

J. L. PENNOCK.

Cranes.

No. 145,234.

Patented Dec. 2, 1873.

FIG. 1.

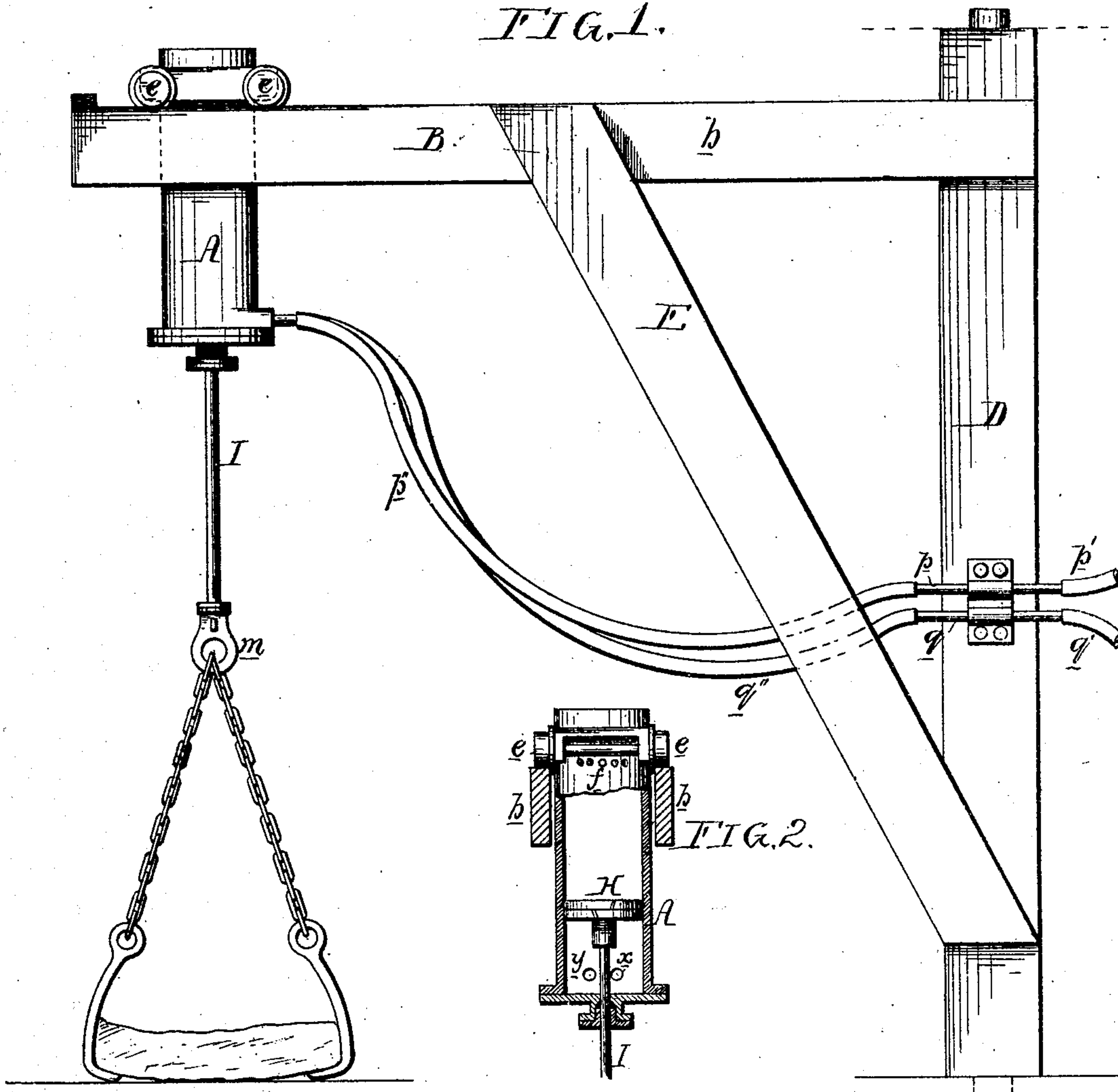


FIG. 2.

