J. A. GROSHON.

Elevator.

No. 220,138. Patented Sept. 30, 1879.

Fig. 1.

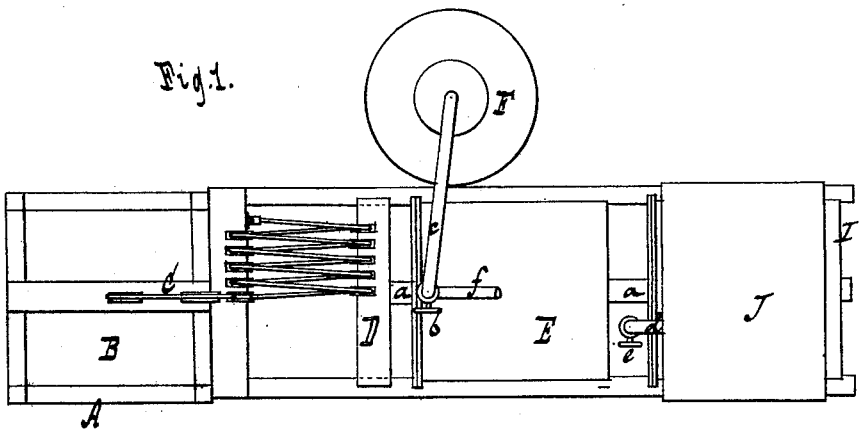
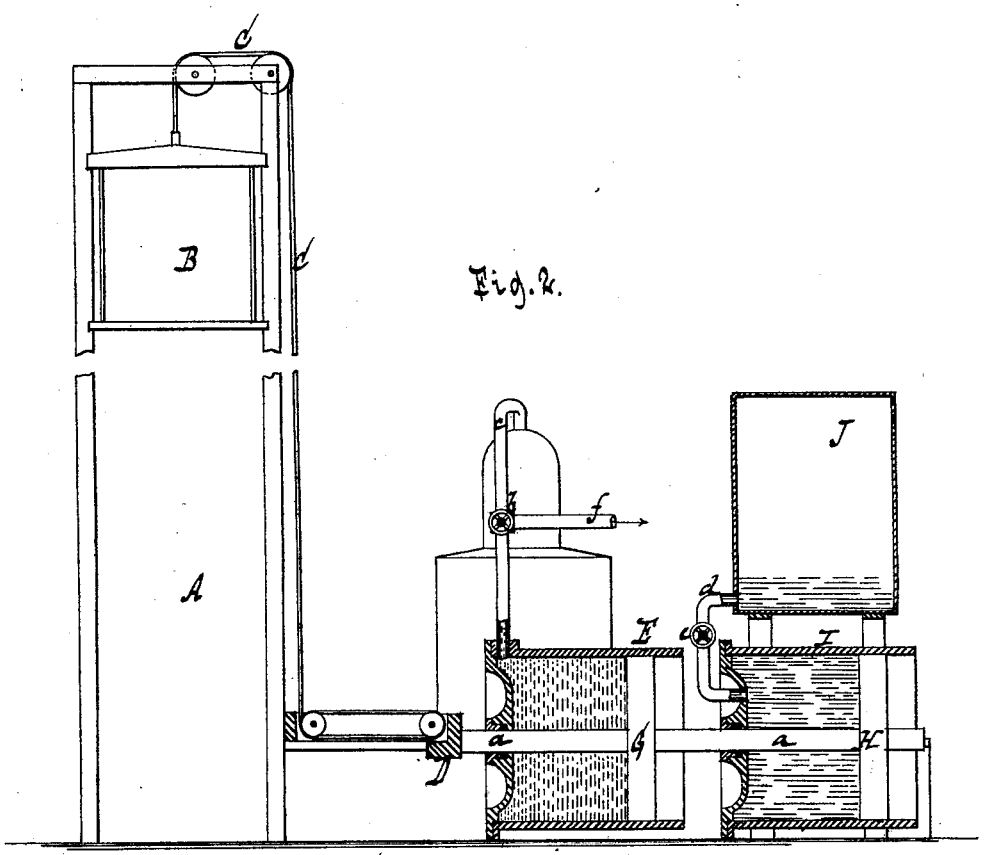


Fig. 2.



Witnesses.
Otto Kupfer
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UNITED STATES PATENT OFFICE.

JOHN A. GROSHON, OF NEW YORK, N. Y.

IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. **220,138**, dated September 30, 1879; application filed August 20, 1879.

