

3

FIG. 4 is partial perspective view of a first exemplary anchor mounted onto a first exemplary frame member of the frame and sunshade assembly of FIG. 2.

FIG. 5 is cross-sectional view taken along line 5-5 of FIG. 2.

FIG. 6 is partial perspective view of a second exemplary anchor mounted onto a second exemplary frame member for use with the sunshade of FIG. 2.

FIG. 7 is cross-sectional view taken along line 7-7 of FIG. 2.

FIG. 8 is a perspective view of a third exemplary anchor mounted onto the exemplary frame member indicated by arrow 8 in FIG. 2.

FIG. 9 is partial perspective view of a fourth exemplary anchor mounted onto a fourth exemplary frame member for use with the sunshade of FIG. 2.

FIG. 10 is cross-sectional view taken along line 10-10 of FIG. 2.

FIG. 11 is a perspective view of an alternate embodiment of the third exemplary anchor for use with the sunshade of FIG. 2.

FIG. 12 is a cross-sectional view of a portion of FIG. 11.

#### DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

A few inventive aspects of the disclosed embodiments are explained in detail below with reference to the various figures. Exemplary embodiments are described to illustrate the disclosed subject matter, not to limit its scope, which is defined by the claims. Those of ordinary skill in the art will recognize a number of equivalent variations of the various features provided in the description that follows.

Vehicles with an open frame assembly might not include a roof that extends above a passenger space. As a result, the passengers can be exposed to the conditions of the ambient environment such as sunlight, rain, etc. Although a solid roof can be secured to the open frame assembly, a solid roof can adversely affect a passenger's perception of an open passenger space. Thus, it is desirable to provide a structure that can at least partially shield one or more passengers of a vehicle from one or more ambient conditions, while simultaneously providing the passenger(s) with sense of an open passenger space.

FIG. 1 illustrates an embodiment of a vehicle 10 that can include a frame and sunshade assembly made in accordance with principles of the disclosed subject matter. The sunshade can be semi-opaque to the ambient sunlight and semi-transparent to the passenger(s) viewpoint such that the sunshade can provide a predetermined level of protection from sunlight, while also providing the passenger(s) with the ability to perceive an open passenger space.

The vehicle 10 shown in FIG. 1 is specialized for use on an unimproved path or on an unmarked path, and can be referred to as a multipurpose utility vehicle (MUV) or as a side-by-side all-terrain vehicle (SxS, or SxS ATV). However, the disclosed frame and sunshade assembly can be used with any vehicle that is configured for travel along any one or combination of improved, unimproved, and unmarked paths. For example, embodiments are intended to include or otherwise cover any type of vehicle or automobile, including a passenger car, minivan, truck, tractor, boat, other types of all-terrain vehicles (ATV), semi-tractor, off-highway vehicle, etc. For example, embodiments can include or otherwise cover configurations of the frame and sunshade assembly for use in still other types of vehicles, such as an

4

autonomous wheeled vehicle, a non-motorized wheeled vehicle, a continuous tracked vehicle, etc.

The vehicle 10 can include a body 12, a pair of front wheels 14L, 14R, a pair of rear wheels 16L, 16R, a rollover protection structure 18, a pair of front door assemblies 20L, 20R, a pair of rear door assemblies 21L, 21R, a frame assembly 32, a pair of front suspension assemblies 34L, 34R, a pair of rear suspension assemblies and a powertrain. The right rear wheel 16R, the rear suspension assemblies and the powertrain are hidden from view in FIG. 1 by the body 12. The frame assembly 32 can include the rollover protection structure 18. As will be discussed in detail below, a sunshade 36 can be connected to the frame 32 at the rollover protection structure 18 and can cover an area above a passenger space.

The vehicle 10 can include a pair of front seats 22L, 22R and a pair of rear seats 23L, 23R mounted in a passenger space of the vehicle 10. The front seats 22L, 22R can be arranged side-by-side in a transverse direction T of the vehicle 10. The rear seats 23L, 23R can be arranged side-by-side in a transverse direction T of the vehicle 10. The rear seats 23L, 23R can be spaced behind the front seats 22L, 21R in a longitudinal direction L of the vehicle 10.

The rollover protection structure 18 can be configured to extend around the seats 22L, 22R, 23L, 23R and the passenger space. The rollover protection structure 18 can extend above the seats 22L, 22R, 23L, 23R in a vertical direction V of the vehicle 10. The rollover protection structure 18 can cooperate with the body 12 and/or at least a portion of the frame assembly 32 to define a pair of door openings through which a passenger may pass in order to enter or exit the passenger area.

The front door assemblies 20L, 20R can each include a door 24 and a front window panel assembly 26L, 26R, and can be configured to selectively open and close access through the door openings by moving between a closed position and a fully opened position. The rear door assemblies 21L, 21R can each include a door 25 and a rear window panel assembly 28L, 28R, and can be configured to selectively open and close access through the door openings by moving between a closed position and a fully opened position. In the closed position, the door assemblies 20L, 20R, 21L, 21R can span the respective door openings to obstruct access to the passenger area via the door openings. In the closed position, the front portion of each door assembly 20L, 20R, 21L, 21R can be latched to the rollover protection structure 18. The fully opened position can be any position where the door assemblies 20L, 20R, 21L, 21R are pivoted away from the respective door openings to provide substantially unobstructed access to the passenger area via the door openings. FIG. 1 shows the door assemblies 20L, 20R, 21L, 21R in the closed position. The exemplary window panel assemblies 26L, 26R, 28L, 28R are illustrated to include a mesh or net panel. However, embodiments are intended to include or otherwise cover window panel assemblies that include a transparent or semi-transparent panel.

Each seat 22L, 22R, 23L, 23R of the vehicle 10 also can include a seat belt assembly 30, and/or other structures that may be relevant or beneficial.

FIG. 2 shows a plan view of a frame and sunshade assembly 38. The frame and sunshade assembly 38 can include the sunshade 36 and a plurality of frame members 40, 42, 44, 46, 48. Referring to FIGS. 1 and 2, the frame members 40, 42, 44, 46, 48 can be connected to together and extend around the passenger space. The sunshade 36 can extend along an area bounded by the frame members 40, 44, 46, 48. The frame members 40, 42, 44, 46, 48 can be spaced