

No. 688,601.

Patented Dec. 10, 1901.

J. C. DEAN.
ELEVATOR.

(Application filed June 15, 1901.)

(No Model.)

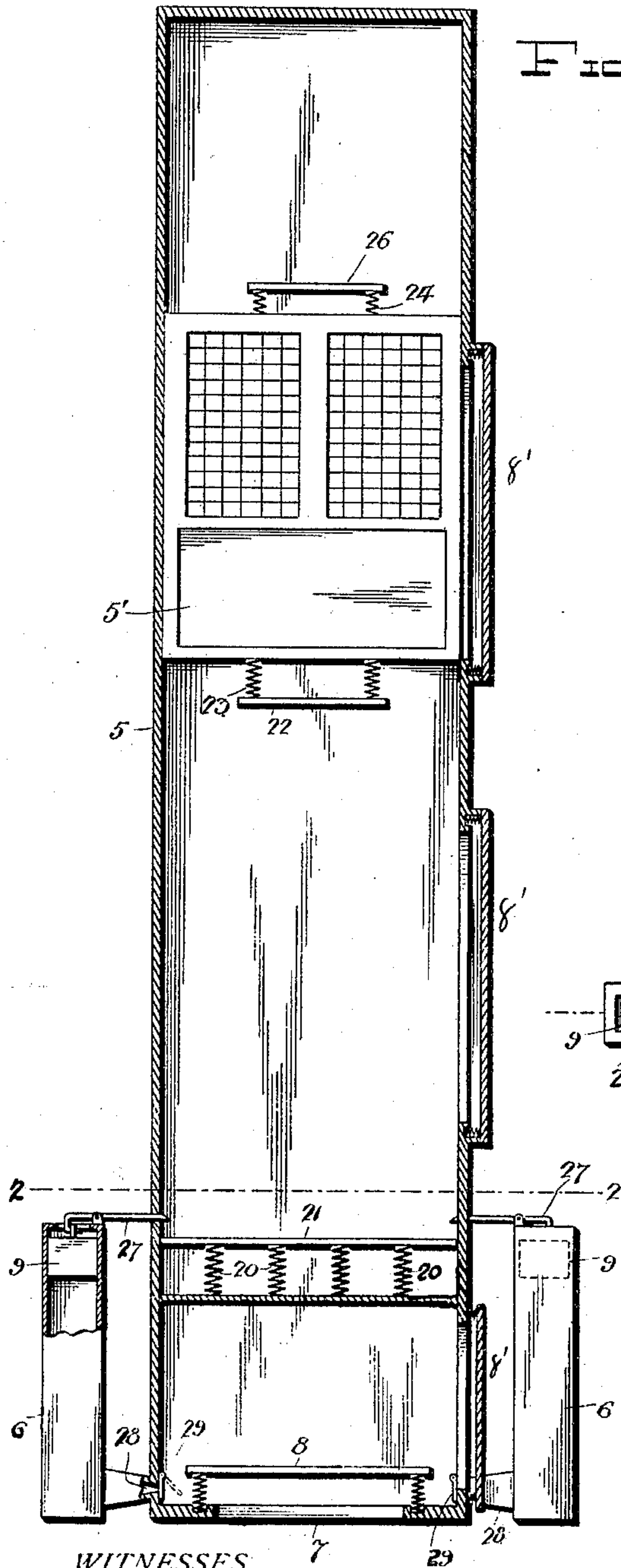


Fig. 1

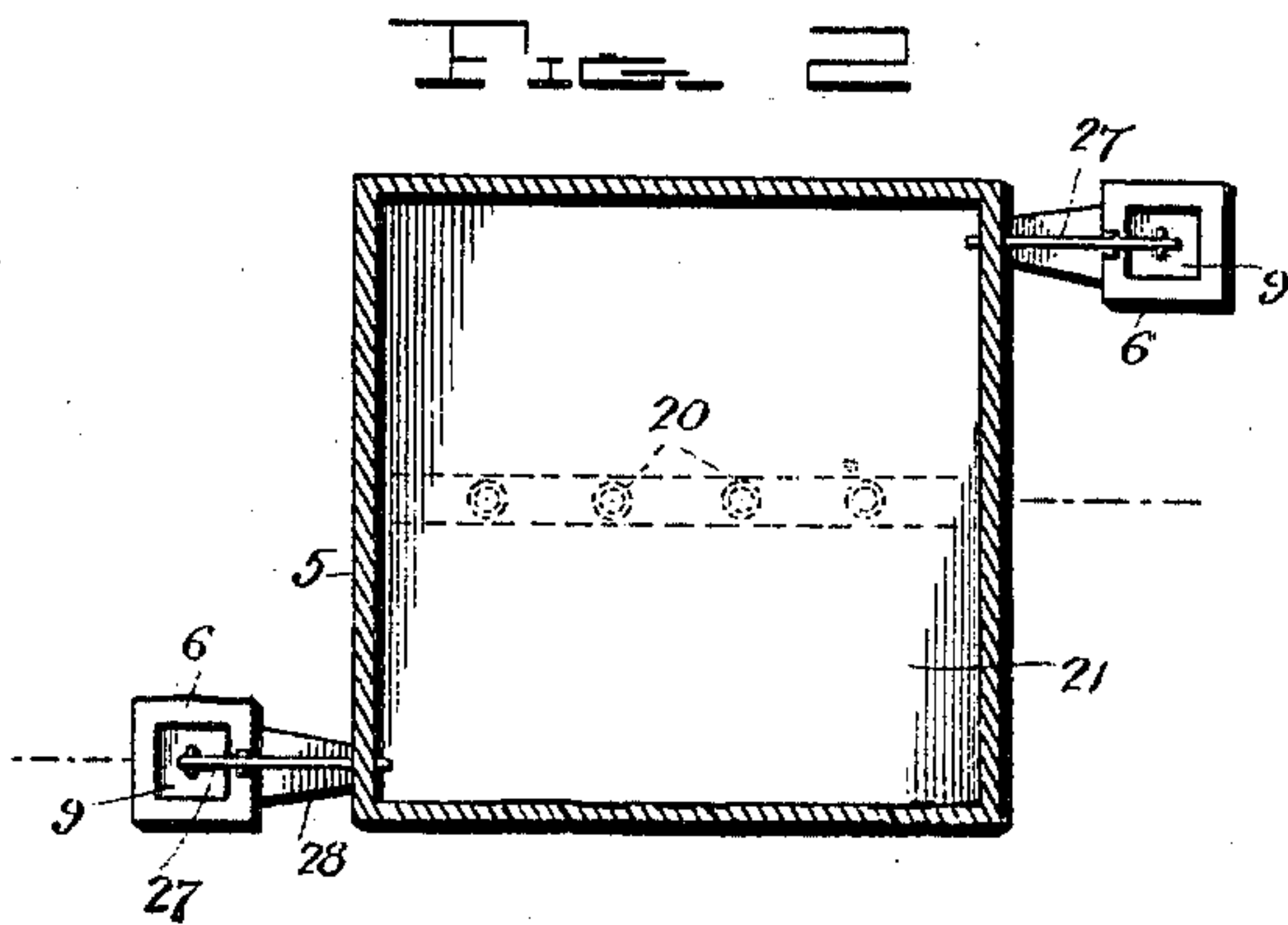


Fig. 2

WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES CLARK DEAN, OF HEROLD, WEST VIRGINIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 688,601, dated December 10, 1901.

Application filed June 15, 1901. Serial No. 64,749. (No model.)

To all whom it may concern:

Be it known that I, JAMES CLARK DEAN, a citizen of the United States, residing at Herold, in the county of Braxton, State of West Virginia, have invented certain new and useful Improvements in 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.

This invention relates to elevators; and it has for its object to provide a construction wherein if the cage or car of the elevator be dropped by accident or otherwise it will settle to the bottom of the elevator-shaft at such a slow speed as not to injure the occupants.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in both views, Figure 1 is a sectional view of the elevator-shaft, showing an elevator-car therein. Fig. 2 is a section on line 2 2 of Fig. 1.

