(No Model.)

3 Sheets—Sheet 1.

R. WILSON.

TACKLE BLOCK.

No. 585,145. Patented June 22, 1897.

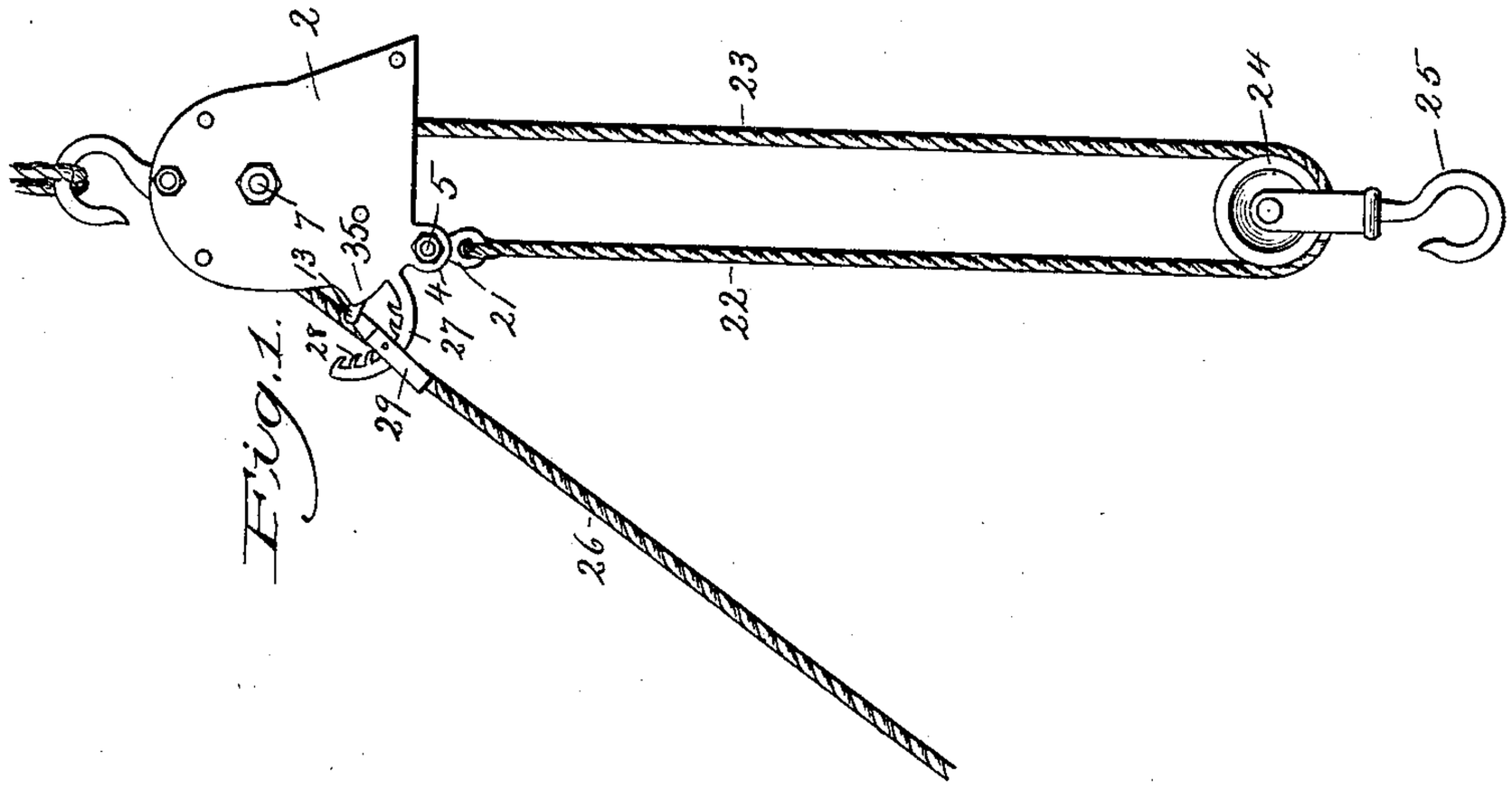

Fig. 1.

