(No Model.)

W. E. H. OTTO.

CONTROLLING MECHANISM FOR ELEVATORS.

No. 572,214. Patented Dec. 1, 1896.

Fig. 1.

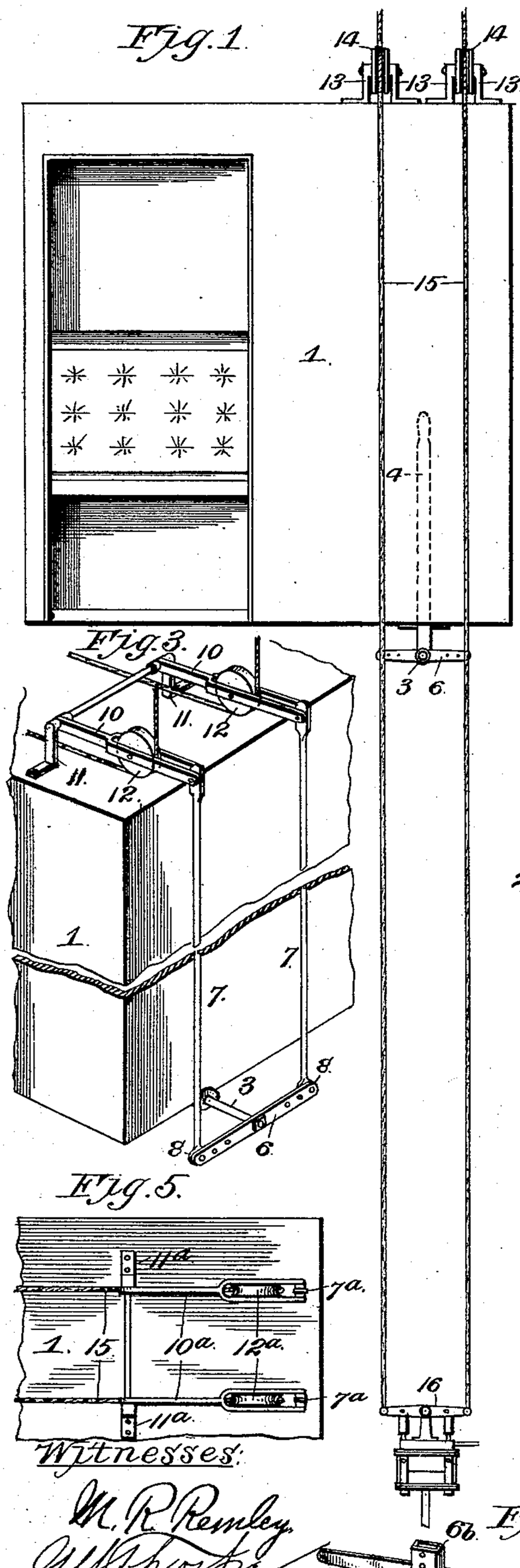

Fig. 2.

