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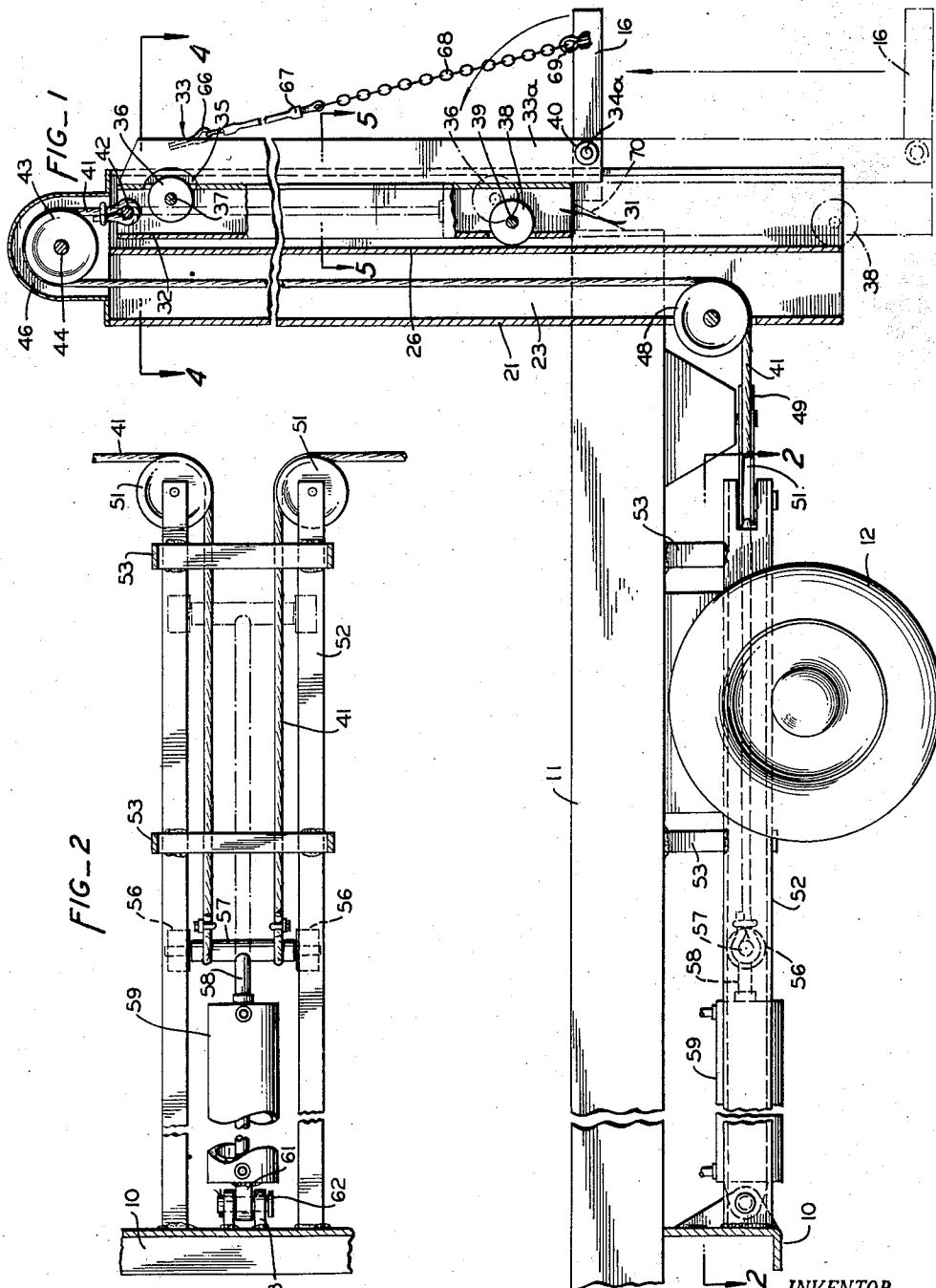
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GATE LIFT MECHANISM FOR TRUCKS

