

L. O. HARBAUGH.
 AUTOMATIC DEVICE FOR ELEVATORS.
 APPLICATION FILED APR. 12, 1912.

1,050,648.

Patented Jan. 14, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

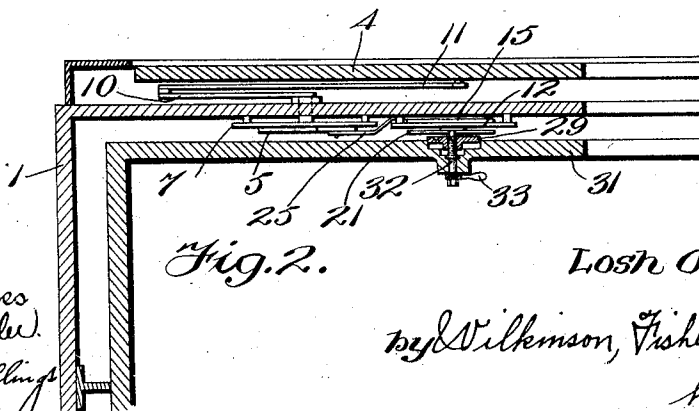
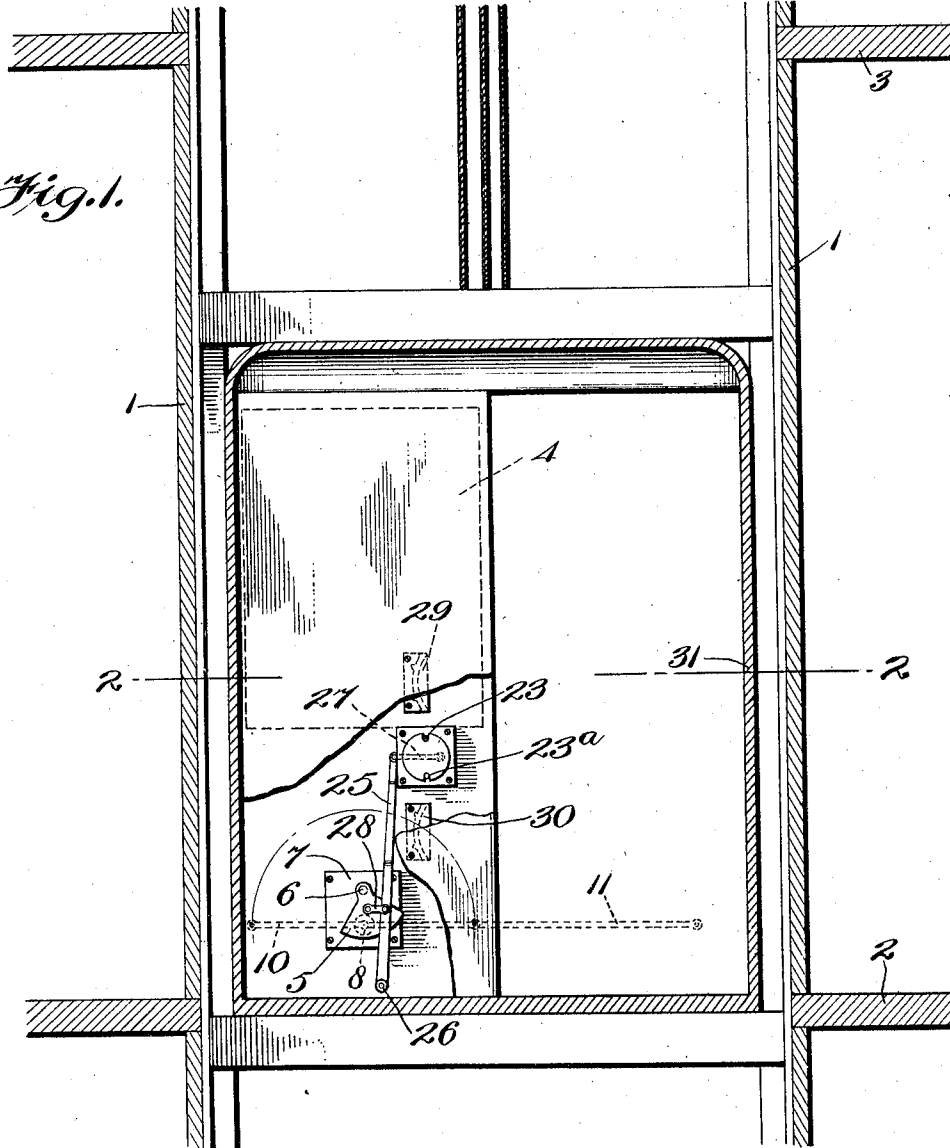


