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### Accessory holder assembly for an off-road vehicle

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#### Abstract

An off-road vehicle has a frame, a motor, a steering input device, a storage bin disposed forward of the steering input device, a rack disposed forward of the steering input device, the rack defining a perimeter, and an accessory holder assembly selectively connected to the rack. The accessory holder assembly includes a receptacle having an upwardly facing receptacle aperture for receiving an accessory. The receptacle is disposed within the perimeter. The accessory holder assembly further includes a lock for securing the accessory holder assembly to the rack.

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## Background/Summary

CROSS-REFERENCE (1) The present application is a continuation application of U.S. patent application Ser. No. 18/163,670, entitled “Accessory Holder Assembly for an Off-Road Vehicle,” filed Feb. 2, 2023, which claims priority to U.S. Provisional Patent Application No. 63/306,666, entitled “Accessory Holder Assembly for an Off-Road Vehicle,” filed on Feb. 4, 2022, the entirety of each of which is incorporated by reference herein.

### TECHNICAL FIELD

(1) The present technology relates to accessory holder assemblies for off-road vehicles.

### BACKGROUND

(2) Off-road vehicles such as all-terrain vehicles (ATVs) are used for utility and recreational purposes. The off-road vehicles may sometimes be used for transporting cargo and accessories. It is desirable to have the ability to carry elongated accessories which can be cumbersome and may not fit entirely in storage bins of the vehicle.

(3) Thus, there is a need for accessory holder assemblies for off-road vehicles that permit different

accessories to be carried while the off-road vehicle is being operated on different kinds of terrains.  
SUMMARY

(4) It is an object of the present technology to ameliorate at least some of the inconveniences present in the prior art.

(5) In one aspect, the present technology provides an off-road vehicle having a frame, a motor connected to the frame, a steering assembly connected to the frame, the steering assembly including a steering input device, a storage bin disposed forward of the steering input device, the storage bin having side walls and a bottom wall, and an accessory holder assembly connected to the storage bin. The accessory holder assembly includes a receptacle having an upwardly facing receptacle aperture for receiving an accessory. The receptacle aperture is disposed within a perimeter defined by the side walls of the storage bin. The receptacle extends below the bottom wall of the storage bin. A height of a portion of the receptacle extending below the bottom wall of the storage bin is greater than a width of the receptacle aperture and greater than a length of the receptacle aperture.

(6) In some implementations, the height of the portion of the receptacle extending below the bottom wall of the storage bin is greater than a height of the side walls of the storage bin.

(7) In some implementations, the length of the receptacle aperture is greater than the width of the receptacle aperture.

(8) In some implementations, the accessory holder assembly further includes a lock for securing the accessory holder assembly to the off-road vehicle.

(9) In some implementations, the accessory holder assembly further includes a bracket connected to the receptacle, the lock is mounted to the bracket, and the bracket has a platform for supporting a first portion of the accessory when a second portion of the accessory is received in the receptacle.

(10) In some implementations, the bracket has first and second portions defining a L-shape. The first portion is removably connected to the receptacle and extends in the storage bin. The second portion projects laterally away from the first portion and outside the perimeter defined by the side walls of the storage bin. The lock is mounted to the second portion of the bracket. The lock includes a latch member, and the off-road vehicle defines a recess for receiving the latch member of the lock.

(11) In some implementations, the lock is a manually operable lock.

(12) In some implementations, the bottom wall of the storage bin defines a bin aperture, and the receptacle extends through the bin aperture.

(13) In some implementations, the accessory holder assembly further has a flange surrounding at least in part the receptacle aperture and a tab projecting from the receptacle below the flange. The flange abuts an upper face of the bottom wall of the storage bin surrounding the bin aperture, and the tab extends under a lower face of the bottom wall of the storage bin adjacent the bin aperture such that the bottom wall of the storage bin is retained between the flange and the tab.

(14) In some implementations, the accessory holder assembly further includes an extension sleeve removably connected to the receptacle, the extension sleeve extending in the storage bin, above the bottom wall of the storage bin.

(15) In some implementations, the accessory holder assembly further includes a resilient liner disposed inside the extension sleeve, and a clamp for retaining the accessory inside the extension sleeve.

(16) In some implementations, the clamp includes a cam lever assembly movable between a clamped position and an unclamped position, the cam lever assembly biasing the resilient liner for retaining the accessory inside the extension sleeve when moved from the unclamped position to the clamped position.

(17) In some implementations, the off-road vehicle further includes a radiator assembly connected to the frame and fluidly connected to the motor, the accessory holder assembly being disposed rearward of the radiator assembly.

