

(No Model.)

2 Sheets—Sheet 1.

S. B. WILLIAMS.
ELEVATOR.

No. 537,399.

Patented Apr. 9, 1895.

Fig. 1.

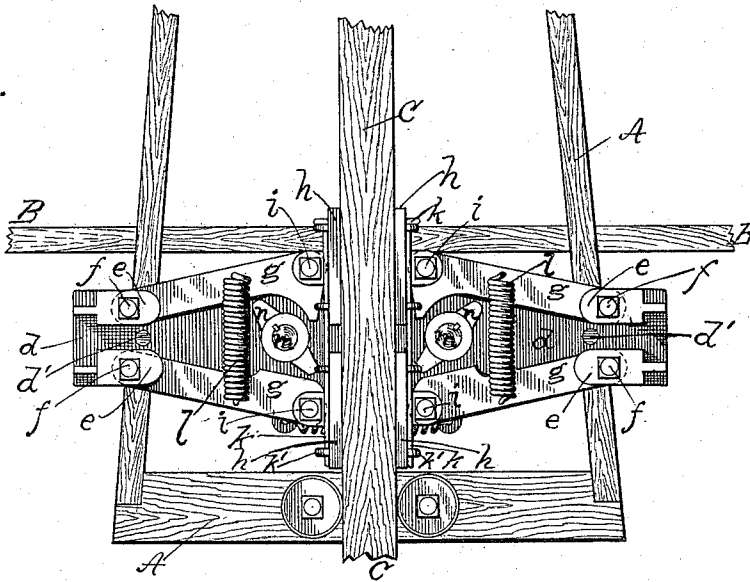
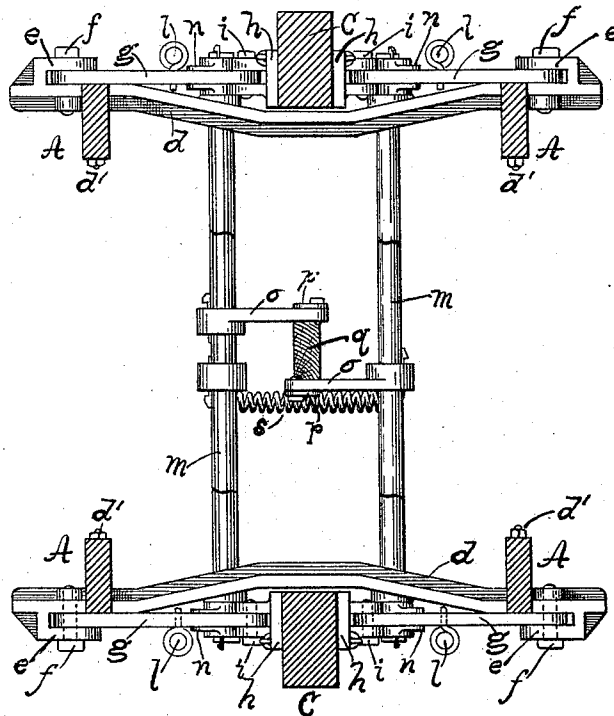


Fig. 2.



Witnesses.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

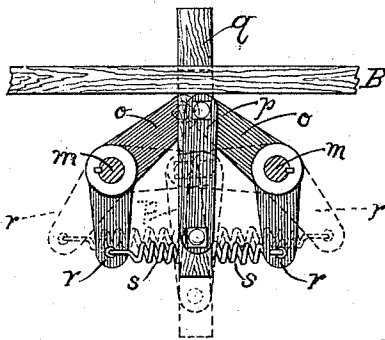


Fig. 5.

