2 Sheets—Sheet 1.

B. G. MARTIN.

ELEVATOR.

No. 188,388. Patented March 13, 1877.

Fig. 1.

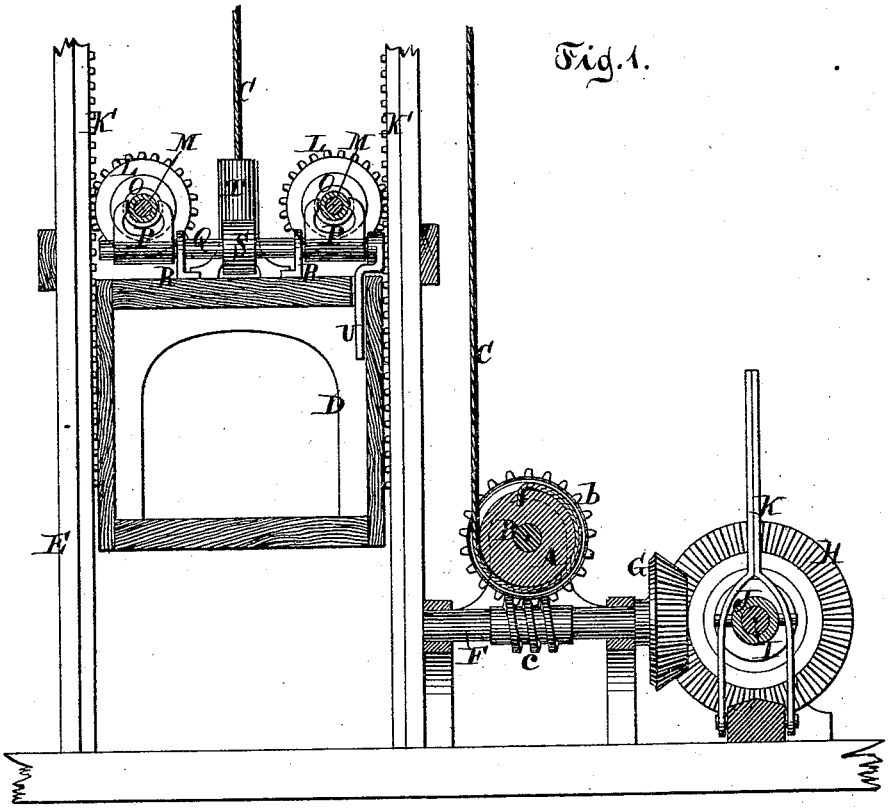
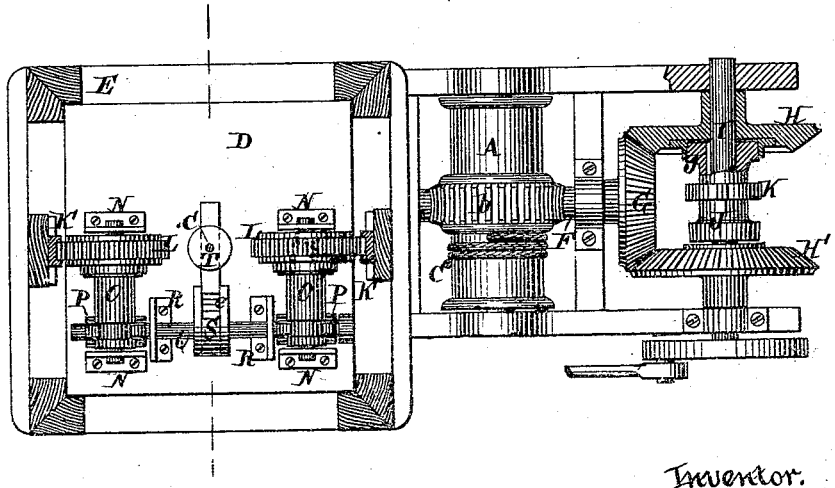


Fig. 2.



Witnesses.
Otto Hefeland
Chas. Wahlers.

