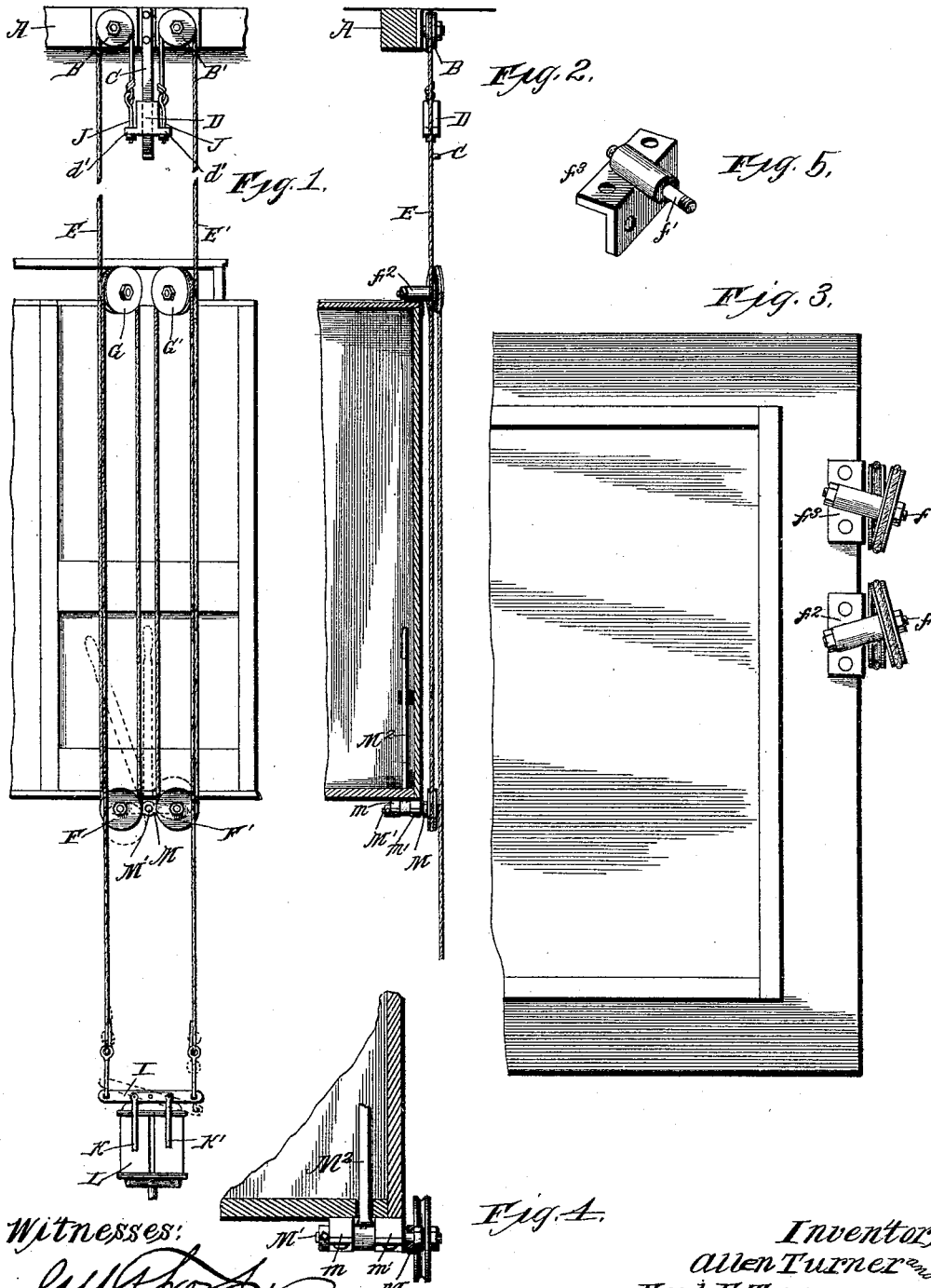


(No Model.)

A. & F. E. TURNER.
CONTROLLING DEVICE FOR ELEVATORS.

No. 493,607.

Patented Mar. 14, 1893.



Witnesses:
G. J. Thorpe
Margaret R. Remley

Fig. 1.

Inventors:
Allen Turner
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By *H. J. Green & H. J. Green*
attys.

UNITED STATES PATENT OFFICE.

ALLEN TURNER AND FREDERICK E. TURNER, OF KANSAS CITY, MISSOURI,
ASSIGNORS TO THE KANSAS CITY ELEVATOR MANUFACTURING COMPANY,
OF SAME PLACE.

CONTROLLING DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 493,697, dated March 14, 1893.

Application filed September 12, 1892. Serial No. 445,639. (No model.)

To all whom it may concern:

Be it known that we, ALLEN TURNER and FREDERICK E. TURNER, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Controlling Devices for Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to mechanism for controlling the movement of elevators of the class in which cables, secured at the top of the hatchway pass in loops around sheaves journaled upon the car, and secured at the lower ends to operating levers, or rocking bars.

The object of our invention is, mainly, to construct and arrange the pulleys and cables upon the car in such manner that the cables will move freely throughout their looped portions, to avoid unnecessary friction and save the wear upon the cables, and allow the latter to work smoothly with scarcely any strain upon them which would tend to interfere with the free, easy and effective movement of the operating lever, or rocking bar.

