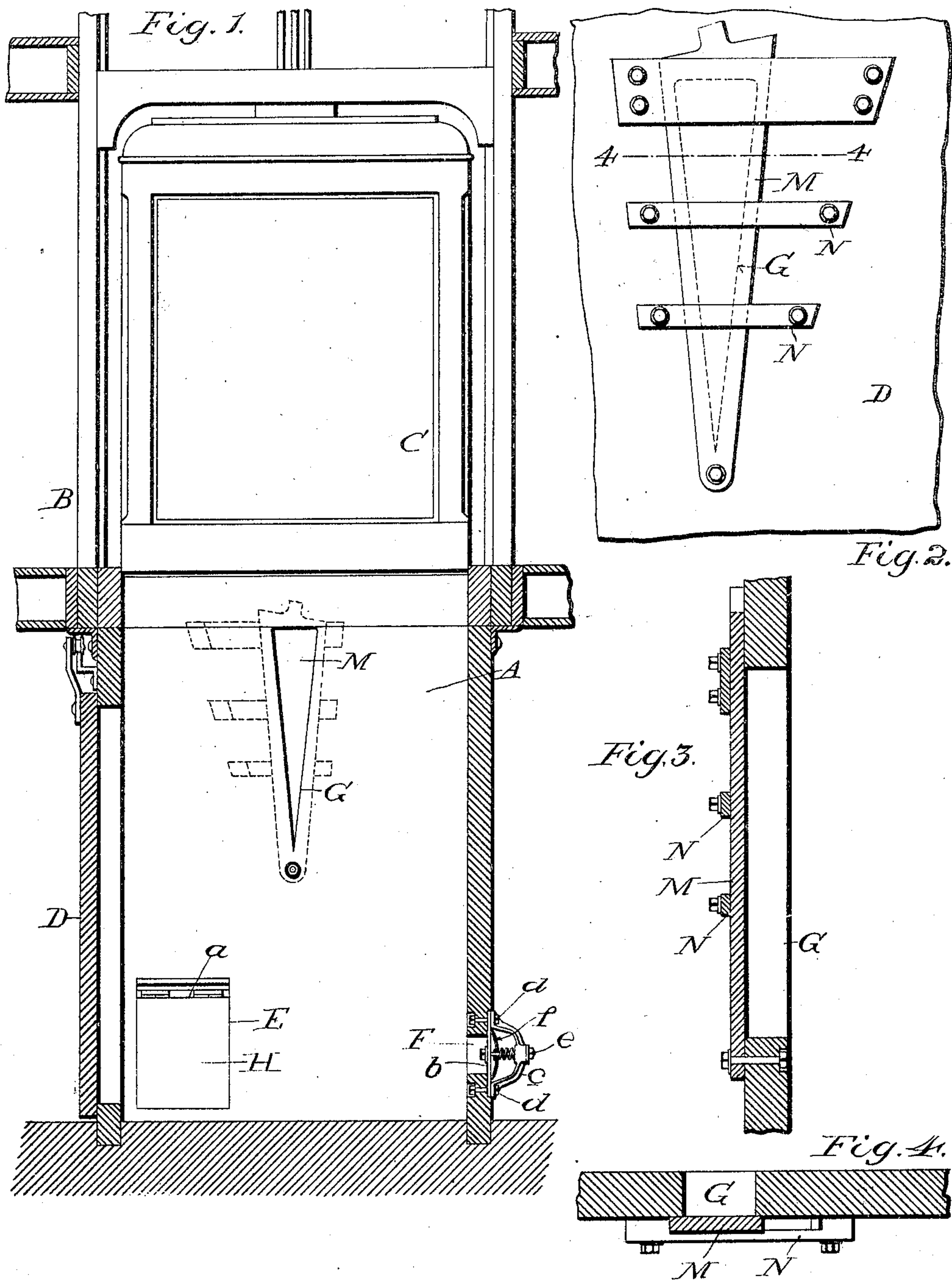


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PATENTED MAY 16, 1905.

G. M. BAKER.  
SAFETY APPLIANCE FOR ELEVATORS.

APPLICATION FILED FEB. 3, 1905.



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# UNITED STATES PATENT OFFICE.

GEORGE M. BAKER, OF NEW YORK, N. Y.

## SAFETY APPLIANCE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 789,954, dated May 16, 1905.

Application filed February 3, 1905. Serial No. 244,003.

*To all whom it may concern:*

Be it known that I, GEORGE M. BAKER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Safety Appliances for Elevators, of which the following is a specification.

My invention pertains to air-cushion chambers provided at the bottom of elevator shafts or wells with a view of confining air below, and thereby gradually arresting the descent of a falling car, so as to prevent injury to the car and its freight; and it contemplates the provision of an efficient and reliable air-cushion chamber embodying means whereby the escape of air therefrom may be regulated to adapt the chamber to shafts or wells of various heights and cars of different weights.

The invention will be fully understood from the following description and claims, when taken in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of an elevator shaft or well having the air-cushion chamber constituting the present and preferred embodiment of my invention at its bottom. Fig. 2 is an enlarged detail exterior elevation of the air-cushion chamber, illustrating my novel means for regulating the escape of air from the chamber. Fig. 3 is a vertical section taken through the regulating means and the adjacent wall of the air-cushion chamber. Fig. 4 is a horizontal section taken in the plane indicated by the line 4 4 of Fig. 2.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is my novel air-cushion chamber, which is arranged at the bottom of an elevator shaft or well B, and C is an elevator-car, of suitable construction, designed to be raised and lowered in the shaft B by any means compatible with the purpose of my invention.

