

No. 756,735.

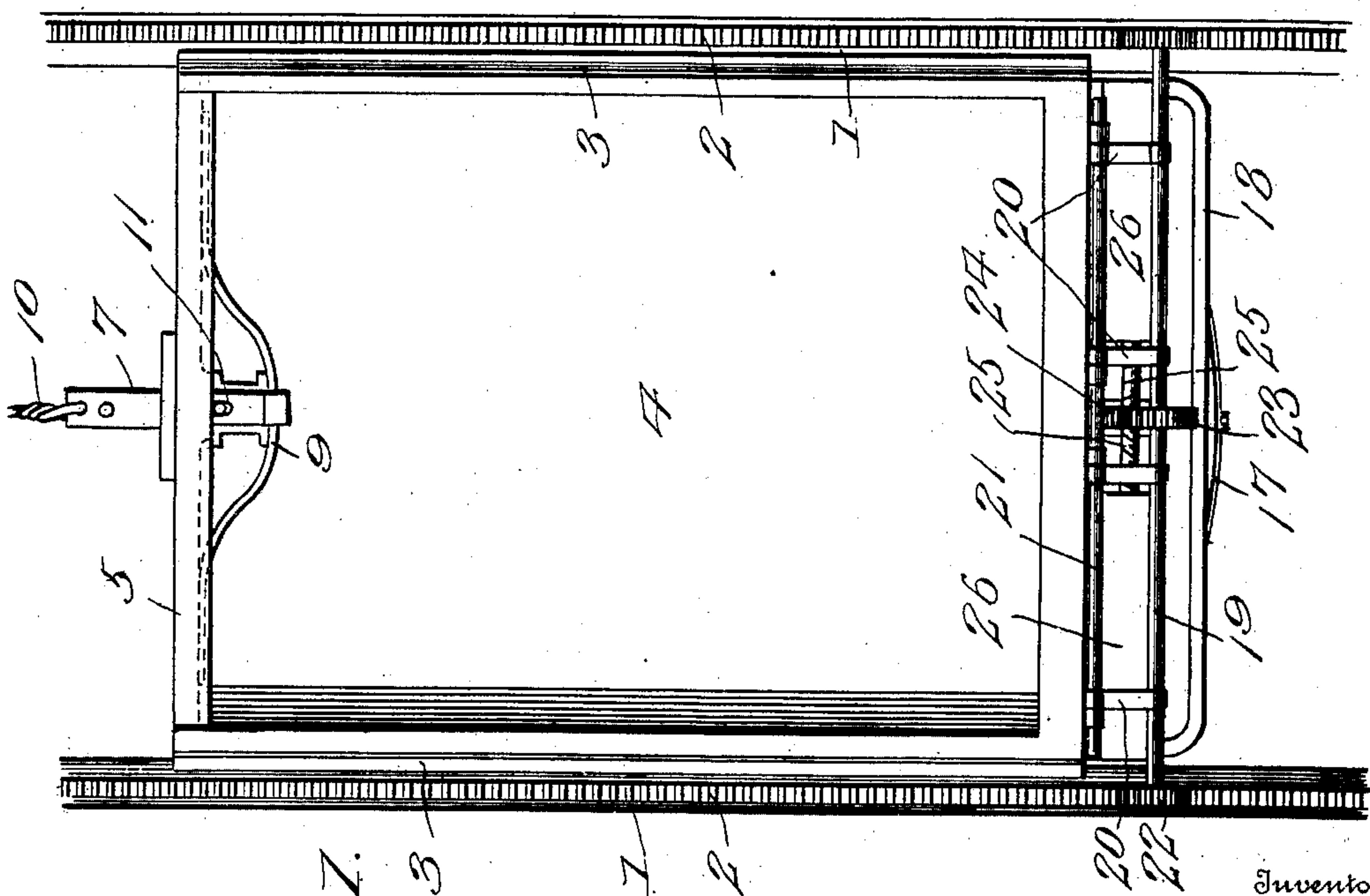
