and the second attaching portion 61305. It should be noted that connection structures such as the “securing strap 61309”, the “connection member 61311” and/or the “secure member 61313” in this embodiment may be used as an example or a part of the “coupling apparatus”.

Fourteenth embodiment of the second aspect

Referring to FIGS. 82A and 82B schematically showing a travel device 614 according to the fourteenth embodiment of the second aspect of the present disclosure, in which FIG. 82A is a perspective view of the travel device 614, and FIG. 82B is a side view of the travel device 614.

The travel device 614 includes a carrier 61400, and a protection apparatus 61401 attached to the carrier 61400 to provide improved impact resistance to the carrier 61400. The carrier 61400 has a structure and a configuration similar to those of the carriers as mentioned, including the box portion 61402 with the buckle assembly 61410, the canopy portion 61404 detachably attached to the box portion 61402, the carrying handle detachably and pivotably connected to opposite sides of the box portion 61402, and the bracket assembly 61408 connected to the outer bottom of the box portion 61402. In FIGS. 82A and 82B, for the clarity purpose, the carrying handle of the carrier is omitted.

Similar to the travel device 613, alternatively or additionally, in this embodiment, the

protection apparatus 61401 is attached to the carrier 61400 by a securing strap 61409 extending outwardly from the upper portion of the protection apparatus 61401. The difference is that, in this embodiment, the connection portion of the first portion 61403A and the second portion 61403B is chamfered, instead of at a right angle. In addition, one end of the securing strap 61409 is attached to the upper portion of the protection device 61401 and a distal end (the other end) thereof is connected by the attachment member 61411 to the connecting portion 61414A (disposed directly on the canopy portion 61404), rather than to the carrying handle attached to the opposite sides of the box portion 61402. In addition, the strap 61409 is optionally provided with a secure member 61413, such that the length of the securing strap 61409 is fixed after adjustment.

In this embodiment, the carrier 61400 may be supported and protected in a relatively stable manner by the connection between the body 61403 of the protection apparatus 61401 and the connecting portion 61414A on the top of canopy portion 61404 in addition to the optional connection between the first attaching portion 61412 and the second attaching portion 61405. It should be noted that connection structures such as the “securing strap 61409”, the “connection member 61411” and/or the “secure member 61413” and/or the “first attaching portion 61412” and/or the “second attaching portion 61405” in this embodiment may be used as an example or a part of the “coupling apparatus”.

According to the present disclosure, the securing strap as shown may be an elastic strap or a non-elastic strap. It is worthy to note that, the elastic strap may help in absorbing the impact or shock caused by side collision or by a sudden change in vehicle speed or direction while traveling, while the non-elastic strap may help in dispersing the impact and increasing the strength for safety.

According to the present disclosure, the body of the protection apparatus is made of an energy-absorbing or shock-absorbing material. Examples of such material include, but not limited to, Expandable Polyethylene (EPE), Expandable Polypropylene (EPP), Expandable Polystyrene (EPS), Expandable Polyolefins (EPO), memory foam material such as Polyurethane (PU) Foam, silicone and latex. The body of the protection apparatus may be a single layer structure, or multi-layer structure. The body of the protection apparatus may be formed as various shapes in cross section.

With reference to FIGS. 83A to 83G, various designs for the plate-like body according to the present disclosure are illustrated. The plate-like bodies 615E are shown as having respective shapes in cross section. It should be noted that the “section” herein refers to a section of the plate-like body when viewed from the front side of the carrier. For example, as shown in FIG. 83A, the section of the plate-like body 615A may be in a rectangular shape. As another example, as shown in FIGS. 83B and 83C, the plate-like body 615B and/or 615C may consist of two portions having different

thicknesses (i.e., corresponding to widths of the cross-section). A first portion has a constant thickness and a second portion extends from one end (e.g., an upper end) of the first portion and has a thickness that gradually increases or decreases from the first portion. Optionally, the second portion with the gradual thickness may be constructed such that one surface is flush with one surface of the first portion and the other surface is at an angle to the other surface of the first portion (see FIG. 83B); alternatively, the second portion may be constructed such that the two surfaces are at angles to the two surfaces of the first portion, respectively (see FIG. 83C). In another example, the first portion and/or the second portion may have a shape with variable thickness other than a gradual thickness. As another example, as shown in FIG. 83D, the plate-like body 615D has a first portion and a second portion that are perpendicular or at an angle to each other. Optionally, the first portion and the second portion may each have a constant thickness. The thickness of the first portion may be equal to the thickness of the second portion but is not limited thereto, i.e., it may also be less than or greater than the thickness of the second portion. In addition, the first portion and/or the second portion may have a variable thickness. For example, as shown in FIG. 83E, at least a portion of the section of the plate-like body 615E may be curved, e.g., have an arched corner, etc. However, it should be understood that, in the absence of conflict in structure, the shapes of the plate-like bodies in the embodiments of the second aspect of the present application may be combined or replaced with each other.

