Oct. 19, 1926. 1,603,387

W. H. HEISE

TRUCK ELEVATOR

Filed May 14, 1924 3 Sheets-Sheet 1

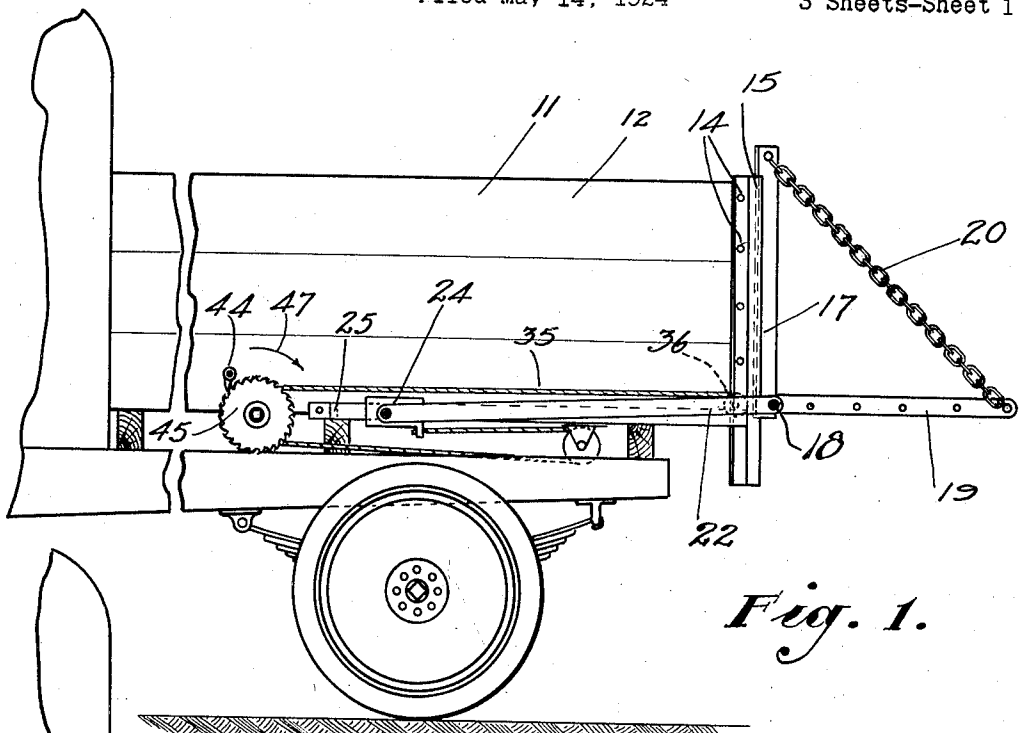


Fig. 1.