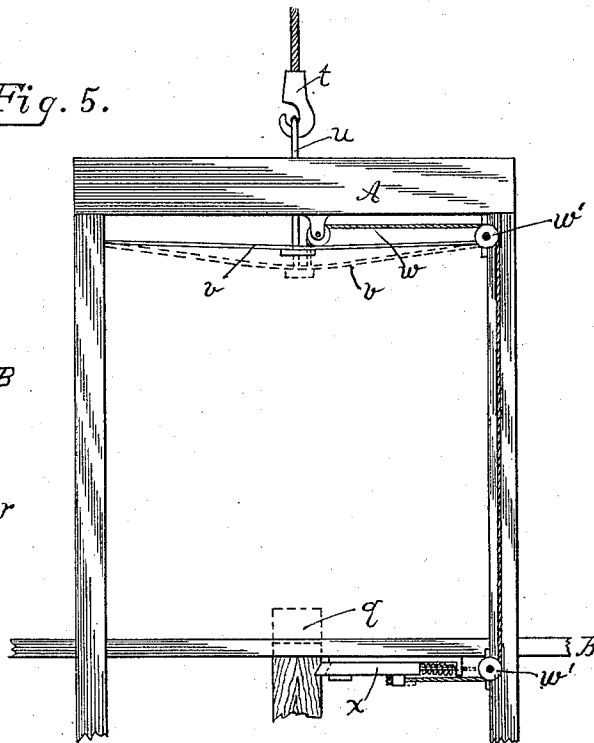
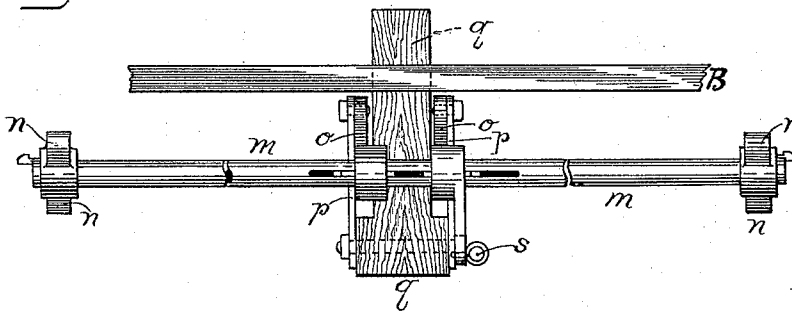


Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL B. WILLIAMS, OF LIMA, OHIO.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 537,399, dated April 9, 1895.

Application filed January 14, 1895. Serial No. 534,779. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL B. WILLIAMS, a citizen of the United States, residing at Lima, Allen county, Ohio, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

My invention relates to a safety brake or lock for hand and power elevators, for freight or passengers, and, more particularly, to a clutch designed for use in that class of elevators shown and described in United States Letters Patent No. 511,718, issued to me December 26, 1893, which is an elevator actuated by hand power and in which the car and its load is made to equal the weight of the counter-balance by transferring to or from the car movable weights provided for that purpose.

In elevators of this class it is necessary that the cage be held normally stationary at whatever position it may be stopped, for the reason that a slight difference between the weight of the counter-balance and load will, in the absence of a suitable brake, cause the elevator to ascend whenever the attendant steps out of the elevator.

The object of my invention is to provide simple and efficient means for avoiding the difficulty here indicated.

My invention is shown and described in the following specification and accompanying drawings, made part hereof, in which—

Figure 1, is a side elevation of my device; Fig. 2, a plan view of the same; Fig. 3, an elevation of parts hereinafter referred to; Fig. 4, a side elevation of certain other parts hereinafter referred to, and Fig. 5, an elevation of a modification of my invention hereinafter referred to.

Like letters of reference indicate like parts throughout the several views.

In the drawings A is the frame work of the cage. B is its floor, and C C is the track adapted to be engaged by the friction-shoes or jaws of my device.

d d, are metal plates or housings securely attached by bolts *d'* to the frame A of the cage. Each of the housing-plates, *d*, at its outer extremity, is provided with a lug *e*, between which and the housing-plate are pivotally secured, by means of bolts *f*, links or toggle-

ties, jaws or shoes *h* pivotally secured to links or toggle-arms *g* by means of bolts *i*.

Jaws or shoes *h* are held in vertical, parallel, alignment with the track C by means of rods *k* passing through eyes *k'* upon the shoes.

It will be seen that the toggle-arms *g* are arranged in pairs, there being a pair at each end of each of the housing-plates *d*. The toggle-arms *g* in each pair are drawn constantly toward each other in a vertical plane by means of stout, spiral springs *l*, secured at top and bottom to said toggle-arms, as shown in Fig. 1. Thus the normal tendency of the toggle-arms is toward each other, and, consequently, to press the shoes or jaws *h* against the track C.

m m, are two rock-shafts, journaled at each end in housing-plates *d*, and carrying at their extremities spreaders *n*, which are securely keyed to the shafts *m*, and which rotate with the rock-shafts in the same vertical plane with toggle-arms *g*. Keyed to the shafts *m*, beneath the floor of the cage, are arms *o*, pivotally engaging the upper ends of links *p* which are, at their lower ends, pivotally secured to pedal *q*, which extends upward through the floor of the cage at a point convenient to the foot of the operator. Shafts *m* have also securely keyed thereto arms *r*, extending downward at an angle to arms *o*, (see Fig. 3,) the arms *r* being constantly drawn toward each other by means of a stout, spiral spring, *s*, attached to each of the arms *r*, the pull of the spring *s* upon the arms *r* keeping the pedal *q*, through shafts *m*, arms *o* and links *p*, normally elevated.

