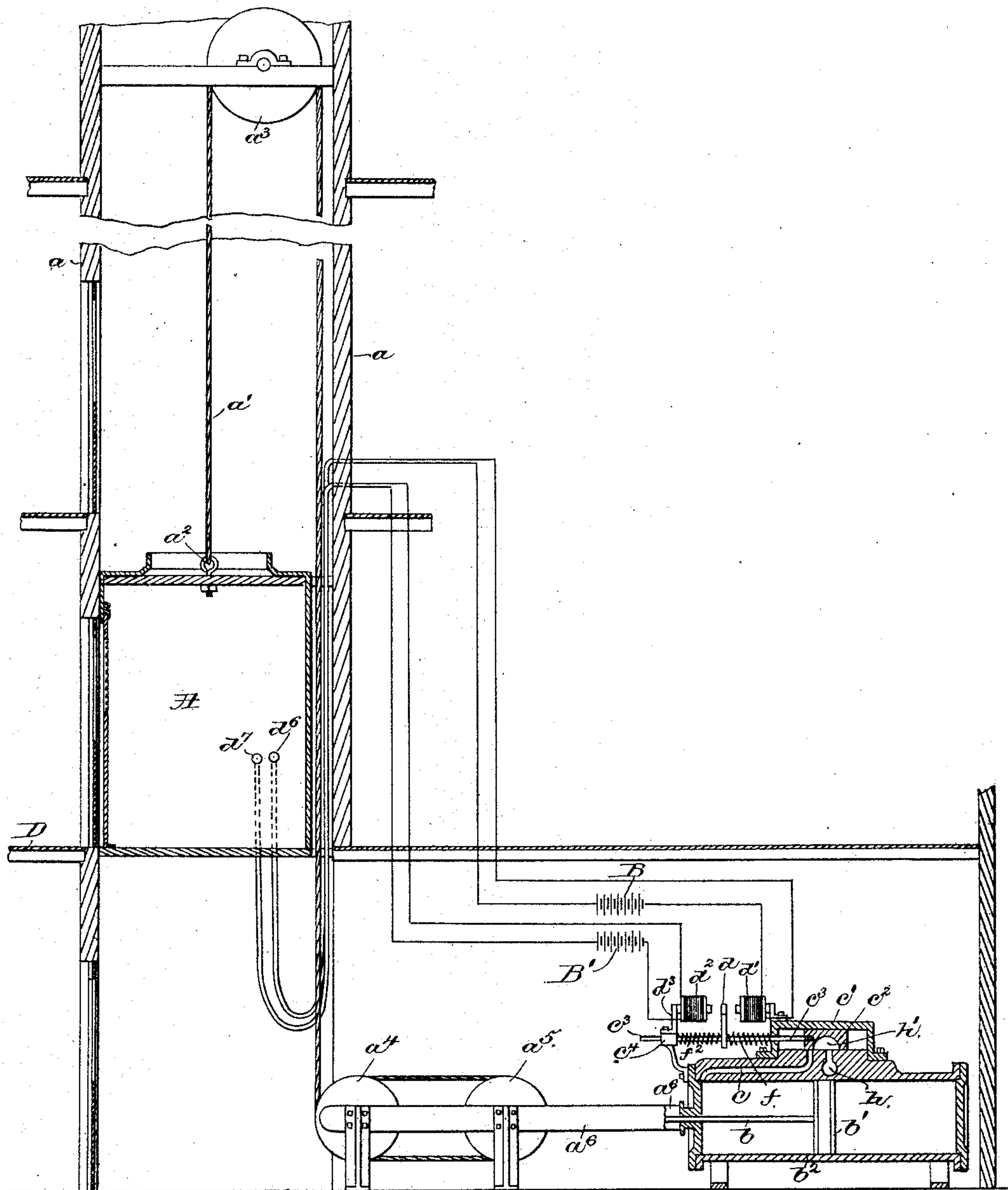


(No Model.)

J. H. CLARK.
ELECTRIC ELEVATOR.

No. 353,123.

Patented Nov. 23, 1886.



Witnesses:

John F. C. Brinkert
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Investor:

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UNITED STATES PATENT OFFICE.

JOHN H. CLARK, OF BOSTON, MASSACHUSETTS.

ELECTRIC ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 353,123, dated November 23, 1886.

Application filed August 12, 1886. Serial No. 210,703. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. CLARK, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Elevators, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object to provide elevators, and more particularly that class known as "passenger elevators," with electrical apparatus by which the power-controlling valve may be operated from within the car to raise or lower the same.

Prior to my invention the power-controlling valve has been operated by means of a shipper-rope passed about sheaves fixed to the building and about a sheave on a shaft or rod, operatively connected to the power-controlling valve.

In some instances the power-controlling valve has been operated by a wheel located within the car, the said wheel revolving continuously during the movement of the car and operating the shipper-rope outside the car. The power-controlling valve has also been operated by a rope passing through the car, the latter arrangement being especially objectionable on account of its unsightliness and on account of the power required to move it.

In accordance with my invention, I obviate the employment of a shipper-rope passing through the car or about sheaves located outside the car, and control the operation of the power-valve by means of electricity, as will be hereinafter pointed out.

The particular features of my invention will be hereinafter pointed out in the claim at the end of this specification.

