

No Model.)

W. E. NICKERSON.
SAFETY CUSHION FOR ELEVATORS.

No. 409,486.

Patented Aug. 20, 1889.

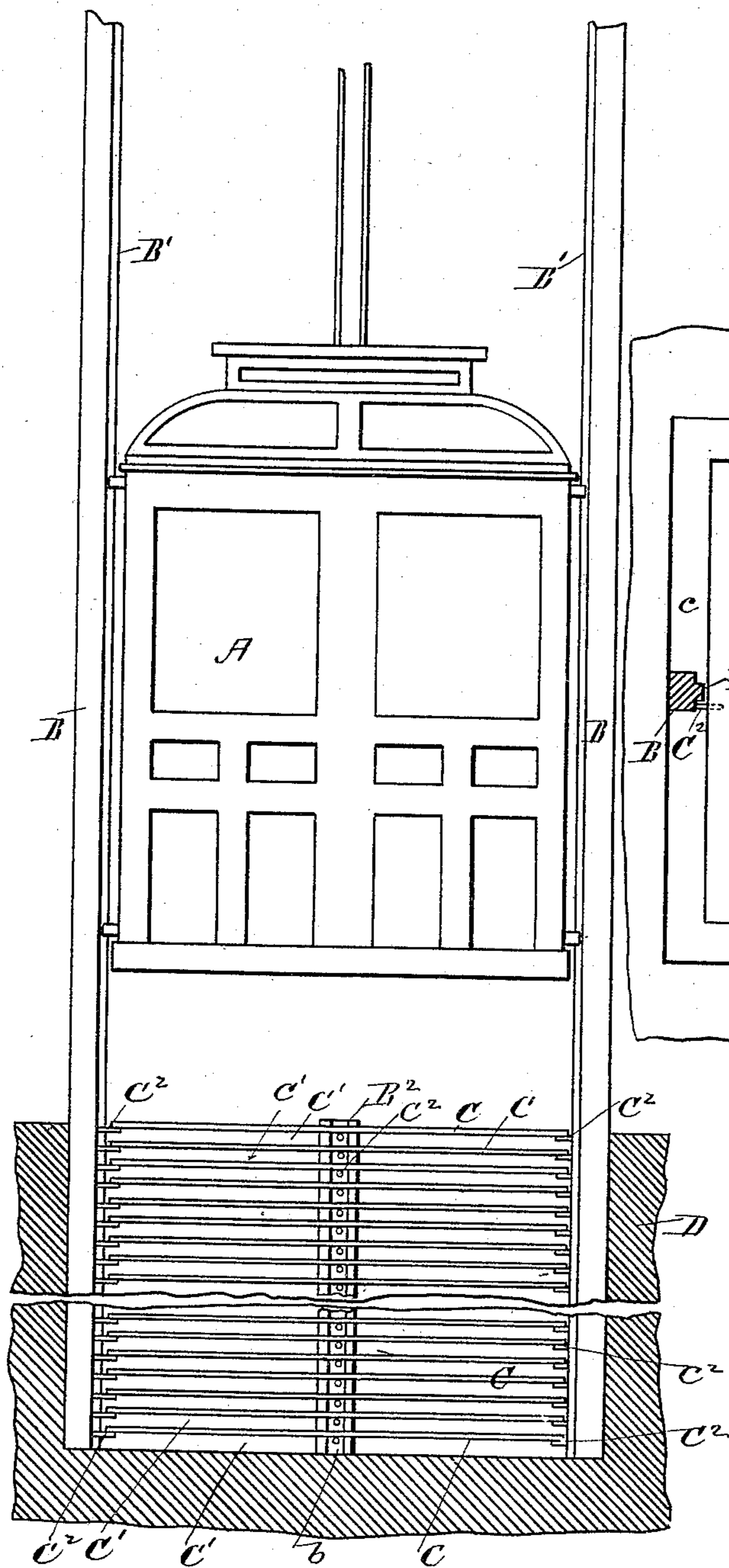


Fig 1.

WITNESSES.

