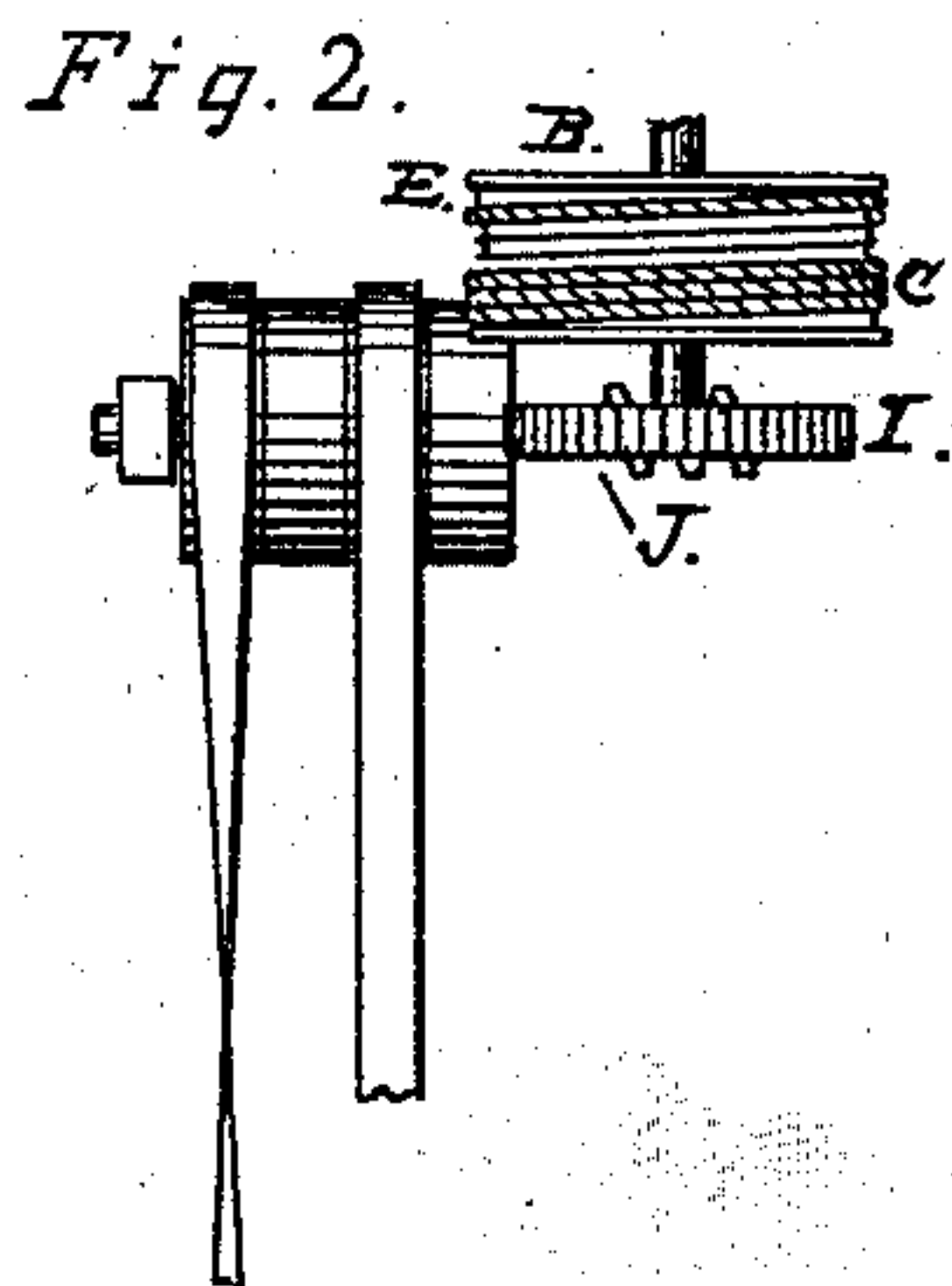