The air-cushion chamber A is built in a strong manner of steel, masonry, or other material, so as to withstand the tremendous pressure incident to the fall of a heavy car, and is provided with a suitable air-tight or substantially air-tight door D, as shown in

Fig. 1. The said chamber is also provided with an air-inlet opening E, an air-vent F, and an opening G for the escape of air. The opening E is designed to admit air to the chamber, so as to prevent suctional resistance from interfering with upward movement of the car C, and it is controlled by an inwardly-opening valve H, preferably an inwardly-swinging door hinged at its upper end to one wall of the casing, as indicated by *a* and shown in Fig. 1. The air-vent F, which is located adjacent to the bottom of the air-cushion chamber, may be controlled by an outwardly-opening spring-backed valve of any construction compatible with the purpose of my invention without involving a departure from the scope thereof. I prefer, however, to effect such control of the vent F through the medium of the valve illustrated, which comprises a bar *b*, extending diametrically across the vent F, a yoke *c*, bolts *d*, connecting said bar and yoke to the side wall of the cushion, a rod *e*, extending between and connected to the bar *b* and the yoke *c*, a valve-disk *f*, loosely receiving the rod *e* and arranged to seat against the outer side of the mentioned wall of the air-cushion chamber, and a coiled spring surrounding the rod *e* and interposed between the outer side of the valve-disk *f* and the yoke *c* and calculated to normally hold the said valve-disk under pressure against the outer side of the chamber-wall, and thereby prevent the escape of air through the vent F under normal conditions. In virtue of the valve construction just described it will be observed that when a car falls into the chamber A and the air cannot escape through the vent G sufficiently fast to prevent a sudden stop and rebound of the car the valve-disk *f* will be opened against the pressure of the spring *g*, and hence will permit the escape of air, so that the downward movement of the car will be gradually arrested and the car permitted to settle gently in the chamber. It will also be observed that the construction of the valve described is such as to assure the valve-disk *f* being held to its seat under normal conditions and being forced open when the car falls, as stated, and, further, that the valve construction is simple and strong and is there-



fore well adapted to withstand the shock and strain to which such devices are ordinarily subjected.

As shown by full lines in Fig. 1 and dotted lines in Fig. 2, the vent G is in the form of a vertically-elongated opening tapered or gradually diminished in width from its upper end to its lower end, this form of opening being advantageous, for the reason that when the falling car reaches the upper end of the vent the volume of air escaping through the vent will be gradually diminished as the car passes downwardly, so that when the car reaches the lower end of the vent the escape of air therethrough will be stopped and the valve controlling the vent F brought into play in the manner before described.

In order that the size of the vent G may be increased or diminished to adapt the air-cushion chamber to shafts of different heights and cars of various weights, I provide the valve M, and by reason of the form of the said valve and its arrangement relative to the vent it will be apparent that through the medium of the valve the vent may be increased or diminished in size without robbing the vent of its advantageous downwardly-tapered form. The said valve M is tapered toward its lower end, is pivoted at said end to the outer side of the chamber-wall in which the vent G is formed, so as to adapt it to swing parallel to said wall and to cover and uncover the vent to a greater or less extent, and is arranged between said wall and three (more or less) guide-straps N, connected to the wall.

In the practical use of my improvements when it is desired to increase the size of the vent G the valve M, as shown in Fig. 2, is swung a suitable distance toward the right, while when it is desired to diminish the size of the vent the valve is swung toward the left the required distance. To entirely close the vent G, the valve M is positioned, as illustrated in Fig. 2, relative to the vent.

It will be appreciated from the foregoing that my improvements add materially to the

efficiency and reliability of the air-cushion chamber and yet do not appreciably increase the cost of the same.

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

1. The combination of an elevator shaft or well, a car movable in the shaft or well, an air-cushion chamber, at the bottom of the shaft or well, having a downwardly-tapered vent in one of its side walls, and a valve controlling the said tapered vent.

2. The combination of an elevator shaft or well, a car movable in the shaft or well, an air-cushion chamber, at the bottom of the shaft or well, having a downwardly-tapered vent in one of its side walls, and means for controlling the said vent; the said means being so shaped and positioned, relative to the vent, as to increase or diminish the size of the vent without robbing the vent of its tapered form.

3. The combination of an elevator shaft or well, a car movable in the shaft or well, an air-cushion chamber, at the bottom of the shaft or well, having a downwardly-tapered vent in one of its side walls, and a downwardly-tapered valve pivoted below the lower end of the vent so as to swing parallel to the wall in which the vent is formed, and control the vent.

4. The combination of an elevator shaft or well, a car movable in the shaft or well, an air-cushion chamber, at the bottom of the shaft or well, having a downwardly-tapered vent in one of its side walls, a downwardly-tapered valve pivoted to said wall, at a point below the lower end of the vent, and arranged to swing parallel to the wall and control the vent, and straps connected to the wall and retaining the valve against the same.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE M. BAKER.

Witnesses:

JOHN F. BARRY,  
ANTON GRONICH.