No. 612,599 Patented Oct. 18, 1898.

W. P. WARD.

SAFETY APPLIANCE FOR ELEVATORS.

(Application filed May 20, 1898.)

(No Model.)

Fig. 1.

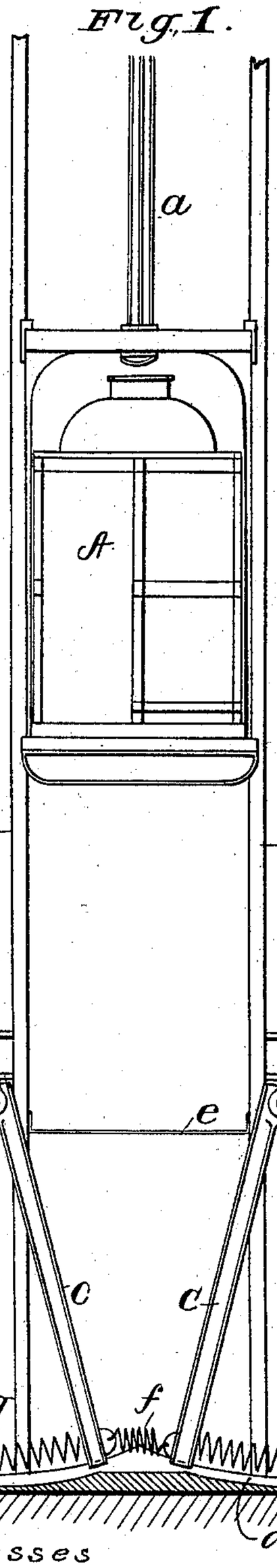
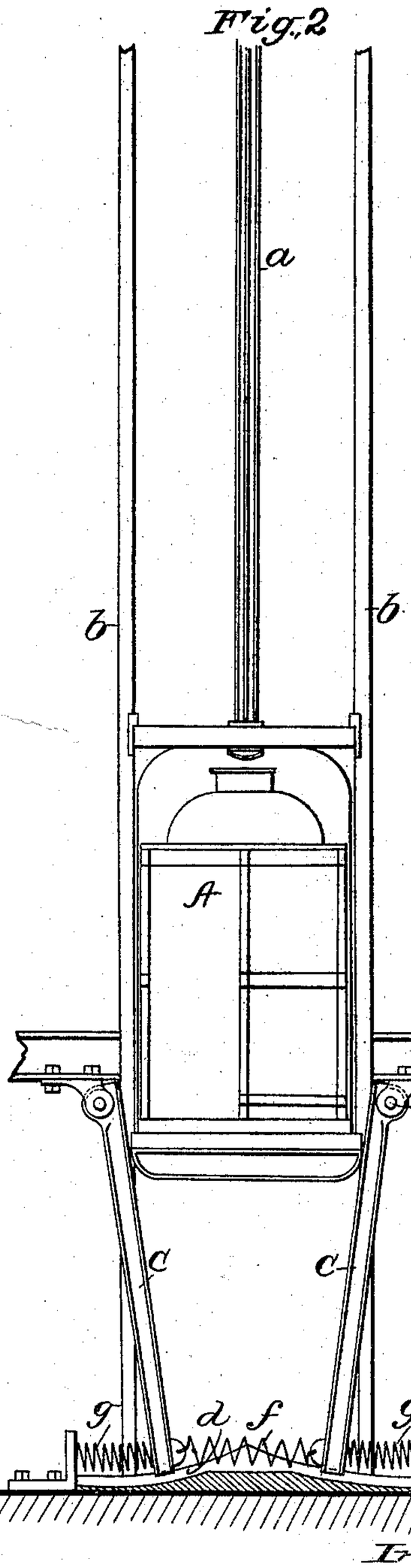


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLARD P. WARD, OF NEW YORK, N. Y.

SAFETY APPLIANCE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 612,599, dated October 18, 1898.

Application filed May 20, 1898. Serial No. 681,234. (No model.)

To all whom it may concern:

Be it known that I, WILLARD PARKER WARD, of the borough of Manhattan, in the city, county, and State of New York, have invented new and useful Improvements in Safety Appliances for Elevators, which improvements are fully set forth in the following specification.

The object of my invention is to lessen and deaden the shock upon the fall of the cage or car of a passenger or freight elevator or lift in the event of the rupture of its supporting or holding mechanism or accidental release therefrom.

