E. W. TAYLOR.

HOISTING AND CONVEYING MACHINE.

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1,035,265. Patented Aug. 13, 1912.

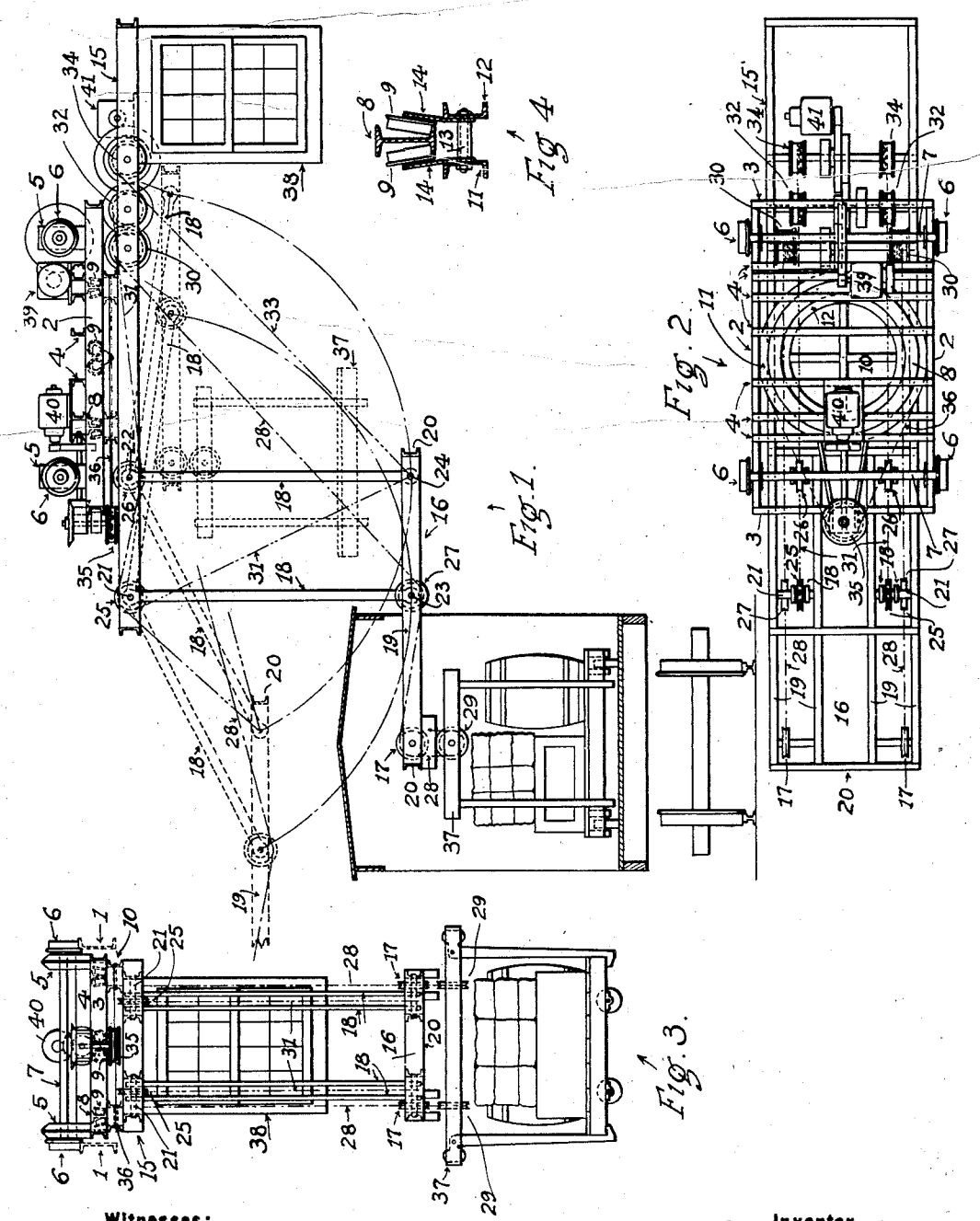

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses:

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HOISTING AND CONVEYING MACHINE.

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To all whom it may concern:

Be it known that I, ERNEST W. TAYLOR, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Hoisting and Conveying Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of the specification, wherein similar parts are designated by similar figures in each case.

