(No Model.) 2 Sheets—Sheet 1.

O. C. BERCHTOLD & E. I. LAUFFER.

SAFETY ATTACHMENT FOR ELEVATORS.

No. 306,126. Patented Oct. 7, 1884.

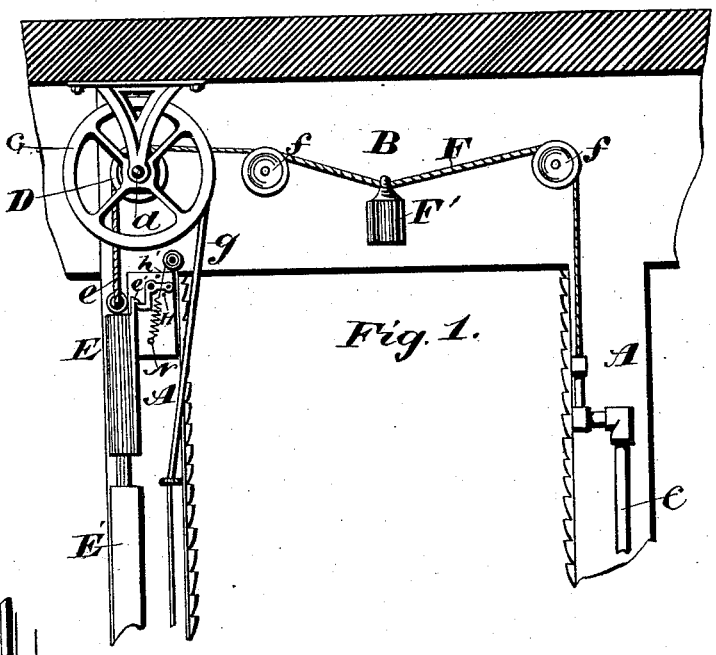

Fig. 1.

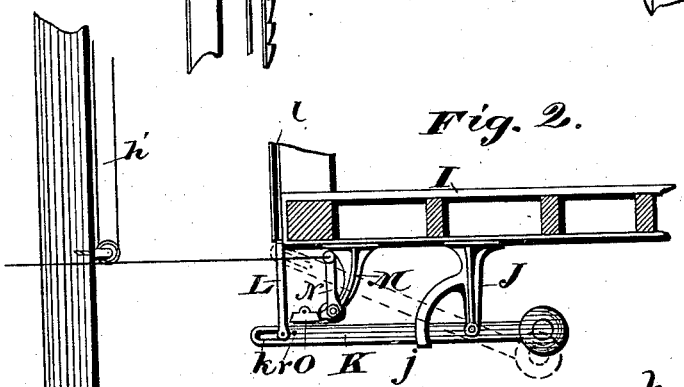

Fig. 2.

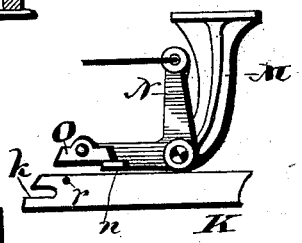

Fig. 4.

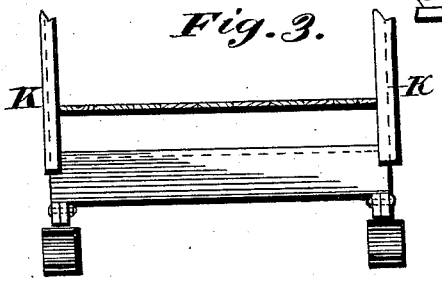

Fig. 3.

