(No Model.)

P. HINKLE.

ELEVATOR.

No. 267,204. Patented Nov. 7, 1882.

Fig. 1.

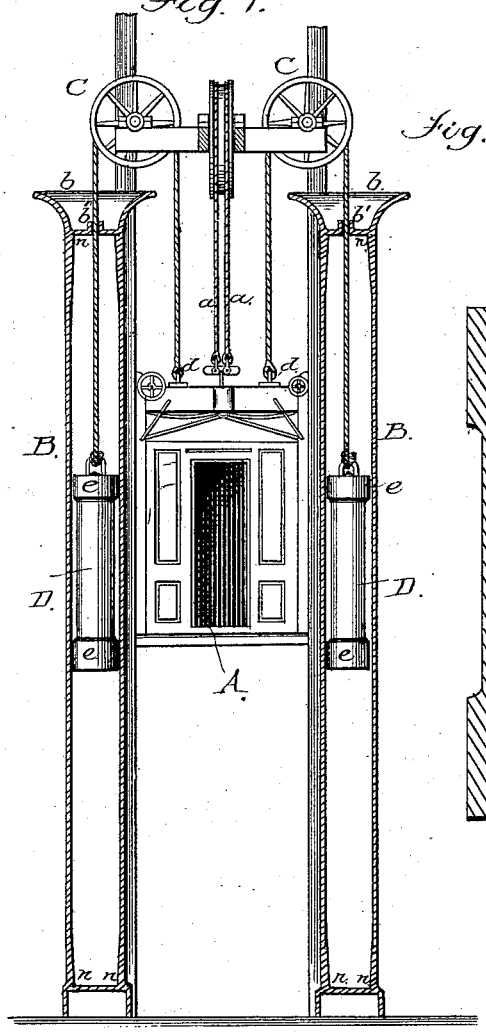


Fig. 2.

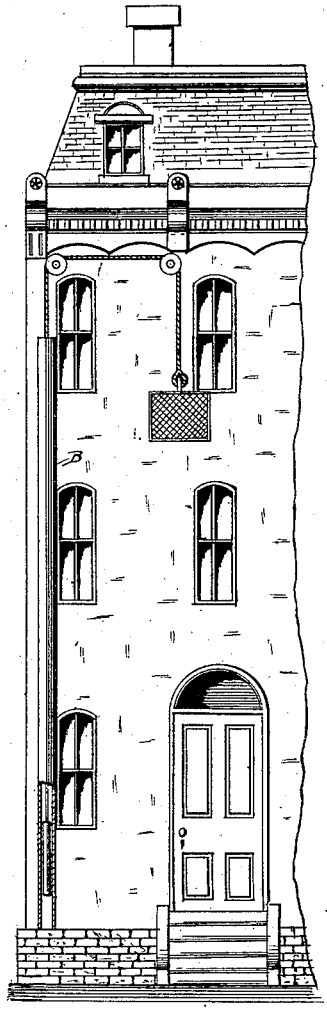
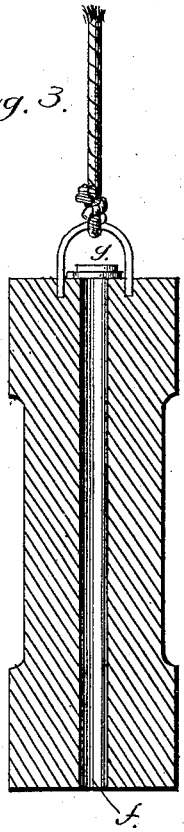


Fig. 3.



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UNITED STATES PATENT OFFICE.

PHILIP HINKLE, OF SAN FRANCISCO, CALIFORNIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 267,204, dated November 7, 1882.

Application filed October 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, PHILIP HINKLE, of the city and county of San Francisco, and State of California, have invented certain Improvements in Elevators; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view in elevation, illustrating my improvements, the counterpoise-tubes being in section. Fig. 2 shows my improvement applied to the exterior of a building, when it may be used in lifting light loads or be used as a fire-escape. Fig. 3 is a vertical sectional enlarged view of the counterpoise or weight.