The plate-like body 615F is shown as having a two-layer structure, while the plate-like body 615G is shown as having a three-layer structure. In these embodiments, the plate-like bodies 615F and 615G are made by the lamination of more than one layer, and thus provide a composite softness to absorb and release the shock or impact caused by side collision or by a sudden change in vehicle speed or direction. That is, the relatively soft material may help in absorbing the impact or shock caused by side collision or by a sudden change in vehicle speed or direction, while the relatively rigid material may help in dispersing the impact and increasing the strength for safety. In view of this, the relatively rigid material may be arranged as outer layers of a plate-like body having a multi-layer structure, with the relatively soft material being sandwiched thereby or being an inner layer. Taking the plate-like body 15F as shown in FIG. 15F as an example, the layer 6151F may be made of a relatively rigid material and serve as an outer layer arranged on a side near the rear door of a vehicle, while the layer 6152F may be made of the relatively soft material and serve as an inner layer arranged on a side near the carrier. Taking the plate-like body 615G as an example, the layer 6152G made of the relatively soft material is sandwiched by the layers 6151G and 6153G. Such three-layer structure provides the plate-like body with the improved strength and impact resistance, and thus provides the protection apparatus with the improved strength and impact resistance.

With reference to FIGS. 84A and 84B, the plate-like bodies 61603A and 61603B of different dimensions according to the present disclosure are illustrated. As shown, the carriers 61600A and 61600B have a determined width L61 defined by the box portion in the transverse direction B6. In the embodiment of FIG. 84A, a width L62 of the plate-like body 61603A is greater than the width L61 of the carrier 61600A, while in the embodiment of FIG. 84B, the width L63 of the plate-like body 61603B is less than the width L61 of the carrier 61600B. It is worth to note that, in both cases, the central axis (i.e. an axis vertically passing through the respective midpoint of the width L62, L63) of the respective plate-like body 61603A, 61603B and the central axis (i.e. an axis vertically passing through the midpoint of the width L61) of the carrier 61600A, 61600B will coincide.

Fifteenth embodiment of the second aspect

Referring to FIGS. 85A and 11B, a travel device 624 according to a fifteenth embodiment of the second aspect of the present disclosure is schematically shown. FIG. 85A is a perspective view of the travel device 624, and FIG. 85B is a side view of the travel device 624. The travel device 624 includes a carrier 62400, and a protection apparatus 62401 attached to the carrier 62400 at a side surface thereof. The carrier 62400 has a structure and a configuration similar to those of the carrier 6100 as shown in FIG. 69, including the box portion 62402, the canopy portion 62404 detachably attached to the box portion 62402 by the buckle assembly 62410, the carrying handle 62406 detachably and pivotably connected to opposite sides of the box portion 62402, and the bracket assembly 62408 connected to the outer bottom of the box portion 62402. The box portion 62402 may be rectangular-shaped when viewed from the top thereof, defined by a pair of opposite long sides extending in the longitudinal direction A6 and a pair of opposite short sides extending in the transverse direction B6. The protection apparatus 62401 is constructed mainly of a plate-like body 62403 made of an energy-absorbing or shock-absorbing material.