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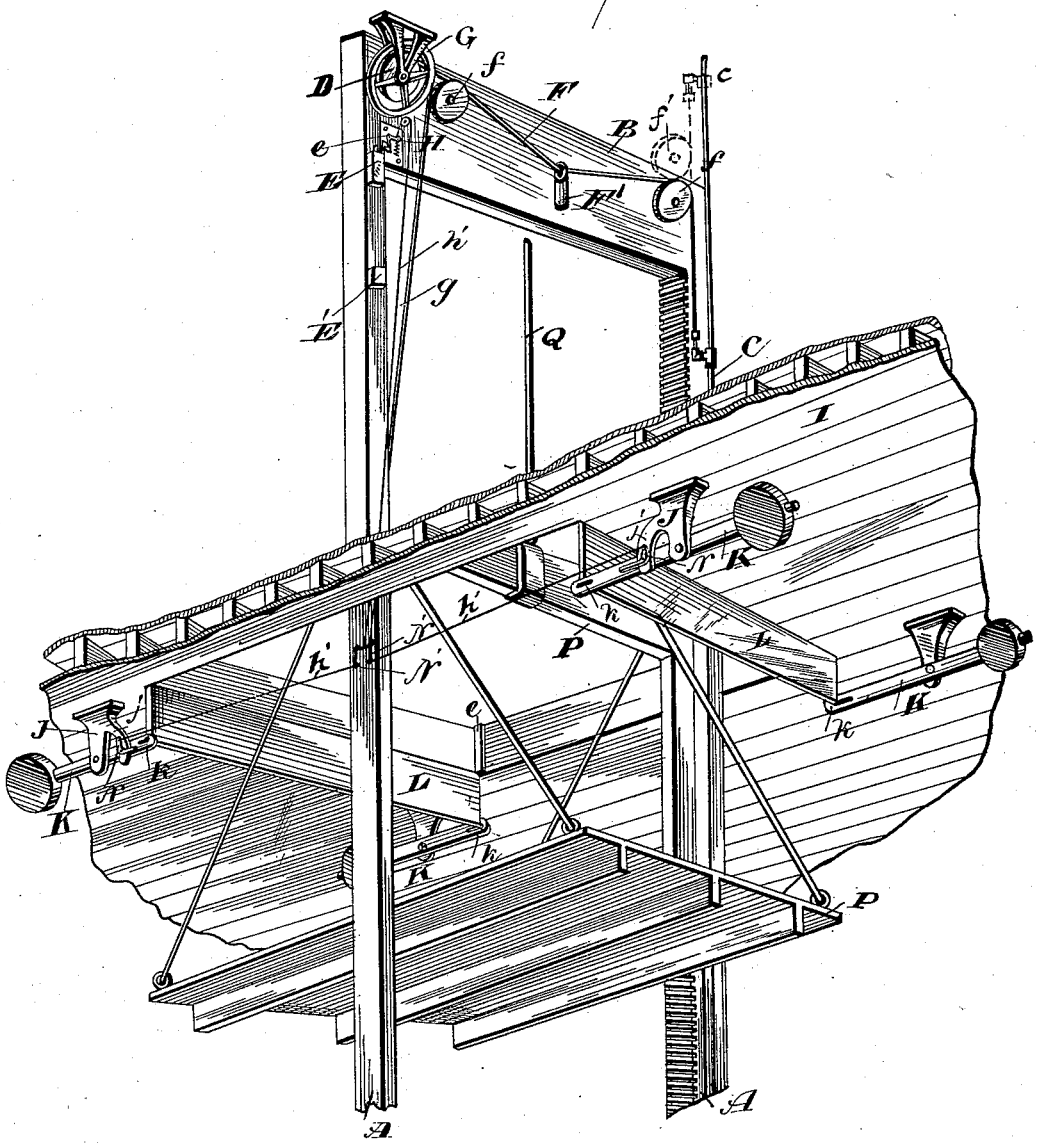
Fig. 5.



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UNITED STATES PATENT OFFICE.

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SAFETY ATTACHMENT FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 306,126, dated October 7, 1884.

Application filed March 4, 1884. (No model.)

To all whom it may concern:

Be it known that we, OTTO CHARLES BERCHTOLD and EMIL I. LAUFFER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Safety Attachments for Elevators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to safety attachments for elevators; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

The object of our invention is to improve certain devices on which we have already obtained Letters Patent of the United States No. 290,202, dated December 18, 1883.

In the accompanying drawings, Figure 1 is a side elevation of the upper portion of the frame-work, guides, &c., for an elevator, to which are attached a portion of our improved safety attachments. Fig. 2 is a vertical section of a portion of the floor to which is secured a portion of our improved safety attachments shown in elevation. Figs. 3 and 4 are elevations in detail of portions of the device shown in Fig. 2. Fig. 5 is a view in perspective of an elevator with our improved attachments as seen from below.

A A are ways for an elevator, and secured above to the cross-beams B in the usual manner.

C is the rod, cable, or other device by which the elevator is operated, and the arrangement of parts is such that the elevator is made to move in the opposite direction from that in which the part C is drawn, and that when in a position midway of its sweep up and down, the elevator is caused to stop.

D is a drum secured to the shaft *d*, over which and to which the rope *e* passes and is secured that supports the weight E. The rope F is secured to the drum, and passes around it in an opposite direction from the rope *e*. The rope F passes over the guiding-pulleys *f* and midway between them supports the weight F′. The other end of this rope is attached in any convenient manner to the device C.

G is a grooved wheel, secured to the shaft *d*, around which the rope *g* passes. This rope passes down on one side of the elevator, and by means of which the wheel G and the drum D may be rotated in the direction that will raise the weight E.

F′ is a stop on which the weight rests when it descends. The weight is provided with the hook *e′*, that, when the weight is in the raised position shown, engages a similar hook on the bell-crank H. These hooks have beveled ends, so that when the weight is raised the hook on the bell-crank is snubbed back and again drawn forward by the springs *h*, attached to the horizontal arm of the bell-crank, to which is also attached the wire *h′*, leading over a guiding-pulley, as shown, and down the side of the elevator to bell-cranks N, hereinafter described. Under the floors on the side where access is had to the elevator are suspended actuating mechanism for the safety-stop, and shown in Figs. 2, 3, and 4.

