

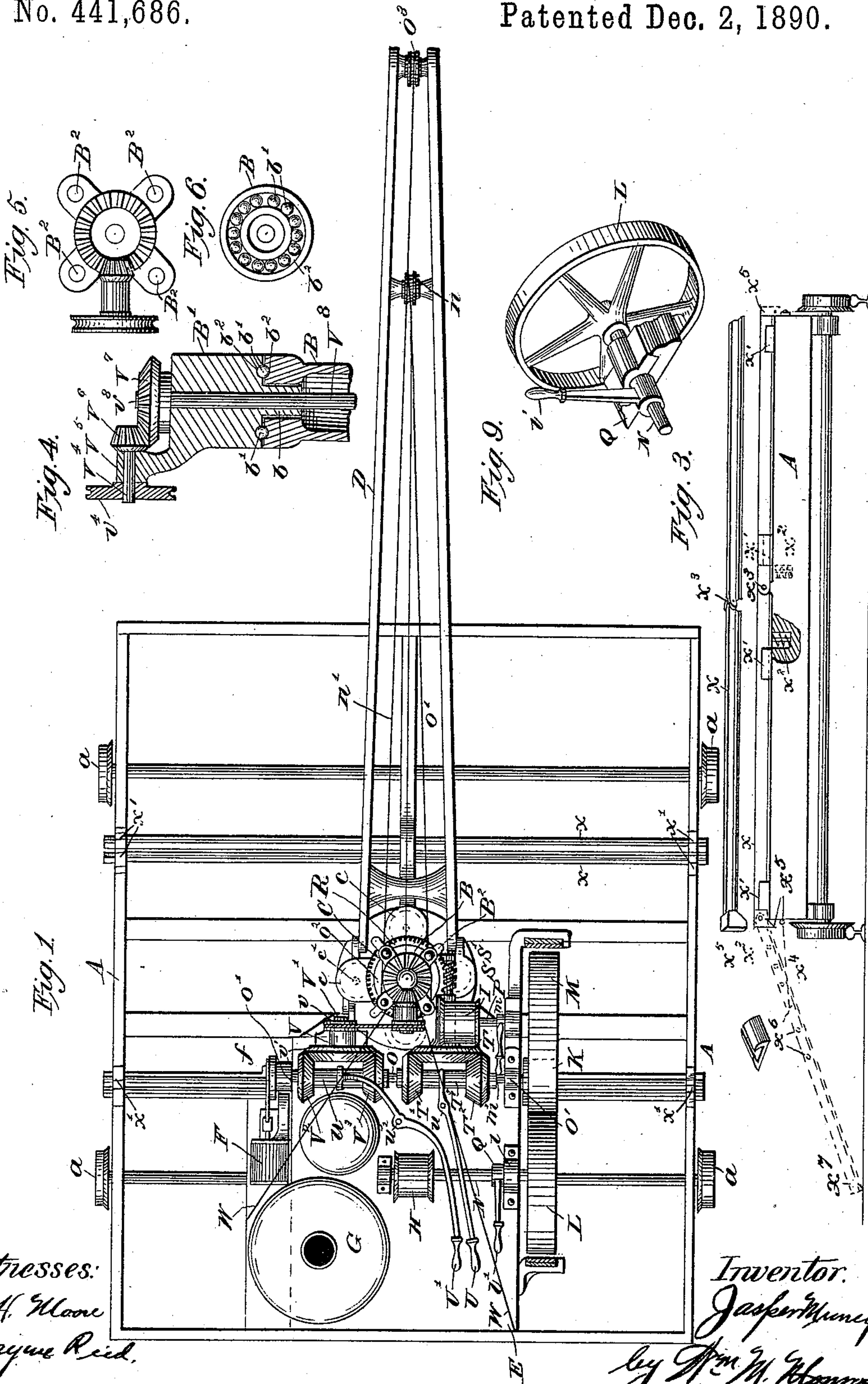
(No Model.)

3 Sheets—Sheet 1.

J. MURREY.
TRAVELING CRANE.

No. 441,686.

Patented Dec. 2, 1890.



Witnesses:
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Mayne Reid.