To all whom it may concern:

Be it known that I, JOHN A. GROSHON, of the city, county, and State of New York, have invented a new and useful Improvement in Elevators, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view. Fig. 2 is a vertical central section.

Similar letters indicate corresponding parts.

This invention relates to an improvement in elevators; and consists in the combination of a steam-piston sliding in a steam-cylinder, a secondary piston sliding in a water-cylinder and operated by the steam-piston, and a water-cylinder containing a body of water, which is acted on by said secondary piston, and so arranged that when the elevator has been raised it is held in position by the action of such water, as will be hereinafter set forth; also, in the combination, in an elevator, of a steam-piston, a steam-cylinder in which such piston slides, secondary piston operated by the steam-piston, a water-cylinder in which said secondary piston slides, and a water-tank communicating with the water-cylinder, and so arranged that when the elevator has been raised it is held in position by the action of the water, as will be hereinafter more fully described; also, an elevator, constructed substantially as described, and provided with a device for multiplying the motion transmitted from the piston to the elevator, as will be hereinafter described.

In the drawings, the letter A designates the elevator-shaft, and B is the car or platform, which depends from a rope or chain, C. This rope or chain passes over several series of pulleys, one series of which is fastened to an arm, D, which arm is attached to the piston-rod *a* of the steam-piston G, which steam-piston slides in the steam-cylinder E.

F is the steam-boiler, and when the valve *b* is opened the steam flows through the tube *c*, and presses on the steam-piston G in the cylinder E, thus raising the elevator B. When the elevator has been raised and the valve *b* is closed, the steam in the cylinder E would be liable to condense, thus leaving the elevator sink down again.

In order to overcome this difficulty I have provided the following arrangement: The piston-rod *a*, which passes out through the rear end of the cylinder E, imparts motion to a secondary piston, H, sliding in a water-cylinder, I. With this water-cylinder communicates a water-tank, J, and when the piston H slides back the water or other suitable fluid flows through the tube *d* into the cylinder I. The valve *e* is connected with the valve *d* in such a manner that when the valve *b* is opened to allow the steam to flow from the boiler into the cylinder E the valve *e* allows the water to flow from the tank into the cylinder I. Both valves are operated by the conductor in the elevator, as is usual in such machines. When the elevator has been raised the valves *b* and *e* are closed, and the body of water in the cylinder I, pressing against the piston H, holds the elevator in position, even should the steam in the cylinder E condense or partially escape. When the elevator is to descend the valve *b*, which is a three-way valve, is turned so as to allow the steam to flow through the exhaust *f*, and the valve *e* is at the same time again opened, and the elevator descends by its weight, the water flowing back into the tank J.

Of course I can modify my machine in various ways. Thus I can attach the rope or chain C to a piston which slides in a water-cylinder, and by connecting this water-cylinder with the cylinder I, I can cause the water to be forced onto the piston to which the rope or chain C is fastened, and by thus pressing it down the elevator will be raised. To hold the elevator in position the cylinder in which the piston actuating the rope C slides is closed by a valve, and the body of water pressing on said piston holds the elevator in position.

By making the diameter of the cylinder in which the piston actuating the chain C slides smaller than the diameter of the water-cylinder, the action transmitted from the secondary piston to the piston actuating the chain C is multiplied to any desired extent.

If the elevator has to rise to a great height, and the steam-cylinder E is only of limited

length, the multiplying device, which consists of the series of pulleys at the lower part of the elevator and the pulleys on the arm D over which the chain C passes, has to be so arranged as to accomplish the desired object.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in an elevator, of a steam-piston, G, steam-cylinder E, secondary piston H, water-cylinder I, in which such piston slides, and a water-tank, J, communicating with the water-cylinder, all constructed and adapted to operate substantially as described.

2. The combination, in an elevator, of a steam-piston sliding in a steam-cylinder, a secondary piston sliding in a water-cylinder and operated by the steam-piston, and a water-cylinder containing a body of water, which is acted on by said secondary piston, and so arranged that when the elevator has been raised it is held in position by the action of such water, substantially as described.

3. The combination, in an elevator, of a steam-piston, G, steam-cylinder E, secondary piston H, water-cylinder I, in which such piston slides, an elevator which receives motion from said pistons, and a device for multiplying the motion transmitted from the pistons to the elevator, all constructed and adapted to operate substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 19th day of August, 1879.

JOHN A. GROSHON. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.