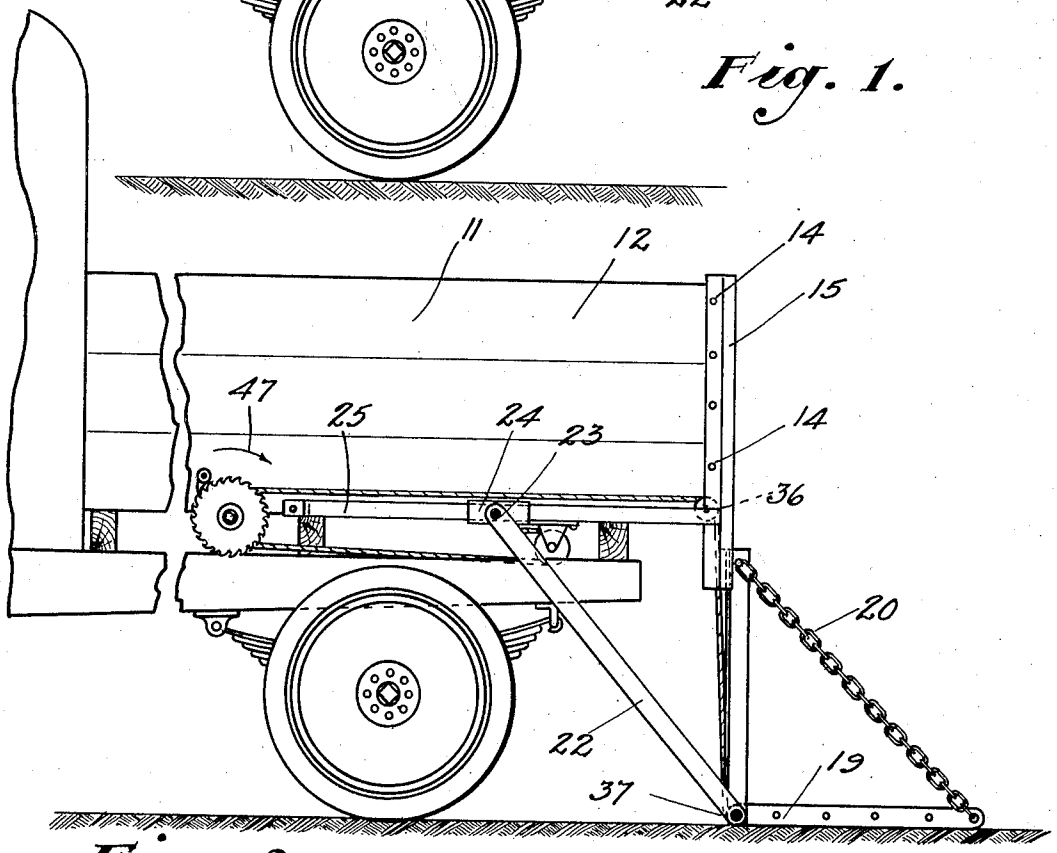


Fig. 2.

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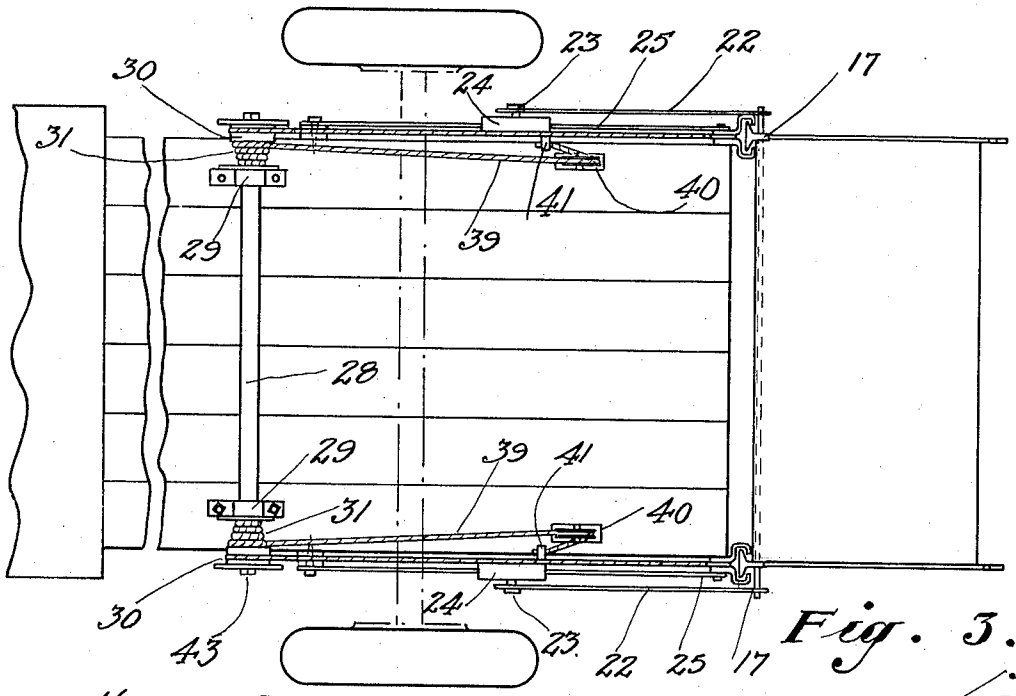


Fig. 3.

