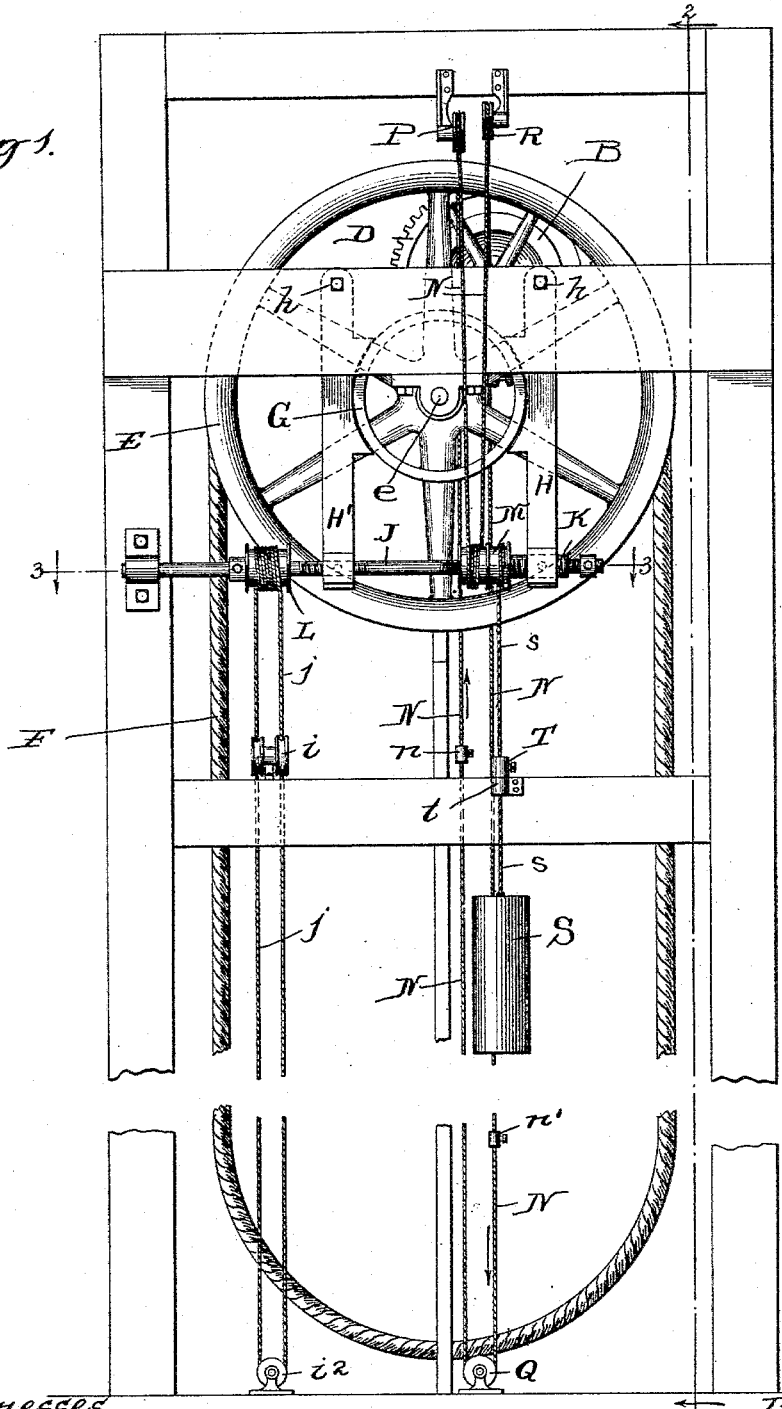
(No Model.) 2 Sheets—Sheet 1.

T. W. EATON.

ELEVATOR BRAKE MECHANISM.

No. 490,275. Patented Jan. 24, 1893.

Fig 1.



Witnesses
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Wm. N. Rheem.

Inventor
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his Attorneys.

(No Model.) 2 Sheets—Sheet 2.

