No. 831,518. PATENTED SEPT. 18, 1906.

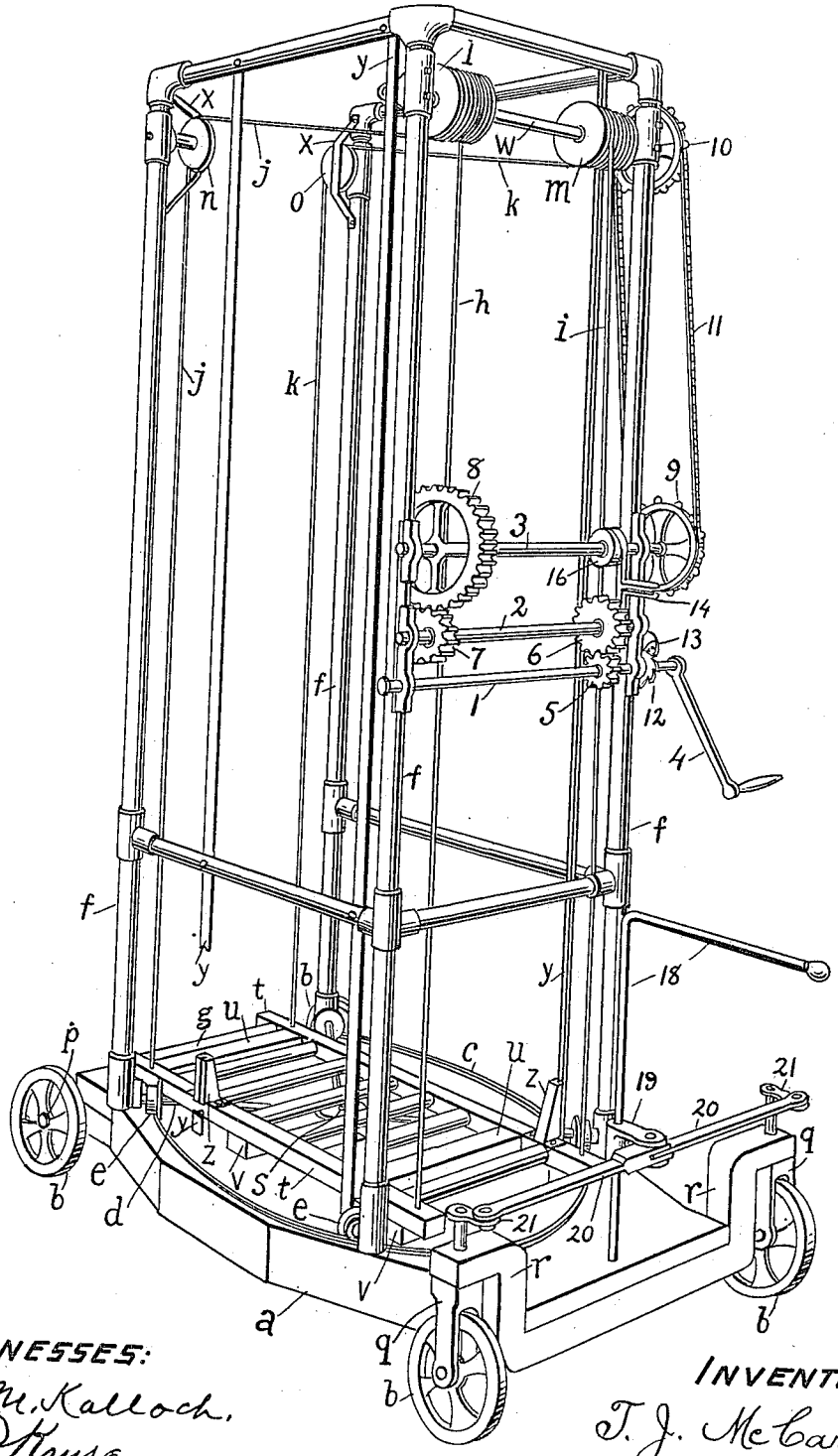
T. J. McCARTHY.

PORTABLE ELEVATOR.

