(No Model.)

J. DUNN.

TACKLE BLOCK.

No. 411,240. Patented Sept. 17, 1889.

Fig. 2.

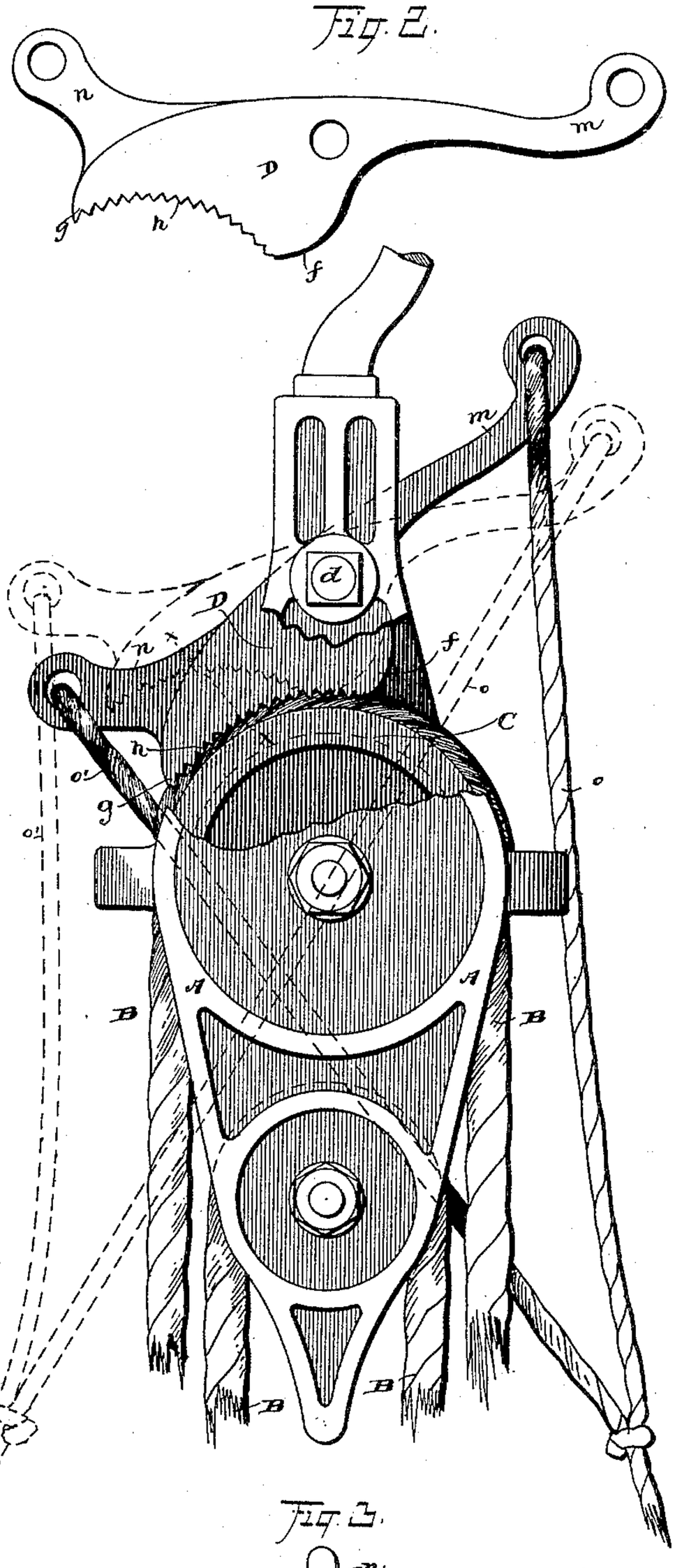
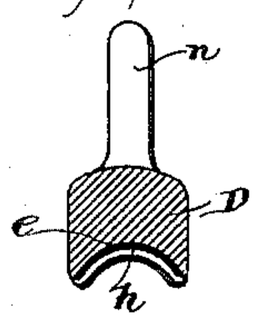


Fig. 1.

Fig. 3.



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TACKLE-BLOCK.

SPECIFICATION forming part of Letters Patent No. 411,240, dated September 17, 1889.

Application filed March 18, 1889. Serial No. 303,789. (No model.)

To all whom it may concern:

Be it known that I, JAMES DUNN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Tackle-Blocks; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in tackle-blocks; and the object of the invention is to provide an effective locking device for holding in suspension a load at any given elevation, so that when the pull on the rope to raise the weight ceases the locking device may instantly be brought into action and prevent any further movement of the rope backward than is sufficient to effect the locking.