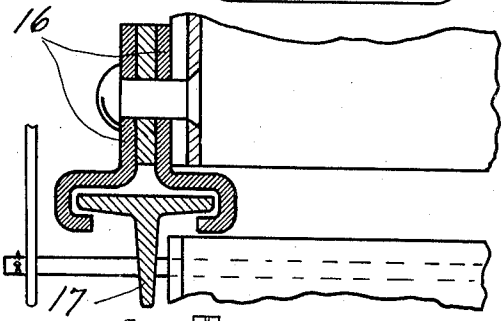


Fig. 4.

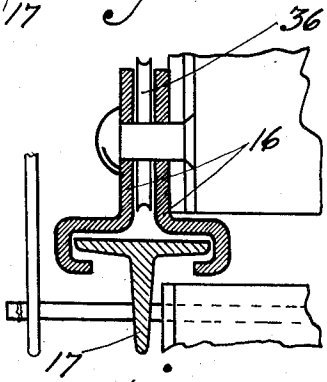


Fig. 5.

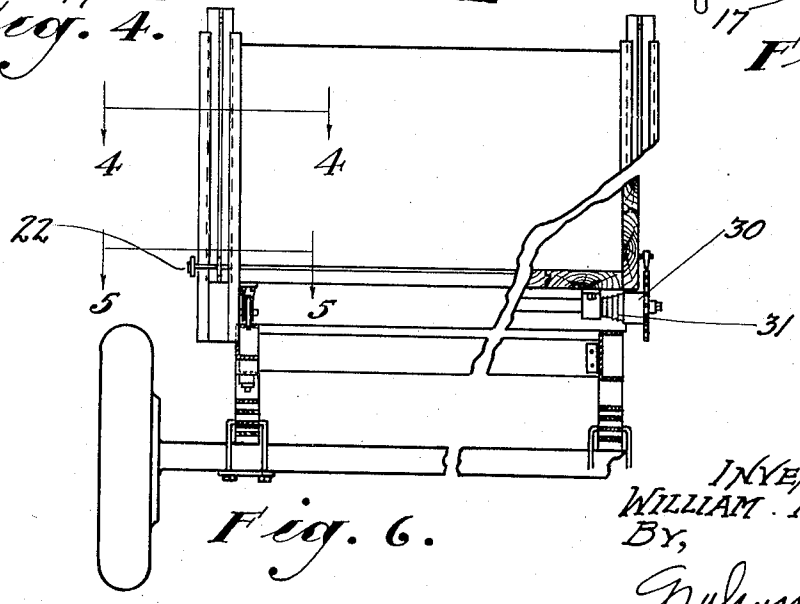


Fig. 6.

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Fig. 7.

