No. 829,864. PATENTED AUG. 28, 1906.

R. H. GAYLORD.

SAFETY INDICATOR FOR ELEVATORS AND TRACTION CARS.

APPLICATION FILED SEPT. 29, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

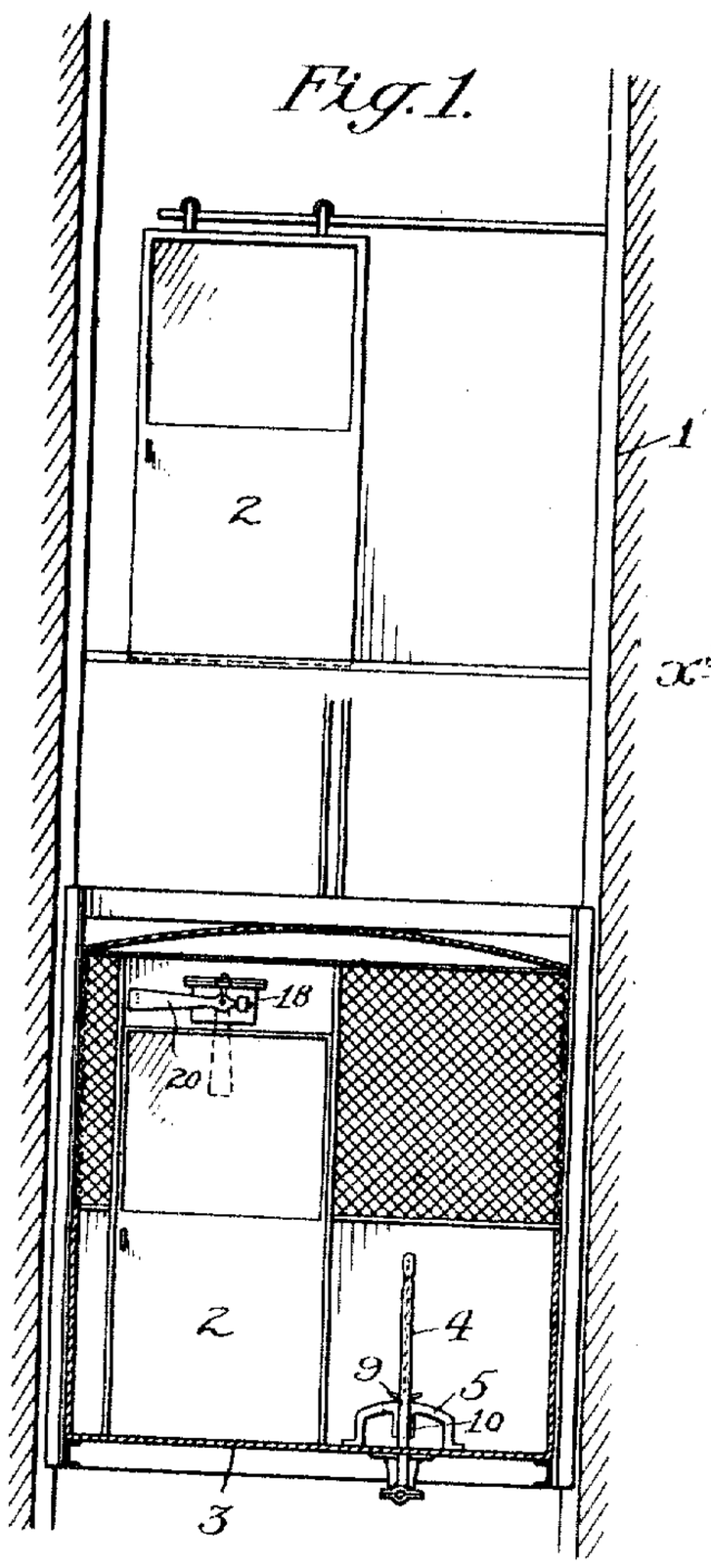


Fig. 2.

