

(No Model.)

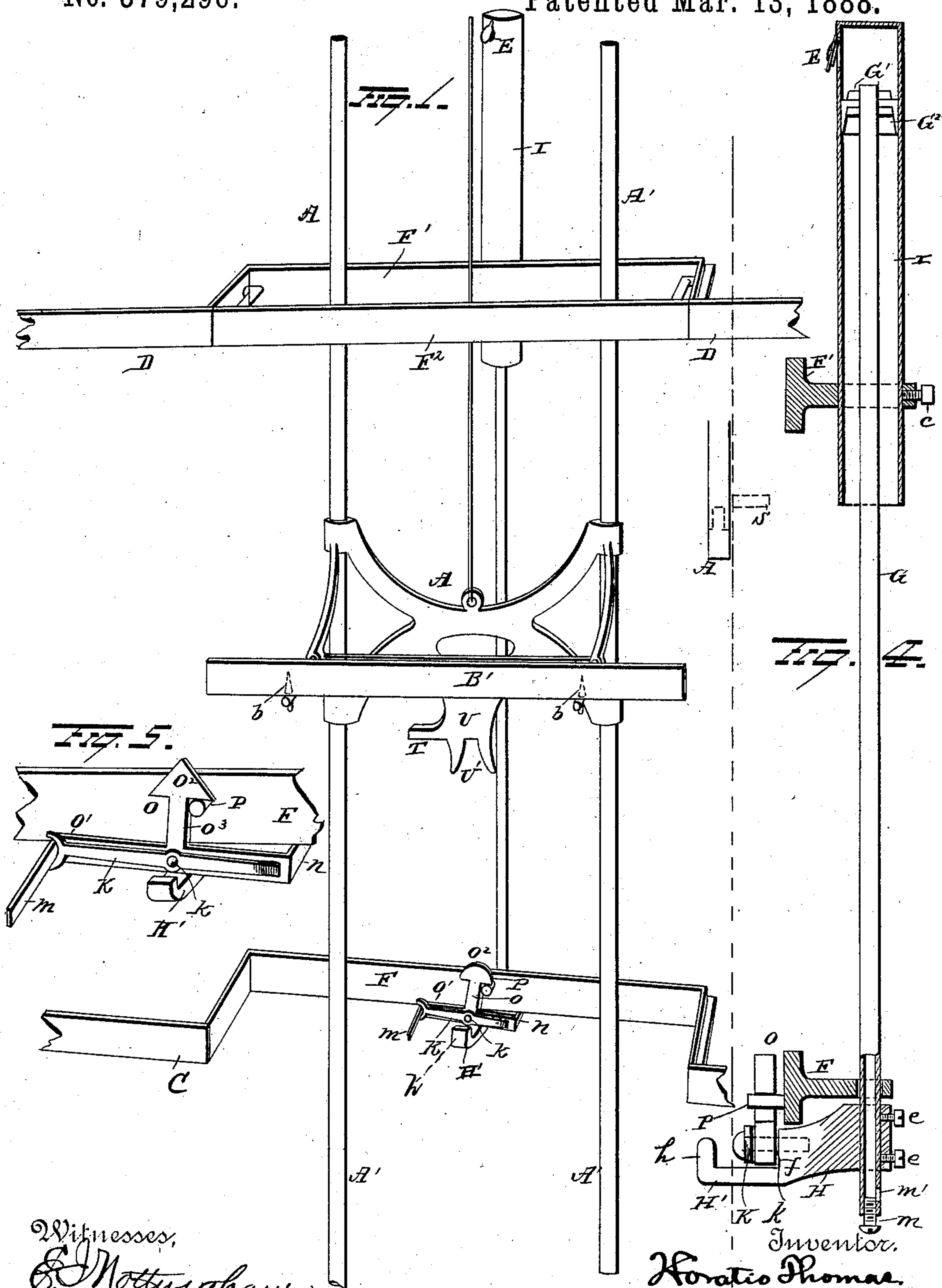
2 Sheets—Sheet 1.

