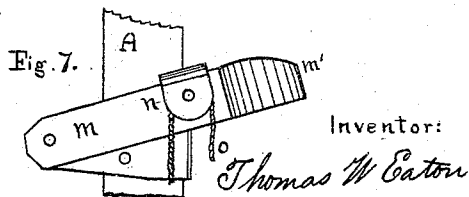
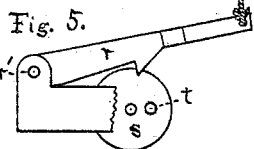
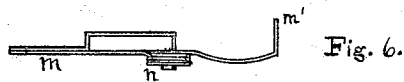
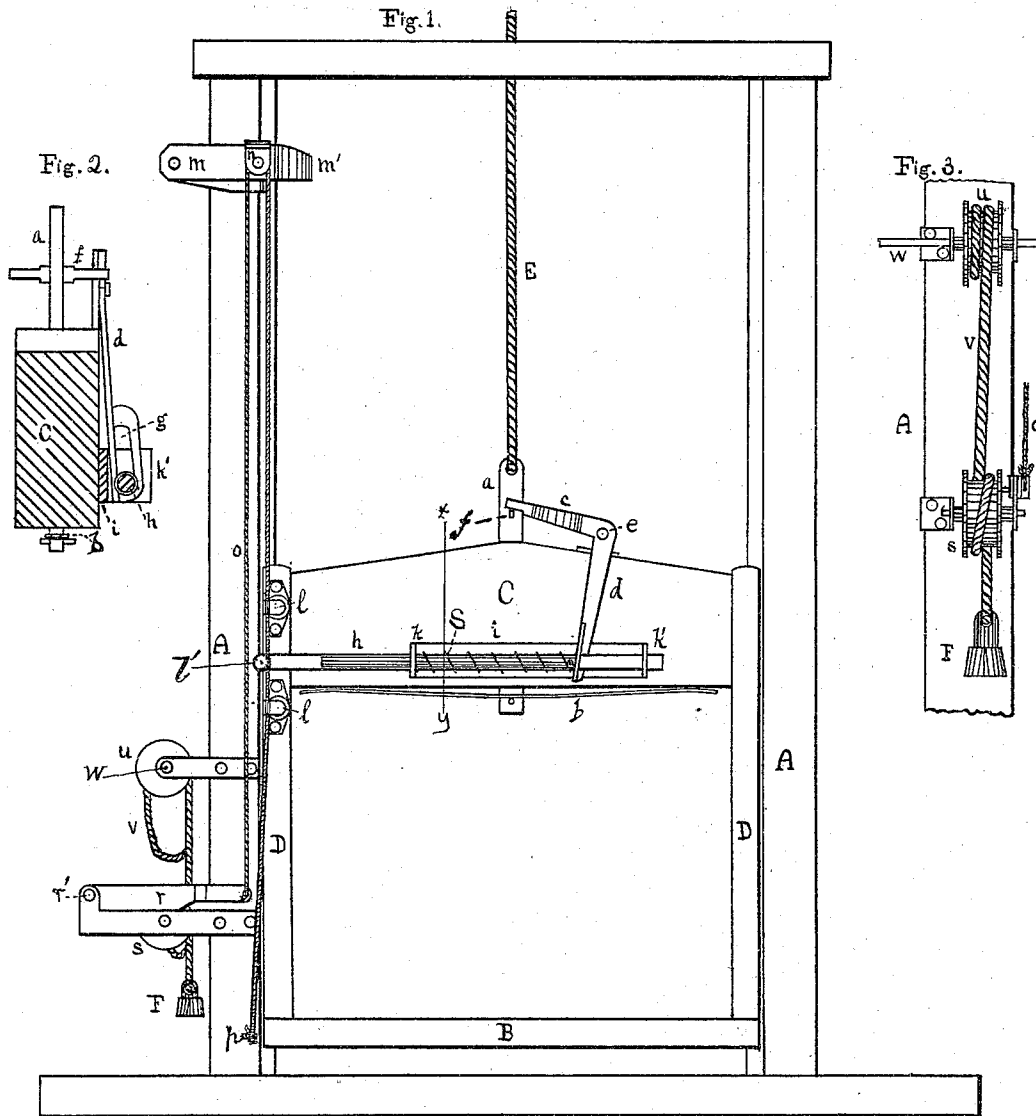


T. W. EATON.
Steam-Elevators.

No. 143,971.

Patented Oct. 28, 1873.



Witnesses:
E. A. West.
W. Bond.

Inventor:
Thomas W. Eaton

UNITED STATES PATENT OFFICE.

THOMAS W. EATON, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN STEAM ELEVATORS.

Specification forming part of Letters Patent No. **143,971**, dated October 23, 1873; application filed February 19, 1873.

To all whom it may concern:

Be it known that I, THOMAS W. EATON, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steam Elevators, of which the following is a full description, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is an elevation. Fig. 2 is a section on line *xy* of Fig. 1; and Figs. 3, 4, 5, 6, and 7 enlarged details—Fig. 4 representing the latch *r* down; Fig. 5, the latch *r* elevated; Fig. 6, a top view of the bar *m* and sheave *n*; and Fig. 7, a view of the bar *m* and sheave *n* elevated.

Steam elevators have heretofore been so constructed that when the cage reaches either the highest or lowest point, the reversing-lever will be operated.

