

S. BALLARD.
ELEVATOR.

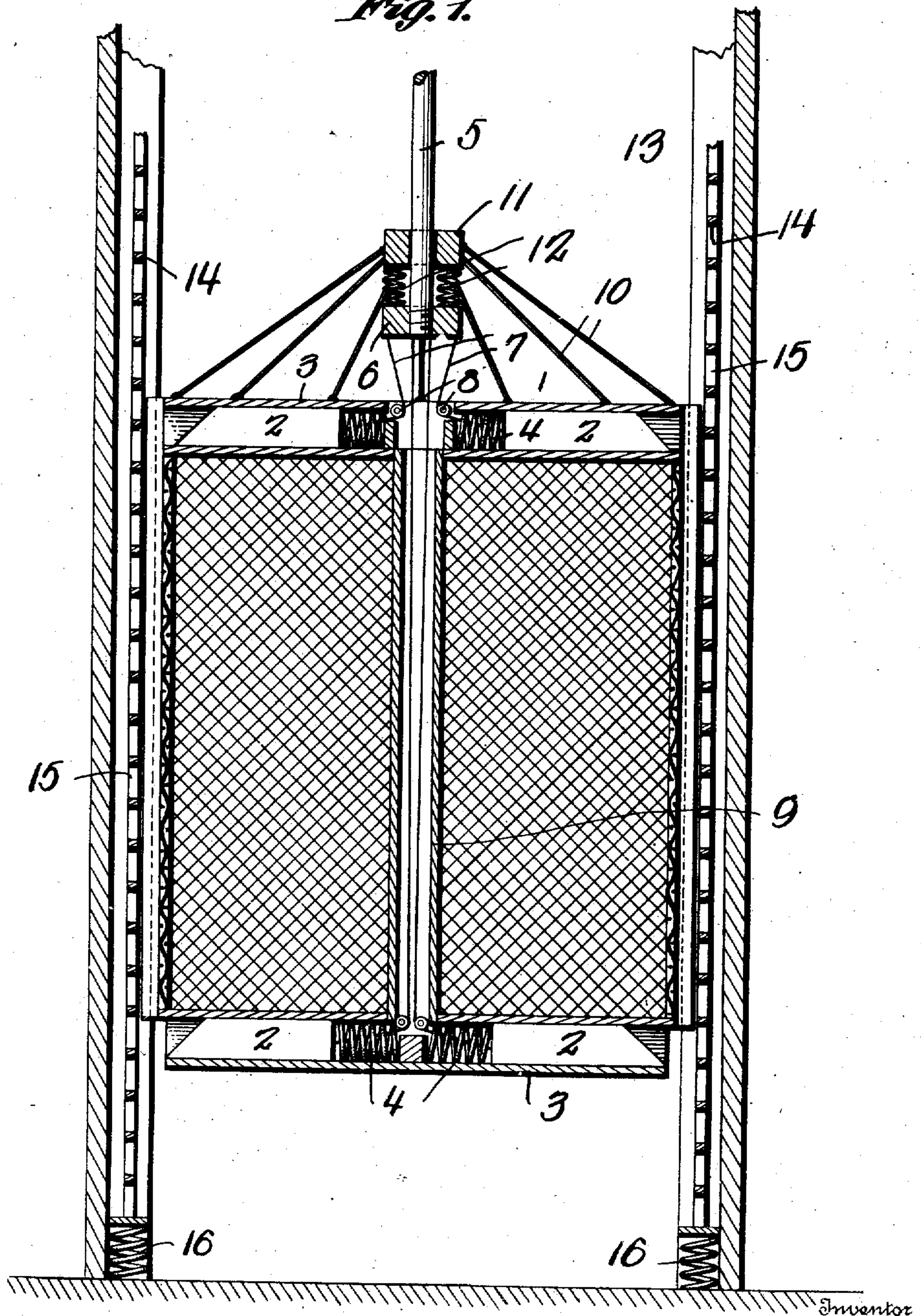
APPLICATION FILED SEPT. 22, 1909.