Filed June 4, 1956

2 Sheets-Sheet 1



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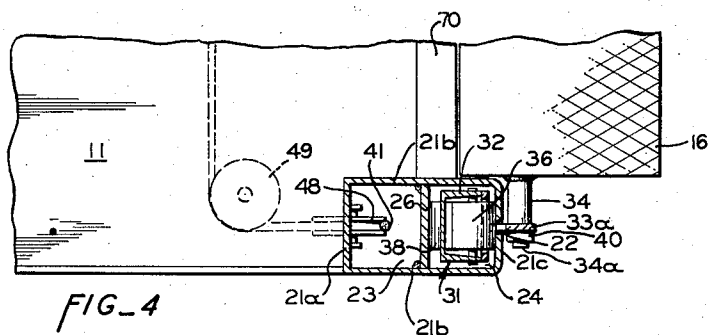
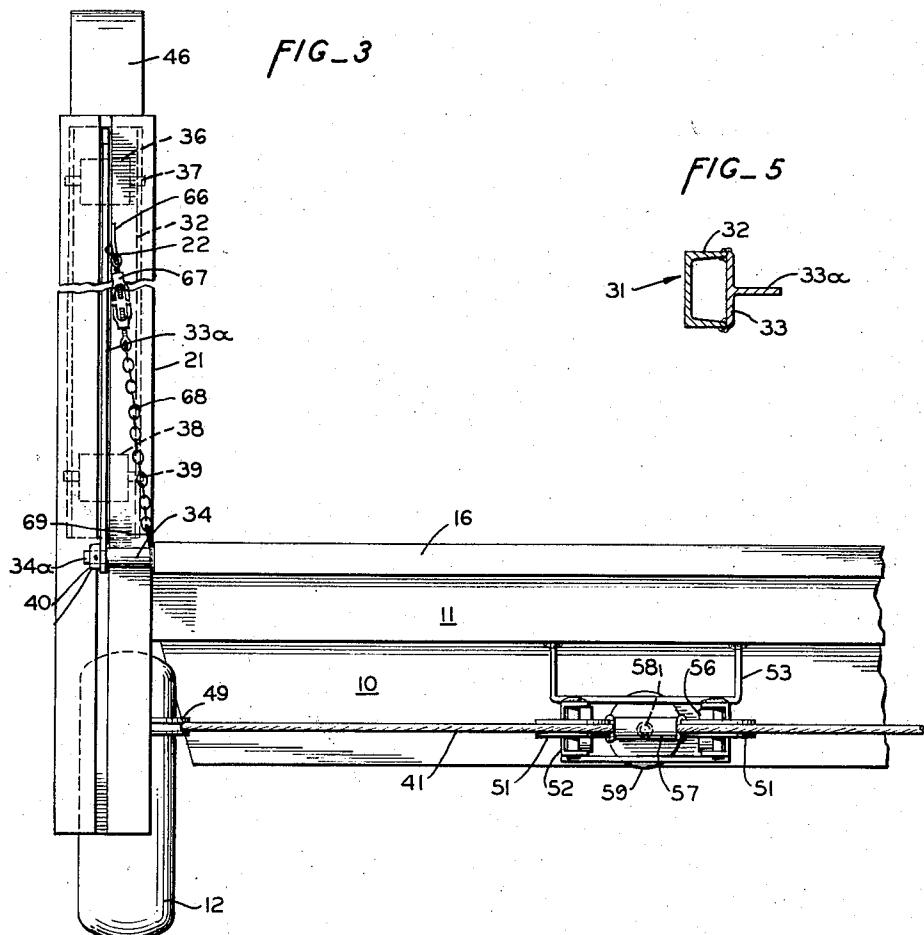
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GATE LIFT MECHANISM FOR TRUCKS

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7 Claims. (Cl. 214—75)

The present invention relates to gate lift mechanisms for trucks, and is concerned more particularly with a gate lift mechanism which will provide a powerful and steady lifting action of the gate platform.

It is the general object of the invention to provide an improved gate lift mechanism for trucks.

It is another object of the invention to provide a mechanism of the above character in which the platform of the gate lift is controlled for steady and even operation to avoid upsetting of any load carried thereby.

A further object of the invention is to provide a gate lift mechanism of the above character which adapts itself to easy installation on existing trucks.

A still further object of the invention is to provide a mechanism of the above character which is constructed to enable fabrication of its principal components from existing or easily fabricated shapes of steel.

Other objects and advantages of the invention will be apparent from the following description of a preferred embodiment thereof taken in connection therewith in the accompanying drawings, in which:

Figure 1 is a fragmentary side elevational view of a truck showing the gate lift mechanism in section.