The object of my invention is to prevent danger in elevators arising from the cage being detached from the hoisting device, be the said hoisting device a rope or cable or a hydraulic ram; and my invention consists in combining with an elevator-cage and proper cables and pulleys a tube or tubes in which move weights of a less cross-sectional area than the tubes, through a medium more dense than air contained within the said tubes.

My invention further consists in certain details of construction, as hereinafter fully described and claimed.

In order that those skilled in the art may make and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is an elevator-cage, shown, for purposes of illustration, as hoisted by the cables or ropes *a a*. Alongside of the well I place one or more tubes, B B, having flaring or funnel-shaped tops *b b* and stuffing-boxes *b' b'*. Cables having one end attached to the cage at *d* pass up over sheaves C C in the frame-work, and thence down through stuffing-boxes *b' b'* into tubes B B, and the ends secured by proper means to weights D D, so that as the cage moves down the weights are drawn up, and vice versa. The weights D are cast with heads *e* of a diameter slightly less than the tubes in which they move. This variation of diameters may be more or less in accordance with rapidity required in the travel of the cage, for the reason that tubes B B are kept constantly filled with oil or water or some medium more dense than air, and as the weights D D travel through the said medium of course they can only travel just as fast as the oil or water can pass between the weight and the tube. In order to facilitate the descent of the weights when the car or cage is being hoisted, and yet retard its rapid descent in case of breakage, I cast the weights D D with a central longitudinal opening, *f*, through them, and place on top of the weight a trap-valve, *g*, which tightly closes the opening when the weight is passing up and the cage is descending, but which opens freely as the weight descends, as the load is being hoisted, and allows more speed in the hoisting. The cables or other means for suspending the weights would unavoidably, when passing up through the stuffing-boxes, carry out a quantity, more or less, of the oil or other liquid in the tubes. The funnel-shaped ends or tops *b b* catch and retain this withdrawn oil or water, and it is carried back into the tubes when the movement of the suspension-cable is reversed.

When the elevator is of the hydraulic-ram variety the operation and application of my invention should simply be reversed, as the enormous weight used in such elevators is calculated to crush the cage against the upper frame-timbers if the cage or car gets loose from the lifting-ram.

It will be obvious that within the limit of safety a great variety of variations may be had as to the rapidity of the travel of the car and the amount of direct effect had on the car by the weights.

In some instances, where only heavy loads are to be lowered, no other devices will be necessary than the tube or tubes B and the contained weights, because the weight or weights may be made so heavy as to carry up the cage with a light load or an attendant, and when at an elevation the cage may be loaded to a full load, but it can only descend just so fast and with perfect safety to the load. This safety is enhanced by a liquid cushion I form at each end of the tubes by slightly contracting their inner diameters, as at *n n*, so that the weight at each end of the travel is checked by a yielding elastic resistance.

A modification of my invention seen in Fig. 2 shows its adaptation to a cheap elevator and

fire-escape. The tube is placed on the exterior or other convenient point of the building and the tube filled with liquid. The weight is so proportioned as to raise the light cage with a boy or other attendant, and any desired latch or catch may be used to check the cage and hold it at any window or other point. As long as the sheaves and cable will hold, the cage may be loaded and descend safely.

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

1. An elevator-cage in combination with a counterpoise-weight moving in a tube containing a liquid, for the purpose specified.

2. The counterpoise for an elevator-cage, provided with a longitudinal opening or openings closed by a valve when the counterpoise is moved in one direction and opened when it is moved in the other.

3. The tube in combination with a counterpoise having the heads *e e*.

4. The counterpoise-tube B, in combination with the funnel-shaped top A′, for the purpose specified.

5. The counterpoise-tube B, having its interior diameter contracted at *n n* near its ends, substantially as set forth.

6. The counterpoise D, in combination with the tube containing a liquid, a cage, and a connecting-rope, all constructed, arranged, and operated as set forth.

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