A WEATHERPROOF VEHICLE STORAGE COMPARTMENT

FIELD OF INVENTION

The present invention relates to a vehicle storage compartment. More particularly, the invention relates to a weatherproof vehicle storage compartment.

BACKGROUND OF THE INVENTION

Usually, a user may park his or her vehicle in parking lots when he or she is outdoor. Some of the parking lots are rooftop covered and provided with security facilities where some are not. For the parking lots with no facilities provided, the vehicle parked there is subjected to external conditions such as environmental conditions, theft, and disturbance from animals. These external conditions may damage parts of the vehicle, thereby affecting aesthetics of the vehicle. As a result, more frequent maintenance is required to maintain optimum condition of the vehicle. To solve this issue, vehicle storage compartments are developed. A vehicle storage compartment refers to a portable shelter that protects the vehicle against the external conditions to improve overall lifespan and security of the vehicle.

One exemplary of the vehicle storage compartments can be referenced from a United States Patent Publication No. US7966774B2 which discloses a security shelter for vehicles. The disclosed security shelter comprises a lid, a top, a threshold, a mid-wall, and a base having a floor, base walls, side vents, anchor points, and structural flooring ridges. The lid includes an upper lip which is configured to mesh with a lower lip which is the upper edge portion of the sidewalls of the threshold. Although the disclosed security shelter can protect the vehicle, however, the lips which are made of plastics are not flexible and the seal formed between the lid and threshold may not be completely watertight. The plastic lips can be easily damaged after being used for a long time and

this will greatly deteriorate the performance of the seal formed. In addition, the lips are not detachable as they are integrated onto the lid and threshold. As a result, the entire lid and threshold need to be replaced to remove the damaged lips, thereby increasing the maintenance cost.

Accordingly, it would be desirable to provide a vehicle storage compartment that comprises an efficient waterproof mechanism. The proposed invention provides such a vehicle storage compartment that solves the abovementioned problems.

SUMMARY OF INVENTION

The main objective of the invention is to provide a weatherproof vehicle storage compartment that comprises an efficient waterproof mechanism that is replaceable.

The proposed invention provides a weatherproof vehicle storage compartment comprising an enclosure having a non-movable section and a movable section hingedly attached to the non-movable section such that the movable section is movable between a closed position where the movable section and the non-movable section are engaged together in a sealed manner and an opened position where an opening is revealed at the non-movable section for an entry of a vehicle wherein the movable section includes a circumferential lip which is engageable with the non-movable section and wherein the circumferential lip comprises a waterproof mechanism that extends along a length of the circumferential lip to form a watertight seal between the movable section and the non-movable section when the movable section is in the closed position.

Preferably, the waterproof mechanism includes a seal having a generally cross-sectional U-shaped profile when the movable section is in the opened position and the U-shaped profile is compressible to extend outwardly such that a surface area of the seal contacting with both the movable and non-movable sections is increased when the

movable section is in the closed position.

Preferably, the waterproof mechanism further includes at least one groove for retaining the seal on the circumferential lip of the movable section.

Preferably, the seal is made of an elastomeric material.

Preferably, the weatherproof vehicle storage compartment further comprises a ventilation system having at least one window panel with a plurality of holes.

Preferably, the ventilation system further comprises at least one cover configured to conceal the holes for preventing inflow of water.

Preferably, the weatherproof vehicle storage compartment further comprises at least one external storage unit disposed at the enclosure.

Preferably, the external storage unit is configured to store an electrical cord for supplying a power source to an internal battery that powers electric-powered mechanisms and/or the vehicle disposed within the weatherproof vehicle storage compartment.

Preferably, the weatherproof vehicle storage compartment further comprises a temperature regulating means for regulating ambient temperature within the weatherproof vehicle storage compartment.

Preferably, the weatherproof vehicle storage compartment further comprises a roller member removably coupled to the non-movable section for allowing relocation of the weatherproof vehicle storage compartment.

One skilled in the art will readily appreciate that the invention is well adapted to carry out the objects and obtain the ends and advantages mentioned, as well as those inherent therein. The embodiments described herein are not intended as limitations on the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

For the purpose of facilitating an understanding of the invention, there is illustrated in the accompanying drawing the preferred embodiments from an inspection of which when considered in connection with the following description, the invention, its construction and operation and many of its advantages would be readily understood and appreciated.

Fig. 1 shows a schematic diagram illustrating a weatherproof vehicle storage compartment according to the present invention.

