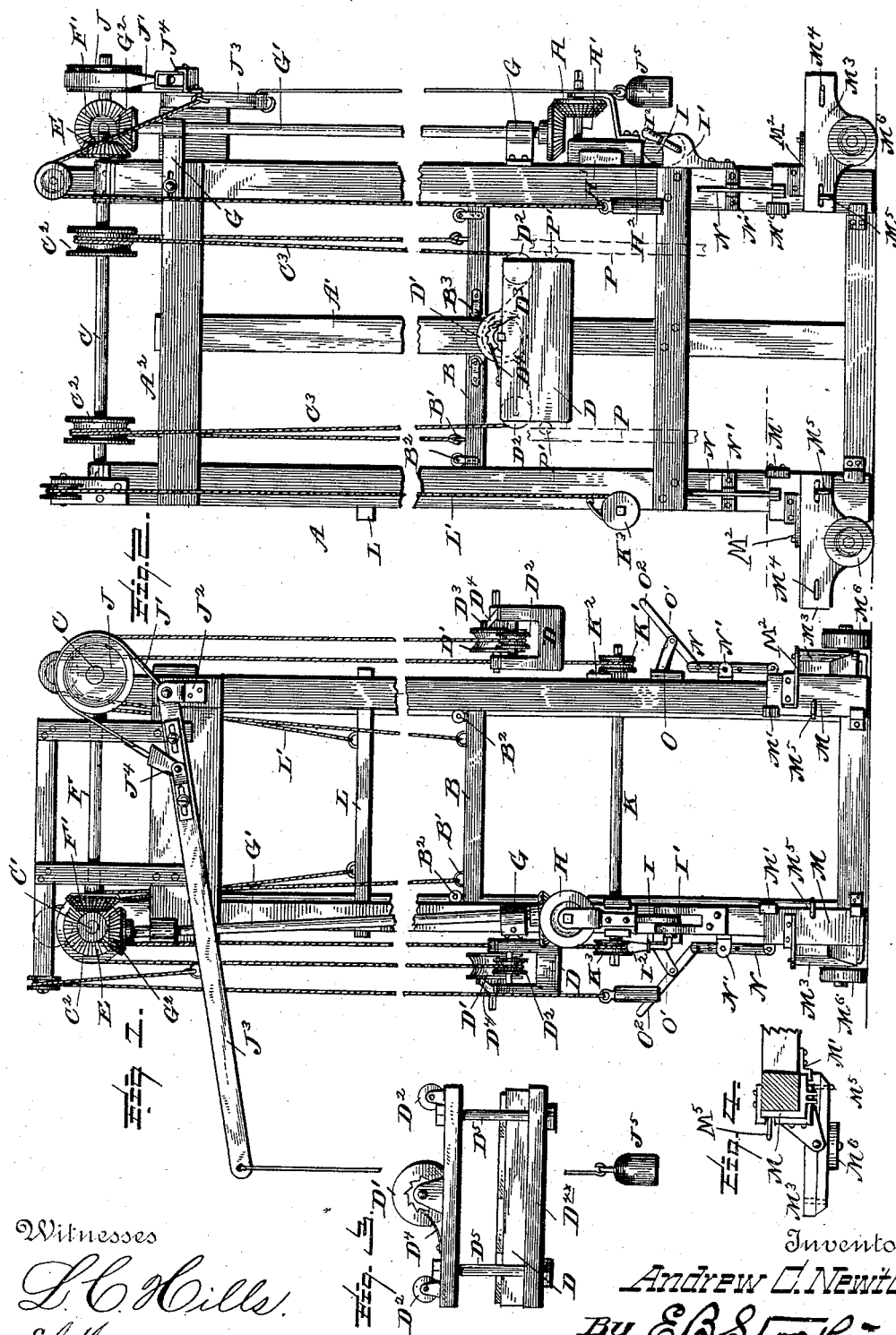


(No Model.)

A. C. NEWTON.
ELEVATOR.

No. 418,051.

Patented Dec. 24, 1889.



Witnesses

L. C. Mills.
E. Hurdman.

Inventor

Andrew C. Newton.

By E. B. Stocking
Attorney.

UNITED STATES PATENT OFFICE.

ANDREW C. NEWTON, OF CRESCENT, NEW YORK.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 418,051, dated December 24, 1889.

