

STAIR-CLIMBING WHEELBARROW

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a stair-climbing wheelbarrow.

Description of Related Art Including Information Disclosed Under 37 CFR 1.97 and 37 CFR 1.98

[0002] Conventional wheelbarrows aid with transporting materials and goods, but they have limitations when it comes to navigating stairs or angled terrain. These limitations can lead to physical strain and potential injury to the user, and, even, the transported goods. Although various attempts have been made to address these problems, the solutions are often insufficient or impractical for stairs.

[0003] US Patent 6,935,447 published August 30, 2005, by Jochum Bierma for “Stair-Climbing Hand Truck” discloses a stair-climbing hand truck comprising two casters held in a chassis and a supporting foot constituted by a two-arm lever having a lower support end and an upper end, a supporting foot guide connected to and guiding the upper end of the two-arm lever, a connecting rod having one end linked to the two-arm lever between the lower support end and the upper end, and an end opposite to the one end guided in a connecting rod guide extending transversely to the supporting foot guide, and a crank mechanism connected to the connecting rod.

[0004] US Patent 7,845,654 issued December 7, 2010, by Lucky W. Price, Jr. for “Special Big 4 Wheeler Wheel Barrow” discloses an auxiliary wheel assembly mounted on a selected portion of a wheelbarrow comprising: several structural

members namely a urethane receptacle barrow, a dual front support and wheel assembly, a rear support and wheel assembly with a plurality of heavy-duty wheels, and a means to connect these front and rear assemblies and barrow. These members are potentially made of various materials and are designed for Original Equipment offerings or After Market additions to currently produced wheelbarrows. The device may have alternative embodiments with various materials and wheel assembly designs.

[0005] US Patent 9,248,850 published February 2, 2016, by Brian Romas et al. for “Wheelbarrow with an Assisted Lift Dumping Barrow” discloses a wheelbarrow has an assisted lift dumping barrow that provides continuously biased forward tilting of the barrow relative to the frame of the wheelbarrow through two gas springs while maintaining the legs and wheel thereof on the ground. A first gas spring is connected to the right side handle of the frame of the wheelchair and to the right rear underside of the barrow. A second gas spring is connected to the left side handle of the frame of the wheelbarrow and to the left rear underside of the barrow. Each gas spring provides a continuous bias or pressure against the rear of the barrow to assist in pivoting and lifting the rear of the barrow for dumping its contents. A latch keeps the barrow from raising until released. A separate rear barrow handle aids in overcoming the bias of the gas springs for lowering the rear of the barrow.

[0006] US Patent 9,757,978 published September 12, 2017, by Jonathan D. Emigh for “Universal Traction Wheel and Associated Vehicle” discloses a universal traction device for movement over even and uneven supporting

surfaces that includes an all-terrain wheel having a circular wheel assembly with a plurality of spoke-containing components arrayed around an outer perimeter wheel edge and control means for extending spokes from the spoke-containing units when encountering an obstacle that the vehicle is to traverse and retracting the spokes when the spokes are no longer required for traversing the obstacle.

[0007] US Patent Publication 2009/0133517 published May 28, 2009, by Steven Kamara et al. for “Mechanical Tri-Wheel Retention Assembly for Stair-Climbing Wheeled Vehicle” discloses while there have been described herein the principles of the invention, it is to be a mechanical tri-wheel retention assembly for a stair-climbing wheeled vehicle having a tri-wheel assembly. The ass has a tri-lobular roller cam mechanism to retain the tri-wheel at a desired angular position for normal two-wheeled operation, and further includes a spring-loaded roller that is configured to pop out of a locking mode in the event of an overload condition, permitting rotation of the tri-wheel assembly to a next predetermined angular position at which point the tri-wheel assembly will be retained, thus preventing damage to the unit and the locking mechanism. The mechanical tri-wheel retention assembly may further include a solenoid actuator configured to automatically disengage the mechanical tri-wheel retention assembly.

[0008] Prior designs do not include a mechanism for directly aiding the energy being exerted whilst going up and downstairs. Prior inventions lack an integrated ratcheting mechanism to prevent the wheel mechanism from rotating back in the unintended opposite direction. Due to this non-inclusion of a ratcheting mechanism within the wheel, it would lead to a lack of stability whilst

maneuvering heavier loads up stairs or steep inclines, potentially resulting in injury. Prior arts also lack some ease of use, such as the switch to change the direction of the ratcheting mechanism, which can prove difficult and time-consuming.

