

A. B. DARLING.
ELEVATOR.

No. 176,841.

Patented May 2, 1876.

Fig. 1

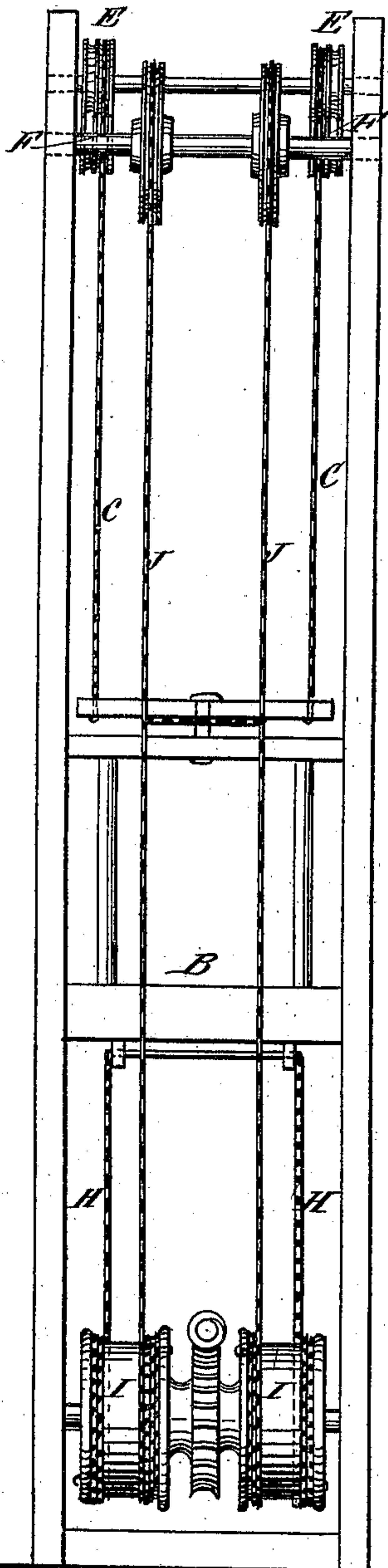


Fig. 2