Patented Apr. 18, 1911.

989,552.

3 SHEETS—SHEET 1

Fig. 1.



Witnesses

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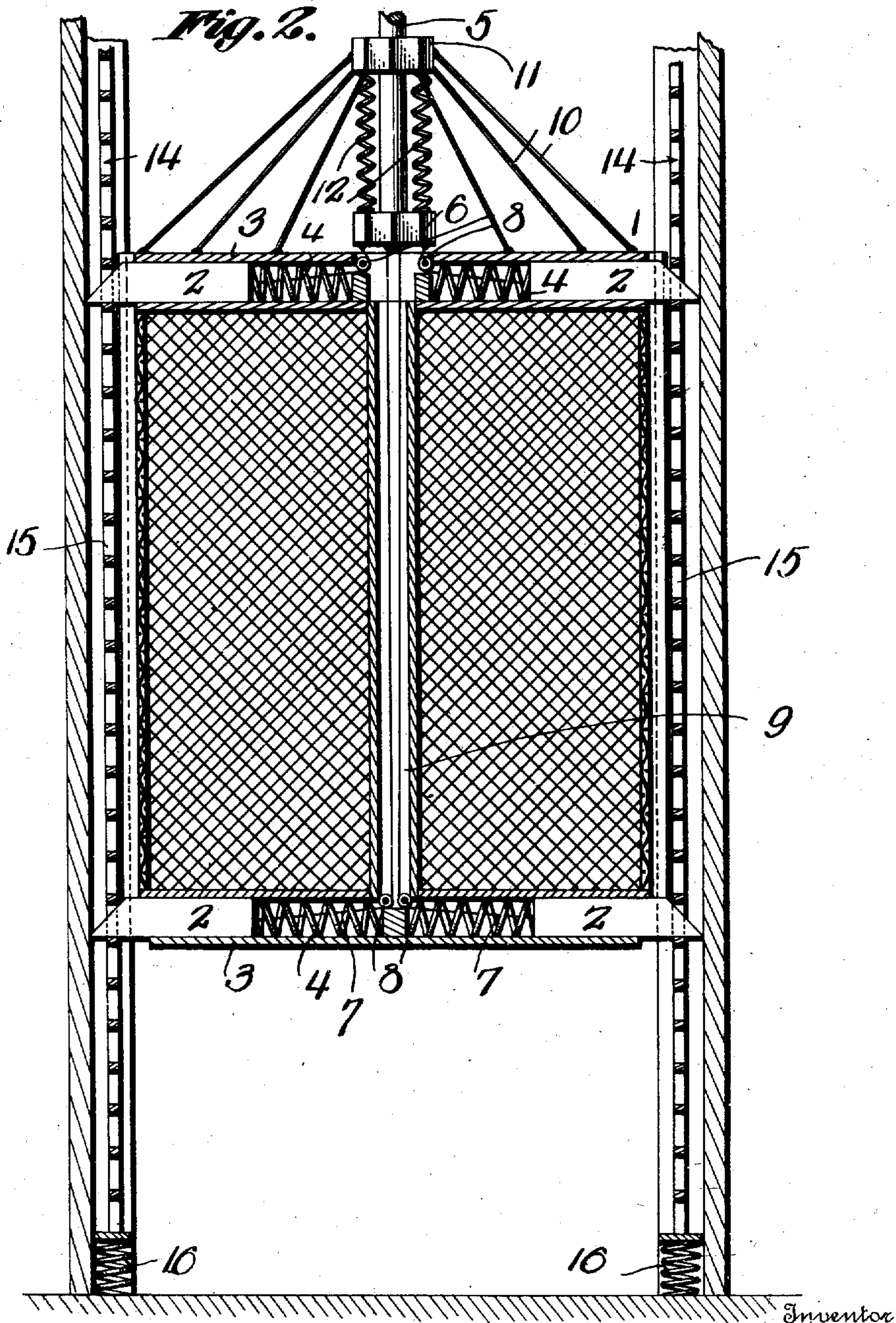
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Inventor

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3 SHEETS—SHEET 3.

