MODULAR MOTOR VEHICLE INTEGRATED CARRIER RACK AND STORAGE SYSTEM WITH UNIVERSAL CONNECTIONS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation of U.S. patent application Ser. No. 15/711,720, filed Sep. 21, 2017, and claims priority pursuant to 35 U.S.C. § 119(e) to U.S. Provisional Patent Application No. 62/554,767 filed Sep. 6, 2017; U.S. Provisional Patent Application No. 62/545,409 filed Aug. 14, 2017; U.S. Provisional Patent Application No. 62/462,285 filed Feb. 22, 2017; U.S. Provisional Patent Application No. 62/431,792 filed Dec. 8, 2016; U.S. Provisional Patent Application No. 62/397,896 filed Sep. 21, 2016; the disclosures of each of which are hereby incorporated by reference in their entireties.

[0002] The present application is related to U.S. patent application Ser. No. 15/054,001 filed Feb. 25, 2016; U.S. Provisional Patent Application No. 62/276,144 filed Jan. 7, 2016; U.S. Provisional Patent Application No. 62/163,638 filed May 19, 2015; U.S. Provisional Patent Application No. 62/120,825 filed Feb. 25, 2015, the disclosures of all of which are hereby incorporated by reference in their entireties. This application is also related to U.S. patent application Ser. No. 14/214,407 filed Mar. 14, 2014; U.S. Provisional Patent Application No. 61/803,101 filed Mar. 18, 2013; and U.S. Provisional Patent Application No. 61/801,951 filed Mar. 15, 2013, the disclosures of all of which are hereby incorporated by reference in their entireties. Further, this application is also related to U.S. Pat. No. 6,752,302 by Anton, patented Jun. 22, 2004, which is hereby incorporated by reference in its entirety.

FIELD OF THE INVENTION

[0003] The subject matter described herein relates generally to lightweight, modular carrier rack and storage systems for motor vehicles, and more particularly to carrier rack systems that are integrated into a motor vehicle or can be attached to a tow hitch—carrier rack and storage systems that are designed through unique, universal connections to carry and store items such as bicycles, skis, snowboards, surfboards, wave boards, wheelchairs, scooters, luggage, fishing gear, accessories, and others.

BACKGROUND OF THE INVENTION

[0004] Present carrier rack systems for motor vehicles, such as cars, trucks, vans, minivans, sports utility vehicles (SUV's), and motor homes, generally involve a system of multiple straps attached onto the vehicle, a system attached to a universal tow hitch, a system attached to a roof, or a system attached to a bumper. These systems are cumbersome, heavy, and difficult to store at home or in the vehicle when the systems are not in use. Additionally, these systems may not be adaptable to all types of vehicles, and when some of these systems are attached, they often make it difficult to access the trunk or doors. These systems are susceptible to theft and may scratch and damage the vehicle when attached and used.

[0005] In the case of systems involving multiple straps, these systems are complicated to attach onto the vehicle and may loosen with use over time. In the case of systems attached to the roof, these systems create wind resistance when the car is moving and are difficult to access. For carrier systems that are attached to bumpers, these systems damage the sensitive bumper mechanism and have limited supportability. For trailer hitch systems, the systems are heavy and difficult to attach, detach, and store.

[0006] Additionally, organization and storage space are important for people from all walks of life. Improved organization and storage save time when preparing for activities. It saves space in a home garage, basement, storage garage or shed, closet, office, home, room or any other place things are stored. It may also help prevent injuries that can occur from tripping, falling, dropping, knocking over unstable items, or other accidental or unintentional actions. Likewise, it may save money because when items fall, they may be individually harmed in the form of dents, breaks, chips or other damage or may dent, break, chip, or damage items which they collide with such as motor vehicles.

[0007] Accordingly, this invention creates an interface between machine and cargo. It is a modular platform whose universal designs and connections allow simple and easy vehicular transport and storage of multiple types of recreational equipment and activity pods.

SUMMARY

[0008] The present invention is directed to carrier rack and storage systems for motor vehicles, and more particularly to carrier rack and storage systems that are integrated into motor vehicles at the time of vehicle manufacture or after production (retrofitting) and it can also attach to current tow hitches in some embodiments.

[0009] In accordance with one aspect of the present invention, a receiver of a carrier rack system is integrated into a portion of a motor vehicle with a rear wall, such as a tailgate of a pickup truck, a trunk lid of a car, a rear license plate wall, or a rear door of a minivan or sports utility vehicle, having an inside and outside. The system generally includes a receiving unit, having rear and forward ends, integrated into the rear wall, an immobilizing system attached to the receiving unit, and/or a carrier bar attached to the receiving unit. The receiving unit may be positioned such that the rear end is directed toward the back of the vehicle and forms an engaging structure in the rear wall that can be aesthetically hidden from view with a cover or cap.

[0010] The carrier bar can generally be universal, meaning it can be attached to any vehicle with a receiving unit and can have any attachments placed on the carrier bar to carry a variety of items. The carrier bar is generally lightweight, easily stored in the vehicle when not in use, and easily attachable to the receiving unit when use is desired. When in use, the carrier bar will not damage the paint on the vehicle. Also, supportability is improved with the carrier because it can be positioned at an optimum level on the vehicle, providing ample distance from the ground when an item or storage pod is attached to the carrier bar and providing less stress to a person's back when the person is loading the item or storage pod onto the carrier bar. The invention is advantageous in that it provides a lightweight and easy to use carrier rack and storage system that can be integrated into motor or other vehicles. The invention is further advantageous in that it will not damage or scratch the vehicle. The invention is yet further advantageous in that it provides a simplistic storage system using universal carrier connections to easily attach and detach cargo for transport in which all