To this end the invention consists in a locking device having a grooved, corrugated, concave binding-surface to engage the rope or cable and pivoted in the block, as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plain elevation of a tackle-block in which my improved locking device is shown in locking position in full lines and out of such position in dotted lines, the shell or casing being partly broken away to disclose the locking device in engagement with the rope. Fig. 2 is a detail of the locking device; and Fig. 3, a cross-section thereof on line *x x*, Fig. 2.

A represents the block of the tackle; B, the hoisting rope, cable, or cord, which for convenience are expressed herein by the term "rope," and C the main sheave. These parts may be regarded as of any common and well-known form and are not in themselves new.

D is my improved construction of locking device. This device is pivoted in the shell of the block centrally over the sheave C on a pivot rod or bolt *d*, extending through from side to side. Its form is peculiar, and in this peculiarity lies its special advantage. It will be seen that it has first a longitudinal groove *e* in its engaging-surface, which is the counterpart of the groove in the sheave C and which runs from the heel *f* to the toe or point *g*. This engaging-surface, furthermore, is concave from heel to toe and corresponds substantially to the periphery of the sheave-surface, so that when down the entire length of the concave portion will be in engagement with the rope. However, there is so much of the cam principle in the formation of these features that when the toe is practically down upon the rope the portion of the device immediately beneath and somewhat in front of a vertical line through its pivot-point will bear so firmly on the rope that with the aid of the extension of the device toward the toe the rope is securely locked against further movement. Obviously, by shortening the locking device—say to half its length—we should have a purely cam shape and action; but that is what I expressly desire to avoid, for the reason that in that case the pressure upon the rope is distributed over such small surface that the compression thereof, which unavoidably follows, works such injury that the value and safety of the rope are greatly impaired. It will be remembered that these locking devices in the ordinary handling of tackle are liable to be applied every few moments and that the strain on them under heavy loads is very great; but by my construction of locking device I so largely distribute the engaging-surface that I get all the efficiency of a purely cam construction and at the same time extend my engagement with the rope over such considerable surface that injury and weakening are avoided. A further feature of the locking-surface is the transverse ribs or teeth *h*, which have a uniform depth from side to side of the device and are slightly rounded, so that while they assist in making engagement they do not cut or damage the fibers of the rope. Back of the teeth *h* is the rounded smooth heel *f*, which, when the locking device is swung out of engagement, as seen in dotted lines, Fig. 1, bears very lightly on the hoisting-rope. In this way the locking device does not wear upon the rope by reason of frictional contact, and yet is in such sensitive relation thereto as to be affected by the backward movement of the hoisting-rope and to automatically engage and lock the same if the rope travels far enough to turn the lock down; but the locking device is not dependent on automatic action alone, and in order that it may be thrown

in or out of engagement at will by the operator it is provided with two arms *m n*, extending in opposite directions, and cords or small ropes *o o'*, connected with the arms to move the device. The arms and ropes balance one another on the pivot of the locking device, so that said device will continue out of locking engagement when the tackle is at work, but will drop into engagement automatically, as described, or be conveniently drawn one way or the other by the ropes, as may seem desirable. Each arm may have a separate cord, or the cords may be united, as shown in Fig. 1. By drawing on the arm *m* the lock is disengaged and by drawing on the arm *n* the lock is brought into engagement. The lock in any event is under the control of the operator.

The special feature of advantage and improvement is the locking device, which gives me the cam action and effect over a long-extended bearing-surface, thus enabling me to employ such a lock without damaging the rope, which I could not do if I employed an ordinary cam-surface on so small a pulley or sheave.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A tackle-block and sheave, in combination with a locking device for the rope that works over the sheave, having a heel adapted to be in contact with the rope when the locking device is disengaged, an engaging-surface grooved longitudinally and convex between its ends to conform substantially to the outline of the sheave, with arms at each end of the device to attach controlling-cords, substantially as set forth.

2. In a tackle-block, the combination of the block, the sheave, and a hoisting-rope with a locking device for the rope pivoted in the block over the sheave and having the following distinguishing features: a convex grooved and ribbed engaging-surface adapted to the hoisting-rope and the sheave, a heel to make contact with the rope and draw the locking device into position, and arms extending in opposite directions to operate the locking device, substantially as set forth.

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Witnesses:
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