

(No Model.)

2 Sheets—Sheet 1.

J. H. TAYLOR.
DIFFERENTIAL PULLEY BLOCK.

No. 304,284.

Patented Aug. 26, 1884.

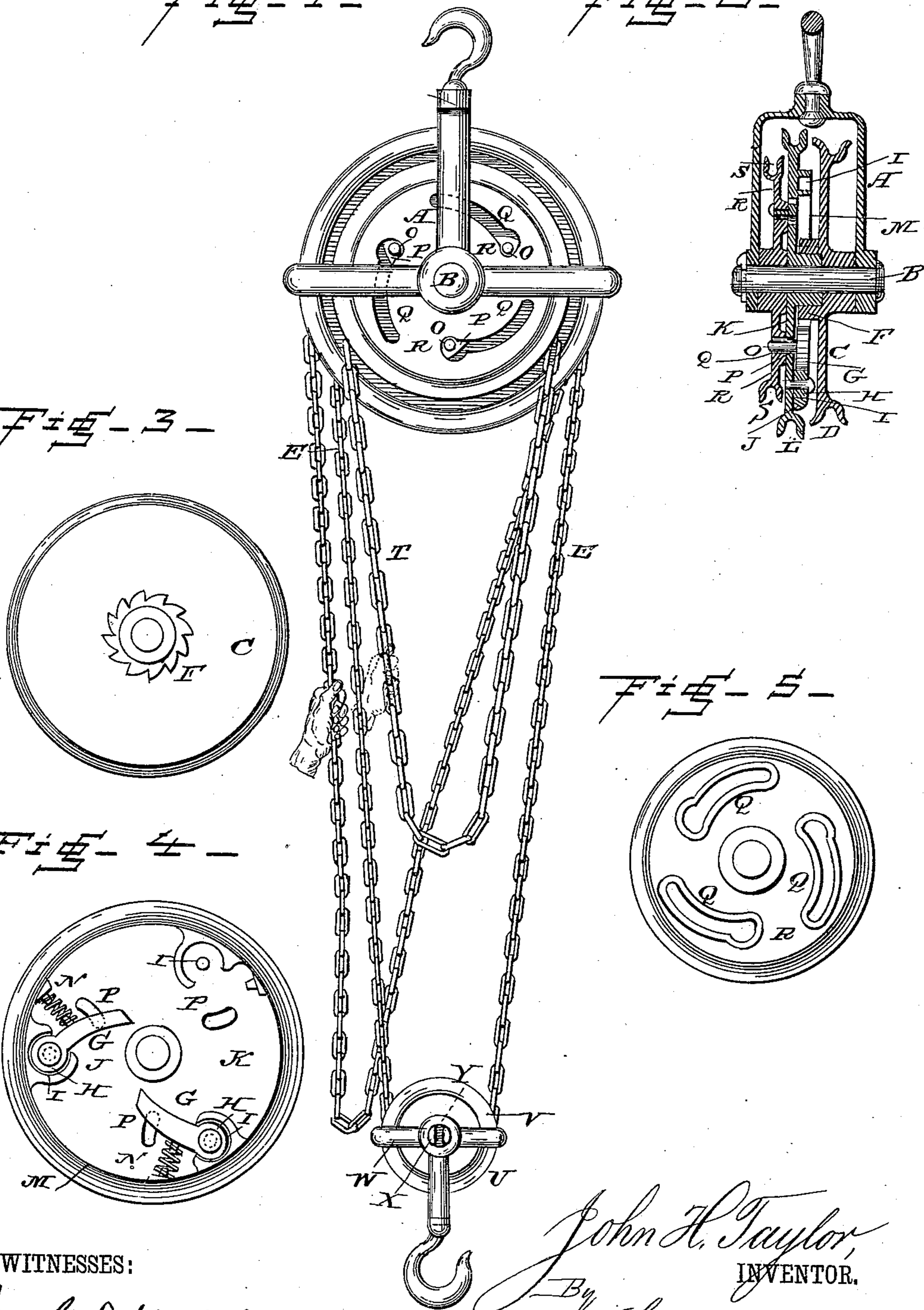
Fig-1-

Fig-2-

Fig-3-

Fig-4-

Fig-5-



WITNESSES:

Wm. G. Dietrich
Wm. Lecher

John H. Taylor
INVENTOR.

Louis Bagger & Co
ATTORNEYS.

(No Model.)

