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CANOPY ROTATION STRUCTURES CONFIGURED FOR GRASPING

Abstract

Embodiments of the present disclosure are directed to a canopy rotation structure that may be removably coupled to a child transport product. The canopy rotation structures generally comprise a first arch and a second arch, each of which attach to canopy wings and rotate relative to each other. The first arch may at least partially define an opening that a user may grasp during use or during collapse of the child transport product.

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Background/Summary

BACKGROUND

[0001] Child transport products such as wagons and strollers can be used to transport children, their affects, and other items. Child transport products often include a canopy affixed to the product to

provide cover from the sun, the rain, or other elements. Child transport products are also frequently collapsible for ease of storage. For example, in a collapsed position, the child transport product may be folded up into a product that takes up less space than when in an expanded position. The product may be pulled into an expanded, use position by a user pulling an area of the product to expand the product. Some child transport products may include a designated handle or pull piece that is separate from existing structures for the user to use to expand the child transport product.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0002] The present disclosure is described in detail below with reference to these figures.

[0003] FIG. 1 illustrates a perspective view of a child transport product with a canopy in accordance with an embodiment disclosed herein.

[0004] FIGS. 2A-2B illustrate a front view of a user expanding the child transport product of FIG. 1 between a partially collapsed position and an expanded position with assistance of canopy rotation structures in accordance with an embodiment disclosed herein.

[0005] FIG. 3 illustrates a perspective view of the canopy from FIG. 1 in accordance with an embodiment disclosed herein.

[0006] FIGS. 4A-4C illustrate various views of one of the canopy rotation structures from FIG. 2 in accordance with an embodiment disclosed herein.

[0007] FIG. 5 illustrates a perspective view of another canopy rotation structure in accordance with an embodiment disclosed herein.

DETAILED DESCRIPTION

[0008] As briefly discussed above, child transport products are often collapsible. Generally, users may be able to directly grasp the frame of the child transport product to move the product between configurations (e.g., moving from a collapsed configuration to an expanded configuration). However, the frame, which may often be a cylindrical rod and sometimes is covered by soft goods, may not be easy or comfortable to grasp. A child transport product may include additional structures, such as handles, that may be provided solely for the purposes of grasping when a user is expanding the child transport product. Yet, these typically involve manufacturing a separate piece. As such, it can be useful for a child transport product to incorporate a feature for user grasping to increase user comfort and ease of use when moving the product from a collapsed configuration to an expanded configuration, and by incorporating such a grasping feature into an existing structure, a less redundant and more efficient child transport product may be provided.

[0009] This detailed description is related to a canopy rotation structure that may be coupled to a child transport product or apparatus (e.g., a wagon or stroller) that may be grasped by the user to assist in expanding the child transport product from a collapsed position. In some examples, a canopy is coupled to a child transport product by attaching a first and a second canopy rotation structure on each side of the frame. At least one of the first and second canopy rotation structures, and in some embodiments, each of the canopy rotation structures, includes an opening through which a user can insert at least part of the user's hand for grasping.

[0010] The canopy rotation structure may include a first and a second arch that are rotatable relative to each other. The first arch attaches to a first canopy wing, and the second arch attaches to a second canopy wing. The first and second canopy wings may include a textile or soft good extending between the first and second canopy wing. In this way, the first and second arches may be rotated to adjust the angle of protection provided by the canopy textile or expand or contract the canopy textile. Further, at least the first arch may define an opening configured for grasping by a user to assist in expanding the product from a collapsed position. In some examples, the opening may be a through hole extending between the first and the second arches, and in other examples,

the opening may be an indentation that extends at least partially through the first arch. In some embodiments, a central arch is positioned between the first arch and the second arch, and the central arch is configured to be attached to the child transport product.

[0011] Turning now to FIG. 1, an example child transport product **100** is provided. FIG. 1 illustrates a wagon as an example child transport product **100**, but it should be appreciated that the components of the child transport product **100** described herein can be in the form of other types of wheeled carriers, including a stroller.

[0012] The child transport product **100** may generally comprise a frame that generally defines a first side **110**, a second side **112** generally opposite the first side **110**, a front side **109**, and a rear side **111** generally opposite the front side **109**. The frame may include a first frame portion **102** and a second frame portion **104**. In some embodiments, such as the child transport product **100** of FIG. 1, the first frame portion **102** may be a top frame portion and the second frame portion **104** may be a bottom frame portion, where the first frame portion **102** and the second frame portion **104** may each extend around the front side **109**, the first side **110**, the rear side **111**, and the second side **112**. Further, as depicted in FIG. 1, the first frame portion **102** may be separated from the second frame portion **104** such that they are not directly coupled together. In instances, the child transport product **100** includes one or more side frame portions **105** that extend between the first frame portion **102** and the second frame portion **104** on one or more sides of the child transport product **100**. In one example, the child transport product **100** includes side frame portions **105** on the front and rear sides **109** and **111** of the frame.