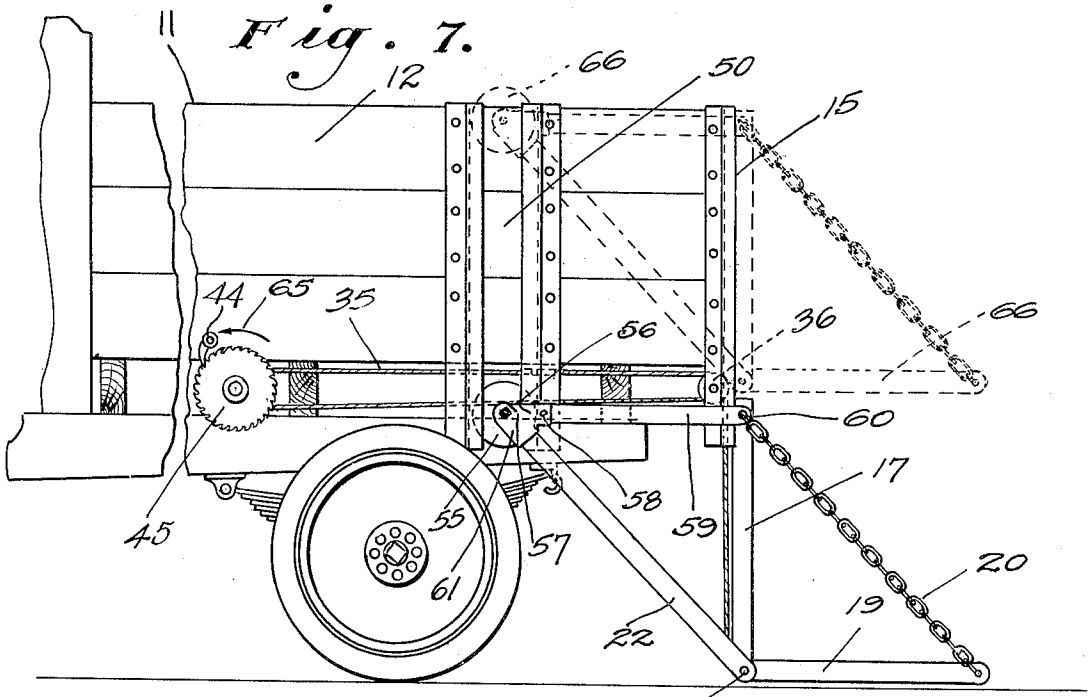
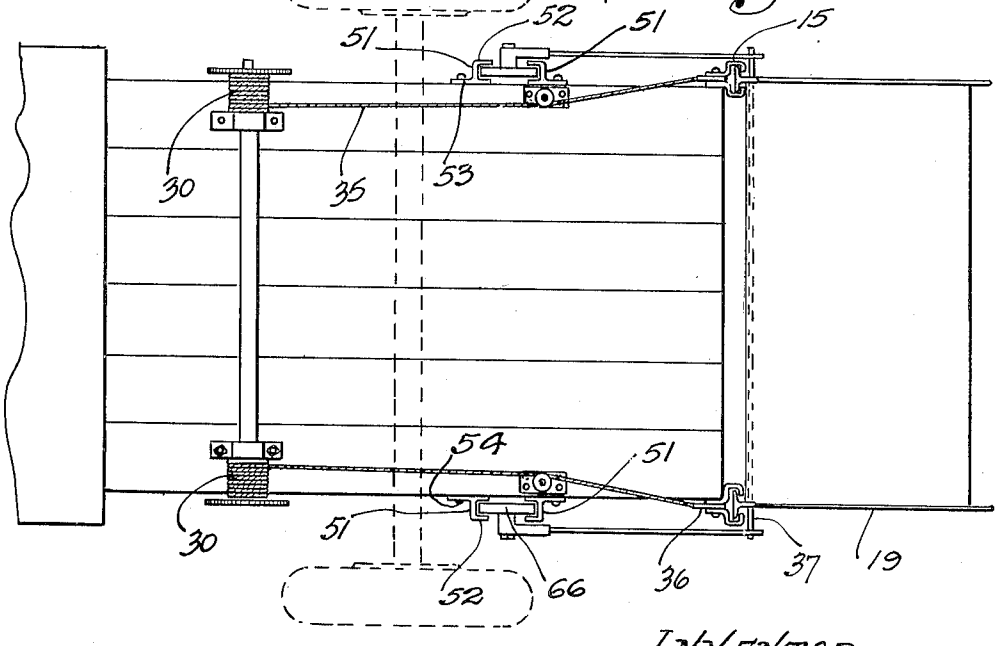


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM H. HEISE, OF LOS ANGELES, CALIFORNIA.

TRUCK ELEVATOR.

Application filed May 14, 1924. Serial No. 713,357.

This invention relates to elevating devices and is especially adapted for use on trucking vehicles.

The manual removal of heavy articles from trucks is often impossible, due to the excessive weight thereof and hoisting apparatus or skids must therefore be employed to load and unload the truck. It is often necessary to carry the apparatus for unloading to the place of delivery, as it is often found that the establishments to which the delivery is to be made are not equipped with suitable hoisting apparatus.