APPLICATION FILED JAN. 29, 1904.

2 SHEETS—SHEET 1.

FIG. 1



WITNESSES:

I. M. Kalloch.

P. Kruse.

INVENTOR:

T. J. McCarthy

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No. 831,518. PATENTED SEPT. 18, 1906.

T. J. McCARTHY.

PORTABLE ELEVATOR.

APPLICATION FILED JAN. 29, 1904.

2 SHEETS—SHEET 2.

FIG. 2

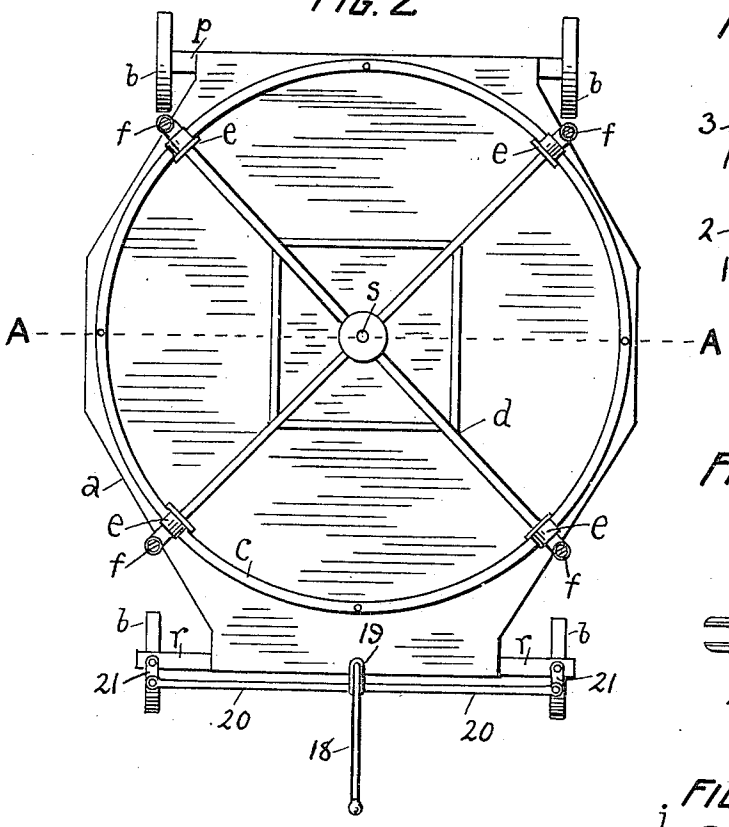


FIG. 4

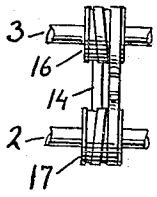


FIG. 5

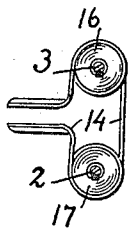


FIG. 6

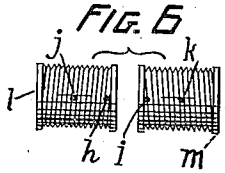


FIG. 3

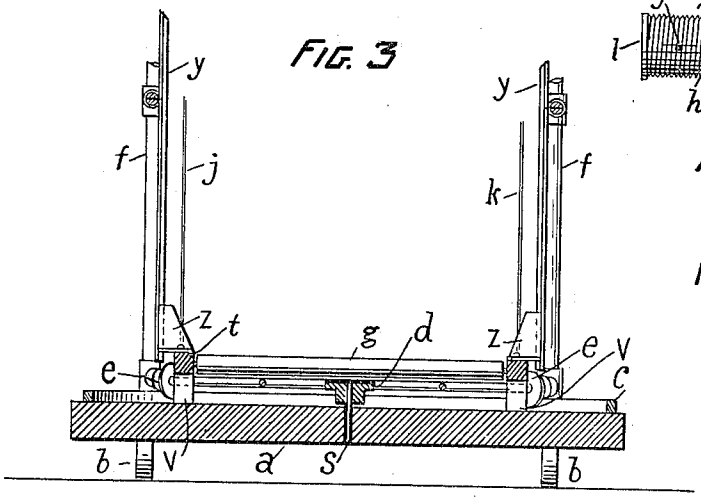
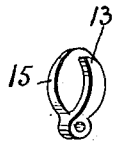


FIG. 7



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UNITED STATES PATENT OFFICE.

