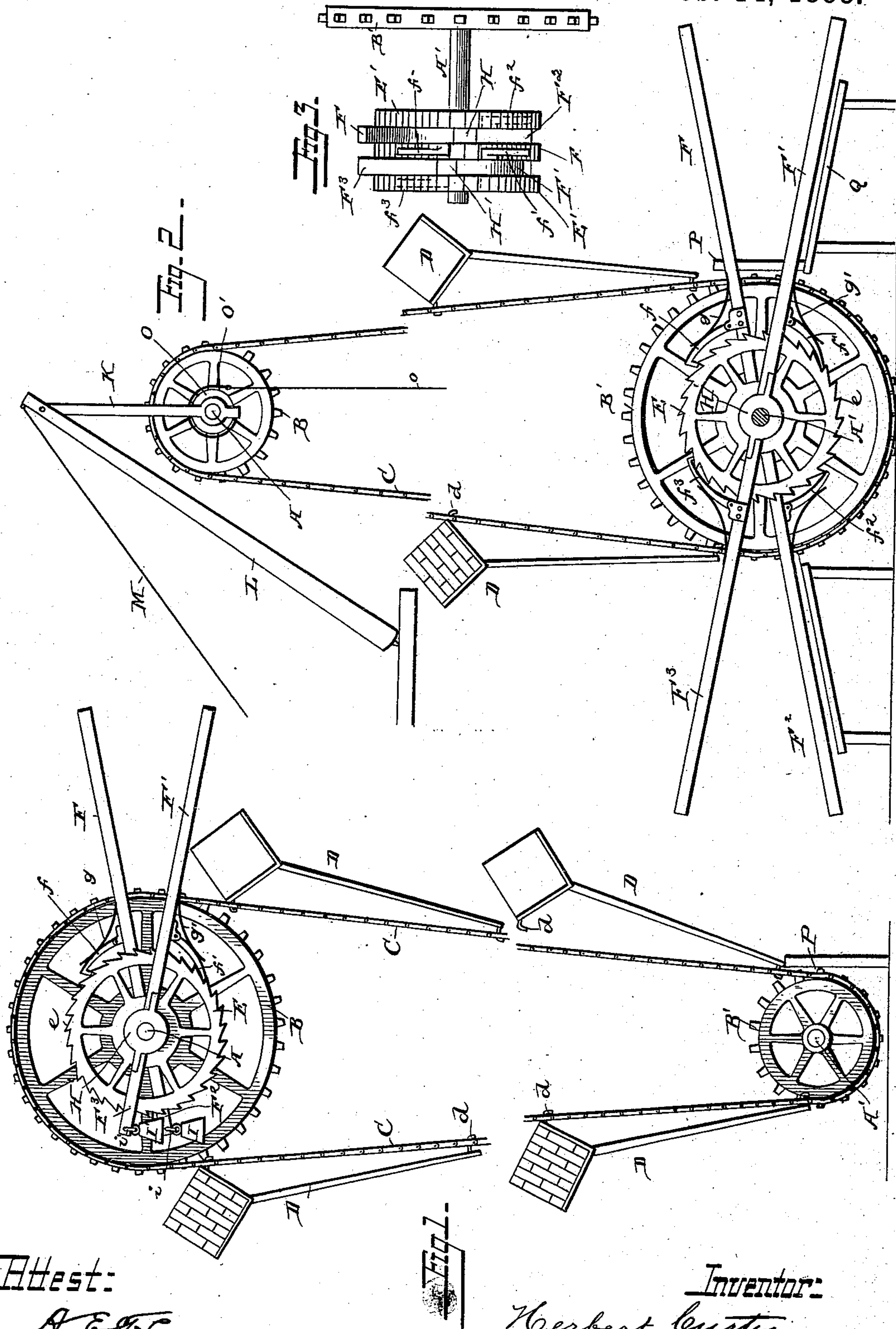


(No Model.)

H. CURTIS.
HOD ELEVATOR.

No. 377,741.

Patented Feb. 14, 1888.



Attest:

A. E. J. Farnsworth.
J. S. Parker.

Fig. 1.

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UNITED STATES PATENT OFFICE.