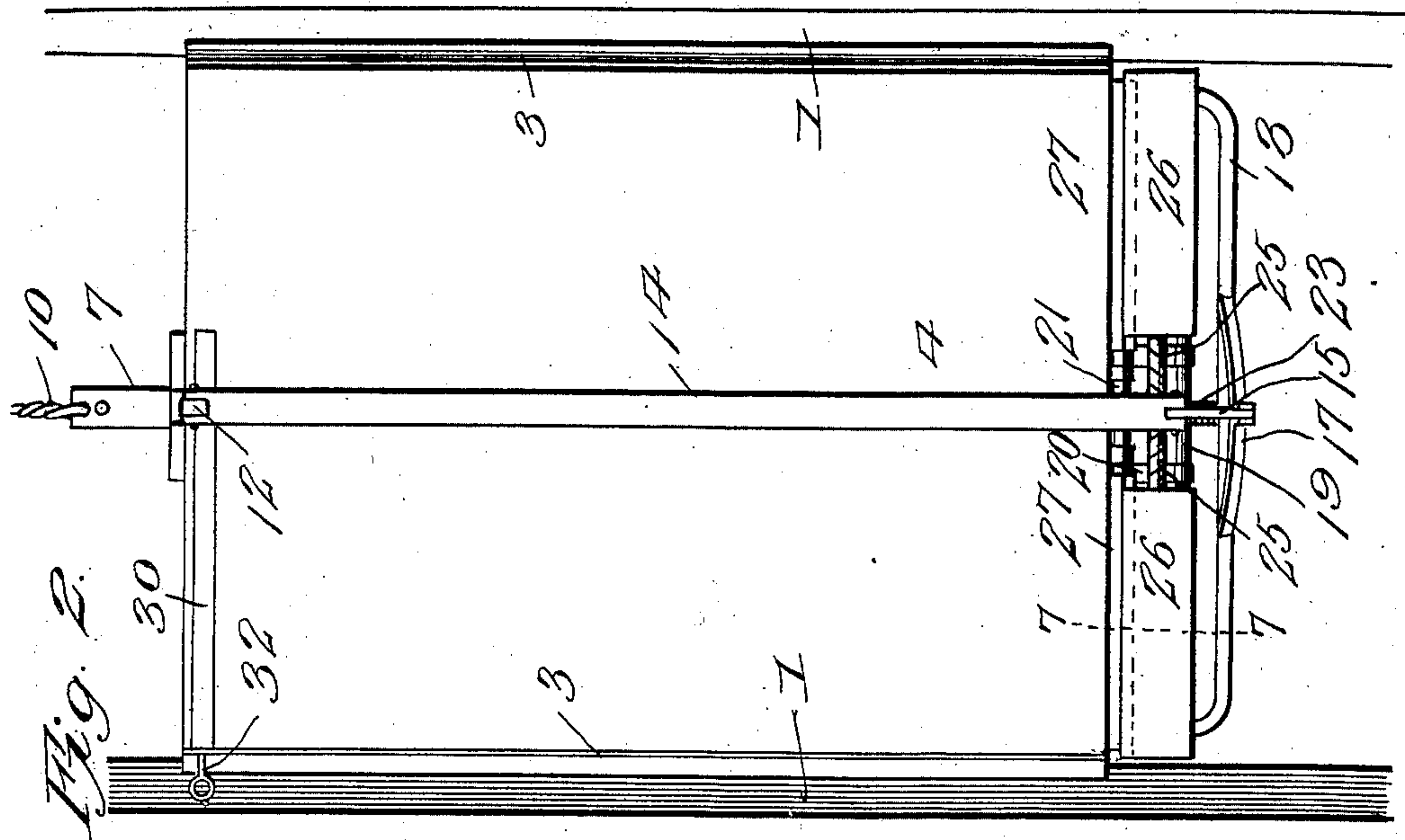
PATENTED APR. 5, 1904.