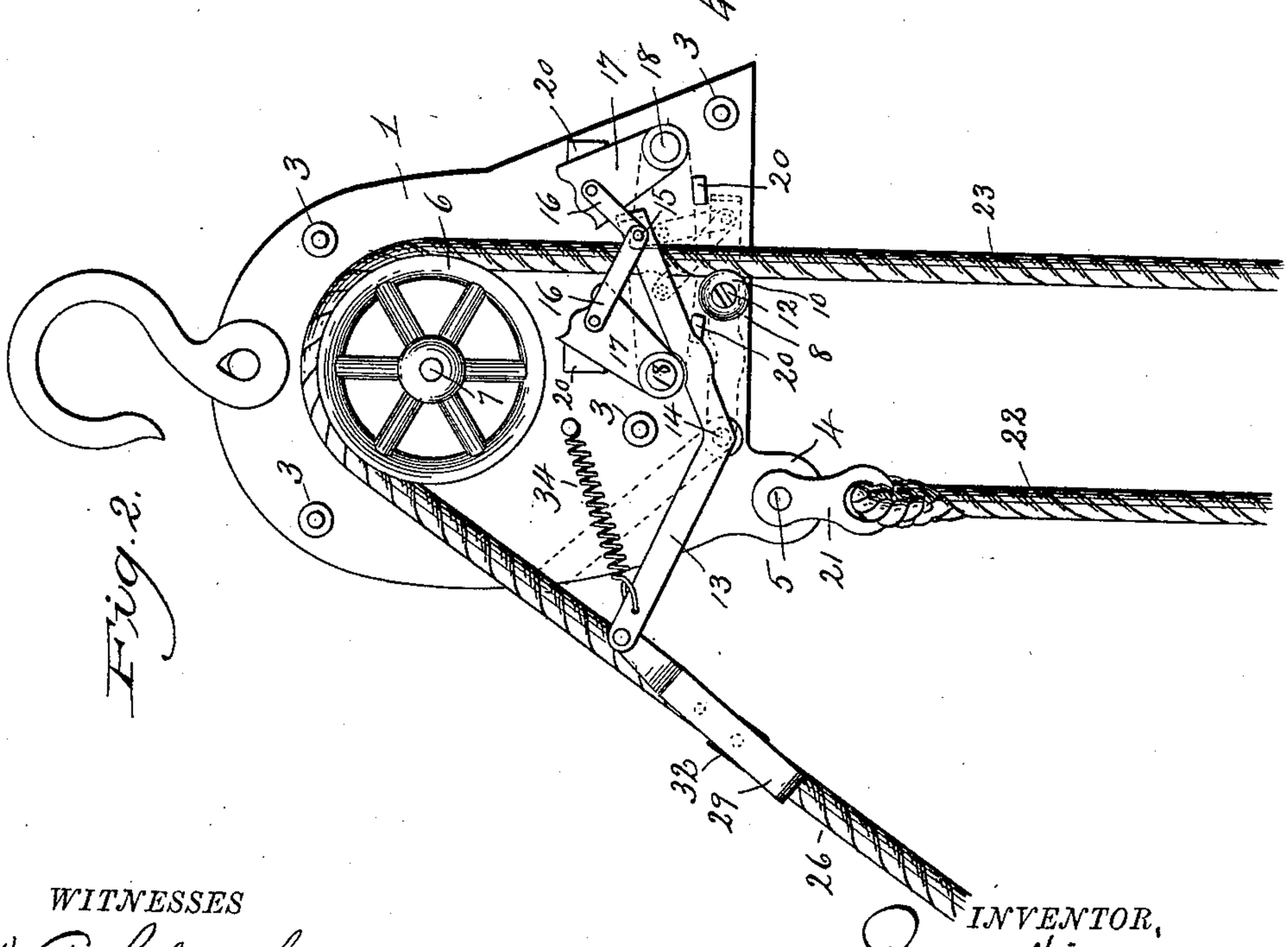

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

