

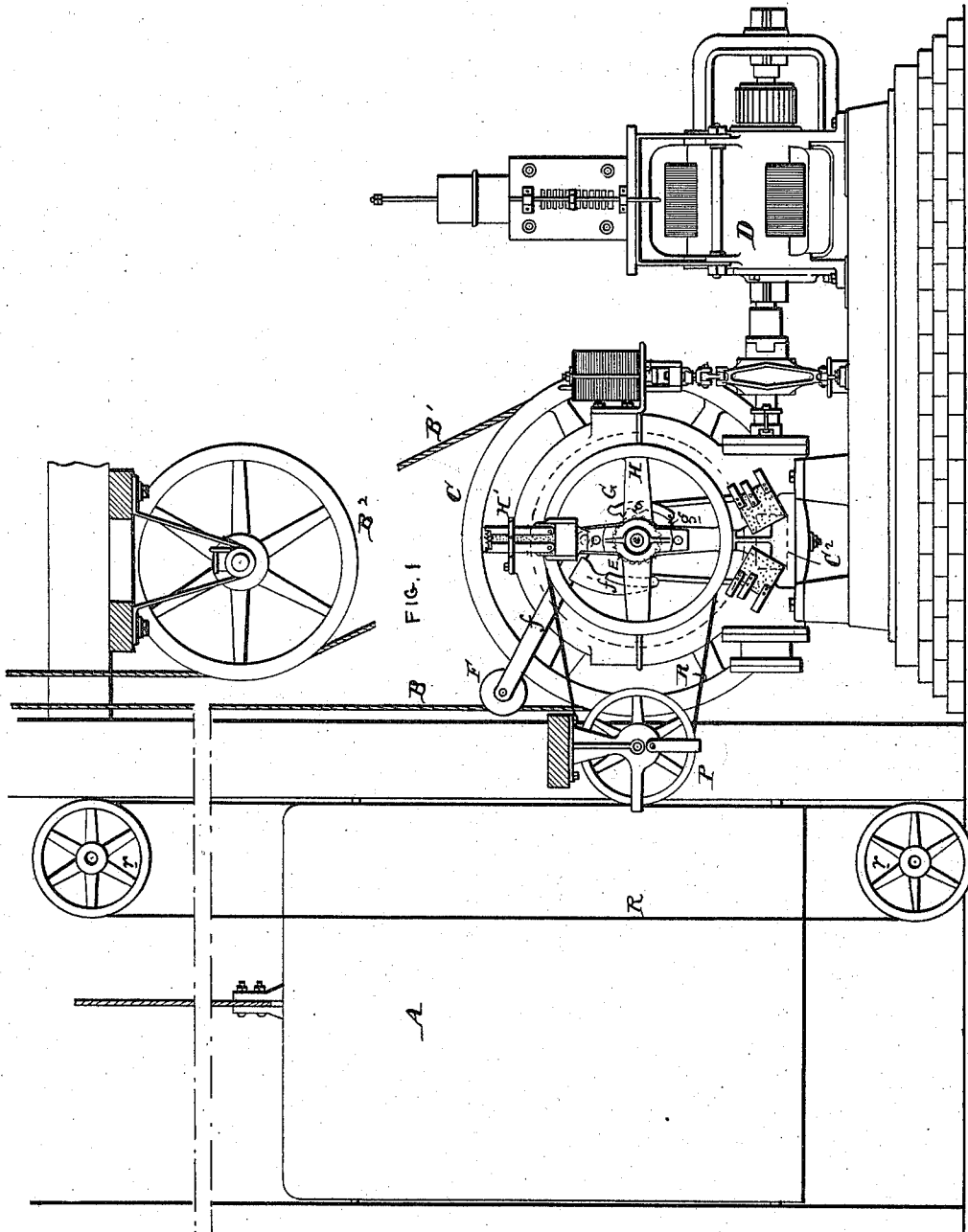
(No Model.)

