

R. D. HUTCHINSON.
ELEVATOR FOR GRAVITY CARRIER SYSTEMS.
APPLICATION FILED AUG. 2, 1906. RENEWED FEB. 24, 1911.

1,004,266.

Patented Sept. 26, 1911.

3 SHEETS—SHEET 1.

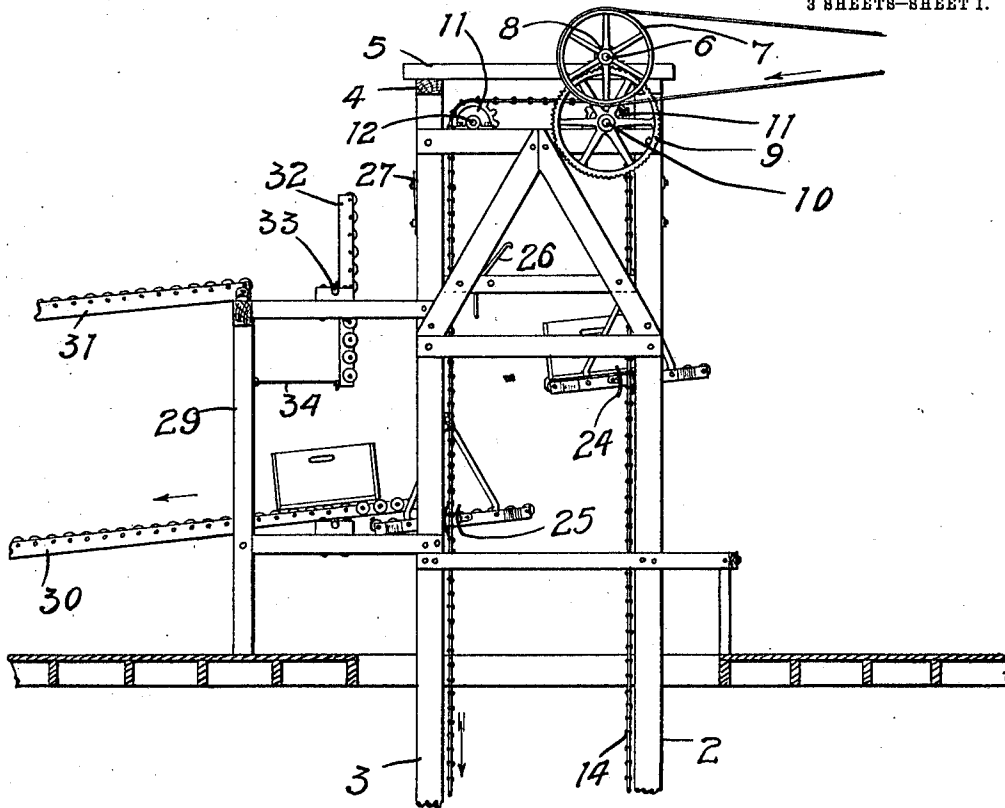
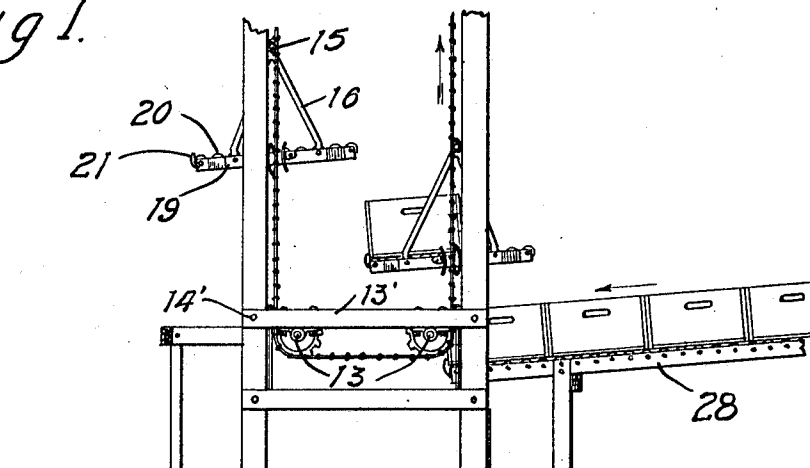


Fig. 1.