- (18) In some implementations, the receptacle is secured to the radiator assembly.
- (19) In some implementations, the off-road vehicle further includes left and right front suspension assemblies operatively connected to the frame, each of the left and right front suspension assemblies including a shock absorber assembly, and left and right front ground engaging members operatively connected to the left and right front suspension assemblies respectively, and the receptacle is disposed forward of the shock absorber assemblies.
- (20) In some implementations, each of the shock absorber assemblies has an upper end and a lower end, and the receptacle is disposed laterally between the upper end and the lower end of one of the shock absorber assemblies.
- (21) In some implementations, the off-road vehicle further includes a front axle assembly operatively connected to the left and right front ground engaging member, the receptacle being disposed forward of the front axle assembly.
- (22) In some implementations, the receptacle is skewed relative to the bottom wall of the storage bin.
- (23) In some implementations, the accessory holder assembly is a first accessory holder assembly and the off-road vehicle further comprises a second accessory holder assembly, the second accessory holder assembly including a receptacle having an upwardly facing receptacle aperture for receiving another accessory, the receptacle aperture being disposed within the perimeter defined by the side walls of the storage bin, the receptacle extending below the bottom wall of the storage bin, and a height of a portion of the receptacle extending below the bottom wall of the storage bin being greater than a width of the receptacle aperture and greater than a length of the receptacle aperture. The first and second accessory holder assemblies are disposed on opposite sides of a longitudinal center plane of the off-road vehicle.
- (24) In some implementations, the off-road vehicle further includes a front differential assembly connected to the frame and operatively connected to the motor, the longitudinal center plane intersecting the front differential assembly, and the first accessory holder assembly is disposed on a first side of the front differential assembly, and the second accessory holder assembly is disposed on a second side of the front differential assembly.
- (25) In some implementations, the accessory holder assembly further includes a drain assembly connected to a bottom of the receptacle and fluidly communicating with the receptacle.
- (26) In some implementations, the drain assembly is a duck bill drain.
- (27) In some implementations, the off-road vehicle further includes a storage bin lid removably connected to the storage bin and preventing access to the receptacle aperture when closed.
- (28) In some implementations, a portion of the accessory holder assembly extends outside the storage bin when the storage bin lid is closed.
- (29) In some implementations, the accessory is a chainsaw having a blade, the receptacle being shaped to fit the blade of the chainsaw.
- (30) In some implementations, the off-road vehicle is an all-terrain vehicle, the steering input device is a handlebar, the off-road vehicle has a straddle seat connected to the frame, and the motor is disposed under the straddle seat.
- (31) According to another aspect of the present technology, there is provided a bin assembly for an off-road vehicle, including a storage bin having side walls and a bottom wall, and an accessory holder assembly connected to the storage bin. The accessory holder assembly includes a receptacle having an upwardly facing receptacle aperture for receiving an accessory, the receptacle aperture being disposed within a perimeter defined by the side walls of the storage bin, the receptacle extending below the bottom wall of the storage bin, and a height of a portion of the receptacle extending below the bottom wall of the storage bin being greater than a width of the receptacle aperture and greater than a length of the receptacle aperture.
- (32) In some implementations, the height of the portion of the receptacle extending below the bottom wall of the storage bin is greater than a height of the side walls of the storage bin.

- (33) In some implementations, the length of the receptacle aperture is greater than the width of the receptacle aperture.
- (34) In some implementations, the bottom wall of the storage bin defines a bin aperture, and the receptacle extends through the bin aperture.
- (35) In some implementations, the accessory holder assembly further has a flange surrounding at least in part the receptacle aperture and a tab projecting from the receptacle below the flange. The flange abuts an upper face of the bottom wall of the storage bin surrounding the bin aperture, and the tab extends under a lower face of the bottom wall of the storage bin adjacent the bin aperture such that the bottom wall of the storage bin is retained between the flange and the tab.
- (36) In some implementations, the accessory holder assembly further includes an extension sleeve removably connected to the receptacle, the extension sleeve extending in the storage bin, above the bottom wall of the storage bin.
- (37) In some implementations, the receptacle is skewed relative to the bottom wall of the storage bin.
- (38) In some implementations, the bin assembly further includes a storage bin lid removably connected to the storage bin and preventing access to the receptacle aperture when closed.
- (39) According to yet another aspect of the present technology, there is provided an accessory holder assembly connectable to a storage bin of an off-road vehicle, the accessory holder assembly including a receptacle having an upwardly facing receptacle aperture for receiving an accessory, a bracket connected to the receptacle, the bracket having a platform for supporting a first portion of the accessory when a second portion of the accessory is received in the receptacle, and a lock mounted to the bracket.
- (40) In some implementations, the lock is a manually operable lock.
- (41) In some implementations, the bracket has first and second portions defining a L-shape. The first portion includes an extension sleeve connected to the receptacle, the second portion projects laterally away from the first portion, and the lock is mounted to the second portion of the bracket.
- (42) In some implementations, the accessory holder assembly further includes a resilient liner disposed inside the extension sleeve, and a clamp for retaining the accessory inside the extension sleeve, the clamp biasing the resilient liner for retaining the accessory inside the extension sleeve when moved from an unclamped position to a clamped position.
- (43) In some implementations, the accessory holder assembly further includes a drain assembly connected to a bottom of the receptacle and fluidly communicating with the receptacle.
- (44) In some implementations, the drain assembly is a duck bill drain.
- (45) According to yet another aspect of the present technology, there is provided an accessory holder assembly connectable to an off-road vehicle. The accessory holder assembly includes a receptacle defining an upwardly facing receptacle aperture for receiving an accessory, and a bottom opposite the receptacle aperture. The receptacle is insertable in an aperture defined in the off-road vehicle. The accessory holder assembly further includes a flange projecting from the receptacle, the flange being structured to abut a portion of the off-road vehicle surrounding the aperture, and at least one connector disposed between the flange and the bottom of the receptacle for connecting the receptacle to the off-road vehicle.
- (46) In some implementations, the at least one connector includes at least one of tabs and mounting brackets projecting from the receptacle.
- (47) For purposes of the present application, terms related to spatial orientation when referring to a vehicle and components in relation to the vehicle, such as “forwardly”, “rearwardly”, “left”, “right”, “above” and “below”, are as they would be understood by a driver of the vehicle sitting thereon in an upright driving position, with the vehicle steered straight-ahead.
- (48) Furthermore, in the context of the present application, “outwardly” or “outward” means away from a longitudinal center plane of the frame of the vehicle, and “inwardly” or “inward” means toward the longitudinal center plane of the frame of the vehicle.

(49) Implementations of the present technology each have at least one of the above-mentioned object and/or aspects, but do not necessarily have all of them. It should be understood that some aspects of the present technology that have resulted from attempting to attain the above-mentioned object may not satisfy this object and/or may satisfy other objects not specifically recited herein.

(50) Additional and/or alternative features, aspects, and advantages of implementations of the present technology will become apparent from the following description, the accompanying drawings, and the appended claims.

