

No. 750,597.

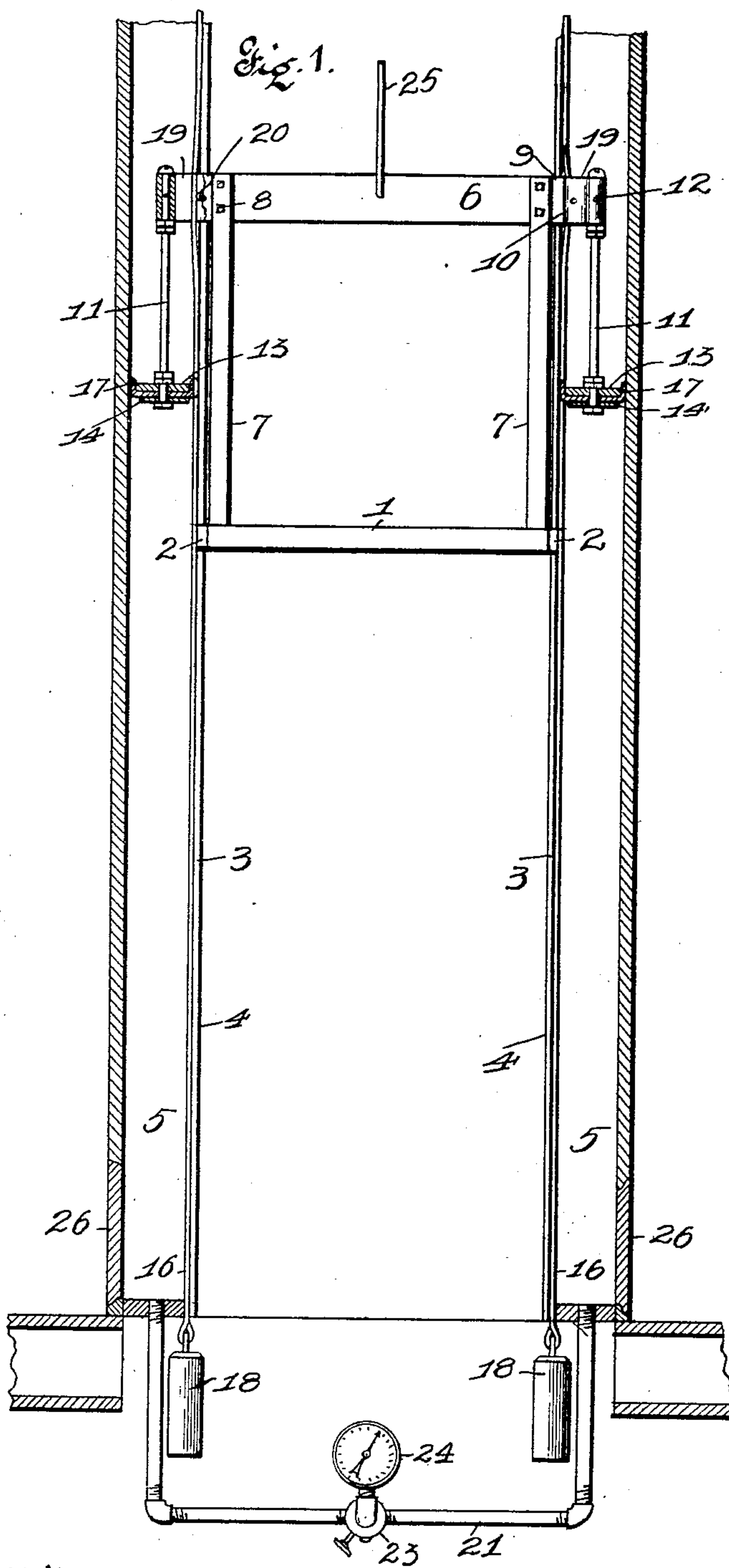
PATENTED JAN. 26, 1904.