[0013] In other embodiments, the first frame portion **102** and the second frame portion **104** may be positioned in a variety of orientations. For example, in another wagon embodiment, the first frame portion **102** may be a front frame portion that extends on the front side **109** and portions of the first side **110** and second side **112**, and the second frame portion **104** may be a rear frame portion that extends on the rear side **111** and portions of the first side **110** and second side **112**. In one example of a stroller embodiment of the present disclosure, the first frame portion **102** may be coupled to the second frame portion **104** to form a variety of angles between them. For instance, the first frame portion **102** may comprise a push handle and at least top portion of stroller side rails while the second frame portion **104** may comprise stroller legs. Additionally, the first frame portion **102** and the second frame portion **104** may be portions of a unitary structure or may be separately formed structures secured together either directly or indirectly via other components, such as the side frame portion(s) **105**.

[0014] A handle **106** may be attached to the child transport product **100**. The handle **106** is arranged at the rear of the frame in this example and may act as a push handle. In other aspects, the handle **106** may be arranged at the front of the child transport product **100** so that it may be used as a pull handle. In some aspects, the handle **106** may be adjustable so that it is movable between the front side **109** and the rear side **111** of the frame so that it may be used for push or pull. The handle may be movable relative to the frame through sliding, rotating, telescoping, pivoting, and the like. The handle **106** may be composed of two side handle portions and a central handle portion that connects the two side handle portions and provides a central area where a user would grasp the handle **106**. In other examples, the handle **106** may comprise two side handle portions that are not joined together.

[0015] The frame may be coupled to wheels **108** allowing movement of the child transport product **100**. The wheels **108** are located at least partially under the frame such that the wheels support the weight of the frame. While four wheels **108** are shown, it will be appreciated that additional or fewer wheels **108** may be provided. For example, the child transport product **100** may have a three-wheel configuration. The wheels **108** may be uniform in size or there may be differences in wheel sizes. For example, the rear wheels **108** may be larger in diameter than the front wheels **108**.

[0016] Between the first side **110** and the second side **112** of the frame may be a seating area **114** configured to accommodate a person, such as a child. The seating area **114** is generally positioned

above the wheels **108**. The seating area **114** may include soft goods, such as textiles and cushions, to aid in occupant comfort. The seating area **114** may also include a harness, lap belt, or other features not illustrated.

[0017] The child transport product **100** may also include a canopy **116** generally comprising a first canopy wing **118**, a second canopy wing **120**, and a canopy textile **122** extending between the first canopy wing **118** and the second canopy wing **120**. FIG. 1 shows the canopy **116** expanded such that the canopy textile **122** is positioned over some of the other canopy **116** structures described herein, which may obstruct the view shown in FIG. 1. As such, these structures are shown in dashed line in FIG. 1, indicating that they are present but would be obscured by the canopy textile **122**.

[0018] Generally, the canopy **116** provides protection or shade from the sun or other elements like rain, snow, or wind. The canopy **116** may also provide privacy to occupants or users of the child transport product **100**, such as children. Further, the canopy **116** may provide a sense of security to occupants by providing a more enclosed space. The canopy **116** may increase safety as the canopy **116** can discourage occupants from reaching outside of the child transport product **100**. While the canopy **116** in FIG. 1 is shown as a single canopy **116** positioned in the center of the frame, it is expressly contemplated that additional canopies **116** may be coupled to the frame, and the canopy or canopies **116** may be positioned in an area other than the center of the frame.

[0019] The canopy textile **122** may be formed of various textiles, plastics, combinations of materials, and the like. In some embodiments, the canopy textile **122** may filter or be resistant to ultraviolet (UV) rays that attempt to penetrate the canopy textile **122**. The canopy textile **122** may be at least partially composed of a mesh material to allow for breathability within the child transport product **100**. The canopy textile **122** may also be water-resistant or have a waterproof coating such that rain or snow does not penetrate through the canopy and reach the occupant. The canopy textile **122** may be composed of elasticized material or thread such that the canopy textile **122** can securely attach to the first canopy wing **118** and the second canopy wing **120**. The canopy textile **122** may be removable, such as via hook and loop fasteners, snaps, buttons, drawstrings, zipper, a combination of these, and/or the like, from the first canopy wing **118** and the second canopy wing **120** so a user may wash and clean the canopy textile **122**.

