(No Model.) 2 Sheets—Sheet 1.

A. ELLIOTT.

ELEVATOR GUARD.

No. 490,785. Patented Jan. 31, 1893.

Fig. 1.

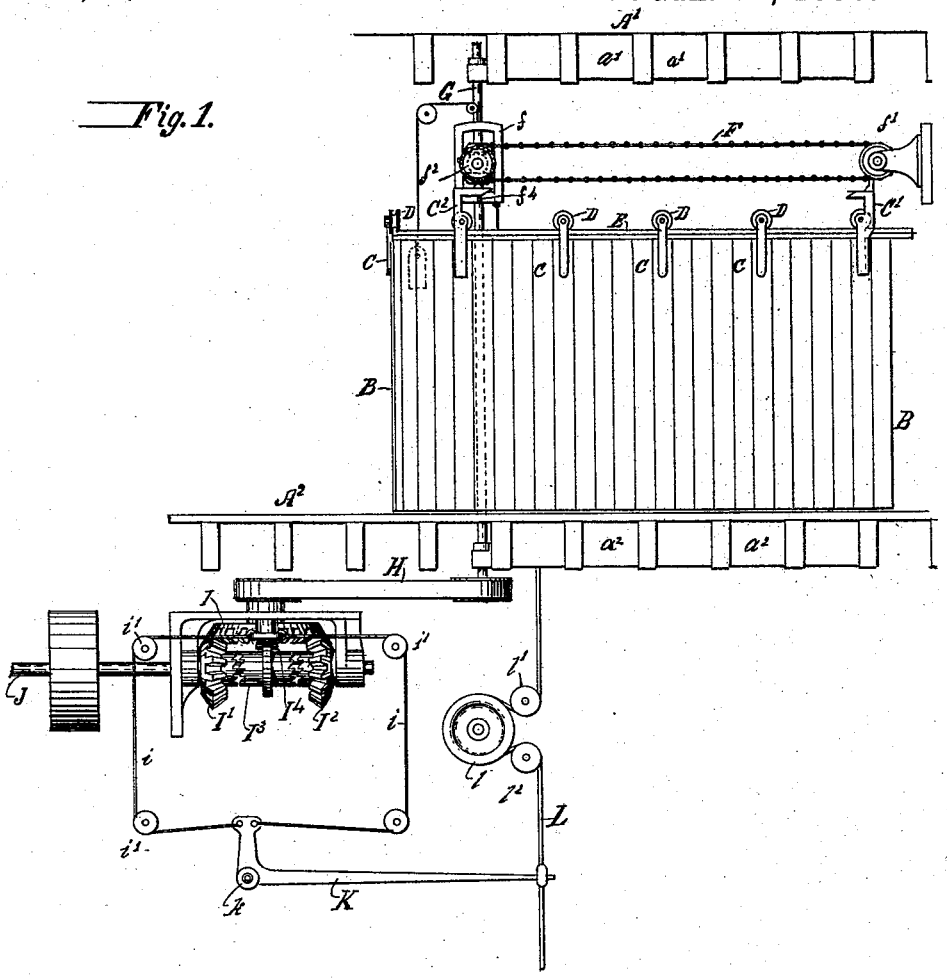
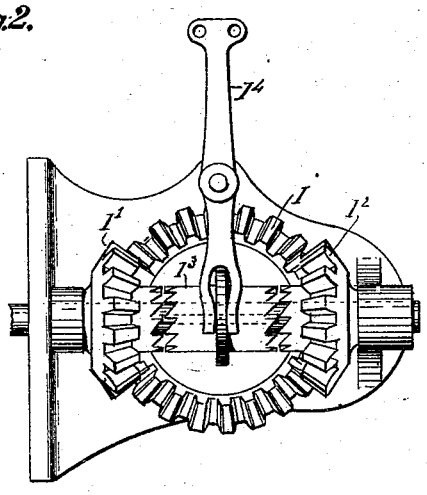


Fig. 2.