G. E. CARNES.
ELEVATOR BRAKE.

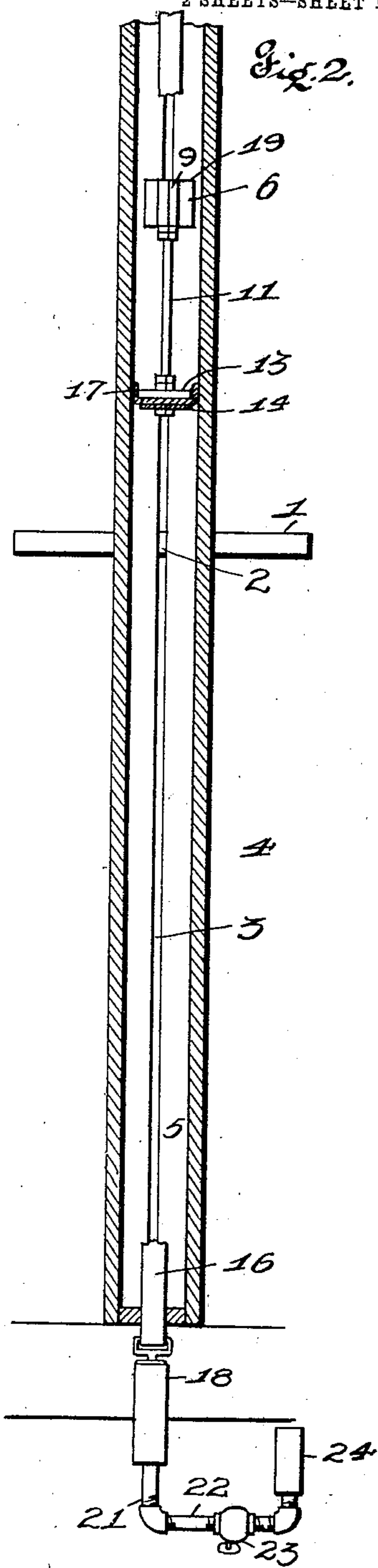
APPLICATION FILED APR. 27, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
Alfred W. Eicher
M. Blinn



Inventor
George E. Carnes
by Higdon & Longan & Hopkins Attys.