[0020] The first canopy wing **118** and the second canopy wing **120** are configured to support the canopy textile **122** when the canopy **116** is in a use position (as compared to the canopy **116** in a collapsed position as shown in FIGS. 2A-2B) and enable movement and adjustment of the canopy textile **122**. The first canopy wing **118** and the second canopy wing **120** are rotatable relative to the frame portions, each other, or a combination of these. The first canopy wing **118** and the second canopy wing **120** may be positioned to create different angles relative to each other to provide customized weather protection. For example, the first canopy wing **118** and the second canopy wing **120** may be rotated to have a smaller angle between each other such that the canopy textile **122** is not completely expanded and less shade is provided. In some embodiments, the first canopy wing **118** and the second canopy wing **120** may have a lock that secures a particular use angle into place such that the occupant cannot manually adjust the canopy without unlocking the lock. The first canopy wing **118** and the second canopy wing **120** may be collapsed by rotating the first canopy wing **118** and the second canopy wing **120** toward the first frame portion **102**, either towards the front side **109** or the rear side **111**. The first canopy wing **118** and the second canopy wing **120** may rest adjacent to the first frame portion **102** when the canopy **116** is collapsed, as shown in FIG. 2A-2B. The first canopy wing **118** and the second canopy wing **120** may be formed of a variety of materials such as steel, aluminum, carbon fiber, titanium, plastics, and the like.

[0021] The child transport product **100** includes canopy rotation structures **124** coupled to the first canopy wing **118** and the second canopy wing **120** that allow the first canopy wing **118** and the second canopy wing **120** to rotate relative to each other and/or the frame portions. The canopy rotation structures **124** may be positioned on the first and second sides **110** and **112** of the child

transport product **100**. As such, the canopy rotation structures **124** may be referred to herein as a first canopy structure and a second canopy structure and may be mirror images of each other unless otherwise indicated. The canopy rotation structures **124** attach the first canopy wing **118** and the second canopy wing **120** to the frame of the child transport product **100** by nuts, bolts, screws, spring loaded pins, twisting locks, welding, and the like. Various attachment mechanisms will be appreciated by those skilled in the art. In other embodiments, the first canopy wing **118** and/or the second canopy wing **120** and at least some components of the canopy rotation structures **124** are an integrated piece.

[0022] The canopy rotation structures **124** may be removable from the frame such that the canopy **116** is removably coupled to the child transport product **100**. The canopy rotation structures **124** may be removably coupled to the first frame portion **102**. In other embodiments where the first and second frame portions **102** and **104** do not form top and bottom frame portions, the canopy rotation structures **124** may be removably coupled to the first frame portion **102**, the second frame portion **104**, or a combination of these. The canopy rotation structures **124** may be removably coupled to the frame of the child transport product **100** via sliding connections, spring loaded pins, latches, hook and loop fasteners, and the like. One skilled in the art will appreciate additional coupling mechanisms known in the art.

[0023] In some embodiments, the child transport product **100** is collapsible between a collapsed position **200** and a use position **202**, as shown in FIGS. 2A-2B. The collapsed position **200** may be a position in which the child transport product could be stored in the back of a vehicle or a closet, for example. The use position **202** may be a position in which the child transport product **100** could be pushed or pulled carrying an occupant, such as a child. In other examples, the child transport product **100** is not collapsible.

[0024] Now turning to FIGS. 2A and 2B, the collapsed position **200** and the use position **202** are provided. The first frame portion **102** is movable relative to a second frame portion **104** such that a user may pull on the first frame portion **102** to expand the child transport product **100** from the collapsed position **200** to the use position **202**. In some aspects, the first frame portion **102** and the second frame portion **104** may be a top frame and a bottom frame, and the top frame may be movable relative to the bottom frame. In other aspects, the first frame portion **102** may be a left frame and the second frame portion **104** may be a right frame, and the left frame may be movable relative to the right frame. In other aspects, the first frame portion **102** may be attached to the second frame portion **104** at a variety of angles, such as in a stroller configuration. The first frame portion **102** may be movable relative to the second frame portion **104**, or vis-versa, through sliding, rotating, telescoping, pivoting, and the like. In the example depicted in FIGS. 2A and 2B, the side frame portions **105** may each include a plurality of links that rotate relative to each other to move the first frame portion **102** relative to the second frame portion **104**, thereby collapsing and expand the child transport product **100**. While generally described as one frame portion being movable relative to the other, it is expressly contemplated that both the first frame portion **102** and the second frame portion **104** may both be movable relative to each other.