Alternatively or additionally, in this embodiment, the protection apparatus 62401 may be attached to the carrier 62400 at the side surface corresponding to one of the long sides. In more specific, the protection apparatus 62401 may be attached to the carrier 62400, with being sandwiched by the long side of the carrier 62400 and the seat backrest 630 when the travel device 624 is installed in a vehicle. In this embodiment, the protection apparatus 62401 is attached to the carrier 62400 by a securing strap 62409 connected with and extending from the protection apparatus 62401, and having a connection member 62411, for example a hook, on a distal end. Similarly, the plate-like body 62403 (shown in FIG. 85C) of the protection apparatus 62401 may be optionally covered with a cloth for the ease of being connected with the securing strap 62409. The securing strap 62409 may be connected to the connecting portion 62414A of the carrier 62400 with the connection member 62411 at the distal end thereof. In this embodiment, the connecting portion

62414A is configured on a position on the outside of a side wall of the box portion 62402, corresponding to that of the securing strap 62401 and the connection member 62411 of the protection apparatus 62409. The connecting portion 62414A may be directly disposed on the outside of the side wall of the box portion 2402, or connected to the side wall of the box portion 2402 by a connecting strap 62414B connecting and extending from the side wall of the box portion 2402, as shown in FIG. 85A. It should be noted that connection structures such as the “securing strap 62409”, the “connection member 62411” and/or the connecting portion 62414A and/or the “connecting strap 62414B” in this embodiment may be used as an example or a part of the “coupling apparatus”.

Sixteenth embodiment of the second aspect

Referring to FIGS. 86A and 86C, a travel device 625 according to a sixteenth embodiment of the second aspect of the present disclosure is schematically shown. FIG. 86A is a perspective view of the travel device 625, and FIG. 86B is a side view of the travel device 625. The travel device 625 includes a carrier 62500 and a protection apparatus 62501 attached to the carrier 62500 at a side of the carrier 62500. The carrier 62500 has a structure and a configuration similar to those of the carrier 6100 as shown in FIG. 69, including the box portion 62502, the canopy portion 62504 detachably attached to the box portion 62502 by the buckle assembly 62510, the carrying handle 62506 detachably and pivotably connected to opposite sides of the box portion 62502, and the bracket assembly 62508 connected to the outer bottom of the box portion 62502. The box portion 62502 may be rectangular-shaped when viewed from the top thereof, defined by a pair of opposite long sides extending in the longitudinal direction A6 and a pair of opposite short sides extending in the transverse direction B6. The protection apparatus 62501 is constructed mainly of a plate-like body 62503 made of an energy-absorbing or shock-absorbing material.

Similar to the embodiment as shown in FIGS. 85A to 85C, in this embodiment, the protection apparatus 62501 may be attached to the carrier 62500 at the side surface of the carrier 62500 corresponding to one of the short sides. In more specific, the protection apparatus 62501 may be attached to the carrier 62500, being sandwiched by the long side of the carrier 62500 and the seat backrest 630 when the travel device 625 is installed in a vehicle. As shown in FIG. 86C, the body 62503 of the protection apparatus 62501 is inverted L-shape. That is, the body 62503 made of the energy-absorbing or shock-absorbing material is constructed by a first portion 62503A and a second portion 62503B that are integral with each other at a right angle. As shown in FIGS. 86A and 86B, the second portion 62503B of the body 62503 extends from the top of first portion 62503A in a horizontal direction and a transverse direction B6 of the carrier 62500, at a slightly higher level than the erected carrying handle 62506, or the top of canopy portion 62504 (when the carrying handle

62506 is removed or pivoted to a horizontal position), to cover at least a part of the top of the carrier 62500.

Additionally or alternatively, in this embodiment, referring to FIGS. 86A to 86C, the protection apparatus 62501 is alternatively or additionally installed in the vehicle by a securing strap 62509 looped over the headrest 630A of the vehicle. In more specific, the securing strap 62509 may be connected to the upper portion of the protection apparatus 62501 at its one end 62509A, and extend outwardly therefrom. The securing strap 62509 may, for example, extend from the front side of the seat 630 (i.e., a position where the protection apparatus 62501 is provided) through one side (i.e., a side connected to the end 62509A) of the protection apparatus 62501 (specifically, the body 62503 thereof) toward the rear side of the seat 630, then be wrapped around the headrest 630A (e.g., may be wrapped around the headrest 630A at a position connected to the seat 630) from the back side of the seat 630, and then extend toward the front side of the seat 630 (i.e., extend from the opposite side of the headrest 630A to the front side of the headrest 630), so as to be connected to another side of the body 62503 of the protection apparatus 62501 (not shown) by the other end of the securing strap 62509 (i.e., an end away from the end 62509A). In this manner, the protection apparatus 62501 may be firmly attached to the seat 630 in addition to the attachment to the carrier 62500. Optionally, the strap 62509 may be provided with a secure member (not shown), such that the length of the securing strap 62509 is fixed after adjustment. It should be noted that a connection structure such as the "securing strap 62509" in this embodiment may be used as an example or a part of the "coupling apparatus".