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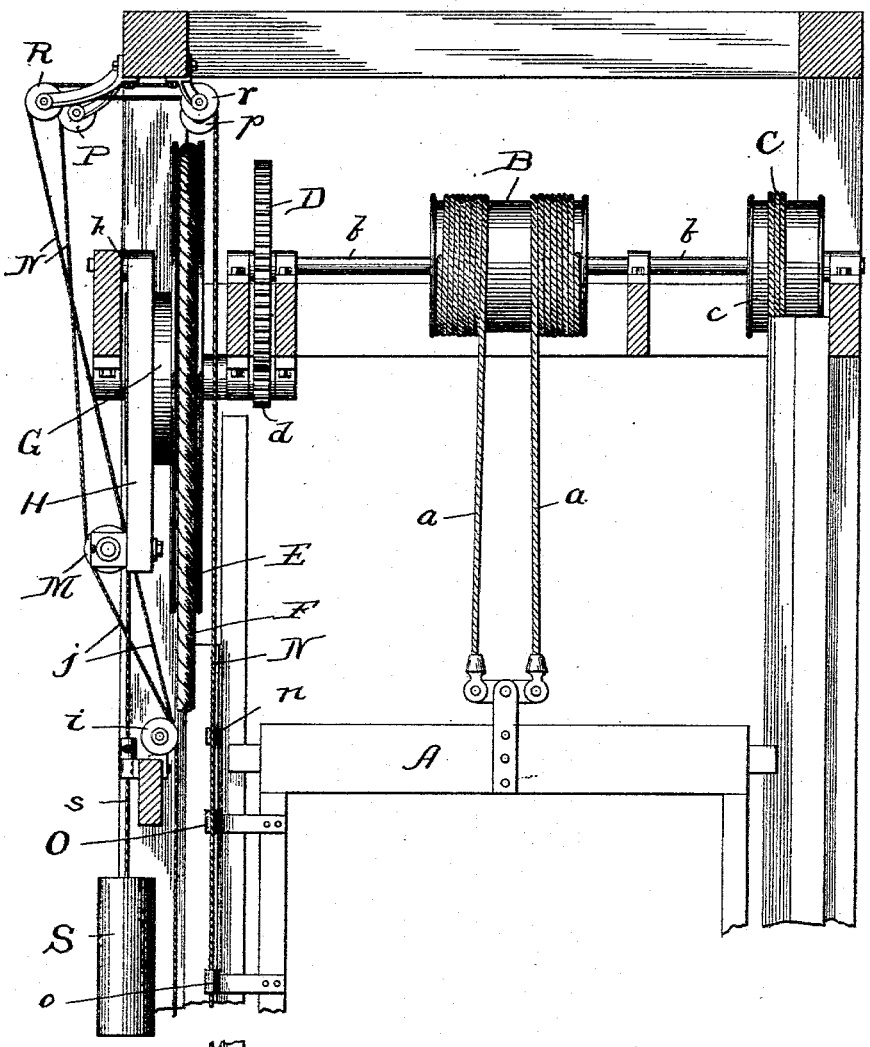


Fig 2.

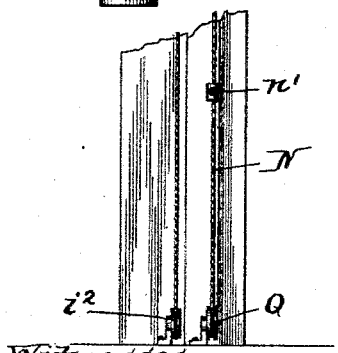
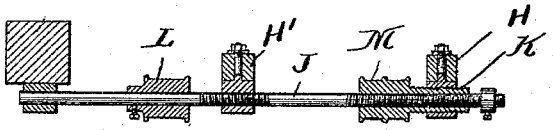


Fig 3.



Witnesses:
Wm. J. Fleming
Wm. M. Rheem.

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UNITED STATES PATENT OFFICE.

THOMAS W. EATON, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE EATON & PRINCE COMPANY, OF SAME PLACE.

ELEVATOR BRAKE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 490,275, dated January 24, 1893.

Application filed June 27, 1892. Serial No. 438,066. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. EATON, a citizen of the United States, residing at Chicago, in the county of Cook, in the State of Illinois, have invented a new and useful Improvement in Elevator Brake Mechanism, of which the following is a specification.

This invention relates to the brake actuating mechanism used upon elevators, and more especially to that used upon hand operated elevators. The mechanism is duplex in its character, so that it may be used to set the brakes at will and at any point in the run of the elevator, and it is also adapted to set them automatically at the limits of the run.

The invention consists in the novel construction and novel combinations of parts hereinafter fully described and pointed out in the claims.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is an elevation of an elevator provided with my invention; Fig. 2 is a section on the line 2—2 of Fig. 1, and Fig. 3 is a detail section on the line 3—3 of Fig. 1.

In said drawings A represents the frame work of the elevator car or platform, and *a a* the supporting cables thereof winding upon the drum B upon the shaft *b*.

C is the usual counterweight cable winding upon the drum *c*. The shaft *b* is operated by the gears D *d*, the latter being fast upon the journal *e* of the wheel E operated by the power applying hand rope F.

G is the brake wheel secured upon the side of wheel E, and H and H′ are the brake levers located at each side of the wheel G and pivoted stationarily at *h* at their upper ends and with their lower ends free to be forced toward each other when the braking power is applied.

The mechanism for operating these brake levers constitutes the novel feature of my invention and consists of the following: A horizontal shaft J is passed through the lower end of each of the levers, and has a threaded engagement with both of them, as hereinafter set forth. That portion of the shaft which passes through lever H′ is threaded with a right hand thread, while that part of it which passes through lever H is threaded with a left hand thread. In the case of the lever H′, the engagement with the thread of the shaft is direct, but the engagement between the lever H and the shaft is indirect, a sleeve K being interposed between the shaft and the said lever H, such sleeve being threaded upon the shaft and having also a threaded exterior engaging with the lever. The exterior thread upon the sleeve thus acting upon the lever H is right handed.