It is the principal object of my invention to provide an elevator which may be incorporated in a trucking vehicle.

It is also an object of my invention to provide a device which may be readily installed on the vehicle, which will be of sturdy construction and which will have a very simple operating arrangement.

My invention consists essentially of a pair of vertical guides which are secured to the rear end of the vehicle. Slidably situated in these guides are a pair of slide bars to the lower ends of which the elevator platform is secured, this platform being the tail gate of the vehicle. Extending from the elevator to a pair of drums which are located forward of the elevator are a pair of cables which are arranged to be wound on the drums. To lower the elevator, the drums are rotated either manually or mechanically, this modification being arranged for manual operation. Because of the fact that the weight is eccentrically disposed, that is, to one side of the slides there is a tendency for a lateral movement of the elevator as it is lowered. I also provide braces which are adapted to resist any lateral movement of the elevator.

Articles may be removed from the vehicle much quicker by the use of my elevator than by the beforementioned manner because it is unnecessary to secure any ropes or the like to the article being removed as is necessary when a hoist or block and tackle is used. Also, it takes very little labor to lower the elevator and the article may be very easily handled.

Further objects of the invention and the additional advantages thereof will be made evident hereinafter.

Referring to the drawings which are for illustrative purposes only:—

Fig. 1 is a fragmentary elevational view of a vehicle employing an elevator of my invention, the elevator being shown in raised position.

Fig. 2 is a view similar to Fig. 1, but showing the elevator in lowered position.

Fig. 3 is a bottom plan view of Fig. 2.

Fig. 4 is a section taken on the line 4—4 of Fig. 6.

Fig. 5 is a section taken on the line 5—5 of Fig. 6.

Fig. 6 is an end view of Fig. 1 partially sectioned to show the drum arrangement.

Fig. 7 is a fragmentary elevational view of a vehicle employing an alternative form of elevator, the elevator in this view being shown in lowered position.

Fig. 8 is a bottom plan view of Fig. 7.

As shown in the drawings, the numeral 11 represents a vehicle to which my invention is applied. Secured to the rear end of the sides 12 of the truck 11 by means of the rivets 14 are guides 15 as shown in Figs. 1 and 2. As shown in Figs. 4 and 5, each of the guides consist of a pair of members 16 shaped and secured together as shown. Extending into the guides 15 are slide bars 17 which may be in the form of T bars as shown. Pivoted to the lower ends of the slides 17, on the shaft 18 is the tail gate 19 of the trucking vehicle 11. There extends a chain 20 between the upper ends of the slides 17 and the outer end of the tail gate or platform 19 to hold the platform in horizontal position. The platform may be swung into vertical position so that it also accomplishes the same purpose as the ordinary tail gate.

Pivoted on the shaft 18 are brace members 22, the other ends of the members are pivoted at 23 to the sliding blocks 24 which blocks slide on the slide bar 25 secured to the side 12 of the vehicle 11.

As shown clearly in Fig. 3, a shaft 28 is rotatably mounted on the under side of the floor of the vehicle and forward of the elevator, by means of the journals 29. Secured

at each end of the shaft 28 are cylindrical drums 30 and conoidal spirally grooved drums 31 which may be made integral as shown. Extending from the drums 30 are cables 35 which pass over the sheaves 36 and are secured to the lower ends of the slides 17 at 37. Extending from the conoidal pulley 31 are cables 39 which pass over the sheaves 40 secured to the floor of the vehicle to the rear of the blocks 24 as shown, after which the cables are extended to the blocks and are secured thereto at 41.

