

(No Model.)

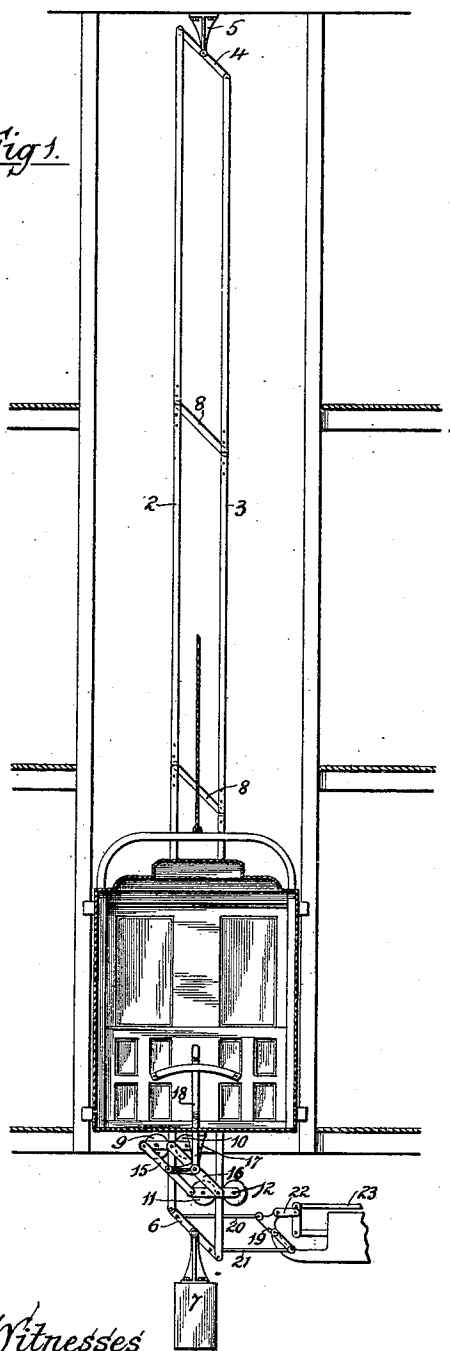
2 Sheets—Sheet 1.

H. ROWNTREE.
ELEVATOR CONTROLLING DEVICE.

No. 473,198.

Patented Apr. 19, 1892.

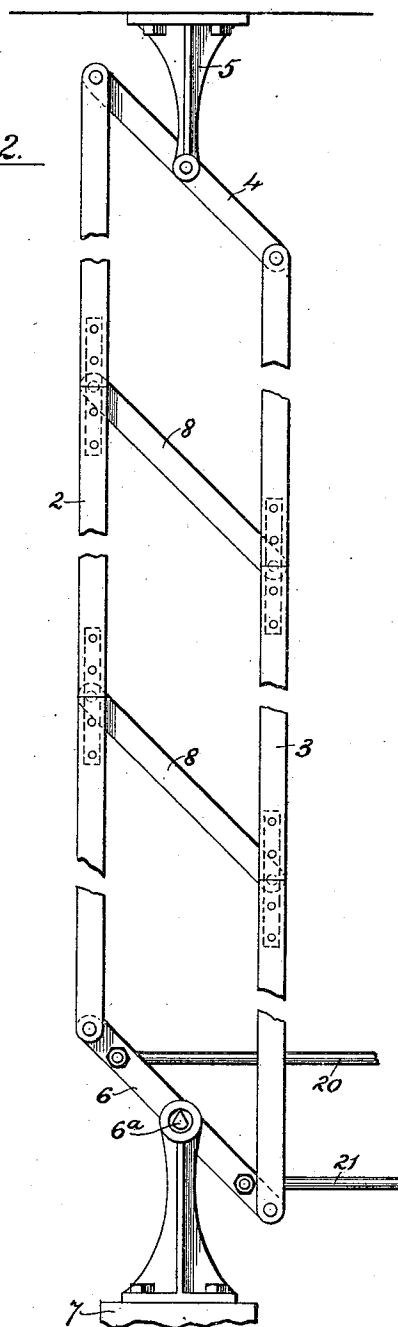
Fig 1.



