A HITCHING ASSEMBLY FOR A BICYCLE

Technical Field

[0001] The present disclosure generally relates to a hitching assembly for mounting on a bicycle. More particularly, it relates to a hitching assembly configured for mounting on a rear of a bicycle and for towing a rider on wheeled devices such as roller skates or roller blades, cruisers, surfboards, skateboards and longboards.

Background

[0002] The following discussion of the background to the invention is intended to facilitate an understanding of the present invention. However, it should be appreciated that the discussion is not an acknowledgment or admission that any of the material referred to was published, known or part of the common general knowledge in any jurisdiction as at the priority date of the application.

[0003] A rider can ride recreationally on various wheeled devices. For example, a longboard is a form of skateboard akin to a surfboard with wheels. Longboards are commonly used for cruising, or alternatively may be used for downhill slopes. Cruising and surfing on a longboard is joyous especially while travelling down slope. However it is difficult for beginners especially for one that is not athletic as it requires strength and balancing. It is not as popular as cycling which is easier when travelling long distances with up and down slopes.

[0004] In order for a bicycle to tow a rider on a longboard, a long rope can be tied to the bicycle with the longboard rider holding the other end. However, when the cyclist stops, the longboard rider has to hold on to the rope or drop it on the ground. For the longboard rider to continue, he has to pick up the rope that is laying on the ground. When

the cyclist slows down, the rope between them goes slack and lies on the ground posing safety issues. When the cyclist accelerates, the rope gets taut and create jerks between them making the ride rough and undesirable.

[0005] There appears to be no attempt to address this problem. As such, the present invention attempts to overcome at least in part some of the aforementioned disadvantages and to provide for an improved approach for addressing the foregoing challenge.

Brief Description of the Drawings

[0006] In the drawings, like reference characters generally refer to the same parts throughout the different views. The drawings are not necessarily to scale, emphasis instead generally being placed upon illustrating the principles of the invention. The dimensions of the various features or elements may be arbitrarily expanded or reduced for clarity. In the following description, various embodiments of the invention are described with reference to the following drawings, in which:

[0007] FIG. 1 shows a perspective view of a hitching assembly mounted to a bicycle in accordance with embodiments of the present invention;

[0008] FIG. 2 shows a perspective view of a hitching assembly mounted on a bicycle towing a rider on a wheeled device in accordance with embodiments of the present invention;

[0009] FIG. 3 shows a perspective exploded view of the hitching assembly in accordance with embodiments of the present invention;

[0010] FIG. 4 shows a perspective exploded view of another hitching assembly in accordance with embodiments of the present invention;

[0011] FIG. 5a shows a side view of the hitching assembly mounted to a seat rail of the bicycle when in use in accordance with embodiments of the present invention;

[0012] FIG. 5b shows a top perspective view of the hitching assembly mounted to a bicycle seat rail when in use in accordance with embodiments of the present invention;

[0013] FIG. 6 shows a perspective view of a hitching assembly mounted on a bicycle seat rail in accordance with embodiments of the present invention.

Summary of the Invention

[0014] The following presents a simplified summary of one or more aspects in order to provide a basic understanding of such aspects. This summary is not an extensive overview of all contemplated aspects, and is intended to neither identify key or critical elements of all aspects nor delineate the scope of any or all aspects. Its sole purpose is to present some concepts of one or more aspects in a simplified form as a prelude to the more detailed description that is presented later.

[0015] According to a first aspect of the present disclosure, there is provided a hitching assembly configured for releasable connection to a rear end of a bicycle comprising a housing having an aperture for permitting passage of a cord, a retractable mechanism residing within the housing, wherein the retractable mechanism includes the cord wound around the retractable mechanism for detracting the cord from the housing and retracting the cord back into the housing, an attachment mechanism coupled to an exterior of the housing and configured for releasable connection to the rear end of the bicycle and a handle configured for coupling to a desired length of the cord.

Detailed Description

[0016] Reference will now be made in detail to an exemplary embodiment of the present invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with the embodiment, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications, and equivalents, which may be included within the spirit and scope of the invention as defined by the appended description. Furthermore, in the following detailed description of embodiments of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be recognized by one of ordinary skill in the art that the present invention may be practiced without these specific details. In other instances, well-known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the embodiments of the present invention.