[0025] The canopy rotation structures **124** may include an opening **204** configured to receive a user grasp to assist in transforming the child transport product **100** between the collapsed position **200** and the use position **202** and/or vice versa. For example, the user may need to expand the collapsed position **200** into a use position **202** to prepare for an occupant, such as a child, after removing the child transport product **100** out of storage. The user may grasp the opening **204** to pull on the frame (e.g., the first frame portion **102**) to expand the child transport product **100**. Additionally, for both embodiments of the child transport product **100** that are collapsible and embodiments that are not collapsible, the opening **204** of the canopy rotation structures **124** may be used to lift or carry the child transport product **100** when positioned in the use position **202**. For example, a user may need to lift the child transport product **100** up a flight of stairs or onto another raised surface and may lift the child transport product in the use position **202** by grasping the openings **204** of the canopy

rotation structures **124**.

[0026] Turning now to FIG. 3, an embodiment of the canopy rotation structures **124** is provided. Canopy rotation structures **124** allow for the canopy **116** to collapse such that the child transport product **100** can more compactly collapse into a smaller structure suitable for storage and/or to temporarily remove the shade/protection provided by the canopy **116** or to adjust the angle of the canopy **116**. The canopy rotation structures **124** may each generally comprise a first arch **302** and a second arch **304**. The first arch **302** and the second arch **304** of each canopy rotation structure **124** are coupled to the canopy wings **118**, **120** such that each of the first arches **302** couple to the first canopy wing **118** and each of the second arches **304** couple to the second canopy wing **120**. The first arch **302** on at least one canopy rotation structure **124** may define the opening **204**, or in some embodiments, the first arch **302** on both canopy rotation structures **124** defines the opening **204** configured for grasping such that the user can comfortably expand, collapse, lift, and/or carry the child transport product **100** evenly through both the first side **110** and the second side **112**. In this example, the opening **204** is a through hole, but in other embodiments, the opening **204** may be an indentation extending at least partially through the first arch **302**. While FIG. 3 shows each canopy rotation structure **124** having an opening **204** (for two openings **204** combined), it is expressly contemplated that only one canopy rotation structure **124** may have an opening **204**.

[0027] As shown in FIGS. 4A-4C, the first arch **302** and the second arch **304** may be contiguously arranged in a horizontal orientation. In some embodiments, the first arch **302** and the second arch **304** are horizontally arranged contiguous to each other such that the first arch **302** is juxtaposed to the second arch **304**. In other embodiments, such as the one shown in FIGS. 4A-4C, the first arch **302** and the second arch **304** are arranged horizontally and are each juxtaposed to a central arch **402** such that the central arch **402** is contiguously arranged in a horizontal orientation between the first arch **302** and the second arch **304**.

[0028] The first arch **302** and the second arch **304** are configured to allow for rotation of each arch relative to the other, such as to expand or collapse the canopy **116**. For example, when the first canopy wing **118** (which is attached to each first arch **302**) experiences a force, each of the first arches **302** may rotate in response. Similarly, for example, when the second canopy wing **120** (which is attached to each second arch **304**) experiences a force, each of the second arches **304** may rotate in response. Further, for example, when the first arch **302** experiences a force, the first canopy wing **118** may rotate in response. Similarly, for example, when the second arch **304** experiences a force, the second canopy wing **120** may rotate in response. In some examples, the first arch **302** and the second arch **304** may rotate in opposite directions and/or the same direction. This rotation allows a user to adjust the angle of the canopy **116**, adjust the amount of canopy **116** coverage or to collapse the canopy **116** entirely. However, in other examples, one of the first arch **302** or the second arch **304** may be stationary relative to the other arch within the canopy rotation structure **124** such that only one arch rotates while the other remains stationary. In embodiments with the central arch **402**, the central arch **402** may remain stationary while the first arch **302** and/or the second arch **304** may rotate relative to the central arch **402**.

