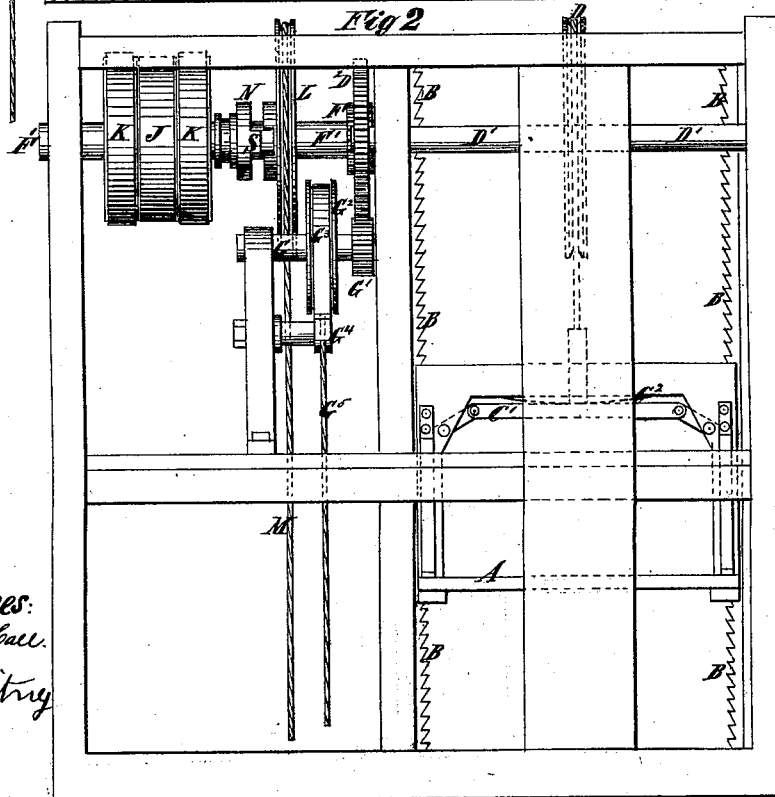
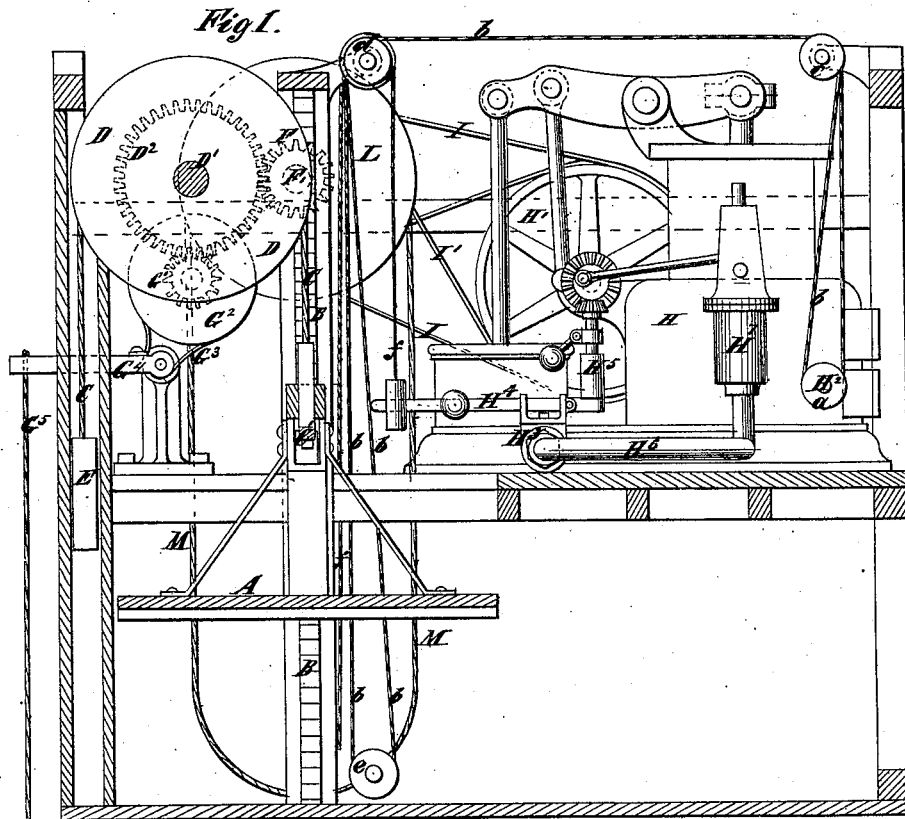


H. W. SHERRILL.  
 Combined Elevator and Operating-Engine.  
 No. 212,275. Patented Feb. 11, 1879.



*Witnesses:*  
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 J. J. Whitney

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# UNITED STATES PATENT OFFICE.