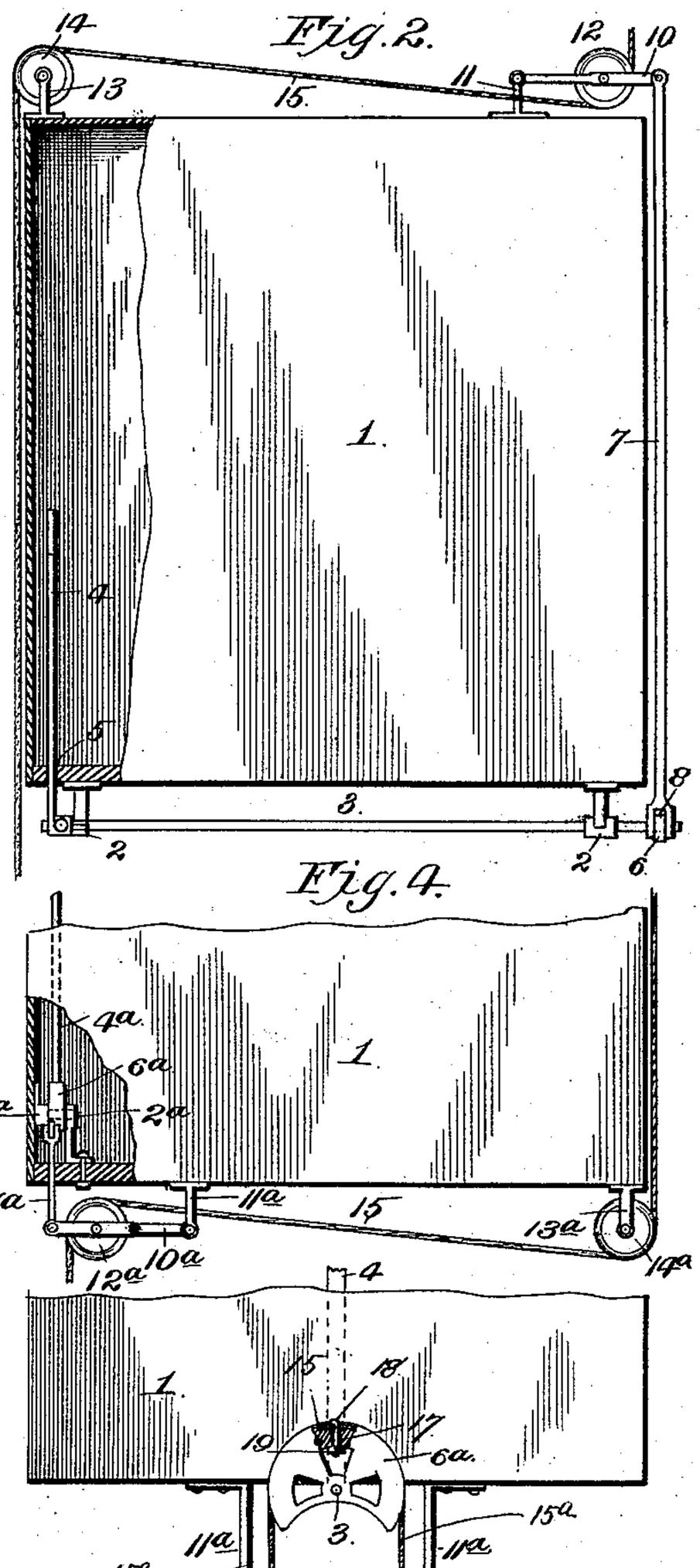

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Witnesses:

M. R. Remley.

G. L. Knopf.

Inventor:

Wm. E. H. Otto

By, Higdon & Higdon

Attys.

UNITED STATES PATENT OFFICE.

WILLIAM E. H. OTTO, OF KANSAS CITY, MISSOURI.

CONTROLLING MECHANISM FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 572,214, dated December 1, 1896.

Application filed September 28, 1895. Serial No. 563,947. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. H. OTTO, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Controlling Mechanism for Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in controlling mechanism for elevators, and the objects of my invention are to produce an operating mechanism which is simple, durable, and comparatively inexpensive of construction and capable of being easily and quickly manipulated, and which shall be direct and positive in its action.

A further object of my invention is to produce an operating mechanism which, in addition to the advantages above enumerated, shall be at all times under the perfect control of an operator.

With these objects in view my invention consists in certain peculiar and novel features of construction and arrangement, as will be hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents a front elevation of an elevator with a controlling mechanism applied thereto embodying my invention. Fig. 2 represents a side elevation of the same, showing the elevator-car partly broken away to show the operating-lever within the car. Fig. 3 represents a perspective view of a portion of the elevator-car, showing the construction and arrangement of the operating-levers upon the car and the rock-shaft and rocking lever beneath the car. Fig. 4 represents a portion of an elevator-car, showing applied thereto a modified arrangement of the controlling mechanism. Fig. 5 is an inverted plan view of a part of Fig. 4. Fig. 6 is a rear elevation of a car provided with a still further modified form of controlling mechanism. Fig. 7 is a detail perspective view of the rock-arm, to which the operating-lever is secured.

In the drawings, 1 designates an elevator car or cage, which is of the usual or any preferred construction.

2 designates two or any suitable number of pendent bearing-brackets, which are bolted or otherwise suitably secured to the under side of the car, and 3 designates a rock-shaft extending, preferably, from front to rear and projecting at its opposite ends through said bearing-brackets. The lower end of the operating-lever 4 is secured upon the front end of the rock-shaft and extends upwardly through a slot 5 in the floor of the elevator-car, the said slot extending in a direction at right angles to the longitudinal arrangement of the rock-shaft. The rear end of the rock-shaft projects a slight distance beyond the rear side of the elevator-car, and a rocking lever 6 is secured thereon.

A pair of pull-rods 7 7 extend parallel and vertically at the rear side of the elevator-car and have their lower ends bifurcated or not, and pivotally connected, as at 8, to opposite ends of the rocking lever 6 by bolts which pass through registering holes in said rocking lever and rods. The series of holes in the opposite ends of the rocking lever to which said pull-rods are pivoted allows of the adjustment of the operating-lever to any throw desired.

The upper ends of the parallel pull-rods 7 7 are pivotally connected to the free or outer ends of the levers 10, which are pivoted at their inner ends to standards or brackets 11, bolted or otherwise firmly secured upon the top of the elevator-car. These levers 10 are bifurcated for a suitable distance from their outer ends, and grooved guide sheaves or pulleys 12 are revolubly mounted in said bifurcations, and a suitable distance from the pivotal point of the depression-levers 10. Standards or supporting-brackets 13 are bolted or otherwise suitably secured upon the top of the elevator-car, and grooved sheaves or guide-pulleys 14 are revolubly supported between them, so as to longitudinally aline with the sheaves or guide-pulleys carried by the depression-levers, and also to project slightly beyond the front side of the elevator-car.

