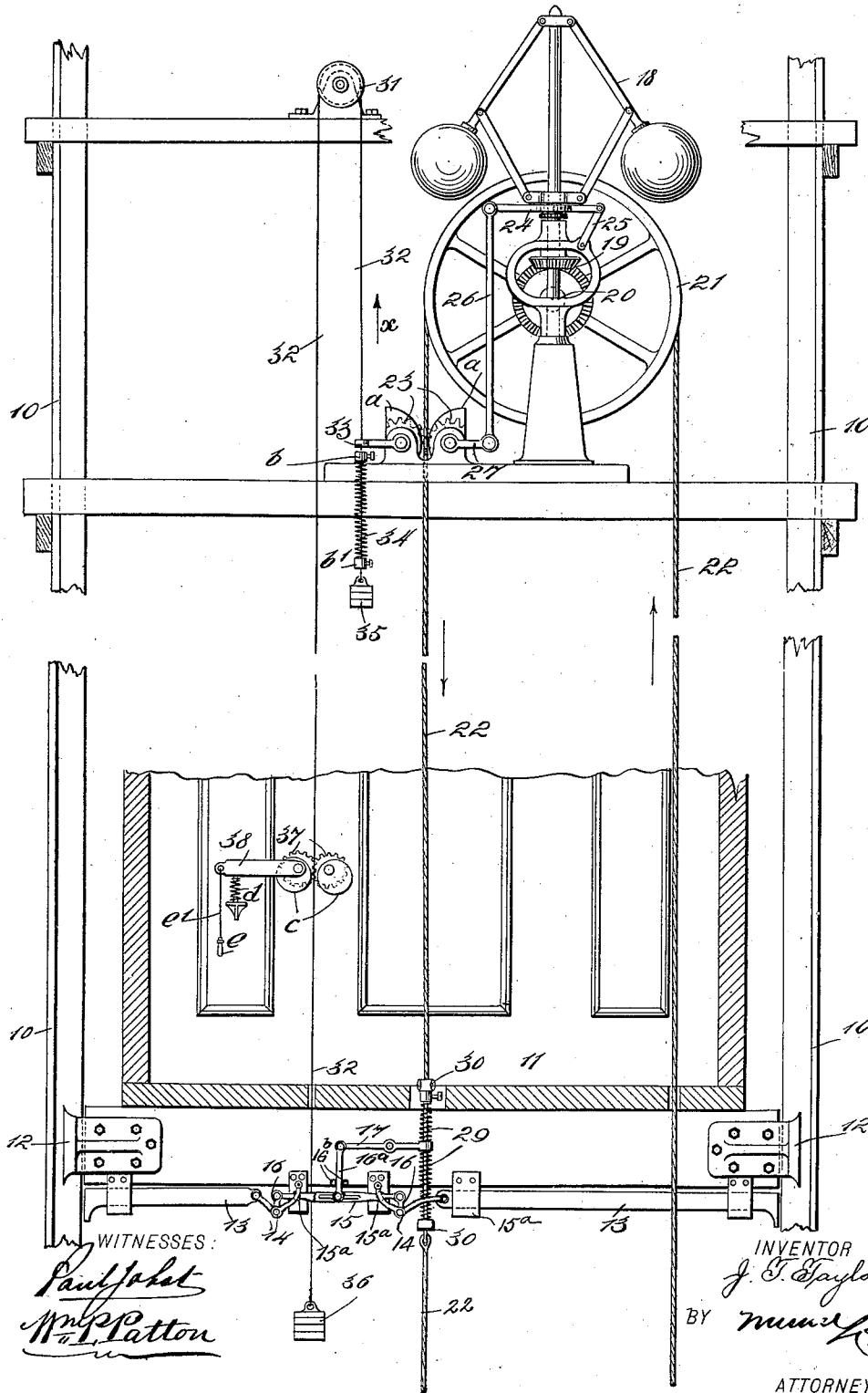


(No Model.)

J. T. TAYLOR.
SAFETY DEVICE FOR ELEVATORS.

No. 601,535.

Patented Mar. 29, 1898.



UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR ELEVATORS.

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To all whom it may concern:

Be it known that I, JOHN T. TAYLOR, of New York, in the county and State of New York, have invented new and useful Improvements in Safety Devices for Elevators, of which the following is a full, clear, and exact description.