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## Description

### BRIEF DESCRIPTION OF THE DRAWINGS

- (1) For a better understanding of the present technology, as well as other aspects and further features thereof, reference is made to the following description which is to be used in conjunction with the accompanying drawings, where:
- (2) FIG. 1 is a perspective view, taken from a front, left side, of a straddle-seat off-road vehicle, with accessories being received in accessory holder assemblies disposed in the front storage bin;
- (3) FIG. 2 is a left side elevation view of the vehicle of FIG. 1;
- (4) FIG. 3 is a top plan view of the vehicle of FIG. 1;
- (5) FIG. 4 is a perspective view, taken from a front, left side, of a front portion of the vehicle of FIG. 1, with a storage bin lid disposed above the front storage bin, and the accessories and accessory holder assemblies removed from the front storage bin;
- (6) FIG. 5 is a top plan view of the front storage bin of the front portion of the vehicle of FIG. 4;
- (7) FIG. 6 is a perspective view, taken from a front, left side, of the front portion of the vehicle of FIG. 4, with the storage bin lid omitted and accessory holder assemblies about to be inserted into the front storage bin;
- (8) FIG. 7 is a front elevation view of the front portion of the vehicle of FIG. 4, with the front differential assembly shown and the fairings and the steering assembly omitted, and the receptacles of the accessory holder assemblies connected to the front storage bin;
- (9) FIG. 8 is left side elevation view of the components of the front portion of the vehicle shown in FIG. 7;
- (10) FIG. 9 is a rear elevation view of the components of the front portion of the vehicle shown in FIG. 7;
- (11) FIG. 10 is a perspective view, taken from a front, left side, of the front portion of the vehicle of FIG. 6, with the accessory holder assemblies connected to the front storage bin and a first set of accessories about to be inserted in the accessory holder assemblies;
- (12) FIG. 11 is a perspective view, taken from a front, left side, of the front portion of the vehicle of FIG. 10, with a second set of accessories about to be inserted into the accessory holder assemblies;
- (13) FIG. 12 is a perspective view, taken from a top, front, left side, of the front portion of the vehicle of FIG. 11, with the second set of accessories received in the accessory holder assemblies;
- (14) FIG. 13 is a perspective view, taken from a top, front, right side, of the front portion of the vehicle of FIG. 12;
- (15) FIG. 14 is a perspective view taken from a front, right side, of a frame of the vehicle of FIG. 1, with the accessory holder assemblies, accessories received in the accessory holder assemblies and the front axle assembly;
- (16) FIG. 15 is a left side elevation view of the components of FIG. 14;
- (17) FIG. 16A is a perspective view, taken from a bottom, front, right side of an accessory holder assembly, with a clamp in an unclamped position;
- (18) FIG. 16B is a perspective view, taken from a bottom, front, right side, of the accessory holder assembly of FIG. 16A, with the clamp in a clamped position;

- (19) FIG. 17A is a left side elevation view of the accessory holder assembly of FIG. 16A, with a chainsaw received therein and the clamp in the unclamped position;
- (20) FIG. 17B is a cross-sectional view of the accessory holder assembly and chainsaw of FIG. 17A taken along the cross-section line 17B-17B of FIG. 17A;
- (21) FIG. 18A is a left side elevation view of the accessory holder assembly of FIG. 16B, with a chainsaw received therein and the clamp in the clamped position;
- (22) FIG. 18B is a cross-sectional view of the accessory holder assembly and chainsaw of FIG. 18A taken along cross-section line 18B-18B of FIG. 18A; and
- (23) FIG. 18C is an enlarged view of portion 18C of FIG. 18B.

#### DETAILED DESCRIPTION

- (24) The present technology will be described with reference to a four-wheeled straddle-seat all-terrain vehicle (ATV) 10. However, it is contemplated that aspects of the present technology could be used in other types of off-road vehicles, such as three-wheeled vehicles, side-by-side off-road vehicles (SSVs), motorcycles, snowmobiles and the like.
- (25) Referring to FIGS. 1 to 3, the ATV 10 has a front end 12 and a rear end 14 defined consistently with a forward travel direction of the ATV 10. A longitudinal center plane 16 (FIG. 3) extends vertically and longitudinally through the lateral center of the ATV 10. The ATV 10 has a frame 20 to which is mounted a motor 22 (schematically shown in FIG. 2) for powering the ATV 10. The ATV 10 has two front wheels 24 and two rear wheels 24. The wheels 24 are operatively connected to the motor 22 via a transmission (not shown). Each of the four wheels 24 is provided with low-pressure balloon tires adapted for off-road conditions and traversing rugged terrain. It is contemplated that the ATV 10 could have only three wheels 24. It is also contemplated that different ground engaging members, such as skis and a track assembly, could be used in other off-road vehicles.
- (26) The two front wheels 24 are suspended from the frame 20 by left and right front suspension assemblies 30 while the two rear wheels 24 are suspended from the frame 20 by left and right rear suspension assemblies 32. Each front suspension assembly 30 includes upper and lower A-arms 34a, 34b and a shock absorber assembly 36, best seen in FIGS. 6 to 9. The A-arms 34a, 34b have one end pivotally connected to the frame 20, and the other end supporting a kingpin 38 of its corresponding left or right front wheel 24. Each shock absorber assembly 36 has a lower end 40 pivotally connected to its corresponding upper A-arm 34a and an upper end 42 pivotally connected to the frame 20. Referring to FIG. 14, each of the left and right kingpins 38 is operatively connected to a front differential assembly 50 via a wheel axle 52 connected to the kingpin 38, a universal joint 54 connected to the wheel axle 52, a half-shaft 56, and a universal joint 58 connected to the front differential assembly 50. The universal joints 54, 58 are covered by boots. The front differential assembly 50 is connected to the frame 20 and disposed such that the longitudinal center plane 16 intersects the front differential assembly 50 (FIGS. 7 and 9). The left and right kingpins 38, wheel axles 52, universal joints 54, half-shafts 56, universal joints 58 and the front differential assembly 50 together form a front axle assembly 60 of the ATV 10, best seen in FIGS. 14 and 15. The front axle assembly 60 operatively connects the front wheels 24 to the motor 22 and transmission of the ATV 10.
- (27) Referring back to FIGS. 1 to 3, the ATV 10 further includes a straddle seat 70 connected to the frame 20 for accommodating a driver of the ATV 10. The motor 22 is disposed under the straddle seat 70. Driver footrests 72 are provided on either side of the driver seat 70 and are disposed vertically lower than the driver seat 70 to support the driver's feet. A steering assembly 80 is rotationally connected the frame 20 to enable a driver to steer the ATV 10. The steering assembly 80 includes a handlebar 82 connected to a steering column assembly 84 (FIG. 6) for actuating steering linkages operatively connected to left and right front wheels 24. Other steering input devices, such as a steering wheel, could be used in different vehicles.
- (28) A throttle operator 88 (FIGS. 1 and 3), in the form of a thumb-actuated throttle lever, is