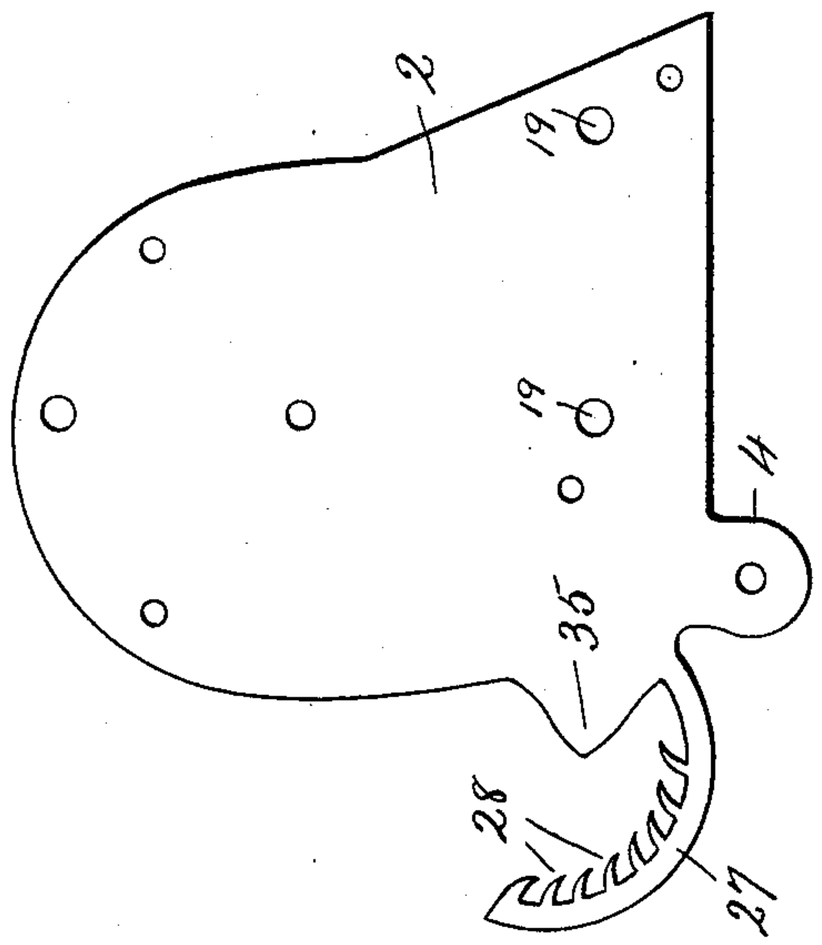
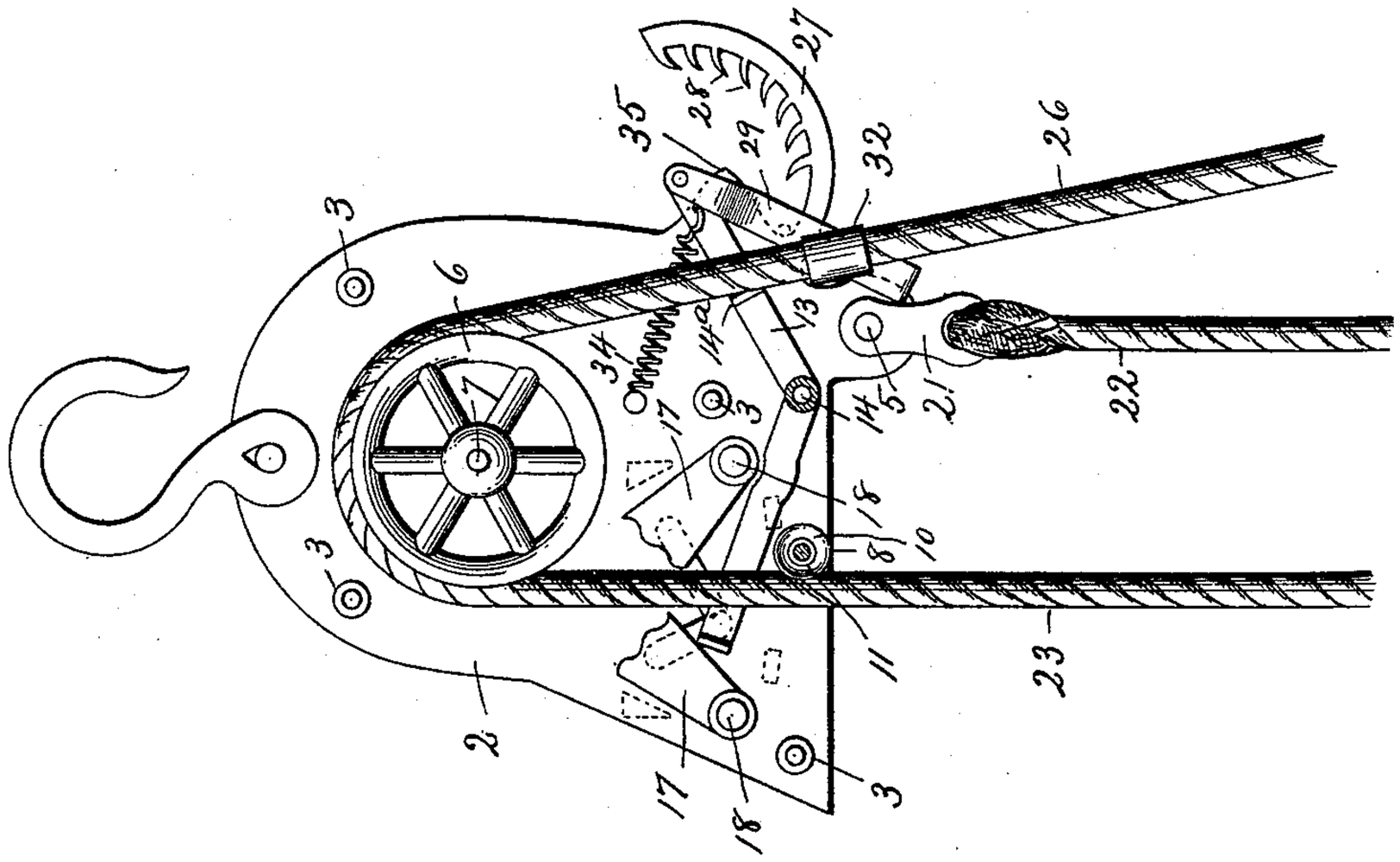