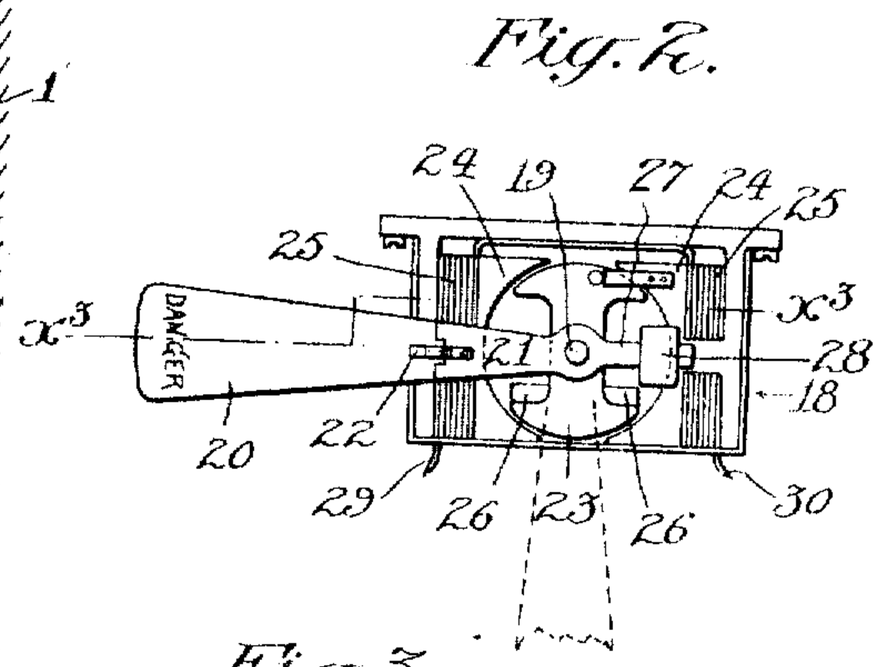


Fig. 3.

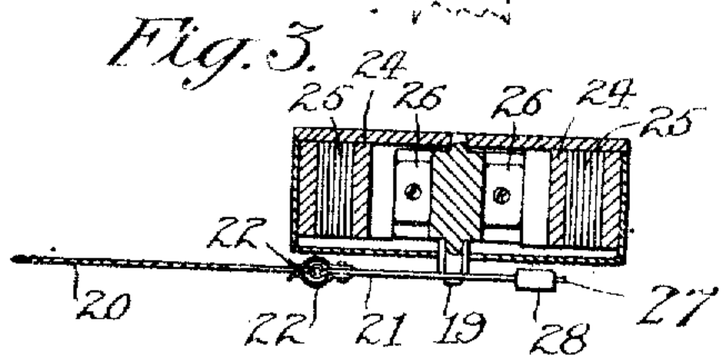


Fig. 4.