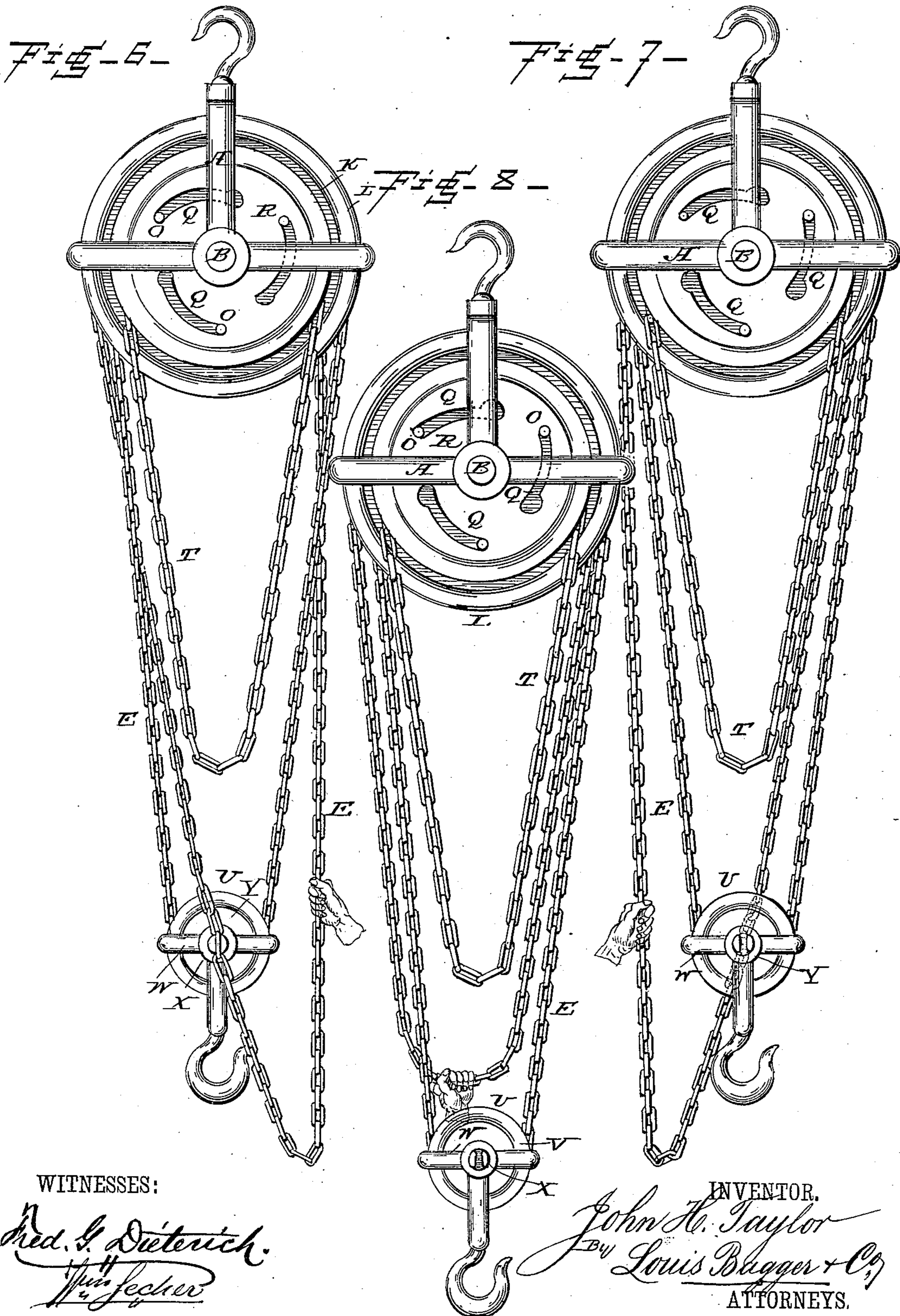
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Wm. S. Dieterich
John H. Taylor

INVENTOR.

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Louis Bigger & Co.
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UNITED STATES PATENT OFFICE.

JOHN H. TAYLOR, OF BATAVIA, NEW YORK, ASSIGNOR OF ONE-HALF TO
JOHN B. CHADDOCK, OF SAME PLACE.

DIFFERENTIAL PULLEY-BLOCK.

SPECIFICATION forming part of Letters Patent No. 304,284, dated August 26, 1884.

Application filed July 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. TAYLOR, a citizen of the United States, and a resident of Batavia, in the county Genesee and State of New York, have invented certain new and useful Improvements in Self-Sustaining Pulleys; 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
10 which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of my improved self-sustaining pulley. Fig. 2 is a vertical section of the same. Fig. 3 is a view of the smaller of the hoisting-pulleys. Fig. 4 is a view of the larger of the pulleys. Fig. 5 is a view of the cam-pulley; and Figs. 6, 7, and 8 are views of the pulley and block, showing the different ways of using the pulley with different leverage.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to self-sustaining or so-called "differential pulleys;" and it consists in the improved construction and combination of parts of such a pulley as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates the frame of the pulleys, which frame may be of any desirable shape, and may be suspended or supported in any suitable manner; and B indicates the pin upon which the pulleys are journaled.