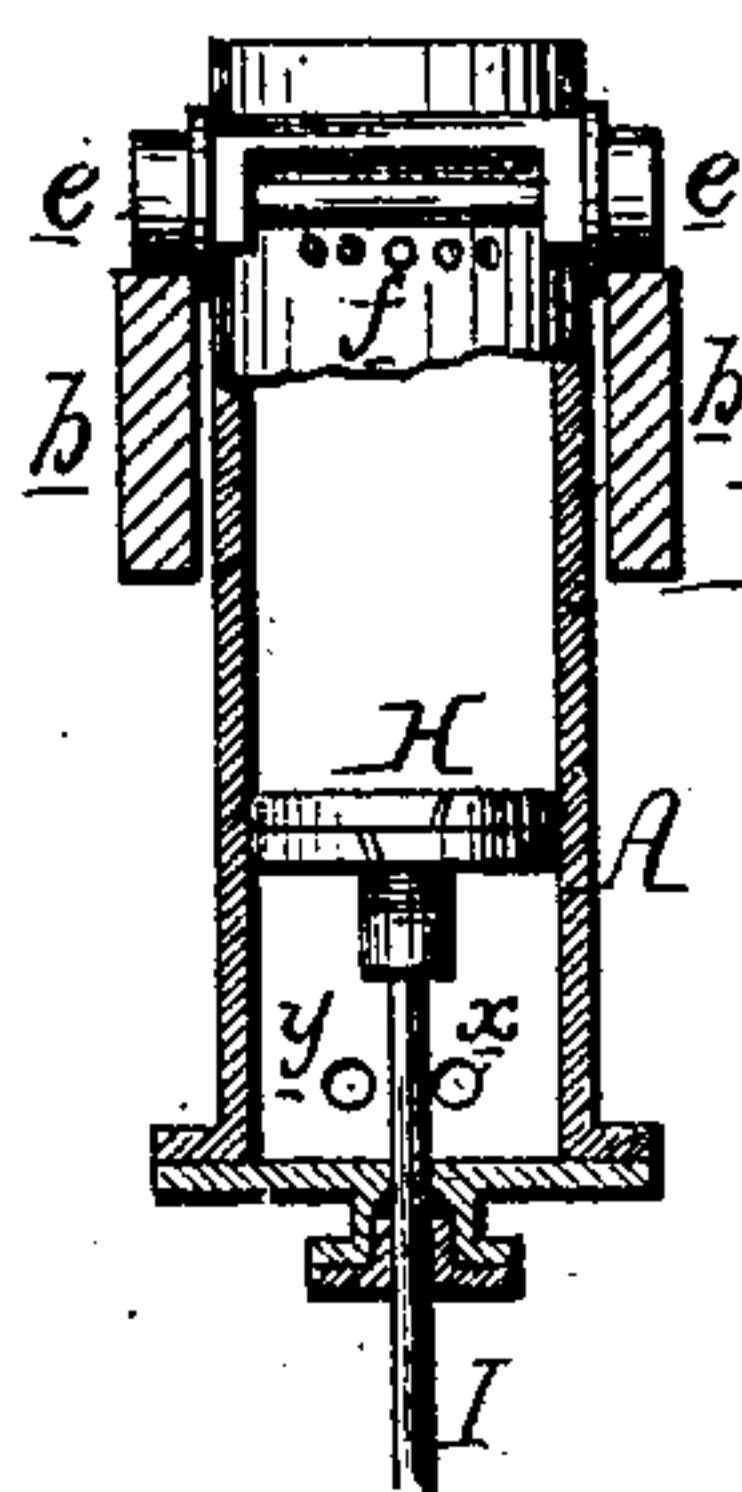
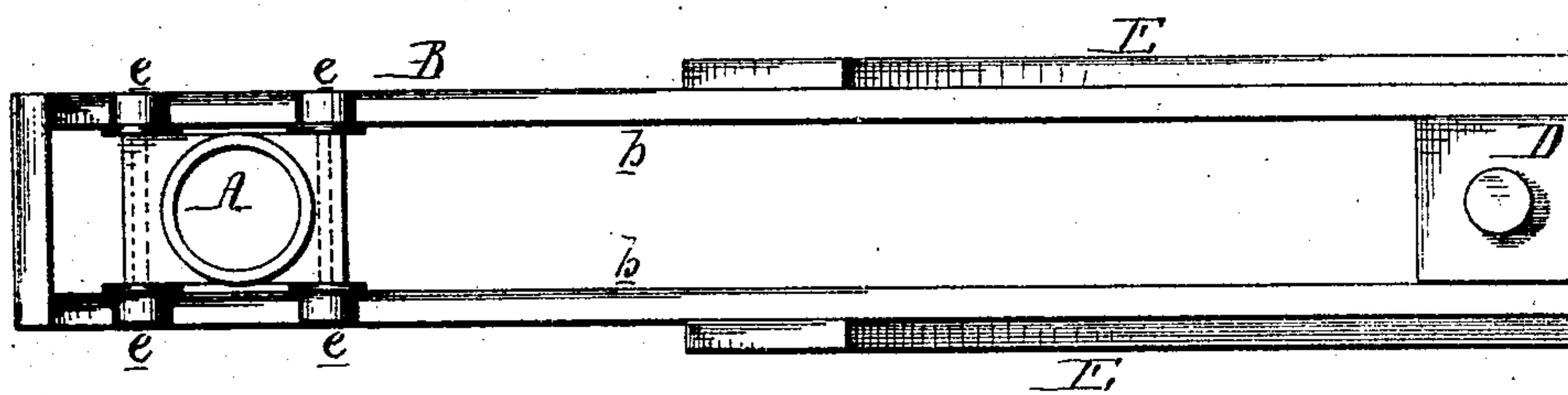


FIG. 3.