THOMAS JAMES McCARTHY, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO McCARTHY PORTABLE ELEVATOR COMPANY, OF SAN FRANCISCO, CALIFORNIA, AND JERSEY CITY, NEW JERSEY, A CORPORATION OF CALIFORNIA.

PORTABLE ELEVATOR.

No. 831,518. Specification of Letters Patent. Patented Sept. 18, 1906.

Application filed January 29, 1904. Serial No. 191,203.

To all whom it may concern:

Be it known that I, THOMAS JAMES McCARTHY, a citizen of the United States of America, and a resident of the city and county of San Francisco, in the State of California, have invented a new and useful Improvement in Portable Elevators, of which the following is a specification, reference being had therein to the accompanying drawings.

The improvement that constitutes the subject-matter hereof is the complement of my invention in portable elevators set forth in my pending application for a patent, Serial No. 186,504, filed on the 24th day of December, 1903, now Patent No. 777,530, dated December 13, 1904. It is designed to provide a more desirable form of the machine disclosed therein for the handling of cases or flat packages and generally all articles other than barrels or cylindric containers. The use of this machine thus far has shown it to be satisfactory, but at the same time has brought out the fact that in a large number of business places the room available for storing the cases (and the like) is more or less restricted, and therefore the proprietors will direct that they be stacked up as closely as possible, leaving between the different piles but the narrowest of alleyways wherein it is altogether impossible to have a machine of ordinary capacity in the right position to receive its load and then turn as a whole so that it can be discharged on the spot, on either side. The consequence is that with the aforesaid form of the machine (and with any other machine of which I have any knowledge) the loading must take place at the crossings of the alleys and the machine be turned at the crossings or in some larger vacant space, whenever required, to have it in the right position to be unloaded, involving incessant trips from the loading to the unloading point, with concomitant expenditure of time and labor. The want, then, is felt of a machine that can be stationed in the alley on the sides of which the tiers of cases are being built and which machine will receive its load there, and after raising it to the desired height will be capable of delivering it in the best position for stacking on either side, as may be required. To fill this want is the object of the present improvement, which, to give an immediate idea of what it is, may be said to consist, essentially, of a revolving elevator mounted upon a truck that may but need not be turned.

In the accompanying drawings, Figure 1 is a partly broken perspective view of the complete machine. Fig. 2 is a plan view showing the truck of the machine and a superimposed carriage with which the elevator revolves, the posts of the elevator-frame appearing in section. Fig. 3 is a cross-section on the line A A of the preceding view, showing the same parts in vertical aspect, besides a portion of the framework above the said line and a section of the elevator-platform resting on the carriage. Figs. 4 and 5 are front and side views, respectively, of a brake connected with the hoisting mechanism. Fig. 6 is a detailed view of the hoisting-drums. Fig. 7 is a perspective of a pawl also included in the said mechanism.

Like symbols indicate corresponding parts throughout the specification and drawings.

The principal parts of this improved form of my machine are: the aforementioned truck, comprising a bed *a* and wheels *b* thereunder; a circular track *c*, laid on the said bed; a revolving carriage *d*, centrally pivoted on the bed and having flange-wheels *e* bearing on the said track; an open framework *f*, rigidly secured to the said carriage; a roller-platform *g*, fitted in the frame and adapted to be raised and lowered therein by means of cables *h i j k*, drums *l m*, pulleys *n o*, and suitable gearing, and a steering apparatus.

The bed *a* may be made of wood or metal and of any desired dimensions. The drawings show it as being octagonal in shape with opposite parts extended forward and rearward, respectively, to afford a suitable base, over which may be placed a platform of good working length. This is believed to be the best shape for the bed (having due regard to elegance) inasmuch as it gives sufficient width to lay the track *c* and has receding sides where the wheels *b* can be located so as to be out of the way and yet facilitate the steering of the machine. The rear wheels are fitted to a common axle *p* and the front wheels are journaled in guide-bearings *q*, pivotally connected to hangers *r* of the bed *a*, which hangers consist, as shown, of the raised ends of a cranked bar secured across the bottom of

the bed forwardly. The track *c*, like the bed, may be either iron or wood and is fixed thereon by any approved means.

