

(No Model.)

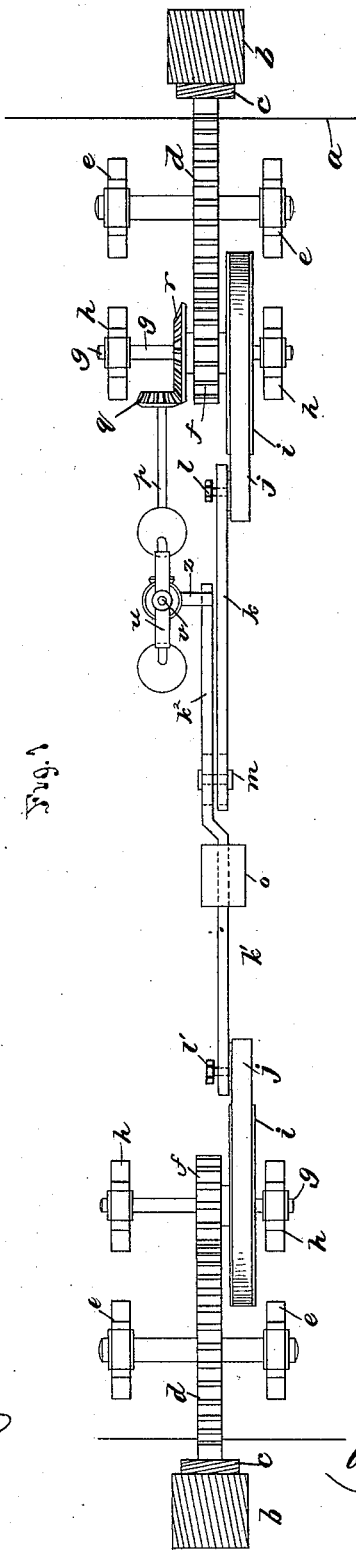
2 Sheets—Sheet 1.

C. P. ADAMS & E. VAUGHAN.

STOPPING MECHANISM FOR ELEVATOR CARS.

No. 304,771.

Patented Sept. 9, 1884.



Witnesses

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E. A. Finckel

Inventors:

Charles F. Adams.

Earl Vaughan.

by Wm. H. Finckel.

Atty.

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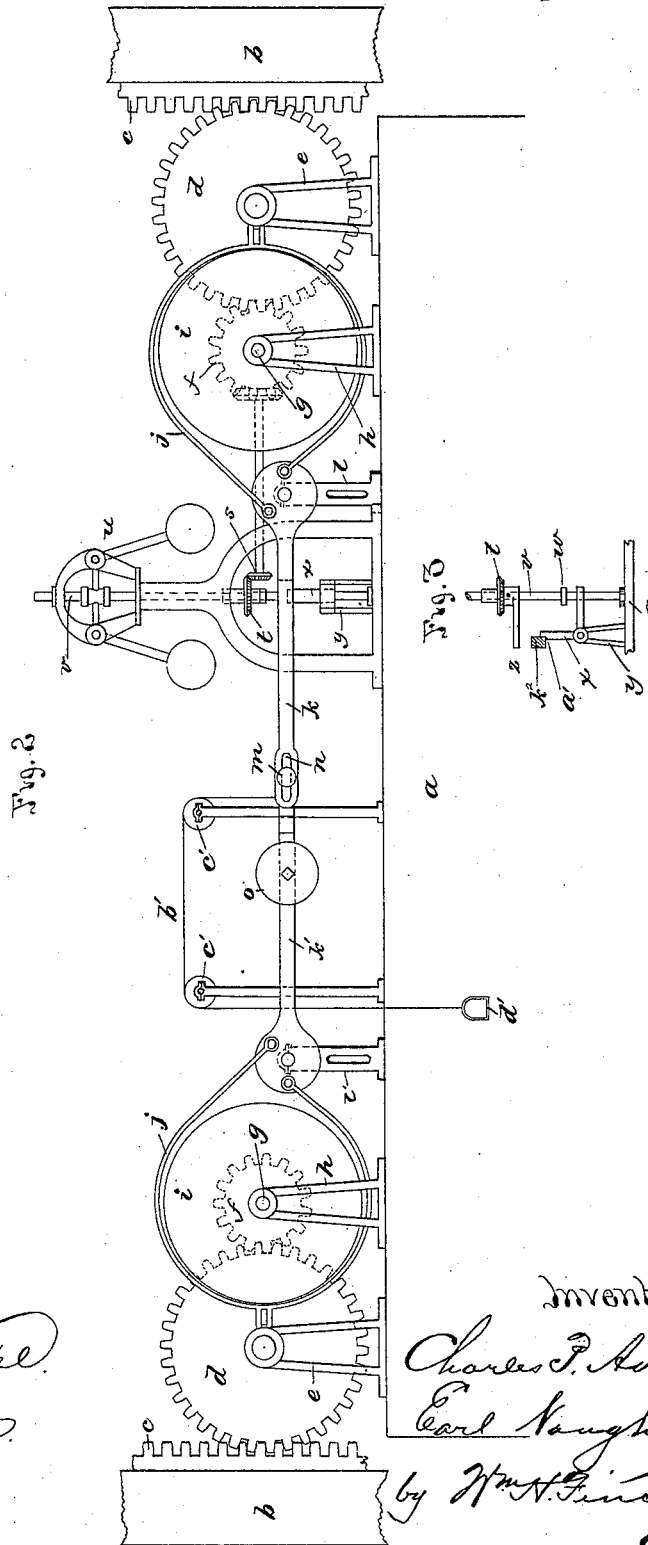
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UNITED STATES PATENT OFFICE.