The improvement in question belongs more especially to the class of overhead tramway devices for picking up freight, and other material, moving the same to storage or shipping points along the line of travel, and there depositing the packages or loads within cars, warehouses or at other destined receiving points.

As designed the present invention is adapted for construction and use either as an independent instrument, or as an ancillary feature to other apparatus that together form a general material handling system and unitary whole.

In the several figures Figure 1, is a side elevation showing the median loading or unloading position of the apparatus in the full lines, and, indicating, by dotted lines, the limit of movement of the same on either side of the full-line position. Fig. 2 is a plan view of the apparatus as shown in Fig. 1. Fig. 3 is an end view of the apparatus as shown in Fig. 1, and, Fig. 4 is an enlarged sectional view of a portion of the turn-table feature entering into the construction.

As shown, the improvement in question involves an overhead tramway, comprising two parallel tracks, indicated by 1, 1, and any suitable framework or supporting structure therefor, as the floor-timbers of a warehouse, or other building, trestle-work, or bridge-tramway. Mounted upon and adapted to travel on said tracks 1, 1, and maintain the chief operative features of the device, is a trolley of the usual type for the purposes involved, and, swinging from and connected to the same by the hanger-pieces 5 and the track-wheels 6, is a rectangular frame-work made up of the side-beams 2, 2, end-beams 3, 3 and cross-beams 4, 4. 7, 7, indicate the cross-axles by which said wheels are journaled in the hanger-pieces 5. Within said frame-work below and firmly fastened to the cross-beams 4, is a circular I-beam track 8, and below, and suspended from the lower flanges of the track 8, by means of truck-wheels 9, 9 is a rotatable circular frame-work 10, composed of two concentrically arranged circular channel-beams 11 and 12, that are tied to one another, by bolts 13.

14 indicates side-hanger plates by means of which the frame-work 10 is suspended as above stated, the lower ends of said plates being fastened, respectively, to the inner sides of the webs of the circular channel-beams 11 and 12, and the upper ends of the same being fastened to the axles of the truck-wheels 9. Rigidly fastened to and across the under sides of the channel-beams 11 and 12 of the frame-work 10, is a rectangular frame-work 15, from the side members of which is hung a downwardly-extending frame-work structure consisting of four pairs of quadratically arranged hanger-rods or bars 18, one pair at each corner, pivotally attached to the frame-work 15, near the front portion thereof, at their upper ends, and at their lower ends, at the same distance, one from the other, as at the top, to longitudinal beams 19, constituting the side members of a reciprocating platform or frame-work 16, below. Said beams are firmly connected together at each end by end-beams 20, and, as shown, extend forwardly of the up and down or normal portion of the hanger-bars 18. 21, 22, 23 and 24, on the side of the device exposed in Fig. 1, indicate the pins by which the hanger-bars are thus pivotally connected to the upper frame-work 15 on the one hand, and the lower longitudinal beams 19, on the other. Near the forward end of the rectangular frame-work 16, of which the beams 19 are the sides, are located, next to said beams, hoist-sheaves 17. On the pins 21 and 22, in the frame-work 15, between each pair of hanger-bars 18, are sheaves 25 and 26, the sheaves 25 occupying the pins 21, and the sheaves 26 occupying the pins 22, and, on the pins 23, through the beams 19, exteriorly of the hanger-bars 18 in each case, and in alinement, respectively, with the sheaves 17, are sheaves 27, 27. Reeved through the duplicate systems of sheaves, just described, are hoist-ropes 28, 28, whose outer ends are attached to the outer ends of the beams, 19, and, which extend thence

downwardly around sheaves 29, in the crate 37 to be hoisted, thence upwardly around the sheaves 17, backwardly to and under the sheaves 27, 27, to and around a drum 30, in each case, in the frame-work 15, where they are made fast.

To effect the forward oscillation of the frame-work 16, upon the pins 21 and 22, a pair of reciprocating ropes 31, 31, are attached to the pins 24, in alinement with, and respectively passing to and over the sheaves 25, thence to and beneath the sheaves 26, to drums 32, 32 located on the frame-work 15 to which they are fastened, and, to effect the desired backward oscillation of said frame-work 16, additional reciprocating ropes 33, 33, are severally attached to the pins 24, and passed upwardly and made fast to drums 34 located on the frame-work 15 for the purpose.

A turntable-actuating drum 35 is located centrally of the trolley, near the front end of the same, from which a rope 36 extends to and operatively around the circular frame-work 10, and thence backwardly to a suitable fastening point in said drum.