Inventor.
Benjamin Green Martin
by Van Santvoord & Hauff
his attorneys

2 Sheets—Sheet 2.

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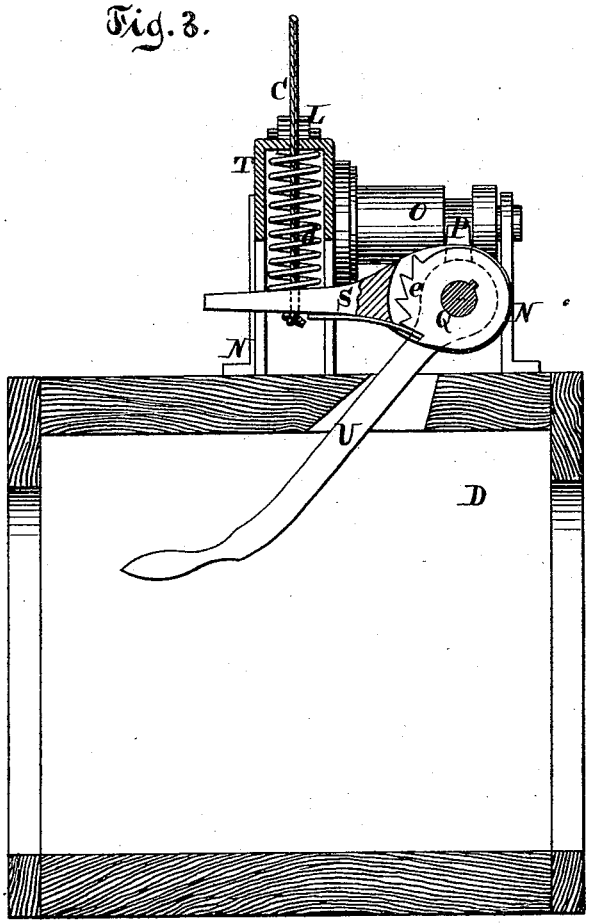
Fig. 3.



Witnesses.
Otto Hufeland
Chas. Wahlers

Inventor.
Benjamin Green Martin
by
Van Santwood & Hauff
his attorneys

UNITED STATES PATENT OFFICE.

BENJAMIN G. MARTIN, OF NEW YORK, N. Y.

IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. **188,383**, dated March 13, 1877; application filed November 18, 1876.

To all whom it may concern:

Be it known that I, BENJAMIN G. MARTIN, 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 drawing, in which —

Figure 1 represents a sectional side view. Fig. 2 is a sectional plan. Fig. 3 is a sectional view of the platform or car.

Similar letters indicate corresponding parts.

This invention consists in combining with the elevator-drum its shaft carrying a worm-wheel, and a shaft carrying a worm adapted to the worm-wheel for imparting motion to the drum, a reversing-gear composed of three bevel-wheels, and a sliding friction-clutch, whereby the motion of elevator-drum can be reversed without interrupting or changing the motion of the driving-shaft. With the car or platform is combined a safety-clutch, which, whenever the rope breaks, is thrown in gear automatically with two cog-wheels, which mesh into racks secured to the sides of the elevator-well. This safety-clutch also enables a person on the car or platform to lower this car or platform with any desired velocity after the rope has parted.

In the drawing, the letter A designates the elevator-drum, which is mounted on a shaft, B, and from which extends a rope, C, over a pulley to the car or platform D, which moves in the well E. On the shaft B is mounted a worm-wheel, *b*, which engages with a worm, *c*, mounted on a shaft, F, that extends at right angles to the shaft B. On the outer end of the shaft F is secured a bevel-wheel, G, which meshes into two bevel-wheels, H H′, that are mounted loosely on the driving-shaft I, one on each side of the wheel G. Between the bevel-wheels H H′ is situated a friction-clutch, J, which is feathered on the driving-shaft, and which engages with a lever, K, by means of which the same can be thrown in gear either with the wheel H or with the wheel H′.

The friction-clutch which I use for this purpose may be of any suitable construction; but I prefer to use a clutch of that kind which I have described in Letters Patent No. 179,804, granted to me on the 11th day of July, 1876.