Fig. 2 shows a schematic diagram illustrating a waterproof mechanism of the weatherproof vehicle storage compartment according to the present invention.

Fig. 3 shows a seal of the waterproof mechanism before and after compression.

Fig. 4 shows a schematic diagram illustrating a ventilation system of the weatherproof vehicle storage compartment according to the present invention.

Fig. 5 shows a schematic diagram illustrating a storage unit of the weatherproof vehicle storage compartment according to the present invention.

Fig. 6 shows a schematic diagram illustrating an internal view of the weatherproof vehicle storage compartment according to the present invention.

Fig. 7 shows a roller member of the weatherproof vehicle storage compartment according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The invention will now be described in greater detail, by way of example, with reference to the drawings.

Referring to Figs. 1 and 2, a weatherproof vehicle storage compartment (100) is illustrated therein. The vehicle storage compartment (100) is configured to store a vehicle which may include but is not limited to a two- or three-wheeled vehicle.

In a preferred embodiment of the invention, the vehicle storage compartment (100) generally comprises an enclosure that comprises a non-movable section (102) and a movable section (101) hingedly attached to the non-movable section (102) such that the movable section (101) is movable between a closed position where the movable section (101) and the non-movable section (102) are engaged together in a sealed manner and an opened position where an opening is revealed at the non-movable section (102) for an entry of the vehicle. By way of example, the movable section (101) is a cover that is connected to the non-movable section (102) via a hinge or any other fastening means. Preferably, the vehicle storage compartment (100) further comprises an actuator for actuating the movable section (101) between the closed position and the opened position. It should be understood that the actuator can be any actuator including but is not limited to a hydraulic actuator, an electric actuator, and a pneumatic actuator.

Referring to Figs. 2 and 3, the movable section (101) includes a circumferential lip (103) which is engageable with the non-movable section (102) when the movable section (101) is in the closed position. In the preferred embodiment of the invention, the circumferential lip (103) of the movable section (102) comprises a waterproof mechanism that extends along a length of the circumferential lip (103) to form a watertight seal between the movable section (101) and the non-movable section (102) when the movable section (101) is in the closed position. Preferably, the waterproof mechanism includes a seal (104) having a generally cross-sectional U-shaped profile when the movable section (101) is in the opened position. When the movable section (101) moves from the opened position to the closed position, the U-shaped profile is compressible to extend outwardly such that a surface area of the seal (104) contacting with both the movable and non-movable sections (101, 102) is increased, thereby forming a watertight and airtight seal therebetween which is configured to effectively prevent water, dirt and other particulate matter from entering the enclosure. Preferably, the seal (104) is made of an elastomeric material. By way of example, the elastomeric material includes rubbers. Advantageously, the elastomeric seal (104) can prevent damages formed on the movable and non-movable sections (101, 102) due to frequent engagement between the movable and non-movable sections (101, 102).

The waterproof mechanism further includes at least one groove (105) for retaining the seal (104) on the circumferential lip (103) of the movable section (101). In one embodiment of the invention, the waterproof mechanism includes two grooves (105) for receiving lower ends of leg portions of the seal (104) that has the generally cross-sectional U-shaped profile. Preferably, diameters of the grooves (105) are smaller than that of the lower ends of the leg portions of the seal (104) such that the seal (104) can be retained firmly thereon. It should be understood that the design of the seal (104) can be replaced by other shapes, sizes and configurations where the seal (104) can flexibly form a watertight and airtight seal between the movable and non-movable sections (101, 102).

Referring to Fig. 4, the weatherproof vehicle storage compartment (100) further comprises a ventilation system disposed on the enclosure. Preferably, the ventilation system comprises at least one window panel (107) with a plurality of holes for facilitating air flows. The ventilation system further comprises at least one cover (106) configured to conceal the holes for preventing inflow of water. Additionally, the ventilation system may further comprise a drive motor associated with the cover (106) such that the cover (106) can be automatically driven to move to conceal or reveal the holes. In another embodiment of the inventions, the ventilation system may further comprise at least one sensing unit configured to transmit a signal to control the drive motor in moving the cover (106) upon detecting weather conditions. By way of example, the sensing unit may include but is not limited to a rain sensor and a humidity sensor. It should be understood that the window panel (107) can be in a form of a louvre system formed by a plurality of louvre blades, wherein the louvre blades can be automatically driven to move between a closed position and an opened position.