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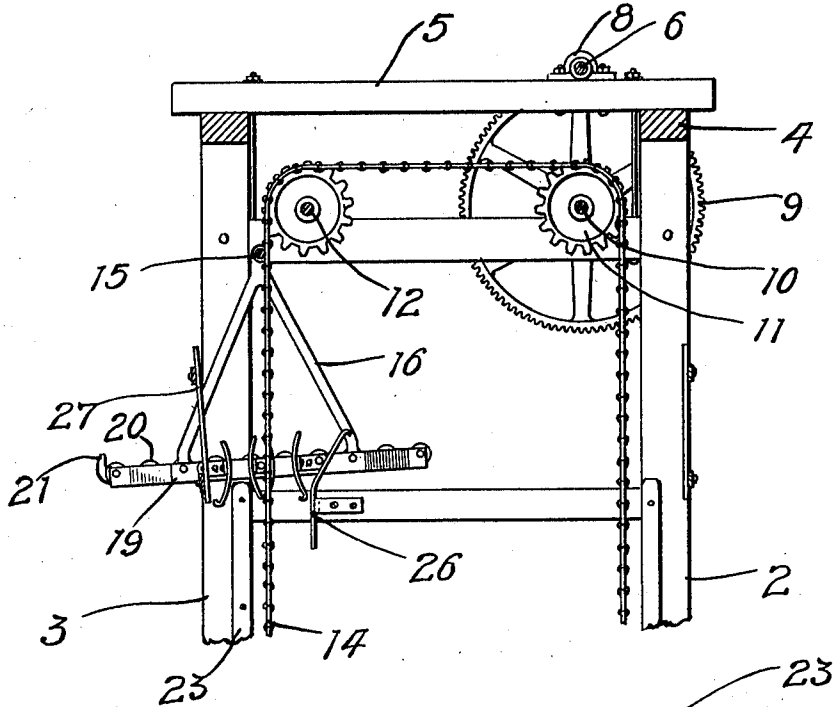
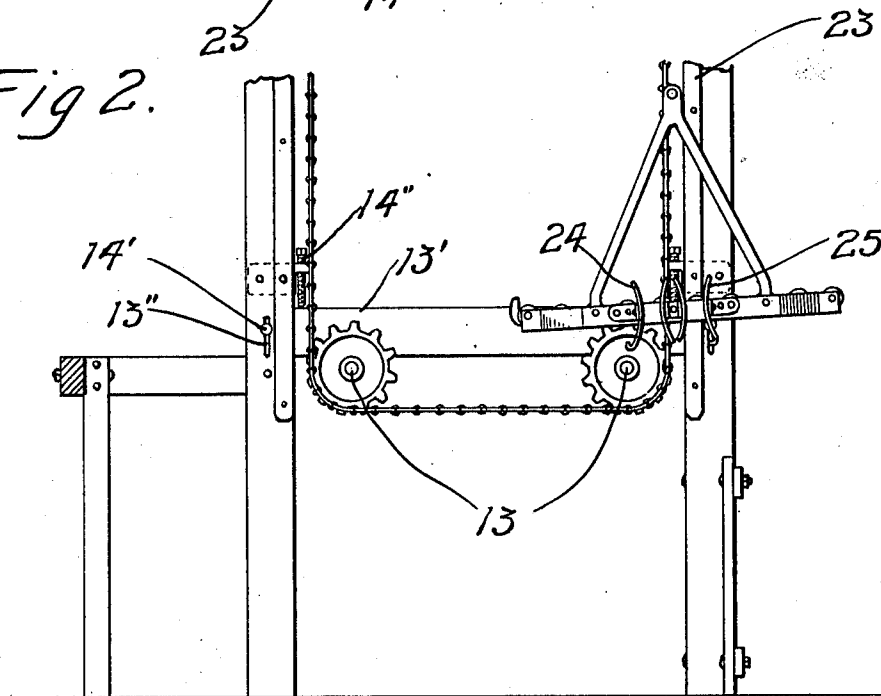


Fig 2.



