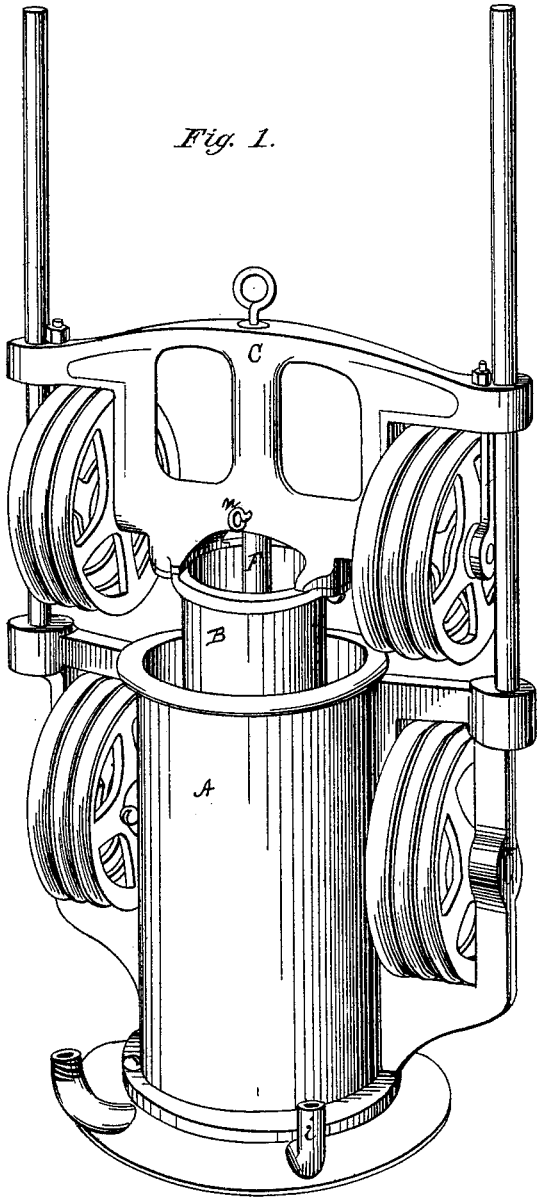
2 Sheets—Sheet 1.

T. STEBINS.

HYDRAULIC ELEVATOR.

No. 181,113. Patented Aug. 15, 1876.

Fig. 1.



Witnesses:

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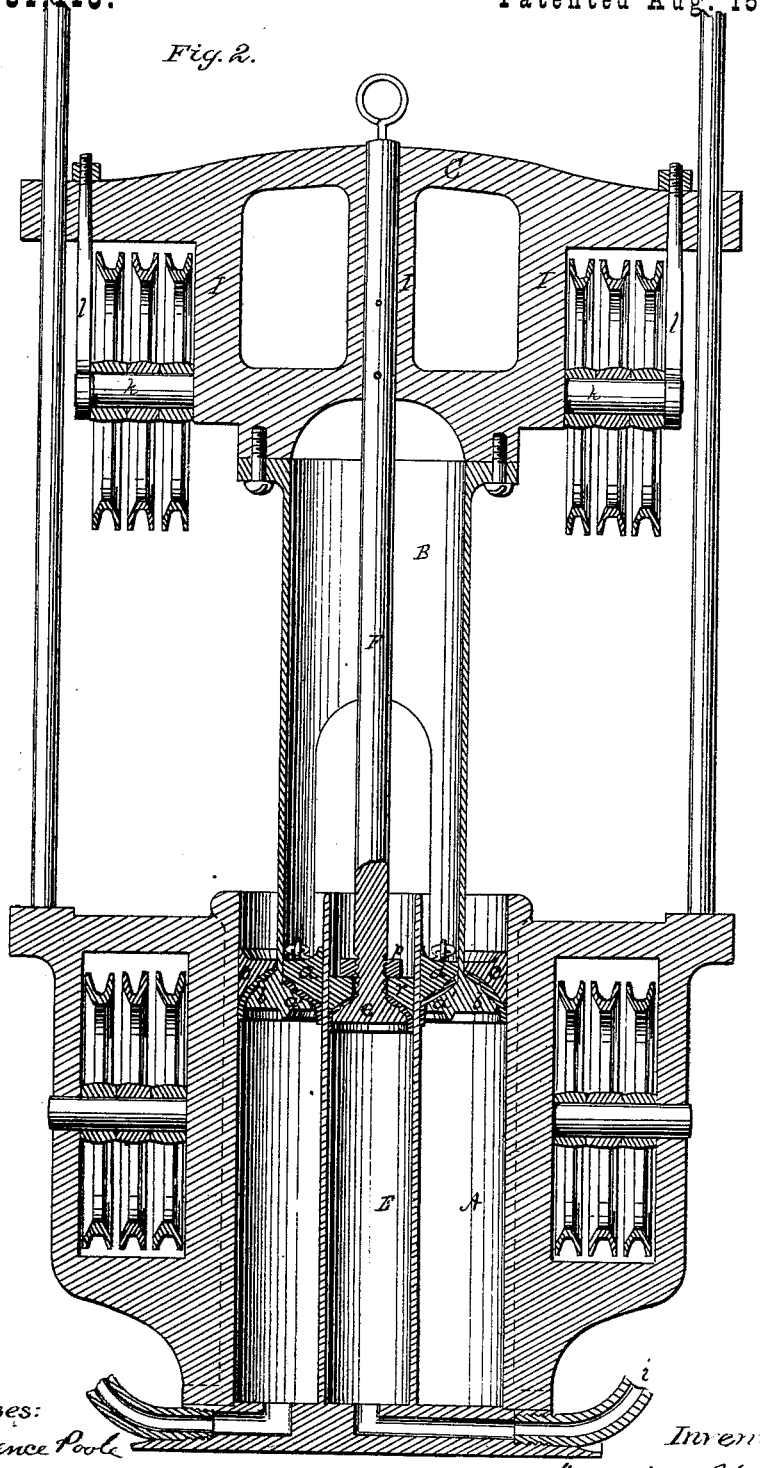
2 Sheets—Sheet 2.

