(No Model.)

M. W. HOBEN.

ELEVATOR HATCHWAY OPENING MECHANISM.

No. 301,893. Patented July 15, 1884.

FIG. 1.

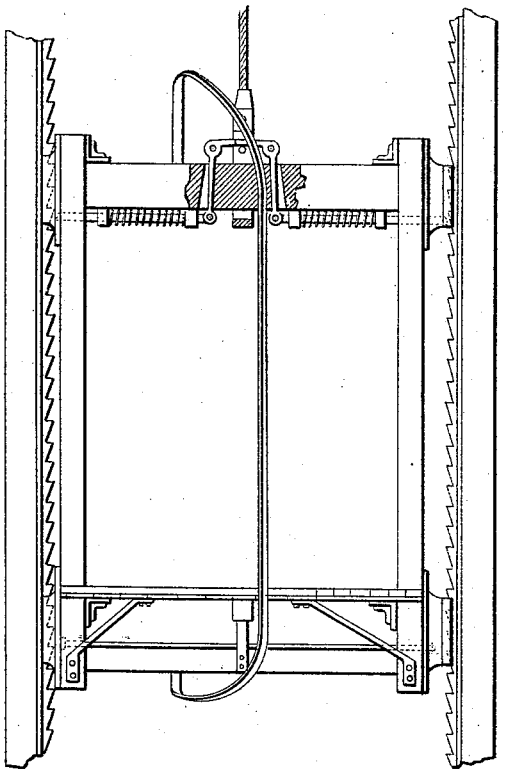


FIG. 2.

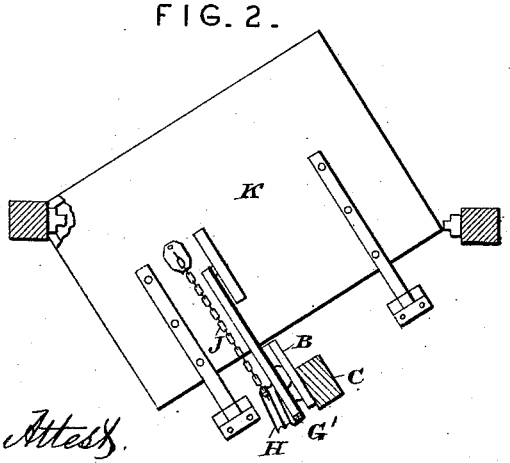


FIG. 3.

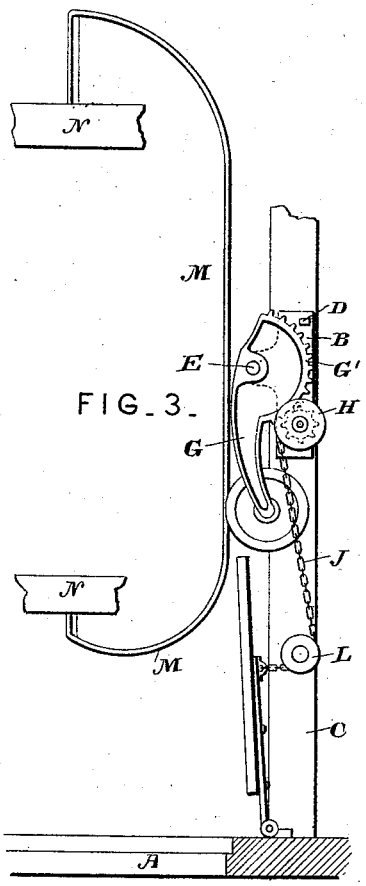
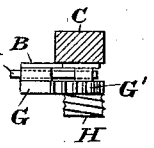


FIG. 4.



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ELEVATOR-HATCHWAY OPENING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 301,893, dated July 15, 1884.

Application filed May 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, MARTIN W. HOBEN, of Cohoes, county of Albany, and State of New York, have invented a new and useful Improvement in Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to an improvement in that class of elevators employed in buildings or mines, in which a pendent cage or platform is raised or lowered between suitable guides by means of a rope or equivalent, to which the said cage or platform is attached, and which passes over pulleys and is wound thereon or paid out in any usual or ordinary manner.

My invention consists, mainly, in the combination, with an elevator cage or platform, of a hatchway-opening mechanism so arranged with regard to the path of the said cage that it shall be acted upon thereby and caused to automatically open the door of the hatchway in a manner hereinafter fully set forth.