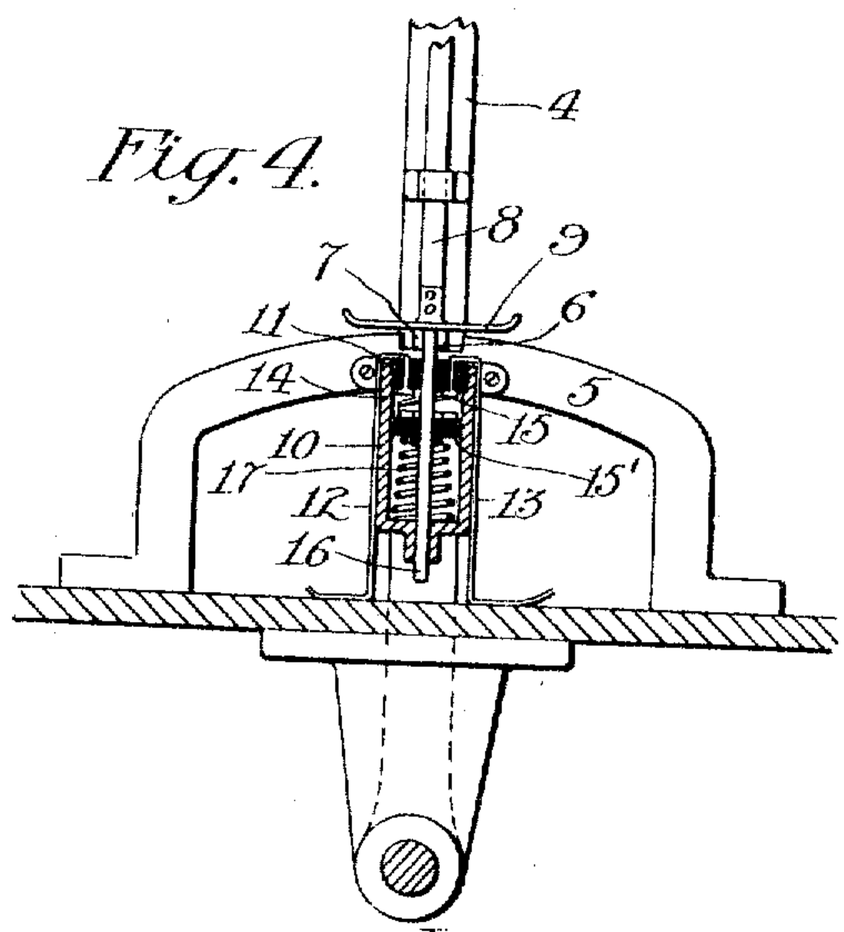
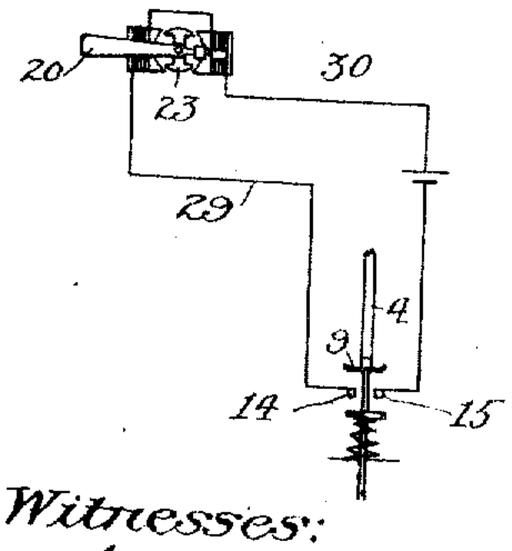


Fig. 5.



Witnesses:
Frank L. Abraham.
Jas. Mansfield

Inventor;
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By Townsend Lynch Hackley & Knight
His attys.

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2 SHEETS—SHEET 2.

Fig. 6.

