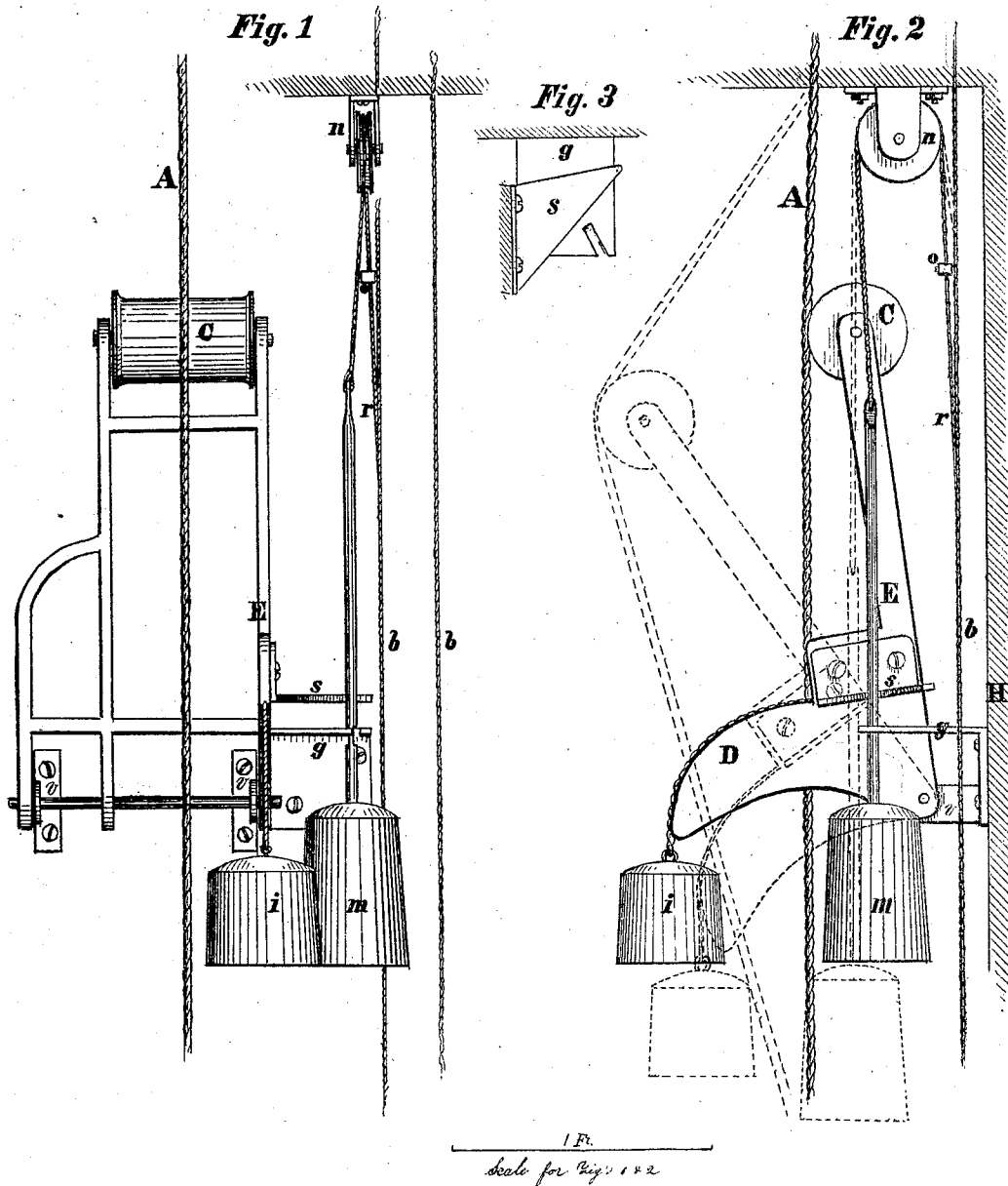


J. G. DREW.

Improvement in Elevators.

No. 130,112.

Patented Aug. 6, 1872.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

JOHN G. DREW, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. 130,112, dated August 6, 1872.

Specification describing a certain Improvement in Elevators, invented by JOHN G. DREW, of Boston, in the county of Suffolk and State of Massachusetts.

My invention relates to an automatic shifter for stopping the machinery of an elevator.

Much difficulty has been experienced in operating freight and passenger elevators (especially the former) by some accidental stoppage of the platform in its downward course—sometimes by a box on some floor which may happen to project into the passage-way sufficiently to check the platform; a block of wood or joist may produce the same effect. When this occurs and is unobserved by an operator, the machine continues to run, thus unwinding the suspensory rope from the drum and getting it entangled in the gearing, the result of which is sometimes productive of much damage to the machinery.

The object of my invention is to remedy such difficulty by the use of a device which, at any time when the suspensory rope is slackened from any cause, will automatically adjust the shifting apparatus so as to stop the machine.

Figure 1 is a front view of a device which embodies my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a plan of the arm *s* and bracket *g*, which are also included in the other two figures.