Matthew M. Rhunt.
Frank G. Parker

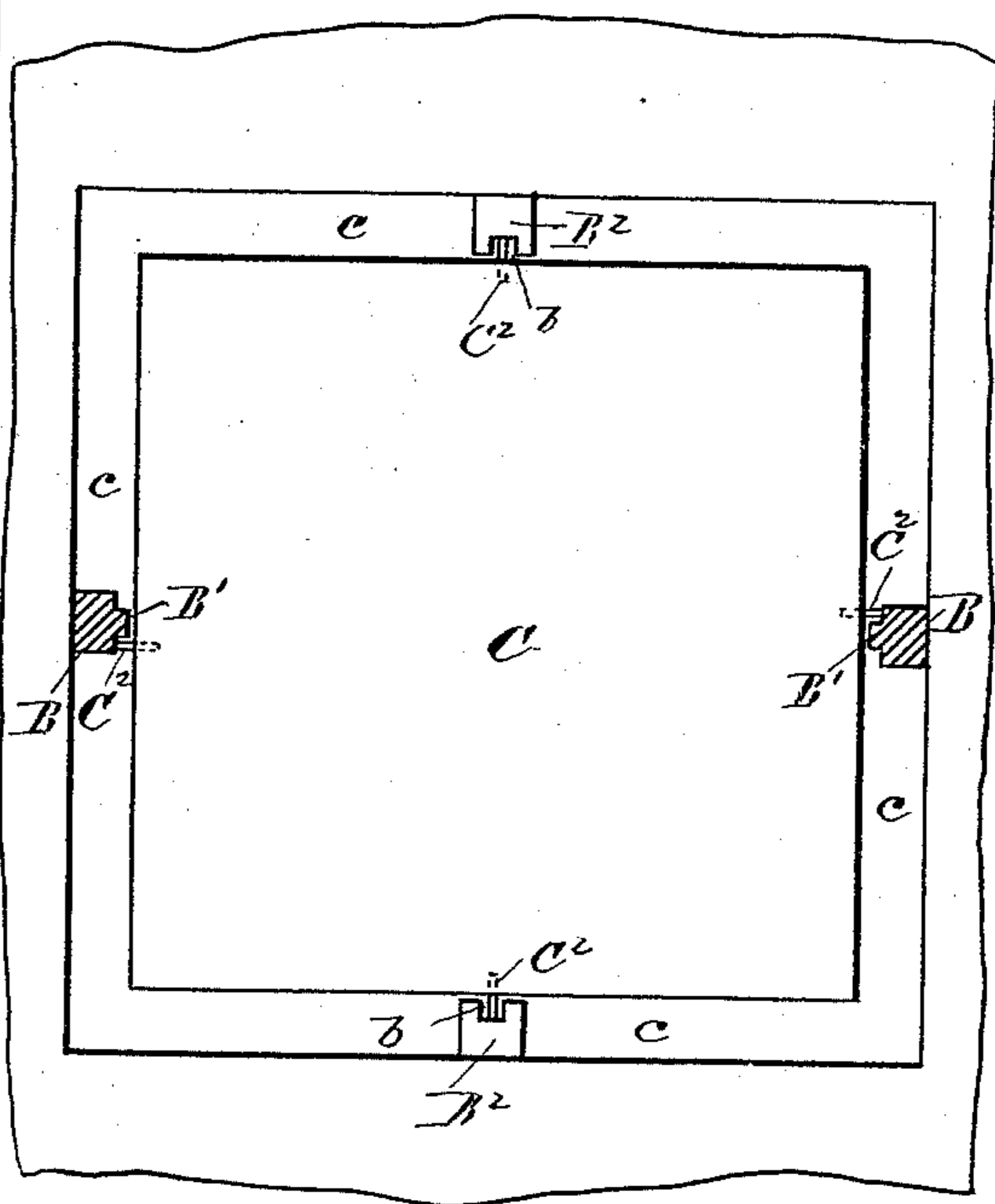


Fig. 2.

INVENTOR.

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UNITED STATES PATENT OFFICE.

WILLIAM E. NICKERSON, OF CAMBRIDGE, MASSACHUSETTS.

SAFETY-CUSHION FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 409,486, dated August 20, 1889.

Application filed May 15, 1889. Serial No. 310,881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EMERY NICKERSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Non-Rebounding Safety-Cushions for Elevators, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to elevators, its object being to lessen the danger to life and property in the event of the accidental fall of the carriage.

