

No. 765,791.

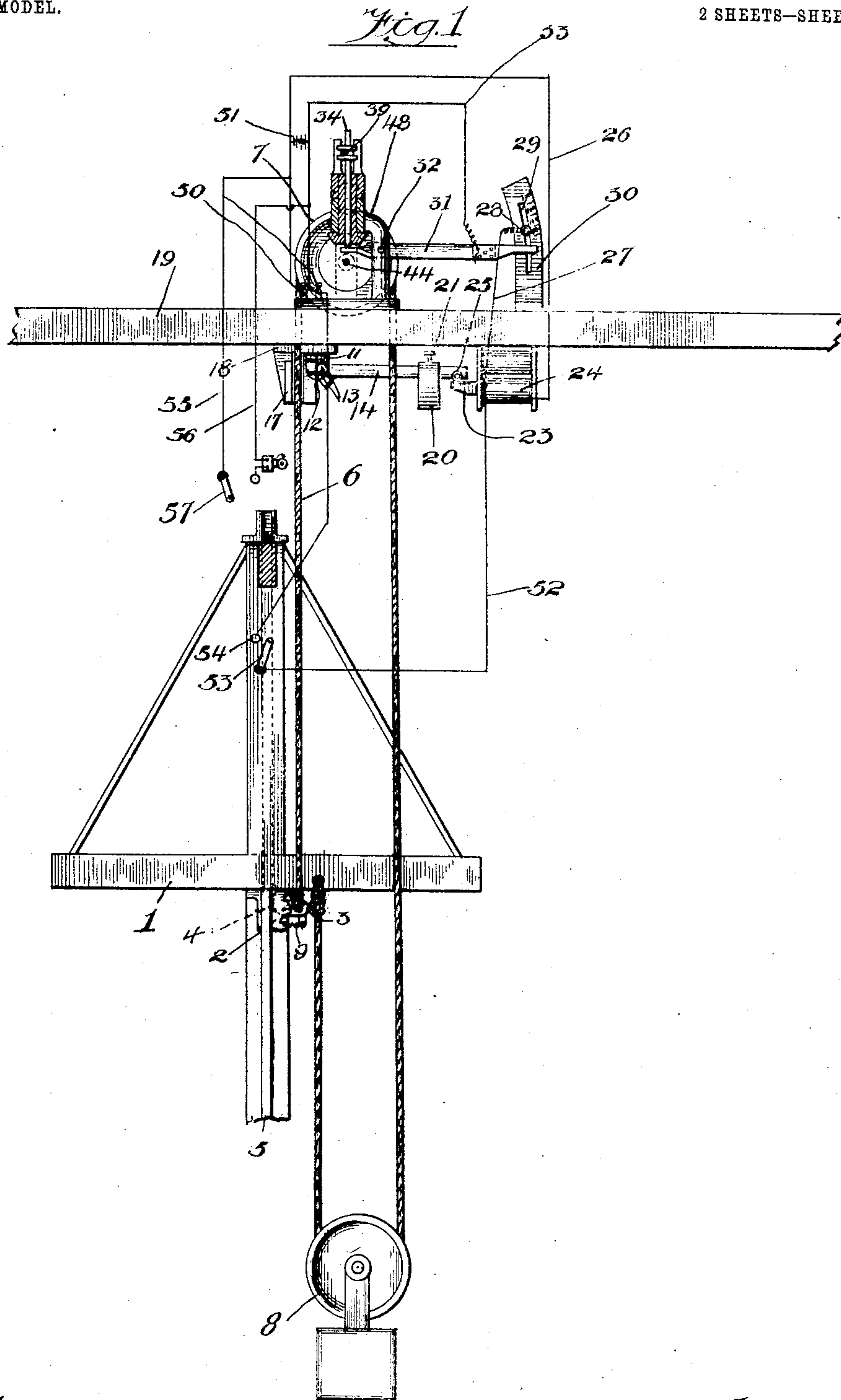
PATENTED JULY 26, 1904.