G. THALEN.
ELEVATOR.

APPLICATION FILED DEC. 23, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses

Wm. North. H
Herbert W. Lawson.

Gustav Thalen, Inventor

By *Victor J. Evans*
Attorney

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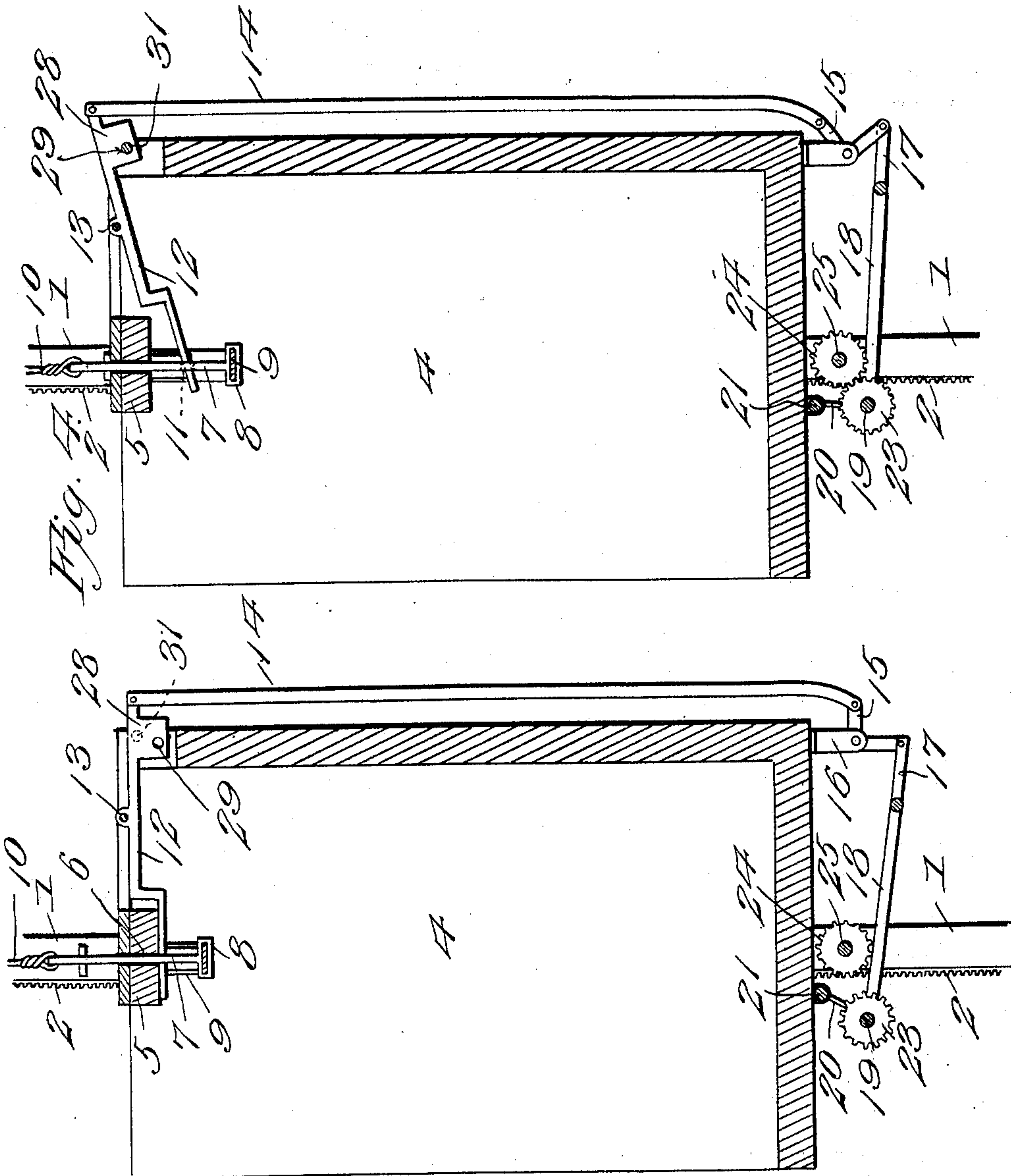


