

H. E. TOWLE.

Hoisting and Lowering Apparatus.

No. 101,681.

Patented April 5, 1870.

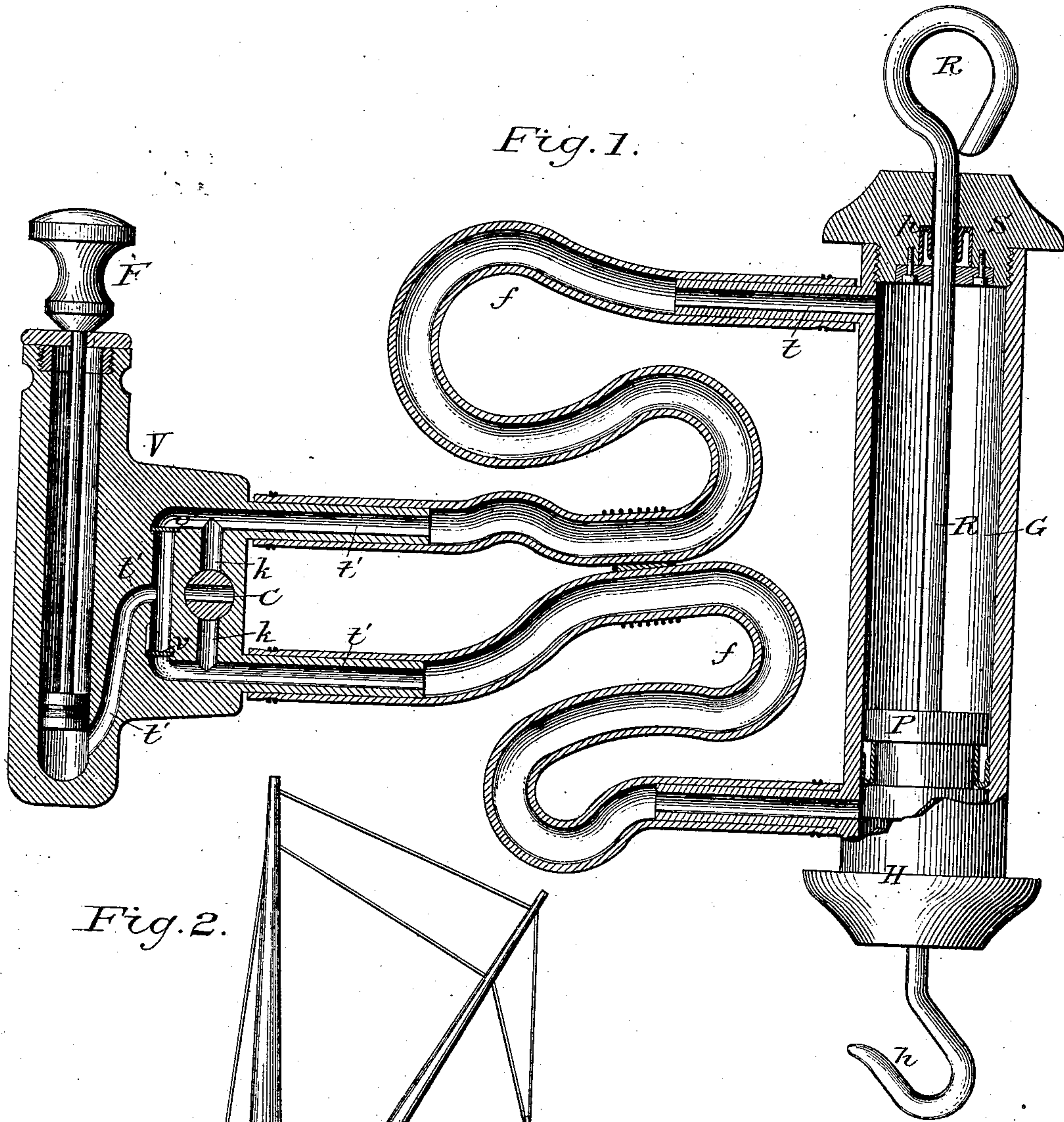
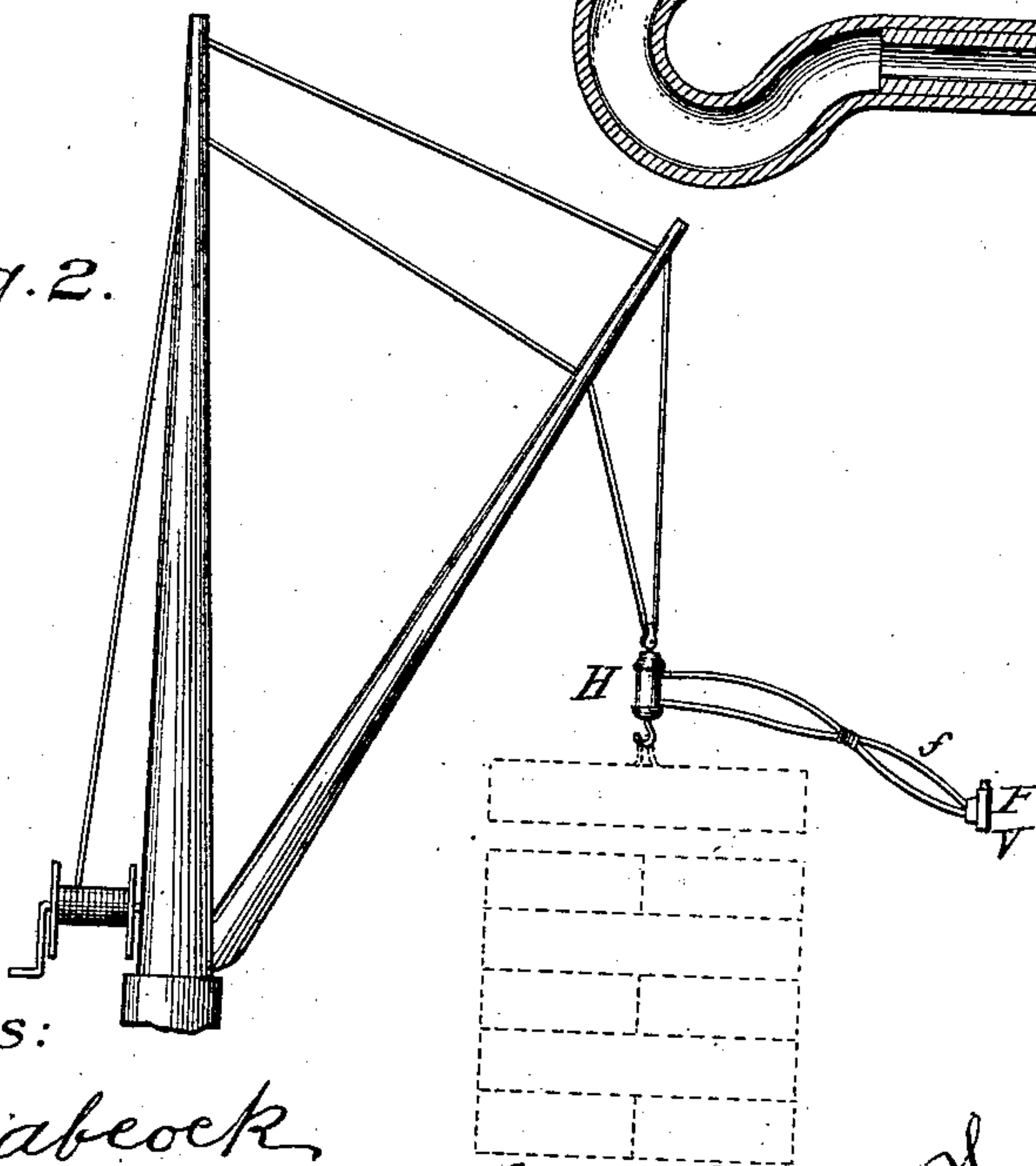