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HIS ATTORNEY

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

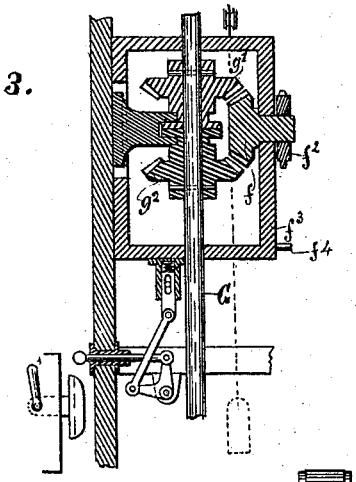
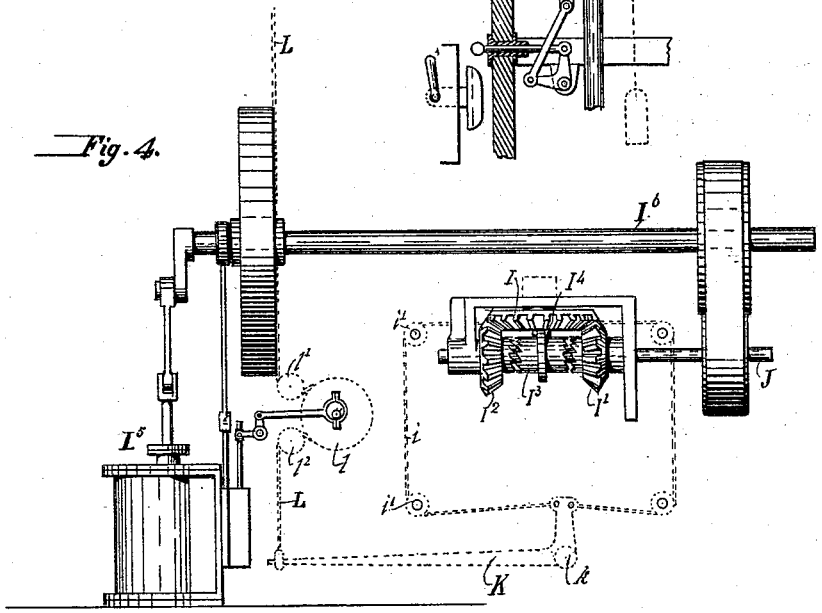


Fig. 4.



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UNITED STATES PATENT OFFICE.

ABRAHAM ELLIOTT, OF ROCHESTER, ASSIGNOR OF ONE-HALF TO THE EXCELSIOR ELEVATOR GUARD AND HATCH COVER COMPANY, OF NEW YORK, N. Y.

ELEVATOR-GUARD.

SPECIFICATION forming part of Letters Patent No. 490,785, dated January 31, 1893.

Application filed February 16, 1892. Serial No. 421,678. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM ELLIOTT, of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Elevator-Guards, of which the following is a specification.

My improvement relates to elevator guards of the kind which are made longitudinally flexible, so that they may be caused to travel from in front of an opening to a hatchway around to one side of the hatchway, so as to hold or directly assume a position at right angles. Ordinarily, these guards are made in the form of doors and commonly such doors are supported at the upper edge by hangers furnished with rollers running along a rail.

The object of my improvement is to provide for moving an elevator guard of the kind mentioned in opposite directions without reversing the engine employed for moving it.

I will describe an apparatus embodying my improvement and then point out the novel features in a claim.

In the accompanying drawings, Figure 1 is an elevation of the front of a hatchway and of an apparatus through which motion may be transmitted to a guard employed in connection with said hatchway. Fig. 2 is an inverted plan of certain parts. Fig. 3 is a sectional elevation of a certain part. Fig. 4 shows a driving power and its connections with the guard operating mechanism.

Similar letters of reference designate corresponding parts in all the figures.

A′ A^2 designate floors in a building. A hatchway is provided between and through these floors. The bottom sills of this hatchway where it intersects the floors A′ A^2 are marked a' a^2 and indicate the position of the hatchway.

B designates an elevator guard, here shown as made in the form of a longitudinally flexible door. In order that this door may be longitudinally flexible, it is made up of a number of strips flexibly connected together. These slats may be connected together by hinges or in any other suitable way.

C designates a number of hangers extending from the upper portion of the door B and furnished at the upper extremities with rollers, D. These hangers with their rollers may be of any approved form of what are usually termed barn door hangers. The rollers, D, run along a rail, E, extending around the front and one side of the hatchway.