J. RICE.
ELEVATOR.

APPLICATION FILED DEC. 6, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
J. B. Weir
Edward A. Casfeldt

Inventor:
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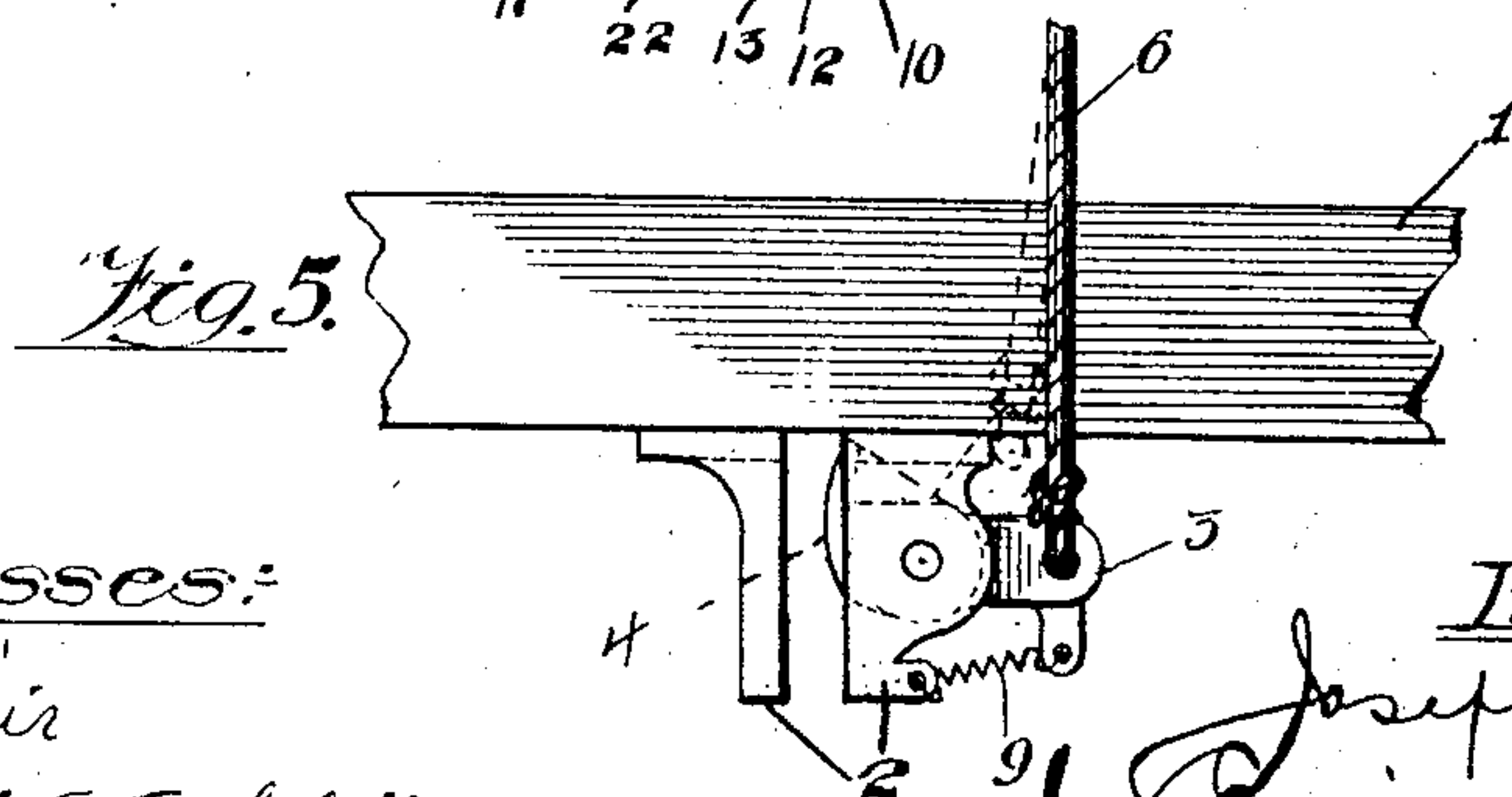
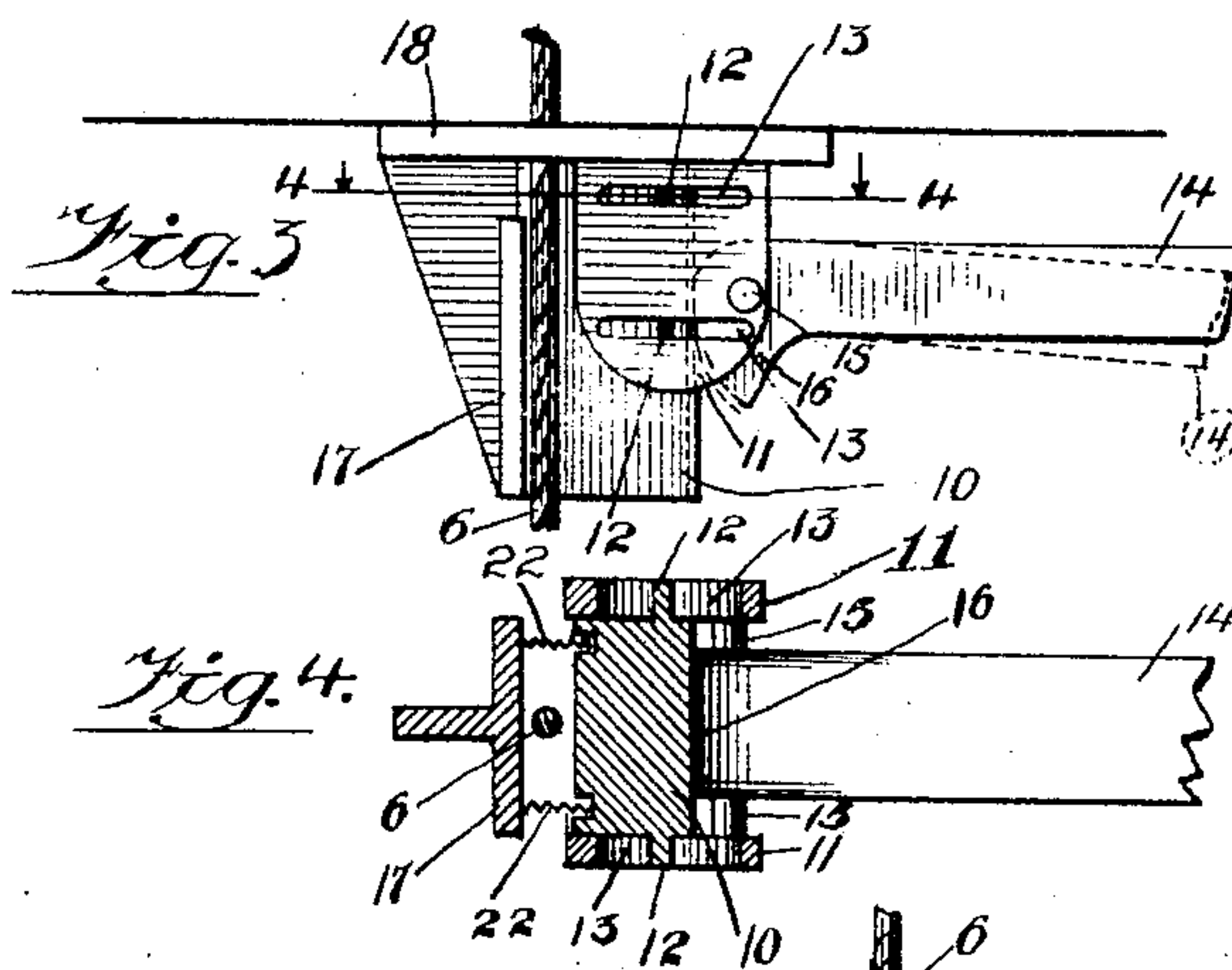