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

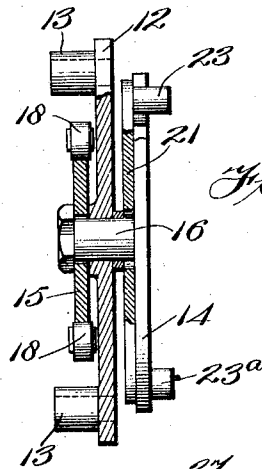
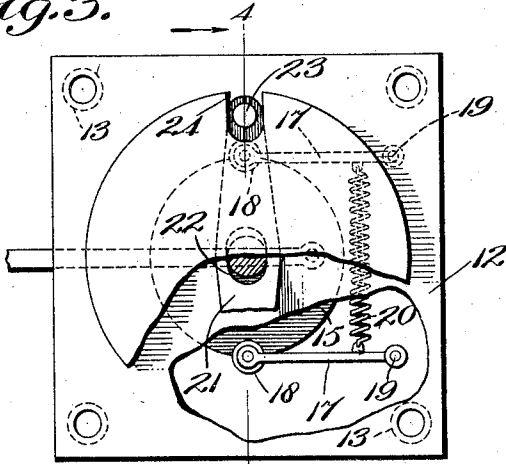


Fig. 4.

Fig. 5.

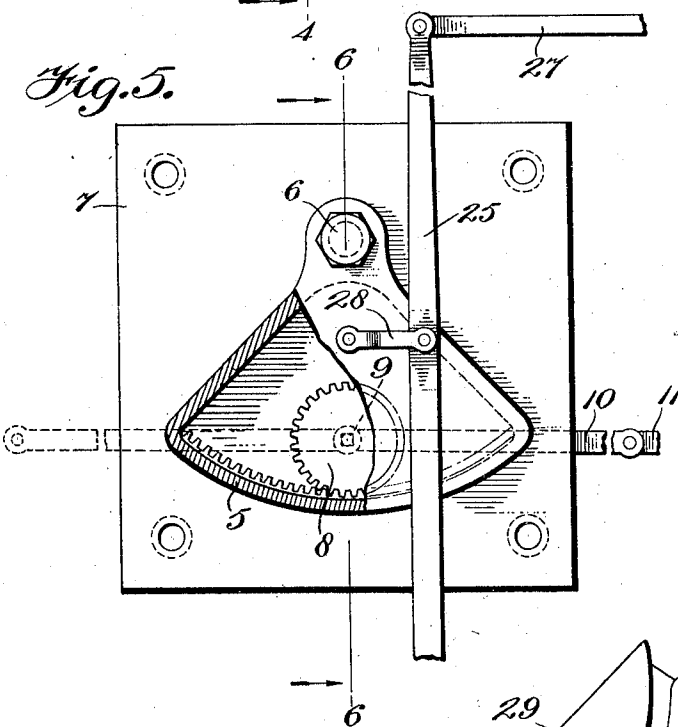


Fig. 6.

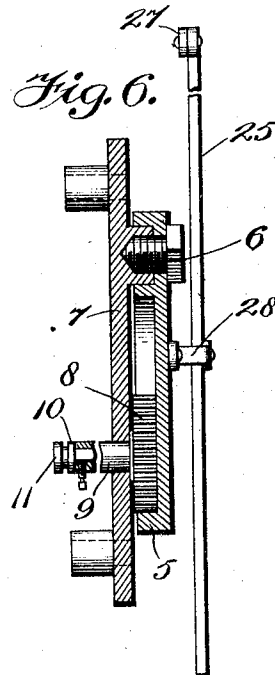
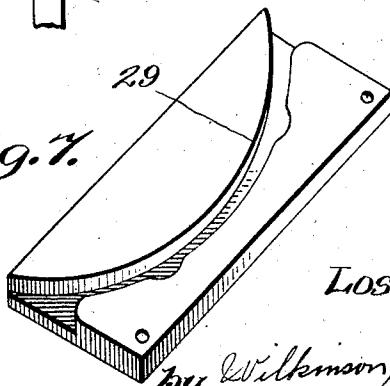


Fig. 7.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC DEVICE FOR ELEVATORS.

1,050,648.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed April 12, 1912. Serial No. 690,453.

To all whom it may concern:

Be it known that I, LOSH O. HARBAUGH, a citizen of the United States, residing at Piqua, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Automatic Devices for Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in automatic devices for elevators, and it consists in the constructions, combinations and arrangements herein described and claimed.

An object of my invention is to provide an improved device, whereby the doors of an elevator shaft will be automatically opened and closed by the elevator car to effectively prevent all danger of the doors remaining accidentally open.

A further object of my invention is to provide a strong and durable means adapted to act with certainty for automatically opening and closing the doors of an elevator shaft and for positively locking said doors in open and closed positions.

In the accompanying drawings forming a part of this application, and in which similar reference symbols indicate corresponding parts in the several views:—Figure 1 is a fragmentary sectional view of an elevator shaft, showing a car in position for receiving and discharging passengers, freight, etc.; Fig. 2 is an enlarged, detail section on the line 2—2 of Fig. 1; Fig. 3 is a rear elevation, with parts broken away, of the rotatably-mounted disk and its cooperating parts; Fig. 4 is a section on the line 4—4 of Fig. 3; Fig. 5 is a rear elevation of the operating mechanism shown in Fig. 1; Fig. 6 is a section on the line 6—6 of Fig. 5, and Fig. 7 is a perspective view of the actuating cam means carried by the elevator car.