Fig. 3.



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3 Sheets—Sheet 3.

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TACKLE BLOCK.

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Fig. 6.

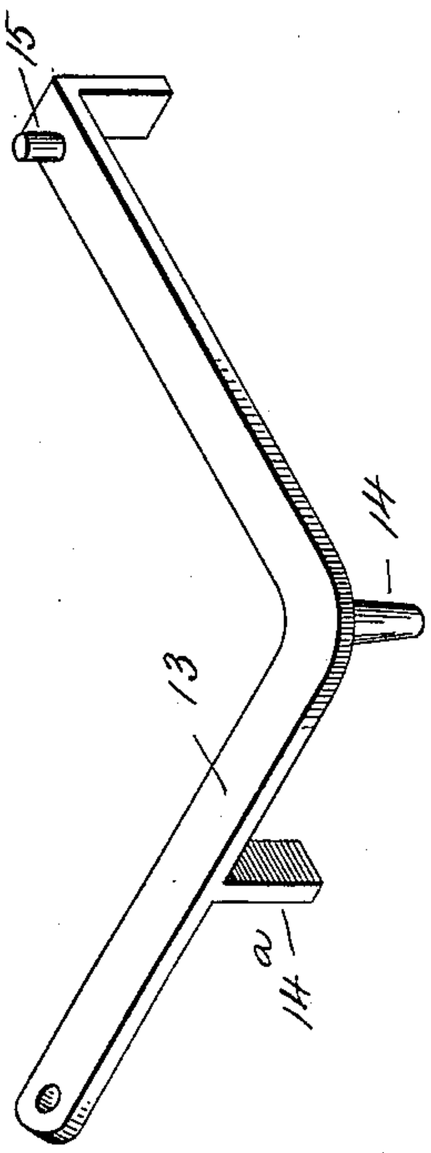


Fig. 7.