[0017] In the specification the term "comprising" shall be understood to have a broad meaning similar to the term "including" and will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps. This definition also applies to variations on the term "comprising" such as "comprise" and "comprises".

[0018] Certain terminology used in the description is for convenience in reference only and shall not be limiting. For example, up, down, front, back, right, and left refer to the disclosed subject matter as orientated in the view being referred to. The words, "inwardly" and "outwardly" refer to directions toward and away from, respectively, the geometric center of the aspect being described and designated parts thereof. The terminology will include the words specifically mentioned, derivatives thereof, and words

of similar meaning. Like references numbers denote like features, components, or elements throughout the various embodiments.

[0019] To achieve the stated features, advantages and objects, the present invention is directed to a hitching assembly for towing a rider on a wheeled device. This provides more fun and enjoyment in riding a wheeled device such as a longboard. It also provides a rider with an easier and alternative way to learn how to ride a wheeled device.

[0020] FIG. 1 illustrates a perspective view of a hitching assembly 20 that is releasably connected to a bicycle 40. In a resting position, the hitching assembly 20 is configured to be releasably connected to a rear end of the bicycle 40 without impeding the movement of the cyclist while riding the bicycle. In various embodiments, the hitching assembly 20 is releasably connectable to a rear of the bicycle seat. In some embodiments, the hitching assembly is releasably connectable to a seat rail of the bicycle. The hitching assembly is designed with ergonomic features that cater to both cyclists and riders on wheeled devices that are being towed by the bicycle. It is also designed to provide an effective and convenient way for riders on wheeled devices to hitch free rides from passing cyclists thereby making the hitching assembly a useful one.

[0021] In various embodiments, a wheeled device is a recreational device with wheels capable of transporting a rider from point A to point B. Some examples of such wheeled devices are roller skates or roller blades, cruisers, skateboards, surf skates and longboards.

[0022] FIG. 2 shows a perspective view of a hitching assembly 20 releasably connected to a bicycle 40 and towing a rider 12 on a wheeled device 11 in accordance with embodiments of the present invention. In various embodiments, the hitching assembly 20 has a housing for storing a retractable mechanism (not shown). One end of the cord 24 is attached to the retractable mechanism inside the housing. The cord 24 extends from the

retractable mechanism and through an aperture in the housing. The retractable mechanism is configured to retract the cord 24 through the aperture after the cord 24 has been pulled taut by the rider 12. This provides the advantage of preventing the cord from being tangled when in a resting position. When in use, the retracting cord ensures that the rider does not get tangled with the cord 24 when the bicycle is travelling at varying speeds. The cord 24 can be made from any material and can take any suitable form, including but not limited to, a string, a chain, or a plastic material.

[0023] FIG. 3 shows a perspective exploded view of a hitching assembly 20 in accordance with embodiments of the present invention. The hitching assembly 20 comprises a housing 28 configured for housing a retractable mechanism (not shown), a cord 24 attached to the retractable mechanism, an attachment mechanism 21 for connecting the housing 28 to a bicycle structure and a handle 29 coupled to one end of the cord 24. The attachment mechanism 21 is configured to releasably attach the housing 28 to a bicycle structure. In some embodiments, the attachment mechanism 21 includes a connector 21a coupled to an attachment 21b that is in turn connected to a portion of the housing 28. In some embodiments, a pair of connectors 21a each of which is coupled to an attachment 21b is used. In some embodiments, the attachment mechanism 21 includes a connector 21a integrated with an attachment 21b as a single unitary piece. In some embodiments, the attachment 21b is a string or an elastic band. The connectors 21a include a quick-release connector such as a carabiner for easy detachment of the hitching assembly 20 from the bicycle structure. The attachment mechanism 21 provides a means for connecting the hitching assembly 20 to the bicycle 40 at an easily accessible position. The attachment mechanism 21 can either connect the hitching assembly 20 temporarily or permanently to the bicycle structure by providing a quick-connect-release mechanism.