Application filed April 23, 1889. Serial No. 308,288. (No model.)

To all whom it may concern:

Be it known that I, ANDREW C. NEWTON, a citizen of the United States, residing at Crescent, in the county of Saratoga, State of New York, have invented certain new and useful Improvements in Elevators, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is the provision of a cheap and easily-constructed brick hoist or elevator which shall be easily movable and which shall be capable of adjustment to various conditions as to the height of the hoist and the weight to be lifted.

To this end I have constructed a hoist as described in the following specification, and with such novel features as are particularly set forth in the claims at the end of the same.

In the drawings, Figure 1 is an end elevation of my hoist as it appears when looking toward the brick pile or building. Fig. 2 is a side elevation of the same from the side on which the controlling-rope hangs in Fig. 1. Fig. 3 is a side elevation of one of my counterweight-boxes, as preferably constructed for the purpose of holding bricks or stones for counterbalancing the varying weights on the elevator-car. Fig. 4 is a top plan showing the caster-wheel and its attachment to the frame.

The frame of my elevator is preferably constructed of four upright posts at the four corners of the same when there is but a single lift or car employed, together with cross-pieces at the top and bottom and middle uprights A'. The corner-posts are shown at A, and the cross-posts at the top of the frame at A². Between the four posts there runs the car or platform B. Four ropes are used to hoist this platform, which are attached to the platform at the corners at B'. Here staples are shown for attachment; but it is evident that any other mode of fastening will be equally efficacious for this purpose.

At the corners, and running against the posts A, are rollers B², which are employed for the purpose of decreasing the friction at this point. Against the middle posts are rollers B³ for the same purpose, which may be arranged in any convenient manner.

At each side of the lift there is a shaft C

and C'. Each of these shafts carries a pair of pulleys C², these being rigid with the shafts upon which they are mounted, for the purpose hereinafter disclosed. Cords C³ pass over these pulleys, passing entirely around the same, once or more, and at the lower ends of these cords there are counterbalance-boxes D arranged upon the same in the following manner: At the middle of the top of the box there is a main drum D', to the shaft of which there is attached a cog-pinion D³, against which there bears a pawl D⁴, attached to the side of the box. At each end of the box there is a pulley D², over which the cords C³ pass on their way to the drum, as shown. One of these cords passes over the top of the drum and the other passes under the same, in order that upon turning the drum there may be cord taken up or let out toward both of the pulleys. This arrangement, as shown, is so adjusted that upon turning the drum in the direction permitted by the pawl on the box at D⁴ the cords are both taken up in order to shorten the distance at which the cord hangs. This adjustment is very necessary when it is desired to remove bricks from piles of various heights or to raise them so. The turning of the drum is best accomplished by the action of a winch-handle applied to the end of the shaft of the same, which should be polygonal.

In order to obviate the swinging and bumping of the counterweight-box, I prefer to employ guides of the kind illustrated at P in Fig. 2, which, although shown only in part in that figure, are designed to extend throughout the whole length of the path of said box. Small friction-pulleys attached to the counterweight-box bear against said guides and prevent rubbing of the same against each other.

At the end of each of the shafts C there is a bevel-gear E, and between these gears there extends a cross-shaft F, at each end of which there is also a bevel-wheel F'. Upon the revolution of the cross-shaft there is an opposite revolution of the shafts C and C', so that the lift is raised upon each side at the same time.

Turning in brackets G at the sides of the frame there is a vertical shaft G', which

serves to transmit the force of the motor to one of the ends of the cross-shaft, having a bevel-wheel G^2 , which gears with that on one end of the said shaft. At the lower end of the vertical shaft there is another bevel-wheel, which gears with a bevel-gear H turning in the vertical plane at the end of the vertical shaft, as shown. This last bevel-wheel turns upon a horizontal shaft H' , at the end of which there is a polygonal end for the application of a winch-handle, whereby manpower may be applied thereto. I do not confine myself to an elevator of this kind driven by man-power, nor, indeed, by any special power, as this is a matter independent of my invention, and therefore there may as well be a pulley at the end of the shaft H' as a polygonal end.