When it is desired to lower the elevator from the position in which it is shown in Fig. 1 into the position shown in Fig. 2, a suitable wrench is placed on the squared portion 43 of the shaft 28 and the pawls 44 are removed from engagement with the ratchet wheels 45, which arrangement prevents the drums from turning except when the pawls are disengaged by the operator. The drums 30 and 31 are then rotated in the direction indicated by the arrow 47 in Figs. 1 and 2, thereby lengthening the cables 35 and allowing the elevator to lower by the weight of the article placed thereon. By rotating the drums 30 and 31, the cables 39 are wound on the drums 31 shortening them and moving the blocks 24 rearwardly on the slides 25. From Figs. 1 and 2, it will be seen that as the pivot 37 moves away from the plane along which the block slides, the block must gradually be moved faster in order that the slided bars 17 may travel straight, in other words, in order that the brace 22 be made to resist any lateral movement in the elevator, the block must be moved rightwardly in order to compensate for the downward movement of the pivoted end 37. Considering that the elevator lowers at a constant speed, then the compensating movement of the pivoted end 23 of the brace 22 must gradually accelerate in motion in order that the lower end of the slides 17 be maintained in the same plane so that they will not bind in the guides 15. From Figs. 3 and 6, it will be seen that drums 31 are conical and have spiral grooves formed thereon. The cables 39 are wound from the small ends of the drums and as the drums rotate, the cables gradually wind on the larger portion of the drums; the travel of the cable thereby being gradually accelerated which in turn moves the blocks 24 at a gradually increasing speed. By rotating the drums in the opposite direction, the cables 35 will be wound on the drums 30 and the cables 39 will be unwound from the drums 31, returning the various parts back to the position as shown in Fig. 1.

In Figs. 7 and 8, the main parts of the device being optionally the same, the same reference characters are utilized, in part. In this form of the invention, slides 50 are provided, shown as extending vertically upon the sides 12 of the body 11. These slides 50 may be retained and guided by a pair of members 51 providing channels 52, each member comprising a flange 53 by which it may be secured to a side 12, as by bolts 54. Rollers 55, or their equivalent, are situated in the slides 50, each having a shaft 56 extending therefrom upon which a fitting fixture 57 is placed. Secured at 58 to the fixtures 57 are substantially horizontal brace members 59, which extend rearwardly and are shown as secured at 60 to the vertical slide bars 17. Secured at 61 to the fixtures 57 are also the diagonal braces 22, which carry at their lower ends, the pivots 37.

It will be seen that this modification of the invention dispenses with the use of the slide blocks 24 and the slide bars 25. It also dispenses with the use of the ropes 39 and the spiral portions 31 of the rotatable drums 30, it being possible to lower and elevate the platform 19 by the use of the single ropes 35. By rotating the drums 30 in the direction indicated by the arrow 65 of Fig. 7, the rope 35 may be wound thereon in such manner as to shorten the extending length thereof, thereby raising the platform 19, which is shown in lowered position, into the raised position as indicated by the dotted lines 66 of Fig. 7. The rollers 55, during this operation, travel upwardly in the guides 50 and assume substantially the position shown at 66 in Fig. 7. Owing to the triangular brace construction provided by the members 22, 59 and 17, it is practically impossible for any undesired lateral movement to occur in the platform 19.

I claim as my invention:—

1. The combination of: a structure forming part of a trucking vehicle; a platform secured in sliding relationship to said structure; means for retaining said platform in horizontal position; means for moving said platform between raised and lowered positions; and means for bracing said platform in any of its prescribed positions, said means including a brace secured at one end to said platform and slidably secured at its other end to said truck structure.

2. The combination of: a structure forming part of a trucking vehicle; a platform secured in sliding relationship to said structure; means for retaining said platform in horizontal position; means for moving said platform between raised and lowered positions; and means for bracing said platform in any of its prescribed positions, said means including a horizontal slide bar mounted at the side of said truck structure, and a brace secured at one end to said platform and slidably secured at its other end upon said slide bar.

3. The combination of: a structure forming part of a trucking vehicle; a platform secured in sliding relationship to said structure; means for retaining said platform in horizontal position; means for moving said platform between raised and lowered positions; and means for bracing said platform in any of its prescribed positions, said means including a horizontal slide bar mounted at the side of said truck structure, a slide block movably carried upon said slide bar, and a brace secured at one end to said platform and pivotally secured at its other end to said slide block.