Witnesses, Hubert Howson,
Harry Smith

J. L. Pennock
by his Attys.
Howson and Son.

UNITED STATES PATENT OFFICE.

JOSEPH L. PENNOCK, OF COATESVILLE, PENNSYLVANIA.

IMPROVEMENT IN CRANES.

Specification forming part of Letters Patent No. 145,234, dated December 2, 1873; application filed October 15, 1873.

To all whom it may concern:

Be it known that I, JOSEPH L. PENNOCK, of Coatesville, Chester county, Pennsylvania, have invented an Improvement in Cranes, of which the following is a specification:

The object of my invention is to economize time and labor in raising and lowering and moving from place to place heavy articles by the direct application of steam or compressed air to a piston in a cylinder, A, which can be moved to and fro on the jib B of a pivoted crane, as shown in the side view, Fig. 1, and sectional view, Fig. 2, of the accompanying drawing. The crane may be constructed in the same manner as an ordinary foundry-crane, the jib consisting of two horizontal beams, *b b*, Fig. 3, secured to the post D, and braced to the latter by diagonal stays E. On the top of the beams are suitable rails adapted to rollers *e e* on shafts which pass through and turn in projections on the cylinder A, so that the latter can be traversed to and fro on the beams *b b* by the aid of any suitable appliances, such, for instance, as those which are used in connection with the traversing-carriages of ordinary cranes. The cylinder is provided with a piston, H, the rod I of which passes through a stuffing-box on the cylinder-cover, and is furnished at its lower end with an eye, *m*, to which the hoisting-tackle is attached.

Two short pipes, *p* and *q*, are secured to the post of the crane, the pipe *p* communicating, through a tube, *p'*, with the steam-space of a boiler, or with a compressed-air reservoir, and the tube *q* communicating, through another flexible tube, *q'*, with an exhaust-pipe directed to any point where it will be convenient to discharge the exhaust steam or air. The pipe *p* also communicates, through a flexible tube, *p''*, with the inlet-opening *x* of the cylinder A, and the pipe *q*, through a similar flexible tube, *q''*, with the exhaust-opening *y* of the said cylinder. The flexible communications between the fixed pipes *p* and *q* and the cylinder permit the latter to be traversed to and fro on the jib of the crane, while the flexible communications *p'* and *q'* permit the crane to be turned in any direction on its pivot. Both inlet and exhaust pipes are furnished with suitable cocks or valves situated at any point where they can

be most conveniently manipulated by an attendant.

I have used the above-described crane in my rolling-mill with the most satisfactory results, the raising and lowering of heavy boiler-plates, and the loading of the same on cars, &c., being accomplished, by the help of two or three men, with much greater facility than the same duty was formerly performed by twelve men and an ordinary crane.

The piston of the cylinder is under the most perfect control, and can, by the manipulation of the cocks, be raised or lowered rapidly or slowly, as circumstances may require. For instance, after the piston has been lowered, and the tackle at the lower end of its rod has been connected to the object to be elevated, steam or compressed air is admitted through the pipe *p* and *p''* to the cylinder beneath the piston, and the latter will be elevated with a rapidity depending on the pressure of steam or air, the weight of the load, and the freedom with which the steam or air is permitted to escape through the exhaust-pipe. If the latter be entirely closed the ascent of the piston will be rapid, and the more the exhaust-passage is opened the slower will be the ascent of the piston. I generally leave the exhaust-passage partially open at all times, so that the water of condensation may be drained from the cylinder, the ascent and descent of the piston and its load being regulated by the introduction of more or less live steam or compressed air into the cylinder, but, if the pressure of steam or air be low, I manipulate the cocks of both pipes. Should the hoisting-tackle break, the piston would have a tendency to rise and cause much damage by escaping from the cylinder; but this tendency is obviated by the perforations *f* near the top of the cylinder, which will permit the free escape of the steam or air before the piston can pass from the cylinder.

It is not essential in carrying out my invention that the pipes should be disposed of in the precise manner illustrated and described. Flexible pipes, for instance, might be conveyed along the roof of the building containing the crane in such a manner as to permit the latter to be turned in any direction, and the cylinder to be traversed to and fro; but I prefer the ar-

rangement described, as I have found it most convenient in practice.

If desired, the traversing-cylinder may be adapted to the horizontal beams of a traveling-crane; but my invention is most applicable to pivoted cranes, which are used for loading and unloading heavy objects, and in which the extent of lift is limited.

I claim as my invention—

A cylinder, A, having wheels or rollers adapted to ways on the jib or beams of a crane, and having a piston and piston-rod constructed for direct attachment to the weight to be hoisted,

in combination with pipes so arranged as to admit steam or compressed air to and exhaust it from the cylinder without interfering with the free movement of the latter or with that of the crane, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOS. L. PENNOCK.

Witnesses:

J. GANNAN,

WILL. H. KOONS.