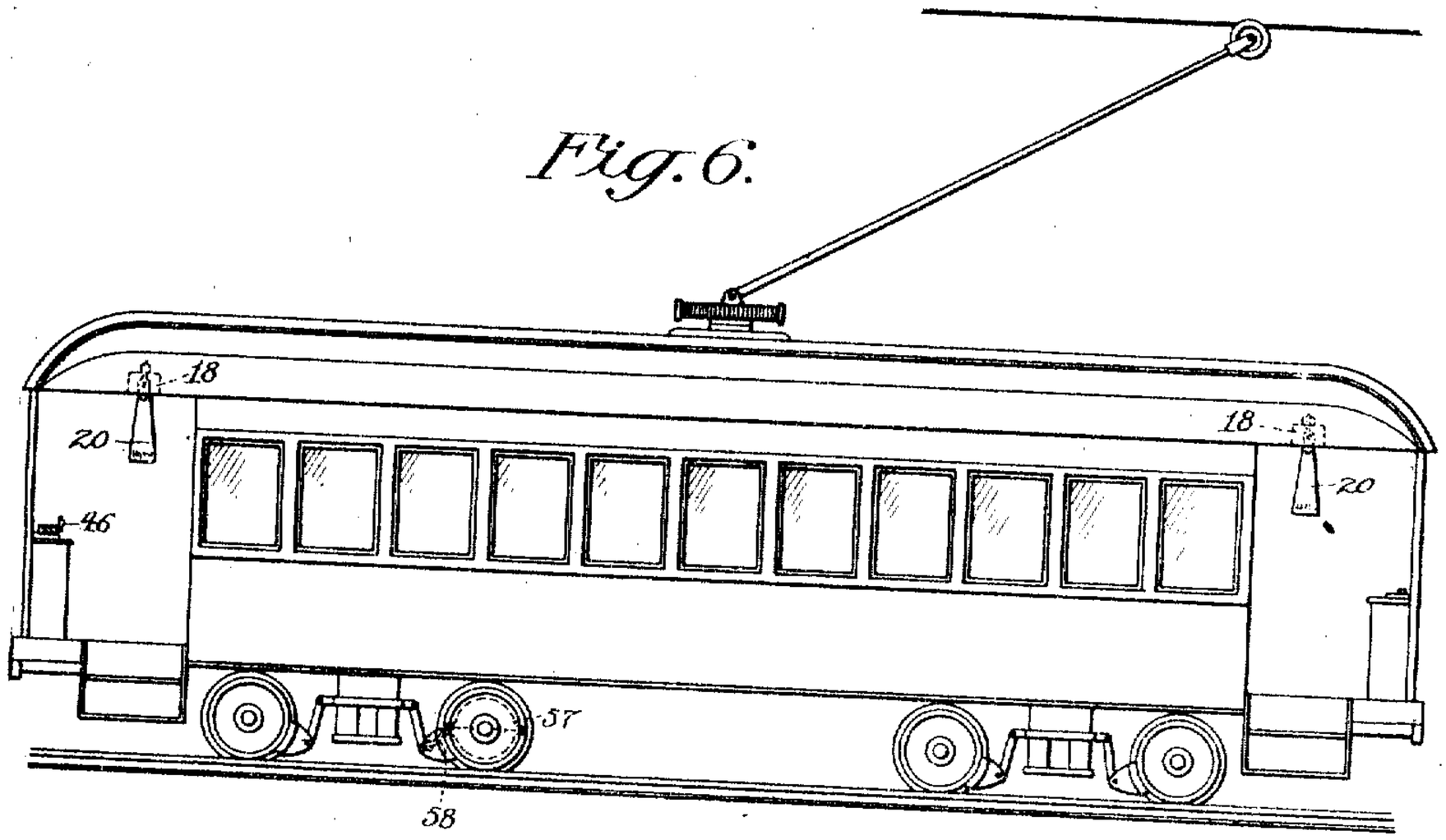


Fig. 7.

