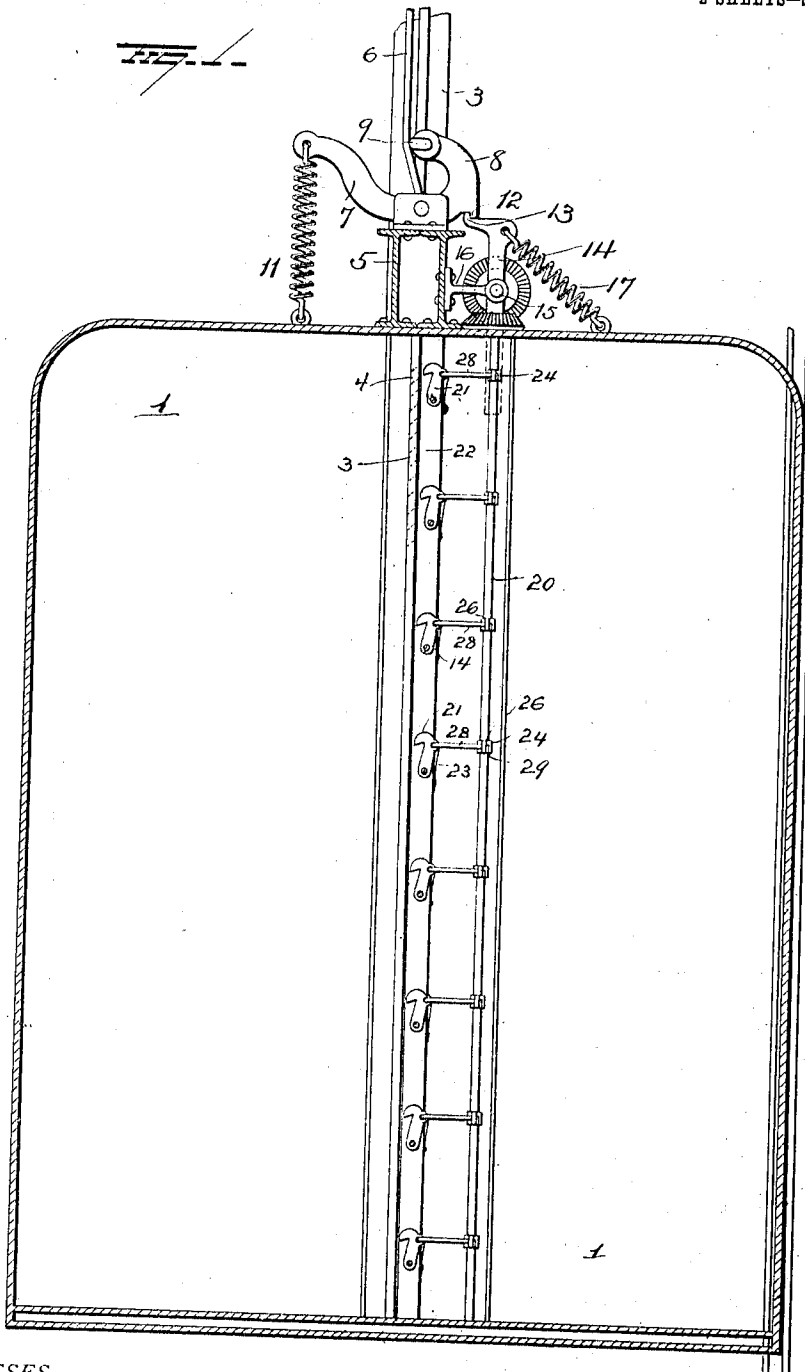


J. HILL.
SAFETY DEVICE FOR ELEVATORS.
APPLICATION FILED MAR. 29, 1912.

1,039,283.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.