The well of the elevator generally extends somewhat below the lowest point to which the cage or car normally descends. Near the bottom of the well I place on opposite sides a bar or rod or series of bars or rods hinged at their upper ends and pressed toward one another by inwardly-pressing springs. When the car or cage falls, it will pass between the bars, pressing back the springs and forcing the lower ends thereof back against the action of the springs. These springs may be supplemented by one or more springs between the bars, which tend to draw them together. The fall of the cage or car thus gradually becomes less rapid or is entirely stopped before reaching the bottom of the well.

The accompanying drawings will serve to illustrate my invention.

In said drawings, Figure 1 represents my improvement in place at the bottom of an elevator-well, the elevator-car being in an elevated position. Fig. 2 is a similar view showing the elevator-car as in the act of dropping.

The cage or car A is usually suspended upon the end of one or more flexible cables, chains, or other suspending devices *a* and rises and falls in suitable guides *b b*. Its movement may be effected by various different kinds of motors. When an elevator falls, its fall is generally somewhat retarded by the friction of the cable or other means of suspending the same.

The two bars C C on opposite sides of the cage or car, near the bottom of the well, (or one of each of the series of bars on opposite sides thereof,) preferably should be a continuation of the guides *b b* and of the same configuration as the guides on the side which faces the interior of the well. Such bars should be substantially constructed, the size and strength thereof depending largely upon the weight of the elevator and the load that it is designed to carry, the distance it is to travel, &c. These bars should be hinged at their upper ends, as at *c c*, and at their lower ends they should preferably travel in grooved guides *d d*, thus preventing lateral action thereof.

In addition to the rods and springs to arrest the descent of the cage or car there may be provided one or more layers of canvas *e*, stretched across the path of the cage or car below the lowest plane to which the cage or car normally descends, or some similar device through which the cage or car must pass before it reaches the bottom of the well. At the bottom of the well there may be a pool of water or air-cushions or springs (not shown) pressing perpendicularly upward or some other well-known device (not shown) for lessening the shock before the fall is completely arrested.

The lower framework of the cage or car and the floor thereof should be substantially built to resist the strain to which they may be subjected.

Instead of rods or a series of rods inclined toward one another plates provided like the rods with similar springs may be placed in analogous positions and similarly inclined toward each other. The spring or springs *f* between the two lower ends of these bars C C tend to draw the lower ends of the bars together, and the springs *g g*, which press against the outer faces of the ends of these bars, tend to press them together.

It may sometimes be preferable to omit the springs between the lower ends of the bars on account of their liability to injure the floor of the cage or car and the occupants thereof in case the fall of the cage or car is not entirely arrested by the bars.

Of course modifications may be made within wide limits without departing from the nature and principle of my invention.

In the foregoing description I have used the terms "bars or rods," a "series of bars," and "plates" as indicating equivalent devices. Hence in the following claims where the term "bars" is employed it is to be un-

derstood as including a series of bars or plates.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with the shaft in which an elevator or lift operates, of bars hinged at their upper ends at the sides of the shaft and inclined downwardly toward the center of the shaft and into the path of the car, and springs acting on the lower free ends of the bars for normally holding them in said position, substantially as described.

2. The combination with the shaft or well of an elevator or lift, of bars placed on opposite sides of said shaft or well, hinged at their upper ends and converging downwardly toward one another and into the path of the car, and a spring acting on the lower ends of the bars for holding the latter in a converging position, substantially as described.

3. The combination with the shaft or well of an elevator or lift, of bars placed on opposite sides of said shaft or well, hinged at their upper ends, and converging downwardly toward one another and into the path of the car, and springs, one for each bar, acting against the lower ends thereof to hold them in said position, substantially as described.

4. The combination with the well of an elevator or lift, of bars arranged at opposite sides of said well, hinged at their upper ends, and converging toward each other at their lower ends, a spring connecting the lower ends of said bars, and springs pressing against the rear faces thereof, substantially as described.

5. The combination with the well of an elevator or lift, of bars arranged at opposite sides of said well, hinged at their upper ends, and converging toward each other at their lower ends, guides for said lower ends, and springs acting to normally hold the bars in said converging position, substantially as described.

6. The combination with an elevator-shaft, of bars arranged at opposite sides thereof, hinged at their upper ends and converging toward one another and into the path of the elevator at their lower ends, springs acting against the lower ends of said bars to normally hold them in said position, and a sheet of fabric, such as canvas, stretched across the elevator-shaft above the bars and acting to check the descent of the car in case of accidental falling thereof, substantially as described.

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

WILLARD P. WARD.

Witnesses:
R. A. PIPER,
RICHARD F. JONES.