H. THOMAS.

AIR CUSHION FOR CASH CARRIERS.

No. 379,296.

Patented Mar. 13, 1888.



Witnesses,
E. Nottingham
G. F. Downing

By his Attorney,
H. A. Szymann.

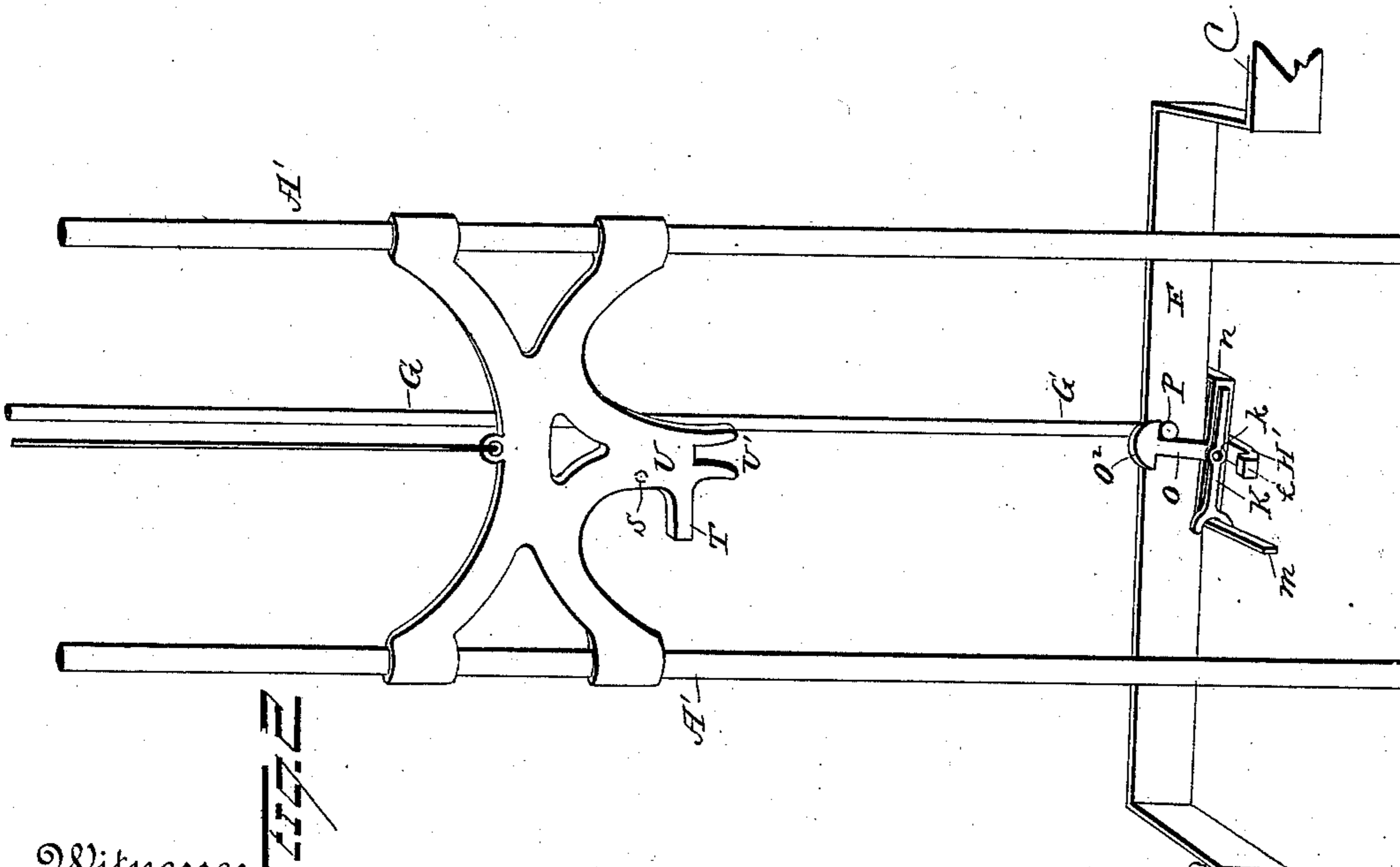
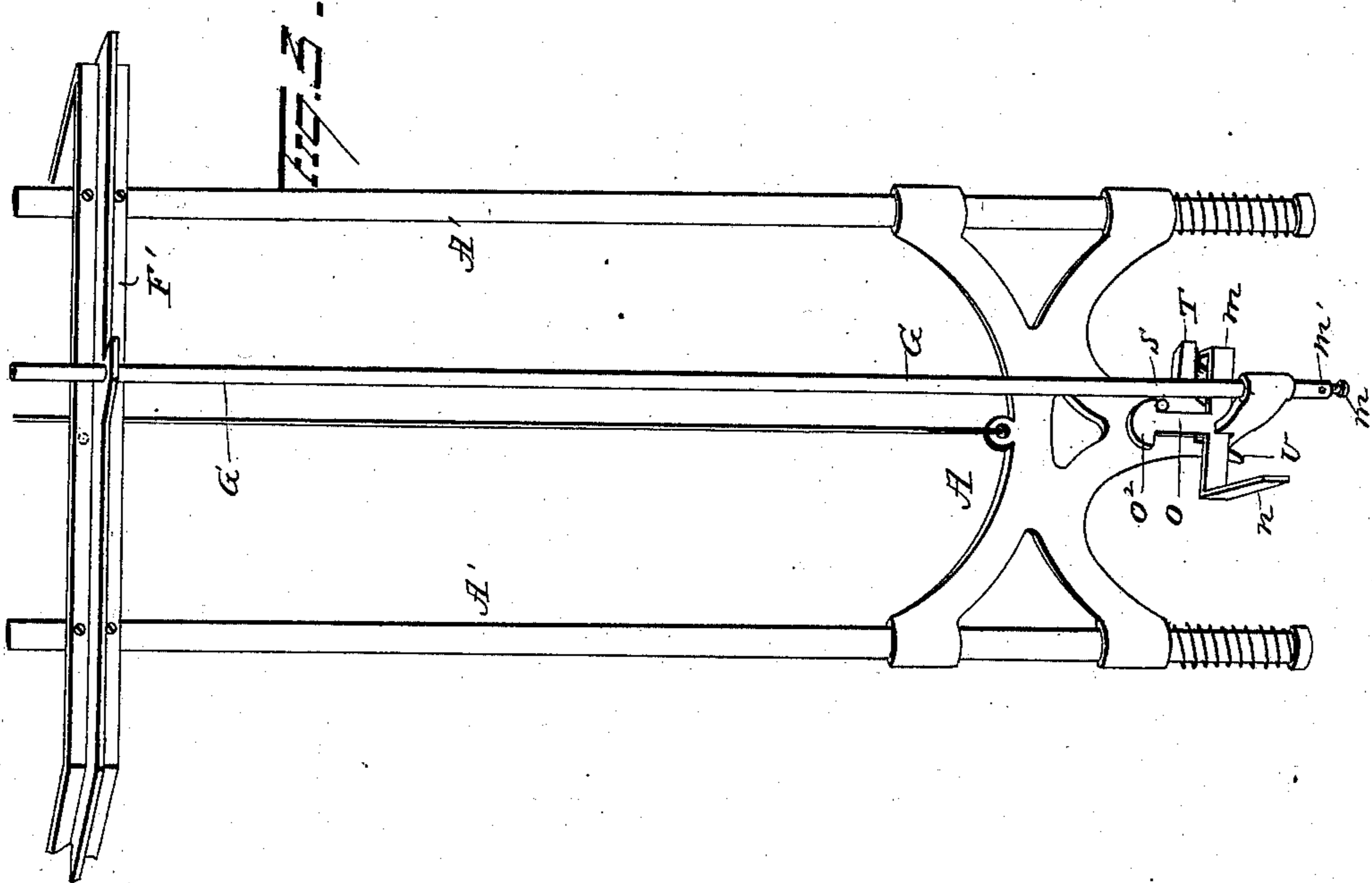
(No Model.)

