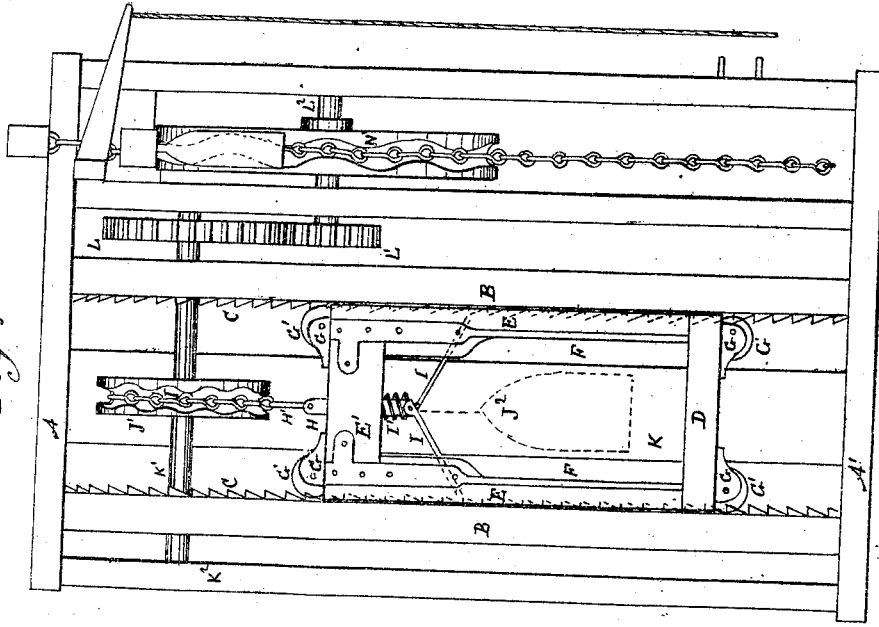


James Bates.

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Fig 1

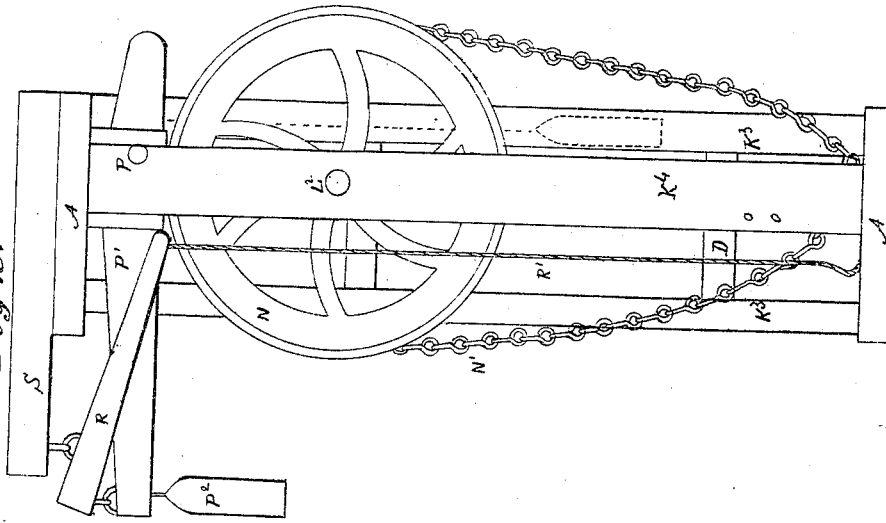


Witnesses.
Wm. H. H. H. H.
Elias H. H. H.

PATENTED APR 18 1871

Elevator.

Fig 2.



James Bates
By his Attorney J. Deming

UNITED STATES PATENT OFFICE.

JAMES BATES, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN HOISTING-MACHINES.

Specification forming part of Letters Patent No. 113,836, dated April 18, 1871.

To all whom it may concern:

Be it known that I, JAMES BATES, of Baltimore city and county, in the State of Maryland, have invented certain new and useful Improvements in Hoisting-Machines or Elevators; and I hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawing forming part of this specification.