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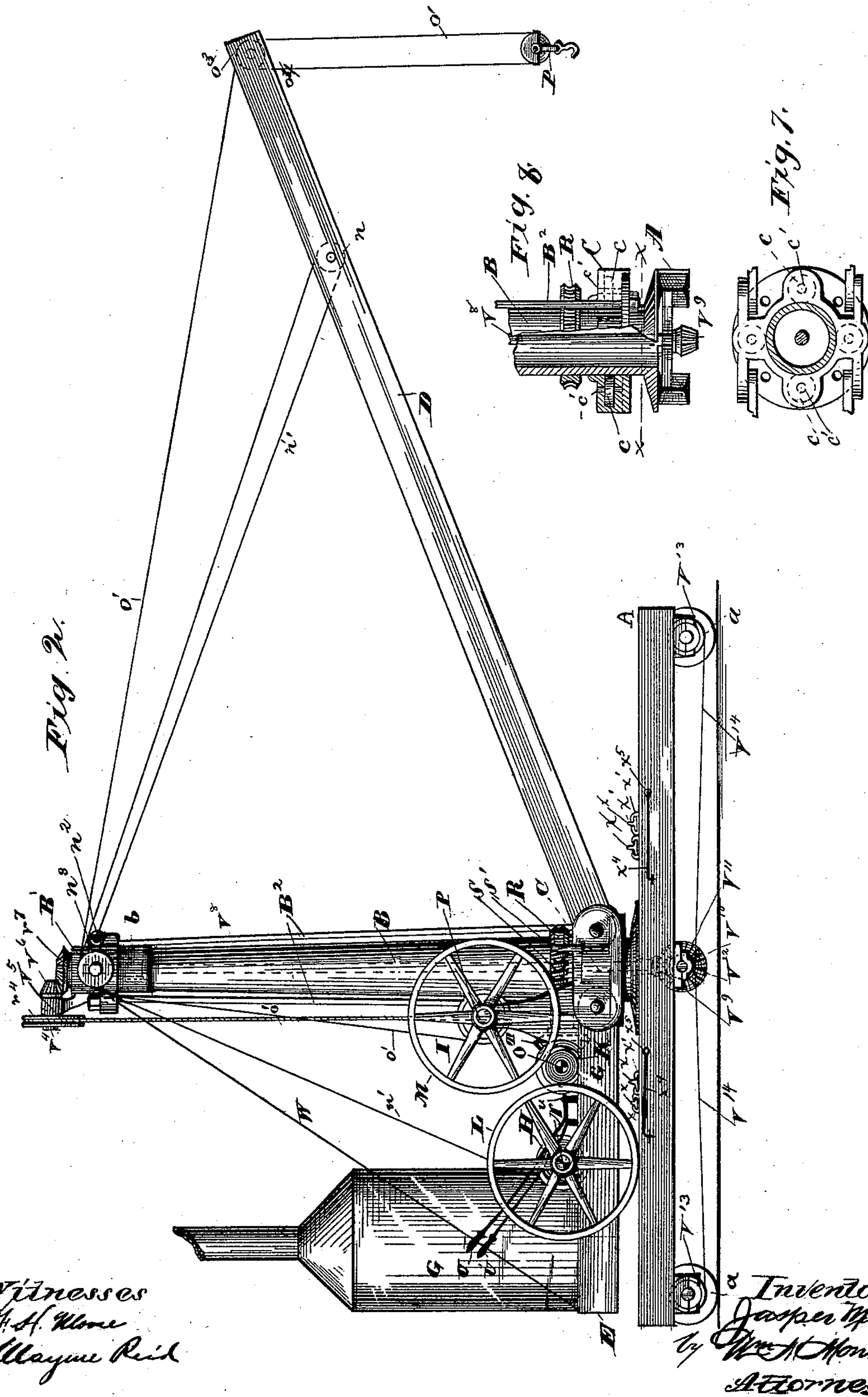
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3 Sheets—Sheet 2.

