

ANIMAL CONTAINMENT DEVICE**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims the benefit of U.S. Provisional Application Nos. 63/647,974, filed on May 15, 2024, 63/664,931, filed on June 27, 2024, 63/672,892, filed on July 18, 2024, 63/688,573, filed on August 29, 2024, and 63/709,199, filed on October 18, 2024, which are incorporated by reference as if fully set forth.

TECHNICAL FIELD

[0002] The present disclosure relates generally to animal containment devices. In particular, the present disclosure relates animal containment devices for securing a pet or an animal in a vehicle.

BACKGROUND

[0003] Many pet owners utilize a crate, cage, or other type of traveling carrier to transport animals in a vehicle, such as an automobile, airplane, train, bicycle, or the like. Pet traveling carriers are available that cooperate with safety belts or other anchor points of a vehicle to prevent a pet from roaming within and/or escaping from a vehicle. However, these carriers often do not adequately secure a pet in the case of a sudden change in vehicle speed or direction and can be difficult to install in a vehicle. An improperly restrained pet is more likely to be injured and to injure occupants of a vehicle during a crash.

[0004] Additionally, many existing pet traveling carriers suffer from various other deficiencies. For example, some pet traveling carriers lack safety features and the ability to securely attach them to a vehicle, and carriers that do attach to the vehicle often take up considerable room in the cargo area when not in use and can be difficult to install and remove. In another example, some pet traveling carriers are insufficiently anchored to contain and protect the animal in the event of a vehicle crash. In yet another example, some pet traveling carriers lack safety features relevant to crash performance when installed in the rear cargo area of a vehicle. In still another example, most pet traveling carriers are not crash tested and if they are, they utilize anchor points in the vehicle which are not rated for the weight of the carrier and therefore are likely to break upon impact.

SUMMARY

[0005] Aspects of this disclosure relate to animal containment systems, devices, and methods for securing an animal containment device, such as a crate for a large dog, in the rear cargo area of a vehicle while maintaining a substantially leak-free vehicle seal when using tie-down anchor points located on the exterior of the vehicle, such as cargo door hinges.

[0006] In accordance with one aspect of the disclosure, an animal containment system for a cargo area of a vehicle is disclosed. The animal containment system may include a body defining a cavity within which an animal is receivable. The animal containment device may include a tie-down anchor assembly disposed on the body of the animal containment device. The animal containment system may further include a tie-down strap assembly coupled to the animal containment device and a structure of the vehicle. The tie-down strap assembly may include a tie-down strap having a first end attachable to the tie-down anchor assembly and a second end attachable to the load-bearing mounting structure of the vehicle, such as a rear door hinge, cargo area side-wall-mounted anchor, cargo area floor-mounted anchor, or exterior surface of the vehicle (e.g., vehicle frame, cargo rack, tailgate assembly). The tie-down strap assembly further includes a tie-down strap adjuster coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap. The tie-down strap adjuster includes an angle-based locking mechanism and a stationary routing component. A portion of the tie-down strap is positioned between angle-based locking mechanism and the stationary routing component.

[0007] In accordance with another aspect, an animal containment device is disclosed. The animal containment device may include a body defining a cavity within which an animal is receivable. The animal containment device may further include a tie-down anchor assembly disposed on the body of the animal containment device, the tie-down anchor assembly comprising an open loop of webbing providing a webbing connection point for attachment to a fastening mechanism of a tie-down strap assembly.

[0008] In accordance with another aspect, a tie-down strap assembly for a cargo area of a vehicle is disclosed. The tie-down strap assembly may include a tie-down strap having a first end attachable to a tie-down anchor assembly of an animal containment device and a second end attachable to a load-bearing mounting structure of the vehicle. The tie-down strap assembly may further include a tie-down strap adjuster coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap. The tie-down strap adjuster may be configured to adjust a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap. The tie-down strap assembly may further include a gasket disposed around a portion of the tie-down strap proximate the second end of the tie-down strap. The gasket may include a gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion. The gasket opening may be sized to receive the portion of the tie-down strap. The gasket contact portion may be located to receive an external force applied to the gasket body by a door of the cargo area of the vehicle. The gasket opening may decrease in size when the external force is applied to the gasket body.

[0009] In accordance with another aspect, a method of forming an animal containment system for a cargo area of a vehicle is disclosed. The method may include forming an animal containment device having a body defining a cavity within which an animal is receivable. The animal containment device may include a tie-down anchor assembly disposed on the body of the animal containment device. The method may further include forming a tie-down strap assembly including a tie-down strap having a first end attachable to the tie-down anchor assembly and a second end attachable to a load-bearing mounting structure of the vehicle.

[0010] In accordance with another aspect, method for installing an animal containment system in a cargo area of a vehicle is disclosed. The method may include disposing an animal containment device in a cargo area of a vehicle, the animal containment device having a body defining a cavity within which an animal is receivable. The animal containment device may include a tie-down anchor assembly disposed on the body of the animal containment device. The method may further include attaching a first end of a tie-down strap of a tie-down strap assembly to a mounting structure of a vehicle. The method may further include attaching a second end of the tie-down strap of the tie-down strap assembly to the tie-down anchor assembly of the animal containment device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The following description of the illustrative embodiments may be better understood when read in conjunction with the appended drawings. It is understood that potential embodiments of the disclosure are not limited to those depicted. With reference to the accompanying drawings, like elements are numbered alike.

[0012] FIG. 1 is a perspective view of an example animal containment system installed in a cargo area of a vehicle according to an embodiment of the disclosure;

[0013] FIGS. 2A, 2B, 2C, 2D, 2E, and 2F are perspective, rear, side, top, and bottom views of an example animal containment device according to an embodiment of the disclosure;

[0014] FIGS. 3A, 3B, 3C, 3D, 3E, and 3F are perspective, side, top, and bottom views of an example animal containment device according to an embodiment of the disclosure;

[0015] FIGS. 4A, 4B, 4C, 4D, and 4E are perspective, side, and cross-sectional views of an example tie-down strap adjuster according to an embodiment of the disclosure;

[0016] FIGS. 5A, 5B, 5C, and 5D are exploded and cut-away perspective views of an example tie-down anchor assembly disposed on a side panel of the body of an example animal containment device according to an embodiment of the disclosure;

- [0017] FIG. 6 is an exploded perspective view of an example tie-down anchor assembly disposed on a top panel of the body of an example animal containment device according to an embodiment of the disclosure;
- [0018] FIGS. 7A, 7B, and 7C are side and cut-away perspective views of an example animal containment device having a top tie-down anchor assembly according to an embodiment of the disclosure;
- [0019] FIGS. 8A, 8B, 8C, 8D, 8E, and 8F are perspective, top, and cross-sectional views of an example tie-down strap assembly according to an embodiment of the disclosure;
- [0020] FIGS. 9A, 9B, 9C, and 9D are perspective views of an example animal containment system secured in a cargo area of a vehicle according to an embodiment of the disclosure;
- [0021] FIGS. 10A and 10B are perspective and cross-sectional views of an example gasket of an example tie-down strap assembly according to an embodiment of the disclosure;
- [0022] FIGS. 11A and 11B are perspective and cross-sectional views of another example gasket of another example tie-down strap assembly according to an embodiment of the disclosure;
- [0023] FIGS. 12A and 12B are perspective and cross-sectional views of another example gasket of another example tie-down strap assembly according to an embodiment of the disclosure;
- [0024] FIGS. 13A, 13B, and 13C are perspective and cross-sectional views of another example gasket of another example tie-down strap assembly according to an embodiment of the disclosure;
- [0025] FIGS. 14A and 14B are perspective and cross-sectional views of another example gasket of another example tie-down strap assembly according to an embodiment of the disclosure;
- [0026] FIGS. 15A and 15B are perspective and cross-sectional views of another example gasket of another example tie-down strap assembly according to an embodiment of the disclosure;
- [0027] FIGS. 16A, 16B, and 16C are top and side views of an example tie-down strap of an example tie-down strap assembly according to an embodiment of the disclosure;
- [0028] FIG. 17 is a flow chart of an example method for forming an animal containment system for a cargo area of a vehicle according to aspects of the disclosure; and
- [0029] FIG. 18 is a flow chart of an example method for installing an animal containment system in a cargo area of a vehicle according to aspects of the disclosure.

DETAILED DESCRIPTION

- [0030] The present disclosure sets forth various aspects of an animal containment system for a vehicle including an animal containment device for containing a pet. The animal containment system includes one or more tie-down strap assemblies for mounting/securing the animal containment device in a vehicle.

[0031] It should be noted that the illustrations and descriptions of the examples and embodiments shown in the figures are for example purposes only, and should not be construed limiting the disclosure. One skilled in the art will appreciate that the present disclosure contemplates various embodiments. Additionally, it should be understood that the concepts described above with the above-described examples and embodiments may be employed alone or in combination with any of the other examples and embodiments described above. It should further be appreciated that the various alternative examples and embodiments described above with respect to one illustrated embodiment can apply to all examples and embodiments as described herein, unless otherwise indicated.

[0032] Unless explicitly stated otherwise, each numerical value and range should be interpreted as being approximate, as if the word “about,” “approximately,” or “substantially” preceded the value or range, and is intended to include the degree of error associated with measurement of the particular quantity based upon the equipment available at the time of filing the application.

[0033] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the present disclosure. As used herein, the singular forms “a,” “an” and “the” are intended to include the plural forms as well, unless the context clearly indicates otherwise. Conditional language used herein, such as, among others, “can,” “could,” “might,” “may,” “e.g.,” and the like, unless specifically stated otherwise, or otherwise understood within the context as used, is generally intended to convey that certain embodiments include, while other embodiments do not include, certain features, elements, and/or steps. Thus, such conditional language is not generally intended to imply that features, elements, and/or steps are in any way required for one or more embodiments or that one or more embodiments necessarily include logic for deciding, with or without author input or prompting, whether these features, elements and/or steps are included or are to be performed in any particular embodiment. The terms “comprising,” “including,” “having,” and the like are synonymous and are used inclusively, in an open-ended fashion, and do not exclude additional elements, features, acts, operations, and so forth. For example, it will be understood that the terms “comprises,” “comprising,” *etc.*, when used in this specification, specify the presence of stated features, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, element components, and/or groups thereof. Also, the term “or” is used in its inclusive sense (and not in its exclusive sense) so that when used, for example, to connect a list of elements, the term “or” means one, some, or all of the elements in the list.

[0034] The example embodiments may be further understood with reference to the following description and the related appended drawings, wherein like elements are provided with the same reference numerals. The example embodiments describe an animal containment system and/or associated apparatuses for safely transporting animals (e.g., dogs) in a vehicle cargo area. In some

embodiments, the animal containment system features an animal containment device (e.g., crate) for holding the animal that can be secured in a cargo area of a vehicle to securely transport the animal in the vehicle.

[0035] The animal containment device may include, or be referred to alternatively as, a crate, a dog crate, a storage device, or another suitable device. Those skilled in the art will understand that the animal containment device is configured to safely hold an animal during, for example, transportation of the animal in a moving vehicle and/or for transportation of the animal outside the vehicle. The animal containment device can include or can be configured to cooperate with one or more load legs and/or tie-down straps or other securing members to position and secure the animal containment device within the vehicle.

[0036] In some embodiments, the disclosure provides for various animal containment devices which can be secured in the cargo space of a vehicle utilizing various tie-down strap assemblies and vehicle anchor points which are rated for the weight of the animal containment device plus its animal occupants and therefore are substantially less likely to fail (e.g., break) upon impact (e.g., vehicular crash). As a result, the animal containment systems, devices, and assemblies disclosed herein provide improved safety for both the animal in the animal containment device and the occupants in the vehicle. In some embodiments, the disclosure provides for mechanisms (e.g., tie-down anchor assemblies, tie-down strap assemblies) which are used to tie the animal containment device in the cargo space more securely than traditional animal crates as well as mechanisms (e.g., gaskets) which are used to maintain a substantially leak-free vehicle when the vehicle anchor points (e.g., cargo door hinges) are located on the exterior of the vehicle.

[0037] The animal containment systems disclosed herein can provide crash safety of rear seat human occupants in a vehicle when an animal, such as a dog, is behind them in the animal containment device in the rear cargo area of the vehicle. The animal containment systems disclosed herein can also provide crash safety for the dog in the rear cargo area. Additionally, the animal containment systems disclosed herein can provide a "universal" fit in many sport utility vehicle (SUV) rear cargo areas. In some aspects, the animal containment devices disclosed herein can be formed of a material that is durable and has the strength of heavy-duty kennels with some of the flexibility and aesthetics of soft-sided crates.