The nature or essence of my invention consists in the particular construction and arrangement of devices forming the improvements in the elevator described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a front elevation, and Fig. 2 is an elevation of one side.

In the above-mentioned drawing, A is the top of the frame, and A' the bottom, connected by the guides or ways B B, which extend down through the several floors of the building in which the elevator is used. To each of the guides B a ratchet-toothed rack, C, is fastened for the frame of the platform D to traverse on, which frame consists of the two grooved side bars E E, which traverse on the racks C, and are connected by the top bar E', which is securely fastened or connected to the platform D by the braces F F. There is a stand, G, fastened to each corner of the platform-frame for the grooved pulleys G' to turn in, which run against the flanges of the racks or guides B. The grooves in the pulleys are so deep that the teeth of the rack do not touch the bottom of the groove. The bar E' is mortised for the bar H to traverse in, and it has the clevis H' fastened to its upper end for the rope or chain which is to raise and lower the platform. There are two pawls, I I, hinged to the lower end of the bar H, which pawls extend through mortises in the side bars E to catch into the teeth of the rack C, and the spiral spring I' acts between the bar E' and the pawls I to push down the bar H and press pawls I out into the notches in the racks C and stop the platform, the instant the suspending rope or chain J breaks so as to let the platform fall if it was not held by the pawls and racks. The chain J passes over the pulley J¹, and has the weight J² fastened to it, which weight is arranged to traverse in the case K. The pulley

J¹ is fastened to the shaft K¹, which turns in the post K² and in a bar supported by the posts K³ K³, and this shaft K¹ has the large gear L fastened to it, which is turned by the small gear L¹ on the shaft L², which turns in a bar between the posts K³ and in the post K⁴. This shaft L² has the grooved hoisting-wheel N fastened to it for the rope or chain N' to run in, which passes down through as many of the floors in the building as may be necessary. The grooves in the wheel N and pulley J¹ are serpentine so as to increase the friction on the rope or chain used in the machine. This groove is made serpentine in short curves, the swells on one side of the groove being opposite the recesses on the other, so that the rope or chain used will be bent so serpentine as it lies in the groove that it will not slip readily, but only move with the wheel or pulley when it turns or is turned. The pin P in the post K⁴ forms the fulcrum of the lever P¹, which bears constantly on the wheel N to hold it from or graduate its turning when the platform is loaded and descending. But when the platform is being raised the lever P¹ is raised from the wheel by the lever R connected to it and hung from the bar S projecting from the top of the frame. The end of the lever R is pulled down by the rope R', which may extend down through the several floors of the building. The lever P¹ has the weight P² fastened to it to hold it down onto the wheel N and prevent its turning when the platform is being loaded or unloaded. I make the weight J² so much heavier than the platform that it will overcome the friction of the several parts and draw up the empty platform when the lever P¹ is raised.

It may be perceived that by the use of the weight J² to balance the platform and draw the rope constantly into the serpentine groove J; in which it is so cramped as not to slip readily, but is held firmly enough to draw up the load on the platform when the pulley J¹ is turned for that purpose by the gearing and large wheel N; therefore, by the use of the weight J² and serpentine grooves J, I am enabled to dispense with the drum or cylinder heretofore used to wind the rope on.

Heretofore it has been the practice to pull down a lever by a rope to apply friction to the hoisting-wheel. But I have arranged mine dif-

ferently, and applied a weight to pull down the lever and apply the friction constantly, when the lever is not raised by pulling a rope, as heretofore described.

Having described my improvements, I claim—

1. The combination and arrangement of the serpentine grooved pulley J¹, the rope or chain J, and the balancing-weight J², for the purpose of traversing the platform by turning the pul-

ley, and without winding the rope on a drum or cylinder.

2. An elevator or hoisting-machine, constructed, arranged, and operating in all its parts substantially as herein set forth.

JAS. BATES.

Witnesses:

J. DENNIS, Jr.,
T. C. CONNOLLY.