Upon the track *c* rests the aforesaid carriage *d*, which preferably consists of a spider or radial armed hub fitted to a central pivot *s* on the bed *a* and whose arms have the beforementioned flange-wheels *e* journaled on their outer ends, the latter wheels being adapted to ride circularly either way on the track *c* or any arc thereof. Four wheels *e* are employed, this number being deemed sufficient with the central axis *s* to insure the stability of the carriage and of the elevator revolving therewith. The arms of the spider are braced to one another, as shown in Fig. 2, for strength and rigidity, and for a like purpose the whole spider will, by preference, be made of steel in a single casting.

The frame of the elevator is in all essential particulars the same as was fully described in my said application, Serial No. 186,504, Patent No. 777,530, to which reference is hereby made for a complete statement of this part of the invention, since it would be superfluous to repeat the description thereof here, save to say that the frame *f* comprises four corner-posts suitably braced to one another at the top and near the bottom on three sides, as Fig. 1 shows. It is therefore a three-sided frame, the open side of which is intended normally to be at the rear end of the under truck. As heretofore, the entire framework *f* is made of pipe cut into sections of various lengths that are united by ordinary couplings, such as T's and elbows. This framework is supported upon the extremities of the spider-arms of the carriage *d*, which arms are fitted in the lower ends of the corner-posts outside the flange-wheels and track thereunder. The spider-arms, it will be seen, not only hold up the frame, but also serve to brace it at the bottom. Being thus held up by the carriage the frame will share all of the latter's movements on its circular track and so will the hoisting apparatus which the frame carries.

The elevator-platform includes two parallel supporting bars or timbers *t*, cross-bars *u* joining the same together, and a series of rollers (marked *g*,) that are laid parallel also with one another transversely of the said supporting bars or timbers and journaled therein. As illustrated in Fig. 1, this platform is made so that its members *t* when in the lowermost position can rest upon the spider-arms of the carriage *d* between the wheels *e* and project beyond the carriage on opposite sides, extending as far inside the frame *f* as is safe to insure clearance of the cross-bracing thereof and adjacent parts of the hoisting mechanism and far enough out of the frame through the open side to properly receive the loads upon the rollers *g*. The platform may thus project out of the frame much more than has been shown on the drawings and, as a rule, will be sufficiently long to underlie a little more than half the length of the longest cases that it is designed to raise or lower. Buffers or bumpers *v*, conveniently made of india-rubber, are provided on the under side of the members *t* to offset or deaden any occasional impact of the platform against the spider-arms. These buffers or bumpers pass between the spider-arms and are arranged to bear some on the bed of the truck below and owing to frictional contact with the bed will in addition to preventing concussive shocks also help to maintain the elevator in the right position for loading by keeping it from revolving too freely.

To the corners of the platform are secured the aforenamed cables *h i j k*, which thence are led to the drums *l m* at the upper end of the frame *f*. These drums are keyed to a shaft *w*, near the ends thereof, which are journaled in suitable bearings provided on the front posts of the frame, as seen in Fig. 1. The forward cables *h i* are led directly each to its drum and secured to the periphery thereof at a point close to the drum's inner end in each instance, and the rear cables *j k* are respectively passed over the pulleys *n o* on the rear posts of the frame opposite the drums and thence are brought to the latter, being secured also to the peripheries thereof, but centrally. Deep spiral grooves are formed in the drums' peripheries to take the bights in the cables as they are wound thereon, and these grooves run in opposite directions around the two drums in such a manner that the cables *h j* will wind away from the cables *i k*, or conversely. The drums, therefore, are grooved right and left and placed on the shaft *w* in the reverse order of their grooving, as indicated in Fig. 6, so that by revolving the drums clockwise they both will coil their cables outward, the drum *l* being made to carry its cables *h j* toward the left in winding and the drum *m* simultaneously carrying its cables *i k* toward the right. It will be understood that the two sets of cables are made to spread the required distance apart while winding in this way and as the platform rises with its load leave it an entirely free passage, allowing the load to project high above the open frame. This arrangement permits the use of relatively long drums, affording a separate groove for each coil of the several cables, thereby preventing their overlapping and operating to keep the platform well poised always. Guards *x*, secured to the rear posts of the frame, are placed over the inner face of the pulleys *n o* and their cables *j k* to prevent possible contact of the load therewith while taking it off the platform.