Additionally or alternatively, in this embodiment, the contour of the inner face of the protection apparatus 62501 may be corresponding to that of the carrier 62500. In more particular, the portion of the protection apparatus 62501 that the first portion 62503A is connected to the second portion 62503B has a dome-shaped inner face (a face facing toward the carrier 62500 when installed in the vehicle), such that the contour of the inner face of the protection apparatus 62501 is conforming to the contour of the canopy portion 62504 of the carrier 62500. In this way, protective apparatus 62501 can help prevent pets from getting injured in accidents or side impacts. Although in this embodiment, the protection apparatus 62501 is illustrated as having the dome-shaped inner face; it should be noted that, the contour of the inner face of the protection apparatus 62501 is not limited thereto.

It should be noted that, the protection apparatus 62401 and 62501 may be constructed in a similar way to those as shown in FIGS. 83A to 83G. In more specific, the body 62403, 62503 of the protection apparatus 62401, 62501 may be made of an energy-absorbing or shock-absorbing material. Examples of such material include, but not limited to, Expandable Polyethylene (EPE),

Expandable Polypropylene (EPP), Expandable Polystyrene (EPS), Expandable Polyolefins (EPO), memory foam material such as Polyurethane (PU) Foam, silicone and latex, may be in a single-layer structure, or a multi-layer structure, and may be formed as various shapes in section. For example, the body 62403, 62503 of the protection apparatus 62401, 62501 may be made of the energy-absorbing or shock-absorbing material (such as EPP or EPS) sandwiched by two plates made of polyethylene (PE) having the respective thickness of 61mm. Additionally and alternatively, the body 62403, 62503 of the protection apparatus 62401, 62501 may be optionally covered with a cloth for the ease to be connected with the securing strap 62409, 62509. According to this embodiment, by attaching the protection apparatus to the carrier at a position between the carrier and the seat of the vehicle, it is possible to protect the head of the pet contained in the carrier from being the injured in an accident or by a side collision. The pet may be carried in the vehicle with improved safety.

It should be noted that, in the embodiments as shown in FIGS. 85A to 85C, and FIGS. 86A to 86C, the protection apparatus 62401, 62501 is attached to the carrier 62400, 62500 to be installed in the vehicle by the securing strap 62409, 62509. However, the present disclosure is not limited thereto. According to the present invention, the protection apparatus may be attached to the carrier at the side surface corresponding to one of the long sides in a manner similar to the embodiments as shown in FIGS. 69 to 82A and 82B, and the carrier includes the coupling apparatuses of various configurations as above mentioned, such as the attaching portions and/or the attaching members.

According to the present disclosure, it is possible to further improve the impact resistance of the carrier by modifying the structure of the canopy portion of the carrier. Details will be illustrated in various embodiments of a third aspect of the present disclosure. In the absence of conflict in structure, embodiments of this aspect may also include any one structure or a combination of structures of embodiments of the first aspect and/or the second aspect.

First embodiment of the third aspect

Referring to FIG. 87, a side view of a travel device carrier 61700 according to the first embodiment of the third aspect of the second aspect of the present disclosure is schematically shown. The carrier 61700 has a structure and a configuration similar to those of the carriers in any embodiments of the second aspect as mentioned above, including the box portion 61702 with the buckle assembly 61710, the canopy portion 6174 detachably attached to the box portion 61702, the carrying handle 61706 detachably and pivotably connected to opposite sides of the box portion 61702 by the pivot shafts 61762, and the bracket assembly 61708 connected to the outer bottom of the box portion 61702.

In this embodiment, the canopy portion 61704 is constructed mainly by a pair of U-shaped

frames 61742 and a plurality of U-shaped support rods 61746 (also referred to as a “U-shaped bracket”) spaced apart from each other. The cover 61744 is connected to these brackets 61742 and support rods 61746 by, for example, binding or by adhesive bonding, the canopy portion 6174 provides a shielding effect for the animal in the box portion 61702 when in an unfolded state. The U-shaped frames 61742 are connected to the cover 61744 (also referred to as a “canopy”) at the lower periphery of the canopy portion 6174, and are pivotally connected to the opposite sides of the box portion 61702 with the respective pivot shafts 61748, so as to bring the canopy portion 6174 to be folded or unfolded. The canopy portion 6174 may be secured to the opposite short sides of the box portion 61702 by magnetic connectors 61720 when unfolded to cover the box portion 61702.