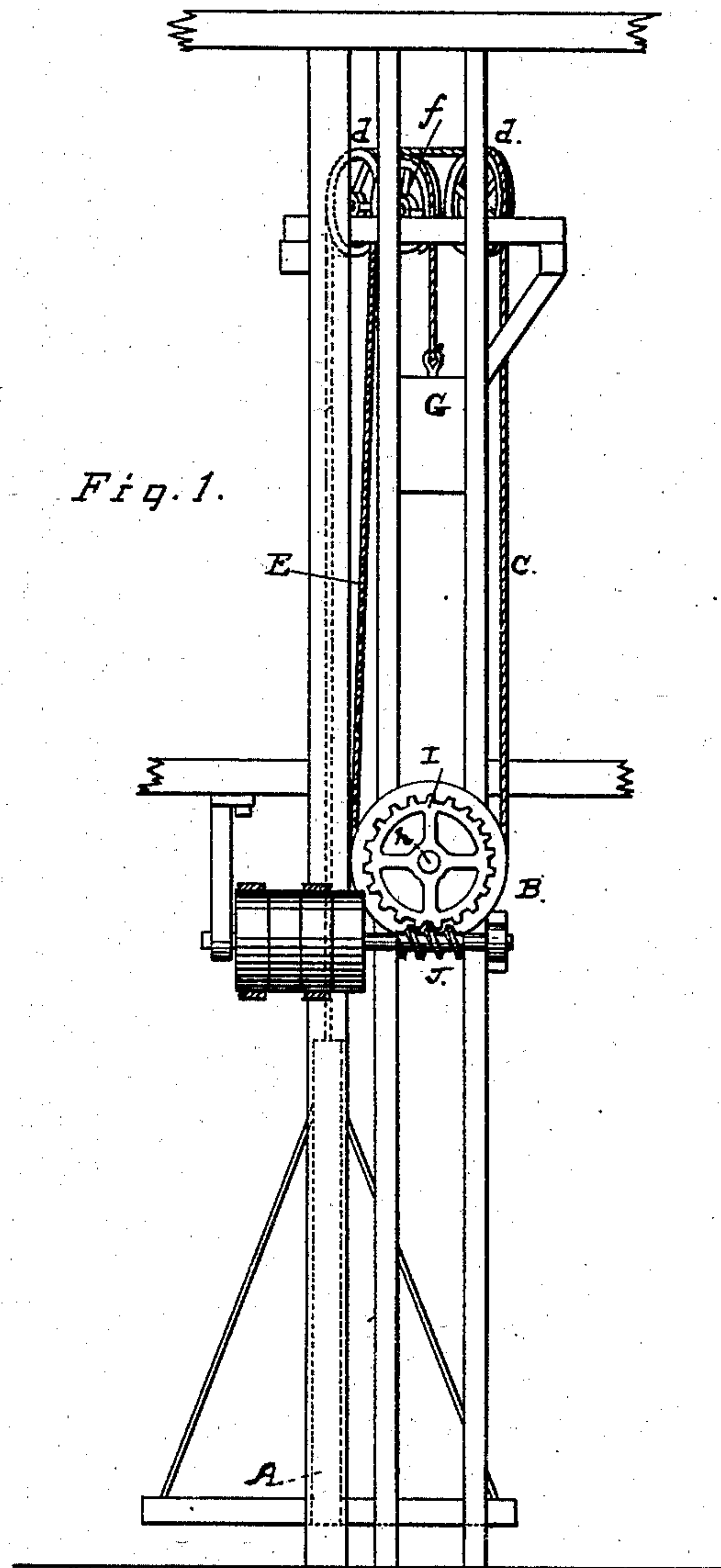


