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(54) Title: CLIMBING DEVICE WITH CRANK HANDLE

(57) Abstract: The present invention discloses a drag and rotating mechanical system which facilitates ascending or descending movement and displacement. It comprises a protecting metal casing, and crank handles that upon rotation thereof move the individual in a quick and safe manner. The mechanical piece, with its pulleys and bearings, holds, tensions, presses and releases the rope by means of the locking action thereof. This operation facilitates displacement for realizing other type of activities, such as building maintenance, tower, storage dam walls maintenance and all activities involving climbing up or descending requiring free hands and feet.

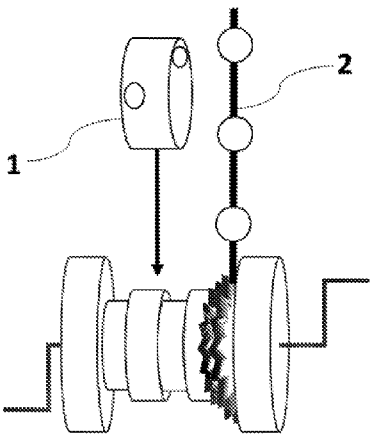

FIG 1

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CLIMBING DEVICE WITH CRANK HANDLE

OBJECT OF THE INVENTION

The present invention can be included in the technical field of pulleys or similar devices where a force is applied to a rope, cable or chain passing over one or several pulleys, for example, in order to obtain a mechanical advantage, particularly for assistance in the ascent or descent of a climber.

More specifically, the object of the invention is a pulley system and a rope having spherical bodies along its entire length which provides assistance when climbing, both in the ascent and in the descent.

BACKGROUND OF THE INVENTION

Up to now assistance devices in the field of climbing are focused on safety and several retention methods so as to prevent accidents, as it can be seen in patents US20110073417A1 or US20120241700A1.

There are other devices focused on the ascent by using ropes, wheels and pawls (CN106512339A) which is based on the pushing action of the feet in the ascending movement, while managing the device being described to climb up and secure the position again, thus avoiding the fall.

Therefore, considering the previous documents it is necessary to find alternatives directed to directly help or assist the vertical ascent and descent in climbing or in works on walls or at height, but keeping the need of using manual force and thus controlling the realized movement.

DESCRIPTION OF THE INVENTION

The invention describes a system referred to climbing device with a crank handle assisting and helping in vertical movements or in climbing processes.

The advantages for an individual using the climbing device with crank handle are:

- facilitating ascent and descent in transitions or vertical movements, with a much lower energy being used compared to that used in free climbing.
- dynamizing all movements;
- keeping a fixed position without effort and enabling to perform horizontal actions with both hands.

The first aspect of the invention is a climbing device with crank handle characterized in that it comprises:

- a rope having a plurality of spherical bodies distributed along its entire length;
- a casing, inside which there is a drag and rotating mechanism, and which comprises an inlet and an outlet orifice for the rope; and wherein the drag and rotating mechanism comprises:
- a central shaft, comprising crank handles at the ends thereof, projecting from the casing;
- a toothed pulley mounted on said central shaft, around which the rope is wounded, once it passes through the inlet orifice;
- a pulley with bearing, also mounted onto the central shaft, through which the rope is introduced after passing over the toothed pulley, and from which it continues towards the outlet orifice.

A preferred embodiment of the climbing device with crank handle comprises at least a safety locking system in the toothed pulley by means of a pawl located in said pulley being configured for locking said pulley when the handle is not actuated, and configured for being released when the handle is actuated and the pulleys move.

Another preferred embodiment of the climbing device comprises hoops in the casing configured for holding the harness.

DESCRIPTION OF THE DRAWINGS

FIG 1.- Side view of the climbing device with crank handle and the rope with spherical bodies passing therethrough.

FIG 2.- Side view of the climbing device with pulleys.

FIG 3.- Side view of the casing and the passageway orifices of the pulley.

FIG 4.- Individual using the climbing device with crank handle, using the harness.

PREFERRED EMBODIMENT OF THE INVENTION

The following is a description of a preferred embodiment based on the attached figures.

The climbing device with crank handle works with a rope (2) having a plurality of spherical bodies distributed along its entire length, running into a casing (6), inside of which there is a drag and rotating mechanism, and comprising an inlet and an outlet orifice for the rope; and wherein the drag and rotating mechanism comprises a central shaft (5), comprising crank handles (9) at the ends thereof, projecting from the casing, wherein a toothed pulley (4) mounted onto said central shaft (5), around which the rope (2) is wounded once it passes through the inlet orifice of the casing (6), said rope running, after the toothed pulley, towards a pulley with bearing (1), being also mounted onto the central shaft in a specific area (3), through which the rope is introduced after running over the toothed pulley, and from which it continues towards the outlet orifice of the casing (6). So, upon actuation of the crank handles (9) the pulley system assists in the traction in the ascent or descent movement of the individual suspended from the climbing device with the rope (2) and harness onto the hoops (7 y 8).