In this embodiments, the canopy portion 174 is divided into two halves, each of which includes two support rods 61746. The cover 61744 is divided into a total of five corresponding areas 61744A to 61744E (i.e., 61744A, 61744B, 61744C, 61744D, 61744E). By increasing the number of the support rods 61746, the canopy portion 6174 may be provided with a support for the improvement in impact resistance. As an alternative, each half of the canopy portion 6174 may include at least two support rods, such as but not limited to three, four, or five support rods. It should be noted that a cover having these areas may be formed by “sheets” or “sheet-like members” joined to each other, with each sheet or each sheet-like member forming an area; alternatively, the cover may be an integrally formed structure, with each of those areas forming a part of the cover.

Second embodiment of the third aspect

Referring to FIG. 88, a side view of a travel device carrier 61800 according to the second embodiment of the third aspect of the second aspect of the present disclosure is schematically shown. The carrier 61800 has a structure and a configuration similar to those of the carrier 61700 as shown in FIG. 87, including the box portion 61802 with the buckle assembly 61810, the canopy portion 6184 detachably attached to the box portion 61802, the carrying handle 61806 detachably and pivotably connected to opposite sides of the box portion 61802 by the pivot shafts 61862, and the bracket assembly 61808 connected to the outer bottom of the box portion 61802. The canopy portion 6184 also has a structure and a configuration similar to those of the canopy portion 6174 in addition to the number of support rods 61846, i.e., includes the U-shaped frames 61842 connected to the box portion 61802 by the respective pivot shafts 61848 as well as the support rods 61846 for supporting the cover 61844. In this embodiment, each half of the canopy portion 6184 includes five support rods 61846. That is, the canopy portion 6184 is provided with a total of ten support rods 61846 such that the cover 61844 is divided into eleven areas 61844A to 61844K (i.e., 61844A, 61844B, 61844C, 61844D, 61844E, 61844F, 61844G, 61844H, 61844I, 61844J, 61844K). With increasing in the number of support rods, the canopy portion 6184 and thus the carrier 61800 may

be provided with a better supporting for impact resistance compared to the carrier 61700.

The support rods may be selected as a strip-shaped flexible member made of plastic or a hard part (such as metal), which is not limited thereto. Preferably, some or all of the support rods 61746, 61846 may be made of the energy-absorbing or shock-absorbing material as mentioned, so as to provide the carrier with a better impact resistance to prevent the animal therein from being impacted or injured due to the side collision or a sudden change in vehicle speed or direction.

Third embodiment of the third aspect

Referring to FIG. 89, a travel device carrier 61900 according to the third embodiment of the third aspect of the present disclosure is schematically shown. The carrier 61900 has a structure and a configuration similar to those of the carrier 61700 as shown in FIG. 87, including the box portion 61902 with the buckle assembly 61910, the canopy portion 6194 detachably attached to the box portion 61902, the carrying handle 61906 detachably and pivotably connected to opposite sides of the box portion 61902 by the pivot shaft 61962, and the bracket assembly 61908 connected to the outer bottom of the box portion 61902. The canopy portion 6194 also has a structure and a configuration similar to those of the canopy portion 6174, including the U-shaped frames 61942 connected to the box portion 61902 by the respective pivot shafts 61948 as well as the four support rods 61946 for supporting the cover 61944. Similar to the canopy portion 6174, the cover 61944 of canopy portion 6194 is divided into five areas 61944A to 61944E (i.e., 61944A, 61944B, 61944C, 61944D, 61944E).

The carrier 61900 is different from the carrier 61700 in that, in this embodiment, the cover 61944 is embedded with a protection apparatus 61901 in the central area 61944C thereof. The protection apparatus 61901 may be formed as a plate or sheet made of the energy-absorbing or shock-absorbing material as mentioned, so as to provide the carrier with a better impact resistance to prevent the animal carried therein from being impacted or injured due to the side collision or a sudden change in vehicle speed or direction.

Fourth embodiment of the third aspect

Referring to FIGS. 90A and 90B, FIG. 90A schematically shows a carrier 62000 according to a further embodiment of the present disclosure, and FIG. 90B schematically shows the arrangement of protection apparatuses of this embodiment.