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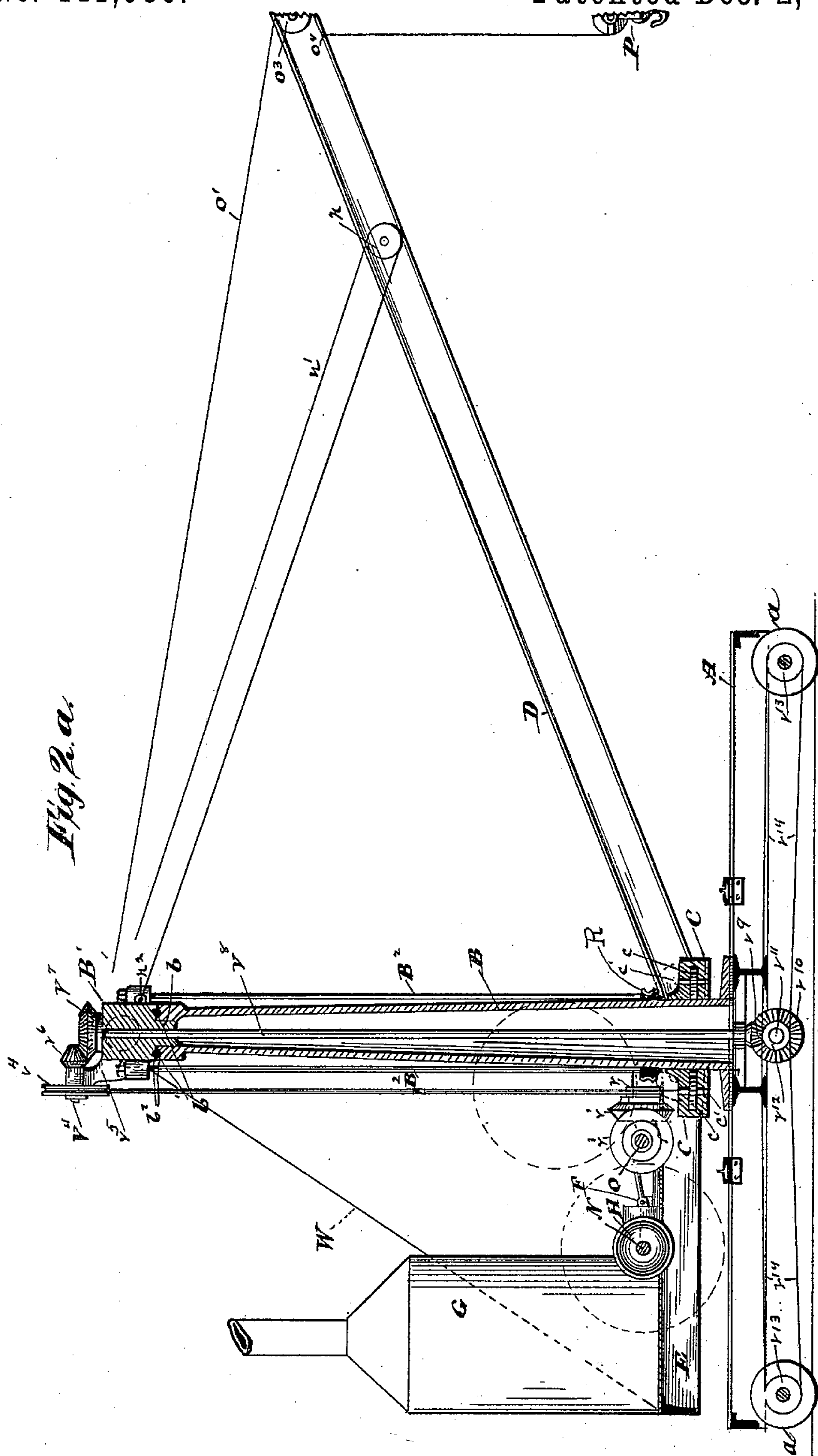
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UNITED STATES PATENT OFFICE.

JASPER MURREY, OF CLEVELAND, OHIO.

TRAVELING CRANE.

SPECIFICATION forming part of Letters Patent No. 441,686, dated December 2, 1890.

Application filed April 3, 1890. Serial No. 346,481. (No model.)

To all whom it may concern:

Be it known that I, JASPER MURREY, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Traveling Cranes; of which I hereby declare the following to be a full, clear, and exact description, 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 traveling cranes; and its objects are to provide a simple, durable, and efficient form of crane which shall require small initial expense in the construction and be self-propelling, and in which all the various functions for hoisting, propelling, &c., can be carried on simultaneously or singly without stopping or reversing the engine.

The objects are also to provide a balanced crane and one having access to all sides of its truck.

My invention consists in utilizing a central vertical post with the adjacent engine-platform and hoisting-jib and the attendant mechanism for hoisting, for propelling the crane, for revolving the load, and also in the combination and arrangement of the various parts, as shown in the accompanying drawings, described in the following specification, and more specifically pointed out in the claims.

