

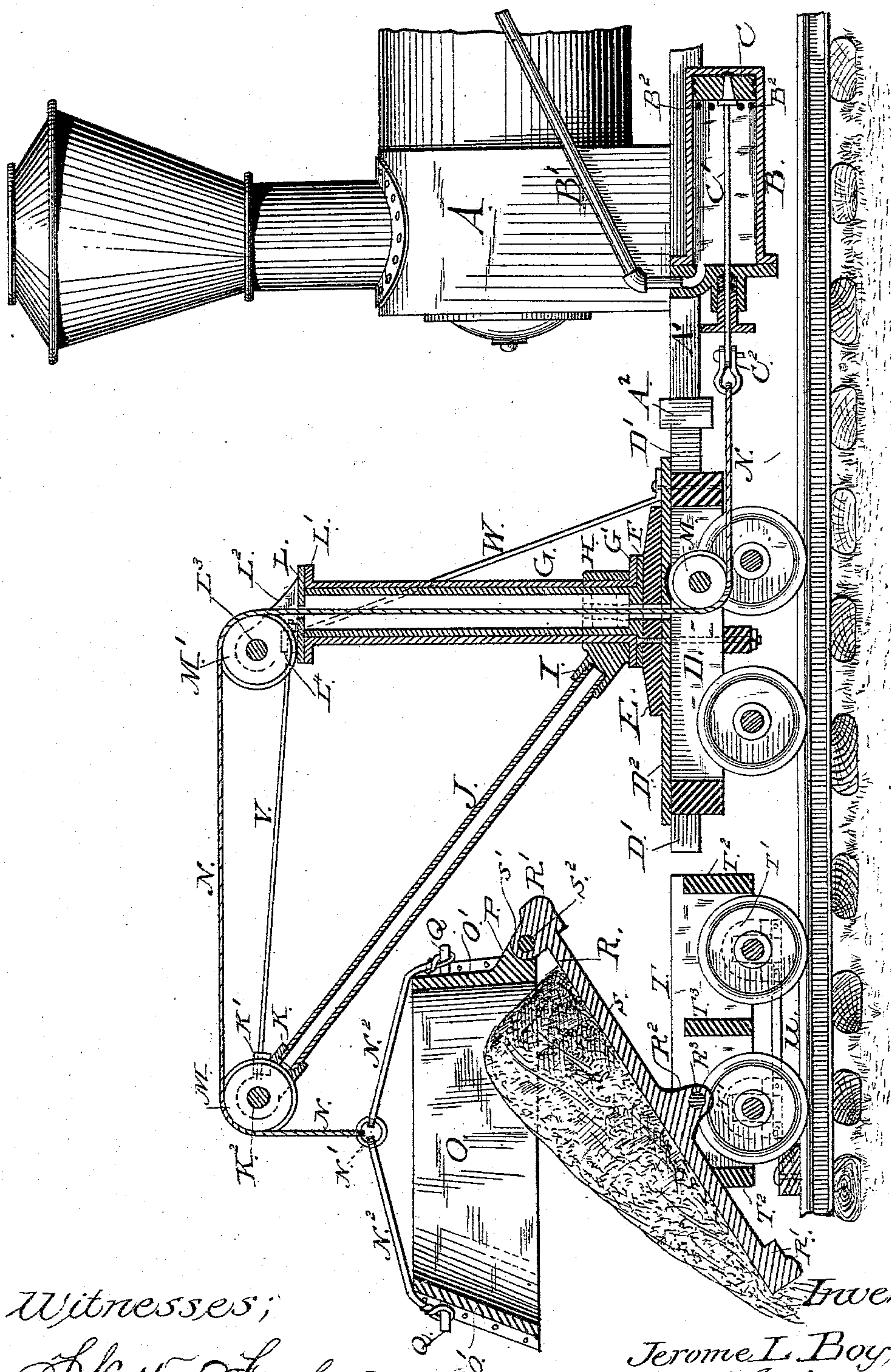
(No Model.)

J. L. BOYER.

HOISTING APPARATUS FOR LOCOMOTIVE AND PORTABLE ENGINES.

No. 280,904.

Patented July 10, 1883.



Witnesses;

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HOISTING APPARATUS FOR LOCOMOTIVE AND PORTABLE ENGINES.

SPECIFICATION forming part of Letters Patent No. 280,904, dated July 10, 1883.

Application filed May 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, JEROME L. BOYER, a citizen of the United States, and a resident of the borough of Columbia, county of Lancaster, State of Pennsylvania, have invented a new and useful Improvement in Hoisting Apparatus for Locomotive and Portable Engines, of which the following is a specification.

This improvement relates more particularly to locomotives employed in moving furnace-cinder from the furnace to the dump, but is applicable for various other purposes, and will be found of great service on wrecking-trains or in connection therewith.

The object of the improvement is to give to the operator in charge of the same the ability, through block and fall, a crane or derrick, or by direct pull upon a rope or chain, to hoist a weight limited only by the area of the cylinder and the pressure of the steam. I attain this desirable result by the adoption of an open-end cylinder conveniently placed, preferably as shown in the accompanying drawing, forming a part of this specification, like letters designating like parts throughout.