HENRY W. SHERRILL, OF JERSEY CITY, NEW JERSEY.

## IMPROVEMENT IN COMBINED ELEVATOR AND OPERATING-ENGINE.

Specification forming part of Letters Patent No. 212,275, dated February 11, 1879; application filed August 5, 1878.

*To all whom it may concern:*

Be it known that I, HENRY W. SHERRILL, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Combined Elevator and Operating-Engine, of which the following is a specification:

One improvement consists in the combination, with an elevator platform or car and a shaft for effecting the hoisting and controlling the lowering thereof, of an engine for operating said shaft, a wheel arranged loosely on said shaft for use in operating the shaft by hand, tackle applied to said wheel for actuating it, and a device whereby said wheel may be connected to and disconnected from said shaft, whereby, when the engine is used, it is relieved of the inertia and momentum of said wheel, and the elevator can be started and stopped when operated by the engine very quickly and easily.

Another improvement consists in the combination of an elevator platform or car, a caloric-engine for operating the same, provided with a damper or valve for controlling the draft of air to the furnace thereof, and means for operating the damper or valve from the elevator platform or car, whereby the generation of power for and action of the engine may be regulated from the elevator platform or car.

Another improvement consists in the combination, with an elevator platform or car and a caloric-engine for operating the same, provided with a safety-valve, whereby the pressure of air in the furnace may be regulated, of means enabling the valve to be opened from the platform or car without interfering with its operation as a safety-valve, and preferably also enabling the resistance to the opening of said valve to be changed.

Another improvement consists in details of construction to be hereinafter explained.

In the accompanying drawings, Figure 1 represents a central vertical section of a building furnished with an elevator, a caloric-engine for operating the same, and a wheel and tackle whereby the elevator may be operated by hand, all embodying my improvements, and Fig. 2 is a vertical section of such building and view of the elevator and some of its

driving mechanism, taken at right angles to Fig. 1.

Similar letters of reference designate corresponding parts in both figures.

A designates an elevator platform or car arranged to travel vertically along ratcheted guide-bars B in a hoistway of the ordinary or any other suitable construction, and operated—*i. e.*, raised and lowered—from above by means of a rope or tackle, C, shown as passing over the periphery of a drum or wheel, D, and connected to a weight, E, which holds it on said drum or wheel and serves partly as a counter-balance. Preferably the rope or tackle C is connected to levers C', arranged in the frame of the elevator-platform A, and provided with dogs or stops for engaging with the ratcheted guide-bars to arrest the elevator in case of a breakage of the said rope or tackle, a spring, C<sup>2</sup>, being employed to throw the said bars and their dogs or stops into action when released by a breakage of said rope or tackle. The shaft D<sup>1</sup>, on which the drum or wheel D is mounted, is furnished with a gear-wheel, D<sup>2</sup>, with which engages a pinion, F, mounted on a driving-shaft, F', which may be operated by either of two means, as will be presently described.

G designates a shaft, carrying a pinion, G<sup>1</sup>, which engages with the gear-wheel D<sup>2</sup>, and carries a brake-wheel, G<sup>2</sup>, around which a brake-strap, G<sup>3</sup>, connected at one end to a lever, G<sup>4</sup>, furnished with a rope or tackle, G<sup>5</sup>, may be tightened at will to brake or stop the shaft D<sup>1</sup> and arrest the elevator. The object of thus applying a brake to a separate shaft is to provide for arresting the elevator in case of a breakage of the driving-shaft or its appurtenances.