T. STEBINS.

HYDRAULIC ELEVATOR.

No. 181,113. Patented Aug. 15, 1876

Fig. 2.



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UNITED STATES PATENT OFFICE.

TIMOTHY STEBINS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN HYDRAULIC ELEVATORS.

Specification forming part of Letters Patent No. **181,113**, dated August 15, 1876; application filed March 2, 1876.

To all whom it may concern:

Be it known that I, TIMOTHY STEBINS, of Boston, Massachusetts, have invented certain Improvements in Hydraulic Elevators, of which the following is a clear, full, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of an elevator with my improvements attached. Fig. 2 represents a vertical section of same.

My invention relates to that class of hydraulic elevators used in buildings, and is an improvement on my patent dated February 1, 1876, No. 172,896; and it consists, first, in overcoming the friction by, and making the main or tank counterbalance, the car; secondly, in the peculiar construction of the parts for securing the packing; and, thirdly, in the construction of the cross-head.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the drawings, B is a hollow piston, working between the cylinders A and E, and attached to the cross-head C. Within the cylinder E is the piston *e*, attached by the rod F to the cross-head C, as shown in Fig. 2. The opening *i* leads from the main or tank into the cylinder E and beneath the piston *e*, so that when the cross-head rises with the piston *e* the cylinder E fills with water directly from the main or tank, and operates as a power to overcome friction and aid in raising the car; but when the car is again lowered, the water in cylinder E is forced back into the main or tank, and serves to steady the car in its descent, and acts as a counter-balance for car and plunger, which is perfectly safe and reliable.

It is evident, by thus using and forcing back the water into the main, I utilize a large and important power free of cost, as there results no waste or consumption of the water in cylinder E.

I do not confine myself to the exact devices shown for thus utilizing the water in the main as a counter-balance, as the same result can be reached by a variety of arrangement of parts, which would readily suggest themselves to any skilled mechanic.

In elevators heretofore constructed, if the car, in its descent, met with any obstruction, or should be accidentally caught upon packages left carelessly in its track, the elevator, being suddenly relieved of its counter-balance, would continue to operate and unwind the hoisting-ropes. This difficulty is perfectly overcome by utilizing the water in the main or tank as a counter-balance, for that remains at all times and under all circumstances in position, and the pistons are arrested in their descent the moment the car is arrested in its track, thus avoiding all possibility of accident.

In Fig. 2 is shown my new devices for securing the packing. The ring or cap *c* is constructed to fit loosely over the lower flange *b* of the hollow piston B, to which it is secured by screws or any other convenient means. The packing-ring, of rubber or other suitable material, being placed on the flange *b*, the ring or cap *c* is moved down upon it, and secured in position.

It is evident that the packing can be readily adjusted by one man, as it is all arranged from the outside of the cylinder, and the only part of the machine to be handled is the ring or cap *c*.

The outer packing of the hollow piston B having been adjusted, it becomes necessary to adjust the packing on the inner side, or between the piston and the hollow cylinder E. To do this, the inner ring *a* is raised from its seat upon the inner flange *a'* of the piston, and a rubber or other suitable packing is placed upon the flange *a'*, when the ring *a* is returned to its position or seat, and secured by screws or other convenient means.

The piston-rod F, to which is attached the piston *e*, passes vertically through the cross-head C, to which it is secured by a bolt, *n*, passing through the cross-head horizontally. When the bolt *n* is withdrawn the piston-rod F can be raised, and the piston *e* elevated above the cylinder E.

To arrange and secure the packing on the piston *e*, it is only necessary to raise the piston, run up the screw-nut *p* on the rod F, lift the cap *r* from its seat, place the packing on

the piston, return the cap to its place, and screw down the nut. The piston is then in working order, and the rod F is again secured in position by the bolt *n*.

The cross-head C is provided with the pendent arms I I I, supporting the journals *k k*, as shown in Fig. 2. The object of this peculiar construction is to avoid a liability to spring on the part of the journals on account of the great strain to which they are subjected. The outer ends of these journals are sustained by the eyebolts *l l*, attached by screws and nuts to the cross-head, as shown in Fig. 2.

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

1. The method of counterbalancing the car and plunger of a hydraulic elevator by means of the water in the main or tank acting directly on the plunger, and without the intervention of valves, substantially as and for the purpose set forth.

2. The method herein described for utilizing the water of a main as an auxiliary power in raising, without waste or consumption, consisting of connecting pipes without the intervention of valves, substantially as set forth.

3. The hollow piston B, provided with the beveled flanges *a'* and *b*, in combination with the rings *a* and *c*, substantially as and for the purpose set forth.

4. The piston *e*, in combination with the beveled cap *r* and screw-nut *p*, substantially as and for the purpose set forth.

5. The cross-head C, provided with the pendent arms I I I, supporting the journals *k k*, in combination with the eyebolts *l l*, substantially as and for the purpose set forth.

TIMOTHY STEBINS.

Witnesses:
PHIL. W. HALE,
WILL H. MOXON.