[0038] During a typical crash with impact on the front or rear of the vehicle, when the animal containment device is located in the vehicle cargo area, the impact forces from the crash will tend to cause the animal containment device to move forward (e.g., toward the vehicle seats and occupants), upward toward the ceiling, and/or rotationally forward and up (e.g., sending the top of the animal containment device over the vehicle seatback). Accordingly, features of the present disclosure aid in absorbing and/or counteracting such impact forces. In various embodiments, the animal containment device is part of an animal containment system that may include one or more features (including, but not

limited to, a mounting assembly) that positively retain and/or block the animal containment device in the cargo area, preventing the animal containment device from becoming a projectile and/or inducing harm to animal or human occupants. As such, embodiments disclosed herein provide crash safety of rear seat human occupants when an animal (e.g., a dog) or other cargo is behind them in the rear cargo area along with crash safety of the animal or cargo itself.

[0039] In the following description, the terms "front" and "rear" are generally used with respect to a front and rear of a vehicle in which aspects of the present disclosure are used or intended to be used, unless otherwise stated. Thus, for example, a rear of an animal containment device is oriented toward a rear of vehicle or refers to a portion of the animal containment device intended to be orientated towards a rear of a vehicle.

[0040] It should be further understood that reference to a "side" of the animal containment device is provided for ease of explanation, and that multiple different components of the animal containment device can define the exterior of the animal containment device and these exterior components are not necessarily orthogonal to the other "sides." Additionally, the terms "inside" and/or "interior" and/or "internal" may refer to features in a direction toward the center of the animal containment device, relative to a certain component of the animal containment device, and the terms "outside" and/or "exterior" and/or "external" may refer to features in a direction away from the center of the animal containment device, relative to a certain component of the animal containment device.

[0041] Although the disclosure may illustrate different embodiments, it is contemplated that aspects of individual embodiments may be combined or omitted. Therefore, the disclosure and claims are not intended to be limited to the illustrated embodiments.

[0042] FIG. 1 is a perspective view of an example animal containment system 100 installed in a cargo area of a vehicle according to an embodiment of the disclosure. As shown, the cargo area of the vehicle includes floor 4 and at least one floor-mounted anchor (e.g., load-bearing floor, side, and/or ceiling tie-down anchor points), such as floor-mounted anchors 6A, 6B, 6C (not shown), and 6D.

[0043] The animal containment device 110 may be a portable, enclosed containment assembly or crate that includes a body 112 defining an enclosure having an interior within which an animal is receivable, the body 112 including a cavity. The animal containment device 110 may include a base and at least one wall extending from the base upwardly and partially defining the cavity. For example, the animal containment device 110 may have a bottom panel 113 (not shown), top panel 114, front panel 117, rear panel 119 (not shown), first side panel 116, and second side panel 118 (not shown).

[0044] As shown, the animal containment system 100 may comprise an animal containment device 110 having a body 112 defining a cavity within which an animal is receivable. As shown, the body 112 has a top panel 114 oriented facing a ceiling of the cargo area of the vehicle, a first side panel 116

oriented facing a first side wall of the cargo area of the vehicle, a second side panel 118 (not shown) oriented facing a second side wall of the cargo area of the vehicle opposite the first side wall of the cargo area of the vehicle, a front panel 117 oriented facing a rear seat surface of a vehicle seat (e.g., a “front side” of the cargo area of the vehicle), and a rear panel 119 (not shown) oriented facing a rear wall or door of the cargo area of the vehicle (e.g., a “rear side” of the cargo area of the vehicle opposite the “front side” of the cargo area of the vehicle).

[0045] The animal containment device 110 includes at least one tie-down anchor assembly disposed on the body 112 of the animal containment device 110. For example, as shown, the animal containment device 110 includes six tie-down anchor assemblies (e.g., providing webbing connection points for up to six tie-down strap assemblies), including two top tie-down anchor assemblies 120A and 120B disposed on first and second portions, respectively, of a top panel 114 of the body 112 of the animal containment device 110, two side tie-down anchor assemblies 122A and 122B disposed on first and second portions, respectively, of a first side panel 116 of the body 112 of the animal containment device 110, and two side tie-down anchor assemblies 122C (not shown) and 122D (not shown) disposed on first and second portions, respectively, of a second side panel 118 (not shown) of the body 112 of the animal containment device 110. In some aspects, the animal containment device 110 may include a respective biasing mechanism coupled to the respective webbing (e.g., the tie-down anchor point for attachment to the fastening mechanism of the tie-down strap assembly) of each of the tie-down anchor assemblies 120A, 120B, 122A, 122B, 122C (not shown), and 122D, such that the webbing connection point of each tie-down anchor assembly is spring-biased by the biasing mechanism. In some aspects, the webbing of each of the tie-down anchor assemblies 120A, 120B, 122A, 122B, 122C (not shown), and 122D may be accessible via an opening defined in the body 112 of the animal containment device 110. An example side tie-down anchor assembly is described in further detail below with reference to FIGS. 5A, 5B, 5C, and 5D, and an example top tie-down anchor assembly is described in further detail below with reference to FIG. 6.

[0046] The animal containment system 100 further includes at least one tie-down strap assembly coupled to the animal containment device 110 and a load-bearing mounting structure of the vehicle, such as a rear door hinge (e.g., a hinge of the cargo hatch), cargo area side-wall-mounted anchor, cargo area floor-mounted anchor, or exterior surface of the vehicle (e.g., vehicle frame, cargo rack, tailgate assembly). For example, as shown, the animal containment system 100 includes six tie-down strap assemblies coupled to the animal containment device 110 and a load-bearing mounting structure of the vehicle, including two top tie-down strap assemblies 130A and 130B removably attached to the two top tie-down anchor assemblies 120A and 120B, respectively, and four side tie-down strap assemblies 132A,

132B, 132C (not shown), and 132D removably attached to the four side tie-down anchor assemblies 122A, 122B, 122C (not shown), and 122D, respectively.

[0047] Each tie-down strap assembly includes a tie-down strap having a first end attachable to a respective tie-down anchor assembly and a second end attachable to the load-bearing mounting structure of the vehicle. For example, as shown, each of the two top tie-down strap assemblies 130A and 130B includes a tie-down strap having a first end attachable to a respective one of the two top tie-down anchor assemblies 120A and 120B, respectively, and a second end removably attachable to an overhead anchor point, such as a hinge coupled to a door of the cargo area of the vehicle. In another example, as shown, each of the four side tie-down strap assemblies 132A, 132B, 132C (not shown), and 132D includes a tie-down strap having a first end attachable to a respective one of the four side tie-down anchor assemblies 122A, 122B, 122C (not shown), and 122D, and a second end removably attachable to a respective one of the floor-mounted anchors 6A, 6B, 6C (not shown), and 6D disposed on the floor 4 of the cargo area of the vehicle.

[0048] As shown, each tie-down strap assembly 130A, 130B, 132A, 132B, 132C (not shown), and 132D further includes a tie-down strap adjuster 131A, 131B, 133A, 133B, 133C (not shown), and 133D, respectively, coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap. The tie-down strap adjuster may be configured to adjust a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap. An example tie-down strap adjuster is described in further detail below with reference to FIGS. 4A, 4B, 4C, 4D, and 4E.

[0049] As shown, each tie-down strap assembly further includes a first fastening mechanism fixedly attached to the first end of the tie-down strap and removably attachable to the tie-down anchor, and a second fastening mechanism fixedly attached to the second end of the tie-down strap and removably attachable to the load-bearing mounting structure of the vehicle. For example, as shown, the first fastening mechanism includes a first carabiner assembly, and the second fastening mechanism includes a second carabiner assembly.

[0050] In some aspects, the animal containment system 100 further includes at least one load leg. For example, as shown, the animal containment system 100 includes a load leg 140 coupled to the animal containment device 110 and extendable from the body 112 of the animal containment device to a rear seat surface 2 of the vehicle. The load leg 140 may be installed or otherwise provide support against the rear seat surface 2 of the rear vehicle seat, which may also be referred to as the "vehicle seatback," and configured to reduce a magnitude of an impact force transferred from the rear seat surface 2 of the vehicle to the animal containment device 110 during an impact event. By adding energy-absorption structures as disclosed herein, the tie-down anchor assemblies 120A, 120B, 122A, 122B,

122C, and 122D, the tie-down strap assemblies 130A, 130B, 132A, 132B, 132C, and 132D, and the load leg 140 may help absorb impact forces during a crash and thereby reduce the force exerted upon the pet contained within the animal containment device 110, further reducing injury.

[0051] In some aspects, a user may place the animal containment system 100 on the floor 4 of the cargo area of the vehicle, behind the rear seat surface 2 and under the ceiling of the vehicle. The position of the load leg 140 of the animal containment system 100 may be extended off the front panel 117 at a distance so when the load leg 140 contacts the rear seat surface 2 of the vehicle seat, no other part of the animal containment device 110 is able to contact the vehicle seat 2. The load leg 140 may work in conjunction with the tie-down strap assemblies 130A, 130B, 132A, 132B, 132C, and 132D to ensure that the animal containment device 110 does not contact the rear seat surface 2, for example.

[0052] FIGS. 2A, 2B, 2C, 2D, 2E, and 2F are perspective, rear, side, top, and bottom views of an example animal containment device 210 according to an embodiment of the disclosure. The animal containment device 210 may be a portable, enclosed containment assembly or crate that includes a body 212 defining an enclosure having an interior within which an animal is receivable, the body 212 including a cavity. The animal containment device 210 has a bottom panel 213 (e.g., including four anti-slip pads each having a triangular geometry, as shown), top panel 214, front panel 217, rear panel 219, first side panel 216, and second side panel 218.

[0053] The animal containment device 210 includes a load leg 240 and six tie-down anchor assemblies (e.g., providing webbing connection points for six tie-down strap assemblies), including two top tie-down anchor assemblies 220A and 220B disposed on first and second portions, respectively, of a top panel 214 of the body 212 of the animal containment device 210, two side tie-down anchor assemblies 222A and 222B disposed on first and second portions, respectively, of a first side panel 216 of the body 212 of the animal containment device 210, and two side tie-down anchor assemblies 222C and 222D disposed on first and second portions, respectively, of a second side panel 218 of the body 212 of the animal containment device 210. In some aspects, the animal containment device 210 may include a respective biasing mechanism coupled to each of the tie-down anchor assemblies 220A, 220B, 222A, 222B, 222C, and 222D, such that the webbing connection point of each tie-down anchor assembly is spring-biased by the biasing mechanism. In some aspects, each of the tie-down anchor assemblies 220A, 220B, 222A, 222B, 222C, and 222D may be accessible via an opening defined in the body 212 of the animal containment device 210.

[0054] As shown in FIG. 2D, the animal containment system 200 further includes top tie-down strap assembly 230A removably attached to the top tie-down anchor assembly 220A, and side tie-down strap assemblies 232B removably attached to the side tie-down anchor assembly 222B. In some aspects, a user may place the animal containment system 200 on the floor 4 of the cargo area of the vehicle, behind

the rear seat surface 2 and under the ceiling of the vehicle. The position of the load leg 240 of the animal containment system 200 may be extended off the front panel 217 at a distance so when the load leg 240 contacts the rear seat surface 2 of the vehicle seat, no other part of the animal containment device 210 is able to contact the vehicle seat 2. In some aspects, the animal containment system 200 further includes a load leg 240 coupled to the animal containment device 210 and extendable from the body 212 of the animal containment device to a rear seat surface 2 of the vehicle. The load leg 240 may be installed or otherwise provide support against the rear seat surface 2 of the rear vehicle seat.

[0055] FIGS. 3A, 3B, 3C, 3D, 3E, and 3F are perspective, rear, side, top, and bottom views of an example animal containment device 310 according to an embodiment of the disclosure. The animal containment device 310 may be a portable, enclosed containment assembly or crate that includes a body 312 defining an enclosure having an interior within which an animal is receivable, the body 312 including a cavity. The animal containment device 310 has a bottom panel 313 (e.g., including four anti-slip pads each having a triangular geometry, as shown), top panel 314, front panel 317, rear panel 319, first side panel 316, and second side panel 318.

[0056] The animal containment device 310 includes a load leg 340 and eight tie-down anchor assemblies (e.g., providing webbing connection points for up to eight tie-down strap assemblies), including four top tie-down anchor assemblies 320A, 320B, 320C, and 320D disposed on first, second, third, and fourth portions, respectively, of a top panel 314 of the body 312 of the animal containment device 310, two side tie-down anchor assemblies 322A and 322B disposed on first and second portions, respectively, of a first side panel 316 of the body 312 of the animal containment device 310, and two side tie-down anchor assemblies 322C and 322D disposed on first and second portions, respectively, of a second side panel 318 of the body 312 of the animal containment device 310. In some aspects, the animal containment device 310 may include a respective biasing mechanism coupled to each of the tie-down anchor assemblies 320A, 320B, 320C, 320D, 322A, 322B, 322C, and 322D. In some aspects, each of the tie-down anchor assemblies 320A, 320B, 320C, 320D, 322A, 322B, 322C, and 322D may be accessible via an opening defined in the body 312 of the animal containment device 310.

