No. 709,494. Patented Sept. 23, 1902.

A. W. LEACH.

SAFETY DEVICE FOR ELEVATORS.

(Application filed June 5, 1902.)

(No Model.)

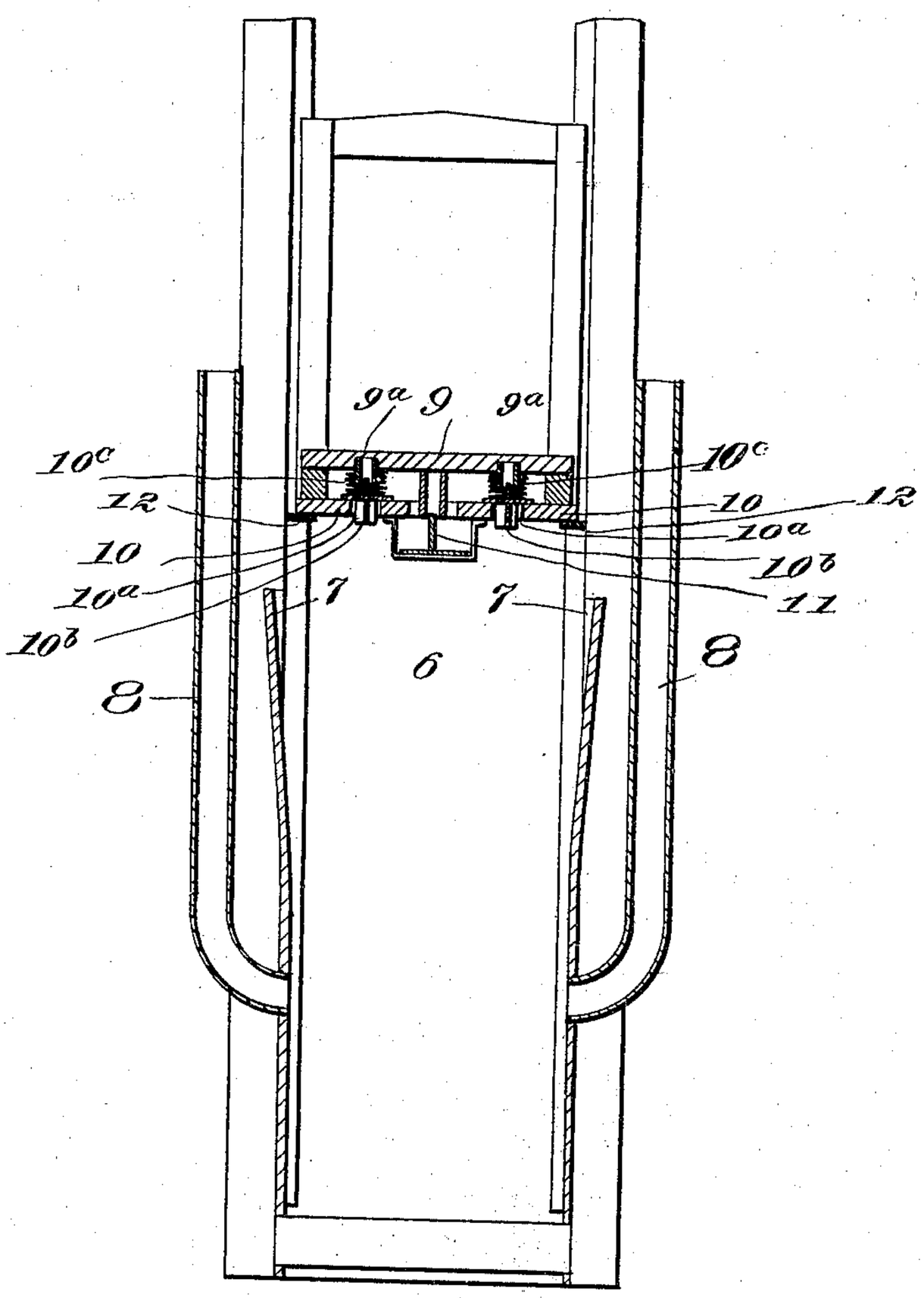

Fig. 1.