My invention consists, also, in certain details of construction and arrangement of parts hereinafter specified.

In the accompanying drawings, Figure 1 is an elevation of an elevator-cage, showing the guide-rails, safety-racks, rope or cable, and the actuating presser-bar of the hatchway-opening mechanism. Fig. 2 is a plan view of the hinged hatch and a portion of the automatic opening mechanism for opening and closing the same. Fig. 3 is a front elevation of the automatic devices for opening and closing the door of the hatchway, and Fig. 4 is a plan view of a portion of the device shown in Fig. 3.

The general construction and arrangement of the elevator-cage, the guide-rails, safety-racks, cable or rope, the sliding catch-bolts, and the means for actuating them to engage with the safety-racks have been fully described in an application filed by me on or about March 27, 1884, Serial No. 125,766, (allowed May 2, 1884,) and need not therefore be described in detail herein further than is necessary to an understanding of my present invention.

As before stated, this invention relates merely to the means for automatically opening and closing the hatchway, and may be applied to any passenger or freight elevator in use. The means whereby this end may be accomplished will now be described.

A represents a hatchway or opening in a floor through which the elevator-cage passes. B is a steel plate secured to the post C by bolts D. Studs E and F of the stud-plates carry, respectively, the segment-lever G, pinion G′, and drum H. The drum is fast to and moves with the pinion. The outer end of the segment-lever carries a presser-wheel, I. The chain J forms a flexible connection between the drum H and the hatch or door K, passing around the guide-sheave L.

M is the presser-rod, attached above to the cross-head N and below to the lower cross-piece N′ of the cage O. If the cage ascend from below the closed hatch, the presser-bar, pressing against the door, forces it open and the presser-wheel drops, bringing down the end of the segment-lever. The segment causes the pinion to revolve, revolving the drum with it, the chain winding upon the drum. The presser-rod, pressing on the presser-wheel in passing, forces the parts into the position shown in Fig. 3, and holds them there until the cage has passed up out of the way, when the weight of the hatch causes it to close, unwinding the chain, and, through the pinions and segment, throws the segment-lever into a horizontal position, as shown in Fig. 2. When the cage descends again, the presser-rod pushes the segment-lever down again into the position shown in Fig. 3, opening the hatch to allow the cage to pass. By substituting a segment, pinion, and drum for the cams heretofore used for automatically working elevator-hatchways, an economy of space is effected; and my invention can be so varied in its details as to accommodate it to many circumstances and places where the cams of necessarily larger radius could not be used.

I do not confine myself to the use of spur-gears, because it may frequently be convenient to use a bevel or miter segment and pinion. Neither do I confine myself to the use of a drum with a spiral groove for winding up the chain, rope, or other flexible connection employed, because with a flat rope no grooves would be required, and the spiral grooves are

not necessary if the drum is properly flanged even for a round rope or chain; nor is a spiral groove necessary when not more than one turn of the drum is required to wind up the rope. The drum H in the latter case would be simply a grooved pulley or sheave.

If necessary or desirable, a horizontal shaft revolving in suitable bearings may be employed with a drum, *k*, on each end with two chains or ropes instead of one connecting with the hatch, and the pinion J may be placed between the two drums.

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

1. The combination of the segment-lever G, pinion G′, drum H, flexible connection J, and hinged hatch K, with the presser-rod M, attached to the elevator-cage, substantially as described.

2. The combination of the presser-wheel I, segment-lever G, pinion G′, drum H, flexible connection J, and hinged hatch K, with the presser-rod M, attached to the elevator-cage, substantially as described.

3. The combination of the presser-wheel I, segment-lever G, pinion G′, drum H, flexible connection J, guide-sheave L, and hinged hatch K, with the presser-rod M, attached to the elevator-cage, substantially as described.

4. The combination of the presser-wheel I, segment-lever G, pinion G′, spirally-grooved drum H, flexible connection J, guide-sheave L, and hinged hatch K, with the presser-rod M, attached to the elevator-cage, substantially as described.

In testimony whereof I have hereunto set my hand this 27th day of May, A. D. 1884.

MARTIN W. HOBEN.

Witnesses:

W. J. WESTOVER,

WM. S. BROWNE.