The valve-controlling cables 15 15 are each suitably secured to the framework (not shown) in the upper end of the shaft or in any other

suitable manner at their upper ends, and, passing under the guide sheaves or pulleys 12, carried by the pivoted depression-levers 10, extend forwardly over the stationary or fixed guide sheaves or pulleys 14, thence downward and adjacent to the front face of the elevator-car, and are attached at their lower ends to opposite ends of the rocking lever 16 of the valve, which is located in the bottom of the elevator-shaft. As said valve forms no part of my invention it is not deemed necessary to describe it in this connection.

Referring now to Figs. 4 and 5, which illustrate slightly-different arrangements of the valve-controlling cables and their connections, 4^a designates the operating-lever, the lower end of which is bolted within a socket 6^b of a rocking lever 6^a, which is pivotally supported between a pair of standards or brackets 2^a 2^a within the elevator-car. The opposite ends of the rocking lever 6^a are pivotally connected to the upper ends of a pair of short pull-rods 7^a 7^a, which extend downward through the floor of the car, and are pivotally engaged at their lower ends in the bifurcations of the levers 10^a, which are pivoted at their inner ends to the lower ends of the pendent standards or brackets 11^a, bolted at their upper ends to the bottom of the car. Guide-sheaves or grooved pulleys 12^a are revolubly supported in the bifurcations of said arms, and grooved sheaves or pulleys 14^a are revolubly supported between pendent brackets 13^a, which are bolted to the under side of the car near its rear edge, so that the sheaves or pulleys 14^a shall aline with the sheaves or pulleys 12^a, and also shall project slightly beyond the rear side of the elevator-car. The cables in this instance are secured at their upper and lower ends, as described, and pass from the rear under the guide sheaves or pulleys 14^a and forwardly over the sheaves or pulleys 12^a, carried by the depression-levers 10^a.

In Fig. 6 a still further modification is shown. In said figure appears the rock-shaft 3 of Figs. 1, 2, and 3 and the depression-levers 10^a, brackets 11^a, and sheaves 12^a of Figs. 4 and 5, all arranged at the under side of the car. In this case I mount a segment-shaped rocking lever 6^a upon the rear end of shaft 3, and extending around the same is a cable 15^a, the ends of which are attached to the free ends of the levers 10^a. Said segmental lever is provided at its middle with a radial hole 17, through which extends the eyebolt 18, and through the eye of said bolt extends the cable, so that by adjusting the eyebolt in said hole by means of a nut 19 the cable can be clamped tightly to the lever that it may not slip thereon when it is desired to open or close the valve by the manipulation of the lever 4. The cable 15 extends in the manner described from the upper to the lower end of the shaft and around the guide-sheaves, as illustrated. The advantage of the segmental lever and the flexible connection 15^b between the same and the depression-levers lies in the fact that the pull upon the latter is always in direct lines both up and down, while with pull-rods not flexible there is a slight lateral as well as vertical movement, due to the fact that their pivotal points of connection with the rocking arm must approach and recede alternately toward and from the vertical plane of the axis of said rock-arm.

The operation of my improved valve-controlling mechanism is as follows: The operating-lever and the rock-shaft 16 being in the position shown in Fig. 1, the elevator-car is at rest, and when, desiring to raise the elevator-car, the lever is swung to one side the rock-shaft 3 causes the upward and downward movement of the pull-rods, causing in turn the swinging movement of the levers 10 and 10^a, one to move upwardly and the other downwardly, and thus acting upon the valve-controlling cables 15 causes an upward pull upon one and allows the other to slacken, so as to operate the rock-lever 16. To move the elevator downward, the operation is reversed.

From the above description it will be seen that I have produced a simple, durable, and effective valve-controlling mechanism to be operated by a lever within the car.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A valve-controlling mechanism for elevator-cars, comprising an operating-lever, a rocking lever connected to respond to the movement of the operating-lever, a pair of levers mounted upon the car and connected to respond to the movements of the rocking lever, guide-sheaves carried by said pair of levers, guide-sheaves mounted upon the car, and cables engaging said sheaves and the sheaves of the said pair of levers, and adapted to be operated by the movement of the operating-lever, substantially as described.

2. A valve-controlling mechanism for elevator cars or cages, comprising a rock-shaft, an operating-lever secured to said rock-shaft and projecting into the car, a rocking lever mounted upon said rock-shaft, a pair of levers mounted upon the car, a pair of pull-rods pivotally connecting said levers and the rocking lever, guide-sheaves carried by said pair of levers, guide-sheaves mounted upon the car, and cables guided around said sheaves and adapted to be actuated by the operation of the operating-lever within the car, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM E. H. OTTO.

Witnesses:
M. R. REMLEY,
G. Y. THORPE.