[0057] FIGS. 4A, 4B, 4C, 4D, and 4E are perspective, side, and cross-sectional views of an example tie-down strap adjuster 400 of an example tie-down strap assembly according to an embodiment of the disclosure. As shown, the tie-down strap adjuster 400 may include an angle-based locking mechanism 404 and a stationary routing component 406. Optionally, as shown in FIG. 4A, the tie-down strap adjuster 400 may be utilized with an optional metal 3-bar 402. As shown in FIGS. 4D and 4E, the tie-down strap adjuster 400 is coupled to the first webbing 410 and the second webbing 411 of the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap. The tie-down strap adjuster 400 may be configured to adjust a length of the tie-down strap between the first end

of the tie-down strap and the second end of the tie-down strap by adjusting the location of the -down strap adjuster 400 along the first webbing 410.

[0058] As shown in FIGS. 4D and 4E, the first portion 410A of the first webbing 410 is free and unattached. As further shown, the second portion 410B of the first webbing 410 is attached to the vehicle anchor point, such as a hinge coupled to a door of the cargo area of the vehicle, or a floor-mounted anchor (e.g., one of floor-mounted anchors 6A, 6B, 6C, 6D) disposed on the floor (e.g., floor 4) of the cargo area of the vehicle. As further shown, the portion 411A of the second webbing 411 is attached to the housing of the tie-down strap adjuster 400.

[0059] In some aspects, the housing of the tie-down strap adjuster 400 may be made of metal with holes cut out for a “3-Bar” 402 (e.g., a metal 3-Bar structure) to secure to an end of the second webbing 411. Alternatively, the 3-Bar 402 may be formed of a first material (e.g., metal) and secured within the housing of the tie-down strap adjuster 400, and the housing may be formed of a second material (e.g., plastic).

[0060] As shown in FIGS. 4C, 4D, and 4E, the tie-down strap adjuster 400 may include an angle-based locking mechanism 404 rotatable between a first angular position (e.g., an unlocked position shown in FIGS. 4C and 4D) and a second angular position (e.g., a locked position shown in FIG. 4E). As shown in FIG. 4D, the angle-based locking mechanism 404 in the first angular position permits an adjustment of the length of the tie-down strap by permitting an adjustment of the location of the -down strap adjuster 400 along the first webbing 410. As shown in FIG. 4E, the angle-based locking mechanism 404 in the second angular position prohibits the adjustment of the length of the tie-down strap by prohibiting an adjustment of the location of the -down strap adjuster 400 along the first webbing 410.

[0061] As shown in FIGS. 4C, 4D, and 4E, the tie-down strap adjuster 400 may further include a stationary routing component 406. As shown, a third portion 410C of the first webbing 410 is positioned between the angle-based locking mechanism 404 and the stationary routing component 406. In some aspects, as shown in FIG. 4D, the angle-based locking mechanism 404 in the first angular position increases a distance between the angle-based locking mechanism 404 and the stationary routing component 406 (e.g., the angle-based locking mechanism 404 rotates counter clockwise to unlock the third portion 410C of the first webbing 410 from the stationary routing component 406) to permit a movement of the third portion 410C of the first webbing 410. In some aspects, as shown in FIG. 4E, the angle-based locking mechanism 404 in the second angular position decreases the distance between the angle-based locking mechanism 404 and the stationary routing component 406 (e.g., the angle-based locking mechanism 404 rotates clockwise to lock the third portion 410C of the first webbing 410 against the stationary routing component 406) to prohibit the movement of the third portion 410C of the first

webbing 410. In some aspects, the angle-based locking mechanism 404 in the second angular position increases a holding force on the tie-down strap when a tension force is applied to the tie-down strap.

[0062] In some aspects, by utilizing utilizes an angle-based locking mechanism 404, the tie-down strap adjuster 400 disclosed herein does not require a user to release a spring-loaded button from the tie-down strap to loosen it from a given position. For example, As shown in FIG. 4D, if the first portion 410A of the first webbing 410 is substantially parallel with the top face of the housing of the tie-down strap adjuster 400, the first webbing 410 can move freely about the tie-down strap adjuster 400. As shown in FIG. 4E, once the first portion 410A of the first webbing 410 deviates from parallel to an angle greater than approximately fifteen degrees (15°), the location of the tie-down strap adjuster 400 along the first webbing 410 will be locked in place: e.g., the angle-based locking mechanism 404 rotates clockwise, pinching the third portion 410C of the first webbing 410 between the angle-based locking mechanism 404 and the stationary routing component 406.

[0063] FIGS. 5A, 5B, 5C, and 5D are exploded and cut-away perspective views of an example tie-down anchor assembly 500 (e.g., a side tie-down anchor assembly) disposed on a side panel 516 of the body 512 of an example animal containment device according to an embodiment of the disclosure. As shown, the side panel 516 comprises a body portion 516A, a side trim portion 516B, a first cut portion 516C, a second cut portion 516D, and an opening portion 516E (e.g., a recess in the side panel 516). FIG. 5A provides an exploded perspective view of the tie-down anchor assembly 500, showing the side of the animal containment device with the webbing 513 hidden. FIG. 5B provides a cut-away side view of the tie-down anchor assembly 500, showing the side of the animal containment device with the side trim portion 516B and the webbing 513 hidden and the first cut portion 516C, second cut portion 516D, and opening portion 516E of the side panel 516 set to transparent. FIG. 5C provides a cut-away side view of the tie-down anchor assembly 500, showing the side of the animal containment device with the side trim portion 516B and the webbing 513 hidden and the first cut portion 516C, second cut portion 516D, and opening portion 516E of the side panel 516 set to non-transparent. FIG. 5D provides a cut-away side view of the tie-down anchor assembly 500, showing the side of the animal containment device with the side trim portion 516B hidden, the webbing 513 shown, and the first cut portion 516C, second cut portion 516D, and opening portion 516E of the side panel 516 set to non-transparent.

[0064] As shown, the tie-down anchor assembly 500 includes webbing 523, which provides a tie-down anchor point for attachment to the fastening mechanism (e.g., carabiner) of a tie-down strap assembly. As shown, the webbing 523 is accessible via an opening defined by the opening portion 516E in the side panel 516 of the body 512 of the animal containment device.

[0065] As shown, the tie-down anchor assembly 500 includes a biasing mechanism 558 coupled to the webbing 523 of the tie-down anchor assembly 500 and the webbing (not shown) of another tie-down

anchor assembly. As such, the biasing mechanism 558 may couple together an adjacent pair of side tie-down anchor assemblies, such as tie-down anchor assemblies 122A and 122B, 122C and 122D, 222A and 222B, 222C and 222D, 322A and 322B, and 322C and 322D, such that the webbing connection points (e.g., the exposed, open loops of webbing) of each of the adjacent pair of tie-down anchor assemblies is spring-biased by the biasing mechanism 558. For example, the webbing 523 is biased to the stored position, and a first portion 523A of the webbing 523 (e.g., an open loop of webbing) remains visible and usable for connecting a fastening mechanism (e.g., carabiner, hook, or other device) of a tie-down strap assembly to secure the animal containment device to an anchor point of the vehicle. The first portion 523A of the webbing 523 may rest in an open loop so that a user can connect the fastening mechanism with one hand and without having to pull out or otherwise manipulate the webbing 523. As a result, the spring-bias allows each piece of webbing 523 to be pulled outwards from the animal containment device to allow for installation (e.g., attachment to a tie-down strap assembly) regardless of anchor point locations within the vehicle.

[0066] As shown, the biasing mechanism 558 includes a first hanger 550, a first spring 554 having a first spring end coupled to the first hanger 550, a first attachment structure 570 (e.g., post, screw, bolt, pin) coupled to a second spring end of the first spring 554, a slide tube 560, a first pin 562, and a first routing structure 566 defining an opening to route the first portion 523A of the webbing 523, which provides the tie-down anchor point for attachment to the fastening mechanism (e.g., carabiner) of a first tie-down strap assembly.

[0067] As shown, the biasing mechanism 558 further includes a second hanger 552, a second spring 556 having a first spring end coupled to the second hanger 552, a second attachment structure 572 (e.g., post, screw, bolt, pin) coupled to a second spring end of the second spring 556, a second pin 564, and a second routing structure 568 defining an opening to route a first portion of a second webbing (not shown), which provides the tie-down anchor point for attachment to the fastening mechanism (e.g., carabiner) of a second tie-down strap assembly.

[0068] In some aspects, as shown, on one end, the webbing 523 is sewn around the slide tube 560 where the first routing structure 566 is positioned to route the webbing 523. The webbing 523 is then routed through the first cut portion 516C and the second cut portion 516D on the side panel 516 such that a first portion 233A of the webbing 523 is visible on the exterior of the animal containment device. Subsequently, the second portion 523B of the webbing 523 contained within the animal containment device is routed over the first pin 562, through the first hanger 550, and then back under the first pin 562 before being sewn in place. As shown, this provides two loops for the webbing 523. Although the first spring 554 and the first hanger 550 (and similarly the second spring 556 and the second hanger 552) are shown as two separate parts, in some aspects they may be formed as one integrated part.

[0069] FIG. 6 is an exploded perspective view of an example tie-down anchor assembly 600 (e.g., a top tie-down anchor assembly) disposed on a top panel 614 of the body 612 of an example animal containment device according to an embodiment of the disclosure. As shown, the top panel 614 comprises a body portion 614A and an opening portion 614B. The tie-down anchor assembly 600 includes a webbing (not shown) which provides a tie-down anchor point for attachment to the fastening mechanism (e.g., carabiner) of a tie-down strap assembly. The webbing is accessible via an opening defined by the opening portion 614B in the top panel 614 of the body 612 of the animal containment device.

[0070] As shown, the tie-down anchor assembly 600 includes a biasing mechanism 658 coupled to the webbing of the tie-down anchor assembly 600. As such, the biasing mechanism 658 may spring-bias the webbing connection points of each of the top tie-down anchor assemblies (e.g., tie-down anchor assemblies 120A, 120B, 220A, 220B, 320A, 320B, 320C, 320D). For example, the webbing may be biased to the stored position, and a first portion of the webbing may remain visible and usable for connecting a fastening mechanism (e.g., carabiner, hook, or other device) of a tie-down strap assembly to secure the animal containment device to an overhead anchor point of the vehicle. The first portion of the webbing may rest in an open loop so that a user can connect the fastening mechanism with one hand and without having to pull out or otherwise manipulate the webbing. As a result, the spring-bias allows each piece of webbing to be pulled outwards from the animal containment device to allow for installation (e.g., attachment to a tie-down strap assembly) regardless of anchor point locations within the vehicle.

[0071] As shown, the biasing mechanism 658 includes a hanger 650, a spring 654 having a first spring end coupled to the hanger 650, an attachment structure 670 (e.g., a hole, post, screw, bolt, pin) coupled to a second spring end of the spring 654, a bracket 660, a pin 662, and a routing structure 664 (e.g., a roof insert having a first recessed or cut portion 664A and a second recessed or cut portion 664B therein to mate with the webbing) defining an opening to route the first portion of the webbing, which provides the tie-down anchor point for attachment to the fastening mechanism (e.g., carabiner) of a tie-down strap assembly.

[0072] As shown, the webbing is secured on the animal containment device by being slid through the hanger 650, then routed out and into slots on the roof (e.g., formed by the opening portion 616B and the recessed or cut portions 664A, 664B in the routing structure 664) before being sewn back onto itself to form a continuous loop of webbing. For example, as shown a first end of the webbing may be routed through the opening portion 614B in the top panel 614, through the first recessed or cut portion 664A of the routing structure 664, under the pin 662, through the hanger 650, back over the pin 662, through the second recessed or cut portion 664B of the routing structure 664, and then back through the opening portion 614B before being sewn onto a second end of the webbing to form a continuous loop of webbing.

having a portion that is visible and usable (e.g., for connection to the fastening mechanism of a tie-down strap assembly) on the exterior of the animal containment device. Although the spring 654 and the hanger 650 are shown as two separate parts, in some aspects they may be formed as one integrated part. In some aspects, a gasket (not shown) may be disposed around the webbing of the tie-down anchor assembly 600 to substantially prevent liquid contamination.

[0073] FIGS. 7A, 7B, and 7C are side and cut-away perspective views of an example animal containment device 710 having a top tie-down anchor assembly 720 disposed on a top panel 714 of the body 712 of the example animal containment device 710 according to an embodiment of the disclosure. As shown, the top panel 714 comprises a body portion 714A and an opening portion 714B. The tie-down anchor assembly 720 includes a webbing 723 which provides a tie-down anchor point for attachment to the fastening mechanism (e.g., carabiner) of a tie-down strap assembly. The webbing is accessible via an opening defined by the opening portion 714B in the top panel 714 of the body 712 of the animal containment device 710.