The shaft G' is loose in the brackets, and is free not only to turn therein, but also to slide in the same. Just below the end of the shaft G' there is a guide, preferably of the dovetail type, as shown at H^3 , in which there slides a support H^2 , to which is attached the bracket which supports the outer end of the shaft H' , and into which said shaft enters for its inward bearing, as shown. The support is free to slide in the guide, and the top of said support comes directly under the end of the shaft G' , which abuts against the same for its support. Directly underneath the end of the support there is an eccentric-cam I journaled in the brackets I' . To this cam there is attached a handle I^2 , by means of which the same is turned, and by the action of the periphery of the cam the support H^2 is raised, lifting the shaft G' . This lifting brings the top gear-wheel on this shaft into gear with the corresponding wheel on the end of the shaft F or the shaft C' , and through the cross-shaft the power may be transmitted to both lifting-shafts. This device is for the purpose of dropping the lift independently of the vertical shaft, as will be described.

The form of the balance-box is not preferably that shown in Figs. 1 and 2, but that shown in Fig. 3. In this figure the box consists of a top and a bottom plank D^3 and D^4 , the pulleys being attached to the top plank, as shown. These planks are connected by means of bolts, preferably four in number, and on the lower plank there is laid the first layer of bricks. The strips D^5 can be introduced at the side of the box for the purpose of keeping the bricks in place, as shown, and these strips would only be laid high enough to hold in the bricks necessary at any given time. This number of bricks would be variable, according to the weight which it was desired to raise at a time or to lower. At the end of the lifting-shaft C , preferably, there is fixed a pulley J , which is adapted to carry a strap or cord made of sheet metal, or hemp, or other material J' . Below the pulley J , and attached to the side of the frame, there is a bracket J^2 , to which is pivoted the lever J^3 , near the fulcrum of which is attached the strap or cord

J' , as at J^4 , and to the end of which is attached the weight J^5 , either by a cord, rope, or chain. This last weight is for the purpose of keeping the strap taut over the pulley. This last device is a strap-brake, whereby the descent of the lift by gravity may be controlled or entirely stopped, and, indeed, this is the action of my elevator.

The lift having been brought up to the required height for the deposit of the bricks or stones by means of the shafts G' and F , the brake is pulled taut and the lift held in its raised position until the bricks or stones can be run onto the same. The pressure on the cord supporting the end weight is then lessened, and gravity is allowed to act in carrying the lift to the ground. By this means there will be no necessity of reversing devices on the engine used in running the device, if such is used. At the bottom and at one end of the frame there is a shaft K , at each end of which there is a pulley K^3 attached, and at one or both ends of which there is a cog K' , borne upon by a pawl K^2 , for the purpose of preventing the revolution of the same in one direction. A sill L is supported by the cords L' , which run over the pulleys K' , and the ends of which are fastened to said pulleys, so that on the revolution of the same the sill will be raised or lowered. The ends of the shaft K , or one of the ends thereof, is squared for the application of a crank to the same; or any other well-known means may be employed for the purpose of facilitating the application of power. This sill is used to bridge over the space between the lift and the brick pile for the purpose of allowing a wheelbarrow or other vehicle to be run onto the latter; or the sill is used for the support of a plank, the other end of which rests upon a building in process of construction for the same purpose.

The advantage and necessity of making the sill movable in a vertical direction are that it enables me to use my device with buildings or brick piles of any height within the altitude of the elevator.

In order to facilitate the removal of the elevator, I provide a novel caster, as shown, for the purpose of enabling the rolling of the elevator in any direction at will without the pivots employed in small casters. A caster-body M is held to embrace the end of each leg of the whole device, as seen in Figs. 1 and 2, and kept so by the guides M' or their equivalents, in order that said body may slide freely upon the end of said legs. Pivoted to a bracket M^2 , attached to the side of this body, I have a bearing M^3 , slotted, as shown at M^4 , for the passage of a revoluble pin or hook M^5 , inserted in the frame of the device. There is such a slot at each end of the bearing and such a hook in each face of each leg. At the bottom of the bearing there is a wheel M^6 , upon which the whole frame runs, as will be seen. Swinging upon the upper side of the body of the caster there is a rod or rigid strap N , which

is perforated and which is adapted to pass between the two sides of a bracket N' attached to the side of the frame of the elevator. The strap and the bracket may be held together at 5 will by a pin, as shown, passing through the perforations in the strap and through corresponding perforations in the bracket. By means of this device the frame is lifted up until the wheels M⁶ come into the proper position for holding the weight of the device, 10 while the body is held in this position and the elevator thus held up on the caster by the action of the strap, as shown.