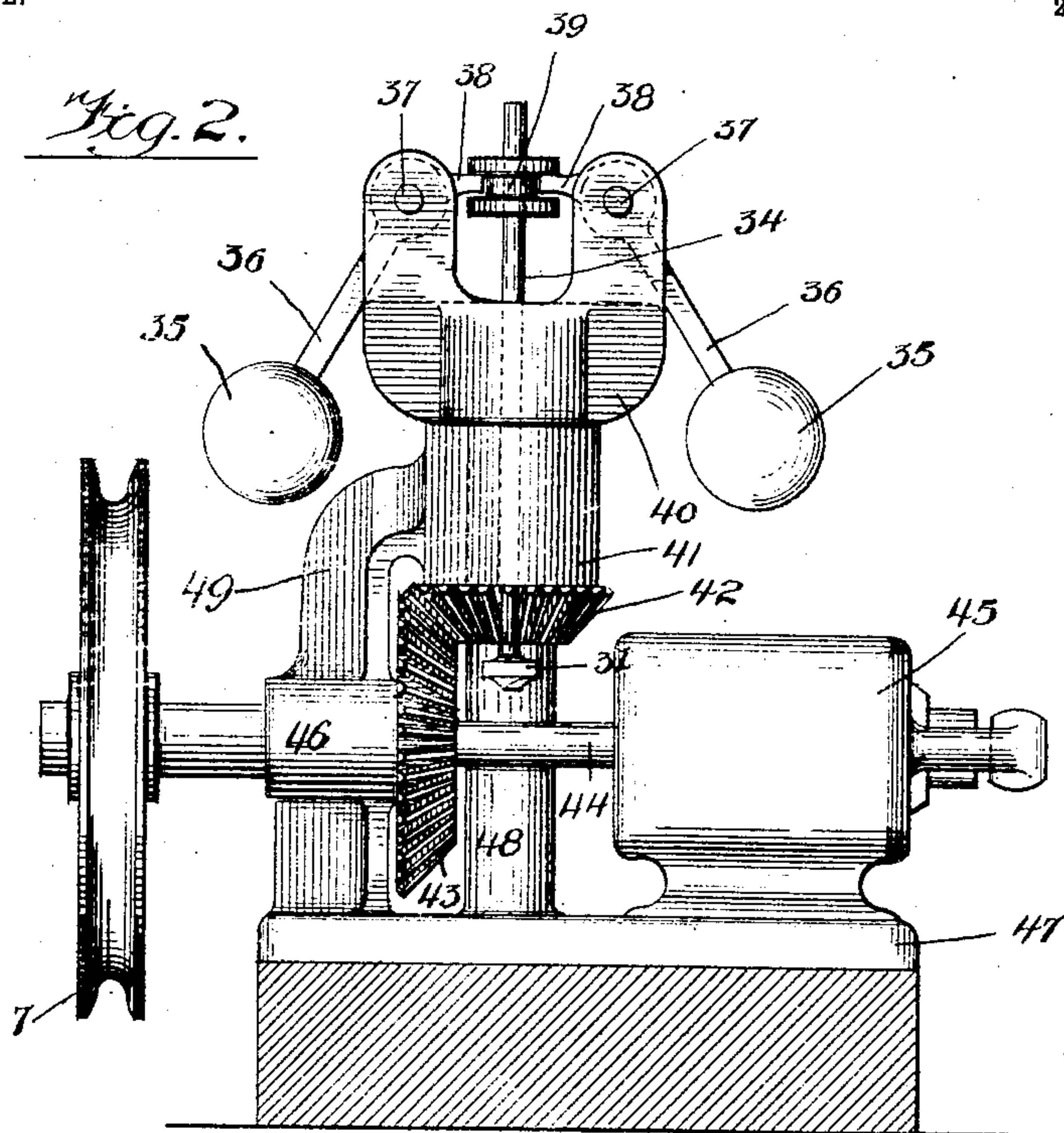
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Edward A. Eisfeldt

