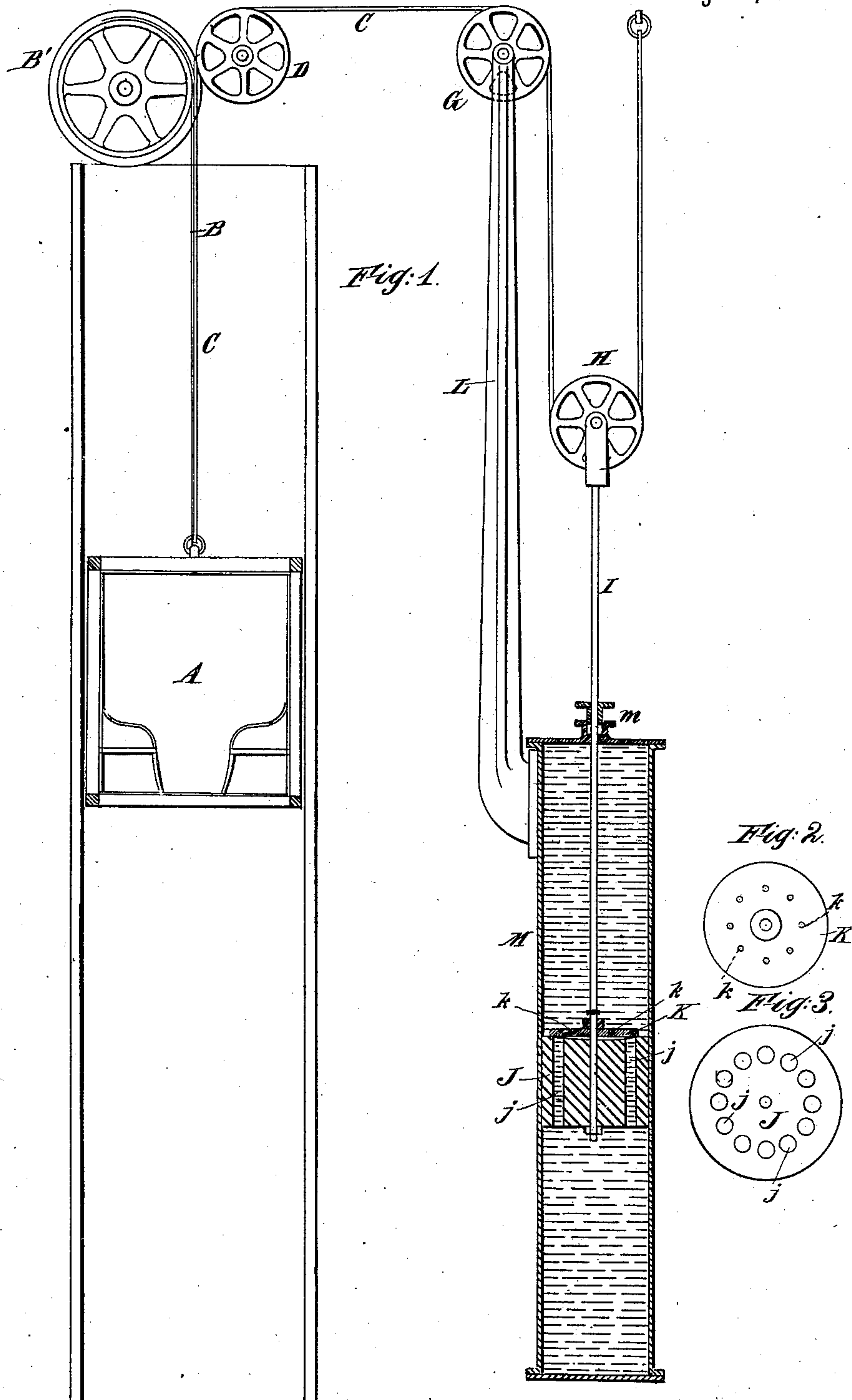


(No Model.)

W. J. M. DOBSON.
ELEVATOR.

No. 298,187.

Patented May 6, 1884.



Witnesses
M. F. Boyle
W. C. Day

Inventor
William J. M. Dobson.
His attorney
J. S. Selmon.

UNITED STATES PATENT OFFICE.

WILLIAM J. M. DOBSON, OF NEW YORK, N. Y.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 298,187, dated May 6, 1884.

Application filed August 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. M. DOBSON, of New York city, in the county and State of New York, have invented certain new and
5 useful Improvements in Passenger and Freight
Elevators and Analogous Hoisting and Lowering Apparatus, of which the following is a specification.