[0029] The canopy rotation structures **124** may be removably coupled to the frame of the child transport product **100**, such as to the first frame portion **102** and/or the second frame portion **104**. In embodiments with the central arch **402** (such as those shown in FIGS. 4A-4C), each central arch **402** may couple to the first side **110** and the second side **112** of the child transport product **100**. In these examples, the central arch **402** is connected to a post **404** extending away from the canopy rotation structure **124**. In these examples, the post **404** may be received by a corresponding slot on the frame, such as on the first frame portion **102** or the second frame portion **104**. The post **404** may be inserted into the slot and secured into place using securing mechanisms such as snap fits, spring loaded pins, sliding connections, a combination of these, and the like. In other examples, the post **404** may be configured to engage an additional structure attached to the frame. In embodiments without the central arch **402**, the first arch **302** and the second arch **304** may be

removably coupled to the frame by an additional structure attached to the frame that such that the first arch **302** and the second arch **304** are attached to the frame while remaining rotatable to each other.

[0030] The first arch **302** and the second arch **304** may take a variety of forms. As shown in FIGS. **4A-4C**, the first arch **302** and the second arch **304** are circular in shape. In other embodiments, the first arch **302** and the second arch **304** may be any shape with at least a rounded portion such that rotation of the first wing **118** and the second wing **120** can occur. For example, the first arch **302** and the second arch **304** may be ovals, half circles, circles, and the like. The first arch **302** and the second arch **304** may be composed of a variety of materials, such as metal, alloy, plastic, wood, and/or a combination of these.

[0031] In some embodiments, the canopy rotation structures **124** each have an outer wall **405** forming an outer surface of the canopy rotation structure **124** and facing away from the opening **204**, and an inner wall **410** opposite the outer wall **405** and defining the opening **204**. The outer wall **405** may be formed by the first arch **302**, the second arch **304**, and in embodiments where present, the central arch **402**. The inner wall **410** is defined by the first arch **302**, the second arch **304**, and the central arch **402** where present, but in other aspects, the inner wall **410** may be defined by the first arch **302** only, the second arch **304** only, or the first arch **302** and second arch **304**. Further, in some aspects, the inner wall **410** may be a separate component secured to one of the first arch **302**, the second arch **304**, or the central arch **402**.

[0032] The canopy rotation structures **124** also have a first side wall **406** extending between the outer wall **405** and the inner wall **410** and generally facing away from the second arch **304**. The first side wall **406** may be an integrated component of the first arch **302**, or it may be a separate component that couples to the first arch **302**. For example, the first side wall **406** may removably couple to the first arch **302** via sliding connections, snap fits, and the like. It may be desirable to remove the first side wall **406** to access attachment points between the first arch **302** and the second arch **304**, such as for repair or maintenance. In some embodiments, the first side wall **406** is a concave surface such that it caves in towards the inner wall **410**, or a convex surface rounding away from the inner wall **410**, such as to provide a more comfortable grip for the user. The first side wall **406** may have a tapered portion **408**. In these examples, the tapered portion **408** at least partially tapers inward toward the inner wall **410** such that the thickness of the canopy rotation structure **124** (i.e., between the first side wall **406** and the second side wall **407**) may be greater closer to the outer wall **405** than the inner wall **410**. The surface of the first side wall **406** may be composed of metal, alloy, plastic, wood, or the like. In some embodiments, the canopy rotation structures **124** may have a second side wall **407** extending between the outer wall **405** and the inner wall **410** and generally facing away from the first arch **302**. The second side wall **407** may be defined by the second arch **304** or formed of a separate structure secured to the second arch **304**. In some aspects, the second side wall **407** has similar shape and construction as the first side wall **406** of the first arch **302**, such as the configuration shown in FIG. **4B**. For example, the second side wall of the second arch **304** may similarly have a convex surface, concave surface, and/or a tapered portion.

[0033] The inner wall **410** may extend at least partially into the first arch **302**, and in some examples, between both the first arch **302** and the second arch **304** (i.e., where the opening **204** is a through hole). In embodiments with the central arch **402**, the inner wall **410** may wholly or partially extend into the central arch **402**. In some examples, the shape of the inner wall **410** may be at least partially cylindrical and correspond with the shape of the outer wall **405**, such as the configuration shown in FIG. **4A**, or it may be another shape, such as a rectangular prism, triangular prism, pentagonal prism, and the like such that the inner wall **410** does not correspond with the shape of the outer wall **405**. For example, in some embodiments, the outer wall **405** may be at least partially cylindrical in shape and the inner wall **410** may be a triangular prism, which does not correspond to the shape of the outer wall **405**, rather than a cylindrical prism, which would

correspond to the shape of the outer wall **405**, as shown in FIG. 4A.