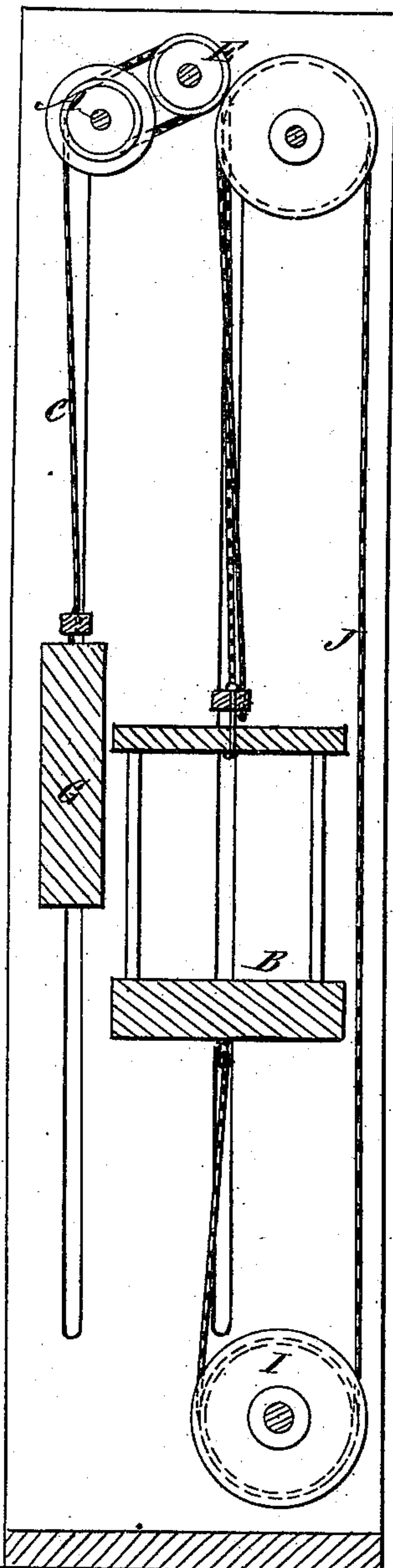


Fig. 3

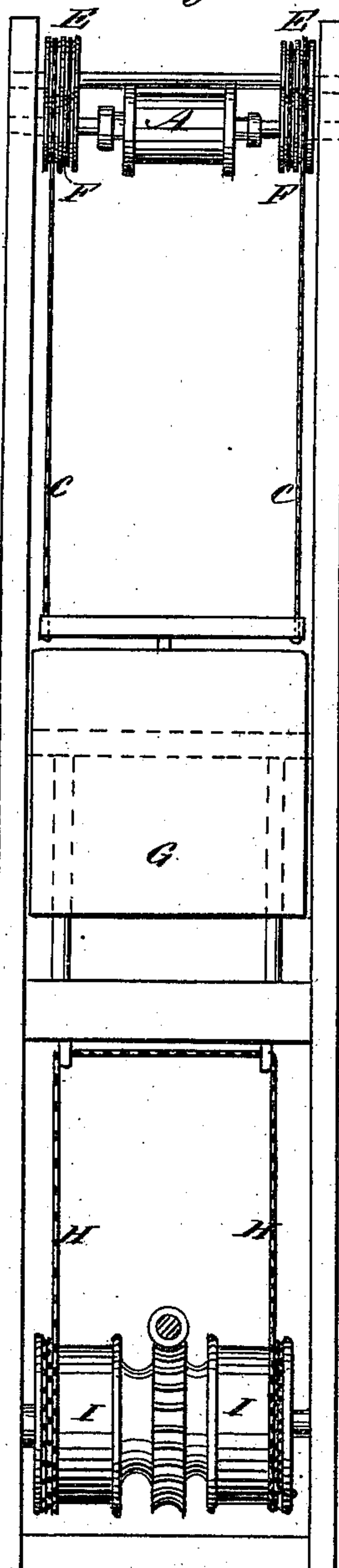
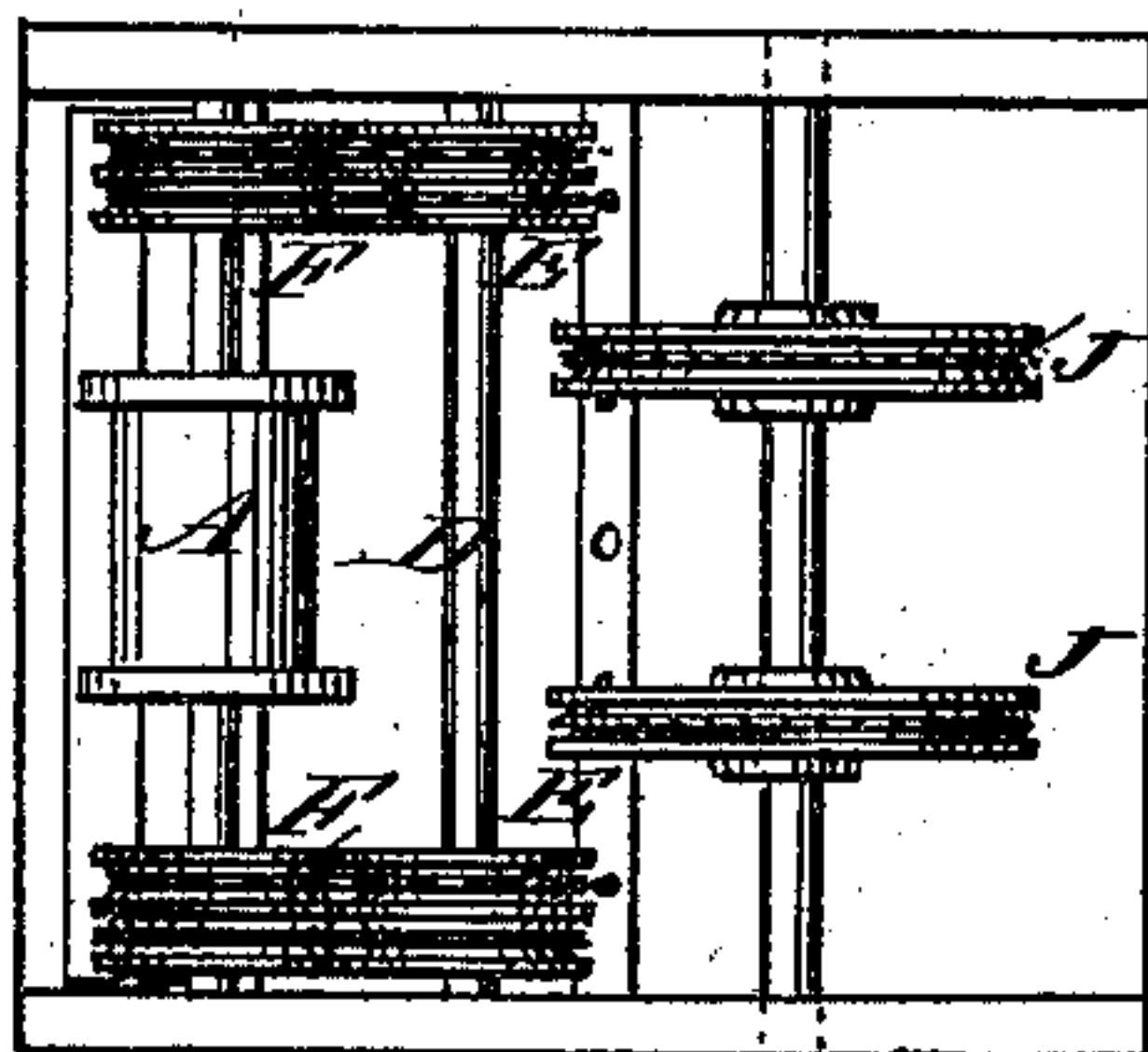


