W. R. METZ.

ELEVATOR TRUCK.

APPLICATION FILED FEB. 2, 1916.

1,227,646.

Patented May 29, 1917.

3 SHEETS—SHEET 1.

Fig. 11.

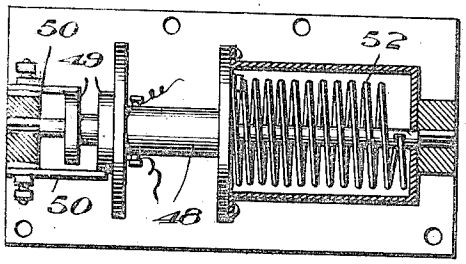


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

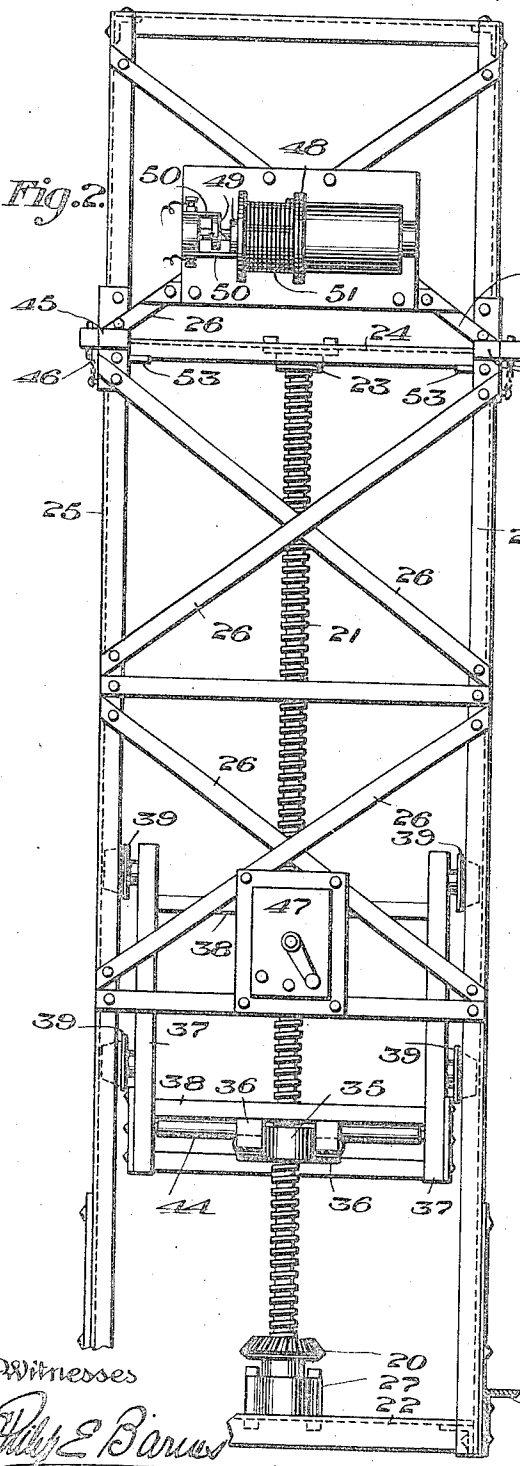


Fig. 3.

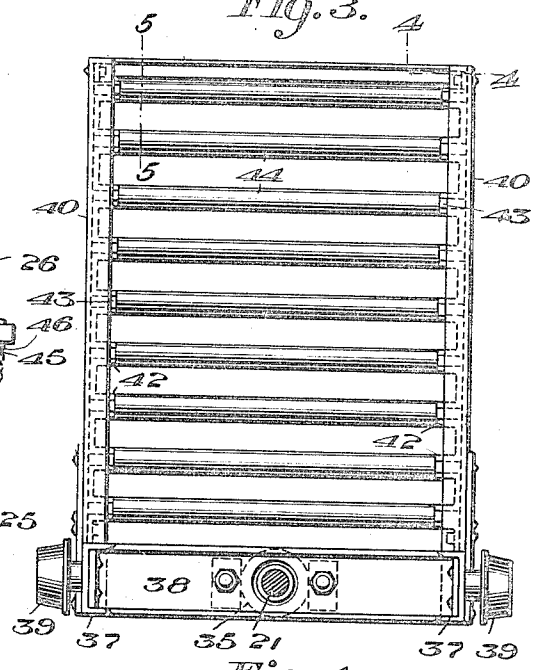


Fig. 4.