*A* is a section of the suspensory or hoisting rope of an elevator from that part of the rope which comes down outside of the passage-way of the platform to connect with the machine. *b* in Fig. 2 and *b b* in Fig. 1 represent a section of the shifter-rope, by which the operator starts and stops the machine, which is done by pulling up or down on this rope. In some instances it may be a rod or chain instead of a rope.

It should be understood that this improvement is applicable to machines already in use; hence the preceding description of that part of the elevator to which it is to be attached, which I think will be sufficient without further describing or illustrating the elevator itself; therefore I will now proceed to describe the device or improvement.

*C* is a friction-pulley in the adjustable frame *E* and rests against the suspensory rope *A*. This frame is made adjustable by being at-

tached with the hinge *v v* to the partition *H*, which is usually found near the rope; or, if a partition is not at hand, a substitute may be erected. The frame *E* has a sort of segment-shaped arm, as shown at *D* in Fig. 2, with a groove in the outer edge for a cord, which suspends the weight *i*. The object of this weight is to carry the top of the frame *E* forward whenever the suspensory rope is slackened so as to admit of it. The shape of the arm *D* is such as to diminish the power of the weight *i* as the frame tips forward so as for its own weight to increase its force. *m* is a weight with a shank or stem, which is suspended by a little flattened place in the stem being fitted into a notch or slot in the bracket *g*. There is a cord runs from this stem up over the pulley *n* and connects with the shifter-rope at *r*; but the weight *m*, being suspended by its stem in the bracket *g*, which is attached to the partition *H*, prevents it from pulling on the shifter-rope until it is thrown off from the bracket *g*, which is accomplished by the little arm *s* on the side of the frame *E*, which runs out in rear of the stem, so that when the frame tips forward this arm carries the stem out of the notch in bracket *g* and lets the weight *m* fall, thus communicating motion to the shifter-rope *b b*. The arm *s* may be made to run a little back, as shown in Fig. 3, instead of standing at right angles with the frame *E*, and the notch in bracket *g* may be made angling to correspond with it, by which arrangement the weight *m* will be carried sidewise as well as forward, so the arm *s* will pass by the stem as it falls, which is desirable, for the reason that the frame *E* should be allowed to tip forward far enough to take up the slack of the suspensory rope and keep it tight on the drum until the machine is stopped. The cord which connects the stem of the weight *m* with the shifter-rope at *r* has a little adjustable clasp or gage on it at *o*, with a set-screw in it to prevent it from slipping on the cord. This is for the purpose of checking the fall of the weight *m*. When it has moved the shifter-rope just far enough it may check against the pulley *n*; or, if preferred, a screw-eye or its equivalent may be used for the clasp to stop against. This cord should be a little slack when the weight *m* is in its position, in order to allow the shifter-rope a free movement to change the machine for run-

ning the elevator both ways—that is, up and down. Now, as may be seen by the description and illustration, so long as the tension is kept on the suspensory rope A by the weight of the platform, the several parts of this device remain inactive and in their places, as here described; but when the suspensory is slackened from any cause the top of the frame E is tipped forward by the weight *i*, as indicated by the dotted lines; and this movement, as has been explained, carries the stem of the weight *m* out of the notch in bracket *g*, and lets the weight fall so as to pull with its full force on the shifter-rope *b b*, thus adjusting it the same as a man would do in stopping the machine. The same result may be produced by the use of springs instead of weights, the principle being the same; but I think the weights are better. In some instances the relative position of the shifter and suspensory may be such as to require the use of more than one pulley for the cord to run over in applying the weight *m* to the shifter. Some elevators have a portion of the suspensory running in a horizontal or oblique direction. Should it be desirable in any case to apply this device to such part of the rope instead of the perpendicular part, it may easily be done by a little change in the position of the arm *s*.

I am aware that other means have been devised with a view to accomplishing the same object to some extent by constructing the elevator-machine in a different manner from those which are in common use. A special advantage of this improvement, however, is that it does not require any change in the construction of the elevator machinery, as it obtains its motive power from the tension and slackening of the suspensory rope, and applies that power directly to the shifter, thus rendering

it applicable to the shifting apparatus of nearly all such machines now in use, as well as to those yet to be constructed. Another of its advantages is, that it not only stops the machine when required, but also it takes up the slack of the suspensory rope and keeps it tight on the drum, so as to be ready to start up again without the trouble of adjusting the rope. Another advantage is its simplicity of construction and operation; all the adjusting required after it has stopped the machine is to place the stem of the weight *m* in the notch of the bracket *g*, and it is again ready for use. This it will be found necessary to do before proceeding to use the machine again, for until it is done the operator will find the weight still pulling on the shifter-rope; therefore the adjusting of it is not likely to be neglected.

I do not claim the motive power which is obtained by the movement of the platform, nor its application to the shifting apparatus for the purpose of stopping the elevator when the platform arrives at the top or bottom of its course. I am aware that this is not new; but

I claim as my invention—

1. The frame E, in combination with the friction-pulley C, or their equivalents, as and for the purpose herein set forth.

2. The combination of the weight *i* and arm D with the frame E, or equivalent, as and for the purpose herein specified.

3. The weight *m*, in combination with the bracket *g* and arm *s*, or their equivalents, in connection with the shifter, as and for the purpose herein set forth.

JOHN G. DREW.

Witnesses:

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