The operation of my device, thus far described, is as follows: The cage being at rest, the shoes or jaws *h* are pressed closely against the track C by means of the thrust upon the shoes of the toggle-arms *g*, which are pulled strongly toward each other by means of connecting springs *l*, the end thrust of the toggle-arms being received by the housing-plate *d* and the lugs *f* which form a bearing and guide for the toggle-arms. When it is desired to raise or lower the cage of the elevator, the toggle-arms are forced apart and the shoes are drawn away from the track by means of the spreaders *n*, the two arms of which when partly rotated, bear and rub against the adjoining, curved edges of the toggle-arms,

forcing the arms apart. This motion of the spreaders *n* is caused by the pressure of the foot of the operator upon pedal *q*, which pulls down links *p*, which swing the arms *o*, which rock, in turn, the shafts *m m* upon which the spreaders are securely keyed. When the foot of the operator is removed from the pedal, the pedal is automatically raised by the pull of spring *s* upon the arms *r*, which now rocks the shafts *m m* in the opposite direction, causing the arms *o* and links *p* to lift the pedal *q* to its normal position, at the same time throwing the spreaders *n* out of engagement with the toggle-arms *g* and permitting the springs *l* to pull the toggle-arms toward each other, thus bringing the jaws or shoes *h* into a lock with the rail *C*. Thus, it will be seen, the elevator will always be held in a locked position, except when the foot of the operator is placed upon the pedal, so that the cage cannot run away in the absence of the operator.

I do not limit the application of my invention to elevators in which the cage is raised and lowered by means of variations in the weight of the elevator-cage, for the reason that it may obviously be applied to elevators operated by steam and other motors, and in which the motion of the cage is controlled by the regulation of the motor. For illustration I have shown, in Fig. 5, how this may be accomplished. In this figure the cage is shown suspended, in the usual way, from its sustaining cable by a hook *t*, which engages an eye *u*, secured at its lower end to a spring *v*. Secured to and leading from this spring is a cord *w* passing over sheaves, *w'*, and attached at its other end to a spring-latch *x* which engages and holds the pedal *q* constantly depressed. Now, if the cable from which the cage is suspended, breaks, the spring *v* will instantly assume the position shown by the dotted lines in Fig. 5, pulling upon the cord *w* and the spring-latch *x*, and releasing pedal *q*, which immediately operates in the manner heretofore described, causing the jaws or shoes to closely lock to the track *C*, holding the cage safely at or about the position it occupied when the cable parted.

Having fully described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. In an elevator, toggle-arms and friction-shoes upon said toggle-arms, in combination with rock-shafts, spreaders on said rock-shafts adapted to actuate said toggle-arms, and a pedal operatively connected with said rock-shafts, substantially as shown and described, for the purpose specified.

2. In an elevator, housing-plates secured to the frame of the elevator cage, toggle-arms pivotally secured to said housing-plates, friction-shoes upon said toggle-arms adapted to engage a track or rail, means for holding said friction-shoes in normal engagement with such track or rail, in combination with rock-shafts journaled in said housing-plates, spreaders on said rock-shafts adapted to actuate said toggle-arms, and a pedal operatively connected with said rock-shafts, substantially as shown and described, for the purpose specified.

3. In an elevator friction shoes or jaws, a pedal, links pivotally connected with said pedal, rock-shafts connected with said links, and means for holding said pedal normally disconnected from said friction-shoes or jaws, in combination with means for actuating said shoes or jaws, substantially as shown and described, for the purpose specified.

4. In an elevator, housing-plates secured to the elevator cage, toggle-arms pivotally secured to said housing-plates, friction-shoes or jaws upon said toggle-arms, springs connecting said toggle-arms in pairs, spreaders adapted to actuate said toggle-arms, and rock-shafts journaled in said housing-plates and carrying said spreaders, in combination with a pedal, springs adapted to hold said pedal normally disconnected from said shoes or jaws, links pivotally connected with said pedal, and arms on said rock-shafts pivotally connected with said links, substantially as shown and described, for the purpose specified.

SAMUEL B. WILLIAMS.

Witnesses:

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