In another embodiment of the invention, the weatherproof vehicle storage compartment (100) further comprises at least one external storage unit (108) disposed at the enclosure to store an electrical cord (109) for supplying a power source to an internal battery that powers electric-powered mechanisms and/or the vehicle disposed within the weatherproof vehicle storage compartment (100), as shown in Fig. 5. By way of example, the electric-powered mechanisms can be the ventilation system and a temperature regulating means. Preferably, the external storage unit (108) only allows the electrical cord (109) to pass through the enclosure into an interior of the weatherproof vehicle storage compartment (100) via a tiny hole. The electrical cord (109) is tightly fit through the tiny hole such that a watertight seal is created to prevent water or moisture from entering the weatherproof vehicle storage compartment (100). Alternatively, an elastomeric rubber seal can be provided at the hole to create a watertight seal between the electric cord (109) and the external storage unit (108) to

prevent water or moisture from entering the weatherproof vehicle storage compartment (100). In another embodiment of the invention, the weatherproof vehicle storage compartment (100) may comprise one or more internal storage unit (112) for storing repair kit necessary for maintenance of the vehicle. By way of example, the internal battery is stored in the internal storage unit (112) disposed within the weatherproof vehicle storage compartment (100). Referring to Fig. 6, the weatherproof vehicle storage compartment (100) further comprises a temperature regulating means for regulating ambient temperature within the weatherproof vehicle storage compartment (100). Preferably, the temperature regulating means is an air conditioner. Alternatively, the temperature regulating means can be a fan unit (110) or a set of fan units (110) to provide inflow and outflow of air across an interior of the weatherproof vehicle storage compartment (100). In another embodiment of the invention, the weatherproof vehicle storage compartment (100) further comprises one or more roller members (111) removably coupled to the non-movable section (101) for allowing relocation of the weatherproof vehicle storage compartment (100).

The present disclosure includes as contained in the appended claims, as well as that of the foregoing description. Although this invention has been described in its preferred form with a degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangements of parts may be resorted to without departing from the scope of the invention.

CLAIMS

1. A weatherproof vehicle storage compartment (100) comprising:
an enclosure having a non-movable section (102) and a movable section (101) hingedly attached to the non-movable section (102) such that the enclosure is movable between a closed position where the movable section (101) and the non-movable section (102) are engaged together in a sealed manner and an opened position where an opening is revealed at the non-movable section (102) for an entry of a vehicle;
wherein the movable section (101) includes a circumferential lip (103) which is engageable with the non-movable section (102); and
wherein the circumferential lip (103) comprises a waterproof mechanism that extends along a length of the circumferential lip (103) to form a watertight seal between the movable section (101) and the non-movable section (102) when the movable section (101) is in the closed position.

2. The weatherproof vehicle storage compartment (100) according to Claim 1, wherein the waterproof mechanism includes a seal (104) having a generally cross-sectional U-shaped profile when the movable section (101) is in the opened position and the U-shaped profile is compressible to extend outwardly such that a surface area of the seal (104) contacting with both the movable and non-movable sections (101, 102) is increased when the movable section (101) is in the closed position.

3. The weatherproof vehicle storage compartment (100) according to Claim 2, wherein the waterproof mechanism further includes at least one groove (105) for retaining the seal (104) on the circumferential lip (103) of the movable section (101).

4. The weatherproof vehicle storage compartment (100) according to Claim 2 or Claim 3, wherein the seal (104) is made of an elastomeric material.

5. The weatherproof vehicle storage compartment (100) according to any of Claims 1 to 4 further comprising a ventilation system having at least one window panel (107) with a plurality of holes.

6. The weatherproof vehicle storage compartment (100) according to Claim 5, wherein the ventilation system further comprises at least one cover (106) configured to conceal the holes for preventing inflow of water.

7. The weatherproof vehicle storage compartment (100) according to any of Claims 1 to 8 further comprising at least one external storage unit (108) disposed at the enclosure.

8. The weatherproof vehicle storage compartment (100) according to Claim 7, wherein the external storage unit (108) is configured to store an electrical cord (109) for supplying a power source to an internal battery that powers electric-powered mechanisms and/or the vehicle disposed within the weatherproof vehicle storage compartment (100).

9. The weatherproof vehicle storage compartment (100) according to any of Claims 1 to 8 further comprising a temperature regulating means for regulating ambient temperature within the weatherproof vehicle storage compartment (100).

10. The weatherproof vehicle storage compartment (100) according to any of Claims 1 to 9 further comprising one or more roller members (111) removably coupled to the non-movable section (101) for allowing relocation of the weatherproof vehicle storage compartment (100).