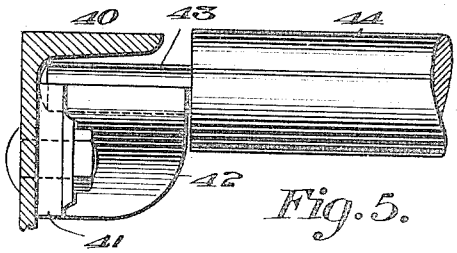
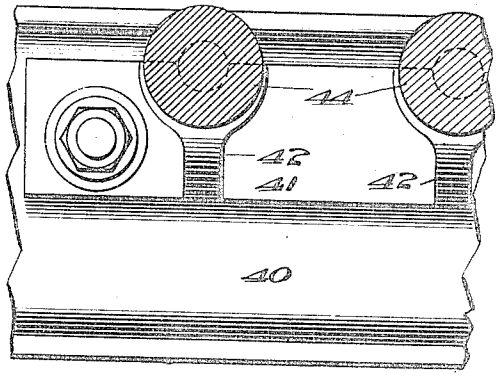


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

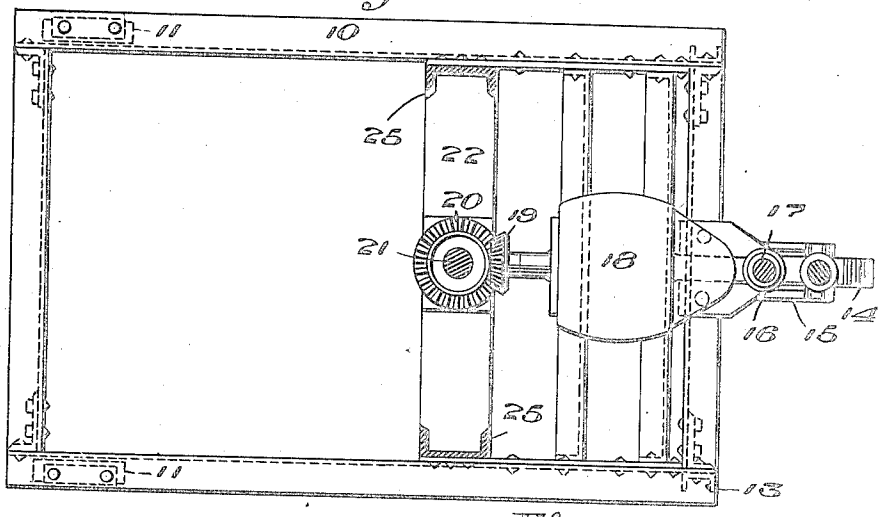


Fig. 7.

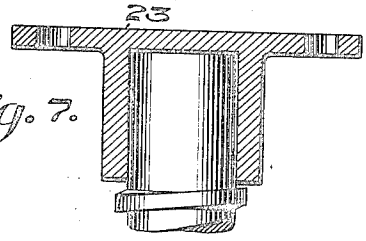


Fig. 9.

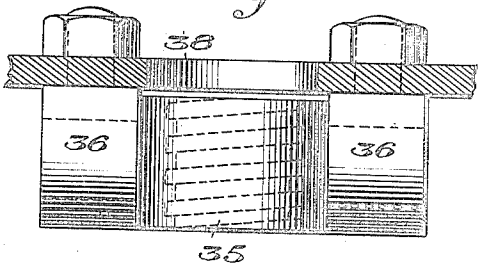


Fig. 8.