2 Sheets—Sheet 2.

H. THOMAS.
AIR CUSHION FOR CASH CARRIERS.

No. 379,296.

Patented Mar. 13, 1888.



Witnesses.
G. Nottingham.
G. J. Downing.

Inventor.
Horatio Thomas

By his Attorney
H. A. Symonds.

UNITED STATES PATENT OFFICE.

HORATIO THOMAS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE BOSTEDO
PACKAGE AND CASH CARRIER COMPANY, OF ATLANTIC, IOWA.

AIR-CUSHION FOR CASH-CARRIERS.

SPECIFICATION forming part of Letters Patent No. 379,296, dated March 13, 1888.

Application filed October 4, 1887. Serial No. 251,439. (No model.)

To all whom it may concern:

Be it known that I, HORATIO THOMAS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Air-Cushions for Cash and Package Carriers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to
10 make and use the same.

My invention relates to an improvement in air cushions for the elevators of cash and package carriers, and particularly to such cushioning devices as are applied to check the momentum of a descending elevator used in connection with store-service apparatus that consists of two tracks independent in location,
15 one being placed above the other in the same vertical plane.

The object of my present invention is to furnish a simple, durable, and perfectly reliable air-cushioning device for the purpose indicated, that will automatically engage the lowered elevator of a two-track apparatus at
25 a proper point to cushion its descent and prevent jar of this elevator when it reaches the lower track from above, the cushioning operation commencing slightly above the lower track to retard and gently seat the elevator in
30 line with the lower track, it having passed quickly from the upper track to the point indicated to economize time in its transit.

A further object to be attained by this improved air-cushioning device is to furnish a
35 simple and convenient means of adjustment, whereby the speed of the falling elevator-frame may be regulated quickly and accurately to properly cushion its descent from the lower track to the counter at a station.

40 With these objects in view my invention consists in certain features of construction and combinations of parts, that will be hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a
45 front elevation of a two-track apparatus for the transport of cash and packages from clerks' stations to a cashier's stand or a bundle-table. Fig. 2 is an enlarged view showing the elevator-frame and mechanism for locking it to the

piston-rod. Fig. 3 is a similar view of the rear
50 face of the frame and locking mechanism. Fig. 4 is a view, partly in side elevation and partly in section, of the cylinder-piston and locking mechanism; and Fig. 5 is an enlarged view in
55 perspective of the locking mechanism.

While the air-cushioning device hereinafter described can be adapted for service in connection with two-track apparatus of different forms of construction, it is designed more particularly for present use in combination with
60 the store-service system that is the invention of Louis G. Bostedo and Horatio Thomas, a brief description of the essential features of which latter will be given to enable me to show the peculiar utility of the air-cushioning
65 device which is the subject of this invention, as well as the manner in which it is combined and arranged to operate in connection with the Bostedo and Thomas store-service apparatus.
70

Two tracks, C D, are arranged one above the other in the same vertical plane, to reach from a cashier's stand or bundle-table to a series of clerks' stations on the lines of track mentioned. The upper track, D, is preferably
75 made a dispatching-railway to run cars by gravity to the main station of the cashier. The lower track, C, is the receiving or return track upon which the bundled goods or cash change is sent from the main station to clerks' stations on the track-line. At proper points
80 along the track-lines elevators are stationed for use of clerks to transmit and receive goods and money. Each elevator is arranged as shown in Fig. 1, and consists of two upright
85 supporting-rods, A', that are affixed to rectangular frames F F', which form well-holes at clerks' stations, through which the elevator A may be moved up and down on the rods A' as guides.
90

The elevator-frame A is provided with a fixed track-section bar, (not shown,) which is made to line with the tracks C and D when the elevator is drawn up or lowered.