[0074] As shown, the tie-down anchor assembly 720 includes a biasing mechanism 758 coupled to the webbing 723 of the tie-down anchor assembly 720. As such, the biasing mechanism 758 may spring-bias the webbing connection points of each of the top tie-down anchor assemblies (e.g., tie-down anchor assemblies 120A, 120B, 220A, 220B, 320A, 320B, 320C, 320D). For example, the webbing 723 may be biased to the stored position, and a first portion (not shown) of the webbing 723 may remain visible and usable for connecting a fastening mechanism (e.g., carabiner, hook, or other device) of a tie-down strap assembly to secure the animal containment device to an overhead anchor point of the vehicle. The first portion of the webbing 723 may rest in an open loop so that a user can connect the fastening mechanism with one hand and without having to pull out or otherwise manipulate the webbing 723. As a result, the spring-bias allows the webbing 723 to be pulled outwards from the animal containment device 710 to allow for installation (e.g., attachment to a tie-down strap assembly) regardless of anchor point locations within the vehicle.

[0075] As shown, the biasing mechanism 758 includes a hanger 750, a spring 754 having a first spring end coupled to the hanger 750, an attachment structure 770 (e.g., a hole, post, screw, bolt, pin) coupled to a second spring end of the spring 754, a bracket 760, a pin 762, and a routing structure 764 (e.g., a roof insert having a first recessed or cut portion 764A and a second recessed or cut portion 764B therein to mate with the webbing 723) defining an opening to route the first portion of the webbing 723, which provides the tie-down anchor point for attachment to the fastening mechanism (e.g., carabiner) of a tie-down strap assembly.

[0076] As shown, the webbing 723 is secured on the animal containment device 710 by being slid through the hanger 750, then routed out and into slots on the roof (e.g., formed by the opening portion

716B and the first recessed or cut portions 764A, 764B in the routing structure 764) before being sewn back onto itself to form a continuous loop of webbing. For example, as shown a first end of the webbing 723 may be routed through the opening portion 714B in the top panel 714, through the first recessed or cut portion 764A of the routing structure 764, under the pin 762, through the hanger 750, back over the pin 762, through the second recessed or cut portion 764B of the routing structure 764, and then back through the opening portion 714B before being sewn onto a second end of the webbing 723 to form a continuous loop of webbing having a portion that is visible and usable (e.g., for connection to the fastening mechanism of a tie-down strap assembly) on the exterior of the animal containment device 710. Although the spring 754 and the hanger 750 are shown as two separate parts, in some aspects they may be formed as one integrated part. In some aspects, a gasket (not shown) may be disposed around the webbing 723 of the tie-down anchor assembly 720 to substantially prevent liquid contamination.

[0077] FIGS. 8A, 8B, 8C, 8D, 8E, and 8F are perspective, top, and cross-sectional views of an example tie-down strap assembly 800 configured to be coupled to a tie-down anchor assembly of an animal containment device and an anchor point of a vehicle according to an embodiment of the disclosure.

[0078] As shown, the tie-down strap assembly 800 includes a tie-down strap having a first webbing 810 and a second webbing 811, a tie-down strap adjuster 813, a first fastening mechanism 814, and a second fastening mechanism 816. As shown, the first webbing 810 has a first end 810A that is fixedly attached to (e.g., sewn around) a portion of the first fastening mechanism 814, a second end 810B that remains free and unattached, and an adjustable portion 810C that is slidably routed through the tie-down strap adjuster 813. As shown, the second webbing 811 has a first end 811A that is fixedly attached to (e.g., sewn around) a portion of the tie-down strap adjuster 813 and a second end 811B that is fixedly attached to (e.g., sewn around) a portion of the second fastening mechanism 816.

[0079] The tie-down strap adjuster 813 is configured to adjust a length of the tie-down strap between the first end of the tie-down strap (e.g., the first end 810A of the first webbing 810) and the second end of the tie-down strap (e.g., the second end 811B of the second webbing 811) by, for example, adjusting a location of tie-down strap adjuster 813 along the first webbing 810, while the location of tie-down strap adjuster 813 along the second webbing 811 remains stationary.

[0080] As shown, the first fastening mechanism 814 is fixedly attached to a first end 810A of the first webbing 810 and removably attachable to a tie-down anchor assembly, and the second fastening mechanism 816 is fixedly attached to a second end 811B of the second webbing 811 and removably attachable to the load-bearing mounting structure of the vehicle. For example, as shown, the first fastening mechanism 814 includes a first carabiner assembly, and the second fastening mechanism 816 includes a second carabiner assembly. As shown, each carabiner assembly includes a post 890 (e.g.,

having a pin formed of metal and a cover formed of plastic or another suitable material) such that the webbing cannot be removed from the carabiner upon use (e.g., which limits the travel of the webbing once secured onto the carabiner).

[0081] The first webbing 810 of the tie-down strap has a first end attachable to a tie-down anchor assembly, and the second webbing 811 of the tie-down strap has a second end attachable to the load-bearing mounting structure of the vehicle. For example, as shown, each of the two top tie-down strap assemblies 130A and 130B includes a tie-down strap having a first end attachable to a respective one of the two top tie-down anchor assemblies 120A and 120B, respectively, and a second end removably attachable to an overhead anchor point, such as a hinge coupled to a door of the cargo area of the vehicle (e.g., a hinge of the cargo hatch). In another example, as shown, each of the four side tie-down strap assemblies 132A, 132B, 132C (not shown), and 132D includes a tie-down strap having a first end attachable to a respective one of the four side tie-down anchor assemblies 122A, 122B, 122C (not shown), and 122D, and a second end removably attachable to a respective one of the floor-mounted anchors 6A, 6B, 6C (not shown), and 6D disposed on the floor 4 of the cargo area of the vehicle.

[0082] FIGS. 9A, 9B, 9C, and 9D are perspective views of an example animal containment system having an example animal containment device 910 secured in a cargo area of a vehicle using tie-down strap assemblies 930, 932A, and 932B according to an embodiment of the disclosure. In some aspects, each of tie-down strap assemblies 930, 932A, and 932B includes a tie-down strap having a first end attachable to a respective tie-down anchor assembly of the animal containment device 910 and a second end attachable to the load-bearing mounting structure of the vehicle. For example, as shown, the top tie-down strap assembly 930 includes a tie-down strap having a first end attachable to a top tie-down anchor assembly of the animal containment device 910, and a second end removably attachable to an overhead vehicular anchor point, such as a vehicle cargo area hinge 906C coupled to a door of the cargo area of the vehicle. In another example, as shown, each of the side tie-down strap assemblies 932A and 932B includes a tie-down strap having a first end attachable to a respective side tie-down anchor assembly of the animal containment device 910, and a second end removably attachable to a respective floor-mounted or side-mounted vehicular anchor point, such as a respective one of the side-mounted anchors 906A and 906B disposed on the side walls of the cargo area of the vehicle.

[0083] As shown, the tie-down strap of the tie-down strap assembly 930 is tied around the vehicle cargo area hinge 906C. In some aspects, because the tie-down strap creates a gap in the vehicle seal along the trunk, a gasket 980 may be disposed around the tie-down strap to substantially prevent water intrusion into the vehicle (e.g., water trickling down the tie-down strap into the rear cargo area of the vehicle). In some aspects, as shown, a gasket 980 is disposed around a portion of the tie-down strap proximate the second end of the tie-down strap of tie-down strap assembly 930 (e.g., a user may place

the gasket at the door jamb between the hinge and the weatherproofing strip ("weatherstrip") or seal affixed to the vehicle). The gasket may be formed of a material comprising at least one of a rubber, a foam, and a silicone. In some aspects, the gasket may be overmolded on the tie-down strap or be provided as a secondary component such that may freely move along the tie-down strap so that a user may position it on the vehicle where appropriate. Example gaskets are described in further detail below with reference to FIGS. 10A, 10B, 11A, 11B, 12A, 12B, 13A, 13B, 13C, 14A, 14B, 15A, and 15B.

[0084] FIGS. 10A and 10B are perspective and cross-sectional views of an example gasket 1080 according to an embodiment of the disclosure. As shown, the gasket 1080 is disposed around the webbing 1010 of an example tie-down strap of an example tie-down strap assembly, the webbing is removably attached to a vehicle cargo area hinge 1006 that is coupled to a door of the cargo area of the vehicle. When the door is closed, the webbing 1010 is disposed between a first vehicle gasket 1007 affixed to the door and a second vehicle gasket 1008 affixed to the vehicle body. In some aspects, the gasket 1080 may be formed of a material that is compressible and water-resistant or substantially waterproof (e.g., a material that does not absorb or hold water and sheds water W when in contact with it). For example, the gasket 1080 may be formed of rubber, foam, silicone, or another suitable material.

[0085] As shown, the gasket 1080 includes a gasket body 1082 having an inner gasket surface 1084 defining a gasket opening and a convoluted gasket path 1085, and an outer gasket surface 1086 defining a gasket contact portion. The gasket opening is sized to receive a portion of the webbing 1010 of the tie-down strap, and the gasket contact portion is located to receive external forces F1 and F2 applied to the gasket body 1082 by the cargo area door of the vehicle. The gasket body 1082 is configured such that the gasket opening decreases in size when the external forces F1 and F2 are applied to the gasket body 1082. In some aspects, a first portion of the gasket opening connects with a second portion of the gasket opening when the external forces F1 and F2 are applied to the gasket body 1082 (e.g., the size of the opening decreases such that the top and bottom of the opening contact each other when compressed to accommodate webbings of different widths). In some aspects, the webbing 1010 of the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and the gasket 1080 is configured to reduce or substantially prevent a fluid flow along the portion of the webbing 1010 in both the tensioned configuration and the untensioned configuration.

[0086] FIGS. 11A and 11B are perspective and cross-sectional views of an example gasket 1180 according to an embodiment of the disclosure. As shown, the gasket 1180 is disposed around the webbing 1110 of an example tie-down strap of an example tie-down strap assembly, the webbing is removably attached to a vehicle cargo area hinge 1106 that is coupled to a door of the cargo area of the vehicle. When the door is closed, the webbing 1110 is disposed between a first vehicle gasket 1107 affixed to the door and a second vehicle gasket 1108 affixed to the vehicle body. In some aspects, the

gasket 1180 may be formed of a material that is compressible and water-resistant or substantially waterproof (e.g., a material that does not absorb or hold water and sheds water W when in contact with it). For example, the gasket 1180 may be formed of rubber, foam, silicone, or another suitable material.

[0087] As shown, the gasket 1180 includes a gasket body 1182 having an inner gasket surface 1184 defining a gasket opening and a gasket path 1185, and an outer gasket surface 1186 defining a gasket contact portion. The gasket opening is sized to receive a portion of the webbing 1110 of the tie-down strap, and the gasket contact portion is located to receive external forces F1 and F2 applied to the gasket body 1182 by the cargo area door of the vehicle. The gasket body 1182 is configured such that the gasket opening decreases in size when the external forces F1 and F2 are applied to the gasket body 1182. In some aspects, a first portion of the gasket opening connects with a second portion of the gasket opening when the external forces F1 and F2 are applied to the gasket body 1182 (e.g., the size of the opening decreases such that the top and bottom of the opening contact each other when compressed to accommodate webbings of different widths). In some aspects, the webbing 1110 of the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and the gasket 1180 is configured to reduce or substantially prevent a fluid flow along the portion of the webbing 1110 in both the tensioned configuration and the untensioned configuration.

[0088] FIGS. 12A and 12B are perspective and cross-sectional views of an example gasket 1280 according to an embodiment of the disclosure. As shown, the gasket 1280 is disposed around the webbing 1210 of an example tie-down strap of an example tie-down strap assembly, the webbing is removably attached to a vehicle cargo area hinge 1206 that is coupled to a door of the cargo area of the vehicle. When the door is closed, the webbing 1210 is disposed between a first vehicle gasket 1207 affixed to the door and a second vehicle gasket 1208 affixed to the vehicle body. In some aspects, the gasket 1280 may be formed of a material that is compressible and water-resistant or substantially waterproof (e.g., a material that does not absorb or hold water and sheds water W when in contact with it). For example, the gasket 1280 may be formed of rubber, foam, silicone, or another suitable material.