CLAIMS

1.- Climbing device with crank handle characterized in that it comprises:

- a rope having a plurality of spherical bodies distributed along its entire length;
- a casing, inside which there is a drag and rotating mechanism, and which comprises an inlet and an outlet orifice for the rope; and wherein the drag and rotating mechanism comprises:
  - a central shaft, comprising crank handles at the ends thereof, projecting from the casing;
  - a toothed pulley mounted on said central shaft, around which the rope is wounded, once it passes through the inlet orifice; and
  - a pulley with bearing, also mounted onto the central shaft, through which the rope is introduced after passing over the toothed pulley, and from which it continues towards the outlet orifice.

2.- Climbing device according to claim 1, comprising at least a safety locking system in the toothed pulley by means of a pawl located in said toothed pulley, configured for locking said pulley when the handle is not actuated, and configured for being released when the handle is actuated and the pulleys move.

3.- Climbing device according to claim 1, comprising hoops in the casing configured for holding the harness.

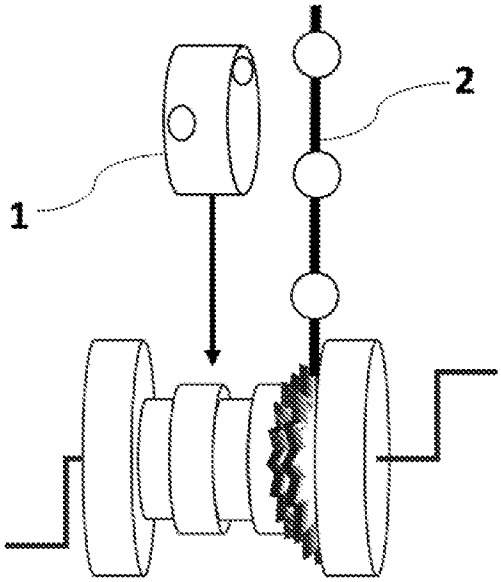

FIG 1

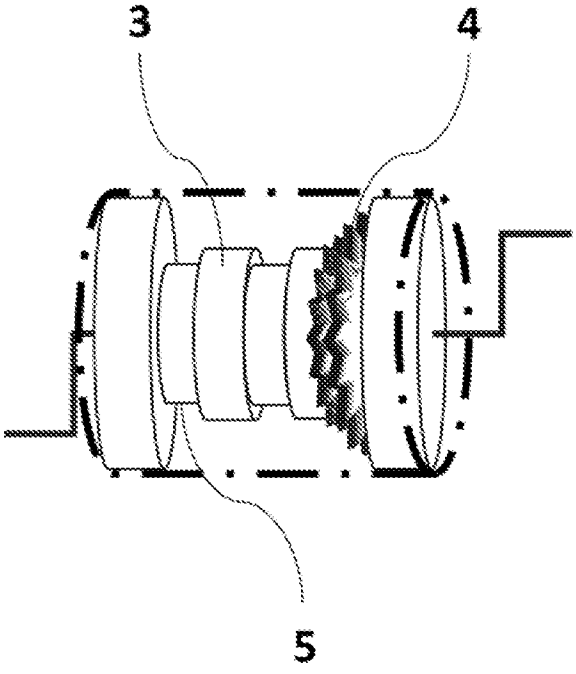

FIG 2

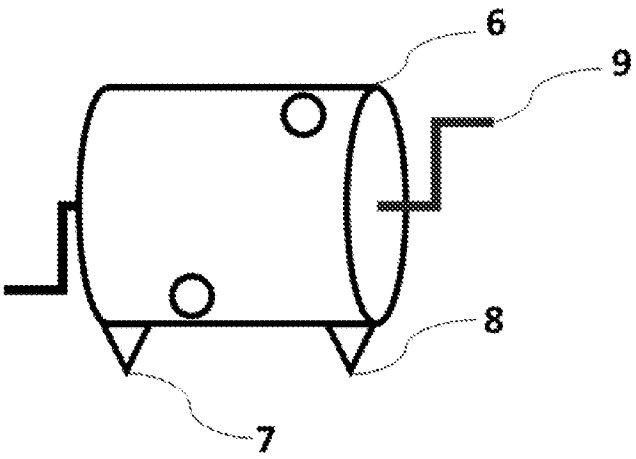

FIG 3

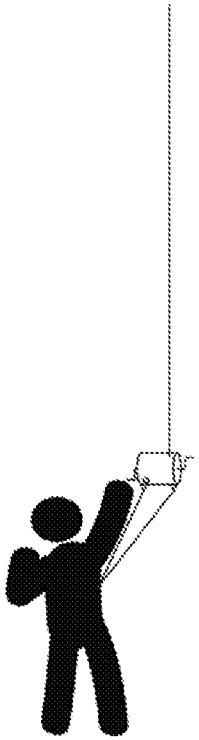

FIG 4