A simple mechanism (not necessary to show
95 in this exhibit) provides for the automatic locking and release of the elevator-frame A, in connection with the lower track, C, when it is low-

ered from the upper track to receive a car that approaches it from the bundle-table or cashier's desk.

The normal position of the car belonging to each clerk's station is near the counter, resting on springs that are coiled around the lower ends of the rods A', as shown in Fig. 3.

The gap in the well-holes F' F, that are made to receive the track-section of the elevator-frame A, is filled in the upper track, D, by a swinging track-bar, which is raised by the elevator when it reaches the upper track, and resumes its proper position to render the upper track continuous when the car is dispatched and the elevator immediately lowered. The provision of the swinging track-piece is necessary to allow other cars from stations more remote from the cashier's stand to pass over the well-hole on their way to that point.

A loose bar, B', is provided for the lower track, C, which is designed to subserve the same purpose as the swinging upper bar, F'. The bar B' is perforated edgewise to receive the pins b, which project from the upper surface of two outrigger-brackets of the elevator-frame, which latter are thus made to lift the loose bar B' and support it temporarily when the elevator-frame A passes through the lower well-hole frame, F, on its way to the upper track, D.

The locking mechanism before alluded to, that arrests a car at its appropriate station and holds it on the track-section bar of said elevator, is supplemented in its action by another device arranged on the rear face of the track-section bar, that will be unlocked by the impetus of a car that runs onto its own elevator track-section bar, so that this car will, when it reaches its own station, be instantly and automatically lowered to the foot ends of the guide-bars A' and rest there convenient to the hand of the clerk or other operator at a station.

The automatic air-cushion I have devised, and which will now be described, is intended to check the fall of a car from an upper track just before it seats itself on the abutments which hold it to line with the lower track, C, so as to avoid any jar that would otherwise result from such a contact of parts. A further office of the air-cushion will be explained in its proper connection when the operation of the same is given.

I represents the cylinder of the air-cushioning device, made preferably of seamless brass tubing, and of such a length as will allow a suitable travel of its piston to perform the work of arresting an elevator's descent properly, as will be explained.

The cylinder I is secured in place in contact with the upper well-hole frame, F', (see Fig. 4,) by its insertion through a hole made through the rearwardly-projecting rib of this frame, (see Fig. 4,) and afterward clamping it in place by a set-screw, c.

The cylinder I is provided with a piston-

rod, G, having a head, G', secured to its top end. This head is preferably provided with a leather cup - packing, G², secured between the metal flanges of the head to allow the piston to be moved freely upward, and by the spreading of the flexible sides of the leather cup and said head will be held air-tight against the inside surface of the cylinder I when the piston is depressed.

The upper end of the cylinder I is closed, and the lower end may be left uncovered, as shown, or it may be closed with a head and have a stuffing box provided for the air-tight passage of the rod G.

Near the upper end of the cylinder I a flap-valve, E, is attached, to hang downwardly and be normally closed by gravity or a weak spring, so that the upward movement of the piston rod and head will forcibly expel the air in advance of the piston-head through this valve-port. The piston-rod G is made of a piece of metal tubing, and thus will afford a passage for air into the portion of the cylinder I above the piston-head G'. The passage of air into the cylinder, as just stated, is controlled by a regulating set-screw, m, which is inserted in the base of the hollow rod G and graduates the size of an orifice, m', made through the side wall of the tubular piston-rod, to increase or diminish its area from full size to a complete closure of the same.

The lower well-hole frame, F, is perforated at a central point in its rearwardly-projected rib, to afford a means of support for the piston-rod G, which loosely slides therein, and is held by the means indicated to move in proper alignment with the cylinder I.