WITNESSES
E. Nottingham
G. J. Downing

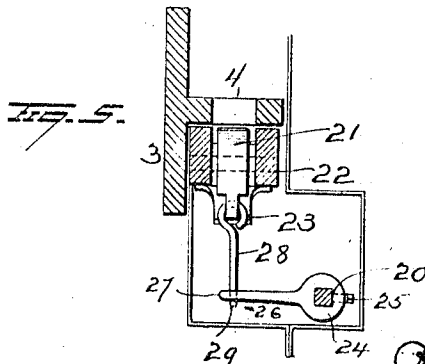
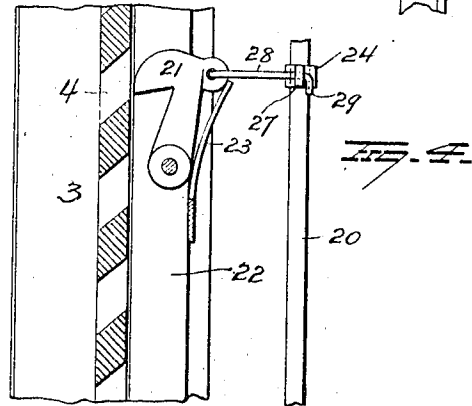
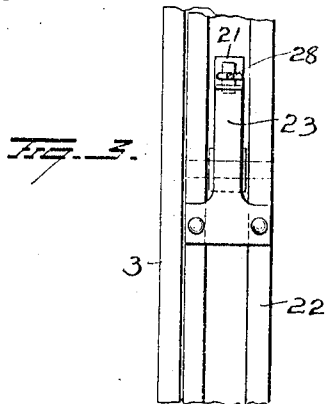
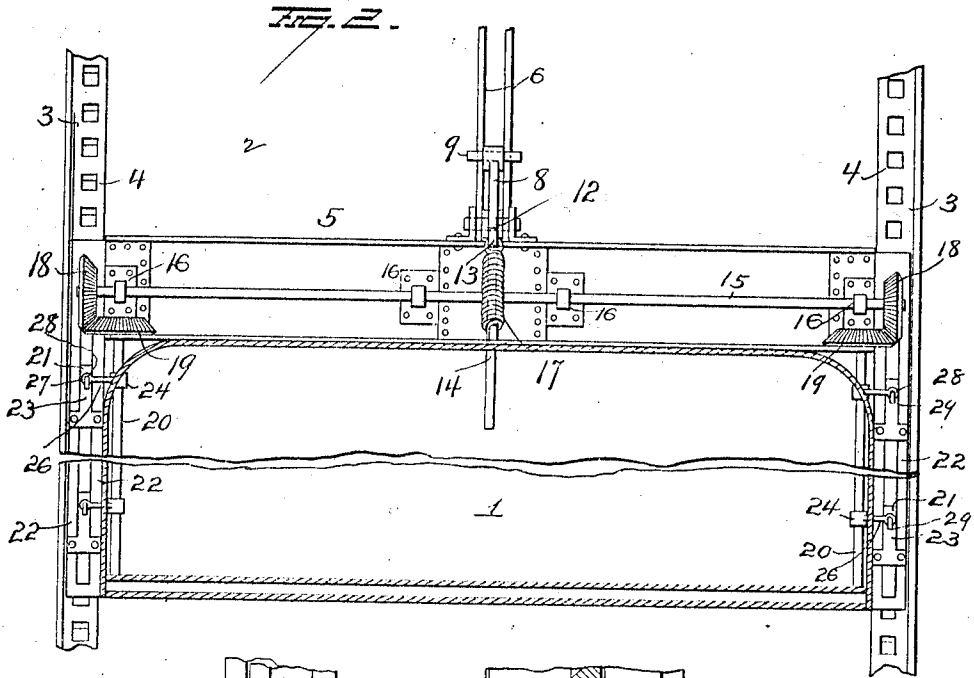
INVENTOR
J. Hill
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2 SHEETS—SHEET 2.



WITNESSES
E. D. Nottingham
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UNITED STATES PATENT OFFICE.

JOSIAH HILL, OF PASADENA, CALIFORNIA, ASSIGNOR OF ONE-HALF TO ESTELLA MILLER, OF PASADENA, CALIFORNIA.

SAFETY DEVICE FOR ELEVATORS.

1,039,283.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed March 29, 1912. Serial No. 687,096.

To all whom it may concern:

Be it known that I, JOSIAH HILL, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Safety 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.

This invention relates to improvements in safety devices for elevators,—one object of the invention being to insure the prompt stopping of the car in case of the breaking of the carrying cable or one of a plurality of such cables.

A further object is to so construct safety-stop mechanism for an elevator, that at least two dogs of a plurality of superimposed dogs at each side of the car will simultaneously engage sockets at the sides of the elevator shaft, and so that the remainder of said superimposed dogs can be adjusted in such manner as to insure engagement of two of them on each side of the car with sockets of the shaft, should the pairs of dogs first tending to engage the sockets fail to bring the car to a full stop, and to accomplish this without permitting movement of the car more than an inch after the ineffectual tendency of the first pairs of dogs to stop the car.

With these and other objects in view the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view illustrating the application of my improvements. Fig. 2 is a sectional view taken at right angles to Fig. 1, and Figs. 3, 4 and 5 are views illustrating details.

1 represents an elevator car of any preferred construction, and 2 illustrates a portion of an elevator shaft,—to the side walls of which latter, angle beams 3 are secured and the inwardly projecting flange of each of these beams is provided with a plurality of openings which form sockets 4 preferably having inclined upper and lower walls. These sockets are for the reception of dogs carried by the car for the purpose of stop-

ping the descent of the car, as hereinafter explained.

A bracket 5 is rigidly secured to the top of the car and may conveniently consist of angle beams. The hoisting cable is connected with this bracket in any suitable manner. In some instances, a plurality of hoisting cables is employed and in the present instance I have shown two such cables 6—6.