Four guides *y* are provided to keep the platform from unduly swaying in any direc-

tion while it is raised or lowered or suspended by the cables. These guides are preferably T-shaped in cross-section and secured to the cross-bracing of the frame between the posts, two by each side of the platform. They are engaged each by a guide-plate *z*, secured to the corresponding side of the platform and adapted to embrace and follow the web each of its respective guide.

Power to rotate the drum-shaft *w* for winding the cables and raising the platform is transmitted by means of shafting and gear-wheels, as follows: Three shafts, respectively numbered 1, 2, and 3, are mounted across the forward posts of the frame *f* in parallelism with the said drum-shaft *w*, each having its bearing on the front posts. The lowermost shaft 1 is intended to be the power-shaft, whether it be turned with a manually-operated crank 4, as shown, or driven by other power. This power-shaft or crank-shaft carries a pinion 5, located on the right a short distance from the frame-post nearest the crank and meshing into a gear-wheel 6, which is carried by the shaft 2 next above on the corresponding end of the latter-named shaft, which also carries a similar gear-wheel 7 at its other end on the left. The gear-wheel 7 is in mesh with a larger gear-wheel 8 on the left end of the shaft 3 higher above, and the right end of the shaft 3 in turn is connected with the drum-shaft *w* at the top of the frame by means of sprocket-wheels 9 and 10 and a chain 11. It will be seen that the several shafts are intergeared to mechanical advantage and that the power and inversely the speed can be varied easily to suit various wants by simply changing the relative sizes of the sprocket-wheels without alteration in the other portions of the gearing.

As in the precited application, Serial No. 186,504, Patent No. 777,530, a ratchet-wheel 12 and pawl 13 are provided to check back rotation of the crank-shaft 11, and the latter is made slidable to admit of the disengagement of the pinion 5 from the gear-wheel 6 upon the pawl 13 being thrown off, and thereby release the gearing, so that the platform may descend by gravity, the rapidity of the descent being governed by a brake 14. The pawl 13 has a keeper or side-retaining projection 15, Fig. 7, which prevents the shaft 11 from sliding when the pinion is normally in engagement with the gear-wheel 6, and the brake 14, which is a double-clasp band-brake, engages two friction-pulleys 16 and 17, respectively keyed to the geared shafts 2 and 3, Figs. 1, 4, and 5. These parts have been fully described in the said application and patent, to which reference is again made for the particulars thereof in order to avoid useless repetitions.

The machine is steered in the same manner as heretofore by means of a rotary handle 18, stepped in the forward part of the truck and having an arm 19, connected with the knuckle of a pair of pivoted links 20, that similarly connect with cranks or levers 21, respectively secured to the pivots of the guide-bearings *q*, in which the forward wheels of the truck are mounted, all of which parts I have specified in the aforesaid application and patent. In the present case, however, the cranks and links and other connections are located forwardly of the handle to obviate interference with the revolving frame *f*. The handle may be steadied by cross-bracing, if desired—for instance, to the upturned ends of the cranked bar upon which the fore part of the truck rests.