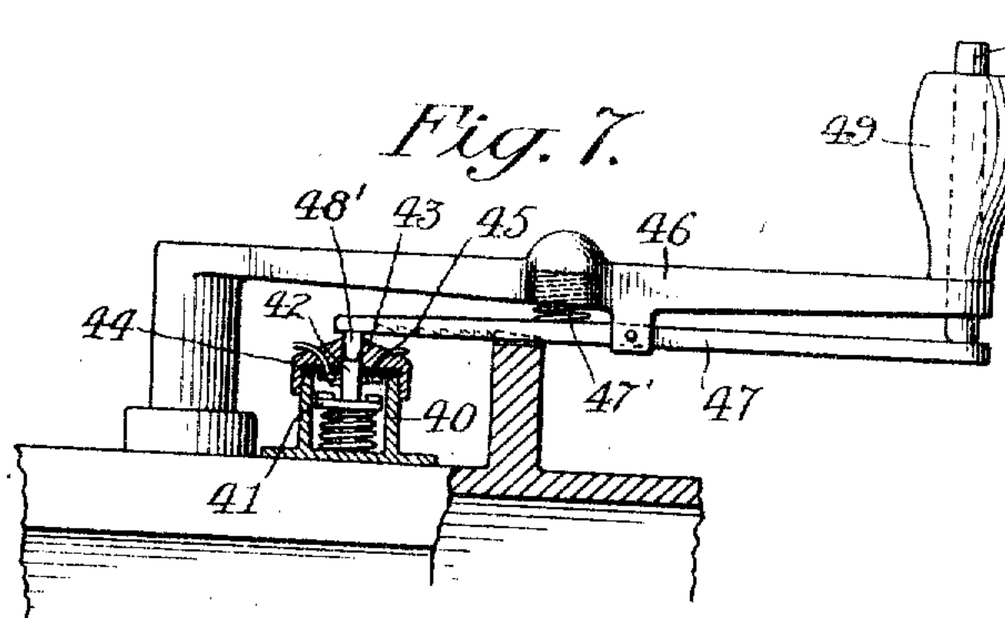
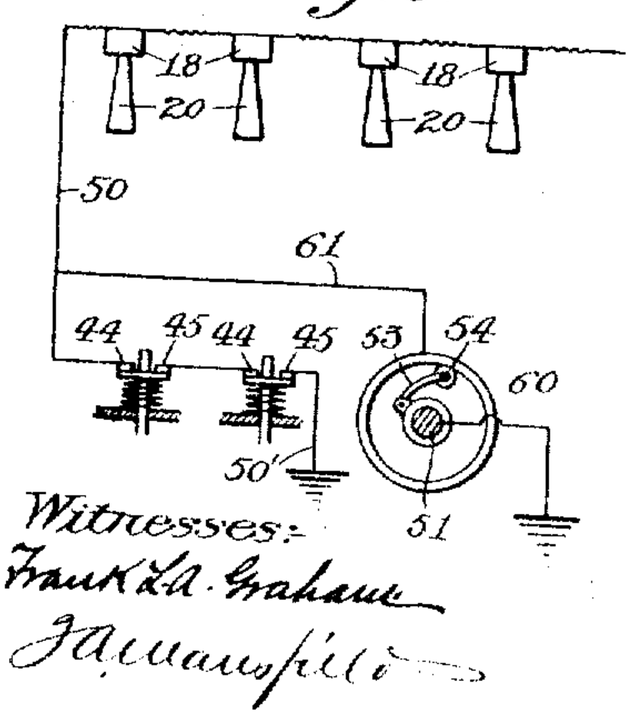


Fig. 8.



Witnesses:-
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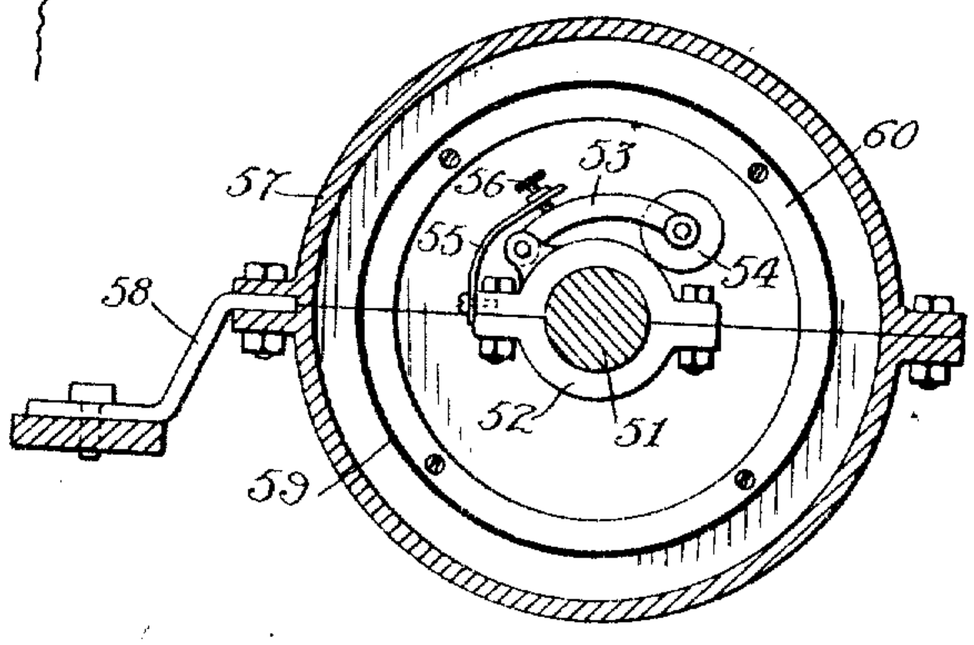
Fig. 9.



Inventor:
Robert H. Gaylord.
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His attys.