C is the smaller hoisting-pulley, which has a circumferential groove, D, adapted to receive the hoisting-chain E, which is endless, and the said pulley has upon its inner face a central ratchet-wheel, F, which is engaged by a number of pawls, G, having their inner ends, H, rounded, and fitting and rocking in concavo-cylindrical recesses I in blocks J, secured upon the face of the larger hoisting-pulley, K, which pulley has a circumferential groove, L, for the reception of the hoisting-chain, and a flange, M, upon the face adjoining the smaller pulley, and near the edge of the same, and springs N bear against the outer sides of the pawls and against the inner side of the flange, forcing the
50 pawls to engage the ratchet-wheel. The pawls

are provided with outwardly-projecting pins O, which project through and slide in curved slots P in the side of the larger pulley, and the said pins project into and slide in eccentric or cam grooves Q in the body of the cam-pulley R, which bears against the outer face of the larger pulley, and has a circumferential groove, S, for the reception of an endless chain, T.

U is the traveling pulley, which has a circumferential groove, V, for the reception of the hoisting-chain, and which is journaled in a frame, W, having means for suspending the burden to be raised, and the pin X, upon which the pulley is journaled, has its ends slotted, as shown at Y, adapted to catch and hold a link
65 of the hoisting-chain.

When the pulley is to be used for hoisting heavy burdens, that portion of the chain passing down from the larger pulley is drawn downward, and the burden will be raised by the larger pulley drawing the chain faster over it than the smaller pulley is allowing the chain to pass downward to the traveling pulley, while, when it is desired to raise a lighter burden with greater speed than what is accomplished by the differential pulleys, the chain passing over the cam-pulley is pulled so as to cause the cam-grooves in the same to force the pins upon the pawls outward, releasing them from engagement with the ratchet-wheel, and allowing the two hoisting-pulleys to revolve independently, when either side of the pending or looped portion of the chain may be caught in the slotted end of the pin of the traveling pulley, and the pulleys act as the usual double set of pulleys, the portion of the chain which is not caught by the slotted pin being pulled, and it will be seen that by pulling that side of the pending portion of the chain which passes from the smaller pulley, and consequently catching the portion passing from the larger pulley, the leverage will be less, while by reversing the aforesaid order the leverage will be increased. When the pawls are disengaged, the power may also be simply applied to the lower end of the looped portion of the chain, when both portions of the chain will travel in opposite directions over the hoisting-pulleys, and the burden be raised comparatively fast, but with very little saving in power.

The chain passing over the cam-pulley may be used for turning the pulleys while hoisting, the ends of the slots bearing against the pins, and thus causing the said cam-pulley and the larger hoisting-pulley to revolve together.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a self-sustaining or differential pulley, the combination of two hoisting-pulleys or sheaves turning independently upon a pin or bolt, a ratchet-wheel secured to one pulley, pawls secured upon the other pulley and having means for engaging and disengaging them with the ratchet-wheel, a traveling pulley, and an endless hoisting-chain traveling over the hoisting-pulleys and under the traveling pulley, as and for the purpose shown and set forth.

2. In a self-sustaining or differential pulley, the combination of a pulley-frame having a central pin or bolt, a smaller hoisting-pulley journaled upon the bolt and having a central ratchet-wheel, a larger hoisting-pulley journaled upon the bolt or pin, and provided with spring-pawls engaging the ratchet-wheel, a traveling pulley, an endless chain traveling over the hoisting-pulleys and under the traveling pulley, and means, substantially as described, for disengaging the pawls from the ratchet-wheel, as and for the purpose shown and set forth.

3. The combination, in a differential pulley or self-sustaining pulley, of a frame having a pivotal bolt or pin, a smaller hoisting-pulley having a ratchet-wheel at the center of its inner face, a larger hoisting-pulley having a flange upon its face near the edge, and having blocks upon its face formed with concavo-cylindrical recesses, spring-pawls fitting with the inner rounded ends in the said recesses and engaging the ratchet-wheel with their outer ends, and provided upon their sides with laterally-projecting pins sliding in slots in the body of the pulley, a pulley having a circumferential groove and having eccentric or cam slots for the reception of the pins from the pawls, a traveling pulley having means for suspending the burden to be raised, an endless hoisting-chain passing over the hoisting-pulleys and under the traveling pulley, and an endless chain passing over the cam-pulley, as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN H. TAYLOR.

Witnesses:

WM. SECHER,
D. E. McELHINNY.