(No Model.)

P. HINKLE.
ELEVATOR.

No. 257,943.

Patented May 16, 1882.



Witnesses:
Wm. A. Burt
Wm. Voitz

Inventor:
Philip Hinkle
By his Attys.
Boone & Babson

UNITED STATES PATENT OFFICE.

PHILIP HINKLE, OF SAN FRANCISCO, CALIFORNIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 257,943, dated May 16, 1882.

Application filed September 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, PHILIP HINKLE, of the city and county of San Francisco, in the State of California, have invented an Improvement in Freight and Passenger Elevators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention has reference to an arrangement for re-enforcing the lifting power of any given freight or passenger elevator without increasing the working power of the engine or motor that drives it; and it consists in the application of an overbalance counter-weight for overbalancing the weight of the cage, and in the interposition between said counter-weight and the cage of a self-acting brake, which prevents the superior weight of the counter-balance from being transmitted to the cage and engine-power when the engine and cage are standing at rest. The self-acting brake which I use is a worm-wheel and worm, which also serves as a gearing for transmitting the power of the engine or motor to the cage and counter-weight, all as hereinafter more fully described.

Referring to the accompanying drawings, Figure 1 is a side view. Fig. 2 is a plan view.

Let A represent the cage, which is suspended in the usual way from the hoisting-drum B by means of the rope C, which passes up over pulleys *d d*, as shown. A rope, E, is also secured to the opposite side of the drum B, and passes up over a pulley, *f*, and to the opposite end of this rope the counter-weight G is suspended. The drum B is secured upon a horizontal shaft, *h*, which is properly supported in bearings, and to this shaft is also secured a worm-wheel, I. A transverse worm or screw-shaft, J, is mounted in bearings, either below or above the worm-wheel, at right angles to the shaft *h*, so as to engage with the worm-wheel I, and to this shaft the power of the engine or other motor employed is applied. It will now be seen that this worm-wheel and worm serve two purposes: first, as a gearing for transmitting the motion and power from the shaft J to the shaft *h* and drum B, and, secondly, as a self-acting brake, which acts instantly when the rotation of the worm-shaft ceases and prevents the superior weight of the counter-weight from reacting against the

weight of the cage, so that both will remain at whatever position they are in when the rotation of the worm-shaft ceases. I can now make the counter-weight G as much heavier than the cage as I wish, and its overweight will assist in raising the loaded cage, while the power of the engine or motor is only required to overcome the difference in resistance between the weight of the cage and counter-weight. When the empty cage is lowered again the power of the engine is still required to overcome the superior weight of the counter-weight on the opposite side, thus producing a uniform strain upon the engine without overstraining it. Suppose, for instance, that the cage weighs two hundred pounds and the counter-weight four hundred pounds, and suppose that the worm can bear with safety a load of two hundred pounds, I can then raise four hundred pounds in the cage, besides the weight of the cage itself, and the engine will have only two hundred pounds to lift when the cage is raised, and the same amount when the cage is lowered, and the worm-gears will at no time be subjected to a strain of more than two hundred pounds, whereas with a simple balance-weight, such as has heretofore been used, no more than the weight of the cage could be used as a counter-balance without having it react to lift the cage as soon as the application of power to the driving-shaft ceased. In this latter case I would be able to raise a weight of only two hundred pounds on the cage. It is therefore evident that I am able by using my overbalance counter-weight to raise twice the amount of weight on a certain size machine as heretofore, or, in other words, it enables me to do the same amount of work with an engine of half the capacity as has been heretofore required.

In case it is desired to raise a load of more than ordinary weight, additional weight can be applied to the overbalance to any desired extent within the limits of strength of the rope and mechanism.

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

1. In an elevator, the combination, with the hoisting-drum B, of the cage A and rope C thereof attached to one side of the drum B, and

the overbalance-weight G and rope E thereof attached to the opposite side of the drum B, substantially as set forth.

2. The combination, with the drum B and
5 ropes C and E, attached to the opposite sides thereof and suspending the cage and overbalance-weight, respectively, of the power-shaft J, provided with the worm, as described, and the

worm-wheel I, mounted on the same shaft with B, as set forth.

In witness whereof I have hereunto set my hand and seal.

PHILIP HINKLE. [L. S.]

Attest:

WM. F. CLARK,
JNO. H. MILLER.