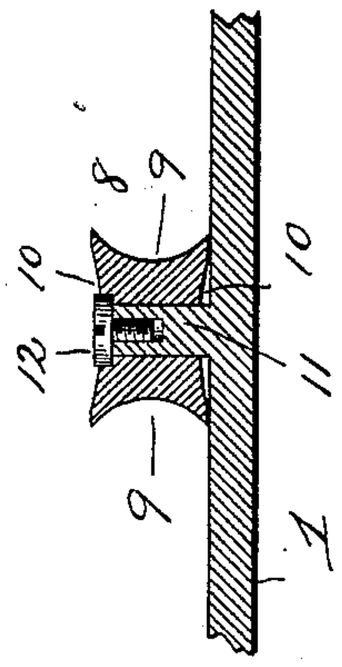
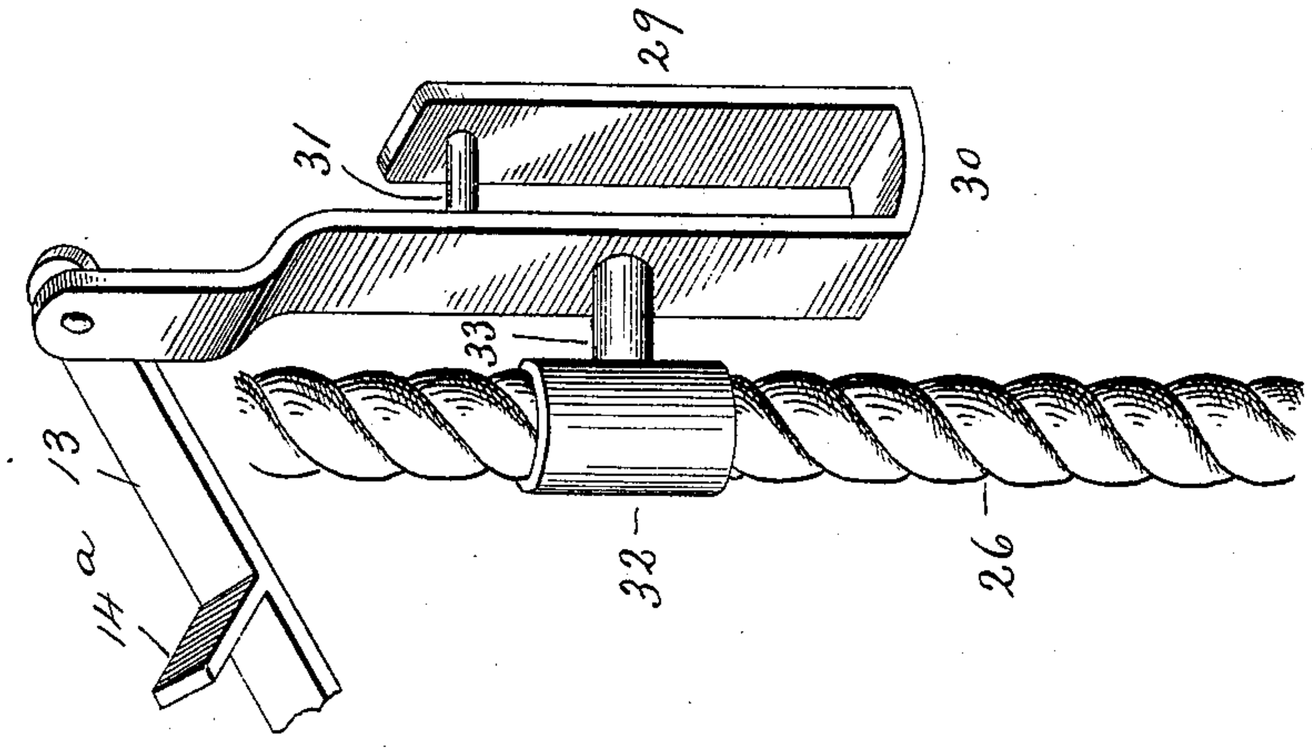


Fig. 5.



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UNITED STATES PATENT OFFICE.

ROBERT WILSON, OF NEWARK, NEW JERSEY.

TACKLE-BLOCK.

SPECIFICATION forming part of Letters Patent No. 585,145, dated June 22, 1897.

Application filed December 17, 1896. Serial No. 616,047. (No model.)

To all whom it may concern.

Be it known that I, ROBERT WILSON, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Tackle-Blocks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as 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 it consists in a novel construction and arrangement of parts hereinafter described.

The object of my invention is to provide a tackle-block of simple and durable construction in which the automatic locking or gripping of the sling is provided for without the necessity for slacking or releasing the hauling-rope and in which the gripping or releasing for the purpose of sustaining the load in any desired position or to permit it to drop will be accomplished by simply changing the angle of inclination of the hauling-rope with respect to the pulley.