In the accompanying drawings, Figure 1 represents a plan view of the complete device. Fig. 2 is a side elevation showing friction driving mechanism. Fig. 2^a is a longitudinal vertical section through central post. Fig. 3 is a front elevation of truck, showing devices for side bracing. Fig. 4 is an enlarged detail of the head of central post in central vertical section, and Fig. 5 the same in plan. Fig. 6 is a plan of the head or post. Fig. 7 is an enlarged cross-section of post on line *x x*, Fig. 8; and Fig. 8 is an enlarged side view of bottom of post, partly in central vertical section. Fig. 9 shows enlarged details of the eccentric for operating the friction-gear.

In the various drawings, A represents a main truck or frame mounted on wheels, as *a*, and supporting centrally a vertical post, as B, securely fastened in place. The post is hollow and squared at the top to receive the head B', which swivels on the wrist *b*, fitted

into the top of the post B. From the head B' depends, by means of the supporting-rods B², the sleeve C, upon which are pivoted the hoisting-jib D and platform E upon opposite sides of the post, and upon the platform are placed the engine F, boiler G, hoisting-drums H and I, with other operating mechanism for raising the load and turning the jib-arm in any required direction, for raising and lowering the jib, and also for propelling the truck on the road, all of which are specifically described as follows:

The boiler G and engine F are preferably located at the outer end of the platform E from the post, so that by their weight they may counteract the weight of the jib and load on the opposite side of the post. The shaft O, connected at one end with the engine-crank *f*, extends across the platform E and is confined by the journal-bearings O' O'. At the end of the engine-shaft opposite the crank is placed the friction-wheel K, preferably of paper, which engages at the pleasure of the operator with either of the friction-wheels L or M on shafts N and P, running parallel with shaft O, and which operate the drums H and I, respectively. One of these drums H operates the pulley *n* on the jib D to raise or lower the same by means of the rope *n'*, passing over the pulley *n*³ on the head of the post and fastened at the other end to the head of the post at *n*². On the other drum I is coiled the rope *o'*, which passes over the pulley *o*² on the head of the mast and over the pulley *o*³ at the end of jib, whence depends the block and hook P, by which the load is lifted, the rope being finally attached to the jib at *o*⁴.

Eccentric-sleeves, as Q, are placed in the bearings *l* and *m* for the friction-wheels L and M, which are thrown into engagement with the roller K by means of the levers *l'* and *m'*. Secured to the central post B, immediately above the sleeve C and surrounding it, is placed the worm-gear R, engaging with the worm S, mounted in the bearing S' on the platform E. The opposite end of the worm-shaft S is provided with the friction-cone T, adapted to engage with one or the other of the friction-cones T' or T², provided with the common hub T³, sleeved onto the shaft O and having longitudinal play on a spline. A lever, as U, pivoted at *u*, is em-

ployed to operate the sleeve, which brings one or the other of the cones T' and T^2 into engagement with the cone T , and serves to reverse the movement of the worm. The effect of the worm movement is to turn the collar C and attached platform and jib in any direction desired. The operator stands in the open space near the boiler, where all parts of the machine are accessible.

In order to facilitate turning the sleeve C and head B' on the post, wheels, as c , are pivoted at c' , so as to bear upon the post, and friction balls or rollers, as b' , are placed in the grooves b^2 , cut in the flat meeting surfaces on the post and head B' , so that both the sleeve C and the head B' , connected together by the rods B^2 , move more easily and in conjunction. Guys, as W , assist to maintain the relative position of the head B' and platform E , secured to the collar C, without change. When it is desired to propel the load on the jib and the car-truck along the road from one locality to another, the mechanism employed is constructed as follows:

A short shaft, as V' , is journaled at V and provided with the pulley-wheel v and the friction-cone v' at each end, respectively. This cone engages alternately, as desired, with the friction-cones V^2 and V^3 , integrally attached to a common hub u , sleeved on the shaft o , and allowed longitudinal movement by a spline. A lever U' , pivoted at u^2 , is used to operate the cones and reverse the movement at pleasure. The pulley v is placed in communication with the chain-gearing under the car, which turns the axles, as follows: Corresponding to the pulley v is a similar pulley v^4 , secured to the shaft V^4 in the journal-bracket V^5 at the head of the post.