An operator's cab, in which are located all the levers and parts necessary to actuate and control the various movements of said machine, is indicated in the figures (by 38) as fastened to and depending from the frame-work 15 near the end thereof; a traction-motor, a motor for actuating the drum 35, and, a motor for actuating the hoisting and reciprocating ropes, as described, are also indicated, by, respectively, 39, 40 and 41.

It will be apparent that a machine built up in the manner, and according to the plan hereinbefore illustrated and explained, will be capable of a variety of movements and adaptable to many different situations and uses. By reason of the turn-table feature of the same, a load may be taken on or released at any point around the machine and in any direction desired, while, by reason of the peculiar formation and connections of the frame-work 16, such load may be reached for and positively handled at points considerably beyond the normal limits of said rotatory movement. In the median position of said reciprocating frame-work 16, as shown in the full lines of Fig. 1, the forward end of the same is in position to project into a box-car, and engage a package or crate therein; by now actuating the drum 34, the ropes 33, 33 may be wound in, which will draw inwardly the hanging bars 18 around their respective pivots at 21 and 22. This will at once oscillate the frame-work 16 inwardly and upwardly, and, because of the parallel relation of the several bars 18 to each other, a corresponding parallel motion will characterize the movement of the frame-work 16, and, the latter, with its load, will be guided upwardly, in this relative position, to any distance desired beneath the frame-work 15. The operation will, of course, be reversed when a lowering is to be effected.

It is evident that the precise manner of making up my machine herein set forth is not essential to the invention, broadly considered. It is capable of variation in several respects, in the several details involved. Instead for instance of pivoted bars to connect the upper and lower frame-works, chains or other flexible means may be employed, and single parts can be substituted in place of those shown in duplicate, and although, the claims designate the frame-work 16 as suspended from the trolley this should not necessarily be restricted to a direct suspension from the trolley and as not including a suspension from the intermediate parts 15, 8 and 10.

Having thus described my invention, as the same is embodied in a concrete form and apparatus, what I claim and wish to cover by Letters Patent, is;—

1. The combination with an overhead tramway, of a trolley mounted thereon, a reciprocating frame-work pivotally connected to and beneath the same at equidistant points, suitable means on said frame-work for engaging loads to be handled thereby, and suitable means for hoisting and lowering loads so engaged, and for reciprocating said frame-work about said pivotal points, substantially as shown and described.

2. The combination, with an overhead tramway, of a trolley mounted thereon, a reciprocating member flexibly connected to and beneath the same by parallelly arranged hangers, suitable means on said member for engaging loads, and suitable means for hoisting and lowering loads so engaged, and for reciprocating said member about the points of its said connection, substantially as shown and described.

3. The combination with an overhead tramway, of a hoisting and conveying machine, comprising a trolley mounted on said tramway, a reciprocating member pivotally connected to and beneath the same by parallelly arranged hanger-bars, suitable means on said member for engaging loads to be hoisted and conveyed, and, suitable means for, severally, hoisting and lowering the loads so engaged, reciprocating said member about the pivotal points of its said connection, and for traveling the trolley on said tramway, substantially as shown and described.

4. The combination, with an overhead tramway, of a hoisting and conveying machine mounted thereon, comprising a rotatory trolley, a reciprocating member pivotally connected to and beneath the same by parallelly arranged hanger-bars, suitable

means on said member for engaging loads to be hoisted and conveyed, and suitable means for, severally, hoisting and lowering the loads so engaged, reciprocating said member about the pivotal points of its said connection, rotating said trolley, and traveling the same along said tramway, substantially as shown and described.

5. In a hoisting machine the combination of a superior rotating supporting member, an inferior reciprocating member supported thereby by parallelly arranged connections pivoted to said members, suitable means on said reciprocating member for engaging loads, and suitable means for, severally, hoisting and lowering the loads so engaged, reciprocating said last named member about said pivotal points, and rotating said superior member, substantially as shown and described.

6. In a hoisting machine, the combination of a superior supporting member, an inferior reciprocating member supported thereby by parallelly arranged connections pivoted to said members, suitable means on said reciprocating member for engaging loads, and suitable means for, severally, hoisting and lowering the loads so engaged, and reciprocating said last named member about said pivotal points, substantially as shown and described.

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In presence of—
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