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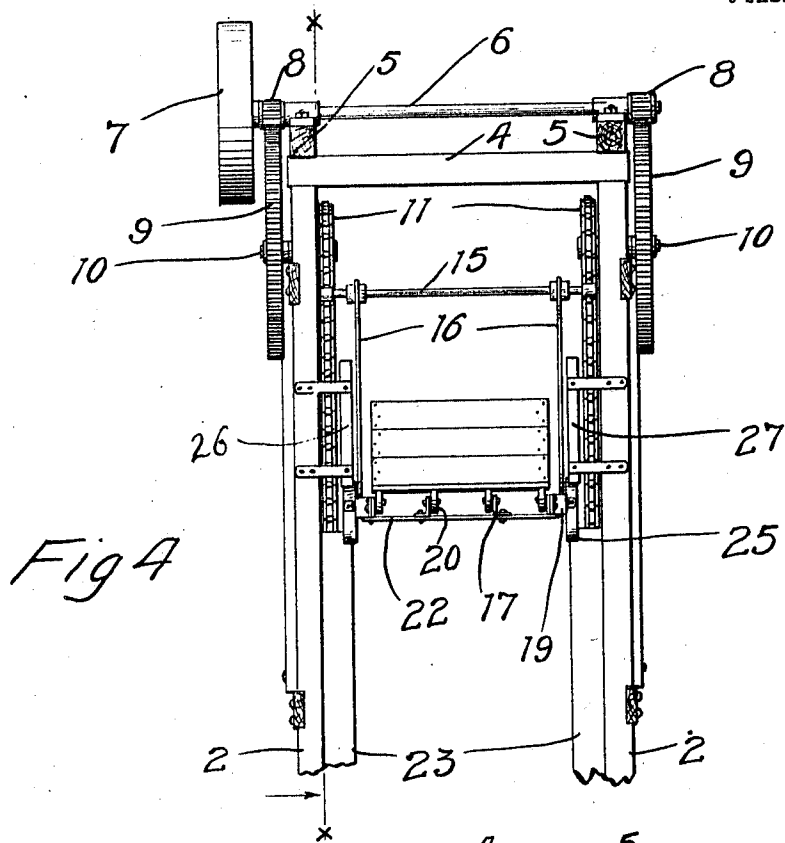


Fig 4

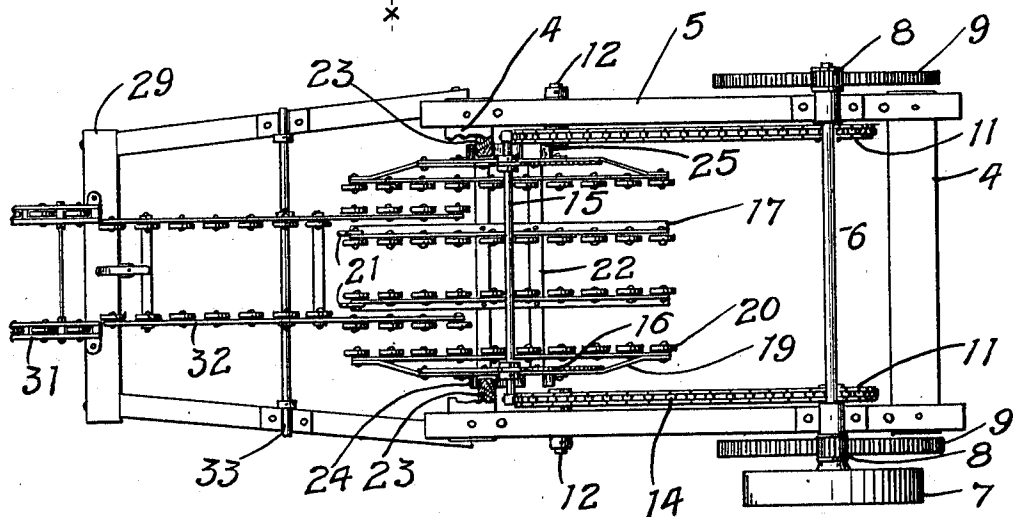


Fig 3.

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UNITED STATES PATENT OFFICE.

ROBERT D. HUTCHINSON, OF ST. PAUL, MINNESOTA, ASSIGNOR TO MATHEWS GRAVITY CARRIER CO., OF ST. PAUL, MINNESOTA, A CORPORATION OF MINNESOTA.

ELEVATOR FOR GRAVITY CARRIER SYSTEMS.

1,004,266.

Specification of Letters Patent.

Patented Sept. 26, 1911.

Application filed August 2, 1906, Serial No. 328,860. Renewed February 24, 1911. Serial No. 610,600.