Referring to the drawings, Figure 1 is a general view of my device, illustrating its use. Fig. 2 is a side elevation of my block, showing one of the frame-plates removed and showing in dotted lines the gripping mechanism in the releasing position. Fig. 3 is a view similar to Fig. 2, but showing the position of the device when an operator standing immediately beneath the pulley desires to slack the rope for the purpose of lowering the object suspended by the block. Fig. 4 is a detail view of one of the frame-plates. Fig. 5 is a detail perspective view of the locking-lever as applied to the grip-actuating lever and to the rope-thimble, respectively. Fig. 6 is a detail view of the grip-actuating lever. Fig. 7 is a detail view of the pulley.

Referring to the drawings, 1 and 2 indicate a pair of frame-plates of the tackle-block retained in parallel relation by intermediate spacing-studs 3 and provided with a pair of depending ears 4, connected by the swivel-bolt 5.

6 indicates the sheave of the block mounted on the shaft 7, carried by the block-frame, and 8 indicates a guide-pulley, preferably provided with the concave periphery 9, located in the perpendicular plane of the rear edge of the sheave 6, but at the point adjacent to the bottom of the frame.

The guide-pulley 8 is provided with concave sides 10 and is mounted on the stud 11, projecting from the frame-plate 1, being secured thereto by a screw 12, screwed into the stud and having its flat head seated in the concave side of the pulley. The purpose of this peculiar construction is to permit the oscillation of the grip-actuating lever 13 (provided with a suitable guide 14^a and pivoted upon a stud, as at 14) between the side of the guide-pulley and the adjacent frame-plate. The grip-actuating lever is preferably of angular construction, its pivot being at the juncture of its angular extremities and is pivotally connected at one extremity to the contiguous ends 15 of a pair of toggle-levers 16, pivoted at their opposite extremities to a pair of pivoted grips 17. The grips 17 are preferably mounted between the frame-plates 1 and 2 by means of laterally-projecting studs 18, rotating in recesses 19 in the frame-plates. Any suitable means for accomplishing the desired purpose may, however, be employed—as, for instance, it might be preferable in some instances to mount the grips upon shafts or bolts passing through the frame-plates and secured by nuts, as usual in this class of device.

20 indicates suitable grip-stops located upon the inner face of one or both of the frame-plates and designed to limit the movement of the grips when swung upon their pivots for the purpose of gripping or releasing the sling-rope.

21 indicates a preferably swiveled eye mounted upon the shaft 5 within the frame and designed to support one extremity 22 of the sling-rope 23, which supports, as usual, a pulley-block 24, carrying a hook 25, designed to be connected to the object desired to be raised. The sling 23 passes between the frame-plates and grips and over the sheave 6, being guided by the guide-pulley 8 and terminating in the sheave end of the rope, to which power is applied in the manner well known in the art.

The mechanism thus far described constitutes a tackle-block provided with gripping and releasing mechanism which may be actuated to grip or release the rope and thus

securely retain at any desired elevation the object operated upon or to permit such object to be lowered when the sheave-strand of the rope is slacked.

I shall now proceed to describe a simple and efficient device by means of which I connect the gripping and releasing mechanism with the sheave-strand in such manner as to permit of the actuation of the former by changing the angle of inclination of the latter and without slacking the sheave-strand 26. Located adjacent to the lower side of the block and preferably substantially concentric with the free extremity of the grip-actuating lever when in the releasing position I provide a toothed rack 27, preferably formed integral with the frame-plate 2 and having a series of teeth 28, preferably curved and disposed rearwardly at a considerable angle with respect to the radii of the rack. To the free extremity of the lever 13 I pivotally connect what I will term a "locking-lever" 29, terminating in a U-shaped portion 30, somewhat out of line, and provided at its open end with a locking-pin 31, designed to engage the teeth 28 upon the segmental rack 27.

32 indicates a rope-thimble pivotally mounted upon a stud 33, projecting from the rear side of the lock-lever and designed to receive the sheave-strand 26, but to permit of the free movement of the latter.