mounted to the handlebar **82**. Other types of throttle operators, such as a finger-actuated throttle lever and a twist grip, are also contemplated. A gear shifter **90** (FIG. 3) located near the handlebar **82** is connected to the transmission and enables a driver to select one of a plurality of gear configurations for operation of the vehicle **10**. In the illustrated implementation of the vehicle **10**, the gear configurations include park, neutral, reverse, low, and drive. It is contemplated that the sequence and/or number of gear configurations could be different than as shown herein. A display cluster **92**, including a number of gauges and buttons, is disposed forwardly of the steering assembly **80**.

(29) The ATV **10** also includes fairings **94** including several side panels **95** extending over a lateral side of the ATV **10**. A radiator assembly **96** is connected to the frame **20** of the ATV **10**. The radiator assembly **96** is fluidly connected to the motor **22** via conduits **96a**, **96b**, best seen in FIG. 8. A coolant reservoir **96c** is also fluidly connected to the radiator assembly **96**. The radiator assembly **96** is disposed rearward of a front grille **97** and the fairings **94** forming the front fascia of the ATV **10**. A fender **98** is disposed over each wheel **24** to protect the driver and/or passenger from dirt, water and other debris being projected by the rotating wheels **24**. The fenders **98** also define a portion of the wheel well **99** in which each one of the wheels **24** rotates and, in the case of the front wheels **24**, steers.

(30) The ATV **10** further includes other components such as an air intake system, an exhaust system, headlights, and the like. As it is believed that these components would be readily recognized by one of ordinary skill in the art, further explanation and description of these components will not be provided herein.

(31) Referring to FIGS. 4 to 8, the ATV **10** includes a front storage bin **100** disposed forward of the handlebar **82**. The storage bin **100** has side walls **102** and a bottom wall **104**. The bottom wall **104** has an upper face **105** (FIG. 5) and a lower face **106** (FIG. 8). Referring to FIG. 5, the bottom wall **104** further has ridges **107** to enhance the structural rigidity thereof. The side walls **102** define a perimeter **108** of the storage bin **100** when seen from above, as in FIG. 5. In other words, the perimeter **108** of the storage bin **100** is defined by the side walls **102** when looking down into the storage bin **100**. The side walls **102** have a height **109**, best seen in FIG. 8, defined between the bottom wall **104** and the upper edge of the side walls **102**. The perimeter **108** and the height **109** define a volume **110** (FIG. 8) of the storage bin **100**.

(32) The ATV **10** also includes a rack **190** (identified in FIGS. 4, 5, and 7) connected to the frame **20** and disposed forward of the handlebar **82**. The rack **190** is formed from a rack frame **192**. The rack **190** includes two support surfaces **195** connected to the frame **192**, disposed on opposite sides of the center plane **16**. Each support surface **195** defines therein a recess **202** for selectively receiving a lock **200** of the accessory holder assembly **140** (discussed below). The rack **190** forms a rack perimeter **199** surrounding the perimeter **108** of the storage bin **100** (illustrated schematically in FIG. 5). Referring to FIGS. 4 and 5, a storage bin lid **120** is removably connected to the storage bin **100** and prevents access to the volume **110** of the storage bin **100** when closed. When connected, the storage bin lid **120** is hingedly connected to the storage bin **100** via hinges **122** (FIGS. 4 and 5).

(33) Referring to FIG. 5, left and right bin apertures **130** are defined in the bottom wall **104** of the storage bin **100**. The left and right bin apertures **130** are respectively disposed on the left and right sides of the longitudinal center plane **16** of the ATV **10**. The left and right bin apertures **130** are shaped as rectangles having rounded corners. The bin apertures **130** extend lengthwise parallel to the longitudinal center plane **16** of the ATV **10**. The bin apertures **130** could be shaped and/or positioned otherwise in other implementations. Each bin aperture **130** is covered by a removable panel **132**. The bottom wall **104** and the panels **132** are integrally formed, and the panels **132** can be cut out or otherwise removed from the bottom wall **104** of the storage bin **100**. A recess **136** defined around each panel **132** indicates to a user where to cut in order to remove the panels **132** from the bottom wall **104**. Drains **134** are provided on each removable panel **132**. The drains **134**



are used to empty the front storage bin **100** from any liquids and debris it could contain. The drains **134** are removed from the storage bin **100** when the panels **132** are removed. In other implementations, the panels **132** could be configured to be selectively connected to the storage bin **100**.

(34) Referring to FIGS. **1** to **3** and **6**, left and right accessory holder assemblies **140** will be generally described. The left and right accessory holder assemblies **140** are connectable to the front storage bin **100**. The left and right accessory holder assemblies **140** are disposed on the left and right sides of the longitudinal center plane **16** of the ATV **10**. Each of the accessory holder assemblies **140** includes a receptacle **142**. The receptacle **142** has an upwardly facing receptacle aperture **144** for receiving an accessory **300**. The receptacle aperture **144** of the left receptacle **142** is best seen in FIGS. **6** and **13**.