[0034] The shape of the opening **204** may be defined by the inner wall **410** of the canopy rotation structure **124**. For example, if the inner wall **410** is cylindrical, the shape of the opening **204** may likewise be cylindrical, and if the inner wall **410** is a triangular prism, the shape of the opening **204** may likewise be a triangular prism. In embodiments where the opening **204** is a through hole, as shown in FIGS. 4A-4C, the inner wall **410** fully extends between through the first arch **302** and the second arch **304** such that each of the first arch **302** and the second arch **304** define an entrance into the opening **204**. In other embodiments, such as those where the opening **204** is an indentation, the inner wall **410** may extend partially or wholly into the first arch **302** and/or partially or wholly into the second arch **304**, and/or partially or wholly into the central arch **402** but not wholly through the first arch **302**, the second arch **304**, and central arch **402**.

[0035] The canopy rotation structures **124** may have an outer diameter as defined by the outer wall **405**, and the opening **204** may have an inner diameter as defined by the inner wall **410**. The outer and inner diameters may be a variety of values. The inner diameter is smaller than the outer diameter but large enough so that the size of the opening **204** is suitable to receive at least a portion of a user's grasp. For example, the inner diameter may be a size so that the opening **204** is suitable to receive at least two fingers of a user. The inner diameter may be within a range of about 30 millimeters to about 100 millimeters in some embodiments, within a range of about 40 millimeters to about 70 millimeters in other embodiments, and within a range of about 45 millimeters to about 60 millimeters in other embodiments. In one example, the inner diameter is about 50 millimeters. In some examples, the inner diameter is at least 50 millimeters. The outer diameter may be between within a range of about 60 to about 150 millimeters in some embodiments, within a range of about 75 millimeters to about 95 millimeters in other embodiments, and within a range of about 80 millimeters to about 90 millimeters in other embodiments. In one example, the outer diameter is about 86.5 millimeters.

[0036] In some embodiments, such as the one shown in FIGS. 4A-4C, the opening **204** may be a through hole such that the opening **204** provides a complete passageway from an outer side to an inner side of the canopy rotation structures **124**. In these embodiments, the opening **204** can receive a user's grasp such that the user's fingers may enter the opening **204** through the first side wall **406** and extend through and at least partially exit the opening **204** through the second side wall **407** when grasping the canopy rotation structures **124**. In other embodiments, the opening **204** may not be a through hole such that the user's fingers would extend through one of the first side wall **406** or the second side wall **407** but not the other when grasping the canopy rotation structures **124**.

[0037] Turning now to FIG. 5, some embodiments of the canopy rotation structures **124** include an opening **204** that is an indentation rather than a through hole such that the inner wall **410** extends only partially through the canopy rotation structures **124** before reaching a back wall **502**. The back wall **502** may be defined by one of the arches **302**, **304**, or **402** or another structure. In these embodiments, the entrance to the opening **204** may be through the first arch **302** or the second arch **304**. In embodiments with the entrance of the opening **204** through the first arch **302**, the opening **204** may extend partially or wholly through the first arch **302** before reaching the back wall **502**. In some of these embodiments with the central arch **402**, the opening **204** may extend partially or wholly through the central arch **402** before reaching the back wall **502**. In some of these embodiments, the opening **204** may extend partially through the second arch **304** before reaching the back wall **502**. In embodiments with the entrance of the opening **204** through the second arch **304**, the opening **204** may extend partially or wholly through the second arch **304** before reaching the back wall **502**. In some of these embodiments with the central arch **402**, the opening **204** may extend partially or wholly through the central arch **402** before reaching the back wall **502**. In some of these embodiments, the opening **204** may extend partially through the first arch **302** before reaching the back wall **502**.

[0038] In embodiments where the opening **204** is closed by the back wall **502** and the entrance to

the opening **204** is through the first arch **302**, the opening **204** faces away from the other canopy rotation structure **124**. In this configuration, a user may grasp the first side wall **406** and inner wall **410** of each canopy rotation structure **124** to grasp the canopy rotation structures **124** when using the canopy rotation structure **124** to move the frame or a portion of the frame of the child transport product **100**. In other embodiments where the opening **204** is closed by the back wall **502** and the entrance to the opening **204** is through the second arch **304**, the opening **204** faces towards the other canopy rotation structure **124**.

[0039] The following clauses represent example embodiments of concepts contemplated herein. Any one of the following clauses may be combined in a multiple dependent manner to depend from one or more other clauses. Further, any combination of dependent clauses (clauses that explicitly depend from a previous clause) may be combined while staying within the scope of aspects contemplated herein. The following clauses are examples and are not limiting.

