

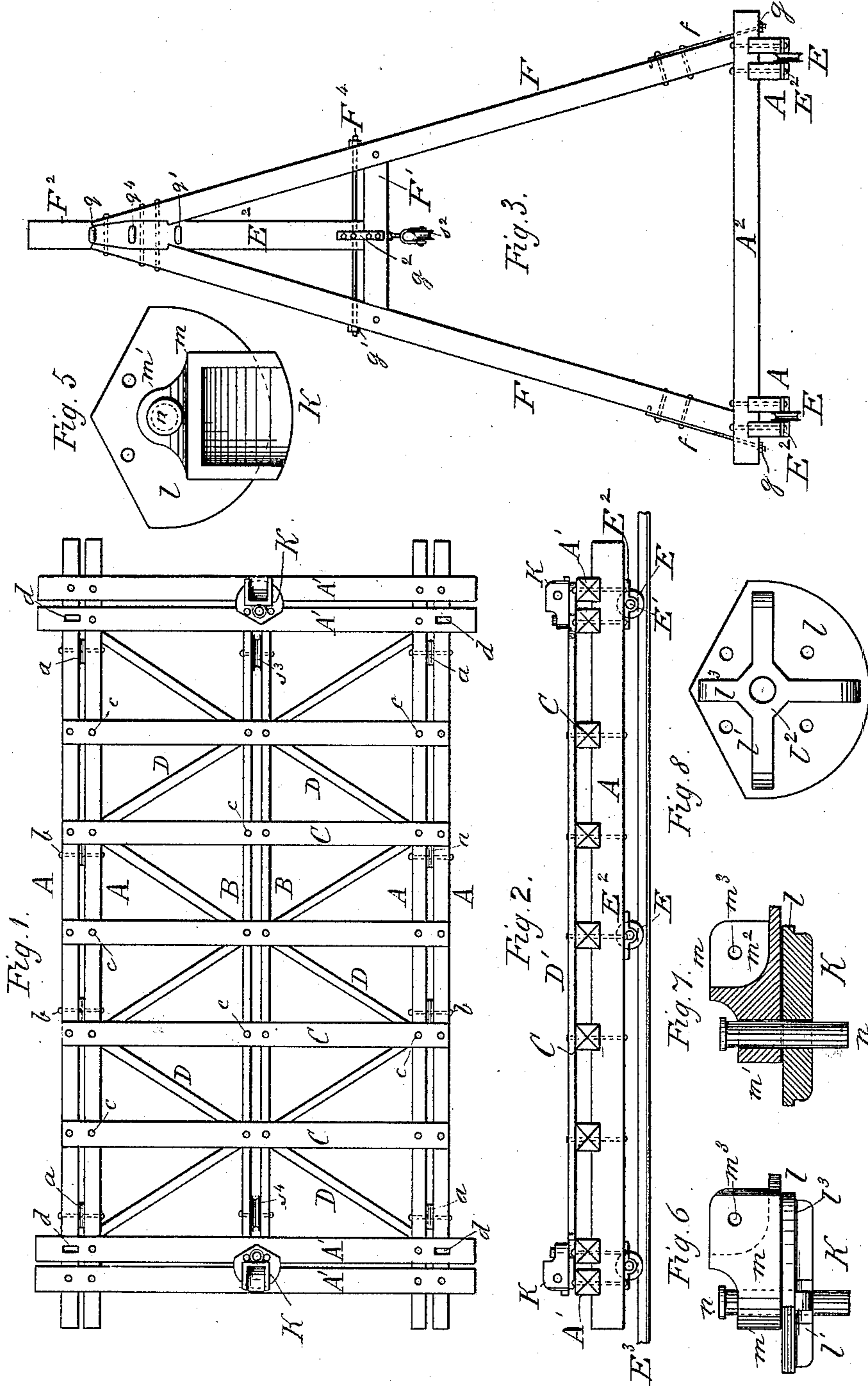
(No Model.)

2 Sheets—Sheet 1.

H. CASE.
TRAVELING DERRICK.

No. 330,870.

Patented Nov. 24, 1885.