CHARLES P. ADAMS, OF STOCKBRIDGE, AND EARL VAUGHAN, OF BOSTON,
MASSACHUSETTS.

STOPPING MECHANISM FOR ELEVATOR-CARS.

SPECIFICATION forming part of Letters Patent No. 304,771, dated September 9, 1884.

Application filed February 16, 1884. (No model.)

To all whom it may concern:

Be it known that we, CHARLES P. ADAMS, a citizen of the United States, residing at Stockbridge, in the county of Berkshire and State of Massachusetts, and EARL VAUGHAN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Stopping Mechanism for Elevator-Cars, of which the following is a full, clear, and exact description.

This invention relates to means for automatically stopping elevator-cars upon their attaining a dangerously-accelerated speed in rising and descending.

The invention consists in the combination, with a suitably-moved car, of toothed racks in the elevator-well, with which toothed wheels on the car mesh, said wheels also driving pinions on shafts carrying friction-drums, the friction bands or straps of which drums are connected to jointed levers held up by a governor mechanism geared with one of the pinions, which governor mechanism is caused to release the said levers when the speed of the car is dangerously accelerated, and effect the application of the power of the friction-bands to the drums to stop the car, all substantially as hereinafter specified and claimed.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a top plan view of the mechanism thereof, omitting the lifting means. Fig. 2 is a front elevation thereof; and Fig. 3 is a side view of part of the governor mechanism, showing one of the friction-levers in cross-section and in position when the car is moving.

The invention is shown applied to the top of a car, *a*; but it is obvious mere mechanical changes only are necessary to apply it the bottom thereof. The well is provided with the usual ways, *b*, on which are secured the toothed racks *c*. The toothed wheels *d*, which mesh with the racks *c*, are supported on shafts borne by standards *e* on the car, and these wheels mesh with and drive pinions *f* on shafts *g*, supported in standards *h*, also on the car. The shafts *g* also support drums *i*, and these drums are encircled by friction bands or straps *j*, eccentrically connected to the heads of levers *k*

k', fulcrumed to standards *l l'* on the car. The free ends of the levers *k k'* extend toward each other over the center of the car, and are loose jointed by pin *m*, engaging longitudinal slots *n* in them, and one or both of said levers is weighted, as by a mass of metal, *o*, secured thereon.

In the drawings, lever *k'* is shown as receiving the weight, and its end *k²* extended beyond the joint to the governor, for a purpose presently appearing.

p is a counter shaft, suitably supported, having on one end a bevel-gear, *q*, meshing with a bevel-gear, *r*, on the shaft *g*, and said shaft has at its other end a bevel-gear, *s*, meshing with the bevel-gear *t*, of a suitable governor, *u*. The bevel-gear *t* is arranged to turn the governor-shaft *v*, and at the same time permit a longitudinal movement of such shaft.