The operation of the machine is obvious. It is readily perceived that the machine, being of requisite dimensions, can be advanced or backed into an aisle on the sides of which cases, for example, are to be tiered up, and that the rear or open side of the revolving frame will normally be accessible longitudinally of the aisle, with the roller-platform in position to receive the cases. The latter will be brought on hand-trucks and deposited flatwise on the platform one by one by sliding them across its rollers. As the platform can project out of the frame, it is capable of receiving cases that are much longer than the aisle is wide and which it will properly support, provided it be a little over half their length, as hereinbefore specified. Assuming that a long case has thus been placed on the platform, it is an easy matter to elevate it within the aisle to the level of the empty space which it is destined to occupy and which may be at any point above the bottom row of cases on either side. The case having reached the stacking or unloading point, the frame is given a quarter-revolution to cause its open side to face that point, and the platform and case are thereby swung across the aisle clear of and without hindrance from the lower tier or tiers of cases that may already be in place on one side or the other. It is possible in this way to move cases six or seven feet long across an aisle four feet wide or less. If the length of the case is in excess of the width of the aisle, as assumed, the case then proportionately extends more or less over any previously-stacked case that may lie under and it may be considered as partly unloaded—that is, to the extent that it projects beyond the side of the alley. To push the case off the roller-platform into its resting-place requires but little work, which may well be performed by the person on whom devolves the duty of steering and hauling the machine and operating the hoisting mechanism. The case having been worked off, the gearing of the hoisting mechanism is released by removing the pawl and pulling out the slidable crank-shaft and the platform is let down quickly for another load without the crank turning, the descent being simply controlled

by the band-brake. The cases are taken down from their respective tiers in a similar manner, the several steps of the operation being merely reversed.

Having now described my invention in its latest improved form, what I claim as novel therein, and desire to cover by Letters Patent of the United States, is—

1. In a portable elevator, the combination with a truck, of an elevator-frame rotatably supported thereon, a platform located upon and rotating with the frame and means carried by the frame for raising and lowering the platform.

2. In a portable elevator, the combination with a truck, of an elevator-frame rotatably supported thereon, a platform located upon and rotating with the frame, rollers carried by the platform, and means carried by the frame for raising and lowering the platform.

3. In a portable elevator, the combination with a truck, of an elevator-frame rotatably supported thereon, a platform located upon and rotating with the frame, continuous guides extending longitudinally of and parallel with the frame, guide-plates mounted on the platform and engaging the guides, and means carried by the frame for raising and lowering the platform.

4. A portable elevator comprising a truck, consisting of a bed, wheels secured at one end of the bed, a cranked bar upon which the opposite end of the bed is received and supported, guide-wheels secured to the ends of the bar, a platform rotatably mounted on the bed and means for raising and lowering the platform.

5. In a portable elevator, the combination with a movable truck, of a rectangular frame rotatably mounted on the truck, three sides of the frame being closed and the remaining side being open throughout its length to receive and discharge the load, a platform carried by the frame and means for raising and lowering the platform.

6. In a portable elevator, the combination with a movable truck, of a rectangular frame rotatably mounted on the truck, the upper end of the frame being open and unobstructed, three sides of the frame being closed and the remaining side being open to receive and discharge the load at any point throughout its length, a platform carried by the frame and means for raising and lowering the platform.

7. In a portable elevator, the combination with a truck, of a rectangular framework rotatably supported on the truck, a platform supported by the framework, idle pulleys located on the framework, guards passing outside the pulleys cables passing over the pulleys and connected with the platform and means for winding and unwinding the cables.

8. In a portable elevator, the combination with a truck, of a framework rotatably mounted thereon, a platform carried by the framework, idle pulleys located on one side of the framework at its upper end, a winding-shaft located opposite the idle pulleys, drums mounted on the shaft, cables connecting the drums directly with the platform, other cables secured to the drums and passing over the idle pulleys and thence to the platform, and means for actuating the winding-shaft.

9. In a portable elevator, the combination with a truck, of a raised track thereon, radiating arms pivotally secured to the truck, flanged wheels carried by the arms intermediate their ends and engaging the track, vertical posts secured to the outer ends of the arms, braces connecting the posts, a platform receivable between the posts and means for raising and lowering the platform.

10. In a portable elevator, the combination with a movable truck, of a frame rotatably mounted thereon, a platform carried by the frame, means for raising and lowering the platform relative to the frame and cushioning means between the platform and frame to prevent jar.

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

THOMAS JAMES McCARTHY. [L. S.]

Witnesses:
A. H. STE. MARIE,
CHAS. T. STANLEY.