[0040] Clause 1. A canopy configured to be attached to a child transport product comprising: a first and a second canopy rotation structures, each comprising a first arch and a second arch, each of the first arches are rotatable relative to the respective second arch, wherein the first and the second canopy rotation structures each have an opening configured for grasping, each of the openings being at least partially defined by the respective first arch; a first canopy wing extending between each of the first arches; and a second canopy wing extending between each of the second arches.

[0041] Clause 2. The canopy of clause 1, wherein each of the first and the second canopy rotation structures further comprise a central arch, wherein each of the central arches are positioned between the respective first arch and the respective second arch, wherein each of the central arches are configured to be attached to the child transport product.

[0042] Clause 3. The canopy of clauses 1 or 2, wherein each of the openings are at least partially defined on a first side by a first side wall of the respective first arch, wherein each of the first side walls at least partially tapers in towards the respective openings.

[0043] Clause 4. The canopy of clause 3, wherein each first side wall comprises a concave surface.

[0044] Clause 5. The canopy of any of clauses 1 through 4, wherein the first arch of the first canopy rotation structure faces away from the second canopy rotation structure and wherein the first arch of the second canopy rotation structure faces away from the first canopy rotation structure.

[0045] Clause 6. The canopy of any of clauses 1 through 5, wherein each of the first arches and the second arches are contiguously arranged in a horizontal orientation.

[0046] Clause 7. The canopy of any of clauses 1 through 6, wherein the first and second canopy wings comprise a textile portion at least partially extending between the first and second canopy wings.

[0047] Clause 8. A canopy configured to be attached to a child transport product comprising: a first and a second canopy rotation structures, each comprising a first arch and a second arch, each of the first arches are rotatable relative to the respective second arch, wherein the first canopy rotation structure has an opening configured for grasping, the opening being at least partially defined by the first arch of the first canopy rotation structure; a first canopy wing extending between each of the first arches; and a second canopy wing extending between each of the second arches.

[0048] Clause 9. The canopy of clause 8, wherein the opening comprises a circle.

[0049] Clause 10. The canopy of clauses 8 or 9, wherein the opening comprises a through hole extending through the both the first arch and the second arch of the first canopy rotation structure.

[0050] Clause 11. The canopy of any of clauses 8 through 10, wherein the opening comprises an indentation extending at least partially through the first arch.

[0051] Clause 12. The canopy of any of clauses 8 through 11, wherein the first arch of the first canopy rotation structure faces away from the second canopy rotation structure.

[0052] Clause 13. The canopy of any of clauses 8 through 12, wherein the inner diameter of the opening is at least 50 millimeters.

[0053] Clause 14. A child transport product comprising: a child transport frame defining a first side and a second side, the frame coupled to wheels; a first and a second canopy rotation structures, each comprising a first arch and a second arch, each of the first arches are rotatable relative to the respective second arches, wherein the first and the second canopy rotation structure each have an opening configured for grasping, each of the openings being at least partially defined by the respective first arch, wherein the first canopy rotation structure attaches to the first side and the second canopy rotation structure attaches to the second side; a first canopy wing extending between each of the first arches; and a second canopy wing extending between each of the second arches.

[0054] Clause 15. The child transport product of clause 14, wherein each of the openings comprise a through hole extending through the respective first and second arches.

[0055] Clause 16. The child transport product of clauses 14 or 15, wherein the child transport frame comprises a first frame portion movable relative to a second frame portion.

[0056] Clause 17. The child transport product of any of clauses 14 through 16, wherein each of the first and the second canopy rotation structures further comprise a central arch, wherein each of the central arches are positioned between the respective first and second arches, wherein the central arch of the first canopy rotation structure attaches to the first side, and wherein the central arch of the second canopy rotation structure attaches to the second side.

[0057] Clause 18. The child transport product of any of clauses 14 through 17, wherein each of the openings are at least partially defined on a first side by a first side wall of the respective first arch, wherein each of the first side walls at least partially taper in towards the respective opening.

[0058] Clause 19. The child transport product of any of clauses 14 through 18, wherein the first arch of the first canopy rotation structure faces away from the second canopy rotation structure and wherein the first arch of the second canopy rotation structure faces away from the first canopy rotation structure.

[0059] Clause 20. The child transport product of any of clauses 14 through 19, wherein each of the first and second canopy rotation structures are removably coupled to the child transport frame.