It consists in placing at the bottom of the well-room a number of thin platforms, or their equivalent, arranged in a vertical series, each platform being separated from the one above and the one below it by a thin space, and being supported in its normal position by pins or pegs of sufficient strength to sustain its weight, but adapted to give way when subjected to a considerable increase of pressure, whereby the velocity of the falling carriage is gradually checked, principally by the inertial resistance of the platforms acting successively, and incidentally by the elastic resistance of the thin layers of air, (in being squeezed out from between the platforms,) and the successive resistances to shearing or bending of the pins by which the platforms are normally supported. The action of this mechanism is such that no rebound will occur.

The so-called elevator air-cushion heretofore in use, consisting of a strong air-tight box which the carriage nearly fills, is designed to gradually check the velocity of the falling carriage by the elastic resistance of the inclosed air alone. Great difficulties in the way of successful operation of this device have presented themselves, for if, on the one hand, the carriage too nearly fills the air-pit the rebound caused by the expansion of the highly-compressed air is disastrous, and if, on the other hand, the carriage fits the pit too loosely sufficient compression is not obtained to properly check its velocity. Experience has proved that the proper adjustment is not easily obtained. Further, when air alone is relied upon to check the falling carriage the air-pit, to work successfully with great velocities, must be of great depth, for the carriage advances

far into it before any sensible checking occurs, and with living freight the distance in which a falling carriage is brought to rest must not be less under any circumstances than one-tenth the space fallen through. There is danger, also, with the ordinary air-cushion of the walls of the air-pit giving way or the bottom of the carriage yielding upward under the great strain incurred.

My invention is intended to supply a cheap and efficient remedy for these difficulties, and is set forth in the following specification and illustrated in the accompanying drawings, in which—

Figure 1 shows, partly in elevation and partly in vertical section, such parts of an elevator as are necessary to illustrate my invention. Fig. 2 is a plan of my device.

A, Fig. 1, represents an elevator-carriage; B, the well-posts, and B' the guides.

C C represent thin wooden platforms or disks placed at the bottom of the well-room and arranged in a vertical series, each being separated from the others by the spaces C' C'. These platforms C C are each held in their normal positions, as shown in Figs. 1 and 2, by pins or pegs of a certain determined strength, and shown by C² C², Figs. 1 and 2. Some of these pins are driven into the guide-posts and others into separate posts provided for the purpose, as shown by B² B², Fig. 2.

It will be observed, by referring to Fig. 2, that when the platform C is forced downward, so as to break or bend the pins C² C², they will have room to pass between the edge of the platform and the posts in B² B² by lying in the grooves b b, and in B B by lying beside the guides B' B'.

c, Fig. 2, is a space of liberal dimensions between the edges of the platforms and the sides of a pit, in which they are shown as located, and is for the purpose of allowing a ready escape of the air between the platforms when it shall be forced out.

The platforms are made, preferably, of two layers of thin boards, the grain of the wood in one layer being at right angles to that of the other layer. They may be made of cheap lumber, and as many used as desired, according to the height of the building, and their combined weight may much exceed that of the

carriage. The pins may be of iron or wood. In the event of the precipitation of the carriage no one of the platforms is heavy enough to give it a shock; but their combined inertia, 5 acting successively, co-operating with the cushioning effect of the thin layers of air and the resistance of the pins, will bring it gradually to rest without rebound, as the air between the platforms on being squeezed out 10 escapes freely, and so cannot throw the carriage upward again.

In the drawings the platforms are represented as being in a roomy pit, the earth around it being represented by D. No pit, 15 however, is necessary to the successful operation of my device, and in buildings where the carriage does not descend into the basement the platforms may be arranged openly under the elevator-shaft, there being of 20 course an aperture in the floor to allow the carriage to descend upon them.

In my device the carriage feels the strong checking action of the cushion from the first

instant of contact with the uppermost platform, and the space in which it must gradually come to rest is equal to the sum of all the inter-air spaces $C' C'$. If considered desirable, a small quantity of straw or other similar substance may be loosely spread in the air-space between the platforms to soften the 30 concussion and prevent the too rapid escape of the air.

I claim—

In a safety-cushion for elevators, a series of air-spaced platforms supported normally on 35 pins, said pins being adapted to yield to increased pressure, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two 40 scribing witnesses, on this 13th day of May, A. D. 1889.

WILLIAM E. NICKERSON.

Witnesses:

FRANK G. PARKER,
MATTHEW M. BLUNT.