The carrier 62000 has a structure and a configuration similar to those of the carrier 61700 as shown in FIG. 87, including the box portion 62002 with the buckle assembly 62010, the canopy portion 62040 detachably attached to the box portion 62002, the carrying handle 62006 detachably and pivotably connected to opposite sides of the box portion 62002 by the pivot shafts 62062, and the bracket assembly 62008 connected to the outer bottom of the box portion 62002. The canopy

portion 62040 also has a structure and a configuration similar to those of the canopy portion 6174, including the U-shaped frames 62042 connected to the box portion 62002 by the respective pivot shafts 62048 as well as the four support rods 62046 for supporting the cover 62044. Similar to the canopy portion 6174, the cover 62044 of canopy portion 62040 is divided into five areas 62044A to 62044E (i.e., 62044A, 62044B, 62044C, 62044D, 62044E).

The carrier 62000 is different from the carrier 61700 in that, in this embodiment, the canopy portion 62040 includes a plurality of protection apparatuses 62001 attached on the outer and/or inner surface of the areas 62044A to 62044E. The protection apparatuses 62001 may be formed as plates or sheets made of the energy-absorbing or shock-absorbing material as mentioned, so as to provide the carrier with a better impact resistance to prevent the animal carried therein from being impacted or injured due to side collision or a sudden change in vehicle speed. As shown in FIG. 90B, the protection apparatuses 62001 are shown as attached on the inner surface of the cover 62044 by binding or by adhesive bonding. However, in the areas 62044A to 62044E, it is also possible to have these protection apparatuses 62001 attached on the outer surface of the cover 62044, or embedded in the cover 62044.

Further, the protection apparatus 62001 as shown in FIG. 90B is constructed as a two-layer structure including a first layer 62001A and a second layer 62001B. The protection apparatus 62001 is made of a selected combination of the energy-absorbing or shock-absorbing materials as mentioned, such that the second layer 62001B (i.e., facing or adjacent to the accommodating space) facing and adjacent to the animal in the box portion (not shown) is relatively soft compared to the first layer 62001A, for providing a comfortable experience for the animal.

Alternatively, the protection apparatus may be formed with a shape or a configuration corresponding to the cover 62044 of the canopy portion 62040. For example, the protection apparatus may have a single-piece structure fully corresponding to the contour of the canopy portion 62040, such that the protection apparatus may be fully attached, e.g. by binding or by adhesive bonding, on the inner surface and/or the outer surface of the cover 62044, or embedded in the cover 62044. Preferably, the protection apparatus is formed with a two-piece structure, with each corresponding to one half of the canopy portion 62040, such that the protection apparatus is foldable with the folding of the canopy portion.

Fifth embodiment of the third aspect

Referring to FIGS. 91 to 93, FIGS. 91 to 93 are side views of carriers according to the fifth embodiment of the third aspect of the present disclosure, schematically showing various designs for canopies of the carriers. The carriers 62100, 62200 and 62300 have structures and configurations similar to those of the carrier 61700 as shown in FIG. 87, except for the design and modification for

the respective cover of the canopy portion.

As shown in FIG. 91, the carrier 62100 includes the box portion 62102 with the buckle assembly 62110, the canopy portion 62140 detachably attached to the box portion 62102, the carrying handle 62106 pivotably and detachably connected to opposite sides of the box portion 62102 by pivot shafts 62162, and the bracket assembly 62108 connected to the outer bottom of the box portion 62102, which are similar to those of the carriers as mentioned. The canopy portion 62140 also has a structure and a configuration similar to those of the canopy portions as mentioned, including the U-shaped frames 62142 connected to the box portion 62102 with the respective pivot shafts 62148 as well as the four support rods 62146 for supporting the cover 62144. Similar to the canopy portion 6174, the cover 62144 of canopy portion 62140 is divided into five areas 62144A to 62144E (i.e., 62144A, 62144B, 62144C, 62144D, 62144E).

In this embodiment, some of the areas 62144A to 62144E of the cover 62144 are made of a grid fabric (i.e., a “mesh fabric”) to enhance the circulation of air inside and outside the carrier 62100. The grid fabrics also allow the user (for example, the animal owner) to observe the animal, i.e., forming the “observation area”, to check the status of the animal in the carrier. In other embodiments, these areas may also be made of a transparent material (e.g. a plastic film) and optionally provided with a breathable structure. It is worth noting that the fabric of a relatively small grid size always provides a relatively high strength compared to that of a relatively large grid size. In view of this, it is possible to select the grid size of the fabric according to the actual application, and optionally, the different areas of the cover 62144 may be made of grid fabrics of different grid sizes.

