

(No Model.)

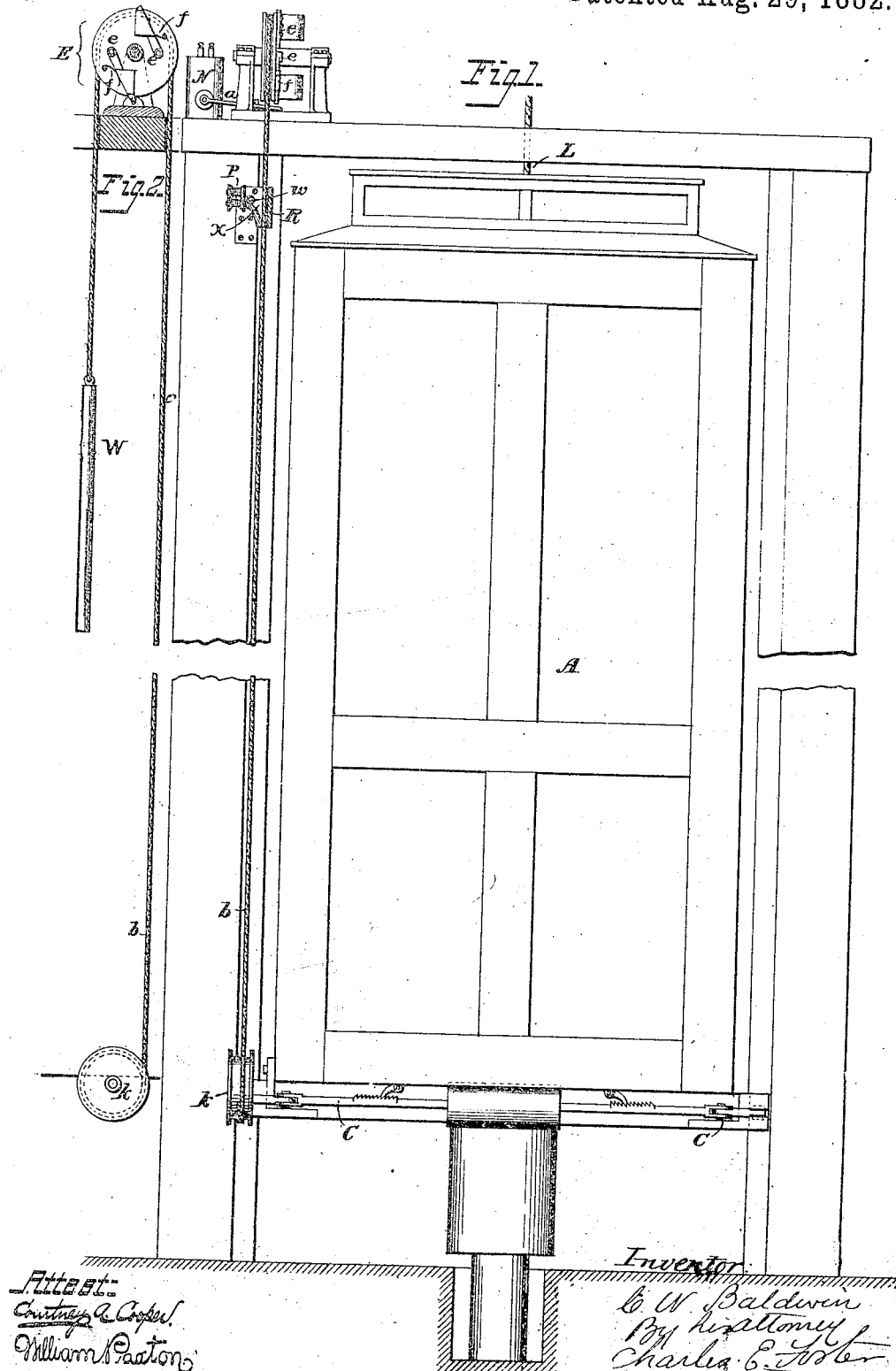
2 Sheets—Sheet 1

C. W. BALDWIN.

ELECTRIC SAFETY APPARATUS FOR ELEVATORS.

No. 263,380.

Patented Aug. 29, 1882.



Printed by
William P. Patton

Inventor
C. W. Baldwin
By his attorney
Charles E. Foster

(No Model.)

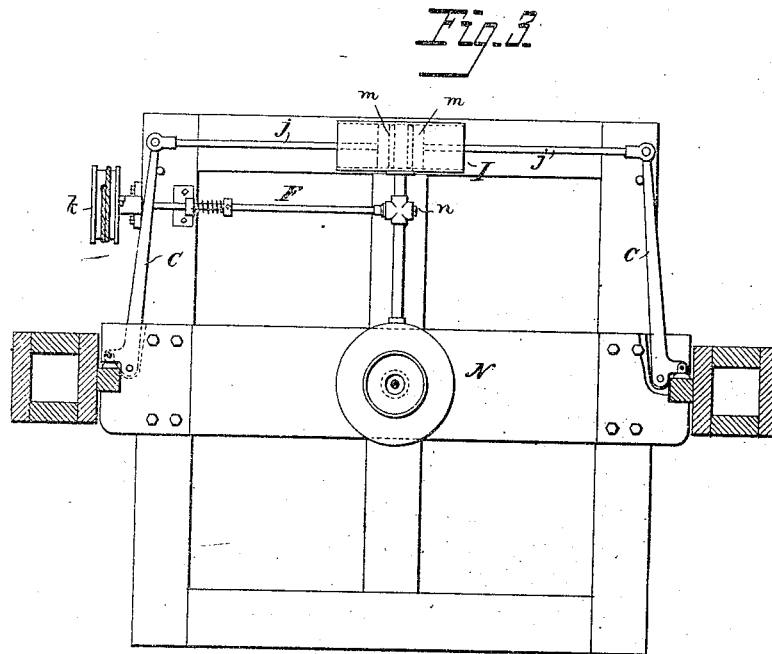
C. W. BALDWIN.

