No. 837,826. PATENTED DEC. 4, 1906.

A. H. HANDLAN, Jr.

ELEVATOR.

APPLICATION FILED JULY 2, 1906.

Fig. I.

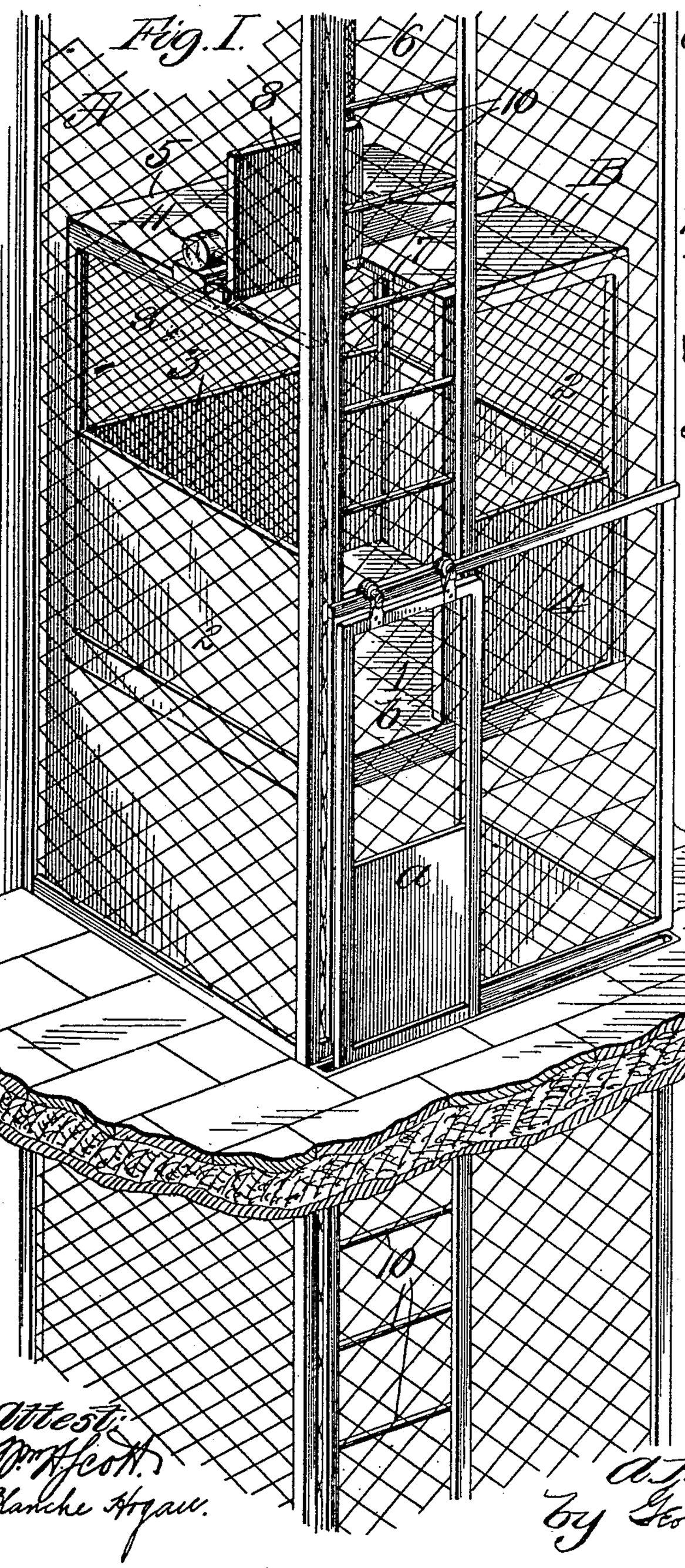
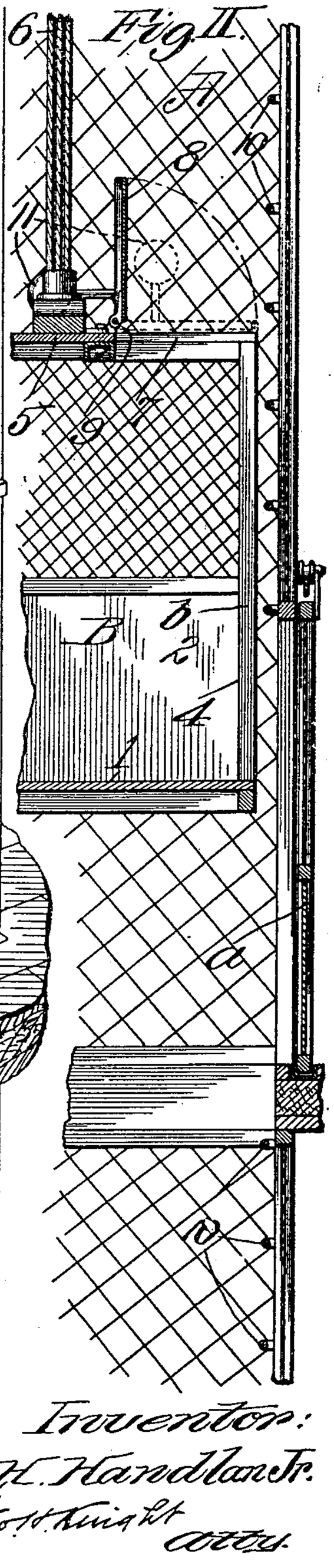


Fig. II.