4. The combination of: a structure forming part of a trucking body; an elevator structure secured in sliding relationship to said body structure, a platform of said elevator structure being comprised of the tail gate of said trucking body structure; means for moving said elevator between raised and lowered positions; and braces for steadying said elevator in any of its prescribed positions, said braces including horizontal slide bars at the sides of said trucking body, slide blocks enclosing and movably carried upon said slide bars, and members pivotally secured at their outer ends to said elevator and at their inner ends to said slide blocks.

5. The combination of: a structure forming part of a trucking body; an elevator structure secured in sliding relationship to said body structure, a platform of said elevator structure being comprised of the tail gate of said trucking body structure; means for moving said elevator between raised and lowered positions; and braces for steadying said elevator in any of its prescribed positions, said braces including horizontal slide bars at the sides of said trucking body, slide blocks enclosing and movably carried upon said slide bars, members pivotally secured at their outer ends to said elevator and at their inner ends to said slide blocks, and means for controlling the positions of said slide blocks.

6. The combination of: a structure forming part of a trucking vehicle; a platform secured in sliding relationship to said structure; means for retaining said platform in horizontal position; means for moving said platform between raised and lowered positions; and means for bracing said platform in any of its prescribed positions, said means including a horizontal slide bar mounted at the side of said truck structure, a slide block enclosing and movably carried upon said slide bar, and a brace secured at one end to said platform and pivotally secured at its other end to said slide block.

7. The combination of: a structure forming part of a trucking vehicle; an elevator platform secured in sliding relationship to said structure; a brace extending forwardly from said platform to said trucking vehicle arranged to resist lateral movement in said elevator platform; and mechanism for moving said elevator platform between raised and lowered positions.

8. The combination of: a structure forming part of a trucking body; guide members rigidly secured to said structure; an elevator comprising slide members in sliding relationship with said guide member, and the tail gate of the structure pivotally secured to said slide members, said tail gate being disposed in substantially horizontal extension; bars secured to said structure; brace members pivotally secured at one end to said elevator and slidably secured to said bars at the other end; means for raising and lowering said elevator; and means for sliding the slidable end of said brace so as to resist lateral movement in said elevator.

9. The combination of: a structure forming part of a trucking body; guide members rigidly secured to said structure; an elevator comprising slide members in sliding relationship with said guide member, and the tail gate of the structure pivotally secured to said slide members, said tail gate being disposed in substantially horizontal extension; bars secured to said structure substantially perpendicular to said guide members; brace members extending between said platform of said elevator and said bars, said brace members being pivoted to said platform and slidably mounted on said bars; drums rotatably attached to said structure; elevator cables extending from said drums to said elevator for raising and lowering said elevator when said drum is rotated; and brace cables extending between said drums and the slidable end of said braces for moving said slidable end of said brace in a manner to cause said brace to resist lateral movement in said elevator.

10. The combination of: a structure forming part of a trucking body; guide members rigidly secured to said structure; an elevator comprising slide members in sliding relationship with said guide members, and the tail gate of the structure pivotally secured to said slide members, said tail gate being disposed in substantially horizontal extension; bars secured to said structure substantially perpendicular to said guide members; brace members extending between said platform of said elevator and said bars, said brace members being pivoted to said platform and slidably mounted on said bars; cylindrical drums rotatably secured to said structure; cables extending from said elevator to said cylindrical drums, and arranged to be wound thereon, for raising and lowering said elevator; conoidal spirally grooved drums arranged for simultaneous rotation with said cylindrical

drums; brace cables extending between the slidable ends of said braces and said conoidal spirally grooved drums, and arranged to be wound thereon, for sliding the slidable ends of said braces forward when said elevator is lowered, said conoidal spirally grooved pulley increasing the travel of said brace cables so as to move said slidable end of said braces in a manner to cause said braces to resist lateral movement in said elevator; and means for rotating said drums.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 5th day of May, 1924.

WILLIAM H. HEISE.