WITNESSES
Wm. A. Lowe
John J. Boardman

INVENTOR
Henry Case
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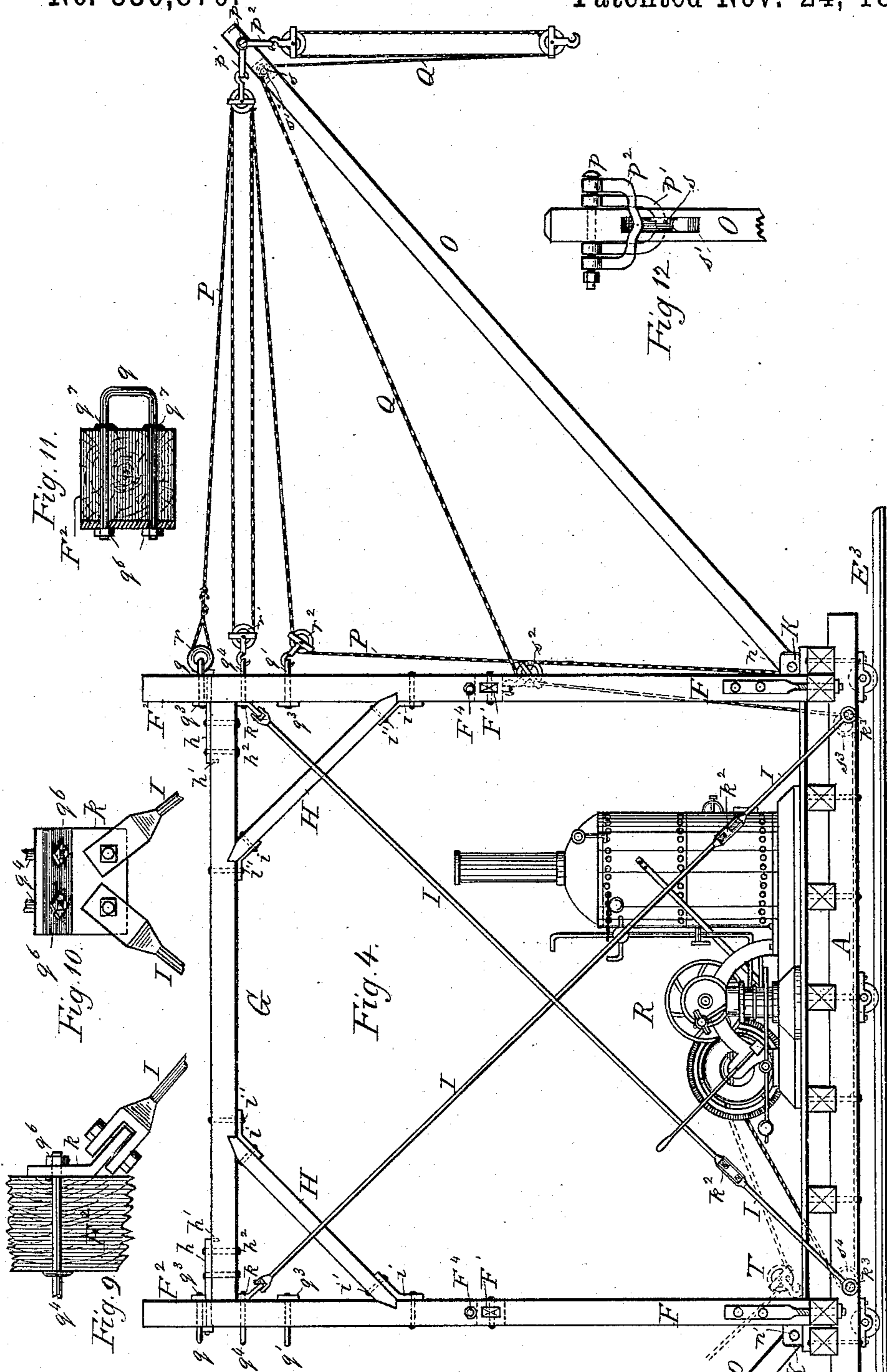
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INVENTOR

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UNITED STATES PATENT OFFICE.

HENRY CASE, OF BROOKLYN, NEW YORK.

TRAVELING DERRICK.

SPECIFICATION forming part of Letters Patent No. 330,870, dated November 24, 1885.

Application filed May 26, 1884. Renewed October 19, 1885. Serial No. 180,350. (No model.)

To all whom it may concern:

Be it known that I, HENRY CASE, a citizen of the United States of North America, and a resident of Brooklyn, county of Kings, State of New York, have invented a new and useful Improvement in Traveling Derricks, of which the following is a specification.

The object of this invention is to provide an improved traveling derrick, designed especially for heavy work in erecting buildings, building docks, bridges, piers, sea-walls, &c.

The invention consists of certain improvements in the derrick frame and shoe, and of certain other improved mechanical devices in combination therewith that give strength to the machine and make it more simple in construction and more effective for work, all of which will be hereinafter set forth.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan of the derrick-floor with the planking removed. Fig. 2 is a side elevation of the derrick-floor. Fig. 3 is a front elevation of one of the A-frames in position. Fig. 4 is a side elevation of my improved derrick. Fig. 5 is an enlarged plan of the improved boom-shoe. Fig. 6 is a side elevation of the same. Fig. 7 is a sectional elevation of the same. Fig. 8 is a plan of the under side of the boom-shoe base-plate. Fig. 9 is an enlarged side elevation showing an angle-plate, forked end of brace-rod, and clevis-bolt in position. Fig. 10 is a front elevation of the same. Fig. 11 is a side elevation of a clevis-bolt in position. Fig. 12 is an enlarged view of boom outer end with swinging clevises or stirrups in position.