A pinion V^6 on the end of the shaft V^4 engages the gear V^7 on vertical shaft v^8 , extending centrally through the post B , and operates gears V^9 and V^{10} under the truck A . On the shaft V^{11} is placed the chain-gear V^{12} , which communicates with both axles and chain-wheels V^{13} by means of connecting-chains V^{14} . This gearing, as shown, is reversible by means of friction-cones V^2 and V^3 .

In Fig. 3 is shown a form of bracing device which is called into use when the arm or jib D is employed to raise a load from the side of a truck, and it is constructed as follows: Beams, as X , are placed transversely across the truck and held down to the truck by straps, as X' . When opened, spring-actuated stop X^2 prevents the beams from being pushed back until desired. Other forms of stops which answer the same purpose may be employed. When wholly extended, the projecting portions of the beams hinge at X^3 upon the inner portion in such a manner as to permit their outer ends to rest upon the ground and give an extended leverage to the truck. A rod and hook, as X^4 , may be attached to the truck, as at X^5 , and holes may be drilled in the beam, as X^6 , in which to insert the hook X^4 and maintain the beam in

position when extended. The outer ends may be pointed, as X^7 , to prevent slipping.

The advantages of the form of crane described are obvious in the general adaptation to all localities where a crane can be employed for any purpose, as wharves, warehouses, for loading vessels, for building purposes, laying iron or stone masonry in locks, &c., where great strength is required, combined with a compact form and portability, for which lightness is essential.

All parts of the frame being built of iron or steel in simple form, it is cheaper than if built of mixed material. The great advantages of the device, however, may be found in the independent manner in which all the functions operate, all movements of the various parts for hoisting the jib, hoisting the load, revolving the load and platform about the post in either direction, and propelling or reversing the movement of the truck being performed independently, and either simultaneously, if desired, or one at a time, and without stopping or in any way altering the speed or direction of the stroke of the engine. For this reason a cheap non-reversible engine may be used, and all connections of working parts will be seen to be taken from the engine-shaft and reversible at will. The engineer's whole time may therefore be disengaged from the engine and put upon the work. The post, being centrally located upon the truck, also receives the whole weight of the load, which largely assists in maintaining the stability of the crane and in balancing the load.

I do not claim the exact shape, size, or proportions of the various parts, nor the materials used in the construction. Such are not of the spirit or scope of the invention.

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

1. In a crane, a main truck, a vertical post supported on the truck, a loose sleeve on the post supporting an engine-platform on one side and a pivoted jib-boom on the other, with mechanism for hoisting and turning the jib and hoisting the load, consisting of the engine and boiler F and G , crank-shaft O , friction-wheels K , L , and M , and auxiliary shafts N and P , with eccentric-sleeves l and m and levers l' and m' , with sleeves T^3 , friction-cones T^2 and T' , and friction-cone T , worm S , and worm-wheel R on the mast B .

2. In a traveling crane, a central post mounted upon a truck, said post being provided with a pivoted head on its upper extremity and loose sleeve around its lower portion depending by rods from the head, an engine-platform and jib attached to the sleeve, and means for propelling the truck, consisting of chain-gearing on the truck-axles communicating with a transverse shaft under the post, a bevel-gear on said shaft engaging with a pinion on the lower extremity of a vertical shaft extending through the post, a bevel-

gear on the upper extremity of the shaft engaging a pinion on a shaft journaled horizontally in a bracket on the head, a pulley on the said horizontal shaft, and a corresponding pulley on a parallel shaft journaled on the engine-platform, which communicates with the main engine-shaft by means of the friction-cone V and sleeved friction-cones V² and V³, with hand-lever U', all substantially as and in the manner set forth.

3. In a traveling crane, a main truck, as A, and side braces for the same, consisting of bars X, jointed, as at X³, and retaining-straps, as X', with stops, as X², and pointed extremities, as X⁵, substantially as described.

4. In a traveling crane, a central post and

main truck, a sleeve on the post, a platform and jib on the sleeve, an engine and main shaft on the platform, means, substantially as described, for propelling the truck, means for swinging the jib about the post, means for raising the jib, and means for raising the load, all said means deriving power from the engine-shaft and reversible at will, such reversibility being independent of the action of the engine, substantially as described, and in the manner set forth.

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