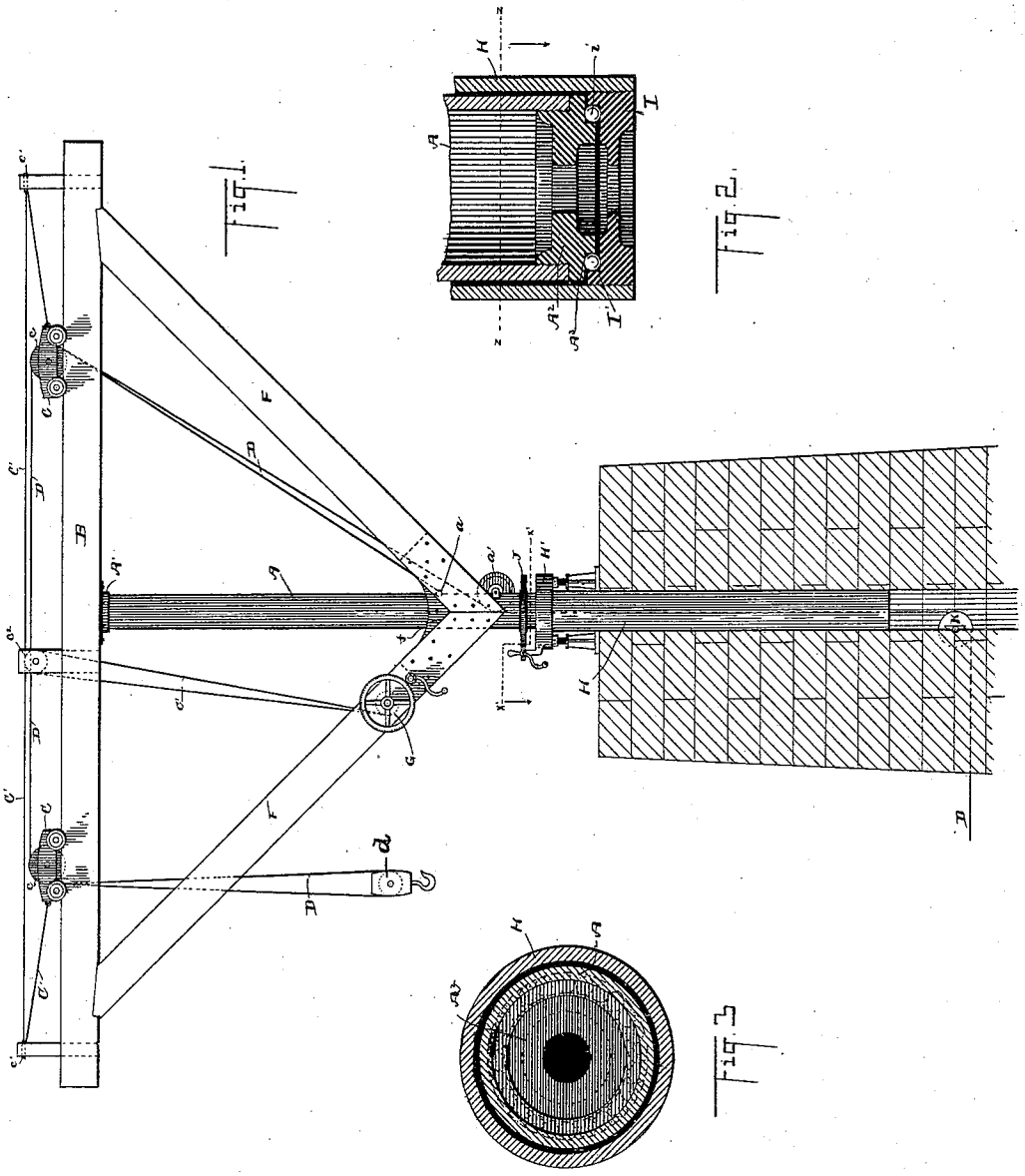
(No Model.) 2 Sheets—Sheet 1.

J. LE DUKE.

DERRICK.

No. 352,333. Patented Nov. 9, 1886.



WITNESSES
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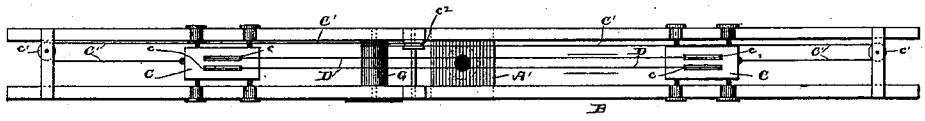


Fig. 4.