When it is desired to raise the elevator 15 upon its casters, I prefer to employ a toggle arrangement of the description illustrated in Fig. 1. Here O is a bracket properly fastened to the side of the frame of the elevator. O' is a link attached thereto, and O² is a lever pivoted to the end of the strap N and between its 20 ends to the link O'. By pushing the upper end of the lever O² toward the frame the strap is depressed, and with it the caster, in order to raise the elevator on this last.

When it is desired to run the elevator endwise, the bearing is held in the position shown in Fig. 2 by means of the hook passing through the slot. When it is desired to run in the other direction, the hook is turned until 30 it is in position to pass through the slot, and the caster is swung around into the opposite position, so that the length of the same would be shown in Fig. 1. Here it is held fixed by the action of another hook corresponding to that shown in Fig. 2. 35

I do not wish to be understood as limiting myself to the exact construction shown and described, as there are various details which may be varied by the exercise of mechanical skill. 40

What I claim is—

1. In an elevator, a counterweight-box having a drum upon which is mounted a ratchet-wheel, and a pawl engaging with said ratchet, 45 in combination with two side pulleys and a counterweight-cord running over said pulleys and wound in opposite directions upon said drum, substantially as specified.

2. In an elevator, a frame and a car or cage 50 sliding within the same, in combination with lifting-shafts, bearing-pulleys, cords running over said pulleys and attached to the corners of said lift or car, and a counterweight-box at either side of said lift attached to the ends 55 of said cords, substantially as described.

3. In an elevator, a frame, a cage or car sliding within said frame, and lifting-shafts at the top of said frame and bearing fixed pulleys, in combination with cords attached 60 to said car or cage running over said pulleys, upon which they are wound, and a counterweight-box running on the end of each pair of cords and having a drum upon which said cords are wound in opposite directions.

4. In an elevator, a frame and a car or cage 65 sliding within the same, in combination with a lifting-shaft at each side of the frame, bearing

fixed pulleys thereon, cords attached to said car or cage and wound around said pulleys, and counter-weights attached to the ends 70 of said cords, substantially as described.

5. In an elevator, a vertical shaft for actuating the car or cage thereof and brackets in which said shaft slides, in combination with a slidable supporting-block carrying a 75 motor-gear under the end of said vertical shaft, and an eccentric-cam under said block, whereby the same is raised, substantially as specified.

6. In an elevator, the lifting-shafts bearing 80 fixed pulleys and having bevel-wheels at one end, and a cross-shaft having bevel-wheels at the ends thereof engaging with said bevels on the lifting-shafts, in combination with a brake-pulley upon the end of one of said lifting-shafts, a pulling-lever pivoted near said 85 pulley, and a strap wound over said pulley and attached to said lever, substantially as described.

7. In an elevator, lifting-shafts, a brake-pulley attached to the end of one of said shafts, and a lever pivoted below said pulley, in combination with a slotted bracket attached to the side of said lever, pins passing through said slots for the purpose of adjustable attachment of the bracket to the lever, 95 and a strap attached to the elevator-frame and passing over the brake-pulley for attachment to the lever at the slotted bracket, substantially as specified. 100

8. In a portable elevator, a frame having legs, a bracket attached near the bottom of each leg, and a slotted bearing-block pivoted to said bracket, in combination with a hook turning in said leg in each face of the same 105 on two sides thereof, said pins being adapted to pass through said slots, and a wheel journaled in said bearing, substantially as specified.

9. In an elevator, a frame having legs, a sliding end to said legs having a bracket and a link attached thereto, and a bracket attached to said legs for attachment to said link at will, in combination with bearing-blocks pivoted to said brackets, said bearing-blocks having slots at either end, pins in two 115 of the faces of said sliding end and turning therein, being adapted to pass through said slots, and a wheel journaled to said bearing, substantially as specified. 120

10. An elevator-frame having legs, casters adapted to slide on the ends of said legs, and a strap pivoted to said casters at each corner of the frame, in combination with a fastening for said strap, a lever pivoted to the end 125 of said strap, and a link pivoted to said lever and to said frame, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW C. NEWTON.

Witnesses:

J. W. ATKINSON,
ELI M. POWELL.