The figure represents in elevation the improvement adapted to dumping cinder-cars, in which—

A represents the front or smoke-box end of the locomotive; A', side frames; A², bumpers of same; B, an open-end cylinder; B', supply-pipe leading from the front end of the cylinder up within the cab of the locomotive, where a three-way cock is provided within reach of the engineer, and through which the action of the hoisting apparatus is governed; B², exhaust-apertures in the shell of the cylinder; C, a piston of the usual construction; C', the piston-rod, provided at its outward end with a swivel or hook-coupler; D, the derrick-car; D', bumpers on same; D², floor of car; E, base-plate of derrick; F, stationary post secured to the plate E. It is turned upon its exterior. G, exterior movable post or pipe, provided with a bearing-flange, G', at the base, and a bolting-flange, L', at the top; H, a collar in two parts, bolted by flanges at the base of the post, and having a hub, I, for the reception of the jib. J is the jib, formed of a pipe threaded at the ends, at the lower end fitted in the boss or hub I, and at the top end in the

bifurcated head-piece K, provided with a sheave, M, and with pads K', for the tension-rods, and a sheave-pin, K². The cap L has standards L², pin L³, and sheave M', with a hole central to the cap on plan, for the chain or wire rope to pass through, also hubs L⁴ for the tension-rods, and is bolted to the movable post G. The hoisting rope or chain is shown at N, and ring and slings at N' N². O represents the sides, and O' the ends, of the cinder-truck box; P, ears cast upon the same; Q, trunnions for lifting by; R, center bottom plate; R', bumpers on same; S, outside bottom plates; R², ears on all of the plates on their lower faces, a fulcrum-pin, R³, passing through the same and the sides of the truck; S', ears cast on the upper face of the bottom plates, and matching with the ears P of the box O O'. A pintle, S², common to all the ears, secures the box and floor together. T represents the cinder-truck sides; T', the caps over the axle-bearing boxes; T², ends, and T³ center cross-bars. U represents a bar connecting the pedestals. V are tension-rods, and W temporary stays.

The construction and adaptation of my improvement is a simple matter, easily understood by an expert, the drawing fully explaining its use, which will be varied to suit the circumstances under which such usage is made. For many purposes—such as wrecking, &c.—a short but powerful lift is desirable, and in this case the cylinder would be of large area and comparatively short stroke. In other cases a long stroke and moderate lift would better suit the case. To meet this, a cylinder of moderate size and stroke would have its lift increased in height, but reduced in effect, by a doubling up of the lifting-rope over blocks, similar to the well-known hydraulic lifts. I have shown the cylinder placed at the front of the locomotive and beneath the frame; but it may be placed where desired, as long as the lifting-rope can be drawn without too many bends therein toward the cylinder; and it need not necessarily be placed in a horizontal position. The cylinder does not require a head at its rear end, except for the exclusion of dust. The front head is provided with the usual stuffing-box and gland, bored to fit the piston-rod. The piston may be a plain plug with three or

more small grooves turned therein, the piston just moving freely in the bore of the cylinder, to save space in the front of the piston. I prefer to admit the steam directly through the front of the cylinder-head, to prevent the piston being carried out of the cylinder. I have apertures made in the shell, which will exhaust or discharge the steam from the cylinder should the piston uncover the same, and its further movement would be stopped. The rod may be arranged in various ways at its outboard end for connection with the hoisting-rope. I give preference to a shackle, as shown.

The operation of the apparatus is as follows: The piston being at the forward end of the cylinder, and the rod protruded to the extent of its stroke, the hoisting-tackle is connected therewith, the engineer turns the three-way cock to pass the steam from the boiler to the hoisting-cylinder, and the load is raised and held by the cock being partially throttled. When the load is blocked, the cock is turned to discharge the steam into the air. A counter-balance will then retract the piston, or it will be drawn back by hand, and the rod will again protrude, ready for a repetition of the lift.

To give a practical example of the use of the hoist, I have shown it as applied to a car-derrick and cinder-car, coupled as shown. The cars are run from the furnace to the bank and backed out to the dumping-point. The engineer, without leaving the cab, puts on the steam, as described, the piston is carried to-

ward the rear, the truncated box is raised, and by hinge-connection with the floor raises that also, and when the proper angle has been gained the cinder slips off. The cock is then turned to exhaust the cylinder, and the weight of box and floor brings the piston forward and seats the box upon the truck, ready for refilling and to repeat the operation.

Having shown the application and utility of the invention, I desire to secure by Letters Patent the following claims thereon:

1. In combination with a locomotive or portable engine provided with an independent hoisting-cylinder, as described, a derrick and car, whereby through arrangement thereof with block and fall the lift may be shortened and the lifting-power of the cylinder thereby increased, and vice versa, substantially as and for the purpose set forth.

2. In an independent hoisting-cylinder, as described, a series of apertures circumferentially placed at the limiting-point of the piston's movement, rearward from the front head, whereby the piston is held in abeyance without risk of further progression, the action of said cylinder-piston being controlled by the manipulation of a three-way cock, as and for the purpose specified.

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