The driving-shaft I receives its motion from a steam-engine or any other suitable motor, and if this motor is started said shaft revolves in one and the same direction. By throwing the friction-clutch in gear with the bevel-wheel H, the elevator-drum is caused to revolve, so as to wind up the rope C, and the platform D is raised, and by throwing the friction-clutch in gear with the wheel H′ the motion of the elevator-drum is reversed, and the platform is lowered. The lever K is intended to be connected by suitable intermediate levers with a rope which can be reached by a person on the platform, so that said person can control the motion of the platform. By throwing the clutch in a central position or out of gear with both the wheels H H′, the motion of the elevator-drum is stopped, and the platform remains stationary.

The drum A is so constructed that two ropes may be used for connecting the same with the platform D.

In order to prevent the platform or car from falling when the rope or ropes should part, I have made the following arrangement: On the sides of the well E are secured two racks, K′ K′, which gear into cog-wheels L L, mounted on shafts M M, which have their bearings in standards N secured on the top of the car D, and which do not turn in their bearings, while the wheels L L turn loosely on the same. On these shafts are mounted friction-clutches O O, which are connected to them by feather keys, and which engage with forked levers P P, by the action of which they can be thrown in or out of gear with the cog-wheels L L. The levers P P are secured to a rock-shaft, Q, which extends at right angles to the shafts M M, and has its bearings in standards R R secured to the top of the car D. On the middle of the rock-shaft Q is secured a lever, S, which extends through a standard, T, secured to the top of the car, and which is connected to the rope C. In the standard T is situated a spring, *d*, which has a tendency to depress the lever S, but by the strain of the rope the said lever is raised against the action of this spring, and the rock-shaft Q is retained in such a position that the friction-clutches O O are out of gear with the cog-wheels L L, and the car or platform D can be raised or lowered in the

well E without hinderance. If the rope breaks, however, the spring *d* depresses the lever S, the friction-clutches O O are thrown in gear with the wheels L L, and the downward motion of the car or platform is checked.

In the example shown in the drawing the lever S is made in the form of a lever-pawl, which turns loosely on the rock-shaft Q, and engages with a cog-wheel, *e*, that is firmly mounted on said rock-shaft. The object of this arrangement is to obtain an opportunity to adjust the position of the lever in relation to the friction-clutches. Said lever may, however, be firmly secured on the rock-shaft, and the cog-wheel *e* may be omitted. On the end of the rock-shaft Q is firmly attached a lever, U, which extends into the interior of the car D, so that it can be conveniently reached by the person in charge.

By means of this lever the friction-clutches can be thrown in or out of gear, and in case the rope shall part, and the downward motion of the car is stopped, the person in charge can release the friction-clutches sufficiently to allow the car to descend slowly. This arrangement is very desirable, particularly if the elevator is used for raising and lowering persons to the different stories of a building. If the rope parts while the car is midway between two stories, and no provision is made to lower the car independent of the rope, the persons in the car are detained until the rope is renewed or refastened.

In the example shown in the drawing I have shown two racks K K one on each side of the well E; but when it is desired four such racks may be applied with a corresponding number of cog-wheels and friction-clutches.

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

1. The combination of the elevator-drum A, the shaft B, and the worm-wheel *b*, arranged upon the same, with the shaft F, the worm *c*, upon the same adapted to the worm-wheel *b*, and the reversing mechanism, composed of the three bevel-wheels G H H′, and the friction-clutch J, arranged between the wheels H H′, substantially as and for the purpose described.

2. The combination, with an elevator car or platform, D, its well E, and rope C, of two or more racks, K K, cog-wheels L L, friction-clutches O O, rock-shaft Q, lever S, and spring *d*, substantially as and for the purpose set forth.

3. The combination of the hand-lever U with the rock-shaft Q, friction-clutches O O, cog-wheels L L, racks K K, well E, and car or platform D, substantially as and for the purpose herein described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 17th day of November, 1876.

B. G. MARTIN. [L. S.

Witnesses:
E. F. KASTENHUBER,
ROBT. E. MILLER.