Figure 2 is a fragmentary plan view, partially in section, taken as indicated by line 2—2 in Figure 1.

Figure 3 is a rear elevational view of the truck omitting one side of the lift mechanism.

Figure 4 is a fragmentary horizontal section taken in a plane indicated by the line 4—4 in Figure 1.

Figure 5 is a fragmentary horizontal section taken as indicated by the line 5—5 in Figure 1.

Referring to the drawings the gate lift mechanism of the instant invention is shown as embodied in a truck having a frame 10 including means forming a truck bed 11 which is supported in a conventional manner on one or more drive wheels 12. At the rear end of the truck bed 11 there is secured a truck bed extension 70 of triangular contour, and rearwardly of this extension 70 there is provided a gate lift platform 16 which is disposed horizontally when used as a lift mechanism and is adapted for movement between the lower position indicated in phantom lines and the upper position shown in full lines where it is operatively related to the truck bed 11. This gate lift platform 16 is supported between two identical opposite lift mechanisms, and only one of these lift mechanisms will be described in detail.

As seen in the drawings the left hand lift mechanism, as viewed from the rear of the truck, is illustrated and this lift mechanism or unit includes an upright tubular frame member 21 which is secured as by welding to the rear face of the truck bed 11 flush with one side edge thereof. The tubular frame member is formed by fabricating a rectangular piece of sheet metal, to provide a front wall 21a (Figure 4) opposite side walls 21b, and a split rear wall 21c whose edges define a slot 22 which extends vertically throughout the length of the tubular frame member 21. The interior of the tubular frame member 21 is divided into two vertically extending compartments

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23 and 24 by a plate 26 which is secured in upright position between the two opposite side walls 21b by welding for example.

Within the compartment 24 of the tubular frame member 21 there is provided a vertically extending tubular carriage 31 which is formed of a channel 12 and a T bar 33 having its web welded to the two side flanges of the channel as shown in Figure 5. The leg of the T bar 33 provides a flange 33a projecting through the slot 22 in the tubular frame member 21, and the flange 33a is apertured adjacent its lower end to receive pivotally the reduced end 34a of a stud 34 welded to the lift platform 16, and set collar 40 being provided on the reduced end 34a. The lift gate platform 16 also carries a hook 69 at each side to connect to a supporting chain 68, which at its upper end is attached by an adjustable turnbuckle 67 to a hook 66. The carriage 31 has mounted therein adjacent its upper end a cylindrical roller 36 carried by a shaft 37 and projecting through cut away portions or openings 35 of the carriage 31 and the T bar 33 to engage the split track formed by the wall sections 21c. Adjacent its lower end the carriage 31 provides a journaled mounting for a second cylindrical roller 38 having a mounting shaft 39 and projecting through an opening in the channel portion 32 of the frame to engage the track provided by the plate 26.

From the above description it will be seen that the load exerted on the carriage from the offset platform 16 and the load carried thereby is transmitted advantageously to the tubular frame member by a rearwardly disposed roller 36 adjacent the upper end of the carriage and a forwardly disposed roller 38 adjacent the lower end of the carriage.

The operating connection for each carriage includes a cable 41 which is attached to a transverse pin 42 in the carriage 31 and extends upwardly out of the compartment 24 to engage a sheave 43 which has its shaft 44 journaled in a frame extension 46. The cable 41 then extends downwardly through the compartment 23 to an idler sheave 48, from whence it extends to a horizontally disposed idler sheave 49 as carried by the truck bed 11 and then inwardly (Figures 2 and 4) to a second horizontally disposed idler sheave 51 journaled at the end of an auxiliary longitudinally disposed frame channel 52. The pair of channels 52 are connected by frame brackets 53 to each other and to the bed 11 of the truck in a horizontal relation thereunder, the forward ends of the channels being welded to the frame 10. The channels 52 provide tracks for a pair of rollers 56 journaled on the ends of a T connection 57 to which each of the cables 41 is attached in equally spaced relation to provide a balancing of the load on the T bar 57. The T bar 57 is attached to or forms a part of the piston rod 58 of a pneumatic or hydraulic piston or cylinder mechanism 59 which has an apertured bracket 61 pivoted on a pin 62 carried by respective apertured ears 63 welded to the frame 10 of the truck. Suitable pressure conduits connect the piston and cylinder mechanism 59 to a conventional source of pressure for which conventional operating controls may be conveniently located on the truck in a manner not shown.