Witnesses

Wm. N. Rheems
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Fig 2.



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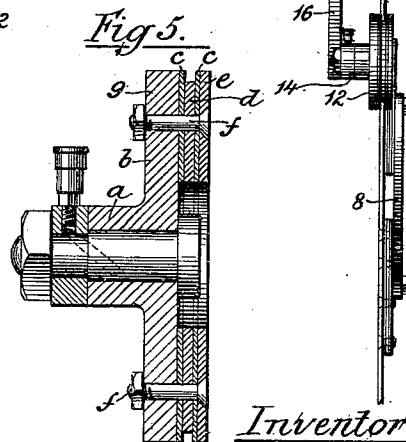
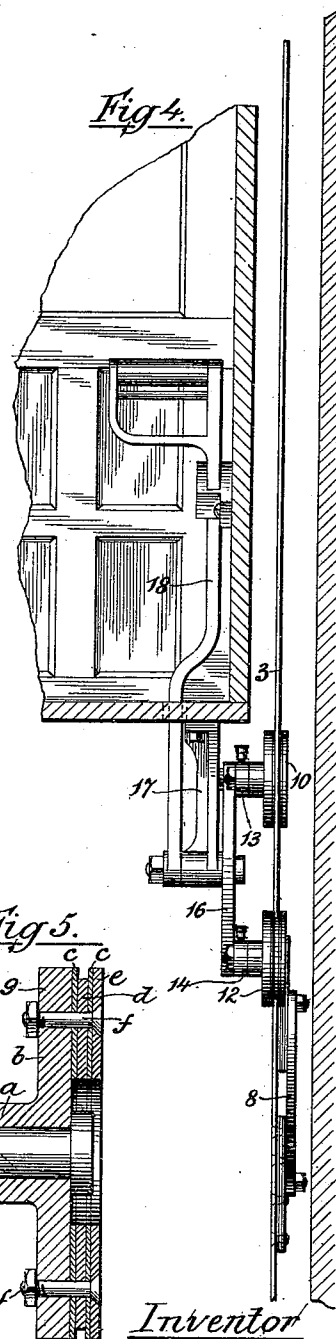
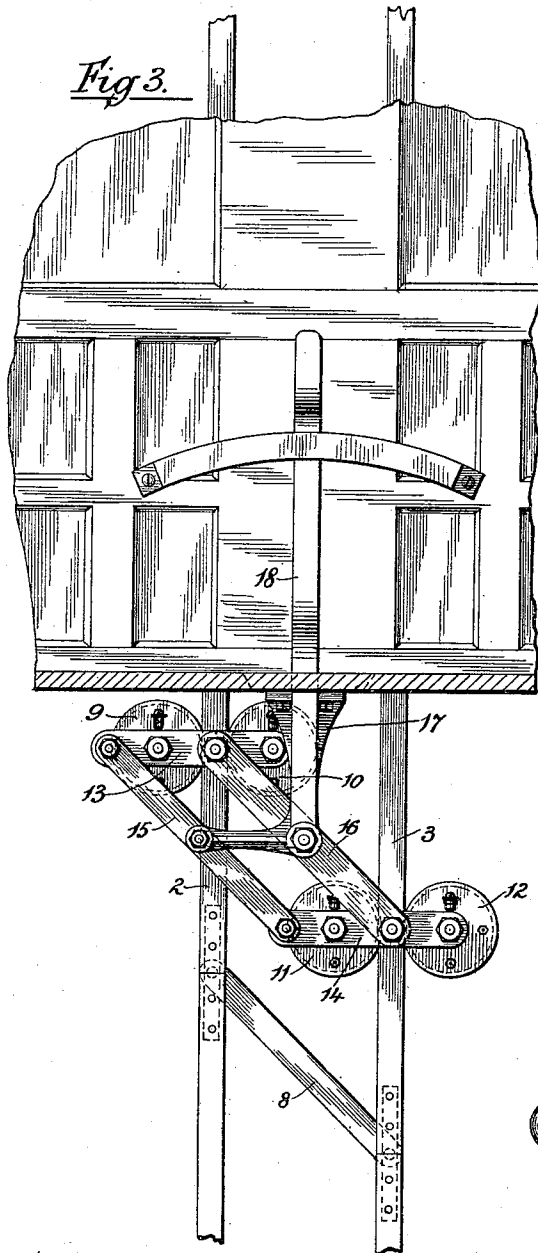
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UNITED STATES PATENT OFFICE.