My device contributes to the safety of the
10 elevator. The same parts may serve also as a counter-balance. I provide an approximately close-fitting piston of such weight as to serve as an efficient counter-balance for the car and its load. This is fitted to run in a vertical
15 case or cylinder filled with fluid and having a smoothly-finished interior, and is provided with liberal apertures controlled by a self-acting valve, the valve having contracted aper-
20 tures. The periphery of the valve fits tightly upon the piston, but under the valve is a sufficient space to allow the fluid to flow freely through the contracted apertures in the valve to the apertures through the piston. This
25 piston is attached to the car by a wire rope or other suitable connection passing over a pulley or series of pulleys, so that the piston descends when the car rises, and rises when the car sinks. The proper movements of the ele-
30 vator made at moderate speeds are allowed by the easy flow of the fluid through the aper-
tures in both directions. In case of any excess in the rapidity of the elevation of the car the valve will rise and allow the piston to descend as rapidly as the occasion may require;
35 but in any case of extra rapid descent of the car the valve will fit closely down upon the piston at its periphery, allowing the fluid to pass only through the small apertures in the valve. These apertures should be carefully
40 formed, of so small capacity that the fluid cannot flow through them sufficiently fast to allow the car to descend with dangerous velocity. In case of breakage of the hoisting-rope, so that the weight of the car is entirely on the
45 rope connecting it to the piston, the piston finds a sufficient resistance in the fluid to entirely support the weight of the car and allow it to descend only with such rapidity as is due to the slow passage of the fluid through the
50 contracted apertures in the valve. In the most complete form of the invention compound

pulleys are interposed between the piston and the car, so arranged that the motion of the piston is reduced.

The accompanying drawings form a part of
55 this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation of the mechanism. It shows the novel parts with so much
60 of the ordinary parts as is necessary to indicate their relation thereto. Fig. 2 is a top view of the valve, and Fig. 3 a top view of the piston. Both these latter figures are on a somewhat larger scale than Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the car, which may be adapted for passengers or freight. It may be guided in any
70 suitable ways and equipped with any ordinary or suitable safety devices additional to mine.

B is the ordinary hoisting-rope carried over a large pulley, B', operated by hoisting mechanism, (not represented,) which may be of any
75 ordinary or suitable character.

C is a wire rope or other rope of sufficient strength and flexibility. It is led over a pulley, D, turning on a fixed center, and also through compound pulleys G H. The lower-
80 most pulley, H, is connected by a piston-rod, I, to a piston, J, which latter is provided with several liberal openings, *j*, is hollowed on the top, as shown, and carries a self-acting valve, K, which opens upward, and is provided with
85 small apertures *k*. The piston J fits in a cylinder, M, filled with fluid, equipped at the top with a tight-fitting stuffing-box, *m*. The uppermost compound pulley, G, is supported in a strong framing, L, which connects the
90 pivot of the pulley G with the cylinder M, and is adapted to resist a strong compressive strain.

In the ordinary working of the elevator mechanism my piston J rises and sinks in its cylinder M without serious resistance from the
95 fluid, which latter may be water, but is preferably oil or dilute glycerine, to avoid possible difficulty from frost if the building is allowed to remain unwarmed for any period in cold weather. The fluid offers some resist-
100 ance to the motion of the piston J in either direction; but when the car is rising and the

piston descending the valve K will rise and allow the piston to sink with but little resistance. When, however, in consequence of any derangement or breakage of the hoisting mechanism, the car A commences to descend much faster than the proper rate, the piston J forbids any excess of motion, the valve K closes tightly, and the fluid in the cylinder M resists the motion, except as it is allowed by the slow passage of the fluid through the small holes in the valve K. So soon as the mechanism is again adjusted, my improvement allows the ordinary working of the device to be resumed without requiring any attention. The compound pulleys G H may contain any number of sheaves desired, with a corresponding increase of the purchase or mechanical advantage.

Modifications may be made. The pulley H may be dispensed with; or a simple ordinary pulley with one shaft may be substituted for the compound pulley G; but such modification requires a very long cylinder M, to allow the great range of motion required for the piston J. I prefer the compound pulleys shown, enlarging the diameter of the piston J and increasing its thickness to provide a suitable weight. The piston J should be of sufficient thickness and weight to serve the ordinary functions of a counter-balance.

Further modifications may be made in the forms and proportions. What I have termed the "cylinder" M may be a case of rectangular or any other desired section, the piston being of corresponding section.

Instead of a cylinder filled with fluid, an airtight cylinder may be employed without fluid, the air serving instead of fluid, in which case the apertures *j* in the piston and the apertures in the valve K should be made smaller and the seat of the valve K lined with rubber or with other suitable substance, to prevent the escape of the air around the sides of the valve.

I claim as my invention—

1. The piston J, having liberal apertures *j*, and valve K, having apertures *k*, of less capacity, the valve fitting closely to the piston by its periphery, and having an open chamber under it communicating between the apertures *j* and *k*, in combination with the piston-rod I, rope C, and a suitable pulley or pulleys arranged for joint operation, as herein specified.

2. In a device for elevators, the compound pulleys G H and rigid brace L, in combination with each other and with the elevating-car A, ropes B and C, cylinder M, piston J *j*, and valve K *k*, arranged for giving operation as herein specified.

In testimony whereof I have hereunto set my hand, at New York city, New York, this 7th day of August, 1883, in the presence of two subscribing witnesses.

W. J. M. DOBSON.

Witnesses:

M. F. BOYLE,
CHARLES R. SEARLE.