Fig. 3.
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Fig. 7
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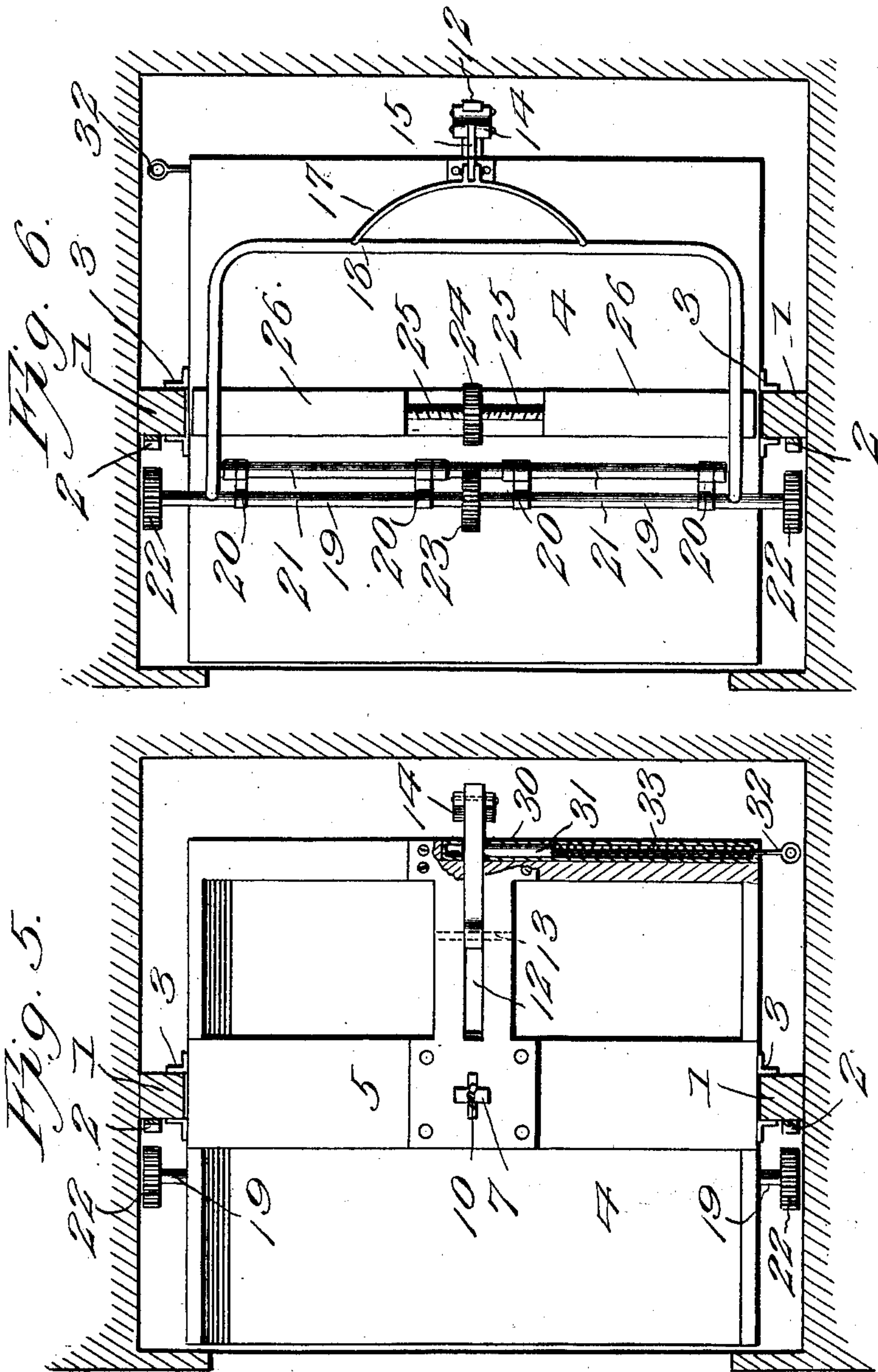
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

GUSTAV THALEN, OF BROOKLYN, NEW YORK.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 756,735, dated April 5, 1904.

Application filed December 23, 1903. Serial No. 186,357. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV THALEN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Elevators, of which the following is a specification.