The floor of the derrick is rectangular, and each sill A A' is composed of two heavy timbers. The side sill-timbers, A, have chucks *a* between them, and are bolted together by bolts *b*, and the end sills, A', are bolted down onto the side sills. Midway between the side sills are the girders B, and laid transversely across the side sills and girders are the floor-beams C, that are firmly bolted down in place by bolts *c*. Diagonal braces D, extending from girders to side sills on both sides, are secured thereto, and planking D', laid over the floor-

beams, complete the derrick-floor. The structure rests on wheels E, secured on axles E', that are journaled in suitable boxes, E², on the under sides of the side sills, A, and these wheels are designed, when the device is in use, to rest on rails, as indicated at E³, Figs. 2 and 4, so that the derrick may be easily moved from one position to another. The vertical fronts or A-frames of the derrick have their lower ends entered into mortises *d* in the innermost timber of each end sill, and are further secured and held in position by strap-bolts *f*, that have their upper ends toed into the timbers F, and are bolted on the outer edges thereof, and have nuts *g* turned on their screw-threaded ends which are extended down through the inner timbers of the end sills, so that on turning up the said nuts *g* the A-frames may be firmly held in place in spite of shrinkage. Each A-frame is composed of two vertical timbers, F, as above stated, a transverse tie-timber, F', whose ends are mortised into and bolted to the timbers F, and of a king-post, F², mortised into the timber F' and projecting up between and above the approaching tops of the timbers F. These parts are firmly bolted together, as indicated in Fig. 3, and each frame is further strengthened by a tie-rod, F⁴, passed through the timbers F, preferably just above the tie F', and held in place by nuts *g'* on its ends. Straps *g*² are secured over the joints between the tie-timbers F' and king-posts F², to further strengthen these A-frames. When in position, the tops of these A-frames are held by a horizontal timber, G, secured thereto by strap-bolts *h*, whose toes are sunk into the timber G, as shown at *h'*, Fig. 4, to give them a better hold, that are bolted to said timber by bolts *h*², and are extended through the king-posts and washers thereon and have nuts on their screw-threaded ends. Corner-braces H, extending diagonally from timber G to the king-posts F² and toed into both timber and posts, as shown, are secured in place by angle-plates and bolts *i i'* at each end, and further brace and strengthen the device. Secured by a clevis-bolt and nuts *q⁴ q⁶* on the inner faces of each A-frame, just beneath the timber G, is an angle-plate, *k*, to the diagonally and downwardly end of which the upper forked ends of two divergent brace-

rods, I, provided with turn-buckles k^2 , are bolted, said forked ends clasping the angle-plate, as shown in Fig. 9. The lower eyed ends of these rods I are secured by bolts k^3 , at 5 points diagonally opposite their respective angle-plates, to the outside of the side sills, A, so that by turning up the turn-buckles k^2 at any time the rods may be drawn taut, to properly brace the structure. A boom-shoe, K, 10 is fixed about centrally on each pair of end sills, as shown. This boom-shoe consists of a heavy iron plate, l , flat on upper face and provided on its under face with quadrangular hub l' and cross-ribs l^2 , and of the shoe proper, 15 m , which is a flat-bottomed heavy cast-iron box open at front and top and having a strong hub or boss, m' , formed as an integral part of it on its back side. The lower rear corner of the box is curved on the inside, as shown at 20 m^2 , Figs. 6 and 7, on a radius from the center of the side bolt-holes, m^3 , of four inches, or thereabout, to fit the correspondingly rounded end of the boom and give it a solid bearing at all times, and to facilitate its vertical move- 25 ments. The shoe is completed by a strong headed bolt, n , preferably of steel, that passes vertically down through the hub m' of the shoe proper, and through a corresponding hole in the plate l , and serves as a pivot for 30 the said shoe proper, m , to turn on. This device is firmly secured in place by entering the hub and ribs l' l^2 , respectively, into corresponding mortises in the end sill-timbers, and the ribs l^3 between the two sill-timbers, and 35 also by bolts and by the insertion of the lower end of the pivot-bolt n in said end sills.

This derrick is designed, preferably, to have two booms and their actuating-tackle; but it may be constructed or used with but one. The 40 lower or butt end of each boom O is rounded off on opposite faces to correspond with the inner curve of the shoe, so that it may move freely in a vertical plane, and is held in the shoe by a transverse bolt, n' . Fixed trans- 45 versely through the outer end of each boom O is a bolt and nut, p , securing thereto two swinging clevises or stirrups, p' p^2 , respectively, in the former of which is hooked the double block of the topping-lift P, and in the 50 latter of which is hooked the upper block of the main fall Q, as shown in Fig. 4.