A further object of our invention is to extend and contract the length of the loops by simple, novel and effective means, and to support the upper ends of the cables in a novel manner which will keep them tight, while they will yield to unusual strains brought upon them without jerking the levers or breaking the cable, by which means a very light cable may be employed; also to provide means for controlling the movements of an elevator car by a lever in the car, and is applicable to either hydraulic, steam, or electric elevators.

In the accompanying drawings, which illustrate our invention,—Figure 1. is a front elevation of the operating mechanism, and a portion of the car and a pilot valve connected therewith. Fig. 2. is a similar side elevation of the same, with the pilot valve not shown. Fig. 3. is a plan of the top of the car, showing the location of the pulleys and their relation one to the other. Fig. 4. is a sectional view of one corner of the car, showing the lower sheave pulleys and the operating lever. Fig. 5. is a perspective of one of the upper in-

clined pulley shafts, and a bearing block for supporting it.

The upper cross beam, A, of the elevator shaft supports two ordinary suspension sheave pulleys, B B', between which is secured a downwardly projecting guide rod, C, upon which a balance weight, D, is supported to move freely up and down in the same plane with the pulleys. Cords, E E', preferably wire cables, are secured by eye bolts, J, with laterally projecting lugs, d', on the bottom of the weight, D, and passing over the suspension pulleys, B B', extend downwardly around lower sheave pulleys, F F', and upper sheave pulleys, G G', on the car, and are secured at their lower ends, respectively, to the opposite ends of a rocking lever, I, which operates the valve rods K K' of a pilot valve mechanism, L, supported at, or near, the bottom of the shaft, and in the same plane with the suspension pulleys.

The upper sheave pulleys, G G', are journaled upon shafts, f f', supported in angle blocks, f² f³, bolted to the top and upper side edge of the car with their axes converging outwardly, and their inner peripheries turned in closely to the side of the car with their vertical tangents in line with the corresponding tangents upon the inner side of the two lower sheave pulleys, F F', which are supported upon parallel axles secured to the ends of a rocking bar, M, upon a rock shaft, M', supported in bearing blocks, m m', bolted to the bottom of the car, to which is secured the lower end of a hand lever, M², passing up into the car and operated upon to pull upon the cables and operate the rocking bar. The sheave pulleys F F', are thus held to oscillate in the same plane closely against the side of the car, and in the same plane with the inner peripheries of the upper sheave pulleys, G G', by which arrangement the cables pass from the weight, D, upward over the suspension pulleys, B B', in the plane of the weight, and of the lower pulleys, and of the rocking bar, and in a plumb, or perpendicular, line from the outer peripheries of the pulleys, B B', down upon the inside of the outer peripheries of the upper pulleys, G G', to the center line or tangent of the outer peripheries of the lower

pulleys, F F'. Passing around the pulleys F F', the cables extend upwardly in lines parallel, or nearly so, with each other, and with the outer and downwardly extending sections thereof, the inner sections being plumb, or in line with, the inner peripheries of the upper rollers, G G', and as the outer peripheries of the said pulleys are turned, because of their inclined axis, outside of the plane of the downward section of the cable between the upper and lower pulleys, the cables, passing over said pulleys, will again descend in a plane outside of and parallel to the lower sheave pulleys. By this arrangement the cables will never abrade, or rub against, each other, which would greatly affect the wear upon and life of the cables, also offer a considerable resistance, affecting both the power required to operate the valves, the sensitiveness of the valves, and the power required to operate the elevator.

The arrangement of pulleys herein described will admit of the car's passing to the extreme upper end of the shaft, as the weight for supporting the upper ends of the cables may pass inside the faces, or angles, of the upper pulleys, and allow the upper end of the car to pass it, or the lower end of the car may pass below the rocking bar in the same manner.

To insure the proper and reliable action of the parts as described, it is only necessary that the weight shall be heavy enough to more than counter-balance the power required to operate the pilot valve, and as this power is small the weights are not necessarily very heavy or cumbersome.

The rocking bar is operated by moving the lever M² from one side to the other, and placed perpendicularly when the rocking bar is to be left horizontal. When the lever M² is moved to one side the sheave roller secured to it upon that side will be forced down to increase the distance between it and the corresponding pulley above it, and consequently pull upon the rope and raise the end of the rocking bar below it, while the pulleys upon

the opposite end of the lever will be brought nearer its corresponding pulley to lengthen, or pay out, the cable to allow the corresponding end of the rocking lever, I, to descend. When the lever M² is moved in the opposite direction the action will be reversed, and the cable E' will raise the depressed end of the rocking lever, I, and the cable E will pay out, or give up cable to allow the end of the rocking lever secured thereto to descend.

By the above described instrumentalities and arrangements of parts we are enabled to provide a simple, effective, inexpensive and quickly responsive mechanism, which will wear a much longer time than cables now employed which are allowed to cross, or come in contact, in the looped sections as the car ascends and descends.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

A controlling device for elevators, comprising a pair of obliquely arranged sheave pulleys, journaled upon fixed bearings at the top of the car, a rocking bar, pivoted at the bottom of the car, a lever projecting within the car to actuate the rocking bar, a pair of sheave pulleys carried at the ends of the rocking bar, and having their inner vertical tangents plumb with the inner vertical tangents of the obliquely arranged sheave pulleys at the top of the car, and cables each looped around a pair of pulleys, comprising the oppositely arranged top and bottom pulleys carried by the car, and secured at their upper ends to a slidable weight and at their lower ends to the opposite ends of a rocking lever in the lower end of the shaft, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

ALLEN TURNER.
FREDERICK E. TURNER.

Witnesses:
MAUD FITZPATRICK,
MARGARET R. REMLEY.