HERBERT CURTIS, OF NEW YORK, N. Y.

HOD-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 377,741, dated February 14, 1888.

Application filed June 29, 1887. Serial No. 242,881. (No model.)

To all whom it may concern:

Be it known that I, HERBERT CURTIS, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Hod-Elevators, of which the following is a specification.

This invention relates to improvements in driving mechanism for elevators, particularly in hod-elevators, in which the entire weight of the operator is utilized; and it consists in certain combinations and arrangements of the parts, as will be hereinafter fully pointed out.

In order that my invention may be better understood, I have in the drawings illustrated a mechanism adapted to carry it into effect.

Figure 1 is a side view of such a mechanism. Fig. 2 is a similar view of an elevator differing in some respects from that shown in Fig. 1. Fig. 3 is a front view of a double driving mechanism.

Heretofore hod and similar elevators have been driven by means of cranks, pulleys, and similar mechanism fixed to a shaft on which were mounted one or more pulleys, over which runs the chain or belt adapted to elevate the load. In all of such prior constructions of which I am aware, wherein the motor power was one or more men, the operators have stood on the ground or a platform and have driven the crank or pulley by hand; but I have found such work both tiresome and wasteful of power, to remedy which defects I provide the machine with treadles and intermediate power-transmitting mechanism, so that the operator, standing on said treadles and alternately shifting his weight from one to the other thereof, utilizes his own weight in elevating the load, besides bringing into use the most powerful muscles of the body.

The elevator consists of the upper and lower shafts, A A', suitably supported and carrying the sprocket or other driving wheels, B B', over which passes the elevating chain or belt C, which is preferably constructed of detachable drive-chain links, whereby its length may be easily varied to suit the height of the elevator.

The invention is applicable to elevators of different kinds; but I have shown it applied to one intended to raise hods, which are indicated by the letter D, they being supported on the chain in any preferred manner, as by hooks

d. The hods may be placed on and removed from the elevator while in continuous movement, in which case the driving mechanism may be situated either at the upper or lower end of the elevator; but I prefer ordinarily to locate it at the upper end thereof, especially where the force of workmen is small, as thereby the operator can see when a loaded hod reaches the top, and, if necessary, stop the apparatus, either to allow another workman to remove it or to do so himself.

The driving mechanism consists of a ratchet-wheel, E, secured to either shaft A or A', engaging with the teeth e of which are pawls f f', carried by levers F F', which latter I prefer to mount on the shaft A, the levers carrying or being provided with hubs H H' therefor. The levers at or near their outer ends are provided with any suitable treadles or supports, upon which the operator places his feet. The levers are extended beyond the hubs, as at F² F³, in order to receive the weights I I', connected thereto by hooks i i', or otherwise, which, when a construction such as shown in Fig. 1 is used, are employed to counterbalance the treadle ends of the levers, or rather to return them to an elevated position ready to receive the feet of the operator.

In the construction shown in Fig. 2, which is adapted for two operators, the extended ends F² F³ of the lever are provided with treadles similar to those at the other ends thereof. The pawls f f' extend in opposite directions from their respective levers, so as not to interfere with each other, and hence one is hooked, while the other is substantially straight, the two pawls being held in contact with the teeth of the ratchet-wheel by springs g g'.

The operator works the apparatus by standing upon the treadles and alternately shifting his weight from one to the other—much as in the act of walking—the weights I I' or the opposite operator raising the treadle end of the lever each time the foot of the operator is removed therefrom. Stops or guards Q are arranged below the levers to prevent their movement too far downward. If desired, hand-rails or other holding devices may be used in connection with the treadles, upon which the operator may pull upward, should at any time the weight to be lifted be too heavy for the weight of his body and the descending hods to raise.

When the arms $F^2 F^3$ of the levers are provided with treadles, they too are provided with pawls $f^2 f^3$, adapted to engage with a ratchet wheel or wheels, E' , secured to the shaft A or A'. The ratchet-wheels with which the pawls on the opposite ends of the lever engage have their teeth e inclined in opposite directions, said wheels being either integral, the two sets of teeth lying in different planes, or the wheels being separate, as shown in Fig. 3 of the drawings, wherein E indicates the central wheel, with which pawls $f f'$ engage, and $E' E'$ ratchet-wheels—one on each side of wheel E—with which wheels pawls $f^2 f^3$ engage.