2 Sheets—Sheet 1.

J. P. CASEY.
ELECTRIC ELEVATOR.

No. 577,644.

Patented Feb. 23, 1897.



Witnesses:

Jesse B. Heller
Wm. Pittman

Inventor.

John P. Casey
By [Signature]
Attorney.

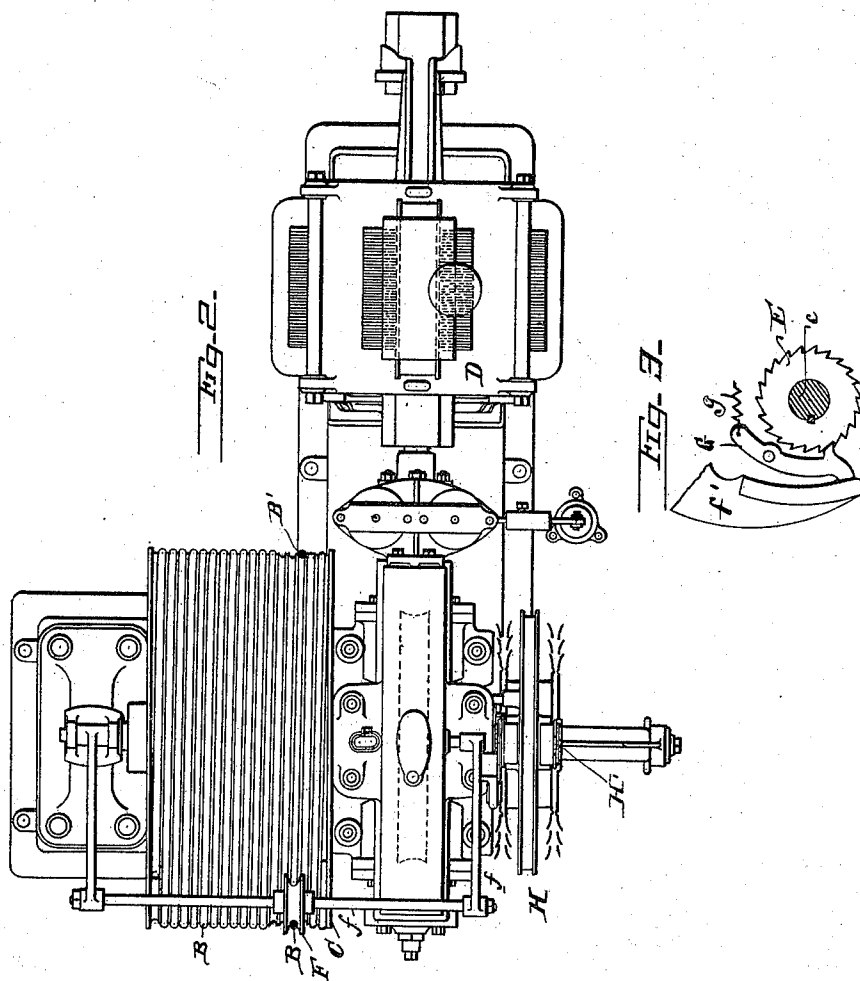
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2 Sheets—Sheet 2.

J. P. CASEY.
ELECTRIC ELEVATOR.

No. 577,644.

Patented Feb. 23, 1897.



Witnesses:

Jesse B. Miller.
C. A. Ritchie.

Inventor.

John P. Casey
By
Attorney.

UNITED STATES PATENT OFFICE.

JOHN P. CASEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
MORSE, WILLIAMS & COMPANY, OF SAME PLACE.

ELECTRIC ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 577,644, dated February 23, 1897.

Application filed June 13, 1893. Serial No. 477,413. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. CASEY, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Electric Elevators, of which the following is a specification.

