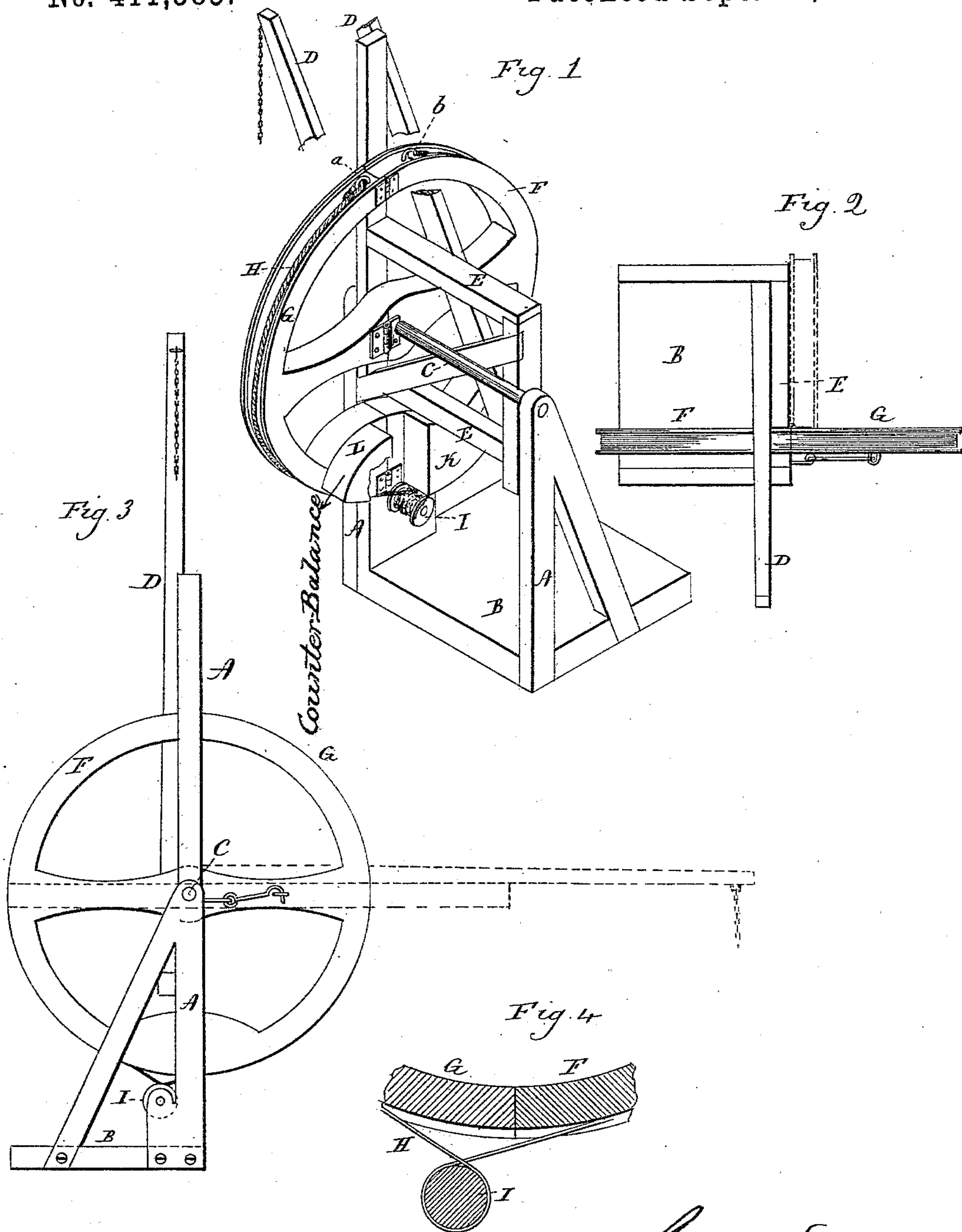


(No Model.)

L. S. DEMING.  
DERRICK.

No. 411,585.

Patented Sept. 24, 1889.



Witnesses  
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# UNITED STATES PATENT OFFICE.

LEVI S. DEMING, OF MIDDLETOWN, CONNECTICUT.

## DERRICK.

SPECIFICATION forming part of Letters Patent No. 411,585, dated September 24, 1889.

Application filed July 15, 1889. Serial No. 317,599. (No model.)

*To all whom it may concern:*

Be it known that I, LEVI S. DEMING, of Middletown, in the county of Middlesex and State of Connecticut, have invented a new Improvement in Derricks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of the derrick complete, the power end of the beam broken off; Fig. 2, a plan view of the same; Fig. 3, a side view looking toward the wheel, representing the operation of the beam; Fig. 4, a detached view showing a portion of the wheel with the drum and the cord-connection between them.

This invention relates to an improvement in derricks specially adapted for hoisting coal and like purposes, and in which the derrick consists of a beam supported upon pivots midway of its length, the hoisting-bucket attached to one arm and the power applied to the other arm, the invention being an improvement upon the derrick for which Letters Patent of the United States No. 405,082 were granted to me June 11, 1889. In that patent I illustrated and described a derrick in which a weight is applied to the power end of the beam to counterbalance the bucket and so as to reduce the amount of power required to raise the bucket by so much as the counter-balance, applying the power so reserved to the descent of the bucket. The derrick in that case consisted of a beam hung upon pivots on an upright, the bucket being carried by one end of that beam and so that power might be applied at the opposite end. In that case a third arm extended from the beam near the pivot at substantially right angles thereto, and so that a cord applied to the power end of the principal beam and to the end of the third beam passed around a pulley, and so that the rotation of the pulley would operate in one direction upon the power end of the beam to raise the bucket, and then, revolving in the opposite direction, operate upon the end of the third arm to turn the beam to lower the bucket.