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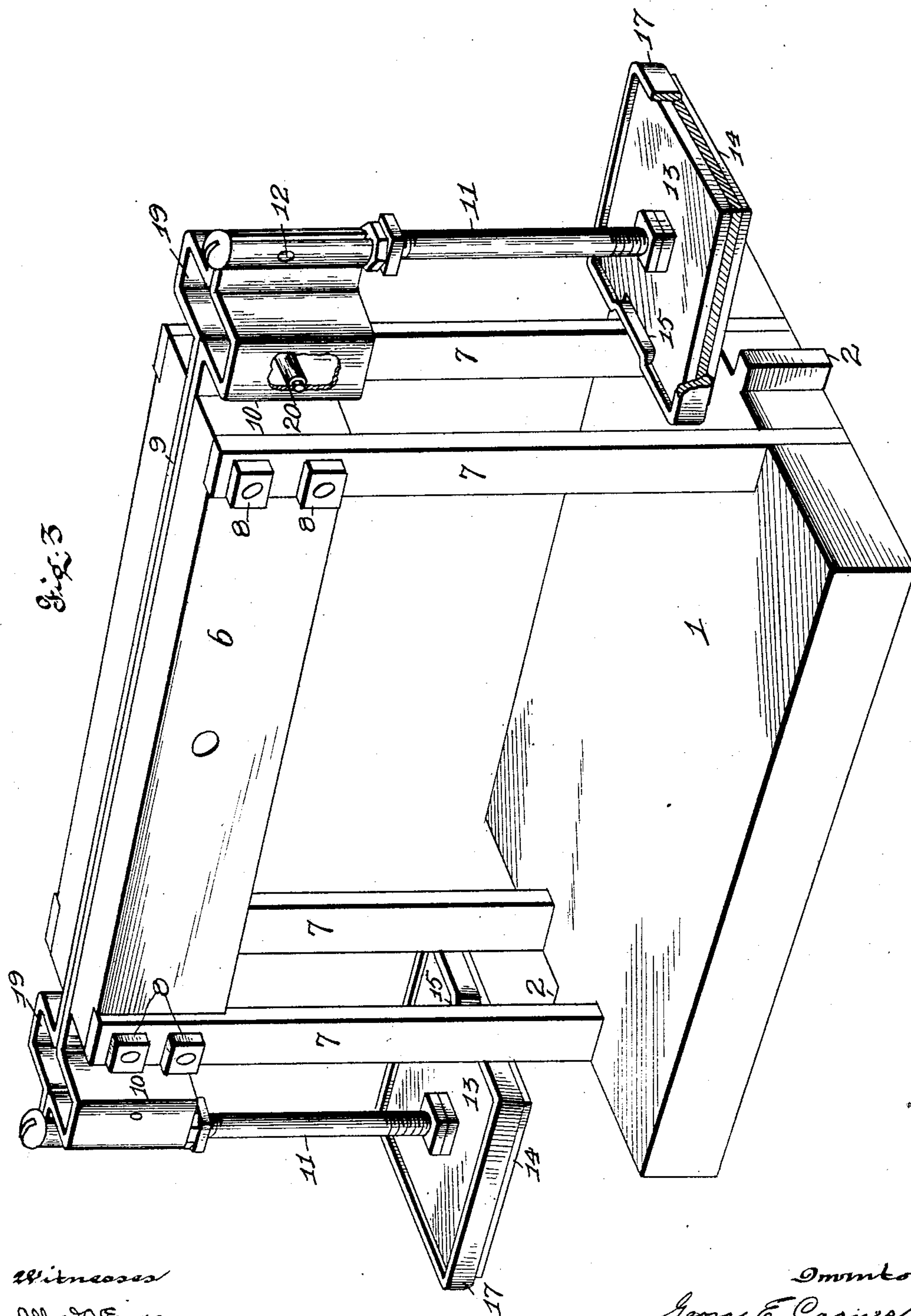
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE E. CARNES, OF ST. LOUIS, MISSOURI.

ELEVATOR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 750,597, dated January 26, 1904.

Application filed April 27, 1903. Serial No. 154,565. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. CARNES, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Elevator-Brakes, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved elevator-brake, and has for its object to provide a safety appliance for elevators adapted to work automatically in case of a sudden and dangerous acceleration of the speed of the car.

In the drawings which form a part of this specification, Figure 1 is a front view of a device embodying my invention, showing the air-chambers in section. Fig. 2 is a vertical transverse sectional view of the portions of the device of my invention contained in each of the air-chambers, showing the valve-belt broken away. Fig. 3 is a perspective view of the framework of a car-body containing and having attached thereto the device of my invention.

In the drawings the car-floor is indicated by the numeral 1 and is provided upon each side with projecting lugs 2, which are adapted to fit into the slots 3 in the bearings 4, the bearings 4 forming the inner faces of the chamber 5. The car-floor 1 is suspended from the cross-beams 6 by hangers 7, to which it is connected by means of bolts 8, the bolts 8 serving to hold the beams 6 together upon opposite sides of the suspension member 9, the suspension member 9 being formed, as shown, of two strips (it is obvious that it may be made integral) provided at their outer ends with angulations to form the bearing-surfaces 10 and curved at their outer extremities to receive and hold the valve-rods 11, which are secured to them by means of the pins 12. Before being bent to form the bearing-surfaces 10 the suspension member 9 extends beyond the ends of the cross-beams 6 sufficiently to permit of its sliding freely in the slots 3.

The rods 11 are provided at their lower extremities with valve-plates 13 and 14, as shown, the plates 13 and 14 being cut away upon their edges nearest to the hangers 7, as indicated by

the numeral 15, to accommodate the valve-belt 16, the plates 13 and 14 being adjustably movable upon the valve-rod 11 with reference to each other for the purpose of accommodating valve-packing, (indicated by the numeral 17.)