[0060] Many different arrangements of the various components depicted, as well as components not shown, are possible without departing from the scope of the claims below. Embodiments in this disclosure are described with the intent to be illustrative rather than restrictive. Alternative embodiments will become apparent to readers of this disclosure after and because of reading it. Alternative means of implementing the aforementioned can be completed without departing from the scope of the claims below. Certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations and are contemplated within the scope of the claims.

[0061] In the preceding detailed description, reference is made to the accompanying drawings which form a part hereof wherein like numerals designate like parts throughout, and in which is shown, by way of illustration, embodiments that may be practiced. It is to be understood that other embodiments may be utilized and structural or logical changes may be made without departing from the scope of the present disclosure. Therefore, the preceding detailed description is not to be taken in the limiting sense, and the scope of embodiments is defined by the appended claims and their equivalents.

Claims

1. A canopy configured to be attached to a child transport product, the canopy comprising: a first and a second canopy rotation structures, each comprising a first arch and a second arch, each of the first arches are rotatable relative to the respective second arch, wherein the first and the second canopy rotation structures each have an opening configured for grasping, each of the openings being at least partially defined by the respective first arch; a first canopy wing extending between each of the first arches; and a second canopy wing extending between each of the second arches.

2. The canopy of claim 1, wherein each of the first and the second canopy rotation structures further comprise a central arch, wherein each of the central arches are positioned between the respective first arch and the respective second arch, wherein each of the central arches are configured to be attached to the child transport product.
3. The canopy of claim 1, wherein each of the openings are at least partially defined on a first side by a first side wall of the respective first arch, wherein each of the first side walls at least partially tapers in towards the respective openings.
4. The canopy of claim 3, wherein each first side wall comprises a concave surface.
5. The canopy of claim 1, wherein the first arch of the first canopy rotation structure faces away from the second canopy rotation structure and wherein the first arch of the second canopy rotation structure faces away from the first canopy rotation structure.
6. The canopy of claim 1, wherein each of the first arches and the second arches are contiguously arranged in a horizontal orientation.
7. The canopy of claim 1, wherein the first and second canopy wings comprise a textile portion at least partially extending between the first and second canopy wings.
8. A canopy configured to be attached to a child transport product, the canopy comprising: a first and a second canopy rotation structures, each comprising a first arch and a second arch, each of the first arches are rotatable relative to the respective second arch, wherein the first canopy rotation structure has an opening configured for grasping, the opening being at least partially defined by the first arch of the first canopy rotation structure; a first canopy wing extending between each of the first arches; and a second canopy wing extending between each of the second arches.
9. The canopy of claim 8, wherein the opening comprises a circle.
10. The canopy of claim 8, wherein the opening comprises a through hole extending through the both the first arch and the second arch of the first canopy rotation structure.
11. The canopy of claim 8, wherein the opening comprises an indentation extending at least partially through the first arch.
12. The canopy of claim 8, wherein the first arch of the first canopy rotation structure faces away from the second canopy rotation structure.
13. The canopy of claim 8, wherein the inner diameter of the opening is at least 50 millimeters.
14. A child transport product comprising: a child transport frame defining a first side and a second side, the frame coupled to wheels; a first and a second canopy rotation structures, each comprising a first arch and a second arch, each of the first arches are rotatable relative to the respective second arches, wherein the first and the second canopy rotation structure each have an opening configured for grasping, each of the openings being at least partially defined by the respective first arch, wherein the first canopy rotation structure attaches to the first side and the second canopy rotation structure attaches to the second side; a first canopy wing extending between each of the first arches; and a second canopy wing extending between each of the second arches.
15. The child transport product of claim 14, wherein each of the openings comprise a through hole extending through the respective first and second arches.
16. The child transport product of claim 14, wherein the child transport frame comprises a first frame portion movable relative to a second frame portion.
17. The child transport product of claim 14, wherein each of the first and the second canopy rotation structures further comprise a central arch, wherein each of the central arches are positioned between the respective first and second arches, wherein the central arch of the first canopy rotation structure attaches to the first side, and wherein the central arch of the second canopy rotation structure attaches to the second side.
18. The child transport product of claim 14, wherein each of the openings are at least partially defined on a first side by a first side wall of the respective first arch, wherein each of the first side walls at least partially taper in towards the respective opening.
19. The child transport product of claim 14, wherein the first arch of the first canopy rotation

structure faces away from the second canopy rotation structure and wherein the first arch of the second canopy rotation structure faces away from the first canopy rotation structure.

20. The child transport product of claim 14, wherein each of the first and second canopy rotation structures are removably coupled to the child transport frame.