UNITED STATES PATENT OFFICE.

ROBERT H. GAYLORD, OF PASADENA, CALIFORNIA.

SAFETY-INDICATOR FOR ELEVATORS AND TRACTION-CARS.

No. 829,864. Specification of Letters Patent. Patented Aug. 28, 1906.

Application filed September 29, 1905. Serial No. 280,576.

To all whom it may concern:

Be it known that I, ROBERT H. GAYLORD, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Safety-Indicator for Elevators or Traction-Cars, of which the following is a specification.

This invention relates to a device designed to secure a better coöperation or understanding between the operator of an elevator or car and the passengers, whereby the passengers will be warned from entering or leaving a car when the car is moving or about to move.

The main objects of the invention are to provide a device of the character described which is simple in construction, effective in operation, and durable in use.

A careless or incompetent elevator operator is very apt when the car is standing still to joggle the latch of the controlling-lever up and down, thereby rapidly unlocking the controlling-lever intermittently and jeopardizing the safety of passengers who are getting into or out of the car, as, if the operator's arm should be jostled by a person when entering or leaving the car while the operator was joggling the latch, it would be apt to shift the controlling-lever and start the car; and another object of the present invention is to provide a signal which will warn the passengers if the operator joggles the latch.

When the invention is applied to an electric traction-car, the energy for operating the signal may be derived from the current which feeds the motors, and another object is to provide for causing the signal to act in harmony with the operation of the car-controller, so that it will indicate "danger" when the controller is on or slightly before being turned on, a further object being to cause the signal to operate when the controller is in off position, provided the car is in motion, thus causing the signal to be automatically displayed when the car is coasting, as will be hereinafter described.

The accompanying drawings illustrate the invention, and, referring thereto, Figure 1 is a vertical sectional view through an elevator-shaft, showing an elevator-cage equipped with the invention. Fig. 2 is a side elevation of the signal-box with the cover-plate removed. Fig. 3 is a section through the signal-box on line x^3 x^3, Fig. 2. Fig. 4 is a side elevation of the lower portion of the controlling lever and lock with the signal-controlling switch shown in vertical section. Fig. 5 is a diagrammatical view showing a system of wiring the signal and its controlling-switch. Fig. 6 is a side elevation of an electric car equipped with the invention. Fig. 7 is an enlarged view showing the controller in front elevation, the signal-controlling switch, which is operated by the controller, being shown in section. Fig. 8 is a diagrammatical view showing the system of wiring the signals, controller-switch, and centrifugal circuit-closer. Fig. 9 is an enlarged view showing in detail the centrifugal circuit-closer.

Referring to the form shown in Figs. 1 to 5, inclusive, 1 designates the elevator-shaft, which is provided with landing-doors 2. 3 designates the elevator-cage, which is equipped with a controlling-lever 4, operating over the sector 5. As shown in detail in Fig. 4, the sector 5 has a locking-notch 6, which is adapted to receive a locking-bolt or latch 7, carried on a rod 8, the rod 8 forming part of the latch mechanism, which is of the usual construction and need not be further shown in detail. Rigidly mounted on the bolt 7 is a presser-blade 9. Fastened to the sector 5 is a switch comprising a tubular casing 10, in the upper end of which is screwed a head 11, formed of insulating material, and passing through the head 11 are connections 12 and 13, having terminals 14 and 15, the latter comprising a spring member adapted to be pressed into contact with the terminal 14. Slidably mounted in the tubular casing 10 is a head 15′, which is carried on a stem 16, the latter extending through both ends of the tubular casing. A coil-spring 17 within the casing 10 presses against the lower side of the head 15′ and serves to normally force the head up, which latter presses the blade 15 into contact with the stationary terminal 14, thus closing the circuit through the switch. When, however, the bolt 7 lies within the notch 6, the presser-blade 9 moves down the rod 16 and moves the head 15′ out of contact with the blade 15, thereby opening the circuit, as shown in Fig. 4. Mounted in front of the doorway of the elevator-car in the upper part of the cage is a signal-box 18. (Shown in detail in Figs. 2 and 3.) Journaled in the box 18 is a shaft 19, upon which is mounted a semaphore 20, the blade of which is hinged to a stub-blade 21, there being a pair of flat springs 22 on the stub-blade which press