My invention relates to new and useful improvements in elevators, and more especially to safety appliances therefor; and its object is to provide means for automatically stopping the fall of the car in the event of the breakage of the hoisting-cables.

A further object is to provide a safety device of simple construction which can be readily attached to an elevator and which will be locked in operative position immediately subsequent to the parting of the cables.

With the above and other objects in view the invention consists of laterally-movable clamping-blocks secured to the elevator-car, and these blocks are adapted to be propelled simultaneously by means of gears adapted to be operated by a rack secured to the guide-rails in the elevator-shaft. These gears are normally out of mesh with the rack, but are adapted to be thrown automatically into engagement therewith upon the breaking of the car-supporting cables.

The invention also consists of simple mechanism for throwing the gears into operative relation with the rack.

The invention also consists of a lock for holding the gears in mesh subsequent to the parting of the cables, so as to prevent their displacement during the operation of the clamping-blocks.

The invention also consists in the further novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a front elevation of an elevator-car having my improved safety attachment thereon. Fig. 2 is a rear elevation thereof. Fig. 3 is a central vertical section through the car. Fig. 4 is a similar view showing the positions of the parts subsequent to the break-

ing of the hoisting-cables. Fig. 5 is a top plan view of the car, the same being partly broken away to show the locking device. Fig. 6 is a bottom plan view of the car; and Fig. 7 is a section on line 7 7, Fig. 2.

Referring to the figures by numerals of reference, 1 1 are guide-rails having racks 2 thereon, and these rails form guides for parallel cleats 3, secured to the sides of an elevator-car 4. A cross-beam 5 is formed at the top of the car and has an aperture 6 extending therethrough, in which is slidably mounted a pin 7, having an eye 8 at its lower end. This eye incloses the central portion of a bow-spring 9, the ends of which are slidably mounted upon the lower surface of the cross-beam 5, and the upper portion of the stem is secured in any suitable manner to the hoisting-cable 10. A slot 11 is formed within the stem 7, and loosely arranged therein is one end of a lever 12, which is fulcrumed at a point between its ends to the top of the car, as shown at 13. The outer end of this lever is connected by means of a bar 14 with one arm of a bell-crank lever 15, fulcrumed in a bracket 16, secured to the bottom of the car 4. The other arm of this lever is pivoted to a bow-shaped extension 17, projecting from a yoke 18, and the ends of this yoke loosely engage a shaft 19, which is supported by straps 20, loosely mounted upon and suspended from a cross-rod 21, secured to the bottom of the car. Gears 22 are secured to the ends of the shaft 19 in alignment with the racks 2, and another gear, 23, is secured to the shaft at a point adjacent the center thereof and in alignment with a gear 24, secured to an oppositely-screw-threaded rod 25. The ends of this rod extend into and engage clamping-blocks 26, which are slidably mounted on guides 27, secured to the bottom of the car and between the guide-rails 1.

The lever 12 has an enlargement 28 adjacent its outer end, and this enlargement has an aperture 29 therein, adapted when pressed downward to register with a cylindrical casing 30, in which is slidably mounted a plunger 31. A stem 32 extends from the plunger through the outer end of the casing 30 and is

inclosed by a spring 33, which bears upon the plunger and holds it normally in contact with the lever 12 and its enlarged portion 28.