(35) As seen in FIGS. **1** to **3**, **10** and **11**, different accessories **300**, such as a chainsaw **310**, a snipper **320**, or a saw **330**, can be received in either one of the receptacles **142**. In FIGS. **1** to **3**, it is shown that the left receptacle **142** can receive simultaneously a snipper **320** and an axe **340**. Thus, more than one accessory **300** can be received in each receptacle **142**. In the illustrated implementation, the right receptacle **142** is shaped to fit a blade **312** of the chainsaw **310**, and can receive the snipper **320** or the saw **330** as well. Other accessories **300** are also contemplated to be received in the receptacles **142**. The receptacles **142** could also be shaped to fit a particular accessory **300**.

(36) The accessories **300** shown as examples in the accompanying Figures are elongated items which would normally not fit entirely inside the volume **110** of the front storage bin **100**. When placed in the storage bin **100**, any one of these accessories **300** would lie on the bottom wall **104** and on the upper edge of the side walls **102**, and project outside the storage bin **100**. Such positioning of the accessory **300** would render it unstable and prone to movements inside the storage bin **100** while the ATV **10** is operated, if not anchored. In contrast, when received in the receptacle **142** of the accessory holder assembly **140** of the present technology, the accessory **300** is less prone to movements while the ATV **10** is operated. The accessory **300** is thus less exposed to risks of being damaged and/or ejected from the storage bin **100** while the ATV **10** is operated. In addition, when received in the receptacle **142** of the accessory holder assembly **140** of the present technology, the accessory **300** does not obstruct the straight-ahead view of the driver, and leaves a center portion of the volume **110** of the front storage bin **100** free of encumbrances, as seen in FIGS. **3**, **12** and **13**. The empty volume **110** can thus be used to carry additional items in the front storage bin **100**.

(37) Referring to FIGS. **5** to **9**, the connection of the left and right receptacles **142** to the storage bin **100** and their positioning relative to various components of the ATV **10** will be described. Since the left and right receptacles **142** have similar features, the following description applies to both left and right receptacles **142**, unless mentioned otherwise.

(38) When the panels **132** are removed from the bottom wall **104** of the front storage bin **100**, the accessory holder assemblies **140** are inserted into the storage bin **100** from above (as seen in FIG. **6**) such that their respective receptacle **142** extends through the bin aperture **130**. When fully inserted therein, a flange **146** (FIGS. **6**, **16A** and **16B**) surrounding the receptacle aperture **144** abuts the upper face **105** of the bottom wall **104** surrounding the bin aperture **130**. Tabs **148** project from the receptacle **142** below the flange **146**. The tabs **148** extend under the lower face **106** of the bottom wall **104** of the storage bin **100** adjacent the bin aperture **130** (FIG. **8**). Thus, when the receptacle **142** is fully inserted and extends through the bin aperture **130**, the bottom wall **104** of the storage bin **100** is retained between the flange **146** and the tab **148**, thereby connecting the accessory holder assembly **140** to the storage bin **100**.

(39) In other words, when fully inserted into the bin aperture **130**, the receptacle **142** is selectively connected to the bottom wall **104** of the storage bin **100** via (i) the flange **146** abutting and mating with the upper face **105** of the bottom wall **104** in an area surrounding the bin aperture **130**

including the remaining portion of the recess **136**, and (ii) the tabs **148** extending under the lower face **106** of the bottom wall **104**, the tabs **148** retaining the receptacle **142** in the bin aperture **130**. As best seen in FIGS. **7** and **8**, when connected to the storage bin **100**, the receptacle **142** extends below the bottom wall **104** of the storage bin **100**.

(40) It is contemplated that only one or more than two accessory holder assemblies **140** could be connected to the front storage bin **100**. Furthermore, it is contemplated that the storage bin **100** could be free of bin apertures **130** and panels **132**, and that the receptacles **142** could be integrally formed with the bottom wall **104** of the storage bin **100** in other implementations.

(41) Referring to FIGS. **12** and **13**, when the receptacle **142** extends through the bin aperture **130**, the receptacle aperture **144** is disposed within the perimeter **108** defined by the side walls **102** of the storage bin **100**, as viewed from above. The receptacle aperture **144** is thus accessible from the volume **110** of the storage bin **100**, and the receptacle **142** increases the overall cargo volume available in the front storage bin **100**. The receptacle aperture **144** has a length **150** defined consistently with the lengthwise dimension of the bin aperture **130** (i.e. extending parallel to the longitudinal center plane **16**). The receptacle aperture **144** also has a width **152** defined consistently with the widthwise dimension of the bin aperture **130** (i.e. extending perpendicular to the longitudinal center plane **16**). In the present implementation, the length **150** of the receptacle aperture **144** is greater than the width **152** of the receptacle aperture **144**, but could be otherwise in other implementations.

(42) Referring to FIG. **8**, a height **154** of a portion **156** of the receptacle **142** extending below the bottom wall **104** of the storage bin **100** is greater than the length **150** and the width **152** of the receptacle aperture **144** (FIG. **13**). In addition, the height **154** of the portion **156** of the receptacle **142** is greater than the height **109** of the side walls **102** of the storage bin **100**. As such, the cargo volume provided by each receptacle **142** is suited to carry elongated accessories **300**, such as the chainsaw **310**, snipper **320** and saw **330** illustrated in FIGS. **10** and **11**. It is contemplated that the left and right receptacles **142** could also have different heights **154** for their respective portion **156** in other implementations. In addition, it is to be understood that when the storage bin lid **120** is closed, access to the receptacle apertures **144** is prevented.