against opposite sides of the semaphore-blade 20 and serve to normally hold the semaphore in line with the stub-blade 21, but which will yield to allow the semaphore to swing out of line therewith. Thus if the semaphore is in danger position, as shown in dotted lines in Fig. 1, and a person should happen to hit the semaphore in moving in or out of the cage the semaphore will yield and swing back without being injured. Mounted on the shaft 19 is an armature 23, and arranged within the box 18 are pole-pieces 24, the windings 25 of which are connected in series, as shown. In order to normally hold the semaphore in horizontal position, the armature 23 may carry weights 26, while an extension 27 of the stub-blade 21 may also carry an adjustable weight 28, which latter may be slid back and forth on the extension 27, as desired, to regulate the balance. One of the connections 12 may be connected to a lead 29 from one of the pole-pieces, while the other connection 13 may be connected to the lead 30 of the other pole-piece, as shown in Fig. 5. The current for operating may be obtained conveniently, if desired, by connecting the device in circuit with the lighting system in the cage.

In operation when the elevator is running the lever 4 will stand at one side of the center of the sector, and the presser-blade 9 will thus be out of contact with the rod 16, so that the latter will be in its upper position with the spring 17 holding the head 15' against the contact 15, and thus closing the circuit through the switch. The pole-pieces 24 thus being energized hold the armature horizontal, so that the semaphore lies vertically, projecting straight down from the box 18 in danger position. When the elevator comes to a landing, the operator moves the controlling-lever 4 into central position and allows the bolt 7 to enter the notch 6, whereupon the presser-blade 9 forces down the rod 16, which opens the switch and breaks the circuit through the pole-pieces 24, which allows the semaphore to be swung up, by means of the weight 28, out of danger position, as shown in full lines in Figs. 1 and 2. When the semaphore is in horizontal position, it is not observed by the passengers, as it is hidden more or less, and therefore they may freely enter or leave the cage. If while the car is standing at the landing the operator should joggle the hand mechanism to jig the bolt 7, it is obvious that the circuit will be quickly made and broken a great number of times, which will cause the semaphore to dance or flutter back and forth, which will warn the passengers who are about to enter or leave the car that the condition of the controller is not perfectly safe, and at the same time, by reason of this fluttering movement of the semaphore, the operator will be much more apt to refrain from joggling the latch mechanism than he would otherwise, and thus accidents are avoided, not only by reason of the warning given to the passengers, but also by causing the operator of the elevator to be more careful. Just before the car starts the operator must raise the latch-bolt 7 in order to swing over the lever 4, and therefore when the latch-bolt 7 is raised the semaphore will assume its danger position slightly before the car takes any movement, and thus a further warning is afforded passengers who might perchance attempt to enter or leave the cage at the time the operator intended to move the cage, and as this warning is given slightly before the cage moves accidents are prevented. As in hydraulic elevators the notch 6 is made wide to allow a limited swinging movement of the controller when locked for cushioning, the presser-blade 9 is made with wings long enough to reach over the top of the rod 16, so that it will hold the rod depressed when the bolt is in any part of the notch.

Referring to the form shown in Figs. 6 to 9, inclusive, which represents the invention as applied to a traction-car, the semaphores are constructed in the same manner as before, and one is arranged at each side entrance of the car, so that in cars of the ordinary type there will be two semaphores at each end of the car. The switch for controlling the semaphore is shown in detail in Fig. 7 and comprises a box 40, which is very similar in construction to the switch described of the foregoing form. The box 40 contains a spring-pressed plunger 41, having a stem 42, while the cover 43 of the box has terminals 44 and 45. 46 designates the car-controller lever, the movements of which are checked by a pivoted latch-rod 47, operated by a thumb-rod 48, which extends through the handle 49. The latch-lever 47 is extended somewhat beyond its usual length and is provided with a stem 48', which is adapted to bear against the stem 42 and to hold the plunger 41 depressed when the latch-lever 47 is in normal position holding the controlling lever 46 stationary. Before the motorman can move the controller he presses down the thumb-rod 48, which tilts the latch-lever 47 and unlocks the controller, and as the latch-lever 47 is thus tilted down its inner end moves up and allows the plunger 41 to be pressed up to close the circuit through the terminals 44 and 45, which circuit is obviously broken when the latch-lever 47 is returned to normal position by a spring 47'. The signals are connected, as shown in Fig. 8, by a wire 50 with the terminals 44 of the controller-switch, the other terminal 45 of the switch being connected by wire 50' with ground. Thus all of the semaphores are operated and moved into danger position at the moment the motorman depresses the thumb-bar 48, so that the passengers are warned slightly before the car takes any movement.

