

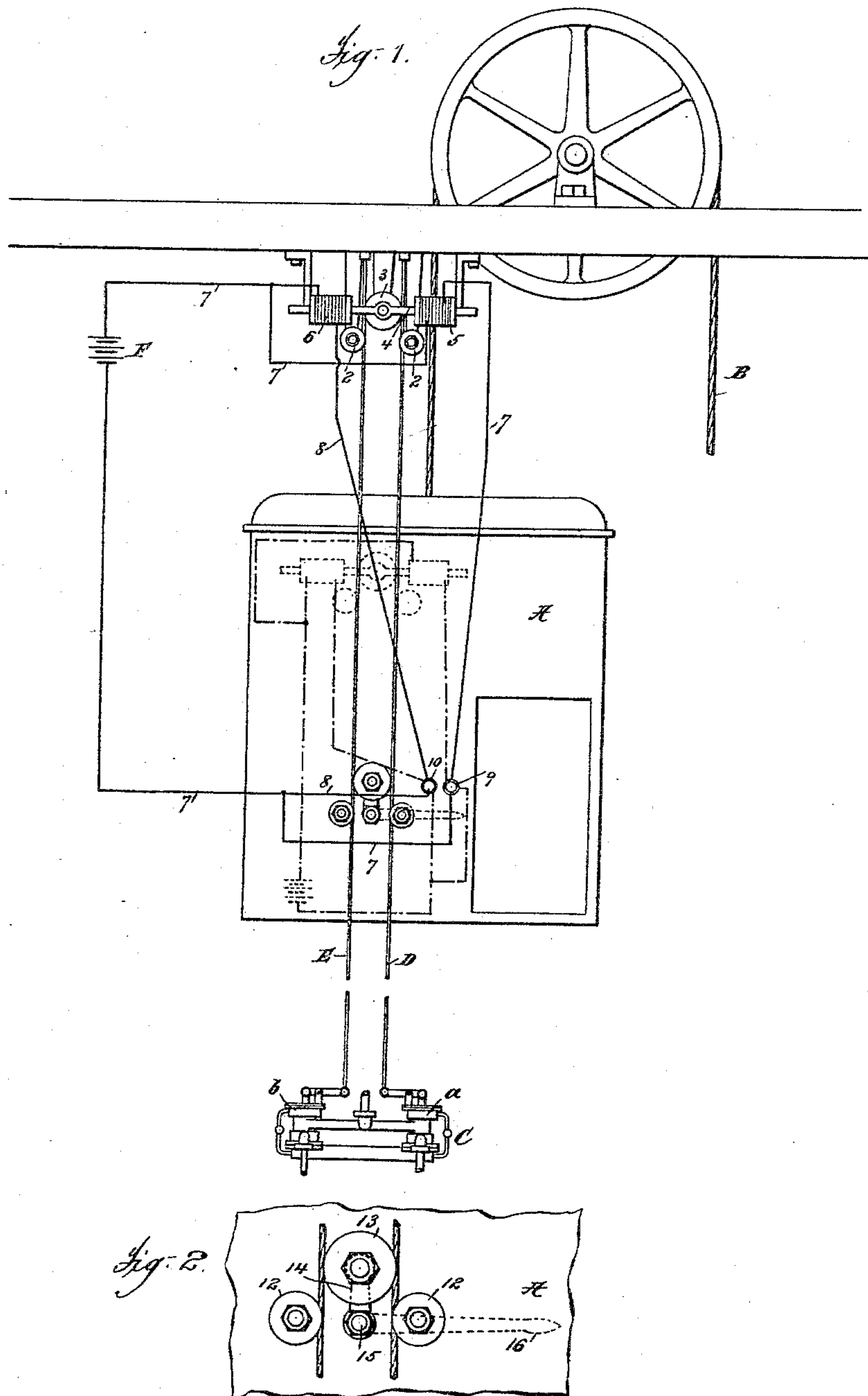
(No Model.)

