

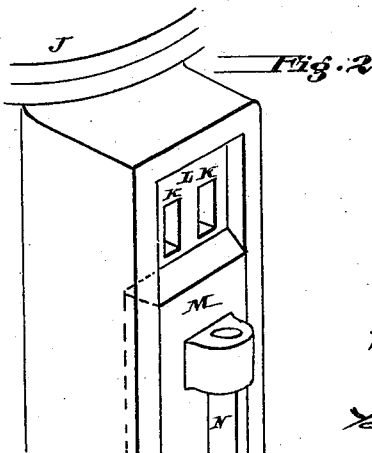
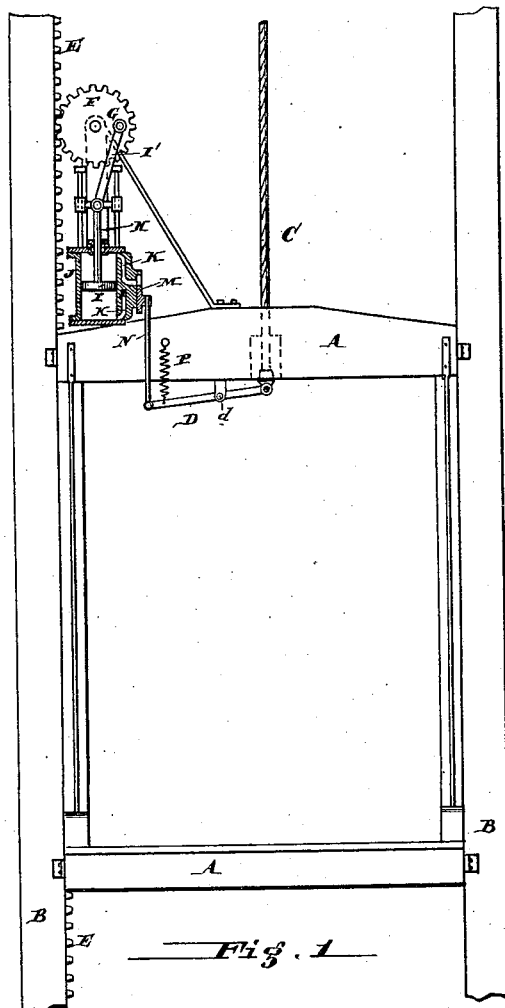
(No Model.)

W. N. WILLIS.

SAFETY ATTACHMENT FOR ELEVATORS.

No. 306,795.

Patented Oct. 21, 1884.



Attest
William S. McHale
Harry Q. Schafer

Inventor
Willis N. Willis
By his atty.

Wm. H. Smith

UNITED STATES PATENT OFFICE.

WALTER N. WILLIS, OF TRAPPE, MARYLAND.

SAFETY ATTACHMENT FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 306,795, dated October 21, 1884.

Application filed February 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, WALTER N. WILLIS, of Trappe, county of Talbot, and State of Maryland, have invented an Improvement in Safety Attachments for Elevators, of which the following is specification.

My invention has reference to safety attachments for elevators; and it consists in providing the elevator-cage with an air-cylinder, in which a piston works, the said piston being actuated by a crank and gearing working on a rack secured to the guide-posts, the said cylinder having its ports communicating with the atmosphere and arranged to be automatically closed should the supporting or lifting cable break, and in details of construction, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

The object of this invention is to provide elevators with a safety device adapted to control the descent of the cage or stop it altogether should the lifting-cable break.

In the drawings, Figure 1 is a front elevation of an elevator embodying my improvements; and Fig. 2 is a perspective view of the escape-ports and the valve.

A is the cage proper. B are the guide-posts, one of which may be provided with a rack, E. This cage is provided with an air-cylinder, J, in which a piston, I, works, and is actuated by a piston-rod, H, connecting-rod I', and crank G, secured to the gear-wheel F, which meshes with the rack E. The ports K, from either end of the cylinder J, open side by side on the valve-face L, as shown in Fig. 2, the walls of which are preferably made dovetailed for the reception of the slide-valve M, which is connected by a rod, N, with one end of a lever, D, pivoted to the cage at d, the other end of which lever is secured to the lifting rope or cable C.

P is a spring, which is connected to the end of lever D and tends to close valve M.

The operation is as follows: As the cage is pulled up or let down by cable C, the valve M is drawn from off the ports K, and the rotating gear F and its crank reciprocate the piston in the cylinder, drawing in and expelling air alternately by each port K. Now, should

the cable C break, the spring P forces up the valve M and closes the ports K from the cylinder, and, as no air can escape, what is in the cylinder is compressed at one end and a partial vacuum created at the other, both tending to arrest the movement of the piston, and consequently the rotation of gear F, which, when stopped, arrests the descent of the cage. If the air should escape slightly, the cage would descend very slowly and without injury to the occupants.

The novelty in this invention lies in the fact that the air-brake device is automatically under the control of the lifting-cable, and it is immaterial to my invention how said air-brake cylinder and its connections are applied or connected to the said lifting-cable.

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

1. In an elevator, the guides, in combination with a rack, a cage, and air-pump mechanism carried by said cage and operated by means of a gear meshing with said rack, a lifting-cable, and connecting devices whereby said cable when under tension keeps the ports of said air-pump open, but when broken allows said ports to be closed, substantially as and for the purpose specified.

2. The combination of cage A, guides B, cable C, cylinder J, having ports K, valve M, piston I, piston-rod H, crank G, means, substantially as described, connecting the said crank with said piston-rod, gear F, rack E, and connecting mechanism between said valve M and cable C, substantially as and for the purpose specified.

3. The combination of cage A, guides B, cable C, cylinder J, having ports K, valve M, piston I, piston-rod H, crank G, means, substantially as described, connecting the said crank with said piston-rod, gear F, rack E, and lever D, rod N, and spring P, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

WALTER N. WILLIS.

Witnesses:

JOHN SATTERFIELD,
T. T. MARTIN.