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UNITED STATES PATENT OFFICE.

ALEXANDER H. HANDLAN, JR., OF ST. LOUIS, MISSOURI.

ELEVATOR.

No. 837,826. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed July 2, 1906. Serial No. 324,346.

To all whom it may concern:

Be it known that I, ALEXANDER H. HANDLAN, Jr., a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a new and useful improvement in elevators, and particularly to that class known as "passenger-elevators," although from the following description it will be seen that it is applicable to all elevators wherein a person is obliged to ride in order to manipulate the same.

The object of this device is to insure to a great extent the safety of a person within the elevator should any of the mechanisms employed in the operation of the same become out of order to the extent of causing the said elevator to descend in a rapid or dangerous manner.

Figure I is a perspective view of a portion of an elevator-shaft, a cage arranged therein, and my invention applied to said shaft and cage. Fig. II is a vertical longitudinal section through a portion of the shaft and cage, the view being taken through the doors thereof.

A represents an elevator-shaft of usual construction, which is provided with the ordinary sliding door *a*.

B represents the cage or elevator proper, which is designed to traverse the interior of the shaft A in a manner well understood. This cage is composed of a floor 1, side walls 2, back wall 3, front wall 4, and a roof 5, and attached to said cage in any well-known manner are the operating-cables 6. The front wall 4 of this cage B is provided with a door-opening *b*, which is designed to register with the door-openings closed by the door *a* of the shaft. This door-opening *b* is entirely open at its upper end—that is, there is no upper frame member—and formed in the roof 5 of the cage is an opening or cut-away portion 7, which opening forms practically a continuation of the door-opening *b*, but is disposed approximately at right angles thereto.

8 designates a trap-door, hinged at 9 to the roof 5 of the cage, and is designed under ordinary conditions to cover the opening 7, whereby a complete roof for the cage is provided.

10 indicates a plurality of preferably horizontally-disposed rungs, arranged within the shaft A, and are so positioned as to be out of the path of travel of the cage B, but are directly opposite the door-opening *b* and the roof-opening 7. These rungs are located at suitable distances apart and between the upper end of the opening closed by the door *a* of one floor of a building and the lower end of the door of the floor of the building there next above.

In the event of the cage starting to fall too rapidly, due to some accident to its operating mechanism, an occupant being fearful of his safety will reach his hands outwardly through the door-opening *b* of the cage and grab hold of some one of the rungs 10, door-frame, lattice-work, or sill of the door *a*, holding on thereto while the cage descends, which action on the part of the occupant will cause his arms or head to contact with the trap-door directly above him, open the same, and permit the entire body of the said occupant to pass through the cage unharmed, where he may remain until assistance reaches him.

In order that each occupant, should there be more than one, will not have to successively open the trap-door with his arms or head, as above described, I have arranged a simple device whereby when the door has been once opened it will remain in such condition until it is manually closed. This device consists of a counterweight 11 so positioned on the trap-door that its weight when the door is closed tends to keep it in such position. However, after the door has been opened this weight is thrown to such position that gravity will cause it to hold said trap-door in the aforesaid desired position.

In order to prevent bruising or otherwise injuring the occupant, I make this trap-door of any very light material, such as thin wood or aluminium, which can be opened without offering but very little resistance.

Obviously the trap-door and rungs can be utilized should the cage stop between floors by the occupants in ascending to the floor above, and after said cage has been emptied of its passengers all necessary repairs to the cage, shaft, &c., can be made without endangering persons' lives.

While I have shown the trap-door as extending only over part of the top of the cage, it will be understood that I may in some cases extend this door over the entire width of the cage.

I claim—

1. The combination with an elevator-cage composed of a floor, side walls and a roof, of a vertically-opening counterbalanced door hinged to the roof of said cage, and means supported by the elevator-shaft and which is adapted to be grasped by an occupant of said cage; one of said walls of said cage being provided with a door-opening in juxtaposition to said counterbalanced door, substantially as specified.

2. The combination with an elevator-cage composed of a floor, side walls and roof, of a trap-door arranged in the roof of said cage, and means supported by the elevator-shaft and which is adapted to be grasped by an occupant of said cage; one of said side walls of said cage being provided with a door-opening in juxtaposition to said trap-door, substantially as specified.

3. The combination with an elevator-cage composed of a floor, side walls and roof, of a trap-door arranged in said roof, and means for holding said trap-door in an open position after the same has once been opened; one of said side walls terminating short of one side of said cage whereby a door-opening is provided; said door-opening being located in juxtaposition to said trap-door, substantially as specified.

4. The combination with an elevator-cage composed of a floor, side walls and roof, of a trap-door arranged in said roof; one of said side walls terminating short of one side of said cage whereby a door-opening is provided; said door-opening being located in juxtaposition to said trap-door, an elevator-shaft, and means supported within said shaft which may be grasped by an occupant, substantially as specified.

5. The combination with an elevator-cage composed of a floor, side walls and roof, of a trap-door arranged in said roof, means for holding said trap-door in an open position after the same has once been opened; one of said side walls terminating short of one side of said cage whereby a door-opening is provided; said door-opening being located in juxtaposition to said trap-door, an elevator-shaft, and means supported within said shaft which may be grasped by an occupant, substantially as described.

ALEXANDER H. HANDLAN, JR.

In presence of—

BLANCHE HOGAN,

WM. H. SCOTT.