My invention has reference to electric elevators; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

In carrying out my invention I provide the hoisting apparatus with a drum, upon which the hoisting-cable is wound and unwound, and drive the same by suitable gear, such as worm and worm-wheel, which are operated by an electric motor. The reversing-switch is preferably concentric with the revolving shaft operated with the winding-drum, and the said shaft is provided with a toothed or ratchet wheel. The switch is also provided with a pivoted pawl held out of contact with the ratchet-pawl by a spring, but adapted to be thrown into engagement therewith by an automatic device under the control of the lifting-cable in case the same should become broken or slack, whereby the electric circuit for operating the electric motor is instantly broken.

My invention will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of an electric elevator embodying my improvements. Fig. 2 is a plan view of the hoisting device proper, and Fig. 3 is a detail elevation of the clutch device, which automatically operates the switch for breaking the electric circuit in case the hoisting-cable becomes broken or slack.

A is the elevator-cage and guided in the customary manner.

B is the elevator rope or cable for raising and lowering the cage, and after passing over the sheave at the top of the shaft is brought down and connected to the winding-drum C.

D is an electric motor connected by a worm and worm-wheel with winding-drum C.

H is the controlling-switch wheel and is provided with suitable contacts H' for controlling the currents applied to the motor.

This switch-wheel is moved in either direction by a control-cable R, guided by sheaves P r. By operating the control-cable the current in the motor is controlled both for stopping and starting the motor and for reversing it, so that the cage may be raised or lowered or stopped.

B' is a cable leading to a counterweight for counterbalancing the cage A, and also for keeping the various cables under proper tension at all times. The use of this cable B' is well known and need not be further referred to.

F is an idler-wheel resting in contact with the elevating-cable B and is loosely journaled upon a transverse axis of a pivoted frame f, pivoted to the main frame of the machine in a suitable position. The frame f is provided with a shoe f', arranged adjacent to the ratchet or pinion wheel E, which revolves with the shaft c of the drum. If the cable B should break or become slack, the frame f falls and throws the shoe f' inward. If this action takes place when the switch H' has been thrown completely to the left, the said shoe will operate upon the pawl G, pivoted to wheel H, and instantly thrust it into contact with the revolving ratchet E. This action will cause the switch H' to be automatically thrown to the position shown in Fig. 1, and thereby break the electrical circuit and stop the operation of the motor. The stopping of the operation of the motor, by interrupting the electric circuit, at once applies the brake to arrest the further rotation of the shaft and drum. This device is intended to automatically act in cases where upon lowering the cage A the cage becomes arrested from some unintentional cause and the cable B becomes slack. If the cable becomes excessively slack and the cage should suddenly drop, there would be great danger of snapping the cable with liability of danger to the occupants of the cage. The instant that a small amount of slack in the cable B occurs the electric circuit is automatically interrupted, the motor is stopped, and the brake is applied, thus insuring great safety in the operation of the apparatus. This automatic device for arresting the op-

eration of the machinery is an important feature of my invention.

It will be readily understood that the automatic device for breaking the circuit for the purpose of stopping the rotation of the drum C is equally adapted to a power-elevator having any other motive power than electricity, for the automatic movement of the part H, by the action of the pawl G being thrown into contact with the ratchet-wheel E, may be made to control any suitable power-controlling device, such as a belt-shifter or valve, which are used on numerous well-known types of power-elevators.

It is evident that the construction of the various parts may be greatly modified without in the least departing from the principles of my invention. Therefore I do not limit myself to the details thereof.

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

In an electric elevator the combination of

a winding-drum, a power device to rotate the drum, a lifting-cable, a movable part adapted to control the power device, a pawl carried by the movable part, a rotating tooth or ratchet wheel moved by the winding-drum or the power device, a movable frame provided with a guide adapted to press upon the lifting-cable and furnished with a shoe to forcibly press the pawl into contact with the ratchet-wheel whereby in case the cable becomes slack the shoe and movable frame shall operate the pawl to throw it positively into engagement with the moving toothed or ratchet wheel and thereby move the movable part to stop the operation of the power device.

In testimony of which invention I have hereunto set my hand.

JOHN P. CASEY.

Witnesses:

ERNEST HOWARD HUNTER,
C. M. DIETTERICH.