W. P. GIBSON.

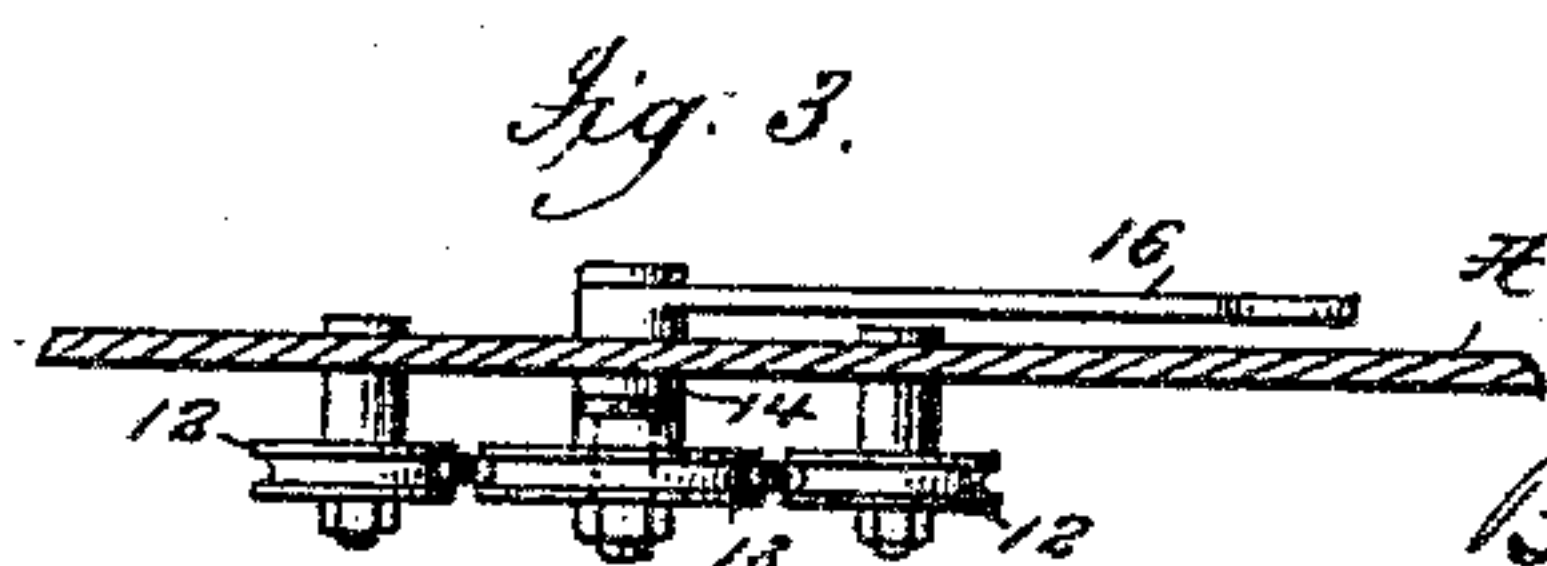
ELECTRICALLY CONTROLLED VALVE OPERATING MECHANISM FOR
ELEVATORS.

No. 412,333.

Patented Oct. 8, 1889.



Attest:
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attys

UNITED STATES PATENT OFFICE.

WILLIAM P. GIBSON, OF NEW YORK, N. Y.

ELECTRICALLY-CONTROLLED VALVE-OPERATING MECHANISM FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 412,333, dated October 8, 1889.

Application filed January 5, 1889. Serial No. 295,550. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. GIBSON, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Electrically-Controlled Valve-Operating Mechanism for Elevators, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a means for operating the valve or other device which controls the movements of an elevator-car by means of combined mechanical and electrical connections, it being the object of the invention to provide a simple, reliable, and economical apparatus by which the valve or other device for controlling the movements of the car can be operated by a circuit closer or closers in the car, and which shall at the same time provide means by which the valve or other device can be operated positively by means of mechanical connections, in case for any reason the electrical connections should fail to operate satisfactorily at any particular time.

In the accompanying drawings, Figure 1 is a diagrammatic view of an elevator-car equipped with means for operating the valve which controls the movements of the car. Fig. 2 is an enlarged side view of a deflecting apparatus carried by the car for operating the valve mechanically, in case of a failure of the electrical apparatus. Fig. 3 is a plan view of said deflecting apparatus.

Referring to said figures, it is to be understood that A represents an ordinary elevator-car, and B its hoisting-cable. The main valve or other device which controls the movements of the car, and which is not herein shown, is operated by means of hydraulic pressure controlled by an auxiliary valve apparatus C, which is of any suitable form for the purpose, but is preferably of the form shown in my companion application for Letters Patent, filed December 31, 1888, Serial No. 294,995, and which need not therefore be herein more particularly described. This auxiliary valve apparatus contains two valves *a b*, which control the movements of the elevator-car in opposite directions. The valves *a b* are connected either

directly or through suitable levers with the lower ends of the two ropes D E, which are suspended from the top of the elevator-shaft and preferably pass through or adjacent to the car.