[0089] As shown, the gasket 1280 includes a gasket body 1282 having an inner gasket surface 1284 defining a gasket opening and a gasket path 1285, and an outer gasket surface 1286 defining a gasket contact portion. The gasket opening is sized to receive a portion of the webbing 1210 of the tie-down strap, and the gasket contact portion is located to receive external forces F1 and F2 applied to the gasket body 1282 by the cargo area door of the vehicle. The gasket body 1282 is configured such that the gasket opening decreases in size when the external forces F1 and F2 are applied to the gasket body 1282. In some aspects, a first portion of the gasket opening connects with a second portion of the gasket opening when the external forces F1 and F2 are applied to the gasket body 1282 (e.g., the size of the opening decreases such that the top and bottom of the opening contact each other when compressed to

accommodate webbings of different widths). In some aspects, the webbing 1210 of the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and the gasket 1280 is configured to reduce or substantially prevent a fluid flow along the portion of the webbing 1210 in both the tensioned configuration and the untensioned configuration.

[0090] FIGS. 13A and 13B are perspective and cross-sectional views of an example gasket 1380 according to an embodiment of the disclosure. As shown, the gasket 1380 is disposed around the webbing 1310 of an example tie-down strap of an example tie-down strap assembly, the webbing is removably attached to a vehicle cargo area hinge 1306 that is coupled to a door of the cargo area of the vehicle. When the door is closed, the webbing 1310 is disposed between a first vehicle gasket 1307 affixed to the door and a second vehicle gasket 1308 affixed to the vehicle body. In some aspects, the gasket 1380 may be formed of a material that is compressible and water-resistant or substantially waterproof (e.g., a material that does not absorb or hold water and sheds water W when in contact with it). For example, the gasket 1380 may be formed of rubber, foam, silicone, or another suitable material.

[0091] As shown, the gasket body 1382 includes a first gasket body portion 1382A (e.g., an upper-half gasket portion) connected (e.g., clamped) to a second gasket body portion 1382B (e.g., an upper-half gasket portion) utilizing one or more fastening mechanisms (e.g., screws attached through the screw bosses 1388A, 1388B shown in FIG. 13B; snaps; adhesive; etc.). As shown, the gasket 1380 includes a gasket body 1382 having an inner gasket surface 1384 defining a gasket opening and a gasket path 1385 having a first interior gasket material 1387A and a second interior gasket material 1387B, and an outer gasket surface 1386 defining a gasket contact portion. The gasket opening is sized to receive a portion of the webbing 1310 of the tie-down strap, and the gasket contact portion is located to receive external forces F1 and F2 applied to the gasket body 1382 by the cargo area door of the vehicle. The gasket body 1382 is configured such that the gasket opening decreases in size when the external forces F1 and F2 are applied to the gasket body 1382. In some aspects, a first portion of the gasket opening connects with a second portion of the gasket opening when the external forces F1 and F2 are applied to the gasket body 1382 (e.g., the size of the opening decreases such that the top and bottom of the opening contact each other when compressed to accommodate webbings of different widths). In some aspects, the webbing 1310 of the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and the gasket 1380 is configured to reduce or substantially prevent a fluid flow along the portion of the webbing 1310 in both the tensioned configuration and the untensioned configuration.

[0092] FIGS. 14A and 14B are perspective and cross-sectional views of an example gasket 1480 according to an embodiment of the disclosure. As shown, the gasket 1480 is disposed around the webbing 1410 of an example tie-down strap of an example tie-down strap assembly, the webbing is

removably attached to a vehicle cargo area hinge 1406 that is coupled to a door of the cargo area of the vehicle. When the door is closed, the webbing 1410 is disposed between a first vehicle gasket 1407 affixed to the door and a second vehicle gasket 1408 affixed to the vehicle body. In some aspects, the gasket 1480 may be formed of a material that is compressible and water-resistant or substantially waterproof (e.g., a material that does not absorb or hold water and sheds water W when in contact with it). For example, the gasket 1480 may be formed of rubber, foam, silicone, or another suitable material.

[0093] As shown, the gasket 1480 includes a gasket body 1482 having an inner gasket surface 1484 defining a gasket opening and a gasket path 1485, and an outer gasket surface 1486 (e.g., having a plurality of short ridges, as shown) defining a plurality of gasket contact portions. The gasket opening is sized to receive a portion of the webbing 1410 of the tie-down strap, and the gasket contact portion is located to receive external forces F1 and F2 applied to the gasket body 1482 by the cargo area door of the vehicle. The gasket body 1482 is configured such that the gasket opening decreases in size when the external forces F1 and F2 are applied to the gasket body 1482. In some aspects, a first portion of the gasket opening connects with a second portion of the gasket opening when the external forces F1 and F2 are applied to the gasket body 1482 (e.g., the size of the opening decreases such that the top and bottom of the opening contact each other when compressed to accommodate webbings of different widths). In some aspects, the webbing 1410 of the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and the gasket 1480 is configured to reduce or substantially prevent a fluid flow along the portion of the webbing 1410 in both the tensioned configuration and the untensioned configuration.

[0094] FIGS. 15A and 15B are perspective and cross-sectional views of an example gasket 1580 according to an embodiment of the disclosure. As shown, the gasket 1580 is disposed around the webbing 1510 of an example tie-down strap of an example tie-down strap assembly, the webbing is removably attached to a vehicle cargo area hinge 1506 that is coupled to a door of the cargo area of the vehicle. When the door is closed, the webbing 1510 is disposed between a first vehicle gasket 1507 affixed to the door and a second vehicle gasket 1508 affixed to the vehicle body. In some aspects, the gasket 1580 may be formed of a material that is compressible and water-resistant or substantially waterproof (e.g., a material that does not absorb or hold water and sheds water W when in contact with it). For example, the gasket 1580 may be formed of rubber, foam, silicone, or another suitable material.

[0095] As shown, the gasket 1580 includes a gasket body 1582 having an inner gasket surface 1584 defining a gasket opening and a gasket path 1585, and an outer gasket surface 1586 (e.g., a plurality of tall ridges, as shown) defining a plurality of gasket contact portions. The gasket opening is sized to receive a portion of the webbing 1510 of the tie-down strap, and the gasket contact portion is located to receive external forces F1 and F2 applied to the gasket body 1582 by the cargo area door of

the vehicle. The gasket body 1582 is configured such that the gasket opening decreases in size when the external forces F1 and F2 are applied to the gasket body 1582. In some aspects, a first portion of the gasket opening connects with a second portion of the gasket opening when the external forces F1 and F2 are applied to the gasket body 1582 (e.g., the size of the opening decreases such that the top and bottom of the opening contact each other when compressed to accommodate webbings of different widths). In some aspects, the webbing 1510 of the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and the gasket 1580 is configured to reduce or substantially prevent a fluid flow along the portion of the webbing 1510 in both the tensioned configuration and the untensioned configuration.

[0096] FIGS. 16A, 16B, and 16C are top and side views of an example tie-down strap 1600 of an example tie-down strap assembly according to an embodiment of the disclosure. As shown, the tie-down strap 1600 includes webbing forming a plurality of attachment positions 1602A, 1602B, and 1602C, a first end 1604 that is twisted over, and a second end 1606 configured to be inserted through the opening of a gasket and tied around the vehicle hinge (e.g., as described with reference to FIGS. 9-15). In some aspects, the tie-down strap 1600 is formed of a material that can withstand at least 8.5 kilonewtons (kN) of force and is substantially waterproof or coated in a waterproofing substance. As shown, the tie-down strap 1600 provides multiple sewn attachment points to ensure proper fitment in different vehicles. In some aspects, a carabiner assembly connecting the tie-down strap 1600 to the animal containment device may be attached to any of the attachment points to secure the animal containment device within the vehicle.

[0097] FIG. 17 is a flow chart of an example method 1700 for forming an animal containment system for a cargo area of a vehicle according to aspects of the disclosure. It is noted that one or more steps may be combined, that certain steps may be omitted, and that the steps may be performed in any preferred order as desired.

[0098] At step 1702, the method 1700 includes forming an animal containment device (e.g., as described with reference to FIGS. 1-3, 5-7, and/or 9) having a body defining a cavity within which an animal is receivable. The animal containment device may include a tie-down anchor assembly (e.g., as described with reference to FIGS. 5-7) disposed on the body of the animal containment device.

[0099] At step 1704, the method 1700 includes forming a tie-down strap assembly (e.g., as described with reference to FIG. 1, 4, 8, and/or 9-16) including a tie-down strap having a first end attachable to the tie-down anchor assembly and a second end attachable to a load-bearing mounting structure of the vehicle.

[0100] In some aspects, the forming of the tie-down strap assembly can include forming a tie-down strap adjuster (e.g., as described with reference to FIGS. 4 and/or 8) configured to adjust a length of the

tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap, and mounting the tie-down strap adjuster to the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap.

[0101] In some aspects, the forming of the tie-down strap assembly can include forming a gasket (e.g., as described with reference to FIGS. 9-15) and mounting the gasket around the portion of the tie-down strap proximate the second end of the tie-down strap (e.g., placing a gasket at the door jamb). The gasket may include a gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion, the gasket opening being sized to receive a portion of the tie-down strap, and the gasket contact portion being located to receive an external force applied to the gasket body by a door of the cargo area of the vehicle, wherein the gasket opening decreases in size when the external force is applied to the gasket body.

[0102] At optional step 1706, the method 1700 optionally includes attaching the first end of the tie-down strap assembly to the tie-down anchor assembly of the animal containment device (e.g., as described with reference to FIGS. 1-3 and/or 5-9).

[0103] At optional step 1708, the method 1700 optionally includes attaching the second end of the tie-down strap assembly to the load-bearing mounting structure of the vehicle (e.g., as described with reference to FIGS. 1-3 and/or 9).

[0104] FIG. 18 is a flow chart of an example method 1800 for installing an animal containment system in a cargo area of a vehicle according to aspects of the disclosure. In some aspects, the steps disclosed with respect to example method 1800 provide improved (e.g., simpler, easier, more secure) techniques for a user (e.g., vehicle operator, pet owner or handler) to attach an animal containment device in a vehicle by, for example, placing the animal containment device in the vehicle, attaching one end of a tie-down strap assembly to a mounting structure of the vehicle, clipping (e.g., via a carabiner) the other end of the tie-down strap assembly to a tie-down anchor assembly (e.g., to an exposed portion of the webbing thereof) of the animal containment device, and then adjusting the length of (e.g., tightening) the tie-down strap assembly by operating a tie-down strap adjuster included in the tie-down strap assembly. It is noted that one or more steps may be combined, that certain steps may be omitted, and that the steps may be performed in any preferred order as desired.

[0105] At step 1802, the method 1800 includes disposing an animal containment device (e.g., as described with reference to FIGS. 1-3, 5-7, and/or 9) in a cargo area of a vehicle. The animal containment device may have a body defining a cavity within which an animal is receivable. The animal containment device may include a tie-down anchor assembly (e.g., as described with reference to FIGS. 5-7) disposed on the body of the animal containment device.

[0106] At step 1804, the method 1800 includes attaching a first end of a tie-down strap of a tie-down strap assembly (e.g., as described with reference to FIG. 1, 4, 8, and/or 9-16) to a mounting structure (e.g., a load-bearing mounting structure, such as a rear door hinge, cargo area side-wall-mounted anchor, or cargo area floor-mounted anchor) of the vehicle (e.g., as described with reference to FIGS. 1-3 and/or 9). In some aspects, the mounting structure of the vehicle may include a hinge coupled to the door of the cargo area of the vehicle, and the attaching of the second end of the tie-down strap assembly to the structure of the vehicle may include removably attaching the second end of the tie-down strap to the hinge (e.g., as described with reference to FIG. 9). In some aspects, the removably attaching of the second end of the tie-down strap to the hinge may include positioning a gasket (e.g., as described with reference to FIGS. 9-15) disposed around a portion of the tie-down strap proximate the hinge. The gasket may include a gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion. The gasket opening may be sized to receive the portion of the tie-down strap. The gasket contact portion may be positioned to receive an external force applied to the gasket body by a door of the cargo area of the vehicle. The gasket opening may decrease in size when the external force is applied to the gasket body. In some aspects, the removably attaching of the second end of the tie-down strap to the hinge may further include mounting the gasket around the portion of the tie-down strap proximate the second end of the tie-down strap.

[0107] At step 1806, the method 1800 includes attaching a second end of the tie-down strap of the tie-down strap assembly the tie-down anchor assembly of the animal containment device (e.g., as described with reference to FIGS. 1-3 and/or 5-9). Optionally, the tie-down strap assembly may include a tie-down strap adjuster mounted to the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap, and the method 1800 may further operating the tie-down strap adjuster to adjust (e.g., tighten) a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap (e.g., as described with reference to FIG. 4).

[0108] The above-described example embodiments may be implemented in various configurations and operated with various methods which are listed below:

1. An animal containment system for a cargo area of a vehicle, comprising:

an animal containment device having a body defining a cavity within which an animal is receivable, the animal containment device comprising a tie-down anchor assembly disposed on the body of the animal containment device; and

a tie-down strap assembly coupled to the animal containment device and a mounting structure of the vehicle, the tie-down strap assembly comprising:

a tie-down strap having a first end attachable to the tie-down anchor assembly and a second end attachable to the mounting structure of the vehicle; and

a tie-down strap adjuster coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap, the tie-down strap adjuster comprising an angle-based locking mechanism and a stationary routing component, wherein a portion of the tie-down strap is positioned between angle-based locking mechanism and the stationary routing component.