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UNITED STATES PATENT OFFICE.

JOSEPH RICE, OF CHICAGO, ILLINOIS.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 765,791, dated July 26, 1904.

Application filed December 6, 1902. Serial No. 134,085. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH RICE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
 5 invented certain new and useful Improvements in Elevators, of which the following is a full, clear, and exact specification.

My invention relates more particularly to safety devices or governors for preventing
 10 elevator-cars from falling or ascending or descending at a dangerous rate of speed; and the invention has for its primary object to provide improved and efficient means whereby the downward movement of the car may
 15 be utilized for positively applying the safety dogs or devices.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of
 20 parts by which the said object and certain other objects hereinafter appearing are attained, all as fully described, with reference to the accompanying drawings, and more particularly pointed out in the claims.

25 In the said drawings, Figure 1 is a diagrammatic illustration of an elevator structure having my improvements applied thereto. Fig. 2 is an enlarged detail view of the generator and governor hereinafter described. Fig. 3
 30 is an enlarged side elevation of the grip or clutch. Fig. 4 is a plan section thereof on the line 4 4, Fig. 3; and Fig. 5 is an enlarged side elevation of one of the safety-dogs.

In carrying out my invention I employ a
 35 grip or clutch which is normally held inactive by a suitably electrically-operated device arranged in a circuit which is preferably supplied with electric current from a generator deriving motion from the elevator-car and
 40 which grip is arranged to engage a cable or other suitable connection secured directly to the safety dog or dogs of the car, so that when the car speeds downwardly beyond a safe rate of speed the current generated will effect the
 45 actuation of the grip, which in arresting the movement of said cable pulls the safety dog or dogs into operation with a positive action.

One of the advantages of such an arrangement is that the circuit which actuates the said electrical device may be closed by a switch controlled by a speed-governor which may be set
 50 to close the switch at predetermined desired speed.

In the example of my invention shown in the drawings the elevator-car 1 is shown as
 55 provided with the usual friction dog or dogs 2 of a well-known form, comprising a pivoted lever 3 and a friction-shoe 4, which is arranged to grip a rail 5 at one or both sides of the elevator-shaft. To the lever 3 of this
 60 safety-dog is attached one end of a cable 6, which passes upwardly over a pulley 7 at the top or upper part of the elevator-shaft and thence downwardly around a weighted pulley
 65 8, located below the car, and from the pulley 8 upwardly again and attached to the car. By the means described it will be seen that the up-and-down motion of the car will impart rotary motion to the pulley 7 without
 70 necessarily applying the safety-dog 3 4, which of course will be held out of action by a weight or spring, as usual—like spring 9, for example; but should the movement of the cable 6
 75 be retarded while the car is descending the safety-dog will be thrown into engagement with the rail 5 by a positive action directly proportional in its holding force to the weight of the car.

In order that the cable 6 may be thus arrested should the speed of the car exceed the
 80 safety limit, the aforesaid grip is employed for engaging that hold of the cable which is attached directly to the safety-dog, and this grip preferably consists of a shoe 10, slidably
 85 mounted in brackets 11 by means of pins 12, which run in slots 13 in said brackets, and a lever 14, pivoted on pin 15 in said brackets and having a nose or cam 16, adapted to push
 90 the shoe 10 against the cable 6 when the lever 14 descends, the cable being passed between the shoe 10 and a fixed shoe 17, which may be formed on or secured to the same plate or support 18 which carries the brackets 13, and the
 plate 18 may in turn be secured to a beam 19.

The lever 14 is preferably operated to force the shoe 10 into an engagement with cable 6 by means of a weight 20, adjustably secured thereto by set-screw 21, and shoe 10 may be held out of engagement with the cable under normal conditions by any suitable means, such as springs 22. The weighted lever 14 is suspended under normal conditions by a latch or catch 23, which is actuated automatically when the car exceeds a certain speed by an electric device—such, for example, as a solenoid 24, one end of whose core may constitute the latch 23, which when the solenoid is deenergized projects outwardly under the lever 14, which is preferably provided with an antifriction-roller 25 to better enable the solenoid to pull the latch or core inward when energized.