In light of practical experience, the animal in the carrier will move in a specific direction when encountering the collision or being hit by an external object or vehicle due to inertia. Therefore, it is preferred in the present disclosure to arrange the fabric of a relatively small grid size, and thus of a relatively high strength, in an area of the cover facing such direction, so as to provide better protection to the animal when the animal is thrown (moves/hits) toward the fabric during the collision or hitting. In the embodiment as shown in FIG. 91, the left half of the cover 62144 is made of the grid fabric, and the second area upward from the U-shaped frames 62142, i.e. the area 62144D between the area 62144E and the area 62144C, is made of the fabric of relatively small grid size to support the animal carried in the carrier with a relatively high strength, so as to protect the animal in a relatively safe manner. Empirically, an external hitting or side collision will give the carrier an impact force such that the animal carried in the carrier will move in a direction toward the area 62144D in the embodiment shown by FIG. 91. Therefore, the arrangement of the fabric of a relatively small grid size may protect the animal in the carrier when the animal is “flying

(moving/hitting)" toward this area.

As shown in FIG. 92, the carrier 62200 includes the box portion 62202 with the buckle assembly 62210, the canopy portion 62240 detachably attached to the box portion 62202, the carrying handle 62206 pivotably and detachably connected to opposite sides of the box portion 62202 by the pivot shafts 62262, and the bracket assembly 62208 connected to the outer bottom of the box portion 62202, which are similar to those of the carriers as mentioned. The canopy portion 62240 also has a structure and a configuration similar to those of the canopy portions as mentioned, including the U-shaped frames 62242 connected to the box portion 62202 with the respective pivot shafts 62248 as well as the four support rods 62246 for supporting the cover 62244. Similar to the canopy portion 6174, the cover 62244 of canopy portion 62240 is divided into five areas 62244A to 62244E (i.e., 62244A, 62244B, 62244C, 62244D, 62244E).

Similarly, some of the areas 62244A to 62244E of the cover 62244 are made of the grid fabric to enhance the circulation of air inside and outside the carrier 62200, and the different areas of the cover 62244 may be made of grid fabrics of different grid sizes. As shown in FIG. 92, at least the areas 62244B to 62244E are made of the grid fabric. The area 62244D between the area 62244E and the area 62244C is made of the fabric of relatively small grid size. Empirically, an external hitting or side collision will give the carrier an impact or a force such that the animal carried in the carrier will move in a direction toward the area 62244D in the embodiment shown by FIG. 92. Therefore, the arrangement of fabric of a relatively small grid size may protect the animal in the carrier when the animal is "flying (moving/hitting)" toward this area. Further, the area 62244B may be covered with a cloth 62244' (also served as a protective cover) and the internal of the box portion 62202 is revealed when the cloth is uncovered, thereby allowing the user or animal owner to check the status of the animal therein.

As shown in FIG. 93, the carrier 62300 includes the box portion 62302 with the buckle assembly 62310, the canopy portion 62340 detachably attached to the box portion 62302, the carrying handle 62306 pivotably and detachably connected to opposite sides of the box portion 62302 by the pivot shafts 62362, and the bracket assembly 62308 connected to the outer bottom of the box portion 62302, which are similar to those of the carriers as mentioned. The canopy portion 62340 also has a structure and a configuration similar to those of the canopy portions as mentioned, including the U-shaped frames 62342 connected to the box portion 62302 by the respective pivot shafts 62348 as well as the four support rods 62346 for supporting the cover 62344. Similar to the canopy portion 6174, the cover 62344 of canopy portion 62340 is divided into five areas 62344A to 62344E (i.e., 62344A, 62344B, 62344C, 62344D, 62344E).

Similarly, some of the areas 62344A to 62344E of the cover 62344 are made of the grid fabric

to enhance the circulation of air inside and outside the carrier 62300, and the different areas of the cover 62344 may be made of grid fabrics of different grid sizes. As shown in FIG. 93, at least the areas 62344B to 62344E are made of the grid fabric. In this embodiment, the area 62344D sandwiched by the areas 62344E and 62344C, and the area 62344B sandwiched by the areas 62344A and 62344C are made of the same fabric of relatively small grid size. In this manner, it is possible to protect the animal in the carrier when the animal is "flying (moving/hitting)" in directions toward both areas 62344B and 62344D in the embodiment shown by FIG. 93. Further, the area 62344B may be covered with a cloth 62344' and the cloth 62344' maybe uncovered to reveal the internal of the box portion 62302, thereby allowing the user or animal owner to check the status of animal therein.