2. The animal containment system of configuration1, wherein the tie-down strap adjuster is coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap, and wherein the tie-down strap adjuster is configured to adjust a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap.

3. The animal containment system of configuration2, wherein the angle-based locking mechanism is rotatable between a first angular position and a second angular position, wherein the angle-based locking mechanism in the first angular position permits an adjustment of the length of the tie-down strap, and wherein the angle-based locking mechanism in the second angular position prohibits the adjustment of the length of the tie-down strap.

4. The animal containment system of configuration3, wherein the first angular position is an unlocked position, and wherein the second angular position is a locked position.

5. The animal containment system of configuration3, wherein the angle-based locking mechanism in the first angular position increases a distance between the angle-based locking mechanism and the stationary routing component to permit a movement of the portion of the tie-down strap, and wherein the angle-based locking mechanism in the second angular position decreases the distance between the angle-based locking mechanism and the stationary routing component to prohibit the movement of the portion of the tie-down strap.

6. The animal containment system of configuration3, wherein the angle-based locking mechanism in the second angular position increases a holding force on the tie-down strap when a tension force is applied to the tie-down strap.

7. The animal containment system of configuration1, the tie-down strap assembly further comprising a first fastening mechanism fixedly attached to the first end of the tie-down strap and removably attachable to the tie-down anchor assembly.

8. The animal containment system of configuration7, the tie-down strap assembly further comprising a second fastening mechanism fixedly attached to the second end of the tie-down strap and removably attachable to the mounting structure of the vehicle.

9. The animal containment system of configuration8, wherein the first fastening mechanism comprises a first carabiner assembly, and the second fastening mechanism comprises a second carabiner assembly.

10. The animal containment system of configuration1, wherein the mounting structure of the vehicle comprises a hinge coupled to a door of the cargo area of the vehicle, and wherein the second end of the tie-down strap is removably attachable to the hinge.

11. The animal containment system of configuration1, the body of the animal containment device having a top panel oriented facing a ceiling of the cargo area of the vehicle, wherein the tie-down anchor assembly is disposed on a first portion of the top panel.

12. The animal containment system of configuration11, wherein the tie-down anchor assembly is a first tie-down anchor assembly, the animal containment device comprising a second tie-down anchor assembly disposed on a second portion of the top panel.

13. The animal containment system of configuration12, the animal containment device comprising a third tie-down anchor assembly disposed on a third portion of the top panel.

14. The animal containment system of configuration13, the animal containment device comprising a fourth tie-down anchor assembly disposed on a fourth portion of the top panel.

15. The animal containment system of configuration13, the tie-down strap assembly comprising a gasket disposed around a portion of the tie-down strap proximate the second end of the tie-down strap, the gasket comprising a gasket body, the gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion, the gasket opening being sized to receive the portion of the tie-down strap, and the gasket contact portion being located to receive an external force applied to the gasket body, wherein the gasket body is configured such that the gasket opening decreases in size when the external force is applied to the gasket body.

16. The animal containment system of configuration15, wherein the gasket is formed of a material comprising at least one of a rubber, a foam, and a silicone.

17. The animal containment system of configuration15, wherein a first portion of the gasket opening connects with a second portion of the gasket opening when the external force is applied to the gasket body.

18. The animal containment system of configuration15, wherein the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and wherein the gasket is configured to reduce a fluid flow along the portion of the tie-down strap in both the tensioned configuration and the untensioned configuration.

19. The animal containment system of configuration1, wherein the mounting structure of the vehicle comprises a floor-mounted anchor of the cargo area of the vehicle, and wherein the second end of the tie-down strap is removably attachable to the floor-mounted anchor.

20. The animal containment system of configuration 19, the body of the animal containment device having a first side panel oriented facing a first side wall of the cargo area of the vehicle, wherein the tie-down anchor assembly is disposed on a first portion of the first side panel.

21. The animal containment system of configuration 20, wherein the tie-down anchor assembly is a first tie-down anchor assembly, the animal containment device comprising a second tie-down anchor assembly disposed on a second portion of the first side panel.

22. The animal containment system of configuration 21, the body of the animal containment device having a second side panel oriented facing a second side wall of the cargo area of the vehicle opposite the first side of the cargo area of the vehicle, the animal containment device comprising a third tie-down anchor assembly disposed on a third portion of the second side panel.

23. The animal containment system of configuration 22, the animal containment device comprising a fourth tie-down anchor assembly disposed on a fourth portion of the second side panel.

24. The animal containment system of configuration 1, the animal containment device comprising a biasing mechanism coupled to the tie-down anchor assembly, wherein the tie-down anchor assembly is accessible via an opening defined in the body of the animal containment device.

25. The animal containment system of configuration 1, further comprising a load leg coupled to the animal containment device and extendable from the body of the animal containment device to a rear seat surface of the vehicle, wherein the load leg is configured to reduce a magnitude of an impact force transferred from the rear seat surface of the vehicle to the animal containment device during an impact event.

26. A tie-down strap assembly for a cargo area of a vehicle, comprising:

a tie-down strap having a first end attachable to a tie-down anchor assembly of an animal containment device and a second end attachable to a mounting structure of the vehicle; and

a tie-down strap adjuster coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap, wherein the tie-down strap adjuster is configured to adjust a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap; and

a gasket disposed around a portion of the tie-down strap proximate the second end of the tie-down strap, the gasket comprising a gasket body, the gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion, the gasket opening being sized to receive the portion of the tie-down strap, and the gasket contact portion being located to receive an external force applied to the gasket body by a door of the cargo area of the vehicle, wherein the gasket opening decreases in size when the external force is applied to the gasket body.

27. The tie-down strap assembly of configuration 26, the tie-down strap adjuster comprising an angle-based locking mechanism rotatable between a first angular position and a second angular position, wherein the angle-based locking mechanism in the first angular position permits an adjustment of the length of the tie-down strap, and wherein the angle-based locking mechanism in the second angular position prohibits the adjustment of the length of the tie-down strap.

28. The tie-down strap assembly of configuration 27, wherein the first angular position is an unlocked position, and wherein the second angular position is a locked position.

29. The tie-down strap assembly of configuration 27, the tie-down strap adjuster further comprising a stationary routing component, wherein a portion of the tie-down strap is positioned between angle-based locking mechanism and the stationary routing component, wherein the angle-based locking mechanism in the first angular position increases a distance between the angle-based locking mechanism and the stationary routing component to permit a movement of the portion of the tie-down strap, and wherein the angle-based locking mechanism in the second angular position decreases the distance between the angle-based locking mechanism and the stationary routing component to prohibit the movement of the portion of the tie-down strap.

30. The tie-down strap assembly of configuration 27, wherein the angle-based locking mechanism in the second angular position increases a holding force on the tie-down strap when a tension force is applied to the tie-down strap.

31. The tie-down strap assembly of configuration 26, the tie-down strap assembly further comprising a first fastening mechanism fixedly attached to the first end of the tie-down strap and removably attachable to the tie-down anchor assembly.

32. The tie-down strap assembly of configuration 31, the tie-down strap assembly further comprising a second fastening mechanism fixedly attached to the second end of the tie-down strap and removably attachable to the mounting structure of the vehicle.

33. The tie-down strap assembly of configuration 32, wherein the first fastening mechanism comprises a first carabiner assembly, and the second fastening mechanism comprises a second carabiner assembly.

34. The tie-down strap assembly of configuration 26, wherein the mounting structure of the vehicle comprises a hinge coupled to the door of the cargo area of the vehicle, and wherein the second end of the tie-down strap is removably attachable to the hinge.

35. The tie-down strap assembly of configuration 26, wherein the gasket is formed of a material comprising at least one of a rubber, a foam, and a silicone.

36. The tie-down strap assembly of configuration 26, wherein a first portion of the gasket opening connects with a second portion of the gasket opening when the external force is applied to the gasket body.

37. The tie-down strap assembly of configuration 26, wherein the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and wherein the gasket is configured to reduce a fluid flow along the portion of the tie-down strap in both the tensioned configuration and the untensioned configuration.

38. A method comprising:

disposing an animal containment device in a cargo area of a vehicle, the animal containment device having a body defining a cavity within which an animal is receivable, the animal containment device comprising a tie-down anchor assembly disposed on the body of the animal containment device; and

attaching a first end of a tie-down strap of a tie-down strap assembly to a mounting structure of the vehicle; and

attaching a second end of the tie-down strap of the tie-down strap assembly to the tie-down anchor assembly of the animal containment device.

39. The method of configuration 38, wherein the mounting structure of the vehicle comprises a hinge coupled to a door of the cargo area of the vehicle, the attaching the second end of the tie-down strap assembly to the mounting structure of the vehicle comprising removably attaching the second end of the tie-down strap to the hinge.

40. The method of configuration 39, the removably attaching the second end of the tie-down strap to the hinge comprising:

positioning a gasket disposed around a portion of the tie-down strap proximate the hinge, the gasket comprising a gasket body, the gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion, the gasket opening being sized to receive the portion of the tie-down strap, and the gasket contact portion being located to receive an external force applied to the gasket body by the door of the cargo area of the vehicle, wherein the gasket opening decreases in size when the external force is applied to the gasket body; and

mounting the gasket around the portion of the tie-down strap proximate the second end of the tie-down strap.

41. The method of configuration 38, wherein the tie-down strap assembly comprises a tie-down strap adjuster mounted to the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap, the method further comprising operating the tie-down strap adjuster to

adjust a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap.

42. The method of configuration38, further comprising extending a load leg coupled to the animal containment device.

43. The method of configuration42, the extending the load leg comprising extending the load leg in a direction away from the body of the animal containment device toward a rear seat surface of the vehicle, wherein the load leg is configured to reduce a magnitude of an impact force transferred from the rear seat surface of the vehicle to the animal containment device during an impact event.

44. The method of configuration38, wherein the mounting structure of the vehicle comprises an exterior surface of the vehicle, the attaching the second end of the tie-down strap assembly to the mounting structure of the vehicle comprising removably attaching the second end of the tie-down strap to the exterior surface of the vehicle.

45. The method of configuration38, wherein the tie-down anchor assembly of the animal containment device comprises an open loop of webbing, and wherein the second end of the tie-down strap of the tie-down strap assembly comprises a carabiner assembly, the attaching the second end of the tie-down strap of the tie-down strap assembly to the tie-down anchor assembly of the animal containment device comprises clipping the carabiner assembly to the open loop of webbing.

46. An animal containment device comprising:

a body defining a cavity within which an animal is receivable; and

a tie-down anchor assembly disposed on the body of the animal containment device, the tie-down anchor assembly comprising an open loop of webbing providing a webbing connection point for attachment to a fastening mechanism of a tie-down strap assembly.

47. The animal containment device of configuration46, wherein the tie-down anchor assembly is a first tie-down anchor assembly disposed on a first portion of the body of the animal containment device, the open loop of webbing is a first open loop of webbing, the webbing connection point is a first webbing connection point, the fastening mechanism is a first fastening mechanism, and the tie-down strap assembly is a first tie-down strap assembly, the animal containment device further comprising a second tie-down anchor assembly disposed on a second portion of the body of the animal containment device, the second tie-down anchor assembly comprising a second open loop of webbing providing a second webbing connection point for attachment to a second fastening mechanism of a second tie-down strap assembly.

48. The animal containment device of configuration47, the body of the animal containment device having a top panel oriented facing a ceiling of a cargo area of a vehicle, wherein the first tie-down

anchor assembly is disposed on a first portion of the top panel, and wherein the second tie-down anchor assembly is disposed on a second portion of the top panel.

49. The animal containment device of configuration 47, the body of the animal containment device having a side panel oriented facing a side wall of a cargo area of a vehicle, wherein the first tie-down anchor assembly is disposed on a first portion of the side panel, and wherein the second tie-down anchor assembly is disposed on a second portion of the side panel.

50. The animal containment device of configuration 47, further comprising a third tie-down anchor assembly disposed on a third portion of the body of the animal containment device, the third tie-down anchor assembly comprising a third open loop of webbing providing a third webbing connection point for attachment to a third fastening mechanism of a third tie-down strap assembly.

51. The animal containment device of configuration 50, further comprising a fourth tie-down anchor assembly disposed on a fourth portion of the body of the animal containment device, the fourth tie-down anchor assembly comprising a fourth open loop of webbing providing a fourth webbing connection point for attachment to a fourth fastening mechanism of a fourth tie-down strap assembly.