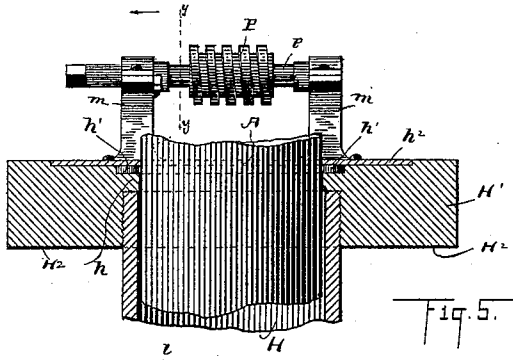


Fig. 5.

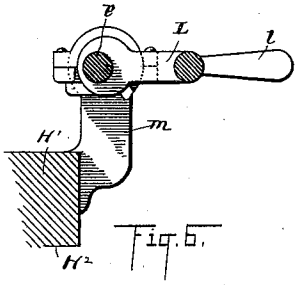


Fig. 6.

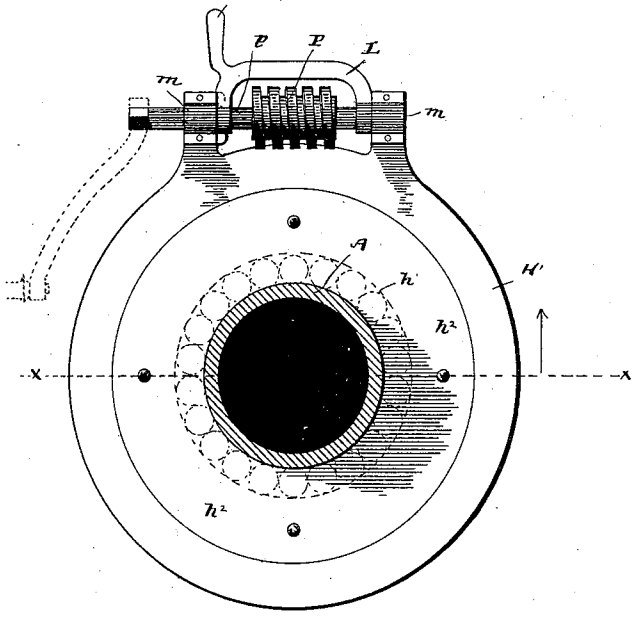


Fig. 8.

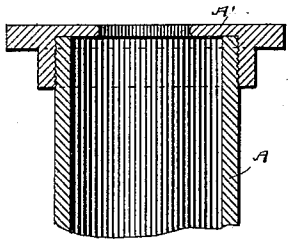


Fig. 7.

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UNITED STATES PATENT OFFICE.

JEREMIAH LE DUKE, OF BEREA, OHIO.

DERRICK.

SPECIFICATION forming part of Letters Patent No. 352,333, dated November 9, 1886.

Application filed July 13, 1886. Serial No. 207,891. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH LE DUKE, of Berea, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Derricks; 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 pertains to make and use the same.

My invention relates to improvements in derricks; and it consists in certain features of construction and in combination of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a derrick embodying my invention. Fig. 2 is an enlarged elevation in section of the lower part of the derrick. Fig. 3 is a plan in section on the line of *z z*, Fig. 2. Fig. 4 is a top plan. Fig. 5 is an elevation in transverse section on the line *x x*, Fig. 8. Fig. 6 is an elevation in section on the line of *y y*, Fig. 5. Fig. 7 is an elevation in section of the top cap of the post. Fig. 8 is an enlarged plan in section on the bent line *x x*, Fig. 1.