The drawing, in section and elevation, shows an elevator and its actuating-cylinder provided with my improved electrical apparatus for operating the valve of said cylinder from within the car.

The car A is herein shown as suspended in the hoistway formed by the sides or walls a in a building or other structure by a rope or cable, a' , having one end fastened, as at a^2 , to the said car.

The rope or roller a' is passed about a sheave, a^3 , near the top of the building, and is extended down to near the bottom of the hoistway, where

it is passed about sheaves $a^4 a^5$, supported in guides a^6 , the said rope or cable having its end fastened to or near the sheave a^4 . The sheave a^4 is supported in stationary bearings, while the shaft or bearing of the sheave a^5 is movable, it traveling in the guides a^6 . The shaft of the sheave a^5 is connected to the piston-rod b of a piston, b' , reciprocating in a cylinder, b^2 , herein shown as located in the basement of the building.

The cylinder b^2 , as herein shown, communicates by a single passage or port, c , with a valve chest, c' , provided with a valve, c^2 , herein shown as an ordinary slide-valve.

The valve c^2 is provided with a valve-stem or rod, c^3 , extended through the valve-chest c and supported, as shown, in an arm, c^4 , attached to the cylinder b^2 . The valve c^2 is moved by electrical devices, herein shown as magnets $d' d^2$.

The valve stem or rod c^3 has secured to it an iron plate, d , forming the armature for the electro-magnets $d' d^2$ on opposite sides of said armature, the magnet d' being shown as secured to the valve-chest c , and the magnet d^2 to an extension, d^3 , of the arm c^4 .

The magnet d' is included in circuit with a battery, B, the terminals of the said circuit being shown as a push-button, d^6 , located in the car, and the magnet d^2 is included in circuit with the battery B', having as its terminals a second push-button, d^7 , also located in the car. The circuit-wires are carried from the magnets to near the center of the hoistway, and thence, after being passed through the side or wall a , the said wires are left of such length within the hoistway as to rise and fall with the movement of the car.

In the operation of the elevator as herein shown the car is supposed to have been stopped at the first floor, D, the valve c^2 being centered—that is, with the passage c closed, as shown in the drawing, by means of a spring, f , on the valve-stem or rod, c^3 , both circuits at such time being opened. If it is desired to ascend, the operator will press the button d^6 , closing the circuit of the battery B, thus magnetizing the magnet d' . The magnet d' being magnetized, attracts the armature d , moving the valve c^2 toward the right to uncover the port or passage c , thus admitting water to the cylinder b^2 . The water entering the cylinder b^2 moves the

piston b' toward the right, thus drawing the movable sheave a^5 away from the fixed sheave a^4 and elevating the car. During the ascent of the car the circuit of the magnet d is kept
 5 closed; but if it is desired to stop at any time in the ascent the operator will remove his finger from the button to break the circuit, and thus demagnetize the magnet d' . The circuit being broken, the spring f centers
 10 the valve, as shown in the drawing, closing the outlet for the water in the cylinder, thus stopping the movement of the piston b' , and consequently stopping the elevator. If, now, it is desired to descend, the operator
 15 pushes the button d' , closing the circuit of the battery B' and magnetizing the magnet d^2 . The magnet d^2 being magnetized, attracts the armature d , moving the valve c^2 toward the left, thus opening the port c to the exhaust h through the
 20 recess h' in the valve c^2 . The water in the cylinder is forced out in the present instance through the port c into the exhaust h by the weight of the car as the latter descends by gravity. If it is desired to stop on the down-
 25 ward passage of the car, the operator breaks the circuit of the battery B' , whereupon the spring f^2 centers the armature, thus moving the valve into the position shown in the drawings, cutting off the port c from the exhaust h .
 30 The cylinder b^2 , instead of having only a single port or passage, c , at one end, may be ported at each end, in which case the laps of the valve c^2 will be made long enough to cover the ports when the valve is on the center.
 35 Instead of using the springs for centering the valve, I may employ a second set of magnets to operate upon a second armature, which might be an extension of the armature d , the said second set of magnets being also operated by suit-
 40 able push-buttons or switches within the car.

I wish it to be understood that I do not limit my invention to the particular class or style of elevator herein shown, as the said invention is applicable to any of the well-known styles or type of elevator.

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I furthermore do not limit myself to the employment of a main valve, as it is evident that the valve c^2 might be an auxiliary valve and operate equally as well.

I have herein shown the car as provided with
 50 push-buttons; but I do not limit myself to this form of switch, as any other switch might be used.

The method herein described whereby the opening and closing of the valve to admit wa-
 55 ter or steam to the actuating cylinder by electricity is, I believe, novel with me.

I do not herein broadly claim controlling electrically from a distance the valve of an engine.

I claim—

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An elevator-car and a motor mechanism provided with a valve to control the movement of the motor mechanism and effect the movement of the car, combined with switches upon the car, and electrical devices, substantially as de-
 65 scribed, connected with the car and to the motor mechanism and co-operating with the valve of the said motor mechanism to effect from the said car the movement of the valve of the motor mechanism at will, in one or the other di-
 70 rection, and by such movement effect the ascent or descent of this said car, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two sub-
 75 scribing witnesses.

JOHN H. CLARK.

Witnesses:

G. W. GREGORY,
 C. M. CONE.