52. The animal containment device of configuration 51, further comprising a fifth tie-down anchor assembly disposed on a fifth portion of the body of the animal containment device, the fifth tie-down anchor assembly comprising a fifth open loop of webbing providing a fifth webbing connection point for attachment to a fifth fastening mechanism of a fifth tie-down strap assembly.

53. The animal containment device of configuration 52, further comprising a sixth tie-down anchor assembly disposed on a sixth portion of the body of the animal containment device, the sixth tie-down anchor assembly comprising a sixth open loop of webbing providing a sixth webbing connection point for attachment to a sixth fastening mechanism of a sixth tie-down strap assembly.

54. The animal containment device of configuration 53, the body of the animal containment device having a top panel oriented facing a ceiling of a cargo area of a vehicle, a first side panel oriented facing a first side wall of the cargo area of the vehicle, and a second side panel oriented facing a second side wall of the cargo area of the vehicle.

55. The animal containment device of configuration 54, wherein the first tie-down anchor assembly is disposed on a first portion of the top panel, wherein the second tie-down anchor assembly is disposed on a second portion of the top panel, wherein the third tie-down anchor assembly is disposed on a first portion of the first side panel, wherein the fourth tie-down anchor assembly is disposed on a second portion of the first side panel, wherein the fifth tie-down anchor assembly is disposed on a first portion of the second side panel, wherein the sixth tie-down anchor assembly is disposed on a second portion of the second side panel.

56. The animal containment device of configuration 54, further comprising a seventh tie-down anchor assembly disposed on a seventh portion of the body of the animal containment device, the seventh tie-down anchor assembly comprising a seventh open loop of webbing providing a seventh webbing connection point for attachment to a seventh fastening mechanism of a seventh tie-down strap assembly.

57. The animal containment device of configuration 56, further comprising an eighth tie-down anchor assembly disposed on an eighth portion of the body of the animal containment device, the eighth tie-down anchor assembly comprising an eighth open loop of webbing providing an eighth webbing connection point for attachment to an eighth fastening mechanism of an eighth tie-down strap assembly.

58. The animal containment device of configuration 57, wherein the first tie-down anchor assembly is disposed on a first portion of the top panel, wherein the second tie-down anchor assembly is disposed on a second portion of the top panel, wherein the third tie-down anchor assembly is disposed on a third portion of the top panel, wherein the fourth tie-down anchor assembly is disposed on a fourth portion of the top panel, wherein the fifth tie-down anchor assembly is disposed on a first portion of the first side panel, wherein the sixth tie-down anchor assembly is disposed on a second portion of the first side panel, wherein the seventh tie-down anchor assembly is disposed on a first portion of the second side panel, and wherein the eighth tie-down anchor assembly is disposed on a second portion of the second side panel.

59. The animal containment device of configuration 46, the animal containment device further comprising a biasing mechanism coupled to the open loop of webbing of the tie-down anchor assembly, wherein the tie-down anchor assembly is accessible via an opening defined in the body of the animal containment device.

60. The animal containment device of configuration 59, the biasing mechanism comprising a first hanger, a first spring having a first spring end coupled to the first hanger, a first attachment structure coupled to a second spring end of the first spring, a slide tube, a first pin, and a first routing structure defining a first opening to route the open loop of webbing.

61. The animal containment device of configuration 59, wherein the tie-down anchor assembly is a first tie-down anchor assembly disposed on a first portion of the body of the animal containment device, the open loop of webbing is a first open loop of webbing, the webbing connection point is a first webbing connection point, the fastening mechanism is a first fastening mechanism, and the tie-down strap assembly is a first tie-down strap assembly, the animal containment device further comprising a second tie-down anchor assembly disposed on a second portion of the body of the animal containment device, the second tie-down anchor assembly comprising a second open loop of webbing providing a second webbing connection point for attachment to a second fastening mechanism of a

second tie-down strap assembly, the biasing mechanism further comprising a second hanger, a second spring having a third spring end coupled to the second hanger, a second attachment structure coupled to a fourth spring end of the second spring, a second pin, and a second routing structure defining a second opening to route the second open loop of webbing.

62. The animal containment device of configuration 46, further comprising a load leg coupled to the animal containment device and extendable from the body of the animal containment device to a rear seat surface of a vehicle, wherein the load leg is configured to reduce a magnitude of an impact force transferred from the rear seat surface of the vehicle to the animal containment device during an impact event.

63. The animal containment device of configuration 46, further comprising a tie-down strap assembly coupled to the tie-down anchor assembly and a mounting structure of a vehicle, the tie-down strap assembly comprising:

a tie-down strap having a first end attachable to the open loop of webbing of the tie-down anchor assembly and a second end attachable to the mounting structure of the vehicle; and

a tie-down strap adjuster coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap, the tie-down strap adjuster comprising an angle-based locking mechanism and a stationary routing component, wherein a portion of the tie-down strap is positioned between angle-based locking mechanism and the stationary routing component.

[0109] Although the disclosure may illustrate different embodiments, it is contemplated that aspects of individual embodiments may be combined or omitted. Therefore, the disclosure and claims are not intended to be limited to the illustrated embodiments.

[0110] While certain examples have been described, these examples are not intended to limit the scope of the disclosure herein. Thus, nothing in the foregoing description is intended to imply that any particular feature, characteristic, step, module, or block is necessary or indispensable. Indeed, the novel methods and systems described herein may be embodied in a variety of other forms; furthermore, various omissions, substitutions, and changes in the form of the methods and systems described herein may be made without departing from the spirit of the disclosure herein. The accompanying claims and their equivalents are intended to cover such forms or modifications as would fall within the scope and spirit of certain of the embodiments disclosed herein.

[0111] It will be appreciated by those skilled in the art that changes may be made to the embodiments described above without departing from the disclosure thereof. It should further be appreciated that structural features and methods associated with one of the embodiments can be incorporated into other embodiments. It is understood, therefore, that this disclosure is not limited to the

particular embodiment disclosed, but rather modifications are also covered within the scope of the present disclosure as defined by the appended claims.

[0112] While the present disclosure has been described with reference to an example embodiment or embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the present disclosure. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the present disclosure without departing from the essential scope thereof. Therefore, it is intended that the present disclosure not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this present disclosure, but that the present disclosure will include all embodiments falling within the scope of the claims.

[0113] It should be understood that the steps of the example methods set forth herein are not necessarily required to be performed in the order described, and the order of the steps of such methods should be understood to be merely examples. Likewise, additional steps may be included in such methods, and certain steps may be omitted or combined, in methods consistent with various embodiments of the present disclosure.

[0114] Although the elements in the following method claims, if any, are recited in a particular sequence with corresponding labeling, unless the claim recitations otherwise imply a particular sequence for implementing some or all of those elements, those elements are not necessarily intended to be limited to being implemented in that particular sequence.

[0115] The words “inward,” “outward,” “upper,” and “lower” refer to directions toward or away from, respectively, the geometric center of the component.

[0116] It will be understood that reference herein to “a” or “one” to describe a feature such as a component or step does not foreclose additional features or multiples of the feature. For instance, reference to a device having, comprising, including, or defining “one” of a feature does not preclude the device from having, comprising, including, or defining more than one of the feature, as long as the device has, comprises, includes, or defines at least one of the feature. Similarly, reference herein to “one of” a plurality of features does not foreclose the embodiment from including two or more of the features. For instance, reference to a device having, comprising, including, or defining “one of a protrusion and a recess” does not foreclose the device from having both the protrusion and the recess.

CLAIMS

What is claimed is:

1. An animal containment system for a cargo area of a vehicle, comprising:
 - an animal containment device having a body defining a cavity within which an animal is receivable, the animal containment device comprising a tie-down anchor assembly disposed on the body of the animal containment device; and
 - a tie-down strap assembly coupled to the animal containment device and a mounting structure of the vehicle, the tie-down strap assembly comprising:
 - a tie-down strap having a first end attachable to the tie-down anchor assembly and a second end attachable to the mounting structure of the vehicle; and
 - a tie-down strap adjuster coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap, the tie-down strap adjuster comprising an angle-based locking mechanism and a stationary routing component, wherein a portion of the tie-down strap is positioned between angle-based locking mechanism and the stationary routing component.
2. The animal containment system of claim 1, wherein the tie-down strap adjuster is coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap, and wherein the tie-down strap adjuster is configured to adjust a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap.
3. The animal containment system of claim 2, wherein the angle-based locking mechanism is rotatable between a first angular position and a second angular position, wherein the angle-based locking mechanism in the first angular position permits an adjustment of the length of the tie-down strap, and wherein the angle-based locking mechanism in the second angular position prohibits the adjustment of the length of the tie-down strap.
4. The animal containment system of claim 3, wherein the first angular position is an unlocked position, and wherein the second angular position is a locked position.
5. The animal containment system of claim 3, wherein the angle-based locking mechanism in the first angular position increases a distance between the angle-based locking mechanism and the stationary routing component to permit a movement of the portion of the tie-down strap, and wherein the angle-based locking mechanism in the second angular position decreases the distance between the

angle-based locking mechanism and the stationary routing component to prohibit the movement of the portion of the tie-down strap.

6. The animal containment system of claim 3, wherein the angle-based locking mechanism in the second angular position increases a holding force on the tie-down strap when a tension force is applied to the tie-down strap.

7. The animal containment system of claim 1, the tie-down strap assembly further comprising a first fastening mechanism fixedly attached to the first end of the tie-down strap and removably attachable to the tie-down anchor assembly.

8. The animal containment system of claim 7, the tie-down strap assembly further comprising a second fastening mechanism fixedly attached to the second end of the tie-down strap and removably attachable to the mounting structure of the vehicle.

9. The animal containment system of claim 8, wherein the first fastening mechanism comprises a first carabiner assembly, and the second fastening mechanism comprises a second carabiner assembly.

10. The animal containment system of claim 1, wherein the mounting structure of the vehicle comprises a hinge coupled to a door of the cargo area of the vehicle, and wherein the second end of the tie-down strap is removably attachable to the hinge.

11. The animal containment system of claim 1, the body of the animal containment device having a top panel oriented facing a ceiling of the cargo area of the vehicle, wherein the tie-down anchor assembly is disposed on a first portion of the top panel.

12. The animal containment system of claim 11, wherein the tie-down anchor assembly is a first tie-down anchor assembly, the animal containment device comprising a second tie-down anchor assembly disposed on a second portion of the top panel.

13. The animal containment system of claim 12, the animal containment device comprising a third tie-down anchor assembly disposed on a third portion of the top panel.

14. The animal containment system of claim 13, the animal containment device comprising a fourth tie-down anchor assembly disposed on a fourth portion of the top panel.

15. The animal containment system of claim 13, the tie-down strap assembly comprising a gasket disposed around a portion of the tie-down strap proximate the second end of the tie-down strap, the gasket comprising a gasket body, the gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion, the gasket opening being sized to receive the portion of the tie-down strap, and the gasket contact portion being located to receive an external force applied to the gasket body, wherein the gasket body is configured such that the gasket opening decreases in size when the external force is applied to the gasket body.

16. The animal containment system of claim 15, wherein the gasket is formed of a material comprising at least one of a rubber, a foam, and a silicone.

17. The animal containment system of claim 15, wherein a first portion of the gasket opening connects with a second portion of the gasket opening when the external force is applied to the gasket body.

18. The animal containment system of claim 15, wherein the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and wherein the gasket is configured to reduce a fluid flow along the portion of the tie-down strap in both the tensioned configuration and the untensioned configuration.

19. The animal containment system of claim 1, wherein the mounting structure of the vehicle comprises a floor-mounted anchor of the cargo area of the vehicle, and wherein the second end of the tie-down strap is removably attachable to the floor-mounted anchor.

20. The animal containment system of claim 19, the body of the animal containment device having a first side panel oriented facing a first side wall of the cargo area of the vehicle, wherein the tie-down anchor assembly is disposed on a first portion of the first side panel.

21. The animal containment system of claim 20, wherein the tie-down anchor assembly is a first tie-down anchor assembly, the animal containment device comprising a second tie-down anchor assembly disposed on a second portion of the first side panel.

22. The animal containment system of claim 21, the body of the animal containment device having a second side panel oriented facing a second side wall of the cargo area of the vehicle opposite the first side of the cargo area of the vehicle, the animal containment device comprising a third tie-down anchor assembly disposed on a third portion of the second side panel.

23. The animal containment system of claim 22, the animal containment device comprising a fourth tie-down anchor assembly disposed on a fourth portion of the second side panel.

24. The animal containment system of claim 1, the animal containment device comprising a biasing mechanism coupled to the tie-down anchor assembly, wherein the tie-down anchor assembly is accessible via an opening defined in the body of the animal containment device.