I represents the floor in vertical section, terminating on the left hand at the elevator shaft or hatchway. A hanger, J, on either side supports a lever, K, pivoted thereto, and has an arm, *j*, with a lateral projecting stop at the end extending under the lever.

L is a vertically-sliding board, guided at either end in grooves *l*, and extending across the front of the elevator-shaft. This board is attached to the levers K by pivots operating in the slots *k*. The levers K may be weighted at the rear to partially balance the front end of the lever and the attached board L.

M is a hanger, to which is pivoted the bell-crank N, to which in turn is pivoted the toe O. The bell-crank N is provided with the stop *n*, on which the heavy end of the toe O rests. To the vertical arm of the bell-crank N is attached the wire *h′*. The bell-cranks N might be pivoted to the arm *j* of the hanger J, if preferred, as shown in Fig. 5.

P is the elevator, suspended by the cable Q; but we do not wish to be understood as limiting the application of our invention to this style of elevator.

Our improved attachments are applicable to all kinds of elevators, and may be added to any of the different varieties without any change in the construction or operation of the elevator. The part C is common to all elevators, and leads from above or from below to

wherever the machinery is located that operates the elevator. If this machinery is driven by belt, the part C leads to and operates the belt-shifter. If the drum on which the cable Q is wound is attached directly to the engine, the part C leads to and operates the reversing-lever. In case the elevator is operated by water, the part C operates the valves. The part C is usually a small wire cable, but is sometimes a rod. In almost universal practice the part C is so arranged and applied to the belt-shifter, reversing-lever, or valves, as the case may be, that the elevator is started upward by pulling down, and is started downward by pulling up on the part C.

Our device is only designed to operate when the elevator is moving upward. As the part C, as aforesaid, is drawn down to start the elevator upward, it is evident that the part C must be drawn up to stop the upward movement of the elevator, and the cable F is arranged accordingly. If an elevator was so arranged that the part C must be drawn down to stop the upward movement of the elevator, a pulley, *f'*, (shown in dotted lines in Fig. 5,) might be added, and the cable F in that case would lead around this pulley and be attached to the part C at a point above, as shown at *c*.

The operation of the device is as follows: The weight F' keeps the slack out of the rope F as the part C is raised or lowered, but without interfering with the movement of the latter. When the elevator is ascending, if there is anything projecting beyond the platform of the elevator that would come in contact with the floors, it will first engage the lower edge of the board L and cause it and the attached levers K to be raised, by means of which the laterally-projecting pin *r* of the lever K would engage the toe O and cause the bell-crank N to draw on the wire *h'*, which in turn would actuate the bell-crank H and release the weight E. The descent of the weight will revolve the drum D and draw upon the rope F and raise the part C. The position of the stop E' allows the weight to descend just far enough to raise the part C to the position required for stopping the elevator. After a descent of the weight, by pulling down on the rope *g* the wheel G and the drum D are rotated, and the weight again raised and secured in the position shown. After the lever K and attachments have been raised, as shown in dotted lines in Fig. 2, and the elevator stopped, if left free they will return by gravity of the parts to the normal position, and the toe O is tilted by the passing pin *r* and again returned to its horizontal position by gravity.

In our former device, patented as aforesaid, a bar extended across the side of the hatchway in place of the board L, and leaving an open space between the bar and the floor above. The motion of the elevator sometimes causes the freight to shift its position, and if anything should slide out over the edge of the platform just as the said bar was past, it might come in contact with the floor and cause serious damage. With our improved mechanism the board L leaves no space where such an accident could occur. If the article projecting strikes the bottom of the board, the elevator is stopped. If it passes the bottom of the board, it will also pass the floor—that is, the thickness of the board farther back from the platform.

What we claim is—

1. The combination, with the levers K, of the sliding board L, substantially as set forth.

2. The combination, with the lever K, provided with the pin *r*, of the bell-crank N, provided with the tilting toe O, and the stop *n*, substantially as set forth.

3. The combination, with the vertically-movable boards, levers K, and bell-crank levers N and H, of cords or wires connecting said bell-cranks, the operating device C, drum D, ropes F and *g*, and weight E, substantially as set forth.

4. The rope F, provided with weight F', and by means of which the movement of the descending weight E may be transmitted to the part C, but without interfering with the movement of the part C, while the weight E is suspended, substantially as set forth.

5. The hanger J, provided with the arm *j*, and adapted to furnish a fulcrum and stop for the lever K, substantially as set forth.

In testimony whereof we sign this specification, in the presence of two witnesses, this 9th day of February, 1884.

OTTO CHAS. BERCHTOLD.
EMIL I. LAUFFER.

Witnesses:
CHAS. H. DORER,
ALBERT E. LYNCH.