From the above description it will be seen that this invention provides a very rugged, rigid lift mechanism for a tail gate platform, which is also constructed for easy lifting action so as to enable handling of a maximum load on the tail gate platform without danger of upsetting the load. Also by virtue of this construction the load need not be centered on the platform, and heavy objects such as oxygen cylinders and the like can be placed in upright fashion at any position on the platform and be handled without upsetting or without special securing of the objects. It will be noted that the triangular truck bed

extension 70 provides a slanting lower face which will serve to cam any articles which may project forwardly from the tail gate platform 16 onto the tail gate and prevent their being caught upon lifting of the gate from its lower position.

While I have shown and described a preferred embodiment of the invention, it will be apparent that the invention is capable of variation and modification from the form shown so that the scope thereof should be limited only by the proper scope of the claims appended hereto.

I claim:

1. In a truck having a frame means and a truck bed, a gate lift mechanism including a pair of upright oppositely disposed tubular frame members mounted at the rear of the truck bed, each of said tubular frame members having a vertical slot formed in its rearward face for at least a portion of its length, and also including means at either side of said slot forming a split track, each of said tubular frame members also including a second track parallel to and spaced forwardly from said split track, a tubular carriage mounted within each of said tubular frame members and including a vertical flange portion projecting through the associated slot, a horizontal tail gate platform secured between said projecting flange portions, roller means journaled in said tubular carriage adjacent the upper end thereof and engaging said split track, other roller means journaled in said tubular carriage adjacent the lower end thereof and engaging said second track, whereby each of said tubular carriages is operatively mounted in an associated tubular frame member for vertical sliding movement under the control of said respective roller means, operating means on said truck for said carriages, and connecting means from said operating means to said carriages.

2. In a truck as recited in claim 1, characterized by said second track providing a separating partition in each of said tubular frame members to form two vertically extending compartments therein, and said connecting means includes operating connections extending upwardly through one of said compartments and then downwardly to the associated carriage.

3. In a truck as recited in claim 1 in which said tubular frame member is fabricated from sheet metal bent to rectangular form with one pair of said edges spaced apart to form said slot and said split track, and in which said second track in each tubular frame member is provided with a vertical plate welded between the opposed walls of said sheet metal member.

4. In a truck as recited in claim 2 in which said flange of each tubular carriage is cut away to provide clearance for said first named roller means.

5. In a truck as recited in claim 1 in which said operating means includes a horizontally disposed hydraulic cylinder mounted beneath said truck bed, opposed horizontally extending tracks extending rearwardly from said

cylinder roller means engaged in said horizontally extending tracks and respective cables connected to said roller means and extending therefrom to said respective carriages.

6. In a truck having a frame means and a truck bed, a gate lift mechanism including operating means mounted adjacent the rear end of the truck bed, a tail gate platform mounted on said truck bed for movement between an upper horizontal position and a lower position under control of said operating means, and a truck bed extension carried by said truck bed at the rear thereof and having a lower rearward cam face adjacent the path of movement of said platform in approaching said horizontal position, said cam face cooperating with any articles projecting forwardly from the platform to move such articles on said platform and thereby prevent an article from being caught between said truck bed and said platform during raising movement of said platform.

7. In a truck having a frame means and a truck bed and a gate lift mechanism including a pair of upright oppositely disposed tubular frame members mounted at the rear of the truck bed, each of said tubular frame members being fabricated from sheet metal and having side edge portions bent to spaced apart relation to provide a vertical slot, and also providing means at either side of said slot forming a split track, a vertical transversely disposed plate welded between opposite sides of each of said frame members and providing a second track parallel to and spaced forwardly from said split track, a tubular carriage mounted within each of said tubular frame members comprising a channel having a T bar welded to the flanges thereof and providing a flange portion projecting through the associated slot, a horizontal tail gate platform pivotally secured between said projecting flange portions, roller means journaled in said tubular carriage adjacent the upper end thereof and engaging said split track, other roller means journaled in said tubular carriage adjacent the lower end thereof and engaging said other track, whereby each of said tubular carriages is operatively mounted in an associated tubular member for vertical sliding movement under the control of said respective roller means, operating means on said truck for said carriages and connecting means from said operating means to said carriages.

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