Both the shaft and the sleeve are separately rotatable to force the levers against the wheel. The shaft is rotated by a spool L rigidly secured to the shaft and operated by a hand rope *j* extending along the elevator shaft within ready reach of the operator, either upon the car or upon any of the landings. The hand rope extends down from opposite sides of spool L to and around the pulley i^2 at the bottom of the elevator way, and may be guided *en route* by idlers *i*. When one side of this rope is pulled down upon, the spool and shaft are turned in such direction as to cause the setting of the brake levers, and when the other side of the rope is similarly actuated, the spool and shaft are turned in a direction which releases the levers, either of these operations being permitted in any position of the car. The brakes are also automatically set when the car reaches its limits of travel by power applied to sleeve K. For this purpose another spool M is placed upon the shaft J and made rigid with sleeve K, and rotated by a rope N secured to the spool and passing from one side thereof up to and over pulleys P *p* at the top of the elevator way, thence down to and under a pulley Q at the bottom of the way, thence up to and over pulleys R *r* at the top, and thence down to the opposite side of the spool. That portion of the rope between pulleys *p* and Q is provided with a stop *n*, adapted to be engaged by the guide O attached to the car at the conclusion of the upward travel, and upon the other side or half of the rope between pulleys *r* and Q is secured another and similar stop *n*′ adapted to be engaged by the guide *o* upon the car at the conclusion of the downward travel. Whenever this cable N is actuated by the car through the engagement of

the stops and guides, it causes a rotary movement by the spool M and sleeve K, in the proper direction to bring the brake levers to bear upon the brake wheel. In order to release the brake preparatory to starting the car after it has been thus automatically stopped, the hand brake cable *j* is employed, and as soon as the car has moved far enough to destroy the engagement between the stop upon the cable N and the guide, the spool M and sleeve K are returned to their normal position automatically by a weight S suspended by a cable *s* also wound on said spool M. In order to prevent cable *s* from rotating the spool beyond its normal position, said cable is passed through a stationary eye *t* and has placed upon it an adjustable button T, which is so located as to come in contact with said eye at the proper time.

I claim:

1. The hand-operated elevator, wherein the brakes are combined with threaded setting devices, a hand rope for actuating the setting device at will, and a separate rope with stops for actuating the setting devices automatically at the limits of the car's travel, substantially as specified.

2. The elevator wherein the brake levers are combined with a shaft J having a threaded engagement with one brake lever, a spool and rope for actuating the shaft at will, a sleeve threaded upon the shaft and having a threaded engagement with the other lever, and a spool and rope for rotating the sleeve, substantially as specified.

3. The combination in a hand operated elevator, of brake levers H H′, screw shaft J, having right and left hand threaded portions, spool L and its rope, sleeve K, and spool M and its rope, substantially as specified.

4. The combination with the brake levers, of the shaft J having a threaded engagement with one lever, a spool and rope for actuating the shaft at will, a sleeve threaded upon the shaft and having a threaded engagement with the other lever, a spool and rope for rotating the sleeve, and means for automatically actuating the last mentioned spool and rope at the limits of the car's travel, substantially as specified.

5. The combination in an elevator, of the brake levers, a shaft having a threaded engagement with said levers, sleeve K, a spool and rope for rotating said shaft at will, a second spool and rope for automatically rotating said sleeve, stops upon the last mentioned rope, guides upon the car engaging said stops, and a weight and flexible connection for returning said sleeve to its normal position, substantially as specified.

6. The combination in a hand operated elevator, of brake levers H H′, screw shaft J, having right and left hand threaded portions, spool L and its rope, sleeve K, spool M and its rope and weight P for returning spool M, substantially as specified.

7. In an elevator, the combination, with the brake levers and the screw shaft by which they are operated, of a spool and hand rope for rotating said shaft at will, a sleeve threaded upon said shaft and acting upon one of the levers, and devices for rotating said sleeve independently of the shaft, substantially as specified.

8. In an elevator, the combination with the brake levers and their operating screw, of the sleeve K and means for rotating said sleeve independently one of the levers being engaged by the screw and the other by the sleeve, substantially as specified.

9. In an elevator, the combination, with the brake levers and their operating screw, of the sleeve K, and means for rotating said sleeve automatically at the limit of the car's travel, substantially as specified.

10. In an elevator, the brake levers and the operating screw, one of said levers being engaged directly by the screw, of a sleeve K interposed between the screw and the other lever and having a threaded engagement both with said lever and with the screw, in combination with means for rotating the screw in both directions, means for rotating the sleeve, and means for returning the sleeve to its normal position, substantially as specified.

THOMAS W. EATON.

Witnesses:
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