The valve-belts 16 are suspended in the air-chambers 5 in close proximity to the slots 3, being fastened at their upper extremities to the top of the air-chamber 5 and being kept measurably taut at all times by means of weights 18 or their equivalents.

The valve-belts 16 pass through the slots 19 over the pulleys 20, which protect them from the wear and abrasion, thence downwardly through recesses in the plates 13 and 14, (indicated by the numeral 15.)

The air-chambers 5 are open at their tops and are connected at their bottoms by means of the pressure-equalizing pipe 21, which pipe 21 is provided with an extension 22, upon which extension 22 the pressure-valve 23 and the gage 24 are mounted, the functions of which valve 23 and gage 24 will hereinafter be described.

The hereinabove-described air-chambers 5 are my embodiment of means for supplying the elevator with resilient cushions of air, upon which the valves formed of the plates 13 and 14 will act automatically in any case of undesirable acceleration of the speed of the car. The mode of operation through which this result is accomplished by the described mechanism is as follows: Under normal condition of operation the valves, composed of the plates 13 and 14, are permitted to slide freely in the air-chambers 5, the valve-belts 16 being kept in contact with the slots 3 and closing the slots 3 by means of the weights 18 or their equivalents. The function of the valve 23 is to fix the air-pressure at the highest rate of speed at which it is desired to permit the elevator to descend, the pressure of the air being indicated by the gage 24 and regulated by the valve 23, which is adapted to close when the desired speed rate is exceeded. When the valve 23 is so closed, which will occur whenever the elevator through breakage of its suspension-rope 25 or otherwise, the air-chambers 5 will have no outlet and the downward progress of the

elevator will be automatically checked by the pressure of the air contained therein. During the ascent of the car the vacuum caused by the ascent of the valves will be relieved by
5 the ingress of air through the slots 3, forcing the valve-belt 16 away from contact with the slots 3.

Among the advantages incident to the construction and mode of operation of the elevator-brake above described are economy and
10 simplicity of construction and the automatic application of resisting air-columns in case of accident without any intervention on the part of the operator being required, and it is manifest that by means of the valve 23 my brake
15 is capable of application to high-speed or low-speed elevators indifferently, the adjustments of the brake mechanism to accommodate any desired normal rate of speed of the elevator
20 being quickly fixed.

The elevator is actuated by the cable 25, whose movement is controlled by any suitable source of power.

I have provided the air-chambers 5 with
25 doors 26, which are removable in order to give access to the valves for the purpose of renewing the packing or substituting other valves. These doors 26 are preferably beveled inwardly, as shown, in order to provide them
30 with air-tight joints, and are held in place by any desired mechanism.

Having thus described my invention, what I claim as new, and desire to have secured to me by the grant of Letters Patent, is—

35 1. A brake mechanism for elevators, com-

prising a suspension member adapted to support the elevator-cage, a plurality of air-chambers mounted vertically upon the elevator-shaft and provided with longitudinal slots, valves mounted upon the suspension member
40 and within the air-chambers, the air-chambers being connected together at their bottoms for the purpose of equalizing the air-pressure within them, and means whereby the slot will
45 be closed beneath the valves when the elevator-car moves downwardly in excess of a predetermined rate of speed, substantially as described.

2. A brake mechanism for elevators, comprising a suspension member adapted to support the elevator-cage, a plurality of air-chambers vertically mounted upon the elevator-shaft and provided with longitudinal slots, valves mounted upon the suspension member
50 and within the air-chambers, a pipe connecting the bottoms of the air-chambers, a valve mounted upon the pipe, a gage connected to the valve, and means whereby the slot will be
55 closed beneath the valves when the elevator-car moves downwardly in excess of a predetermined rate of speed, substantially as described.
60

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

GEORGE E. CARNES.

Witnesses:

M. G. IRION,

ALFRED A. EICKS.