A represents a hollow revolving post, preferably made of large extra-heavy metal tubing. A flanged cap, A′, is screwed on or otherwise attached to the top of the post, to which cap is bolted the jib B. The jib consists of two broad pieces of timber set edgewise and blocked apart far enough to accommodate the hoisting-ropes. So-called "travelers" C, having flanged wheels that travel on the upper edge of the jib-timbers, have sheaves *c*, on which the hoisting-rope D operates. The one end of the rope D is attached to the post—for instance, at *a*—and from thence run over one set of sheaves on the travelers; thence round a sheave, *d*, of the hoisting-block; thence back over the other set of sheaves of the travelers and over the sheave *a′*, and through a hole in the post; thence downward through the cavity in the post. The sheave *a′* is of considerable size, and guides the rope well in toward the center of the post. The jib is supported by braces F, arranged in pairs, and secured to the post by iron plates *f*, the latter being bolted to the post on opposite sides thereof. The draft of the hoisting-rope would of course tend to move the travelers toward the center of the jib, to control which I provide ropes C′, that are attached, respectively, to the outer ends of the travelers, and from thence lead around lateral sheaves *c′*, that are mounted on the ends of the jib. From thence the ropes C′ lead over sheaves c^2, set vertically and arranged side by side near the center of the jib, and from thence the two ropes C′ lead to the windlass G. By turning the windlass both ropes C′ are wound or unwound alike, and the travelers are held at equal distances from the center of the jib. As ropes are slacked off, the travelers of course move toward the center of the jib, and are drawn apart by winding up the rope. With this arrangement of parts the load can be lifted and carried to any point along the jib, and the draft of the hoisting-rope balances the jib perfectly, so that no more strain is had on one side than on the other.

The post A sets inside the metal tube H. The latter has a cap, H′, on top, with a hole in the center large enough to receive the post without contact. An internal annular shoulder, *h*, supports a series of smaller lateral wheels, *h′*, or balls, if preferred, that come in contact with the post and hold the same laterally. A detachable flange, h^2, covers the lateral wheels and the chamber in which these wheels operate. The cap H′ is of considerable size, and extends perhaps four or five inches (more or less) outside the tube H, leaving a square broad shoulder, H^2, at the bottom for engaging jack-screws or other mechanism for elevating the tube.

The tube H at the lower end has a head, I, and the post has a head, A^2. These heads have central openings large enough to allow of the passage of the rope D. The heads have corresponding annular grooves, respectively A^3 and I′, in which operate a series of balls, *i*. The outer shoulder of the groove I′ extends a trifle above the center of the ball, and the inner shoulder of the groove A^3 extends slightly below the center of the ball, by which arrangement the foot of the post is held from lateral displacement; at the same time the balls, of course, support the post.

The mechanism for revolving the post is as follows: A worm-gear, J, is secured to the post just above the cap H′. The cap has upwardly-projecting ears *m*, in which is journaled the hub of the yoke L. The spindle *p* of the worm

P is journaled in the hub of the yoke, eccentric with the axis of the latter. The yoke is provided with a handle, *l*, for turning the same, by means of which the worm may be thrown in or out of gear with the wheel J. When the worm is out of gear, the derrick may be revolved by hand, and when near the desired position the worms may be thrown in gear and the derrick turned to the exact point desired. When the worm is left in gear, the derrick is of course locked.

In operating the device the derrick is at first held by guys until a sufficient amount of stone-work is laid around the tube H, after which the device is self-sustaining.

The sheave K is placed and left in the stone-work to guide the rope D, and a suitable hole is left for the passage of the latter. When the stone-work has been built to near the cap H', the tube is raised far enough to receive another layer of stone. In this manner, for instance, a pier located in a river may be carried up to any height, and without obstructing navigation by guy-ropes. The derrick, therefore, may be conveniently operated in places where it would be impracticable to support a derrick by guy-ropes.

What I claim is—

1. The combination, with a post, a jib rigidly secured to the top thereof, and a tube inclosing the lower portion of the post, of anti-friction balls or wheels for supporting the post vertically and laterally and devices secured to the upper end of the tube and engaging the post for revolving the latter, substantially as set forth.

2. In a derrick, the combination, with a hollow post, a jib mounted thereon, and a tube for supporting the post, the parts being arranged substantially as indicated, of a worm-gear secured to the post, a worm mounted on an attachment of the outer tube for engaging the worm-gear in revolving the post, and an eccentric yoke for supporting the worm, said yoke furnishing means for engaging and disengaging the gear, substantially as set forth.

3. In a derrick, the combination, with a post and a jib mounted thereon, substantially as indicated, of so-called travelers mounted on the jib, ropes, arranged substantially as shown, for holding the travelers on opposite sides of and at equal distances from the line of the post, and hoisting-ropes, arranged substantially as shown, and made to pass over the sheaves of the respective travelers, whereby the draft of the hoisting-ropes is sustained equally by the two arms of the jib.

In testimony whereof I sign this specification, in the presence of two witnesses, this 29th day of May, 1886.

JEREMIAH LE DUKE.

Witnesses:

CHAS. H. DORER,

ALBERT E. LYNCH.