(43) Referring to FIGS. **7** to **9**, the receptacle **142** is skewed relative to the bottom wall **104** of the storage bin **100** such that a center of the bottom **158** of the receptacle **142** is closer to the longitudinal center plane **16** than a center of the receptacle aperture **144**. Having the receptacle **142** skewed this way may facilitate, under some conditions, insertion and withdrawal of the accessory **300** from the receptacle **142** from the side of the ATV **10**. In addition, having the receptacle **142** skewed may limit the interference of the receptacle **142** with components of the ATV **10** disposed within the front wheel well **99**.

(44) Still referring to FIGS. **7** to **9**, a drain assembly **160** is connected to the bottom **158** of the receptacle **142**. The drain assembly **160** is in fluid communication with the receptacle **142** and permits drainage of liquids that might be present in the receptacle **142**. In the present implementation, the drain assembly **160** is a duck bill drain **162**, but other drain assemblies could be used. The duck bill drain **162** is accessible from the wheel well **99** of the ATV **10**, as seen in FIG. **1**. The duck bill drain **162** includes a resilient member having a slit defined therein. To drain liquids from the receptacle **142**, a user can reach and pinch the resilient member of the duck bill drain **162** so as to open the slit to drain the liquid out of the receptacle **142**.

(45) Still referring to FIGS. **7** to **9**, the left and right accessory holder assemblies **140** are disposed rearward of the radiator assembly **96** of the ATV **10**. More particularly, the left and right receptacles **142** are disposed rearward of the radiator assembly **96**. Each receptacle **142** has a forward-projecting mounting bracket **170**. The radiator assembly **96** has left and right rearward-projecting mounting brackets **172**. Each receptacle **142** is secured to the radiator assembly **96** via a fastener **174** connecting the mounting brackets **170**, **172** together. Having each of the receptacles **142** secured to the radiator assembly **96** further stabilizes the connection of the accessory holder

assembly **140** to the ATV **10**. The left and right receptacles **142** could be further connected to the ATV **10** otherwise in other implementations.

(46) It is to be noted that in the present implementation, both the tabs **148** and the mounting brackets **170** are disposed between the receptacle aperture **144** (and the flange **146**) and the bottom **158** of the receptacle **142**. Furthermore, both the tabs **148** and the mounting brackets **170** connect the receptacle **142** of the accessory holder assembly **140** to the ATV **10**.

(47) Still referring to FIGS. **7** to **9**, the left receptacle **142** is disposed forward of the front left shock absorber assembly **36**. As best seen in FIG. **9**, the left receptacle **142** is disposed laterally between the lower end **40** and the upper end **42** of the left shock absorber assembly **36**. Similarly, the right receptacle **142** is disposed forward of the front right shock absorber assembly **36**, and as best seen in FIG. **9**, the right receptacle **142** is disposed laterally between the lower end **40** and the upper end **42** of the right shock absorber assembly **36**. The left and right receptacles **142** could be disposed otherwise in other implementations.

(48) Referring to FIGS. **9** and **14**, the left and right accessory holder assemblies **140** are disposed on opposite sides of the longitudinal center plane **16** of the ATV **10**. The left accessory holder assembly **140** is disposed on the left side of the front differential assembly **50**, and the right accessory holder assembly **140** is disposed on the right side of the front differential assembly **50**. Referring to FIGS. **8**, **14** and **15**, the left and right receptacles **142** are disposed forward of the front axle assembly **60**, and more particularly forward of the universal joints **58**, **54**. The left and right receptacles **142** could be disposed otherwise in other implementations.

(49) Turning now to FIGS. **12** and **16A** to **18C**, the right accessory holder assembly **140** will be described in more detail in conjunction with the chainsaw **310** being the accessory **300** received in the receptacle **142**. The chainsaw **310** has a blade **312** and a power pack **316** and, as will become apparent from the description below, the blade **312** and the power pack **316** are respectively received and supported by the right accessory holder assembly **140**.

(50) The right accessory holder assembly **140** includes a bracket **180**. The bracket **180** is L-shaped. The bracket **180** has a generally vertical portion **182** and a generally horizontal portion **184** interconnected using fasteners **186** (FIG. **16B**). The portions **182**, **184** could be integrally formed in other implementations. The portion **182** extends in the storage bin **100** and is connected to the receptacle **142**. The portion **184** projects laterally away from the portion **182** and outside the perimeter **108** defined by the side walls **102** of the storage bin **100**. In other words and as best seen in FIGS. **10** to **13**, the portion **184** of the bracket **180** extends outside the volume **110** of the storage bin **100**. The storage bin lid **120** is disconnected from the storage bin **100** when the bracket **180** is used. It is contemplated that the storage bin lid **120** could be adapted to permit its use when the bracket **180** is used.

(51) Referring to FIGS. **5**, **6**, **16A** and **16B**, the portion **184** of the bracket **180** will first be described. A lock **200** is mounted to the portion **184** of the bracket **180** for securing the accessory holder assembly **140** to the ATV **10**. The lock **200** selectively locks the bracket **180** to the ATV **10** when inserted in the recess **202** (FIGS. **5** and **6**) defined on the right side of the ATV **10**, specifically in the rack **190**, and upon rotation of a lever **204**. The recess **202** is defined in the support surface **195** of the rack **190**. In the present implementation, the lock **200** is similar to the anchor described in U.S. Pat. No. 8,875,830 B2, which is incorporated by reference herein. The lock **200** could be configured otherwise.

(52) Referring to FIGS. **16A** and **16B**, the lock **200** includes a latch member **206** that is connected to the lever **204**. The latch member **206** includes a pair of cams **208** constituting a lower flange of the lock **200**. The pair of cams **208** defines a hexagonal shape that is congruent with the recess **202** provided on the ATV **10** which is shaped for receiving the latch member **206** of the lock **200**. The pair of cams **208** is rotatable between an unlocked position (FIG. **16A**) and a locked position (FIG. **16B**) when the lever **204** is rotated by about 90 degrees. The lock **200** is a manually operable lock, which means that the lock **200** can be configured in the unlocked and locked positions upon

manual operation of the lever **204** and without any tools.