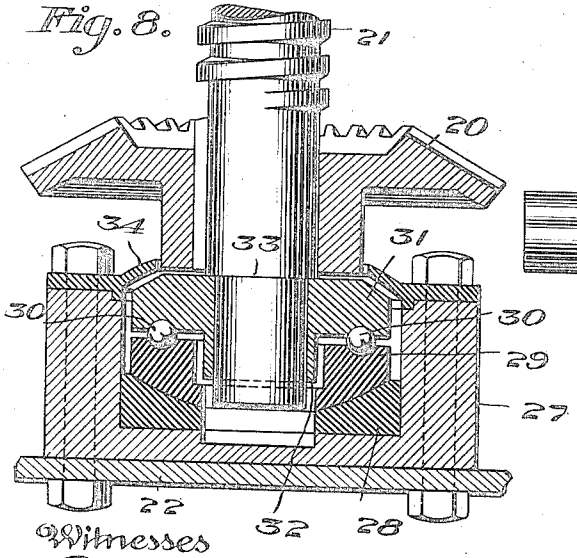
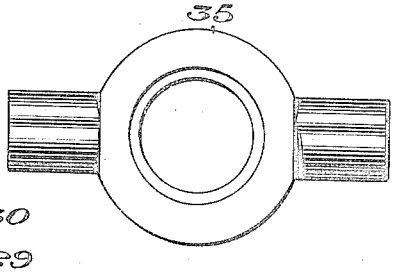


Fig. 10.



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UNITED STATES PATENT OFFICE.

WALTER R. METZ, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-HALF TO GEORGE M. DREXELIUS, OF BALTIMORE, MARYLAND.

ELEVATOR-TRUCK.

1,227,646. Specification of Letters Patent. Patented May 29, 1917.

Application filed February 2, 1916. Serial No. 75,676.

To all whom it may concern:

Be it known that I, WALTER R. METZ, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Elevator-Trucks, of which the following is a specification.

The present invention relates to trucks, and particularly to tiering trucks, so-called for the reason that they are ordinarily used for tiering or piling commodities in warehouses, store-rooms and the like, such trucks being characterized by a platform which may be raised and lowered, so that it can be readily lowered to floor position to receive the load and then elevated to the top of the pile or shelf on which the load is to be stored away.

It has for its object to provide a compact and efficient construction which will have the requisite rigidity and stability and in which the elevating motor and the current connections are so disposed as to secure the greatest efficiency but without any inconvenience to the workmen or handlers of the truck.

Other novel details of construction and arrangement of parts will be pointed out hereinafter, and those features which I regard as novel and of my invention will be expressed in the appended claims.

In the drawings,—

Figure 1 is a side elevation of an elevator truck construction in accordance with the principles of my invention.

Fig. 2 is a front elevational view of the elevator frame, the view being taken through the base or truck frame immediately in front of the elevator frame.

Fig. 3 is a top plan view of the vertically movable elevator.

Fig. 4 is a sectional view taken on line 4—4, Fig. 3.

Fig. 5 is a sectional view taken on line 5—5, Fig. 3.

Fig. 6 is a top plan view of the base or truck frame taken through the elevator frame immediately below the elevator shown in Fig. 1.

Fig. 7 is an elevational view of the top bearing for the screw-shaft.

Fig. 8 is a sectional view of the step-bearing which receives the lower end of the screw-shaft.

Fig. 9 is an elevational view of the swivel nut and bearings therefor.

Fig. 10 is a top plan view of the swivel nut.

Fig. 11 is a detail view of one form of take-up reel for the flexible connections leading to the motor.

Referring to the drawings by numerals, like numbers indicating like parts in the several views, 10 denotes the base or truck frame which is constructed preferably of angle iron and provided at one end with supporting wheels 11 journaled in bearing plates 12 secured to the truck frame. At the opposite or front end of the truck frame I provide supporting posts 13 on which the truck and its supported parts will rest when in use, as shown in Fig. 1, this arrangement giving a stable condition to the truck and preventing any shifting of the same on its wheels when being loaded or unloaded. In order that the truck may be readily elevated so that it can be drawn about the floor, I provide the wheel 14 mounted at the front of the truck frame in a pivoted yoke 15 rotatably carried in a journal 16, which pivoted yoke carries the handle 17, which, when the truck is at rest will occupy the full line position shown in Fig. 1, but when the handle is thrown forward to the dotted line position to draw the truck, the yoke will act as a lever, and by means of the wheel 14 elevate the front end of the truck, lifting the posts 13 from the floor and permitting it to be readily drawn.