2 Sheets—Sheet 2.

ELECTRIC SAFETY APPARATUS FOR ELEVATORS.

No. 263,380.

Patented Aug. 29, 1882.



Attest:
Courtney A. Cooper,
William R. Eaton

Inventor
C. W. Baldwin
By Chas. E. Foster
his attorney

UNITED STATES PATENT OFFICE.

CYRUS W. BALDWIN, OF CHICAGO, ILLINOIS.

ELECTRIC SAFETY APPARATUS FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 263,380, dated August 29, 1882.

Application filed April 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, CYRUS W. BALDWIN, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented certain Improvements in Electric Safety Apparatus for Elevators, of which the following is a specification.

My invention has for its object to prevent accidents liable to result from the derangement of the machinery of elevators or hoists; and it consists in combining with the mechanism and with the braking or safety appliances a governor and an electrical detent, whereby upon injury to any part of the apparatus resulting in an undue increase in the speed of the cage the governor is caused to break the circuit, the detent is released, and the brakes are caused to be applied, arresting the further motion of the cage.

I will now describe certain apparatus illustrating my invention, although I wish it to be understood that I do not limit myself to the special appliances set forth.

In the drawings, Figure 1 represents in elevation part of an ordinary elevator, A being the cage, supported by a cable, L, and provided with suitable brakes, C C, constructed to be applied or removed on the turning of a shaft carrying a drum, k, or otherwise. Fig. 2 is a part-sectional elevation, and Fig. 3 is an inverted plan.

C C are the brake-levers, each connected by rods j to a piston, m, in a cylinder, I, to which air is admitted under pressure from a pumping or compressing apparatus, N, as fully described in the Letters Patent granted to me. A cock, n, connected to the drum-shaft F, serves to regulate the flow of air between the pump and cylinder. Round the drum is wound a rope, b, which extends to the top of the well and over the grooved pulley of a governor, E, which carries arms e, retracted by springs f, and capable of being thrown out by centrifugal action when the cage and governor attain undue speed. Below the pulley is pivoted a lever, a, which constitutes the circuit-breaker of an electrical circuit extending between a battery, N, and an electro-magnet, P, the armature of which is a loose cylinder, c. The rope b carries a weight, W, at its free end, and passes through a funnel-shaped recess, x, in a bracket, R, carrying the electro-magnet P, the said recess being wide

enough to permit the rope to travel freely, and the magnet being so arranged that when the armature is released it will fall between the rope and the inclined face of the recess. So long as the cage travels at its proper rate of speed the parts retain the positions shown; but any derangement of any part of the machinery resulting in any undue increase of motion throws out the arms e of the governor, one of which strikes the lever a, vibrates it, breaks the circuit, thus demagnetizing the magnet P, and the armature then falls, and by jamming between the side of the recess x and the rope b clamps the latter, so that the drum k is turned and the brakes applied by the admission of air to the cylinder I.

A most important feature of my invention is the use of a governor having a movement coincident with but independent of that of the cage and independent of the circuit-breaker, whereby the governor may be made so extremely sensitive as to act upon the circuit-breaker upon the slightest increase in the speed of the cage beyond that at which it should travel, or in fact at any speed, normal or otherwise, according as the governor is set. My device differs in this respect from those in which the circuit-breaker is the governor, in which the breaking of the circuit depends upon the actual speed of the cage itself, and not upon that of an independent governing device.

My invention is not limited to battery-currents, but may be used with magneto-currents generated by the movements of the elevator mechanism or by some extraneous power.

The governor and circuit-breaker operated thereby may be employed in connection with various brake or retarding devices; and it will be apparent that the structure of the detent will depend to a great degree upon the appliances with which it is used.

I am aware that electric conducting wires have been combined with electro-magnets upon a cage to release the catches upon the breaking of said wires. My invention is distinguished from this by the combination, with the electro-magnet, of a governor driven from some part of the apparatus, and devices which break the circuit upon the acceleration of the speed, thus arresting the cage when it moves too rapidly from any cause, whether the rupture of the suspensories or the slipping of a

belt, or from any other disarrangement of the mechanism.

I claim—

- 5 1. The combination, with an elevator, of a governor driven with a positive movement from some moving part of the mechanism, devices, as described, whereby the movement of the cage may be arrested, a detent constructed to be held out of operation during the completion of an electrical current, and a circuit-breaker independent of the governor, and constructed to be operated thereby to release the detent upon an increase in the speed at which the governor is driven, as set forth.
- 15 2. The combination, with a rope supplemental to the hoisting-cable and the brake of an elevator, of a detent constructed to be held out of action by an electric current, a circuit-

breaker, and a governor constructed to operate the circuit-breaker on an undue increase of speed, as specified.

3. The combination of the cage, its brakes and operating-rope *b*, a governor, a bracket having a contracting opening, *x*, for the passage of said rope, a circuit-breaker arranged to be operated by the governor, and an electro-magnet having an armature constituting a detent and arranged to be held above said opening *x* by the magnet, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CYRUS W. BALDWIN.

Witnesses:

HENRY L. KENT,
HOLMES HOGE.