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Fig. 4.

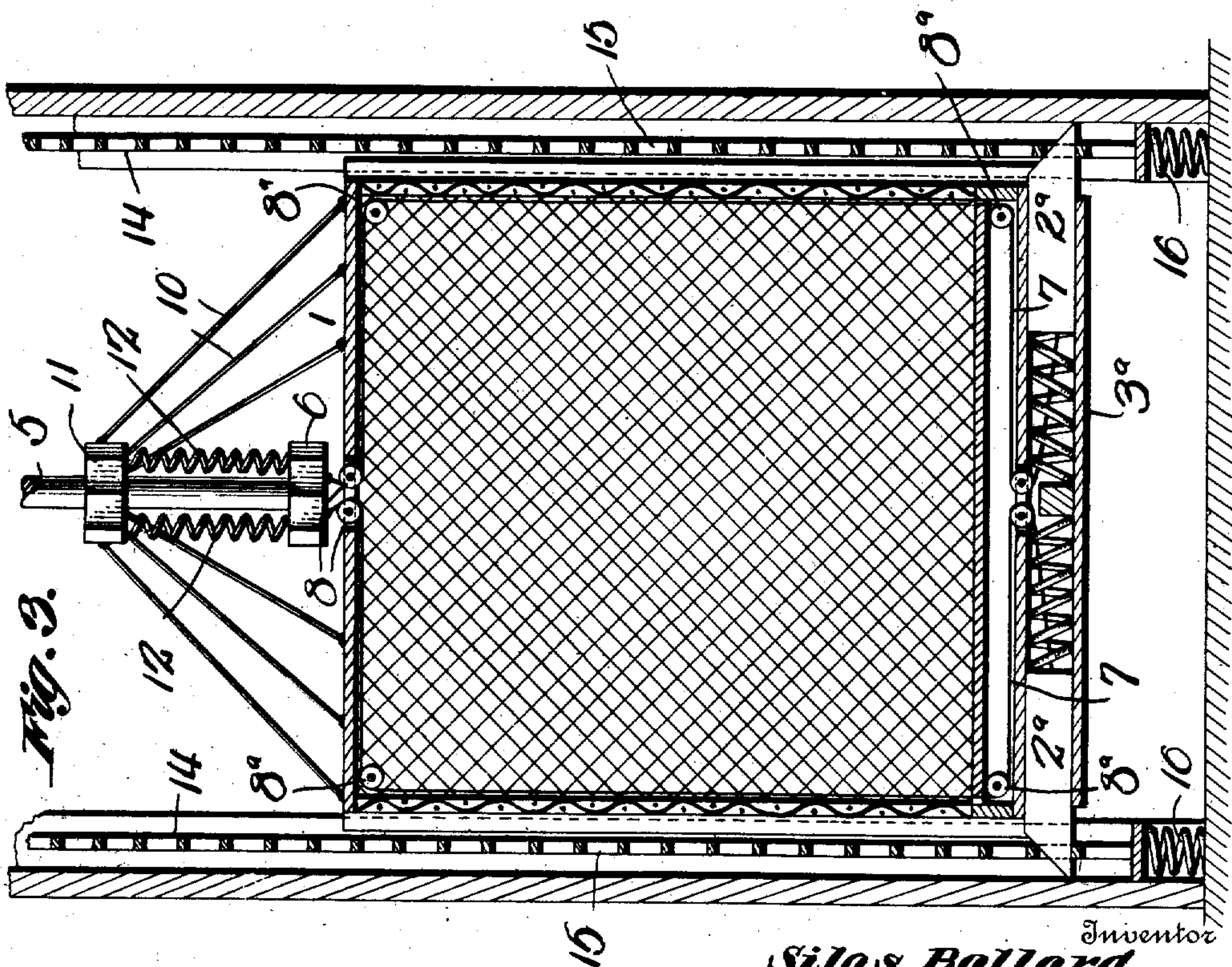
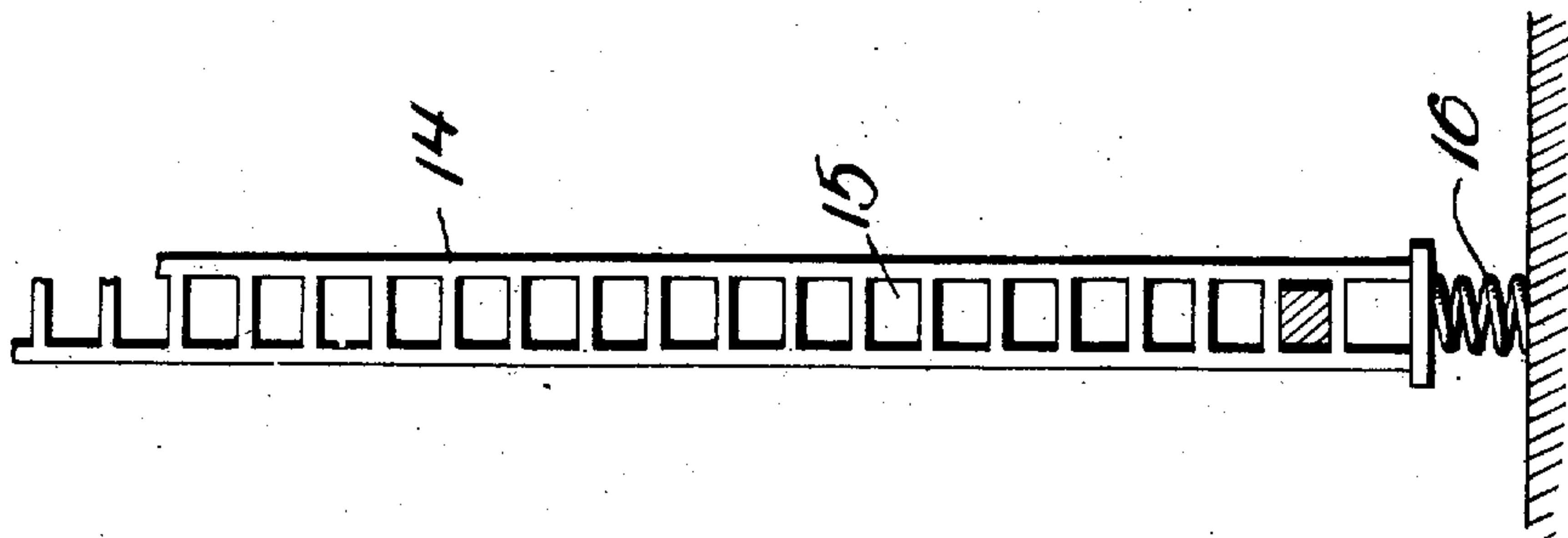