Mounted on suitable cross-bars in the truck frame is a motor 18, preferably of the electric type, as shown, which motor furnishes the power for moving the elevator presently to be described. The motor shaft is provided with a gear wheel 19 which meshes with a gear 20 splined or keyed to a screw-shaft 21, which screw-shaft is mounted at its lower end in a step-bearing secured to a cross-piece 22 on the truck frame, and at its upper end is mounted a bearing 23 carried by the cross-piece of channel iron 24 of the elevator frame.

The elevator frame is composed of chan-

nel iron as shown and comprises the uprights 25 suitably held by cross struts 26 so as to give a rigid elevator frame, and the said screw shaft 21 is preferably located centrally with respect to the elevator frame.

The step bearing for the lower end of shaft 21 preferably comprises a bearing box or casing 27 having in its bottom a block 28 having a concave seat and receives a convexed face bearing block 29 which has on its upper surface a ball-race to receive the ball-bearings 30, there being a second bearing member 31 which rests upon the balls 30 and has a sleeve 32 depending downwardly through an opening in the member 29, so that an open shaft-receiving recess or well is provided in which the lower end of the shaft 21 may be stepped, so as to give a stable engagement between the shaft and bearing. The lower end of the shaft 21 is reduced where it enters the bearing, and the shoulder 33 rests upon the upper member of the bearing, as shown in Fig. 8, so that as the shaft is turned the ball-bearings will be revolved and undesirable friction eliminated. I preferably inclose the top of this bearing with the cover plate 34 so that a close, practically tight bearing is provided, the gear wheel 20 practically covering the orifice in the plate 34. By making the bearing inclosed in this way, I can fill the same with lubricant which will be retained and will sufficiently lubricate the parts to permit an easy rotation and rocking of the bearing, the shaft-receiving well extending downwardly to the bottom and preferably into the casing 27 to furnish a reservoir of some capacity for lubricant.

The shaft 21 is threaded, as shown, throughout its length and engages a nut 35 mounted in swivel bearings 36 on the vertically movable elevator, so that the nut as it travels up and down on the shaft will accommodate itself to any slight distortion or tilting of the shaft and danger of jamming is eliminated.

The nut 35, as stated, is carried by the elevator which comprises a frame preferably L-shape, and which is shown in detail in Figs. 3, 4 and 5. The elevator has horizontal and upright portions, the horizontal portion forming the bed or platform for the load, while the upright or vertical portion is positioned in the elevator frame and travels up and down in the channels of the truck uprights 25, as shown in Figs. 1 and 2, and serves to guide and support the elevator platform and its load. The upright or vertical portion of the elevator is formed of channel iron side pieces 37 tied together by cross struts 38, and preferably on the outside of the vertical limbs of the elevator are mounted guide wheels 39 fitted to the channels of the frame uprights 25. The bed of the elevator is formed of channel iron 40, the flanges of which are preferably inwardly turned as shown in detail in Fig. 4, and to these channel iron side frames are secured the plates 41 having the open bearings 42 to receive the gudgeons 43, of the load receiving rolls 44, which are of sufficient diameter to project slightly above the framework of the load bed, as shown in Fig. 1. This construction makes a very cheap but efficient bed for the elevator, for the channel iron may be readily cut and assembled, and the bearing plates with their open bearings may be cast and readily assembled with the channel irons. In order to prevent the rolls becoming displaced or removed by careless workmen, I mount the bearing plates 41 in such relation to the inturned flanges of the channel iron frame that the rolls cannot be lifted out after the structure is assembled, although they are readily accessible for oiling or cleaning the bearings if this be desirable.

In order that the elevator may be guided between its limits of movement, it is, of course, necessary to extend the uprights 25 of the frame to a point considerably above the limit of movement of the bed or platform of the elevator, the upright or vertical part of the elevator necessitating this extension of the truck frame uprights. This portion of the elevator frame uprights I preferably hinge to the rigid portion so that the top of this elevator frame may be turned down on hinges 45 to permit the truck to be moved through a door of ordinary height, and this hinged top of the frame may be locked in its upright position by any suitable locking means as, for example, the locking pins 46 which pass through the meeting flanges of the two hinged parts.