[0024] In various embodiments, the housing 28 is generally cylindrical. However, it is envisaged that the housing 28 can be shaped and dimensioned accordingly to suit the contours of the bicycle structure or to enhance the aesthetics. The housing 28 includes a

pair of flanges 25 each attached to a side of the exterior of the housing 28. Each flange 25 includes an aperture configured for receiving the attachment mechanism 21 or a portion thereof for secure attachment to the housing 28. For example, the aperture of the flange 25 is configured for receiving the attachment 21b so that the attachment can be secured to the housing 28.

[0025] In various embodiments, the housing has a retractable mechanism that has a cord attached to the retractable mechanism at one end of the cord. When in use, the cord is configured to retract through an aperture of the housing whenever the cord is released by the rider or when the cord slackens during the ride. The cord 24 includes a stopper 23 attached to an end of the cord 24 to prevent the cord 24 from retracting fully through the aperture of the housing 28. The aperture is dimensioned to permit the passage of the cord 24 and to prevent the passage of the stopper through the aperture. The retractable mechanism includes a spool or a spindle that is rotatably mounted on a pin in the centre of the housing. The spool is free to rotate about the axis of the pin. The cord is wound around the spool. A spring component, for example, a spiral torsion spring, is pivotably mounted to the pin in the centre of the spool. The housing includes two enclosures that are mounted on the pin to hold the housing together. The spring component is cooperatively engaged with the spool to apply tension on the spool when the cord is detracted from the spool and housing 28. One end of the spring component is anchored to the pin and the other end of the spring component is secured to the edge of the inner part of the spool. As the cord is detracted from the housing, the spool rotates about the pin to the point where it reaches its maximum state of detraction (or when the cord runs out). As the spool rotates to allow the cord to be detracted from the housing, the spring component applies an increasing rotary tension on the spool to cause the spring component to revert to its original uncoiled position. This causes the spool to rotate in the opposite direction (i.e. of when the cord is detracting from the housing) and causes the cord to be retracted and wound round the spool when the cord is released or slackens during the ride.

[0026] In various embodiments, the exposed length of the cord 24 is adjustable to a suitable length of cord as desired by the rider for the rider's enjoyment. This allows the rider to adjust the length of the cord for providing different levels of comfort and versatility. To adjust the length of the cord for towing, the exposed length of cord 24 is wound round the handle 29 and secured to the handle 29 by tying a hitch knot. In some embodiments, the maximum exposed length of the cord 24 is at least 3 meters to provide a safe distance between the cyclist and the rider so as to prevent the rider from crashing into the bicycle in the event of the bicycle braking suddenly. In some embodiments, the cord has an annular cross-section and has a diameter of about 1.5mm. In some embodiments, the cord is a tape that is flat and has a square or a rectangular cross-section. A cord that is too thick and long tends to bulky and heavy and can cause a cyclist to feel unstable due to the tension in the cord when the rider is pulling at the cord at maximum tension. The cord is therefore arranged to be of a suitable weight and diameter so that the retractable mechanism can easily retract the cord fully and smoothly during towing of the rider, especially when the speed of the bicycle can vary frequently. In some embodiments, the cord is made of a nylon material or a high strength polyester material. It would be appreciated that the cord may be made of any suitable material that can withstand the pressure and forces from the bicycle and the weight of the rider.

[0027] In various embodiments, the handle 29 is constructed to be lightweight so that it can be easily retracted fully to the retractable cord mechanism when a rider is being towed. The handle 29 is lightweight and configured such that the retractable mechanism can carry the weight of the handle and be easily retracted back when in use. In some embodiments, the handle is of a generally circular shape to facilitate ease of handling by the rider. In some embodiments, the handle includes a hollow tube made of lightweight materials such as plastic or aluminium.

[0028] FIG. 4 shows a perspective exploded view of another embodiment of a hitching assembly in accordance with embodiments of the present invention. All the components

of the hitching assembly 20 are similar to those present in FIG. 3, with the exception of the attachment 21b used as part of the attachment mechanism 21. In some embodiments, the attachment mechanism 21 includes a damping mechanism 21b. The damping mechanism 21b provides some advantages. It reduces the jerking forces on the rider when the hitching assembly initially starts to pull the rider, and when the speed of the bicycle changes suddenly. It also reduces the stress on the hitching assembly 20 when the cord 24 is being pulled taut during towing.