On the shaft *v* is a tappet, *w*, which, on the descent of the said shaft, strikes the horizontal end of a trip or bell-crank lever, *x*, fulcrumed in a standard *y*, on the car, and another tappet, *z*, is fast to the shaft *v*, at right angles to the tappet *w*, and extends over the end *k²* of the lever *k'*, to depress the jointed levers *k k'*. The vertical end of the bell-crank lever is notched at *a'*, to receive and support the levers *k k'* when in their normal position of inactivity. When, however, there is a dangerous acceleration of the speed of the car in ascending or descending, the shaft *v* of the governor is caused to descend, and its tappet *w* strikes the horizontal end of the bell-crank lever *x*, and draws its vertical end from its support of the levers *k k'*, allowing the jointed ends of such levers to fall, and as they fall the straps *j* are tightened about the drums, thereby applying sufficient friction to them to arrest the rotation of the shafts *g*, and hence the pinions *f*, and wheels *d*, and so stopping the car. The weighting of the levers *k* insures their fall and also sufficient power to fully apply the friction-straps; and so, also, the tappet *z*, striking the lever end *k²*, would serve to overcome any sticking of the levers at their joint by reason of rust or disuse.

Any suitable connection with the levers leading into the car will serve to give the attendant in the car control of the resetting of the levers, by raising them to their normal posi-

tion, to permit the car to again move. One such connection is here shown as composed of a cord, *b'*, connected to one of the levers, and leading over pulleys *c' c'* into the car, and provided with a handle, *d'*. By pulling down on this cord when the levers are fallen, they will be raised and the stopping mechanism reset, to permit the car to move.

Any suitable motive-power may be used for propelling the car, and the invention may be employed in connection with any of the known brake mechanisms to which it is applicable by obvious adaptation.

The invention is in reality a brake for elevator-cars, and as a whole may be so designated.

What we claim is—

1. A mechanism for arresting the dangerously-accelerated movement of an elevator-car, comprising drums driven by connection with the car-guiding mechanism, levers held normally inactive by connection with a governor, and friction-bands encircling said drums and operated by said levers, on the release of the levers by a too rapid rotation of the governor, to apply friction to the drums and arrest the movement of the guiding mechanism, and consequently that of the car, substantially as described.

2. The combination, with an elevator-car, of two levers loosely connected at their free ends, and a governor mechanism supporting them, friction-bands eccentrically connected to said levers, and friction-drums encircled by said bands and driven by gearing with the racks, whereby, as the speed of the car is unduly increased, the governor withdraws its support from the levers, which then fall and tighten their bands about the friction-drums, and arrest the movement of the drums and the gearing, and hence the car, substantially as described.

3. The combination, with an elevator-car, of levers having their free ends loosely connected so as to drop away from each other, and weighted to insure such fall, friction-bands having their ends eccentrically connected to the heads of said levers, so that as said levers fall said bands will be tightened or their ends

drawn nearer, friction-drums encircled by said bands, their shafts rotated by the movement of the car, and a governor mechanism normally supporting such levers in a state of inactivity, and driven from the shaft of one of the friction-drums, and mechanism operated by said governor to render the levers operative to apply friction to the drums and arrest their rotation, substantially as described.

4. The levers *k k'*, slotted longitudinally, and connected loosely by a pin or bolt passed through said slots, the extension *k²* of lever *k*, a trip-lever engaging said extension to support the levers in inactivity, and the governor rod or shaft provided with means to engage said trip-lever to render the levers *k k'* operative, substantially as described.

5. The combination, with a suitably-moved elevator-car, of toothed racks in the well, toothed wheels engaging the same, drums driven from said wheels by pinions on their shafts, meshing with said wheels, friction-bands on said drums, jointed levers secured to said bands, a governor, geared with one of said pinions, and mechanism connected with and operated by said governor, to operate said levers to apply the friction-bands to the drums to stop rotation of the gearing, substantially as described.

6. The combination, with an elevator-car and means to move it up and down its well or shaft, of jointed or connected levers normally inactive, friction-bands attached to and operated by said levers when rendered active, drums to which said friction-bands are applied, and connected with the car operating or guiding mechanism, and means to render said levers active to apply the friction-bands to the drums to arrest the car, substantially as described.

In testimony whereof we have hereunto set our hands this 12th day of February, A. D. 1884.

CHARLES P. ADAMS.
EARL VAUGHAN.

Witnesses:

GUSTAVE A. CANIS,
PAUL P. TODD.