(53) In the unlocked position, shown in FIG. **16A**, the pair of cams **208** is oriented to be congruent with the recess **202**, making the latch member **206** insertable into, and removable from the recess **202**. In the locked position, shown in FIG. **16B**, the latch member **206** is rotated by about 90 degrees from the unlocked position, thus preventing the latch member **206** from being removed from the ATV **10** when received in the recess **202**. It is contemplated that other types of locks **200** could be employed. The lock **200** thus secures the bracket **180** and the accessory holder assembly **140** to the ATV **10**.

(54) Referring to FIGS. **17B** and **18B**, the portion **184** of the bracket **180** has a platform **220**. The platform **220** is integrally formed in the portion **184**, but could be provided as a separate component in other implementations. The platform **220** is shaped and dimensioned for supporting the power pack **316** of the chainsaw **310** when the blade **312** is received in the receptacle **142**. More particularly, the platform **220** is inclined and elevated relative to a plane **222** containing the portion **184** of the bracket **180** so as to support the power pack **316** of the chainsaw **310**. Having the power pack **316** supported by the platform **220** reduces the stress applied to the blade **312** as the power pack **316** is generally heavy. The platform **220** could be shaped and dimensioned otherwise in other implementations to support a different accessory **300**.

(55) Referring now to FIGS. **12** and **16A** to **18C**, the portion **182** of the bracket **180** will be described in more details. The portion **182** of the bracket **180** is an extension sleeve **240** removably connected to the receptacle **142**. The extension sleeve **240** is a hollow member, as best seen in FIGS. **17B** and **18B**. When connected to the receptacle **142**, the extension sleeve **240** extends in the storage bin **100**, above the bottom wall **104**, as best seen in FIG. **12**.

(56) The extension sleeve **240** has a lower portion **242** defining a downwardly facing bottom aperture **244** of the extension sleeve **240**. The lower portion **242** has downwardly projecting hooks **246** that are insertable in corresponding hook apertures **248** defined in the receptacle **142** below the flange **146**. When the hooks **246** extend through the hook apertures **248**, the lower portion **242** of the extension sleeve **240**, and thus the bracket **180**, is connected to the receptacle **142**. Stops **250** project laterally from the lower portion **242**. The stops **250** abut the flange **146** of the receptacle **142** to limit the insertion of the lower portion **242** into the receptacle **142**. The downwardly facing bottom aperture **244** and the upwardly facing receptacle aperture **144** are in alignment and permit passage of an accessory **300** from the extension sleeve **240** to the receptacle **142**. As seen in FIGS. **17B** and **18B**, the blade **312** of the chainsaw **310** extends through the extension sleeve **240**, the bottom aperture **244** and the receptacle aperture **144**.

(57) The extension sleeve **240** further has an upper portion **260** defining an upwardly facing top aperture **262**. The top aperture **262** is in alignment with an aperture **263** defined in the portion **184** of the bracket **180**, and with the bottom aperture **244** such that passage of an accessory **300** from the aperture **263**, the top aperture **262** and to the receptacle **142** is permitted. Two vertically extending slots **264** and one horizontally extending slot **264** (FIGS. **16A** and **16B**) are defined in the right-side wall of the upper portion **260** of the extension sleeve **240**, forming a resilient, flexible flap **266**, best seen in FIG. **18C**.

(58) Referring to FIG. **18C**, the accessory holder assembly **140** further has a resilient liner **270** disposed inside the extension sleeve **240**. The resilient liner **270** extends in the upper portion **260** of the extension sleeve **240**. The resilient liner **270** also extends through the aperture **263** of the portion **184** of the bracket **180**. The resilient liner **270** has a lip portion **272** surrounding the aperture **263**. The lip portion **272** is connected to portion **184** of the bracket **180** as the portion **184** engages a groove **273** defined in the resilient liner **270**. The resilient liner **270** further has a portion **274** extending adjacent the flap **266** of the upper portion **260**, and a portion **276** extending adjacent the left-side wall of the upper portion **260**. The resilient liner **270** is made of a resilient material, such as a rubber-based polymeric material.

(59) Referring to FIGS. **16A** to **18C**, the accessory holder assembly **140** further has a clamp **280** for

retaining the accessory **300** (in the FIGS. **16A** to **18C**, the chainsaw **310**) inside the extension sleeve **240**. The clamp **280** includes a cam lever assembly **282** rotatably connected to the upper portion **260** of the extension sleeve **240**. The cam lever assembly **282** is movable about a cam pivot axis **284** between an unclamped position, seen in FIGS. **16A**, **17A** and **17B**, and a clamped position, seen in FIGS. **16B**, **18A** to **18C**. The cam lever assembly **282** includes an eccentric member **286** that abuts the flap **266** of the upper portion **260** of the extension sleeve **240**.

(60) When the blade **312** of the chainsaw **310** is received in the extension sleeve **240** and when the cam lever assembly **282** is moved from the unclamped position to the clamped position, the eccentric member **286** rotates about the cam pivot axis **284** (in the counter-clockwise direction when referring to FIG. **18C**) and abuts the flap **266**, which in turn biases the portion **274** of the resilient liner **270** toward the blade **312** of the chainsaw **310** and the left-side wall of the upper portion **260**. After the cam lever assembly **282** has been moved in the clamped position, the portion **274** of the resilient liner **270** is compressed between the blade **312** and the flap **266**. The portion **276** of the resilient liner **270**, on the opposite side of the blade **312**, is also compressed between the left-side wall and the blade **312** as the blade **312** is biased away from the cam lever assembly **282**. Thus, the portions **274**, **276** of the resilient liner **270**, extending on both sides of the blade **312**, retain the blade **312** inside the extension sleeve **240**. When the cam lever assembly **282** is moved from the clamped position to the unclamped position, the eccentric member **286** rotates about the cam pivot axis **284** (in the clockwise direction when referring to FIG. **18C**), the portions **274**, **276** of the resilient liner **270** are relaxed, the flap **266** resiliently reverts to its initial position (shown in FIG. **17B**), and the blade **312** is no longer retained inside the extension sleeve **240**.