It is obvious that sometimes the motorman will throw off his controller and allow the car to proceed under headway. It is desirable at such times to maintain the semaphores in danger position, and therefore I have provided the centrifugal device shown in detail in Fig. 9, in which 51 designates the car-axle, to which is rigidly clamped a split ring 52. Pivoted to the split ring 52 is an arm 53, the free end of which carries a contact-roller 54. A flat spring 55, which is fastened to the split ring 52, is provided with a tension-adjusting thumb-screw 56, which bears against the arm 53 and serves to hold the contact-roller 54 against the split ring 52 when the axle 51 is not rotating.

57 is a shell or drum which is arranged concentric with the axle 51 and which may be supported by a bracket 58, which is attached to any convenient part of the car-frame. Fastened to the shell 57 is a ring of insulation 59, and mounted on the ring of insulation 59 is a contact-ring 60. When the car is in motion, as the axle 51 rotates the centrifugal force causes the roller 54 to swing out and make contact with the inner surface of the ring 60, and thus the circuit is closed between the ring 60 and ground. As shown in Fig. 8, a wire 61 connects the ring 60 with the wire 50. Thus when the car is under headway, even though the controller has been shut, the circuit through the signals will be closed by means of the centrifugal device, and the signals will thus be maintained in danger position. When the car stops, the roller 54 will be sprung back out of contact with the ring 60, and thus the circuit will be broken, and the semaphores will regain their normal horizontal position. It will be apparent that the signals will swing into danger position slightly before the car moves, owing to the motorman having first to depress the thumb-bar to unlock the controller before he can move the controller, and thus passengers who may intend to get off or on the car are warned that the car is about to move. It will be seen from the foregoing that the four semaphores must always be in danger position when the car is moving, that they will move out of danger position when the car stops, and that they will move into danger position slightly before the car starts, thus affording all the protection for safety of which a signal is capable. The term "car" in the claims includes either the elevator-cage or a traction-car. Obviously, the signal may be designedly operated at any time by the elevator operator or motorman to indicate that the car is full by manipulating the latch mechanism without moving the controller. For instance, when a car stops momentarily while a switch is being turned for it the motorman may hold his thumb on the rod 48, which will place the signals in danger position and warn passengers from getting on or off while the car is waiting for the switch to be thrown.

What I claim is—

1. A car, a signal carried by the car, a controller for the car, latch mechanism for the controller, and means operated by the latch mechanism for controlling the signal.

2. A car, a signal carried by the car, a controller for the car, latch mechanism carried by the controller for controlling the same, and means operated by the latch mechanism for controlling the signal.

3. A car, a signal carried by the car, a controller for the car, and means coacting with the controller for automatically operating the signal before the controller starts the car.

4. A car, a signal carried thereby comprising a semaphore pivoted to swing in two different planes, a controller for the car, and means coacting with the controller for operating the semaphore.

5. A car, a signal carried thereby comprising a semaphore pivoted to swing in two different planes, a controller for the car, and means coacting with the controller for operating the semaphore in one plane.

6. A car, a signal carried by the car, a controller for the car, latch mechanism for the controller, and electric means operated by the latch mechanism for controlling the signal.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 22d day of September, 1905.

ROBERT H. GAYLORD.

In presence of—

GEORGE T. HACKLEY,

VERNA A. TALBERT.