One terminal of the solenoid is connected by conductor 26 to one pole of any suitable source of electricity, while the other terminal, 27, is connected to a contact plate or button 28, adjustably mounted in a slot 29, formed in a dial 30, so that the button 28 may be adjusted relatively to a switch 31, pivoted at 32 and connected by conductor 33 with the other pole of said source of electricity. One end of the lever or switch 31 is arranged to be impinged by a rod 34 of a governor, the centrifugal balls of which are shown at 35 on levers 36, pivoted at 37 and having their short ends 38, acting in a grooved hub 39, secured to pin or rod 34. The balls 35 are pivotally mounted in a yoke 40, journaled in a bearing 41 and secured to a beveled gear 42, which meshes with a companion gear 43, secured to a shaft 44, on one end of which the pulley 7 is mounted, while the other end operates a dynamo or generator 45 of any suitable construction, the dynamo and bearing 46 for shaft 44 being mounted on a suitable base 47, upon which is also mounted standard 48, which carries the pivoted pin 32 of lever 31, and which standard 48, together with a standard 49, supports the bearing 41.

The conductors 26 33 lead to the binding-posts 50 of the generator, so that the circuit through the solenoid will be supplied by the generator as the car descends. The speeding of the governor-balls beyond a certain limit causes the lever or switch 31 to rise and make connection with the contact 28, which may be adjusted on the dial 30 to the proper position for establishing contact and closing the circuit through the solenoid when the speed of the governor attains any predetermined number of revolutions per minute.

If desired, the circuit 26 33 may be supplied with a storage battery, (indicated at 51,) so that the operation of the generator during the ordinary use of the elevator will store or charge the battery with current to be used in the operation of the solenoid.

In order that the conductor on the car may

close the circuit to the solenoid at will should he lose control of the car or should the speed of the car exceed a point of safety, one terminal of the solenoid may be connected by conductor 52 to a switch 53 and one of the binding-posts 50 with a contact 54 on the car, thus constituting a shunt around the switch 31.

In order that the engineer may test the condition of the circuit 26 33 from time to time to determine whether the generator is performing its work, a bell-circuit 55 56 may be led from the conductors 26 33 to a suitable switch or push-button 57, located in a position convenient to the engineer's post.

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

1. In an elevator the combination of a car, a safety device for retarding the movement of the car, a flexible connection secured to said safety device, means for retarding the movement of said flexible connection with relation to the car, an electrically-actuated catch for holding the last said retarding means inactive and means for energizing and actuating said catch by the movement of the car, substantially as set forth.

2. In an elevator the combination of a car, means for retarding the movement of the car, a flexible connection secured to said retarding means, a grip for retarding the movement of said flexible connection with relation to the car, a catch for holding said grip inactive, an electric generator operatively connected with said flexible connection and means for releasing said catch by the current from said generator, substantially as set forth.

3. In an elevator the combination of a car, means for retarding the movement of the car, a flexible connection secured to said means, a grip for holding said flexible connection, an electric generator operatively connected with said flexible connection, a catch for holding said grip inactive, a centrifugal governor operatively connected with said flexible connection, means for releasing said catch by the current from said generator, comprising a circuit including said generator, and a switch for closing said circuit operatively connected with said governor, substantially as set forth.

4. In an elevator the combination of a car, means for retarding the movement of the car, a flexible connection secured to said means, a grip for retarding the movement of said flexible connection, electrically-actuated means for holding said grip inactive, comprising a switch for closing the circuit through said electrically-actuated means, and a governor operatively connected with said flexible connection and with said switch, substantially as set forth.

5. In an elevator the combination of a car, means for retarding the movement of the car, a flexible connection secured to said means, a

grip for retarding the movement of said flexible connection, an electrically-actuated device for holding said grip inactive, an electric circuit including said device, having two contact members one of which is adjustable with relation to the other, a centrifugal governor operatively connected with said flexible connection and means for imparting the operation of said governor to one of said contact devices for closing said circuit, substantially as set forth. 10

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Witnesses:

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