My invention consists in providing a device by means of which this reversing-lever will be automatically operated whenever the elevating-cable breaks, or when the cage meets with an obstruction in its descent; in an improved mode of operating this lever when the cage reaches its highest or lowest point; and in the several devices and combinations hereinafter claimed.

In the drawings, *A A* represent the posts, which serve, among other things, as guides for the cage; *B C D*, the cage; *E*, the hoisting-cable; *a*, movable bar passing through *C*; *b*, spring on the under side of *C*, for the purpose of operating the pawls, which are not shown. These parts are constructed in the usual manner. *c d* are two arms of a lever pivoted at *e* to a standard or bracket supported on *C*; *f*, a pin projecting from *a* under the end of *c*, and in contact therewith when the cage is in motion; *h*, movable rod or bar, which moves in the guides *k k'*, connected to and projecting from *C*. As shown, they are part of the plate *i*, which is secured to *C*. The lower end of *d* has a slot through which the rod *h* passes. Around the rod *h*, and between *k* and the lower end of *d*, is a spring, *S*, the inner end of the spring being in contact with a pin passing through the rod or bar *h*; *l l*, two sheaves attached to the cage. Another sheave, *n*, is placed in the outer end of the bar *h*; *n*, another

sheave connected to a bar, *m*, pivoted at its outer end to a bracket or other suitable device, so that the sheave *n* is in fact movable. This bar *m* is so located that when the cage reaches its highest point it will come in contact with the inner end *m'*. *o* is a small rope or fine-wire cable, the lower end *p* of which is permanently secured. This cable passes up on the outside of the two sheaves *l l*, and in contact therewith, and on the inside of the sheave, in the end of the bar *h*; thence over the sheave *n*, and down to the inner end of the latch *r*, to which it is secured, the outer end of the latch being pivoted at *r'*. *s* is a pulley running in suitable bearings, on the face of which is a projecting pin, *t*. *u* is another pulley upon the shaft *w*, Fig. 3, which shaft operates the reversing-lever. (Not shown.) *v* is a chain or cord, to the lower end of which a weight, *F*, is attached. This chain or cord passes around the pulley *s*; thence around the pulley *u*, and the other end is secured to the chain or cord itself. (See Figs. 1 and 3.) The latch *r* has a notch or projection to engage with the pin *t*. The chain *v* should be wrapped around both pulleys *s u* to prevent slipping.

The lever *c d*, and other parts connected therewith, are so adjusted that when the cage is in motion and the cable *E* tight the end of the lever *c* will be in contact with the pin *f*, the spring *S* being somewhat compressed, and the bar *h* being thrown out in the position shown in Fig. 1. At the same time the cord *o*, latch *r*, pulleys *s u*, and chain *v* will be in the position shown in Figs. 1, 3, and 4—that is, the pulley *s* is locked by the latch *r*, as represented in Fig. 4, so as to hold the weight *F* suspended. Now, if the cable *E* breaks, or the cage in its descent meets with any obstruction, or if, from any cause, the cable becomes slack, the spring *b* will draw the bar *a* down, as usual, carrying the pin *f* away from *c*. At the same instant, by the action of the spring *S*, the bar *h* will be thrown inward, carrying with it the cord *o* away from a straight line, and thereby elevating the end of the latch *r*, so as to release the pin *t* from its contact with the notch in the latch; the weight *F* then causes the pulleys *s* and *u* to make a partial revolution, sufficient to operate the reversing-lever.

It will be seen that when the latch *r* en-

gages with the pin *t* on the pulley *s*, that being the position in which these parts are when the cage is in motion, a portion of the cord *v* is slack, and either side may be slack.

When the cage reaches its lowest point the operation of my device is the same as above described, and when it reaches its highest point the top of the cage, coming in contact with the inner end of the bar *m*, raises the sheave *n*, and at the same time elevates the latch *r*, as before.

I am aware that devices are in use for operating the reversing-lever when the cage reaches its highest or lowest point; but it is desirable that this should be done whenever the cable *E*, from any cause, becomes slack or breaks, or the descent of the cage is arrested.

The described adjustment and arrangement of the chain or cord *v* upon the pulleys *u s* is such that the ordinary operation of the shifting-cable is not interfered with, the shaft *w* being free to make a partial revolution sufficient to operate the reversing-lever the same as though they pulley *u* was not thereon.

In certain situations one end of the cable *o* might be secured to the latch *r*, as before, and the other end to the pivoted bar *m*, dispensing with the sheave *n* and the remainder of the

cable, the cable being so arranged as to be operated by the rod *h*, substantially as described; but usually the arrangement shown, or some similar arrangement, will be necessary.

What I claim as new is as follows:

1. The cord or cable *o*, when so arranged and connected with the elevating apparatus that through it the reversing-lever of the engine can be operated, substantially as specified.
2. The lever *c d* and bar *h*, in combination with the bar *a* and cord *o*, substantially as and for the purpose specified.
3. The movable pulley *n*, in combination with the cable *o*, substantially as and for the purpose specified.
4. The combination of the cord *o*, pulley *s*, and latch *r*, for the purpose of operating the reversing-lever of the engine, substantially as specified.
5. The combination of the pulleys *s u*, latch *r*, and cord *v*, substantially as and for the purpose specified.

THOMAS W. EATON.

Witnesses:

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