A ratchet and locking-pawl may be used in connection with the driving mechanism to lock the apparatus at any desired point. I have also shown a brake consisting of a friction-drum, O, mounted upon the upper shaft, A, and a brake or friction strap, O', adapted to be tightened upon the drum by a rope, o , extending to any desired point. This brake may be used when the operator is too heavy for the load to be raised, to prevent the too rapid descent of the treadles; or, should a workman wish to descend to the ground, he may do so by stepping onto the descending part of the elevator and regulate the speed of his descent by means of this brake, the rope o permitting him to have control over the brake until he reaches the ground; but the principal use of this brake is when the apparatus is employed by small builders, who do not employ a gang of workmen, as by its use, together with the other necessary parts of the apparatus, the amount of labor performed by a single workman may be largely increased without a corresponding expenditure of muscular exertion. To illustrate, I will suppose that each hod of bricks weighs eighty pounds and that the laborer weighs one hundred and seventy pounds. The laborer now fills two hods and places them upon the elevator in position to be raised, preferably side by side. He then fills a third hod and carries it up to the point where the bricks are to be used. He then places the empty hod on the descending section of the elevator and steps therein, having first taken hold of the brake-cord o . The weight of the laborer, together with that of the empty hod, will now be opposed to that of the two filled hods, and will be sufficient to elevate them, a too-rapid motion being prevented by the brake. As soon as the laborer reaches the ground or to a properly-placed platform, he steps from the empty hod, when all motion immediately ceases, the parts being held by suitable ratchets. Two more hods are then filled and placed on the elevator. A third is carried up by the laborer, who then removes the two hods already elevated, and then descends with the three empty hods, elevating the two already filled, as will be understood. It will thus be seen that the laborer carries three hods upward at each trip, besides saving himself the labor of descending and carrying down the empty hods. This saving can only be ac-

complished by the use of the brake, which is at all times under control of the laborer as he descends.

The hods may be automatically disengaged from the chains by means of a trip, P, with which the lower end of the handle engages, and is thereby tripped and falls away therefrom, as indicated in Fig. 1.

I have shown a frame-work adapted to support the upper end of the apparatus and to be raised with the wall, it consisting of the inclined booms L, resting upon some firm portion of the structure and steadied by the guys M, from the upper ends of which guys project downward the standards K, in the lower ends of which shaft A is journaled. As the wall rises, the upper supporting-frame will be raised and the chain C lengthened by the insertion of a sufficient number of links.

The levers $F F'$ are easily detachable from the shaft A or A', so as to reduce space necessary to pack the apparatus when being shipped.

I do not wish to be limited to all the details of construction shown. For instance, the levers $F F'$ may be pivoted to a fulcrum other than shaft A or A'; or, in place of the ratchet-wheel and pawl, other connection between the shaft and the foot-levers may be used.

Therefore, without limiting myself to the exact construction shown, what I claim is—

1. In an elevator-operating mechanism, the combination of a shaft carrying a wheel over which the elevator-belt passes, levers adapted to be worked by the feet of the operator, a ratchet-wheel secured to said shaft, and spring-pawls carried by said levers and engaging with the teeth of the ratchet-wheel as the levers are depressed, substantially as described.

2. In an elevator-operating mechanism, the combination of a shaft carrying a wheel over which the elevator-belt passes, levers fulcrumed on said shaft and extending in opposite directions therefrom, their opposite ends being provided with foot treadles or supports, ratchet-wheels carried by said shaft, and pawls carried by the levers and engaging with said ratchet-wheel as each arm of the levers descends, substantially as described.

3. In an elevator-operating mechanism, the combination of a shaft carrying a wheel over which the elevator-belt passes, a ratchet-wheel secured to said shaft to one side of said wheel, levers adapted to be worked by the feet of the operator, fulcrumed to said shaft, one on each side of the ratchet-wheel, and a spring-pawl carried by each lever and engaging with the teeth of the ratchet-wheel as the levers are depressed, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT CURTIS.

Witnesses:

S. VAN ZANDT,
S. K. OSBORN.