To all whom it may concern:

Be it known that I, ROBERT D. HUTCHINSON, of St. Paul, Ramsey county, Minnesota, have invented certain new and useful
5 Improvements in Elevators for Gravity Carrier Systems, of which the following is a specification.

My invention relates to an elevating device; and the object of the invention is to
10 provide means for transferring packages from a lower to a higher level or vice versa, and delivering them to a gravity carrier, all without any attention on the part of the operator except to place the packages on the
15 receiving section of the carrier on one floor and remove them from the delivering section on another floor.

My invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of an elevating apparatus embodying my invention. Fig. 2 is a transverse
25 vertical section on the line $x-x$ of Fig. 4. Fig. 3 is a plan view. Fig. 4 is a detail view of the upper portion of the elevator.

In the drawing, 2-2 and 3-3 represent
30 the upright timbers or frame work of the elevator connected by the cross bars or beams 4 and 5. The upright timbers are extended through holes in the floors of the building where the elevator is erected, a distance varying according to the number of
35 floors it is desired to include in the system. The driving shaft 6 having a pulley 7 is mounted on the frame and has pinions 8 meshing with gears 9 on stub shafts 10 carrying sprocket wheels 11. Similar shafts
40 12 are provided on the other side of the frame on the same level, and shafts 13 are mounted near the bottom of the frame in the same vertical plane with those above on
45 the corresponding side of the apparatus. The shafts 12 and 13 are all provided with sprocket wheels corresponding to those described. Chains 14 connect the said sprocket
50 wheels on the same side and are driven from the shaft 6. These sprocket chains extend through from floor to floor of the building according to the height of the elevating apparatus. The shafts 13 are supported on a cross bar 13' that is vertically adjustable
55 on the frame of the elevator by means of

slots 13'', bolts 14' and adjusting screws 14'' or other suitable adjusting mechanism. By these means the bar 13' can be raised or lowered to tighten or loosen the chains and take up the slack due to wear or stretching.
60 At intervals the chains are connected across the frame work of the elevator by rods 15 which are free to rotate in their bearings, and upon these rods forked bails 16 are secured, supporting package carriers at their
65 lower ends. These package carriers consist of a series of parallel bars 17 preferably of angle bar iron connected on each side with the lower ends of the bails 16 by straps 18. A series of anti-friction wheels 20 are
70 mounted on the bars 17 and at one end the said bars 17 are provided with upwardly extending lugs or stops 21. The bars 17 are connected transversely by braces 22 located
75 near the middle of the bars so that the outer ends thereof have unobstructed spaces between them for the purpose hereinafter described. These carriers being hinged on the chains, are free to swing back and forth and adjust themselves to the different positions
80 of the chains without being tilted or discharging their contents. The upright timbers of the elevator are provided with guides 23 arranged to pass between curved bars 24 and 25 mounted on the sides of the
85 carrier. These bars are arranged in pairs as shown, one pair contacting with the guide 23 on one side of the elevator as the carrier ascends, and the other pair engaging the corresponding guide bar on the other side
90 of the elevator as the carrier descends. During the time the carrier is traveling horizontally across the top or bottom of the elevator, no guiding devices will be necessary
95 as the weight of the carrier or its load will tend to hold it in a horizontal position while the carrying chains are making the turns at the top and bottom of the elevator.

To prevent the carrier from swaying forward or backward when it begins to descend
100 and to direct it so that the bar 23 will pass between the guides 24, I provide bars 26 and 27 mounted on the elevator frame, one of them engaging a guide bar 24 and the other a guide bar 25 to steady the carrier and
105 hold it in position to allow the bar 23 to enter the space between the guides 24. A gravity carrier section 28 is located at the foot of the elevator on its receiving side, the ends of the section projecting between
110

the elevator timbers a sufficient distance to allow the bars of the carrier to pass between them and pick up automatically the package of merchandise lying thereon. As soon as the package has been gathered up, it will slide over the antifriction rollers to the inner end of the carrier and be engaged by the stops 21.