In order that power may be conveniently supplied to the motor 18 the current connections extend upwardly from the motor to a starting box 47, conventionally shown, which box has the usual controller handle for throwing the power on or off. From the controller box the connection runs to a take-up reel 48 having rings 49 with which brushes 50 contact, this reel in turn having coiled thereon the flexible conductor 51 having suitable connection with the rings 49 and to the end of which is attached the usual plug adapted to be inserted in any power socket. The drum or reel 48 is preferably provided with a coiled spring 52, so that it will take up slack or give off the flexible conductor as may be needed, and is preferably located at a point above the hinges 45 so as to be at a height above the ordinary workman and thus the workmen may pass readily beneath it and the annoyance of trailing the current connections which might hamper the workmen is done away with. It is, of course,

understood that any other form of reel of the takeup type may be used. Stops 53 are provided to engage cross struts 26 of the hinged portion of the elevator frame to prevent injury to the reel when the hinged portion is in lowered position.

With this arrangement for supplying current, it will be seen that the conductor can be plugged in at any convenient point, and thereafter the truck may be readily moved from place to place, unreeling or taking up the slack on the spring drum as required, and the necessity of unplugging from one socket and plugging in at another as the truck is moved about is entirely done away with.

It will be observed that the truck frame 10 is of skeleton or of open form beneath the elevator, so that the bed or platform of the elevator will drop within the truck frame and level therewith when it is lowered, thus reducing the height of the truck to a minimum.

Trucks made in accordance with my invention may be cheaply produced and at the same time a very rigid, easily manipulated tiering truck is provided.

It is obvious that such changes as are within the skill of the mechanic may be made without departing from the spirit of my invention.

What I claim is:—

1. In an elevator truck, a base frame, an upright elevator frame having an upper hinged portion adapted to be turned down into lowered position, a vertically movable platform carried by said elevator frame, an electric motor for raising and lowering said platform, a take-up reel mounted on the upper hinged portion of said elevator frame and above the height of the workmen, connections between said take-up reel and said electric motor, and a flexible connection wound upon said take-up reel.

2. In an elevator truck, a base frame, an elevator frame having an upper hinged portion adapted to be turned down into lowered position, a vertically movable platform carried by said elevator frame, an electric motor for raising and lowering said platform, a take-up reel on the upper hinged portion of said elevator frame and above the height of the workmen, connections between said take-up reel and said electric motor, a flexible connection adapted to be wound upon said take-up reel, and stops on said elevator frame to prevent injury to said reel when said hinged portion is in lowered position.

3. In an elevator truck, a base frame formed of angle iron, an elevator frame comprising opposed channeled upright members secured at their lower ends to said base frame, means for connecting said upright members, a hinged portion on the upper end of said elevator frame adapted to be turned down into lowered position, a vertically movable platform frame formed of channel iron and having a horizontal bed section to receive articles to be elevated and a vertical section operating in said elevator frame, rollers on said bed-section, rollers on the side of the vertical section of said platform frame engaging between the flanges of the channels of the upright members of the elevator frame, a screw-shaft located centrally between the upright members of the elevator frame, an anti-friction bearing on said base frame for receiving the lower end of said screw-shaft, and a bearing adjacent the top of said elevator frame for receiving the upper end of said screw-shaft, an electric motor on said base frame, and a connection between said electric motor and screw-shaft for rotating the screw-shaft to move the platform frame vertically.

In testimony whereof I have hereunto set my hand in presence of a subscribing witness.

WALTER R. METZ.

Witness:
GERTRUDE M. STUCKER.

Correction in Letters Patent No. 1,227,646.

It is hereby certified that the name of the assignee in Letters Patent No. 1,227,646, granted May 29, 1917, upon the application of Walter R. Metz, of Washington, District of Columbia, for an improvement in "Elevator-Trucks," was erroneously written and printed as "George M. Drexelius," whereas said name should have been written and printed as *George W. Drexelius;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of August, A. D., 1920.

[SEAL.] M. H. COULSTON,

Acting Commissioner of Patents.

Cl. 187—9.

Correction in Letters Patent No. 1,227,646.

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[SEAL.]

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