25. The animal containment system of claim 1, further comprising a load leg coupled to the animal containment device and extendable from the body of the animal containment device to a rear seat surface of the vehicle, wherein the load leg is configured to reduce a magnitude of an impact force transferred from the rear seat surface of the vehicle to the animal containment device during an impact event.

26. A tie-down strap assembly for a cargo area of a vehicle, comprising:

- a tie-down strap having a first end attachable to a tie-down anchor assembly of an animal containment device and a second end attachable to a mounting structure of the vehicle; and

- a tie-down strap adjuster coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap, wherein the tie-down strap adjuster is configured to adjust a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap; and

- a gasket disposed around a portion of the tie-down strap proximate the second end of the tie-down strap, the gasket comprising a gasket body, the gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion, the gasket opening being sized to receive the portion of the tie-down strap, and the gasket contact portion being located to receive an external force applied to the gasket body by a door of the cargo area of the vehicle, wherein the gasket opening decreases in size when the external force is applied to the gasket body.

27. The tie-down strap assembly of claim 26, the tie-down strap adjuster comprising an angle-based locking mechanism rotatable between a first angular position and a second angular position, wherein the

angle-based locking mechanism in the first angular position permits an adjustment of the length of the tie-down strap, and wherein the angle-based locking mechanism in the second angular position prohibits the adjustment of the length of the tie-down strap.

28. The tie-down strap assembly of claim 27, wherein the first angular position is an unlocked position, and wherein the second angular position is a locked position.

29. The tie-down strap assembly of claim 27, the tie-down strap adjuster further comprising a stationary routing component, wherein a portion of the tie-down strap is positioned between angle-based locking mechanism and the stationary routing component, wherein the angle-based locking mechanism in the first angular position increases a distance between the angle-based locking mechanism and the stationary routing component to permit a movement of the portion of the tie-down strap, and wherein the angle-based locking mechanism in the second angular position decreases the distance between the angle-based locking mechanism and the stationary routing component to prohibit the movement of the portion of the tie-down strap.

30. The tie-down strap assembly of claim 27, wherein the angle-based locking mechanism in the second angular position increases a holding force on the tie-down strap when a tension force is applied to the tie-down strap.

31. The tie-down strap assembly of claim 26, the tie-down strap assembly further comprising a first fastening mechanism fixedly attached to the first end of the tie-down strap and removably attachable to the tie-down anchor assembly.

32. The tie-down strap assembly of claim 31, the tie-down strap assembly further comprising a second fastening mechanism fixedly attached to the second end of the tie-down strap and removably attachable to the mounting structure of the vehicle.

33. The tie-down strap assembly of claim 32, wherein the first fastening mechanism comprises a first carabiner assembly, and the second fastening mechanism comprises a second carabiner assembly.

34. The tie-down strap assembly of claim 26, wherein the mounting structure of the vehicle comprises a hinge coupled to the door of the cargo area of the vehicle, and wherein the second end of the tie-down strap is removably attachable to the hinge.

35. The tie-down strap assembly of claim 26, wherein the gasket is formed of a material comprising at least one of a rubber, a foam, and a silicone.

36. The tie-down strap assembly of claim 26, wherein a first portion of the gasket opening connects with a second portion of the gasket opening when the external force is applied to the gasket body.

37. The tie-down strap assembly of claim 26, wherein the tie-down strap is transitionable between a tensioned configuration and an untensioned configuration, and wherein the gasket is configured to reduce a fluid flow along the portion of the tie-down strap in both the tensioned configuration and the untensioned configuration.

38. A method comprising:

disposing an animal containment device in a cargo area of a vehicle, the animal containment device having a body defining a cavity within which an animal is receivable, the animal containment device comprising a tie-down anchor assembly disposed on the body of the animal containment device; and

attaching a first end of a tie-down strap of a tie-down strap assembly to a mounting structure of the vehicle; and

attaching a second end of the tie-down strap of the tie-down strap assembly to the tie-down anchor assembly of the animal containment device.

39. The method of claim 38, wherein the mounting structure of the vehicle comprises a hinge coupled to a door of the cargo area of the vehicle, the attaching the second end of the tie-down strap assembly to the mounting structure of the vehicle comprising removably attaching the second end of the tie-down strap to the hinge.

40. The method of claim 39, the removably attaching the second end of the tie-down strap to the hinge comprising:

positioning a gasket disposed around a portion of the tie-down strap proximate the hinge, the gasket comprising a gasket body, the gasket body having an inner gasket surface defining a gasket opening and an outer gasket surface defining a gasket contact portion, the gasket opening being sized to receive the portion of the tie-down strap, and the gasket contact portion being located to receive an

external force applied to the gasket body by the door of the cargo area of the vehicle, wherein the gasket opening decreases in size when the external force is applied to the gasket body; and

mounting the gasket around the portion of the tie-down strap proximate the second end of the tie-down strap.

41. The method of claim 38, wherein the tie-down strap assembly comprises a tie-down strap adjuster mounted to the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap, the method further comprising operating the tie-down strap adjuster to adjust a length of the tie-down strap between the first end of the tie-down strap and the second end of the tie-down strap.

42. The method of claim 38, further comprising extending a load leg coupled to the animal containment device.

43. The method of claim 42, the extending the load leg comprising extending the load leg in a direction away from the body of the animal containment device toward a rear seat surface of the vehicle, wherein the load leg is configured to reduce a magnitude of an impact force transferred from the rear seat surface of the vehicle to the animal containment device during an impact event.

44. The method of claim 38, wherein the mounting structure of the vehicle comprises an exterior surface of the vehicle, the attaching the second end of the tie-down strap assembly to the mounting structure of the vehicle comprising removably attaching the second end of the tie-down strap to the exterior surface of the vehicle.

45. The method of claim 38, wherein the tie-down anchor assembly of the animal containment device comprises an open loop of webbing, and wherein the second end of the tie-down strap of the tie-down strap assembly comprises a carabiner assembly, the attaching the second end of the tie-down strap of the tie-down strap assembly to the tie-down anchor assembly of the animal containment device comprises clipping the carabiner assembly to the open loop of webbing.

46. An animal containment device comprising:
a body defining a cavity within which an animal is receivable; and
a tie-down anchor assembly disposed on the body of the animal containment device, the tie-down anchor assembly comprising an open loop of webbing providing a webbing connection point for attachment to a fastening mechanism of a tie-down strap assembly.

47. The animal containment device of claim 46, wherein the tie-down anchor assembly is a first tie-down anchor assembly disposed on a first portion of the body of the animal containment device, the open loop of webbing is a first open loop of webbing, the webbing connection point is a first webbing connection point, the fastening mechanism is a first fastening mechanism, and the tie-down strap assembly is a first tie-down strap assembly, the animal containment device further comprising a second tie-down anchor assembly disposed on a second portion of the body of the animal containment device, the second tie-down anchor assembly comprising a second open loop of webbing providing a second webbing connection point for attachment to a second fastening mechanism of a second tie-down strap assembly.

48. The animal containment device of claim 47, the body of the animal containment device having a top panel oriented facing a ceiling of a cargo area of a vehicle, wherein the first tie-down anchor assembly is disposed on a first portion of the top panel, and wherein the second tie-down anchor assembly is disposed on a second portion of the top panel.

49. The animal containment device of claim 47, the body of the animal containment device having a side panel oriented facing a side wall of a cargo area of a vehicle, wherein the first tie-down anchor assembly is disposed on a first portion of the side panel, and wherein the second tie-down anchor assembly is disposed on a second portion of the side panel.

50. The animal containment device of claim 47, further comprising a third tie-down anchor assembly disposed on a third portion of the body of the animal containment device, the third tie-down anchor assembly comprising a third open loop of webbing providing a third webbing connection point for attachment to a third fastening mechanism of a third tie-down strap assembly.

51. The animal containment device of claim 50, further comprising a fourth tie-down anchor assembly disposed on a fourth portion of the body of the animal containment device, the fourth tie-down anchor assembly comprising a fourth open loop of webbing providing a fourth webbing connection point for attachment to a fourth fastening mechanism of a fourth tie-down strap assembly.

52. The animal containment device of claim 51, further comprising a fifth tie-down anchor assembly disposed on a fifth portion of the body of the animal containment device, the fifth tie-down anchor assembly comprising a fifth open loop of webbing providing a fifth webbing connection point for attachment to a fifth fastening mechanism of a fifth tie-down strap assembly.

53. The animal containment device of claim 52, further comprising a sixth tie-down anchor assembly disposed on a sixth portion of the body of the animal containment device, the sixth tie-down anchor assembly comprising a sixth open loop of webbing providing a sixth webbing connection point for attachment to a sixth fastening mechanism of a sixth tie-down strap assembly.

54. The animal containment device of claim 53, the body of the animal containment device having a top panel oriented facing a ceiling of a cargo area of a vehicle, a first side panel oriented facing a first side wall of the cargo area of the vehicle, and a second side panel oriented facing a second side wall of the cargo area of the vehicle.

55. The animal containment device of claim 54, wherein the first tie-down anchor assembly is disposed on a first portion of the top panel, wherein the second tie-down anchor assembly is disposed on a second portion of the top panel, wherein the third tie-down anchor assembly is disposed on a first portion of the first side panel, wherein the fourth tie-down anchor assembly is disposed on a second portion of the first side panel, wherein the fifth tie-down anchor assembly is disposed on a first portion of the second side panel, wherein the sixth tie-down anchor assembly is disposed on a second portion of the second side panel.

56. The animal containment device of claim 54, further comprising a seventh tie-down anchor assembly disposed on a seventh portion of the body of the animal containment device, the seventh tie-down anchor assembly comprising a seventh open loop of webbing providing a seventh webbing connection point for attachment to a seventh fastening mechanism of a seventh tie-down strap assembly.

57. The animal containment device of claim 56, further comprising an eighth tie-down anchor assembly disposed on an eighth portion of the body of the animal containment device, the eighth tie-down anchor assembly comprising an eighth open loop of webbing providing an eighth webbing connection point for attachment to an eighth fastening mechanism of an eighth tie-down strap assembly.

58. The animal containment device of claim 57, wherein the first tie-down anchor assembly is disposed on a first portion of the top panel, wherein the second tie-down anchor assembly is disposed on a second portion of the top panel, wherein the third tie-down anchor assembly is disposed on a third portion of the top panel, wherein the fourth tie-down anchor assembly is disposed on a fourth portion of the top panel, wherein the fifth tie-down anchor assembly is disposed on a first portion of the first side

panel, wherein the sixth tie-down anchor assembly is disposed on a second portion of the first side panel, wherein the seventh tie-down anchor assembly is disposed on a first portion of the second side panel, and wherein the eighth tie-down anchor assembly is disposed on a second portion of the second side panel.

59. The animal containment device of claim 46, the animal containment device further comprising a biasing mechanism coupled to the open loop of webbing of the tie-down anchor assembly, wherein the tie-down anchor assembly is accessible via an opening defined in the body of the animal containment device.

60. The animal containment device of claim 59, the biasing mechanism comprising a first hanger, a first spring having a first spring end coupled to the first hanger, a first attachment structure coupled to a second spring end of the first spring, a slide tube, a first pin, and a first routing structure defining a first opening to route the open loop of webbing.

61. The animal containment device of claim 59, wherein the tie-down anchor assembly is a first tie-down anchor assembly disposed on a first portion of the body of the animal containment device, the open loop of webbing is a first open loop of webbing, the webbing connection point is a first webbing connection point, the fastening mechanism is a first fastening mechanism, and the tie-down strap assembly is a first tie-down strap assembly, the animal containment device further comprising a second tie-down anchor assembly disposed on a second portion of the body of the animal containment device, the second tie-down anchor assembly comprising a second open loop of webbing providing a second webbing connection point for attachment to a second fastening mechanism of a second tie-down strap assembly, the biasing mechanism further comprising a second hanger, a second spring having a third spring end coupled to the second hanger, a second attachment structure coupled to a fourth spring end of the second spring, a second pin, and a second routing structure defining a second opening to route the second open loop of webbing.

62. The animal containment device of claim 46, further comprising a load leg coupled to the animal containment device and extendable from the body of the animal containment device to a rear seat surface of a vehicle, wherein the load leg is configured to reduce a magnitude of an impact force transferred from the rear seat surface of the vehicle to the animal containment device during an impact event.

63. The animal containment device of claim 46, further comprising a tie-down strap assembly coupled to the tie-down anchor assembly and a mounting structure of a vehicle, the tie-down strap assembly comprising:

a tie-down strap having a first end attachable to the open loop of webbing of the tie-down anchor assembly and a second end attachable to the mounting structure of the vehicle; and

a tie-down strap adjuster coupled to the tie-down strap and disposed between the first end of the tie-down strap and the second end of the tie-down strap, the tie-down strap adjuster comprising an angle-based locking mechanism and a stationary routing component, wherein a portion of the tie-down strap is positioned between angle-based locking mechanism and the stationary routing component.