This invention relates to a novel means for manually operating the safety-clutch usually provided for a passenger or freight elevator, the object being to facilitate the application of the safety clutching device by hand in case dangerous descending motion is acquired by the elevator-cab and the automatic apparatus provided to control the clutch mechanism fails to actuate said mechanism, so that danger of accident is incurred.

The invention essentially consists in the novel construction and combination of parts, as is hereinafter described, and indicated in the claims.

Reference is to be had to the accompanying drawing, forming a part of this specification, and characters of reference thereon, the view shown being a partly-sectional side elevation of portions of a passenger-elevator, the usual safety clutch device thereon, and the improved attachment which is provided to enable said safety clutch device to be manually operated from within the elevator-cab.

In the illustration of the improvement and its application to an ordinary elevator 10 indicate fragmentary portions of upright parallel guides in the shaft or "well" wherein the cab 11 is to reciprocate.

At opposite points on the cab in its complete form bracket-arms 12 are secured near the top and bottom. Only those near the lower end of said cab are represented. The bracket-arms 12 are adapted to loosely embrace the upright guides 10 and, together with the similar arms at the top of the cab, (not shown,) serve to loosely maintain the cab in position to receive vertical movement.

The ordinary safety clutch device for arresting the quick descent of the cab in case of accident comprises the horizontally-slidable clutch-bars 13 and means to forcibly press said bars at their outer ends against the faces of the guides 10, so as to produce sufficient frictional resistance to stop the cab.

The means for slidably moving the clutch-

bars shown consists of the following details: Two pairs of toggle-levers 14 are provided, having adjacent ends on each pair pivoted together. The outer ends of the jointed toggle-levers are respectively pivoted upon the inner ends of the slidable clutch-bars 13. A lever 15 for each pair of toggle-levers is fulcrumed upon the cab at 15^a and is pivoted to a short link 16, and said links at their lower ends are pivoted upon the downwardly-flexed joints of the toggle-levers 14, inner terminals of the latter being likewise pivoted on the cab—for instance, at 15^b. The adjacent ends of the levers 15 are slotted longitudinally for pivotal engagement with the lower end of a hanger-bar 16^a, adapted to slide vertically in a guide 16^b, secured to the cab, the upper end of said hanger-bar being pivoted to one end of the horizontal rocking lever 17, that is fulcrumed between its ends on a frame-timber of the cab 11.

Near the upper end of the elevator-shaft wherein the cab 11 reciprocates the usual governor 18 is stationed, that is revolved by the bevel-gearing 19, one wheel of which is secured upon the horizontal journaled shaft 20, whereon the bull-wheel 21 is secured. On the bull-wheel 21 an endless rope 22 is placed, which, as is customary in this construction of elevator mechanism, has both members or runs of the rope passing loosely down through the cab 11 and engaged below by a similar wheel on the motor-shaft. (Not shown.)

On the framework that sustains the governor 18 in position two segmental gears 23 are supported to rock, and on said gear-segments that are meshed together eccentric clamping-segments *a* are affixed, between which one run of the rope 22 passes.

A lever 24, adapted to be moved by the governor, is pivoted by one end to a link-bar 25, that at its lower end is pivoted upon the frame of the governor. The lever 24 projects above the gear-segments 23, and from the outer end of said lever the pivoted connecting-bar 26 depends. An arm 27 is projected from the short journal-shaft that supports one of the gear-segments 23 toward the governor-stand, and the connecting-bar 26 is at the lower end jointed upon the outer end of the arm 27. The free end of the rocking lever 17 projects into the path of the check-rope

22, and the latter loosely passes through an eye formed on the end of said lever. Springs 29 encircle the check-rope 22, and these are adapted to cushion the impact of knobs 30, that are secured on the check-rope, said springs being placed above and below the end of the arm 17, through which the rope loosely moves. The check-rope 22 runs in the direction of the arrows shown in the drawing and is free from contact with the cam-faces *a* when the cab 11 moves down at normal speed.

If from any cause the speed of descent had by the cab 11 is abnormally increased, it is the office of the governor 18 to automatically actuate the connected gear-segment 23 and its clamping-face *a*, so as to bite the check-rope 22 between the two cam-faces. When the check-rope 22 is held, the clutching device that is on the cab is designed to be actuated by the fall of the cab and arrest the downward movement of the latter.