In addition to being attached to the carrier at the side surface of the carrier corresponding to one of the short sides, it is also possible to have the protection apparatus attached to the carrier at the side surface corresponding to one of the long sides, as the embodiments as shown in FIGS. 85A to 85C and FIGS. 86A to 86C, respectively.

A fourth aspect of the present disclosure also provides a carrier and an impact resistant material provided on the carrier, the specific structure of which will be described hereinafter in conjunction with the accompanying drawings. The "impact resistant material" in this aspect may also be referred to as a "impact resistant body (part)" or a "protection block (structure)", and may be considered as an example of a "protection device".

Referring to FIG. 94, FIG. 94 schematically shows a carrier 7110 according to a first embodiment of the fourth aspect of the present disclosure.

As shown in FIG. 94, the carrier of the first embodiment of this aspect includes a box body 7110. The box body 7110 includes a body 7111 and a bottom support member 7112. The body 7111 forms four side surfaces and a top surface of the box body 7110, and the bottom support member 7112 forms a bottom part of the box body 7110. In an embodiment, the body 7111 is detachably connected to the bottom support member 7112, and more specifically, disposed above the bottom support member 7112 to form an accommodating space for carrying a pet together with the bottom support member 7112.

The body 7111 may include a first support member and a second support member. In this embodiment, the first support member may be a side support member 71111, the second support member may be an upper support member 71112, and the side support member 71111 may be at least partially detachably connected to the upper support member 71112 by at least one connection assembly. The connection assembly may include mating structures respectively disposed on the side support member 71111 and the upper support member 71112, for example, the mating structures

may be mutually engaged zipper structures, snap-fit structures, sliding buckle structures, hook-and-loop fasteners, hook-and-loop structures, etc. Optionally, soft connection structures are used.

In an example, the side support member 71111 may include a first sub-support member 71111a and a second sub-support member 71111b, the first sub-support member 71111a and the second sub-support member 71111b are disposed on two sides of the upper support member 71112 (e.g., symmetrically disposed relative to the upper support member 71112), and at least a part of the first sub-support member 71111a and at least a part of the second sub-support member 71111b may each be detachably connected to the upper support member 71112 by the second connection assembly. The first sub-support member 71111a and the second sub-support member 71111b of the side support member 71111 form two side surfaces of the body 7111, and the upper support member 71112 forms the top surface and at least a part of the other two side surfaces of the body 7111. Optionally, the first sub-support member 71111a and the second sub-support member 71111b are connected as one body by a connecting piece 71111c. For example, the first sub-support member 71111a and the second sub-support member 71111b are integrally formed with the connecting piece 71111c.

The upper support member 71112 may include three sheet-like members connected to each other and may be arched when connected with the side support member 71111. Specifically, the upper support member 71112 may include a first sheet-like member 71112a, a second sheet-like member 71112b, and a third sheet-like member 71112c. The first sheet-like member 71112a and the third sheet-like member 71112c form a part of the other two side surfaces of the body 7111, respectively, and the second sheet-like member 71112b forms a top surface of the body 7111. Optionally, the first sheet-like member 71112a and the third sheet-like member 71112c have a flexible structure (i.e., are bendable). In a specific example, the upper support member 71112 may have an integral structure, i.e., the three sheet-like members 71112a, 71112b, 71112c are formed as one body, for example, by means of a connection such as sewing. However, the present disclosure is not limited thereto, and the three sheet-like members may also be detachably connected to each other by flexible connection structures or the like.

In addition, as shown in FIG. 94, a carrying handle 7115 may be disposed on a top side of the upper support member 71112 (i.e., the second sheet-like member 71112b), e.g., disposed at a central position of the top side, for carrying the pet carrier. In an example, the carrying handle 7115 may be a flexible webbing. Optionally or alternatively, the carrying handle 7115 may also be formed of a rigid plastic.

Referring to FIGS. 95 and 96, FIGS. 95 and 96 schematically show another perspective view