In my present invention the object is to

apply a grooved wheel to the beam, and to which the cord is attached at two points, the cord running from the wheel onto a drum, through which the power is applied; and the invention consists in the construction as hereinafter described, and particularly recited in the claims.

In the illustration, A A represent posts upon a base B. To the posts the beam is hung upon an axle C.

D represents the principal part of the beam, which extends diagonally across a frame E, hung upon the axle C, and as seen in Fig. 1, and so that the beam may swing on said axle in a plane at right angles to the axle. The beam runs diagonally across the frame, and so as to project at one side, as seen in Fig. 2.

To the beam or frame and concentric with the axle a wheel is applied. This wheel is composed of two semicircles F G, the one part F being made stationary upon the frame or beam which carries the frame, while the part G is hinged to the part F at points substantially in the plane of the beam, and so that it may turn at right angles and fold against the frame, as indicated in broken lines, Fig. 2, the two parts when extended being hooked or otherwise secured together, as represented in Fig. 3. The periphery of the wheel is grooved, and in the groove a cord H is arranged, both ends being secured to the periphery, as at *a b*, Fig. 1. This cord runs around a drum I on the frame below the wheel, as seen in Fig. 4, several convolutions of the cord being made around the drum, so that power applied to rotate the drum may draw upon the cord accordingly. Therefore if the drum I be rotated in one direction it will cause the wheel and the beam to turn accordingly and depress the arm, as from the position seen in Fig. 3 to that shown in broken lines, same figure, or if turned in the opposite direction will raise the beam. The bucket, being attached to the beam, will correspondingly rise or fall with the beam.

The counterbalancing-weight is applied to the derrick in this case as in my previous patent. As here represented the weight is in two parts K L, the one part K being secured to the part F of the wheel, and the other part L of the weight secured to the part G



of the wheel, the weight being directly opposite the bucket-arm of the beam, as seen in Fig. 1, and so as to counterbalance the load upon the beam, and thereby divide the power, as in my previous patent.

Derricks for hoisting coal are necessarily arranged close to the side of the wharf against which the boat stands from which the load is to be taken. The wheel, therefore, if not contractible, would project outside the line of the wharf, and, as seen in Fig. 2, such projection would interfere with the rigging of a boat approaching the wharf. Consequently the wheel is divided, as I have described, and the parts hinged together, so that the otherwise projecting part may be folded into the plane with the dock, and this folding of the wheel is produced when the beam is in the vertical position, and because the division of the wheel is substantially in the center and with its periphery grooved, and the drum I located substantially in the plane of the division of the wheel, the swinging of the one part of the wheel, as described, does not disturb the relation of the cord to the drum, so that the wheel may be folded or thrown outward at any time without disturbing the mechanism of the derrick. Power may be applied to the drum in any convenient manner, and the power may be any of the powers usually employed for such hoisting. The beam, because of its inclination, as aforesaid, projects at one side of the wheel. Consequently the beam, with its load, may swing from the position seen in broken lines, Fig. 3, to the directly-opposite position, the load passing outside the plane of the wheel; hence the load may be delivered at a point considerably distant from the axis upon which the beam turns.

From the foregoing it will be understood that I claim nothing herein which is shown or described in my previous patent; but

What I do claim is—

1. In a derrick, the combination of a beam hung upon a horizontal axis and so as to swing in a vertical plane in raising the load, a grooved wheel arranged in a plane parallel with the path of the swinging movement of the beam, the axis of the said wheel being sub-

stantially the axis of the beam, and the wheel in connection with the beam, so that rotation of the wheel will impart corresponding vertical swinging movement to the beam, a revolving drum, the axis of which is substantially parallel with the axis upon which the said grooved wheel rotates, with a cord upon said wheel and coiled upon said drum, whereby the rotation of the said drum imparts rotation to the said wheel in either direction, accordingly as the drum is turned, and the said rotation of the wheel imparts the vertical swinging movement to the lever, substantially as described.

2. The combination of a beam hung upon an axis, a wheel upon said axis and so as to rotate with the beam, the load end of the beam projecting from the wheel at one side, a counterbalancing-weight applied to the wheel upon the side opposite the load, and a cord upon said wheel by which rotation may be imparted to said wheel in either direction, substantially as described.

3. The combination of a beam hung upon an axis, a diametrically-divided wheel arranged to rotate upon the same axis as the beam, one part of the wheel made fast to the beam and the other part of the wheel hinged to the said fast part of the wheel, and so that said hinged part of the wheel may fold into a plane substantially parallel with the axis on which the beam swings, and a cord around said wheel and by which rotation may be imparted thereto, substantially as described.

4. The combination of a beam hung upon an axis, the beam oblique to the axis, a wheel attached to the beam, and so as to rotate upon the same axis, the power end of the beam projecting beyond the plane of the wheel, and so that the load carried by the beam may swing across the plane of the axis upon which the beam turns, and a cord around said wheel by which rotation may be imparted to it and the swinging movement to the beam, substantially as described.

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Witnesses:

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