Fig. 2.



Witnesses:

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HAMILTON E. TOWLE, OF NEW YORK, N. Y.

IMPROVEMENT IN HOISTING AND LOWERING APPARATUS.

Specification forming part of Letters Patent No. 101,681, dated April 5, 1870.

To all whom it may concern:

Be it known that I, HAMILTON E. TOWLE, civil engineer, of the city of New York, have invented certain Improvements in Hoisting and Lowering Apparatus, of which the following is a specification.

In handling heavy building materials—such as blocks of stone, iron, &c.—and also in setting and placing machinery, bridge-beams, girders, &c., by the means of derricks and tackle, consisting of blocks and pulleys or any of the usual appliances by which the heavy materials are raised and lowered, the greatest difficulty and delay are often experienced in the final operation of “setting” the same upon its proper bed or foundation. This arises from the fact that no way has yet come into practical use by which the builder or foreman in charge of the operation and immediately supervising the same can personally and with his own hands accomplish the instantaneous lowering of the load; but, on the contrary, he must, when he is ready to raise or lower, give his orders to others at the cranks of the derrick, or at the point where the power is applied to the derrick or principal hoisting-machine, and in so doing sufficient time is often lost or elapses before his orders are fulfilled to allow the load to swing out of the proper line, and in consequence it is lowered upon the wrong spot. This requires raising again, often accomplished with great difficulty and delay, and in many cases chipping and breaking away the carefully-cut and costly corners and edges, which afterward have to be recut or replaced by new material at considerable expense.