Located at some convenient point—preferably at the top of the shaft and adjacent to the two ropes D E—are a pair of stationary pulleys 2. Located in close proximity to the pulleys 2, either above or below them and arranged between the two ropes, is a deflecting-pulley 3, which is free to move in opposite directions, so as to deflect either one of the ropes D E over the corresponding pulley 2 and thus draw upward upon the rope, so as to operate the valve *a* or *b*, as the case may be, and cause the car to ascend or descend or come to rest, as the case may be. Connected to the pulley 3, and extending upon the opposite sides thereof, is a rod 4, which forms or is connected to the armatures of a pair of electro-magnets 5 6, which are so arranged that when energized they will attract their respective armatures and thus draw the pulley 3 in one direction or the other, according to which magnet is energized, so as to deflect the rope D or E, as the case may be, and operate the corresponding valve of the auxiliary valve mechanism.

The magnets 5 6 may be of the ordinary form, but are preferably of the solenoid form, as herein illustrated, the opposite ends of the rod 4 extending through the coils of the magnets and forming the armatures or cores of the respective magnets. The magnets 5 6 are included in electric circuits 7 and 7-8, which include a suitable battery, as indicated at F, and also include push-buttons or other circuit-closers 9 10, carried upon the car. The wires which form the circuits, including the magnets and the push-buttons, are of course sufficiently slack to permit the required movements of the car.

The term "push-button," as herein used, is to be understood as including any other form of circuit-closer.

The operation of the organization thus described is as follows: To cause the car to move in one direction, the conductor in the car will operate the push-button 9, thereby closing the circuit through the magnet 5 and

causing it to attract its armature and move the pulley 3, so as to deflect the rope D and operate the valve *a*, which valve will, through suitable connections, cause the car to move 5 in the desired direction. To cause the car to move in the reverse direction, the conductor will operate the push-button 10, thereby closing the circuit through the magnet 6, and in the same manner deflecting the rope E, so as 10 to operate the valve *b* and cause the valve to move in the reverse direction. The magnets 5 6 and pulleys 2 3 will preferably be located at the top of the elevator-shaft, as shown by full lines in Fig. 1; but they may, if preferred, 15 be carried by the car, as indicated by dotted lines in said figure, and in such case the ropes D E will of course pass through or adjacent to the car, so as to be in position to be operated upon by the pulleys and be de- 20 flected.

In addition to the electrical appliances which have been described for controlling the movements of the car it is desirable to provide means by which the valve can be posi- 25 tively controlled through mechanical connections in case for any reason the electrical connections become temporarily deranged or inoperative. For this purpose the ropes D E will preferably pass through or adjacent to 30 the car, as before stated, and the car will be provided with two stationary deflecting-pulleys 12, located upon opposite sides of the respective ropes, and with a movable deflecting-pulley 13, located between the ropes and 35 either above or below the pulleys 12. The pulley 13 is carried by an arm 14, projecting from a shaft 15, which is supported in the side of the car and is provided with a hand-lever 16, which is located in the car in con- 40 venient position for the conductor.

In the ordinary operation of the elevator the deflecting mechanism just described will remain idle; but in case, for any reason, the electrical apparatus becomes inoperative tem- 45 porarily the conductor can, by operating the lever 16, rock the pulley 13 in either direc-

tion, so as to deflect either one of the ropes, and thus have positive control of the valves *a b*, and through them of the valve or other mechanism which controls the movements of 50 the car.

The deflecting apparatus operated by the electro-magnets, and also the deflecting apparatus controlled by the lever 16, are preferably of the form shown; but they may be 55 modified considerably without departing from the essential feature of the invention, so long as they provide means for deflecting the respective ropes as they are required.

What I claim is— 60

1. The combination, with the elevator-car, of an auxiliary valve mechanism for controlling the movements of the car, ropes sus- 65 pended from the top of the shaft and connected to said auxiliary valve mechanism to control the same, a deflecting mechanism consisting of deflecting-pulleys for deflecting said ropes, electro-magnets for operating said 70 deflecting mechanism, and electric circuits, including said magnets and push-buttons, located upon the car, substantially as described.

2. The combination, with the elevator-car, of an auxiliary valve mechanism for controlling the movements of the car, ropes suspended 75 from the top of the shaft and connected to said auxiliary valve mechanism to control the same, a deflecting mechanism consisting of deflecting-pulleys for deflecting said ropes, electro-magnets for operating said deflecting 80 mechanism, electric circuits, including said magnets and push-buttons, located upon the car, a deflecting mechanism consisting of deflecting-pulleys carried by the car, and a hand-lever for operating said deflecting mechanism, substantially as described. 85

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WM. P. GIBSON.

Witnesses:

J. J. KENNEDY,
G. M. BORST.