The door B may be moved so as to cover the front opening to the hatchway or may be shifted to a position to one side of the hatchway in a well known manner. The means for moving the door, as here shown, consists of a sprocket chain F, passing around sprocket wheels f' f^2, journaled in brackets supported at the sides of the hatchway; the chain being connected with the door, in the present instance, through a hanger C′. The sprocket wheel f^2 is geared to an upright shaft G, located at one side of the hatchway and extending down through the floor A^2 in connection with which the door B is used. The shaft G is intended to rotate always in one direction, and in order that while thus operating, it may move the door B in reverse directions, it is provided with two gear wheels g' g^2, either of which may engage with a gear wheel f affixed to the sprocket wheel f^2. To enable the gear wheel f to engage with either of the gear wheels g' g^2, said gear wheel f and the sprocket wheel f^2 are supported in a frame f^3 which is free to slide vertically. A suitable counter weight may be employed in connection with it, so that when moved to its extreme limit in either direction, it will be retained in position until positively reversed.

Two of the hangers C′ C^2 of the door B are provided with cam-shaped extremities. The cam-shaped extremity of the hanger C′ is on its upper side, but the cam-shaped extremity of the hanger C^2 is on the under side of said extremity. Owing to this difference between the position of the cam-shaped extremities of these hangers, they may operate on different sides of a pin f^4 with which the frame f^3 is provided, and thus shift the frame f into its different positions. When the door B is completely closed, it will shift the frame f into such position that the sprocket wheel f^2 will be geared to the shaft G in the proper manner to effect the opening of the door B when said shaft G is rotated. Conversely, when the door is opened to the extreme position, it will

shift the frame f so as to reversely gear the sprocket wheel f^2 with the shaft G for the purpose of putting the sprocket wheel f^2 in condition to effect the closing of the door B as soon as the shaft G is rotated.

The shaft G is geared, in the present instance by a belt H, to a shaft provided with a bevel gear wheel I, and journaled in a bracket below the floor A^2. This shaft is geared to a shaft J which is constantly geared with the hoisting engine I^5 through the medium of a band connecting with a shaft I^6. The bevel gear wheel I has constantly geared with it bevel gear wheels I' I^2, which are loosely mounted upon the shaft J and are severally provided with hubs at whose inner extremities are clutch teeth. Between these bevel gear wheels I' I^2 a clutch piece I^3 is mounted upon the shaft J. It is engaged with the shaft J by means of a spline or feather, so as to rotate therewith, but is capable of being moved longitudinally of said shaft. At each end, it has clutch teeth capable of engaging with the clutch teeth of the opposite bevel gear wheel. When shifted into one extreme position, it will transmit motion from the shaft J to the bevel wheel I', and when shifted to the other extreme position, it will transmit motion from the shaft J to the bevel gear wheel I^2. It will only transmit motion to one of the bevel gear wheels I' I^2 at a time. Obviously, by shifting the clutch piece I^3, motion may be transmitted to the shaft G in the reverse direction to that in which the engine shaft J moves. Owing to this, if the clutch piece I^3 is shifted every time that the engine is reversed, it will effect the driving of the shaft G always in one direction.

The clutch piece I^3 is shifted and held in position by means of a lever I^4 fulcrumed to the bracket that supports the shaft of the bevel gear wheel I and connected with one arm of an elbow lever K by cords i passing over guide pulleys i' to the elbow lever K, which is fulcrumed at k to some stationary part of the building. The other arm of the lever K is connected with a rope L which passes through an elevator car, so as to be manipulated by the attendant in the car for the purpose of reversing the hoisting engine. It is shown as passing through the hatchway and around a wheel l, whereby the reversal of the engine valve may be effected. It also passes around guide pulleys l' l^2.

As the attendant's rope not only is connected with the valve of the hoisting engine, but also with the clutch piece I^3, it is obvious that every time the engine is reversed, the connection of the shaft G with the engine will also be reversed.

What I claim as my invention and desire to secure by Letters Patent, is:

The combination, with a hatchway, of a sliding or rolling door for closing the hatchway, a shaft for moving said door, a connection between said shaft and door, an engine shaft, reversible connections between said door-moving shaft and said engine shaft, and an attendant's rope operating the engine reversing mechanism and connected to the reversible connection between the door-operating shaft and the engine shaft, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ABRAHAM ELLIOTT.

Witnesses:
C. R. FERGUSON,
ANTHONY GREF.