The object of my invention is to overcome the above-described difficulty and enable the one person in charge of the operation to have entire and perfect control of the ultimate lowering or raising, and to be able to accomplish it directly by his own personal manipulation of the valve or levers of my auxiliary apparatus, which is especially adapted to derricks, cranes, &c., which he can hold in his hands while near his work, and, by manipulating the same in an easy way, check and graduate the rapidity of the lowering at will, notwithstanding the pendent load may weigh many tons; and also he can, without having to change his position, reverse the motion and raise the load a convenient distance independent of the prin-

cipal hoisting or derrick power by which the original hoisting of the load was accomplished.

In the accompanying drawings, Figure 1 is a vertical section of the auxiliary apparatus. Fig. 2 shows its practical application in settling large stone ashler with a derrick.

H is a hydraulic cylinder, closed at the lower end, and provided with a piston, P, piston-rod K', working through a cap, S, provided with a packing-box, p, closing the upper end of the hydraulic cylinder. Passages *t t* at either end of the cylinder serve for connecting the valve and force-pump piece V by means of suitable pipes, *f f*, which are, for convenience, made flexible, and are lashed together at different points along their length.

F is the handle of the syringe-formed force-pump, which, if preferred, may be operated by a lever, and *v* and *v'* are respectively the inlet and outlet valves of the pump in the passage-way leading to and through the flexible pipe to the upper and lower ends of the cylinder.

The passage-ways *t t* to the tubes from the force-pump have a cross-cut passage-way, *k k*, connecting the same, and this cross-cut is provided with a simple or ordinary rotary two-way cock, C, by means of which this passage may be opened throughout or closed. In place of this cross-cut passage and cock, the same result may be attained by any device which will raise both valves at the same time. The flexible tubes should be of several feet in length, according to the size of the load to be moved, and may be formed into one double tubular rope properly bifurcated at the ends for attachment to the tubes *t t* and *t t*.

The projecting end of the piston-rod R and the lower or opposite end of the hydraulic cylinder H are provided with rings or hooks R and *h*, for attaching the apparatus to the hoisting-tackle supporting the load above, and to the load itself below, the hydraulic cylinder and its piston and rod forming a connecting-link between the two. I previously charge the hydraulic cylinder and force-pump passages of the machine with water or other suitable fluid, for which purpose I especially wish to designate a mixture of glycerine with a small percentage of ordinary lubricating-oil, which mixture I prefer for its general lubricating properties, non-liability to congeal, and general economy for use in hydraulic cylin-

ders and their pumps. The piston-rod being first shoved into the cylinder and the spaces and passages being filled with liquid, and the cross-cut passage being cut off by the cock C, the apparatus is ready for use, as follows: Suspend the cylinder by the ring R to the running-tackle of a derrick, for example, as drawn in Fig. 2, and on the hook *h* hang the load. Now use the derrick in the ordinary manner till the load is within a short distance—say a few inches—of where it is to be deposited, which operation requires no great precision or skill, and may be performed by ordinary laborers at the cranks of the derrick. The chief operator now takes in his hands the valve-piece V, and by gently turning the cock C graduates the velocity of lowering of the load to a quick or slow motion as he permits the compressed fluid in one end of the cylinder to change its place and pass through to the other side of the piston through the tubes and stop-cock, which change will be caused by the pressure in the cylinder from the pendant load. During the process the valve *v'* will remain closed by back pressure of the fluid from the action of the weight.

In order to lift the load whenever the pis-

ton is drawn out, it is only necessary to close the cross-cut passage by turning the cock C and working the force-pump in V by means of the handle F, which will contract the distance between R and *h*, and thus raise the load within the limits of the scope of this auxiliary hoisting and lowering apparatus.

I claim as my invention and desire to secure by Letters Patent—

1. The hydraulic cylinder and its piston and the passages leading from the ends of said cylinder, in combination with tubes or conduits extending from such passages, and communicating with each other through cock C, substantially as described, said parts being arranged for use in connection with a hoisting-machine, as shown and set forth.

2. The combination and arrangement of the hydraulic cylinder and piston, passages *t t*, cock C, flexible pipes *f f*, and force-pump V, adapted to be used substantially as and for the purposes specified.

January 3, 1870.

HAMILTON E. TOWLE.

Witnesses:

H. H. DUNCKLEE,
E. H. FRAME.