(61) Thus, in the present implementation, the right-side accessory holder assembly **140** is adapted to support and retain the chainsaw **310** on the ATV **10** while the ATV **10** is being operated on different kinds of terrains. Finally and referring to FIG. **5**, it is to be noted that another recess **202** is provided on the left side of the ATV **10**, specifically in the left side support surface **195** of the rack **190**. A bracket in some implementations is a mirror image of the bracket **180** and with necessary adaptations could be connected to the receptacle **142** of the accessory holder assembly **140** disposed on the left side of the ATV **10** to provide the ability to carry two chainsaws **310** simultaneously on the ATV **10**.

(62) Moreover, since the bracket **180** is connected to the receptacle **142** using the hooks **246**, it is connectable and removable from the receptacle **142** without using any tools. The bracket **180** can thus be easily removed such that only the receptacle **142** is used, as it is the case for the left accessory holder assembly **140** shown in the accompanying Figures. When the bracket **180** is removed, the storage bin lid **120** can be used without having to remove the receptacle **142**.

(63) Modifications and improvements to the above-described implementations of the present technology may become apparent to those skilled in the art. The foregoing description is intended to be exemplary rather than limiting. The scope of the present technology is therefore intended to be limited solely by the scope of the appended claims.

## Claims

1. An off-road vehicle comprising: a frame; a motor connected to the frame; a steering assembly connected to the frame, the steering assembly including a steering input device; a rack disposed forward of the steering input device, the rack defining a rack perimeter; and an accessory holder assembly selectively connected to the rack, the accessory holder assembly including a receptacle having an upwardly facing receptacle aperture for receiving an accessory, the receptacle being disposed within the rack perimeter, and a height of a portion of the receptacle extending below the rack being greater than a width of the receptacle aperture and greater than a length of the receptacle aperture.
2. The off-road vehicle of claim 1, wherein the length of the receptacle aperture is greater than the

width of the receptacle aperture.

3. The off-road vehicle of claim 1, wherein the accessory holder assembly further includes a lock for securing the accessory holder assembly to the rack.

4. The off-road vehicle of claim 3, wherein: the accessory holder assembly further includes a bracket connected to the receptacle, the lock is mounted to the bracket, and the bracket has a platform for supporting a first portion of the accessory when a second portion of the accessory is received in the receptacle.

5. The off-road vehicle of claim 1, wherein the accessory holder assembly further includes an extension sleeve removably connected to the receptacle.

6. The off-road vehicle of claim 5, wherein the accessory holder assembly further includes a resilient liner disposed inside the extension sleeve, and a clamp for retaining the accessory inside the extension sleeve.

7. The off-road vehicle of claim 6, wherein the clamp includes a cam lever assembly movable between a clamped position and an unclamped position, the cam lever assembly biasing the resilient liner for retaining the accessory inside the extension sleeve when moved from the unclamped position to the clamped position.

8. The off-road vehicle of claim 1, further comprising: left and right front suspension assemblies operatively connected to the frame, each of the left and right front suspension assemblies including a shock absorber assembly; and left and right front ground engaging members operatively connected to the left and right front suspension assemblies respectively; wherein the receptacle is disposed forward of the shock absorber assemblies.

9. An off-road vehicle comprising: a frame; a motor connected to the frame; a steering assembly connected to the frame, the steering assembly including a steering input device; a storage bin disposed forward of the steering input device, the storage bin having side walls and a bottom wall; and an accessory holder assembly at least partially disposed in the storage bin, the accessory holder assembly including a receptacle having an upwardly facing receptacle aperture for receiving an accessory, the receptacle aperture being disposed within a perimeter defined by the side walls of the storage bin, the receptacle extending below the bottom wall of the storage bin, and a height of a portion of the receptacle extending below the bottom wall of the storage bin being greater than a width of the receptacle aperture and greater than a length of the receptacle aperture.

10. The off-road vehicle of claim 9, wherein the height of the portion of the receptacle extending below the bottom wall of the storage bin is greater than a height of the side walls of the storage bin.

11. The off-road vehicle of claim 9, wherein the length of the receptacle aperture is greater than the width of the receptacle aperture.

12. The off-road vehicle of claim 9, wherein the accessory holder assembly further includes a lock for securing the accessory holder assembly to the off-road vehicle.

13. The off-road vehicle of claim 9, wherein: the bottom wall of the storage bin defines a bin aperture; and the receptacle extends through the bin aperture.

14. The off-road vehicle of claim 13, wherein: the accessory holder assembly further has a flange surrounding at least in part the receptacle aperture and a tab projecting from the receptacle below the flange, the flange abuts an upper face of the bottom wall of the storage bin surrounding the bin aperture, and the tab extends under a lower face of the bottom wall of the storage bin adjacent the bin aperture such that the bottom wall of the storage bin is retained between the flange and the tab.

15. The off-road vehicle of claim 9, further comprising a radiator assembly connected to the frame and fluidly connected to the motor, the accessory holder assembly being disposed rearward of the radiator assembly.

16. The off-road vehicle of claim 9, further comprising: left and right front suspension assemblies operatively connected to the frame, each of the left and right front suspension assemblies including a shock absorber assembly; and left and right front ground engaging members operatively connected to the left and right front suspension assemblies respectively; wherein the receptacle is

disposed forward of the shock absorber assemblies.

17. The off-road vehicle of claim 9, wherein the receptacle is skewed relative to the bottom wall of the storage bin.

18. The off-road vehicle of claim 9, further comprising a storage bin lid removably connected to the storage bin and preventing access to the receptacle aperture when closed.

19. The off-road vehicle of claim 18, wherein a portion of the accessory holder assembly extends outside the storage bin when the storage bin lid is closed.

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