H designates a caloric-engine, which, through a belt, I, or a cross-belt, I', on its driving-wheel H<sup>1</sup>, may, on either belt being shifted onto a pulley, J, which is fast on the driving-shaft F', be made to operate the elevator either up or down, and which may, on the belts being shifted on idlers or pulleys K, which are loose on the driving-shaft, be made to release the elevator from its control.

The furnace of this engine is provided with a damper or valve, H<sup>2</sup>, whereby air may be admitted either above or below the fire, or may

be regulated in its ingress so that the power of the engine may be controlled, and this damper or valve is provided with a pulley, *a*, around which passes a cord, *b*, which passes over pulleys *c* and *d*, down the hoistway, through the elevator, and around a pulley, *e*.

By pulling either part of the cord the damper or valve may be operated from the elevator, the power of the engine regulated, and hence the lifting capacity increased or diminished at will.

$H^3$  designates a safety-valve controlled by a lever,  $H^4$ , one arm of which is acted upon by a governor,  $H^5$ , and the other arm of which is furnished with a weight tending to keep the valve closed. This weight has connected to it a cord, *f*, which passes over a suitable pulley and descends into the hoistway and through the elevator. By pulling on this cord the weight may be raised or more or less counter-balanced so that the valve may open or may be opened by the governor  $H^5$  through a reduced pressure within the furnace, the power on the engine and the operation thereof being so affected as to reduce or increase the lifting capacity of the elevator without interfering with the operation of the valve  $H^3$  in the fulfillment of its functions as a safety-valve.

$H^6$  designates a pipe establishing communication between the safety-valve  $H^3$  and the valve-box  $H^1$  of the engine. It conducts thereto and thence into the escape pipe or flue air and gases permitted to escape by the safety-valve, and obviates much of the noise ordinarily occasioned by the escape of air and gases from the safety-valve of an engine.

*L* designates a wheel supported loosely on the driving-shaft  $F'$ , and having a grooved periphery receiving a rope or tackle, *M*, passing down into a hoistway, where it can be reached by hand.

*N* designates a clutch, shown as consisting of a collar capable of sliding along said shaft, but secured by a feather or spline to turn therewith, and provided with two claws or arms, *S*, capable of engaging with recesses in the hub of the wheel *L* when the clutch is slid into proximity to said wheel, so as to lock the latter to the said driving-shaft. The elevator may be operated by hand-power through this rope *M*.

The wheel *L* may be released from the driving-shaft when the latter is to be operated by the engine by adjusting the clutch so that the elevator will not be hampered by it in starting and stopping.

It will be seen that by my invention I provide for operating an elevator by an engine without hampering the latter with a wheel which is employed to enable the elevator to be operated by hand, and that I provide for increasing or diminishing the lifting capacity and speed of an elevator operated by a caloric-engine by regulating the draft and reducing the pressure in the furnace from the elevator itself.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with an elevator platform or car and a shaft for effecting the hoisting and controlling the lowering thereof, of an engine and connections for operating said shaft, a wheel arranged loosely on said shaft for use in operating the shaft by hand, tackle applied to said wheel for actuating it, and a device whereby such wheel may be connected to and disconnected from the said shaft, substantially as and for the purpose specified.

2. The combination of an elevator platform or car, a caloric-engine for operating the same, provided with a damper for controlling the draft of air to the furnace thereof, and means for operating the damper from the elevator platform or car, whereby the generation of power for and the action of the engine may be regulated from the elevator platform or car, substantially as and for the purpose specified.

3. The combination, with an elevator platform or car and a caloric-engine for operating the same, provided with a safety-valve, whereby the pressure of air in the furnace may be regulated, of means enabling the valve to be opened from the platform or car without interfering with its operation as a safety-valve, substantially as specified.

4. The combination, with an elevator platform or car and a caloric-engine for operating the same, provided with a safety-valve, whereby the pressure of air in the furnace may be regulated, of means whereby the resistance to the opening of said valve may be changed from the elevator platform or car, substantially as specified.

5. The combination, with an elevator platform or car and a caloric-engine for operating the same, of the safety-valve  $H^3$ , lever  $H^4$ , governor  $H^5$ , and cord *f*, substantially as specified.

HENRY W. SHERRILL.

Witnesses:

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