It will be understood that the weight of the car suspended from the cable 10 will be sufficient to compress the spring 9 and hold the lever 12 in a substantially horizontal position, as shown in Fig. 3. When the lever is in this position, the gears 22 and 23 are kept out of mesh with the racks and the gear 24, respectively, and therefore the car is free to be raised or lowered at a desired speed. When, however, the cable 10 becomes slack or is broken, the spring 9 will expand and draw stem 7 downward, thereby swinging lever 12 upon its fulcrum and bringing the aperture 28 into alinement with the casing 30. The plunger 31 will be sprung into said aperture by the spring 33, and the lever will thus be securely locked in position. This movement of the lever 12 will cause rod 14 to be drawn upward and will swing the bell-crank lever 15, so as to draw the yoke 18 backward. Shaft 19 will be carried with the yoke, and the gear 23 will be swung into mesh with gear 24, while the gears 22 will move into engagement with the racks 2. As the car drops downward by reason of its lack of support, the gears 22 will rotate upon the racks and gear 23 will move therewith and cause the rotation of gear 24. The blocks 26 will therefore be slid longitudinally in opposite directions and will be moved into contact with the guide-rails 1, against which they will be firmly clamped, and thereby support the car and prevent further downward movement thereof. After the cable has been repaired the parts can be returned to their normal positions by withdrawing the plunger 31 from engagement with the lever 12. The weight of the car will then cause the stem 7 to return the lever to its horizontal position, and therefore withdraw the gears 22 and 23 from engagement with the racks 2 and gear 24, respectively. It will be seen that the apparatus herein described is extremely simple and can be attached to any form of elevator-car at slight cost. It will effectively prevent the dropping of the elevator-car, and its operation is fully automatic.

In the foregoing description I have shown the preferred form of my invention, but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

Having thus described the invention, what is claimed as new is—

1. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of clamping devices connected to the car, a laterally-movable shaft connected to the car, means thereon for transmitting motion to the shaft from the

rails, and means operated automatically by the fall of the car for shifting the shaft into operative relation with the clamping devices and the rails.

2. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of laterally-movable clamping devices connected to the car, a laterally-movable shaft connected to the car, gears thereon adapted to engage the rails, and means operated automatically by the fall of the car for shifting the shaft into operative relation with the clamping devices and the gears into engagement with the rails.

3. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of clamping devices connected to the car, means for shifting the devices simultaneously in opposite directions, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem connected to the car, and means operated by the stem for shifting the shaft into operative relation with the clamping-device-operating mechanism and the gears into engagement with the rails.

4. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping devices mounted thereon, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem upon the car, and means operated by the stem for shifting the shaft into operative relation with the screw and the gears into engagement with the rails.

5. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping devices mounted thereon, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem upon the car, means operated by the stem for shifting the shaft into operative relation with the screw and the gears into engagement with the rails, and means for locking the shaft and gears in such position.

6. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping devices mounted upon and operated by the screw, a laterally-movable shaft connected to the car, a cable-engaging stem slidably mounted within the car, means for automatically sliding the stem within the car, and mechanism operated by the stem for shifting the shaft into operative relation with the guide-rails and screw.

7. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping-blocks mounted thereon, a gear upon the screw, a laterally-movable shaft connected to the car, gears there-

on, and means operated by the fall of the car for automatically shifting the gears of the shaft into engagement with the guide-rails and the gear of the screw, respectively.

5 8. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping-blocks upon the screw, a gear secured to said screw, a later-
10 ally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem connected to the car, and means operated by said stem for shifting the gears on the shaft into engagement with the guide-rails and the
15 gear of the screw, respectively.

9. In an apparatus of the character described, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, clamping-blocks upon the
20 screw, a gear secured to said screw, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem connected to the car, means operated by said stem for shifting the gears on the shaft into
25 engagement with the guide-rails and the gear of the screw, respectively, and means for locking said gears in engaging positions.

10. In an apparatus of the character described, the combination with guide-rails, and

a car therebetween; of a screw connected to 30 the car, clamping-blocks thereon, a gear revoluble with the screw, a laterally-movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem upon the car, means operated by said stem for moving 35 the gears on the shaft into engagement with the rails and the gear on the screw, respectively, and a spring-pressed plunger for locking said gears in engagement.

11. In an apparatus of the character de- 40 scribed, the combination with guide-rails, and a car mounted therebetween; of a screw connected to the car, rail-clamping blocks mounted thereon, a gear upon the screw, a laterally-
45 movable shaft connected to the car, gears thereon, a spring-pressed cable-engaging stem within the car, a lever connected thereto and operated thereby, a bell-crank lever, a rigid connection between said bell-crank lever and the
50 shaft and first-mentioned lever, respectively, and a spring-pressed locking-plunger adapted to engage the first-mentioned lever.

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

GUSTAV THALEN.

Witnesses:

ADAM GREIS,

WILLIAM REIBERT.