Fig. 4



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALFRED B. DARLING, OF NEW YORK, N. Y.

IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. 176,841, dated May 2, 1876; application filed April 4, 1876.

To all whom it may concern:

Be it known that I, ALFRED B. DARLING, of the city, county, and State of New York, have invented a new and useful Improvement in Elevators, of which the following is a specification:

The first part of my invention is a contrivance whereby ropes may be used instead of chains for gearing the elevator-carriage with the retarder, which is employed to regulate the descent of the carriage, the ropes being stronger, less noisy, and more easy in operation, and less wearing.

The second part consists of the carriage connected to the hoisting-drum by ropes, which wind off and on reversely to the action of the hoisting-ropes, the object being, first, to prevent the hoisting-ropes from winding off faster than the carriage descends; and, second, to insure the descent of the carriage.

In the drawing, Figure 1 is a front elevation of an elevator contrived according to my invention. Fig. 2 is a sectional elevation. Fig. 3 is a side elevation, and Fig. 4 is a top view.

Similar letters of reference indicate corresponding parts.

In the use of a retarder, A, to prevent the descent of the carriage B faster than a certain limit of speed regulated by the passage of a fluid in the retarder through an aperture, the retarder has to be geared in some form or other to the elevator, so that their movements will be positive relatively to one another.

In the arrangement patented to Massey and Darling, October 7, 1873, this was accomplished by chains connected to the carriage passing over chain-pulleys on the retarder-shaft, and connected at the other end to a counterpoise for balancing the carriage. These chains and chain-pulleys were used because the friction of a rope on a pulley of the retarder could not be relied on as being sufficiently positive, owing to its tendency to slip, but the chains are objectionable because they are not so strong as wire rope, they make more noise, and wear considerable more than the wear of ropes.

Now, in order that ropes C may be used

instead of these chains, with the same reliance for certainty, I have arranged a counter-shaft, D, with two pulleys, E, also two pulleys, F, on the retarder-shaft, around which I coil the rope twice, and may have three pairs and coil it three times, if required, and then connect it to the counterpoise G, thus insuring ample friction to hold the ropes in all cases against slipping.

H represents the ropes connected to the bottom of the carriage, and winding on the driving-drum I the opposite way to the hoisting-ropes J, so that the carriage is positively connected to the hoisting-drum, and the hoisting-ropes are effectually prevented from running off slack, which they sometimes do, particularly when a retarder is used, getting tangled in the gearing, and, perhaps, cut or broken to the great danger of the carriage.

The pulling-down ropes are more especially required when a retarder is used, as the driving-drum is more liable to run faster than the carriage descends; but they are also useful when the retarder is not used, in case a bar or obstacle of any kind falls in between the carriage and wall and stops it, and also prevents vibration between carriage and counterpoise. The said ropes would then stop the engine and keep the hoisting-ropes in position, whereas, without said ropes, the hoisting-ropes would run off the drum, and would require to be readjusted before the carriage could be released; in the meantime the carriage might fall.

While the lifting-ropes are winding off, the pull-down ropes are winding on, the drum, which enables me to balance the car at nearly equilibrium—say, five hundred to one thousand pounds nearer than can be done without the pull-down ropes, and enables the handling of the car with greater ease with the hand-brakes, and lessens the chances of the car falling in case of the lifting-ropes or belt breaking; also, to prevent the vibration of the weight being communicated to the car.

By this combination of double pulley and pull-down ropes it makes the car run much smoother, prevents the lifting-ropes from running off the drums, takes less power to drive the car, and adds greatly to its safety.

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

1. The retarder A, geared to the carriage of an elevator by ropes C coiled one or more times around the retarder-shaft pulleys and counter-pulleys, substantially as specified.

2. The herein-described elevator, having the power applied to drum, at one side of

which the hoisting-rope is wound on, and, at the other, the pulling-down ropes wound off, or the reverse, substantially as and for the purpose specified.

A. B. DARLING.

Witnesses:

G. B. MASSEY,
S. B. GOODALE.