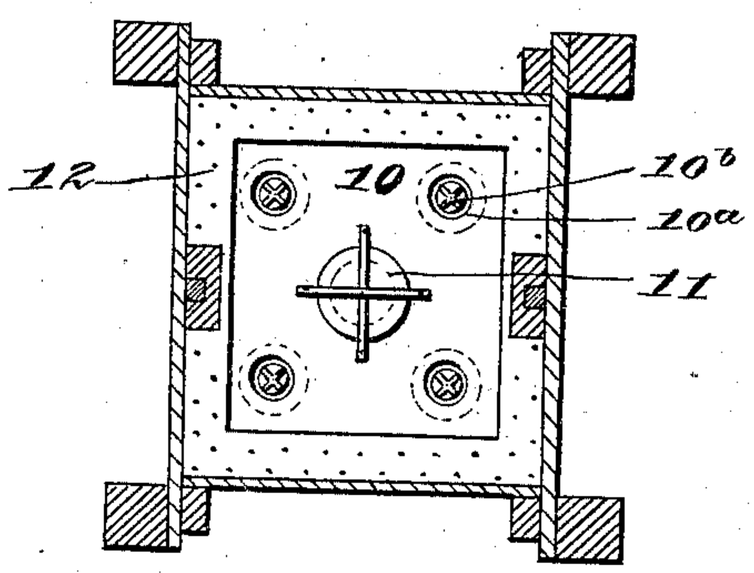

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

AMOS W. LEACH, OF INDIANAPOLIS, INDIANA.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 709,494, dated September 23, 1902.

Application filed June 5, 1902. Serial No. 110,306. (No model.)

To all whom it may concern:

Be it known that I, AMOS W. LEACH, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Safety Devices for Elevators; and I 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of safety devices for elevators in which an air-cushion is formed by a well at the bottom of the shaft.

The object of the invention is to form improved means for the escape of the air to permit the air to escape gradually, and thereby ease the shock which would ordinarily result from the fall of the elevator into a well of the nature indicated. I attain this object by the use of a well having various air-exits, together with an elevator-car the bottom of which has improved valves.

An embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, of the apparatus. Fig. 2 is a plan view of the under side of the elevator-car.

It is intended that the openings and valves for the escape of the air shall successively cease to operate, and referring specifically to the drawings, 6 indicates an air-well at the bottom of the elevator-shaft. This may be formed of wood, concrete, brick, or any other suitable material. The upper part of the walls of the well are flared, as at 7, to the mouth thereof. The length of this flare or inclination will depend somewhat on the size of the well and the height of the shaft and may be varied according to circumstances. The flare affords an escape for air around the edge of the elevator-floor until it passes into the vertical portion of the well. Below the flare the well is tapped by pipes 8, which project above the floor or ground and serve as exits for air confined in the well by the fall of the elevator. The mouths of these pipes in the well are above the bottom thereof, so that the escape of the air through the pipes is cut off when the elevator falls below the mouths thereof.

The floor of the elevator-car is made double, the upper and lower platforms thereof being indicated at 9 and 10, respectively. The lower platform has openings 10^a, covered by puppet-valves 10^b, which open against the tension of spiral springs 10^c. The stems of the valves work in tubes 9^a, joined to the under side of the upper platform, the springs being conveniently wound around the tubes.

By the construction above described the shock of the fall is gradually cushioned by the successive cessation of the escape of the air at the flared portion and the tubes occurring, respectively, when the car falls into the vertical portion of the well and when it passes the mouths of the tubes, after which the remaining escape takes place through the valves in the floor of the car. These escapes are so related that a gradual stoppage is effected and an easy cushion is formed into which the car settles.

A relief-valve is indicated at 11, which closes on the fall, but opens on the lift of the car, so as to admit air into the well and prevent a vacuum when it is attempted to raise the car.

At 12 a strip of rubber or other flexible material is indicated. This is secured to the bottom floor and is adapted to contact with the vertical walls of the well and prevent the escape of air around the floor.

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

1. In a safety device for elevators, the combination with a well having air-escapes operative only during the initial portion of the fall of the elevator-car therein, of a car having air-escape valves in the bottom thereof, operative during the remainder of the fall.

2. In a safety device for elevators, the combination of a well and car each having air-exits, the exits of the well closing successively at the fall of the car.

3. In a safety device for elevators, in combination with a well having a flared upper portion, and air-escape tubes between the

flared portion and the bottom thereof, of a car having valves in its floor, whereby a gradually-decreasing air-escape is permitted, substantially as described.

4. The combination with an elevator-well, of a car therein having spring-pressed air-escape valves in the floor thereof, operated by compression of air in the well, and a relief-valve in said floor, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

AMOS W. LEACH.

Witnesses:

JOSHUA C. STANCHFIELD,

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