Referring to the drawings, 1 indicates an elevator shaft extending between the floors 2 and 3 of the building and provided with a slidably-mounted door 4. An internal segmental gear 5 is pivoted at 6 to a plate 7, secured on the front wall of the elevator shaft, in mesh with a pinion 8 carried by a spindle 9 extending through said plate and front wall; the outer end of said spindle being provided with a crank 10 connected by a link 11 with the shaft door 4. A plate 12 is mounted on the front shaft wall by

spacing legs 13, and carries at its opposite sides a disk 14 and locking plate 15 secured to a common pivot 16; a pair of arms 17, carrying rollers 18, being pivoted at 19 on said plate 12, and connected by a spring 20 for yieldingly maintaining said rollers in locking engagement with a pair of diametrically opposite notches on said locking plate 15. A member 21 is provided with an elongated slot 22 for loosely mounting it on said pivot 16, and carries pins 23 and 23^a extending through radial slots 24 in said disk 14. A lever 25, fulcrumed at 26 on the shaft wall, is connected by links 27 and 28 with said rotatable locking plate 15 and segmental gear 5, respectively; whereby rotation of said locking plate will actuate the pinion 8 for shifting the shaft door 4 to open or closed position. A pair of actuating cam means 29 and 30 are carried by an elevator car 31 in position for engaging said pins 23 and 23^a to shift the disk 14 through 180°; the loose engagement between said pins and disk preventing all danger of excessive strains and binding of the parts during such actuation.

Fig. 1 shows the elevator car 31 stopped at the floor 2 with the shaft door 4 shifted in open position, and with the crank 10 and link 11 lying along a common line extending through the axis of the pivot 9, thus positively locking said door in open position. Upon descent of the car 31, the cam 29 will engage the pin 23 and rotate the disk 14 and its rigidly attached plate 15 anticlockwise through 180°, thereby shifting the lever 25 and segmental gear 5 to the left and rotating the gear 8 through 180° to swing the crank 10 to a position indicated in Fig. 5, with said crank and the link 11 lying in a common line extending through the axis of the pivot 9; thereby shifting the door 4 and positively locking it in closed position. On the other hand, an ascent of the car 31 would cause the cam means 30 to engage the pin 23^a to shift the disk 15 clockwise through 180°, thereby shifting the lever 25 to the left and operating in the above described manner for closing the shaft door 4. It will be noted that the plate 15 will be yieldingly locked in position by the rollers 18 in both the open and closed positions of the shaft door, thereby insuring the proper engagement of the cam means 29 and 30 with the pins 23 and 23^a.

As shown in Fig. 2, the cam means may

be adjustably mounted on the elevator car 31 to permit shifting of said means to inoperative position when it is not desired to operate the shaft doors on floors of the building at which the elevator car is not stopped. I have shown for this purpose a construction in which the cam means are slidably mounted in a recess in the elevator car 31 and threadingly engaged by a screw 32 adapted to be manually operated by a handle 33 for projecting and retracting said cam means in said recess; said adjusting screw 32 constituting a self-locking mechanism for positively locking said cam means in its adjusted positions.

I have illustrated and described preferred and satisfactory constructions, but changes could be made within the spirit and scope of my invention.

I claim:—

1. In an automatic device for elevators, the combination of an actuating mechanism for shifting the shaft door to open and closed positions, a pivoted disk provided with radial slots, means for yieldingly locking said disk with such slots in vertical alinement, operating connections between said actuating mechanism and disk, a member loosely mounted on the pivot of said disk, pins on said member extending slidably through such radial slots, and spaced cam devices on the elevator car for successively engaging said pins during travel of the car therepast.

2. In an automatic device for elevators,

the combination of actuating mechanism for shifting the shaft door and locking the latter in open and closed positions, a pivoted disk provided with radial slots, means for yieldingly locking said disk with such slots in vertical alinement, operating connections between said actuating mechanism and disk, a member provided with an elongated slot loosely engaging the pivot of said disk, pins on said member extending slidably through such radial slots, and spaced cam devices on the elevator car for successively engaging said pins during travel of the car therepast.

3. In an automatic device for elevators, the combination of actuating mechanism for shifting the shaft door and locking the latter in open and closed positions, a disk and a locking plate secured to a common pivot, means yieldingly engaging said plate for locking said disk with such radial slots in vertical alinement, a lever, connections between said lever and said actuating mechanism and disk, a member provided with an elongated slot loosely engaging the pivot of said disk, pins on said member extending slidably through such radial slots, and spaced cam devices on the elevator car for successively engaging said pins during travel of the car therepast.

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

LOSH O. HARPAUGH.

Witnesses:

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