[0029] FIG. 5a shows a perspective view of a hitching assembly mounted on a bicycle seat rail 41 (with the seat removed for illustration purposes) and FIG. 5b shows a top perspective view of the hitching assembly mounted to a bicycle seat rail 41 (with the seat removed for illustration purposes) when in use. In some embodiments, the handle 29 includes a damping mechanism reduces the jerks between the rider and the cyclist as well as to reduce the stress on the hitching assembly 20 when the cord 24 is being pulled taut during towing. The damping mechanism is incorporated into the handle 29 by way of using an elastic band. In some embodiments, the attachment mechanism 21 and the handle 29 includes the damping mechanism to reduce the jerking stresses on the rider and the cyclist. In use, the hitching assembly 20 is pivotable upwards when the cord 24 is pulled taut by the handle 29, and pivotable downwards when the cord 24 is released or slackens during the ride. A cushioning pad 26 is attached at a lower end of the housing configured for engagement with the seat bar of the bicycle when the cord is released or slackens. The quick-connect connectors 21a also allows the hitching assembly 20 to swivel left and right when the longboard rider sway left and right from the bicycle during towing.

[0030] FIG. 6 shows a perspective view of a hitching assembly releasably connected on a bicycle seat rail (without the seat for illustration purposes) when in a resting position. A cushioning pad 26 is attached at a portion of the housing 28 arranged for engagement with the seat bar 42 of the bicycle when the hitching assembly is in a resting position.

This reduces the impact between the hitching assembly 20 and the bicycle seat bar 42, and prevents the housing from being damaged and the seat bar from being scratched. When the bicycle is on the move, the cushioning pad 26 also provides a noise dampening effect from the hitching assembly knocking against the seat bar.

[0031] The hitching assembly provides and increases fun and enjoyment in longboarding. It is also a good tool for learning how to longboard. With the hitching assembly, it enhances the learning experience of a rider by helping the rider learn with both feet on the longboard and to overcome the initial wobbly starts and lack of balance on a longboard, as using one foot to paddle and balancing with just one foot is difficult for learners.

[0032] While the invention has been particularly shown and described with reference to specific embodiments, it should be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. The scope of the invention is thus indicated by the appended claims and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced.

What is claimed is:

1. A hitching assembly configured for releasable connection to a rear end of a bicycle comprising:

a housing having an aperture for permitting passage of a cord;

a retractable mechanism residing within the housing, wherein the retractable mechanism includes the cord wound around the retractable mechanism for detracting the cord from the housing and retracting the cord back into the housing;

an attachment mechanism coupled to an exterior of the housing and configured for releasable connection to the rear end of the bicycle; and

a handle configured for coupling to a desired length of the cord.

2. The hitching assembly according to claim 1, wherein the attachment mechanism further includes at least one connector and a damping mechanism cooperatively coupled to the at least one connector.

3. The hitching assembly according to claim 2, wherein the damping mechanism is a tension spring.

4. The hitching assembly according to claim 1, wherein the retractable mechanism further includes a spool rotatably mounted on a pin within the housing, and a spring component cooperatively engaged with the spool for applying tension on the spool when the cord is detracted from the housing.

5. The hitching assembly according to claim 1, wherein the attachment mechanism includes at least one quick-release connector for coupling to a rear end of the bicycle.

6. The hitching assembly according to claim 1, wherein the handle includes a damping mechanism.

7. The hitching assembly according to claim 1, wherein the housing includes a flange on each side of an exterior of the housing, wherein the flange includes an aperture configured for receiving the attachment mechanism.

8. The bicycle hitch assembly according to claim 5 wherein the quick-release connector includes a carabiner.

9. The bicycle hitch assembly according to claim 1, further comprising a stopper attached to an end of the cord.

10. The bicycle hitch assembly according to claim 1, further comprising a cushioning pad attached to the exterior of the housing configured for engagement with the bicycle when in use.