34 is a weak spring intermediate the grip-actuating lever and the block-frame designed to urge the lever in the direction to engage the grips 17 with the rope. Thus it will be seen that as the position of the grips will be determined by the position of the grip-actuating lever the position of the locking-lever with respect to the rack will control said actuating-lever and will in this manner determine the movement of the grips, as it will appear that as said rack-bar is concentric with the extremity of the actuating-lever when the latter is in the released position, it will be eccentric with respect thereto in the locking position, and consequently the adjustment of the locking-lever will accomplish the purpose desired.

The operation of my device is as follows: Supposing the device to be in the position indicated in Fig. 2, the grips being in the releasing position and the pin 31 being in engagement with one of the teeth 28, power is applied to the sheave-strand 26 of the rope, and so long as the strand remains at the angle indicated the sheave-rope will move freely over the sheave and will take up the sling for the purpose of elevating the object connected with the pulley-block 24. Supposing, now, that it is desired to lock the object operated upon at a predetermined elevation and without permitting its dropping back, even slightly, during such operation, the angle of inclination of the sheave-rope is shifted so as to disengage the pin 31 from the tooth 28. The spring 34 will immediately retract the grip-actuating lever, swinging the grips upon their pivots and causing their adjacent corrugated faces to securely grip the rope. It will be observed that the gripping of the ropes is not produced by the slacking of the sheave-rope, as is usually the case, but that it is accomplished solely and entirely by the changing of the angle of inclination at which the sheave-strand leaves the block. It is clearly apparent, however, that if the spring 34 is made sufficiently weak the grips will simply be brought into contact with the rope and will be automatically actuated to grip the same by the weight of the load. When it is desired, as it frequently is, that the device should be operated from a point immediately below the pulley, the locking-lever may be swung to the position indicated in Fig. 3 of the drawings, in which position pin 31 will engage the lower edge of a projection 35, disposed oppositely to the teeth 28, but having a similar function—namely, the retention of the locking-lever in the locking position or its release when the sheave-strand is shifted to a different angle.

I do not desire to limit myself to the details of construction herein shown and described, but reserve to myself the right to modify, vary, or change them at will within the scope of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a tackle-block designed for use in connection with a rope, the combination with a sheave, gripping mechanism and grip-actuating mechanism, of locking mechanism designed to be controlled by the movement of the rope, substantially as specified.

2. In a device of the character described, the combination with a sheave and gripping mechanism, of a rope passing over the sheave and designed to be gripped by the gripping mechanism, grip-actuating mechanism and locking mechanism operatively connected with the grip-actuating mechanism and in operative relation with the sheave end of the rope.

3. In a device of the character described, the combination with a sheave and gripping mechanism, of a grip-actuating lever, locking mechanism operatively connected with the grip-actuating lever, and means for actuating said locking mechanism, substantially as specified.

4. In a device of the character described, the combination with a sheave, grips and grip-actuating lever, of a rack, a locking-lever operatively connected to the grip-actuating lever and in operative relation with the rack, and means for connecting a rope or the like with the locking-lever, substantially as specified.

5. In a device of the character described, the combination with a sheave and a pair of pivoted grips, of a spring-actuated grip-actuating lever, and locking mechanism carried by the grip-actuating lever and mechanism designed to be engaged by the rope and to

actuate the locking mechanism, substantially as specified.

6. In a device of the character described, the combination with a sheave and a pair of pivoted grips, of a spring-actuated grip-actuating lever, a locking-lever, means for retaining the locking-lever, and a rope-thimble carried by said locking-lever, substantially as specified.

7. In a device of the character described, the combination with a sheave, gripping mechanism, grip-actuating mechanism and a locking-lever operatively connected thereto, of a rack provided with a series of teeth and with a projection disposed oppositely to said teeth and designed to coöperate with the locking-lever, and means for actuating said locking-lever, substantially as specified.

8. In a device of the character described, the combination with a frame, sheave, gripping mechanism and grip-actuating mechanism, of coöperating locking mechanism carried by the grip-actuating mechanism and by the frame, substantially as specified.

9. In a device of the character described, the combination with a frame, sheave, gripping mechanism, grip-actuating mechanism and a locking-lever, of a toothed rack carried by the frame designed to be engaged by the locking-lever and mechanism carried by said lever and designed to engage a rope, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ROBERT WILSON.

Witnesses:
MAGGIE W. SUTPHEN,
WILLIAM MEAD.