A lever 7 is pivotally mounted between its ends upon the bracket 5 and the arm 8 of this lever is curved and of sufficient length to terminate at its free ends approximately over the pivotal support of the lever. The arm 8 of said lever is provided near its free end with a slot through which a pin or short bar 9 freely passes,—the portions of said pin or bar at respective sides of the arm 8 being in position to bear against the hoisting cables 6—6 and will be normally held pressed against said cables by means of a spring 11 secured at one end to the long arm of the lever 7 and at the other end to the top of the car. The arm 8 of lever 7 is provided with a tooth 12 in position to be engaged by a tooth 13 at the upper end of an arm 14. The arm 14 is secured to a shaft 15 mounted in brackets 16 secured to the bracket 5, said shaft being of a length approximately equal to the width of the car 1. A spring 17 is secured at one end to the top of the car and at the other end to the arm 14,—said spring serving to turn said arm when the latter has been released from the lever 7 and thus transmit motion to the shaft 15. At respective ends of the shaft 15, bevel pinions 18 are secured and mesh with bevel pinions 19 secured to the upper ends of vertical shafts 20.

At each side of the car, a plurality of superimposed dogs 21 (eight such dogs being shown as pivoted to each vertical guide-flange 22) are adapted to cooperate with the socketed flanges 4 of the vertical angle-beams 3,—springs 23 being employed to cause said dogs to engage the socketed flange 4 when released. The vertical shafts 20 are made angular in cross-section and on these shafts, collars 24 are adjustably secured by means of set screws 25. Each collar 24 is provided with an arm 26 having an eye 27 at its free end and with this eye, one end of a link 28 is connected,—the other end of said link being connected with a suitable

eye on the adjacent dog 21. The free end of each link 28 is bent as shown at 29 so that when the arm 26 is moved in one direction, motion will be imparted, through the link 28 to withdraw the dog 21. The dogs 21 at respective sides of the car will be so spaced apart and positioned with relation to the socketed beams 3 that when both series or sets of dogs are released (as presently explained) two dogs of each set will engage sockets of the respective beams 3 simultaneously. The remaining dogs of each set are so positioned that, should the first pairs of dogs which tend to engage the socketed beams fail to effectually engage said socketed beams, pairs of said remaining dogs will engage the socketed beams before the car shall have moved more than an inch.

In the operation of my improvements, should one of the operating cables break, the pin or short bar 9 would be caused to turn sufficiently to permit the lever 7 to rock on its pivotal support and move the tooth 12 out of engagement with the tooth 13 of arm 14, thus permitting the spring 17 to move said arm 14 and rotate the transverse shaft 15. The rotation of this shaft will be transmitted through the pinions 18 and 19 to the vertical shafts 20 at respective sides of the car. When the shafts 20 are thus turned, the springs 23 will be permitted to move the dogs 21 toward the socketed beams 3 ready to engage the sockets of said beams,—the engagement of said dogs with the socketed beams being accomplished in pairs as previously explained.

Having fully described my invention what I claim as new and desire to secure by Letters Patent, is:

1. The combination with an elevator, a hoisting cable, and socketed beams or racks to be secured in the sides of an elevator shaft, of a lever pivoted between its ends on the car, a spring connected with one arm of said lever and normally pressing the other arm thereof toward the hoisting cable, dogs mounted on the car to cooperate with said socketed beams or racks, a shaft on the car, an arm secured to said shaft and con-

stituting a locking device for said lever, devices for controlling the release of said dogs, gearing between said controlling devices and said shaft, and a spring for moving said arm and the shaft to which it is secured to transmit motion to said controlling devices.

2. The combination with an elevator car, a hoisting cable attached thereto, dogs at respective sides of the car, and socketed beams or racks for cooperation with said dogs, to be fixed in the sides of an elevator shaft, of a lever pivoted between its ends on the car and having an arm to engage the hoisting cable, a spring connecting another arm of said lever with the car, a transverse shaft mounted on the car, an arm secured to said shaft and having normally locked engagement with said pivoted lever, a spring connected with said arm for moving it, vertical shafts at respective sides of the car, gears connecting said vertical shafts with the transverse shaft, arms attached to the vertical shafts, links connecting said arms with the dogs, and springs for moving said dogs into engagement with the socketed beams or racks.

3. The combination with an elevator car, dogs thereon, and racks to be fixed in the sides of an elevator shaft for engagement of said dogs, and a plurality of hoisting cables attached to said car, of a lever pivoted between its ends on the car and provided with an arm terminating at one end in proximity to said hoisting cables, said arm having a slot, a short bar mounted in said slot and normally bearing against the respective hoisting cables, a spring connecting the other arm of said lever with the car, and devices controlled by movement of said pivoted lever for controlling the operation of said dogs.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

JOSIAH HILL.

Witnesses:

STELLA M. MILLER,
A. F. MILLER.