BRIEF SUMMARY OF THE INVENTION

[0009] The present invention is a new and improved wheelbarrow designed to reduce strain and aid in transporting materials, especially when navigating stairs. By using a 3 cubic-foot steel, oblong bucket attached to a sturdy wooden frame with two handles and a ratcheting mechanism, the mechanism can quickly attach a wheel, made up of three smaller, steel wheels, to easily allow switching between upward and downward stair movement. Additionally, to ensure stability and security, the three smaller wheels are fitted with a rubber ring for grip, and the steel bucket is securely attached with screws to the wooden frame.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0010] FIG. 1 A perspective view of the wheelbarrow

[0011] FIG. 2 Front view of Triangle wheel

[0012] FIG. 3 Side view of Triangle wheel

[0013] FIG. 4 Front view of the Main axle

List of Reference Numerals

[0014] 1 Upper Wheel

[0015] 3 Upper Wheel Axle

[0016] 5 Triangle Structure Top

[0017] 7 Main Axle

[0018] 9 Right wheel
[0019] 11 Right Wheel Axle
[0020] 13 Left Wheel
[0021] 15 Left Wheel Axle
[0022] 17 Triangle Structure Bottom
[0023] 19 Axle Gear
[0024] 21 Gear
[0025] 23 Ratchet Ellipse
[0026] 25 Ratchet Pivot Point
[0027] 27 Bucket
[0028] 29 Frame
[0029] 31 Feet
[0030] 33 Handle Grip
[0031] 35 Wheelbarrow
[0032] 37 Triangle wheel

DETAILED DESCRIPTION OF THE INVENTION

[0033] In FIG. 1 The present invention relates to a wheelbarrow, comprising a frame **29**, feet **31**, a bucket **27**, and a triangle wheel **37**. The frame connects to the bucket with bolts, and the feet are welded to the frame on the opposite side of the Triangle wheel which attaches to the frame by the main axle **7**. The present invention also includes a triangle wheel comprising a front and back

triangle structure top **5**, three or more round wheels **9** and **13**, three or more round wheel axles **3** and **15**, and a main axle **7**. The three round wheels connect to the top and bottom triangle structure by the three round wheel axles, and the main axle goes straight through the top and bottom triangle structure, extending on either side.

[0034] In FIG. **3** The present invention also includes a main axle comprising a durable axle **7**, gears **19**, a ratchet arm **23**, and a durable ratchet pivot point **25**. The gears are welded to the axle on the right side of the wheelbarrow, and the ratchet arm connects to the frame with the ratchet pivot point **25**. The ratchet arm lines up with the gears so that they can only move in one direction at a time.

[0035] The durable bucket **27** of the present invention is made of a strong, durable material that can withstand heavy loads, and is secured to the frame with sturdy bolts. The durable frame **29** is made of a strong, lightweight material such as aluminum, and is designed to provide sturdy support for the bucket and the triangle wheel. The durable feet **31** of the present invention are welded to the frame and provide additional support for the wheelbarrow.

[0036] In FIG. **1** and **4** The handle grip **33** of the present invention is made of a soft, comfortable material that provides a secure grip for the user. The triangle structure bottom **17** of the present invention is securely attached to the main axle **7** and provides a stable base for the round wheels. The right wheel **9** and left wheel **13** of the present invention are securely attached to the round wheel axles on the right and left sides of the triangle structure top **5**, respectively.

[0037] The wheelbarrow of the present invention provides an efficient and durable means for transporting heavy loads over rough terrain. The triangle wheel **37** provides stability and support, and the main axle **7**, gears, ratchet arm, and ratchet pivot point **25** provide a means for controlling the speed and direction of the wheelbarrow. The durable construction of the bucket **27**, frame **29**, and feet **31** ensures that the wheelbarrow can withstand heavy loads and rough use.

CLAIMS

The invention claimed is:

1. A wheelbarrow comprising:
 - a frame;
 - feet;
 - a bucket; and
 - a triangle wheel,wherein the frame is connected to the bucket with bolts, the feet are welded to the frame on the opposite side of the triangle wheel, and the triangle wheel attaches to the frame by the axle.
2. The triangle wheel of claim **1**, comprising:
 - a front and back triangle structure;
 - three or more round wheels;
 - three or more round wheel axles; and
 - a main axle,wherein the three round wheels connect to the top and bottom triangle structure by the three round wheel axles, and the main axle goes straight through the top and bottom triangle structure, extending on either side.
3. The main axle of claim **2**, comprising:
 - a durable axle;
 - gears;
 - a ratchet arm;

a durable ratchet pivot point;

wherein the gears are welded to the axle on the right side of the wheelbarrow, the ratchet arm connects to the frame with the ratchet pivot point, and the ratchet arm lines up with the gears so that they can only move in one direction at a time.

ABSTRACT

The present invention is a stair-climbing wheelbarrow with a ratcheting mechanism designed to reduce physical strain and enhance stability during the transportation of materials up and down stairs. The wheelbarrow features a 3 cubic foot steel bucket, securely fastened to a wooden frame with two handles. The front center of the bucket contains a stair-climbing wheel with a ratcheting mechanism, consisting of three steel wheels with a rubber ring around the outside for added grip on stairs. The ratcheting mechanism is located within the brackets connecting the three wheels in a triangular shape, and a switch on the right handle allows the user to change the direction of the mechanism for forward and backward movement. The ratcheting mechanism locks into place, preventing the wheel from turning back in the other direction and enhancing stability and safety during transportation.