Fig. 3.

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UNITED STATES PATENT OFFICE.

SILAS BALLARD, OF ABILENE, TEXAS.

ELEVATOR.

989,552.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed September 22, 1909. Serial No. 519,001.

To all whom it may concern:

Be it known that I, SILAS BALLARD, a citizen of the United States, residing at Abilene, in the county of Taylor and State of Texas, have invented new and useful Improvements in Elevators, of which the following is a specification.

This invention relates to improvements in elevators, particularly with reference to improved means for locking the car in the event that the hoisting cable breaks so as to prevent the car from dropping and its occupants becoming killed or injured and the said invention consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is a sectional view of an elevator car and a portion of an elevator shaft provided with my improved means to prevent the falling of the car, the locking bolts being shown in normal retracted position. Fig. 2 is a similar view showing the locking bolts in engaging position with the stop elements in the elevator shaft as when the hoisting cable is broken. Fig. 3 is a sectional view of an elevator car provided with means embodying a modification of my invention. Fig. 4 is an elevation of one of the stop elements in the shaft, a locking bolt being shown in engagement therewith and in cross section.

In the embodiment of my invention, I provide the car or cage 1 of an elevator with locking bolts 2 which are mounted for movement transversely of the car so that they may be either disposed entirely within the car or projected so that their outer ends extend beyond the sides thereof. In the form of my invention shown in Figs. 1 and 2, the said locking bolts are disposed in supporting guides 3 both at the top and bottom of the car. In the form of my invention shown in Fig. 3, the locking bolts 2^a are disposed in supporting guide-ways 3^a at the bottom of the car. Each locking bolt is engaged at its inner end by a spring 4, the action of the springs being such as to move the locking bolts outward when the locking bolts have been released. The hoisting cable or element 5 is shown as provided at its lower end with a nut 6 which is connected by means of suitable cords or other flexible elements 7 to the locking bolts, the said cords engaging direction pulleys 8 and in the form of the invention shown in Figs.

1 and 2, those cords which are connected to the lower bolts extend down through a tube 9 in the center of the car. The upper end of the car is connected as by means of suitable rods 10 to a block or guide 11 which has a central opening through which the hoisting cable extends, the said block or guide 11 being disposed above the nut or stop 6 and springs 12 being here shown as interposed between the said guide or block and the said nut or stop, the function of the springs being, when the cable 5 breaks, to force that portion of the cable which passes through the block or guide 11 downwardly and hence to also force the stop or nut 6 downwardly so as to cause said stop or nut to relax on the cords 7 and thereby allow the springs 4 to move the locking bolts 2 outward so as to project the outer ends of said bolts beyond opposite sides of the car.

In opposite sides of the elevator shaft are stop elements 14 which are here shown as vertically disposed bars having openings 15 for the reception of the locking bolts. These stop elements are shown as having their lower ends mounted on supporting and cushioning springs 16. The function of these springs is to permit slight progressively resisted downward movement of the stop elements when the latter are engaged by the locking bolts so that the stop elements have yielding cushioning movement under the sudden stress applied to them by the locking bolts, this yielding movement of the stop elements in the shaft preventing them or the locking bolts from being broken when the locking bolts suddenly engage them, as will be understood.

In the form of the invention shown in Fig. 3, the cords 7 which connect the nut or stop 6 of the locking bolts 2^a in addition to passing over the direction pulleys 8 at the center of the car in its top and bottom also pass over direction pulleys 8^a which are at the outer sides of the car at its top and bottom and hence the said cords are disposed out of the way.

What is claimed is:—

1. In an elevator the combination of a car, a guide located above the car, connecting means between said guide and car, a hoisting cable passing loosely through said guide, a stop secured to the lower end of the hoisting cable below said guide, springs interposed between the stop and guide, locking bolts mounted upon the car, springs nor-

5 mally exerting a pressure to throw the lock bolts outward, stops at the sides of the elevator shaft to be engaged by the lock bolts when thrown outward, and flexible connections between said locking bolts and the stop provided at the lower end of the hoisting cable to hold the locking bolts in withdrawn position under normal conditions.

10 2. In an elevator the combination of a car, horizontal guideways at the upper and lower ends of the car, spring actuated locking bolts mounted in said guideways, stops at opposite sides of the elevator shaft to be engaged by the locking bolts, a centrally disposed tube passed through the car and communicating at its ends with the horizontal guideways, a guide located above the

car and having connection therewith, a hoisting cable passed loosely through said guide, a stop at the lower end of the hoisting cable, springs interposed between said stop and guide, flexible connections between the said stop and the upper locking bolts, and other flexible connections passing through the centrally disposed tube and connecting the said stop with the lower locking bolts. 25

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

SILAS BALLARD.

Witnesses:

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A. D. HAMILTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