It has been frequently found in service that the governor 18 does not act with sufficient quickness for such an adjustment of the safety clutch-bars 13 as will arrest the descent of the cab 11 until it has rapidly moved downward a considerable distance, and in consequence the cab is liable to violently impinge on the bottom of the shaft wherein it travels, to the injury of its occupants.

To obviate accidents due to the defective operation of the governor-controlled safety clutch device for an elevator, the improved attachment that will now be described has been provided.

On a grooved pulley 31, which is adapted to rotate on a fixed support near the upper end of the shaft in which the cab 11 travels, the safety-rope 32 is placed and hangs pendent. The shorter member of the safety-rope 32 passes down through an eye in the end of the arm 33, which is affixed on an end of the rock-shaft that supports the gear-segment 23 and attached cam *a* that is farthest from the governor-stand. On the end portion of the rope 32 that passes below the arm 33 a spring 34 is placed and is held in position by the adjustable collars *b b'*, that engage the upper and lower ends of the spring, and on the extremity of this member of the rope 32 a weight 35 is attached.

The lower collar *b'* of the pair is secured upon the rope, so as to sustain the spring 34; but the upper collar is loose and thus permits a compression of the spring when the rope is pulled upon, so as to impinge the upper collar *b* upon the lower side of the arm 33. The other and longer member of the safety-rope 32 hangs down through apertures in the top and floor of the cab 11 and is stretched taut by the weight 36.

The portion of the safety-rope 32 that is extended vertically through the cab 11 is located close to a side wall of the latter, and on said wall two meshing gears 37 are pivotally secured. On the gears 37 eccentrically-disposed disks *c* or their equivalents are formed or se-

cured and are normally separated sufficiently to allow the pendent taut member of the safety-rope 32 to hang free between them, as is clearly shown in the drawing. On one clamping disk or gear 37 an arm 38 is secured, projecting therefrom at an angle to the vertical rope 32, and said arm or lever is upheld by a supported spring *d*.

There may be a handle *e* hung by the flexible connection *e'* from the outer end of the lever 38 to permit an easy manipulation of the lever or arm 38.

It will be seen that the operator in the cab 11, who at any time depresses the lever 38, will cause the cam-faces of the gears 37 to rock toward each other and bite the depending member of the safety-rope 32, that is located between said clamping-surfaces. Evidently when the safety-rope 32 is gripped, as explained, the rapid downward movement of the cab 11 will pull upon the engaged member of the safety-rope and cause the other pendent member thereof to move upwardly, as is indicated by the arrow *x*.

The upward pull on the shorter member of the safety-rope 32 causes the spring-cushioned collar *b* to engage the lower side of the arm 33 and rock it upwardly, which correspondingly rocks the attached segmental gear 23 and clamping-face *a* thereon, so as to clamp the check-rope 22, which will instantly actuate the safety clutch device and effect an arrest of the dangerously-moving cab. It will be understood that the supplementary safety appliance which has been described is to be relied upon at all times as a means for the manual adjustment of the safety clutch-bars 13 to prevent accidents.

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

1. The combination, with the elevator-cab, of normally inactive stop mechanism for opposing the movement of the cab, a rope adapted to normally travel with the cab and operatively connected to said stop mechanism, another rope normally stationary and extending through the cab, means for keeping said second rope taut, a spring-cushion on the said rope operatively engaged by the spring-cushion on the last-named rope.

2. The combination, with the elevator-cab, of normally inactive stop mechanism for opposing the movement of the cab, a governor operatively connected to said stop mechanism, a normally stationary rope extending through the cab, means for holding the said rope taut, a spring-cushion on the rope, and mechanism engaged by the said cushion and adapted to operatively connect the rope with the stop mechanism.

3. The combination with an elevator-shaft, guides therein, a reciprocal cab loosely engaging said guides, a safety clutching device adapted to engage the guides, and a pendent endless check-rope adapted to operate said

clutch device of a safety device, comprising a rope hung intermediately of its ends on a support in the upper part of the elevator-shaft, means to retain the said rope taut and extended through the elevator-cab, a spring-cushion on one end of said last-named rope, and a pair of eccentric clamping-disks in the elevator-cab between which the last-named rope hangs, one of said disks being adapted

to be operated by the attendant on the cab to clamp the last-named rope, and a clamp for the first-named rope, operatively engaged by the spring-cushion on the last-named rope, substantially as described.

JOHN T. TAYLOR.

Witnesses:

HARRY WATSON,
FREDERICK R. FIELDING.