HAROLD ROWNTREE, OF KANSAS CITY, MISSOURI, ASSIGNOR TO THE CRANE ELEVATOR COMPANY, OF CHICAGO, ILLINOIS.

ELEVATOR-CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 473,198, dated April 19, 1892.

Application filed January 18, 1892. Serial No. 418,482. (No model.)

To all whom it may concern:

Be it known that I, HAROLD ROWNTREE, a citizen of the United States, residing at Kansas City, county of Jackson, and State of Missouri, have invented certain new and useful Improvements in Devices for Controlling the Operation of Elevators, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to provide mechanism for moving positively the valve, switch, or other controlling device by which the movement of the motor or engine actuating the elevator is governed, the amount of movement imparted to said controlling device being absolutely under the control of the operator upon the car. I also provide means for rendering the operation of the mechanism certain under varying conditions of temperature. The derangement of the action of the mechanism through the settling of the building or swaying of the car or from wearing of the parts is also guarded against.

In the drawings, Figure 1 is a vertical section of an elevator-car showing also the control mechanism and enough of the devices connected therewith to illustrate my invention. Fig. 2 is a separate view of a part of the control mechanism. Fig. 3 shows a portion of a car in section and a part of the control mechanism connected therewith. Fig. 4 is a view of the same parts, taken from a plane at right angles to that of Fig. 3; and Fig. 5 illustrates in detail the construction of the shifting-pulleys.

2 3 are parallel rods hung vertically in the elevator-well from the opposite ends of the lever 4, which is pivoted at a point intermediate from its ends to a support 5 at the top of the elevator-well. The lower ends of the rods 2 3 are connected by a lever 6, which is parallel to and in other respects like the lever 4 at the top. From the pivot of the lever 6 is suspended a weight 7, which is thus connected to the rods 2 and 3 through the lever and serves to keep them in tension and so prevents their buckling.

At suitable intervals throughout the length of the rods 2 and 3 are pivoted links 8 8, which serve to maintain the parallelism of the rods 2 and 3 throughout their length. Running

upon each rod 2 and 3 is a pair of sheaves 9 10 and 11 12, respectively. (See Fig. 3.) Each pair of sheaves is connected by bars 13 and 14, upon which they are respectively mounted, and said bars are connected by parallel arms 15 and 16, both of said arms being pivoted to a bracket 17, carried upon the car. One of said arms is connected to a hand-lever 18, so that by means of the latter the movement of the pulleys 9 10 and 11 12 may be effected through the link-work just described.

It is evident that the shifting of the hand-lever 18 to one side or the other of its central position will cause the rods 2 and 3 to approach to or recede from each other, the amount of said motion being precisely determined by the amount of movement given to the hand-lever 18, and the amount of this movement will be independent of the position of the car. In order to permit the lateral pressure of the rollers upon the rods 2 and 3 to be effective in shifting them, the levers and links 4, 6, and 8 must be oblique, as shown, and to secure the best action it is preferable that the arms or links 15 and 16 should have a corresponding obliquity, though this is not absolutely necessary. In fact it is not absolutely necessary to employ the link-work shown for connecting the lever 18 and the pulleys 9 10 and 11 12 at all, as equivalent devices for accomplishing the same purpose—namely, the simultaneous and opposite movement of two pairs of pulleys—can be employed without departing from my invention.

The lateral movement of the rods 2 and 3 imparts movement to the controlling device, whatever it may be, through the devices shown at the lower part of Fig. 1.

The lever 19, working upon a fixed pivot, is arranged parallel to the lever 6, and parallel rods 20 21 connect the ends of lever 6 to the corresponding ends of lever 19. The four points of attachment thus form a parallelogram. This arrangement permits the rods 2 and 3 to expand and contract under variations of temperature without affecting the lever 19, and it also compensates for any inaccuracy in the vertical height of the rods 2 and 3, whether such inaccuracy is in the original workmanship or results from the settling of the building; but any lateral movement im-

parted to the rods, causing them to approach to or recede from each other, will move the lever 6 and will impart a like movement to the lever 19. The latter is connected in any convenient manner, as by a link 22, to the valve-rod 23, which controls the controlling device.