Referring now to the drawings, there is shown an elevator-shaft including a casing 5, which at its lower end projects into a chamber 6, and in the casing 5 is disposed the elevator-car 5', of such size and shape as to prevent the passage of air between the car and the wall of the shaft as the elevator-car is raised and lowered. Thus if there be no means of egress of air from the bottom of the shaft the downward movement of the elevator-car in the shaft can be only at a slow speed.

In order that there may be an escape of air from the bottom of the shaft during the operation of the elevator-car at usual speeds, a doorway 7 is formed at the bottom of the casing 5 and opening into a chamber 6, and this doorway is provided with a door 8, which opens into the casing 5 and is held yieldably in open position by springs. As the elevator-car rises and falls in the casing this door stands open; but if the elevator-car be dropped the sudden compression of air below the elevator-car will force the air through the doorway at such a speed as to move the door to cut off the escape of air from the casing, when the only downward movement of the elevator-car will be at a speed commensurate with the escape of air upwardly around the side of the elevator.

At each floor there is a door 8' in the cas-

ing side, which doors have springs, and the upper end of the casing 5 is closed and the doors referred to open outwardly. These doors at the different floors have spring-hinges which hold them yieldably in closed condition, and it will be seen that as the elevator-car moves up there will be an escape of air through these upper doors, and when the elevator-car moves downwardly these doors are closed by the springs and are held tightly shut by the suction created by the descent of the car.

A lower portion of the casing 5 communicates with the chamber 6, as mentioned, and in the upper portion of the chamber is disposed a weighted piston 9, which when the air is forced from the casing is moved upwardly thereby, and thus acts to retard this movement of air and is a further means for limiting the speed of downward movement of the elevator-car. This weighted piston is held normally in raised position by a latch 27, and when the elevator-car drops after it has passed below the usual lower point of movement it strikes against the inner end of this latch and disengages it from the weighted piston. The piston then drops and forces the air from the chamber back into the casing through openings 28, which connect the casing with the chamber and have inwardly-opening valves 29. This latch 27 may be of any specific construction and in the present instance is shown as a bent rod engaged with a loop upon the piston.

A set of springs 20 is disposed transversely of the elevator-shaft, the lower ends of the springs being fixed to a rigid cross-piece, while the upper ends thereof are attached to a plate, this plate 21 being adapted to receive a plate 22, suspended from the bottom of the elevator-car, and between it and the elevator-car are helical springs 23, attached to the bottom of the elevator-car. When the elevator-car moves downwardly, these corresponding plates come together and the springs are compressed. Also springs 24 are secured to the top of the elevator car or cage, and they support a plate 26, adapted to strike the top of the elevator-shaft and absorb the jar.

In practice modifications of the specific construction shown may be made without departing from the spirit of the invention.

What is claimed is—

1. The combination with a casing of an elevator-car disposed slidably in the casing and approximately fitting the casing to prevent free flow of air from below to above the elevator-car, said casing having an opening at a point below the lower limit of movement of the elevator-car and having a door opening inwardly and adapted to stand normally ajar, and said casing having upper openings provided with outwardly-opening doors having means for holding them normally closed.

2. The combination with a casing of a chamber in which the lower end of the casing is received, and a car movable longitudinally of the casing and fitted into the casing to prevent free flow of air from below to above the car, a weighted piston slidably mounted in the chamber, said casing having an opening communicating with the chamber at a point below the lower limit of movement of the car and an inwardly-opening door for

said opening, said door having means for holding it yieldably ajar.

3. The combination with a casing and a chamber inclosing the lower end of the casing, of a car disposed in the casing for movement therein and fitted in the casing to prevent free passage of air past the car, a weighted piston in the chamber, and a latch for holding the weighted piston in raised position, said latch being disposed for engagement, by the car in its downward movement to release the piston, said chamber and casing having a communicating opening below the piston.

In testimony whereof I hereunto sign my name, in the presence of two subscribing witnesses, on the 13th day of March, 1901.

JAMES CLARK DEAN.

Witnesses:

L. N. JOHNSON,
A. G. JOHNSON.