On the down side of the elevator a frame 29 is arranged extending vertically and connected on different levels with carrier sections 30 and 31. Between the outer side 29 and the elevator, short carrier sections 32 are provided, having the anti-friction rollers corresponding to those before described and centrally pivoted at 33 and adapted to be swung to a vertical position and locked by means of a hook 34 when the carrier on that level is not in use. The bars of the elevator section 32 extend in between the elevator timbers in position to pick up the package on the carrier as it descends. If the operator desires to carry the package below the level of the first receiving carrier, he will swing the section 32 to the position indicated in Fig. 1, whereupon the carrier will pass by it without discharging its load and descend to a lower level. If on that level the receiving carrier is adjusted to pick up the package from the elevating carrier, then the load will be discharged as shown in Fig. 1, and the empty carrier will descend to the bottom of the elevator and be ready for another load.

I claim as my invention:—

1. In an elevating apparatus, the combination with the upright timbers having guide bars 23 thereon, of elevating belts operating vertically between said timbers, carriers pivoted at intervals on said belts and adapted to pick up packages on one side and deliver them on the other, and guide bars 24 arranged in pairs on said carriers and adapted to engage said bars 23 and be guided thereby, substantially as described.

2. In an elevating apparatus, the combination, with the upright timbers, of elevating belts having sprocket wheels and operating vertically between said timbers, carriers pivotally supported between said belts and arranged to pick up packages on one side of the elevator and discharge them on the other, and guides 26 and 27 provided on said timbers in the path of said carrier and arranged to direct the same while changing its course of travel from horizontal to vertical, substantially as described.

3. In an elevating apparatus, a carrier comprising a series of bars 17 arranged parallel with one another and spaced apart, a bail and straps 19 connecting said bail and bars, and antifriction wheels mounted in said bars and stops provided at one end of said bars, for the purpose specified.

4. In an elevating apparatus, the combi-

nation, with the vertically arranged elevator belts, and the rods connecting them at intervals, of carriers mounted on said rods and comprising depending bails, and bars 17 arranged parallel with one another and spaced apart and having cross bars 22 connecting them, the lower ends of said bails being attached to said bars 19 and anti-friction wheels journaled in said bars, and projecting above the tops of the same, and stops provided at one end of said bars, substantially as described.

5. In an elevating apparatus, the combination, with the upright timbers, of the elevating belts provided between the same, elevating carriers supported by said belts and having floors provided with anti-friction bearing surfaces, stationary gravity carriers provided on the discharge side of said elevating apparatus, said carriers being arranged one above another, and short carrier sections contiguous to said elevating apparatus adapted to receive the packages from said elevating carriers and centrally pivoted and adapted to be swung to a vertical inoperative position or to a horizontal operative position, substantially as described.

6. In an elevating apparatus, the combination, with the upright frame, the elevating belts and the carriers supported thereby, of a gravity carrier 31 provided on one side of said frame, a carrier section 32 hinged at a central point and adapted to form a continuation of the carrier 31 and receive the packages from said elevating carriers and deliver them to said carrier 31 or to be swung to a vertical inoperative position, and a hook 34 engaging said carrier section, for locking it in said vertical position.

7. In an elevating apparatus, a carrier comprising bails or hangers, a series of angle bars 17 arranged parallel with one another and spaced apart and connected to said bails, a series of anti-friction wheels journaled in the vertical flanges of said angle bars and projecting above the tops of the same, and upright stops provided at one end of said angle bars, for the purpose specified.

8. In an elevator of the class described, the combination, with an upright frame having four corner posts and horizontal bars at top and bottom, and two intermediate horizontal bars having vertical play, means for adjusting said bars vertically, a pair of chain pulleys revolving on studs fixed in each of said adjustable bars, chain supporting pulleys mounted in the upper end of the frame, one vertically above each of the four lower pulleys, a pair of endless chains running parallel over said upper and lower pulleys, horizontal bars having their ends supported in the chains, elevator cars pivotally suspended from said bars, means for guiding the lower part of each car, two of said chain pulleys being sprocket wheels by which to

engage and move the chains, a shaft geared to said sprocket wheels and journaled in the frame, and means for transmitting power to said shaft, said guiding means for the car consisting of guiding strips fixed, one on each post of the frame beyond the pathway of the chains, upward and downward flaring guides upon two opposite sides of each car, certain of said guides being adapted to

straddle the strips or ribs on the post during descension and other guides during the ascension of the car. 10

In witness whereof, I have hereunto set my hand this 24th day of July 1906.

ROBERT D. HUTCHINSON.

Witnesses:

RICHARD PAUL,
J. B. EVA.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."