In the drawings only a portion of the controlling device is shown, as this forms no part of the present invention, and it may be of any desired sort.

In order to secure greater ease of working, the pivots which sustain the rods 2 and 3 and the weight 7 may be provided with anti-friction devices, one of said devices consisting of the reduction of the pivot to a "knife-edge," such as are used on scales, as shown at 6^a upon the lever 6, Fig 2.

If the car should not be a close fit upon the guides, the control-gear will not be effected thereby, as the movements of the controlling-valve depend wholly upon the relative position of the rods 2 and 3, and such position would not be affected by the swaying of the car, which would be occasioned by looseness of the guides.

In order to secure the noiseless working of the pulleys 9 10 and 11 12 upon their respective rods, I have devised the construction shown in Fig. 5. As there shown, the pulley is built up of a number of sections, the main body consisting of a sleeve *a*, having a flange *b*, to the face of which are bolted the several rings which form the bearing-surface of the pulley. *c c* are two rings of rawhide, leather, or similar substance, and *d* is a ring, of slightly less diameter, of the same material, interposed between the two rings *c c*, a groove being thus formed in which the rod 2 or 3 may run. An outer ring *e* of metal, held by bolts *f*, clamps all the rings upon the flange *b*.

It is to be understood that modifications may be made in the details of the mechanism herein described without departing from the spirit of my invention.

Without confining myself to the precise details of construction herein shown and described, I claim—

1. The combination, in an elevator-control apparatus, of parallel rods suspended in the elevator-well and connected by links, devices upon the car engaging with said parallel rods and adapted to increase or diminish the distance between said rods, a controlling device governing the movement of the motor or engine, and connections between said controlling device and said rods, substantially as described.

2. The combination, in an elevator-control apparatus, of parallel rods suspended in the well, links connecting said rods, a pair of sheaves running upon each of said rods and connected by link-work to a lever upon the car and adapted to increase or diminish the distance between said rods, a controlling device governing the movement of the engine or mo-

tor, and connections from said rod to said operating device, substantially as described.

3. The combination of a pair of vertical rods suspended from a lever at the top of the elevator-well and connected at their lower ends by a corresponding lever, a weight connected to said rods and serving to keep them in tension, devices upon the car by which the distance between said rods may be increased or diminished, a controlling device by which the movement of the motor or engine is governed, and connections from said rods to said controlling device, substantially as described.

4. The combination, in an elevator-operating apparatus, of a pair of vertical rods suspended from a lever at the top of the elevator-well and connected at their lower ends by a corresponding lever, devices upon the car by which the distance between said rods may be increased or diminished, a controlling device by which the movement of the motor or engine is governed, connections from said vertical rods to said controlling device, said connections consisting of a lever having a fixed pivot and connected to said operating device, and parallel rods connected to the opposite ends of said lever and to said vertical rods, so that the four points of connection form a parallelogram, substantially as described.

5. The combination, in an elevator-control apparatus, of parallel rods suspended in the elevator-well, a controlling device governing the movement of the engine or motor, connections between said rods and said controlling device, and an operating device upon the car adapted to increase or diminish the distance between said rods, said device consisting of a pair of sheaves running upon each rod, a bar connecting each pair of sheaves and arms connecting said bars, said bars and arms forming a parallelogram, and a hand-lever connected to one of said arms, substantially as described.

6. The combination, in an elevator-operating apparatus, of a pair of vertical rods suspended from a lever at the top of the elevator-well and connected at their lower ends by a corresponding lever, a weight connected to said rods and serving to keep them in tension, devices upon the car by which the distance between said rods may be increased or diminished, a controlling device by which the movement of the motor or engine is governed, connections from said rods to said controlling device, said connections consisting of a lever having a fixed pivot and connected to said controlling device, and parallel rods connected to the opposite ends of said lever and to said rods, so that the four points of connection form a parallelogram, substantially as described.

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Witnesses:

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