One of the important and necessary features of this invention is to elevate the piston G and hold it in this position secure while the car is being moved upwardly above the lower track, and then automatically disconnect the lock of the air-cushion piston to allow its head to cushion the descent of the automatically-released elevator, which latter is simultaneously freed to descend to the counter by mechanism that has been before alluded to in this specification.

The piston locking and releasing device will now be described.

In Fig. 4, H represents an arm that is affixed by set-screws e to the lower end of the piston-rod G, and extending toward the front. When the piston is fully elevated, as shown in the figure named, the arm projects beneath the rear frame-piece, F, of the rectangular frame, that affords passage-way for the elevator at a station, this piece being in connection with the lower track, C. The arm H is cut away at f to produce a shoulder at this point, the face of which is parallel to the body of the piston-rod and also to the inner face of the frame F, it projecting slightly in advance of the latter-named piece. An integral portion of the arm H is projected forwardly from the base of the shoulder f to produce a horizontal limb, H', on

which the lower portion of the elevator-frame A will rest when it is locked with the piston-rod, as will be hereinafter explained, and the outer end of the limb H' is bent upwardly to form a retaining-hook, *h*. Upon the shoulder *f* of the arm H a tilting hook, O, is pivoted, at *k*, to vibrate horizontally, this vibration or rocking movement being limited by the abutment of the lower edge of the horizontally-extended arm O' of the hook O. The ends of each of the arms O' are bent at a right angle at points equally distant from the pivot *k*, to produce fingers *m* and *n*, which project in opposite directions from each other, but in parallel planes, the finger *m* reaching forwardly and the other finger, *n*, extending toward the rear of the frame-piece F beneath the same. The hooked top portion, O², of the tilting hook O is preferably made triangular or with sloped sides that extend from an apex, to afford a latch-hook on each side of the bar O³, these hooks being adapted to engage projecting pins, in a manner and for a purpose that will be shown.

Upon the outer face of the tilting hook O a plate elliptic spring, K, is mounted on the set-screw *k*, that affords a pivotal bearing for the tilting hook O. The spring K has its bent ends in contact with the horizontal arms O' of the hook O, to exert its elastic force upon the tilting hook and hold it in place when it is tipped in either direction, while it permits such a tipping movement.

The spring K has one of its ends crotched to embrace the finger-piece *m* of the arm O' in a manner to hold the spring in alignment with the arms and cause it to remain always in bearing contact with the arms O' when the tilting hook is rocked on its fulcrum-bolt *k*.

A pin, P, is firmly affixed in the front face of the bar F of the rectangular well-hole frame of the lower track at a proper point to engage one of the hooks or shoulders of the double-shouldered tilting hook O, as shown in Figs. 2, 4, and 5, and a similar projecting pin, S, is affixed to extend from the rear surface of the elevator-frame A to engage the opposite shoulder or hook on the tilting double hook O, this latter-named engagement of the hook and pin S on the elevator-frame A' being shown in Fig. 3.

The pin S is designed to engage the tilting hook on arm H when the elevator is resting at the base of the rods A', which support it, and afford a means of lifting the piston-rod until the arm H is immediately below the lower track, C, when the hook will be tilted and the opposite shoulder of the same be made to engage the pin P to hold the piston-rod G, with its attached head G', near the top of the cylindrical barrel I, to be utilized to cushion the descent of the lowered elevator.

The lower portion of the elevator-frame A is downwardly extended to form a depending arm, U, that is located about midway between the vertical guide-rods A', and the free lower

end of extremity U' of this arm U is bifurcated, the limbs being curved in opposite directions in the same vertical plane to afford a means of ready engagement of the arm U with the horizontal limb H' of the arm H, on which it rests when the piston-rod is connected to the elevator.

On the arm U of the elevator-frame A a lateral limb, T, is formed to project horizontally. This limb T is intended to engage with the finger *m*, (see Figs. 2 and 3,) and by a vibration of the tilting hook O release its hooked attachment with the pin P, the vibration being sufficient to lock the opposite shoulder of this double tilting hook upon the pin S, and thus connect the elevator-frame with the piston of the air-cushion.

