

UNITED STATES PATENT OFFICE.

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ECCENTRIC-LEVER ROPE GRIP AND BRAKE FOR ASCENDING OR DESCENDING ROPES.

SPECIFICATION forming part of Letters Patent No. 733,458, dated July 14, 1903.

Application filed January 28, 1902. Serial No. 91,624. (No model.)

To all whom it may concern:

Be it known that I, ROBERT COCKERELL, blacksmith, a subject of the King of Great Britain, residing at 49 Moray Place, in the city of Dunedin, in the British Colony of New Zealand, have invented certain new and useful Means for Climbing Ropes, of which the following is a specification.

The object of this invention is to provide a simple, easy, cheap, and reliable means of ascending or descending or climbing along ropes which shall be automatically self-sustaining at any point, but capable of being freely moved when desired.

The invention provides painters', quarrymen's, and telegraph-linesmen's ladders, fire-escapes, appliances for gymnasiums, lowering boats at sea, gripping ropes or sheets on vessels, mountain-climbing, saving from wrecks, or the like. For these purposes there are two forms of the one appliance, one for climbing up or down ropes, which can be used by both hands and feet or by the feet alone, and the other to be used principally as a brake for lowering when quick lowering is needed. The appliances consist of a half or U section short length of tube combined with an eccentric and lever that works on a fulcrum and grips a rope. In the climbing appliance this gripping is only when the weight comes on the lever, and in the brake appliance the gripping action is double and only off when in a central position.

Referring to the accompanying drawings, Figure 1 is a view of the rope-climbing appliance, showing same as applied to a telegraph-pole. Fig. 2 is a general view of appliances suitable for climbing, but with means of quick descent, if needed. Fig. 3 is a view of appliances as suitable for any moving on a horizontal or slanting rope. Fig. 4 is a plan of the rope-climbing appliance enlarged for better illustration, and Fig. 5 is a section of the same.

A is any suitable support to which the rope is permanently fastened or temporarily hooked.

A' is any stone or weight or fastening in the pavement or ground to which to keep the lower end of the rope steady, if needed. This is scarcely necessary generally, especially in descending; but a small weight or fastening

is of advantage, especially when near the end of a rope in ascending, as otherwise the rope may rise with the appliance and not slide through it when wanted.

B is the rope when used with the climbing appliance.

B' is the rope when used with the braking appliance, and B³ is the rope as used for carrying.

C is the U-shaped tube or sleeve in the bend of which the rope slides.

C' is the single eccentric for climbing, ending in the lever C³, which is fitted with hand or foot shields, stirrups, or rests, as shown.

The action is obvious. When ascending or descending, the hand or foot, as the case may be, lifts the lever and loosens the grip on the rope, the weight being on the other, and thus alternately the appliances can rise or fall, always tightening when the weight is on them. The brake appliance has levers preferably at each end, and the eccentric grip is double, tightening when either the upper or lower levers are closed. C⁵ is the double eccentric, and C⁷ C⁷ are the levers preferably ending in eyes, so that they can be actuated from the ground, if needed, or from the box or truck F. (See Fig. 3.)

It will be seen upon reference to Fig. 4 that the inner or working end of each lever is concaved and that the rope fits this concavity and also the concaved portion of the U-shaped tube, by reason of which said tubes with the levers supported thereby can be readily raised or lowered upon the rope. By pulling down upon the levers, however, they can secure a firm purchase upon the said rope.

In Fig. 2 the rope can be climbed up or down with two of the climbing appliances, as in Fig. 1, and when it is desired to descend quickly a loop is fastened to the rest, (marked D,) which can be used as a seat, and the rope passes over the saddle E when the appliance C C⁵ C⁷ is used as a brake to steady the descent.

Either appliance can be instantly detached from or attached to the rope by the pin being removed and any way of preventing loss of parts may be adopted, such as are in general use.

In Fig. 3 the truck F is made to run on sheaves G and is furnished with a double eccentric brake G' to each end. When drawn

up by the occupant, the climbing appliances may be on another rope, as shown, or the whole may be on the carrying-rope. In Fig. 2, any person sitting in the loop D can catch
 5 hold of the brake appliance with one hand, and his weight admits of quick lowering, while there is sufficient friction of the rope, passing around the segment of rope-pulley or saddle E, to slow or stop with the brake C C⁵ C⁷ with
 10 but slight exertion. When, however, speed is not of such importance, the single rope and appliances, as shown in Fig. 1, would meet all requirements.

In Fig. 2 a window is shown to show appliances in position, and in Fig. 3 the truck is shown as going to a window, the window there being shown in section.

The operation of my appliance, as illustrated in Fig. 1 of the drawings, is as follows:

20 The person who desires to climb the rope inserts his feet into the stirrups or loops attached to the levers of the climbing devices and with his hands grasps the rope at the distance of his height above the climbing devices.
 25 By now raising one of his feet in its stirrup the lever to which said stirrup is attached is also raised and caused to release the pressure of its cam-surface on the rope or other support. The entire climbing device is then drawn or
 30 slipped the desired distance up the rope, and pressure is again applied to the lever of the device by means of the foot-stirrup, causing the cam-surface of the lever to again clamp the rope within the sleeve of the device.
 35 This same operation is then carried out with respect to the other foot of the person climbing the rope. It will be seen that by means of my appliances it is possible for a person to easily and quickly ascend a rope in a step-
 40 by-step manner. When it is desired to descend the rope, the above-described operation

is reversed—that is, the foot-stirrup and lever are raised, and the device is then permitted to slip down the rope the desired distance. It will be understood, of course, that while
 45 one of the climbing devices is being raised or lowered in ascending or descending the rope the weight of the climber's body is supported by the other device.

I am aware that many appliances have been
 50 tried for lowering, but am not aware that anything like my invention, that can be used for ascending as well as descending, so as to give help to those not able to help themselves or such like, has been invented. 55

In this invention any suitable sizes or materials may be used.

Having described my invention, what I claim, and desire a patent of the United States
 60 of America, is— 65

The combination of an elongated sleeve approximately U-shaped in cross-section, a lever pivotally supported between the cheeks of said sleeve and said cheeks having outwardly-projecting ears, the inner faces of
 65 which are in the same planes as those of the cheeks said ears serving to prevent lateral motion of the lever and the inner end of the latter and the adjacent portion of the sleeve being concaved to receive a rope and the lever
 70 extending at an inclination upwardly and outwardly from the sleeve, and a stirrup rigidly connected with and depending from the outer end of said lever.

In testimony whereof I have hereunto set
 75 my hand in presence of two subscribing witnesses.

ROBERT COCKERELL.

Witnesses:

HENTOR MACAULAY DAVEY,
 ELIZABETH ANN DAVEY.