Through the king-post F^2 of each A-frame are passed two clevis-bolts, q q' , that are held by nuts q^3 in place, with their loops extend- 55 ing beyond the face of said post, and fixed between the bolts q q' is a clevis-bolt, q^4 , whose ends pass through the angle-plate k and are held by nuts q^6 , as before said. Collars q^7 , formed on each leg of the clevis-bolts, prevent their being drawn in too far through the 60 king-posts. The fixed end of the topping-lift P is provided with a ring, r , that is engaged in the loop of the clevis-bolt q . The bight of said lift passes through a block, r' , which is hooked in the loop of the bolt q^4 , and the free 65 end of the lift-rope passes through a block, r^2 , which is hooked in the bolt q' . By giving

these several purchase-points to the topping-lift, and thereby distributing the strain of the work, I secure a more free and easy action of 70 the topping-lift and greater durability to the structure. The free end of the topping-lift is designed to be made fast about the end sill-timbers.

When using but one boom and a single hoist- 75 ing-engine, as shown at R, Fig. 4, the free end of the main fall Q is passed over a sheave, s , adapted to revolve in the mortise s' in the outer end of the boom O, and thence through a block, s^2 , suspended from a tie-beam of an 80 A-frame, and thence beneath and in contact with a sheave, s^3 , fixed between the forward ends of the girders B; thence beneath and about a sheave, s^4 , fixed between the rear ends of the girders B, and thence to the drum of 85 the hoisting-engine R. When both booms and a double engine are used, the suspended block s^2 will be dispensed with, and the free ends of the main falls will be passed directly through 90 snatch-blocks that are made fast to the end sills, as shown at T in the left of Fig. 4, and thence directly to the engine-drums, where they will be made fast, as indicated in dotted lines.

It will be seen that the boom-shoes are so 95 constructed and arranged that the booms can be swung to either side at right angles to the length of the floor, giving them a wide range, and as the loops of the clevis-bolts permit some lateral slipping of the fast end of the topping- 100 lift and of the topping-lift blocks, the swinging of the booms is accomplished with great ease and celerity, and without danger of bringing undue strain upon any part of the mech- 105 anism. The swinging clevises or stirrups p' p^2 also adjust themselves to the direction of pull, and hence are not liable to suffer from undue strain.

Having thus described my invention, I claim as new and desire to secure by Letters Patent— 110

1. A traveling derrick constructed substantially as herein shown and described, consisting of horizontal frame A A' B C D D', 115 wheels and axles E E', A-frames F F' F² F⁴, timber G, corner-braces H, angle-plates k , brace-rods I, boom-shoes K, boom O, swinging clevises p' p^2 , topping-lift P, main fall Q, clevis-bolts q q' q^4 , hoisting-engine R, and suitable sheaves and blocks, all arranged and operated as set forth. 120

2. In a derrick, the combination, with the frame and a boom having its butt rounded off on two opposite faces, of a boom-shoe, K, consisting of a base-plate flat on its upper face, and adapted to be rigidly secured to the der- 125 rick-sills, of a shoe proper or rectangular box open at top and front, and having a curved or rounded seat for the boom-butt, and a vertically-perforated boss on its back, and of a pivoting-pin adapted to be passed down through 130 the shoe-boss and the base-plate to serve as a pivot for the shoe proper, all constructed and arranged substantially as herein set forth.

3. In a derrick, the combination, with a

boom-shoe pivot and base-plate, of a shoe proper provided with side holes for the boom-butt pivot, and constructed with a boom-seat formed in a curve concentric with a line drawn 5 through the pivot-holes, substantially as shown and described.

4. In a derrick, the combination, with a boom-shoe proper, of a base-plate constructed with cross-ribs on its under face, substantially 10 as herein shown and described, whereby the said plate and shoe may be more securely fastened in place, as set forth.

5. The combination, with the derrick-frames A, of forked brace-rods I, provided with turn- 15 buckles and angle-plates k, and their respective fastenings, substantially as and for the purpose described.

6. In a derrick, the combination, with a topping-lift, as P, of clevis-bolts, as q q' q'', sub- 20 stantially as herein shown and described,

whereby more purchase-points and more freedom of motion are given to said lift, as and for the purposes set forth.

7. In a derrick, the combination, with the frame and topping-lift, of clevis-bolts provided 25 with collars, substantially as and for the purpose described.

8. In a derrick, the combination, with the boom, the topping-lift, and main fall, of swinging stirrups or clevises, as p' p'', substantially 30 as and for the purpose described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 28th day of April, 1884.

HENRY CASE.

Witnesses:

JACOB J. STORER,

ALBERT P. MORIARTY.