It is evident that when a car and its attached package-receptacle are elevated to the upper track, to dispatch the same toward the cashier's stand or a bundle-table, this may be readily effected, as the elevator will unseat from the arm H of the air-cushion device when the elevator-frame passes the lower track. When the elevator itself is lowered to line with the lower track, if the depending arm U of the elevator-frame A is extended sufficiently to allow its forked end U' to seat upon the bracket-arm H', that projects beyond the frame to receive it, while the track of the elevator-frame is a few inches above the upper edge of the track-line of the lower track, C, and the limb T so located relatively as to cause it to have contact with the tripping finger *m* of the tilting double-shouldered latch-hook O, to effect a release of the pin P and an engagement of the pin S just before this seating of the elevator on the bracket-arm is accomplished, the air-cushion will be brought into action, so as to prevent a jarring contact of the track-section bar B with the supporting-pins on which it rests to line it with the lower track, the cushion of air thus afforded graduating the descent of the elevator and its car till it gently seats itself on these pins.

When a returned car runs onto the elevator as it rests in line with the lower track, C, the automatic release of the same will be caused by peculiar devices that are the subject of other patents and do not need an elaborate description at this time. The fall of the released elevator and the car that is locked in position upon it will be graduated by the attached air-cushioning device just described, as it will be remembered that the piston-rod of this apparatus has been connected to it at the same time the change of the hook O was made to cushion the descent of the empty elevator and line it with the lower track.

Where the weights to be supported are more than ordinary, which may occur, it is contemplated to give additional support to the elevator and its load by closing the lower end of the tubular cylinder I, to provide a column of air below the piston-head, the escape of which may be regulated by a jet-cock or other proper

valve, and in this way the partial vacuum produced in the upper portion of the cylindrical chamber I will be re-enforced by the compressed-air column, and both means may be
 5 used together to give a slow downward motion to the elevator and its loaded car. The latter-mentioned method of construction is more expensive than the first plan, and for general uses the vacuum in the upper part of
 10 the cylinder I may be depended upon to give perfect results.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

15 1. The combination, with an elevator-frame, a cylinder, and a piston-rod, of a latching-hook connected to the lower end of the piston-rod and adapted to engage the elevator-frame, and provided with a projection adapted to be
 20 engaged by the elevator-frame for tilting the hook in one direction and with a projection adapted to engage a stationary stop for tilting the hook in the opposite direction, substantially as set forth.

25 2. The combination, with a well-hole frame, an elevator-frame, a cylinder, a piston and piston-rod, a stop on the elevator-frame, and a stop on the well-hole frame, of a latching device attached to the piston-rod and adapted
 30 to engage the stop on the elevator-frame as the latter descends and engages the stop on the well-hole frame when the latching device

and piston-rod are in their elevated positions, substantially as set forth.

3. The combination, with two tracks and an
 35 elevator-frame having a projection thereon, of a cylinder, a piston and piston-rod, and a tilting latching device attached to the piston-rod and adapted to be tilted by the frame and engage the projection thereon, whereby the piston is elevated by the upward movement of
 40 the elevator-frame, substantially as set forth.

4. The combination, with an elevator-frame, of a piston, a piston-rod, and a latching-hook attached directly to the lower end of the piston-rod and adapted to be engaged by the elevator-frame as the latter descends, substantially as set forth.

5. The combination, with an elevator-frame, of a cylinder, a piston and piston-rod, a projection attached to the latter for engaging the
 50 frame as the latter descends, and a tilting latch attached to said projection for engaging the elevator-frame, whereby the piston-rod is elevated by the upward movement of the elevator-frame, substantially as set forth.

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

HORATIO THOMAS.

Witnesses:

BENJAMIN F. STRAUS,
 LEONIDAS THOMAS.