

May 9, 1933.

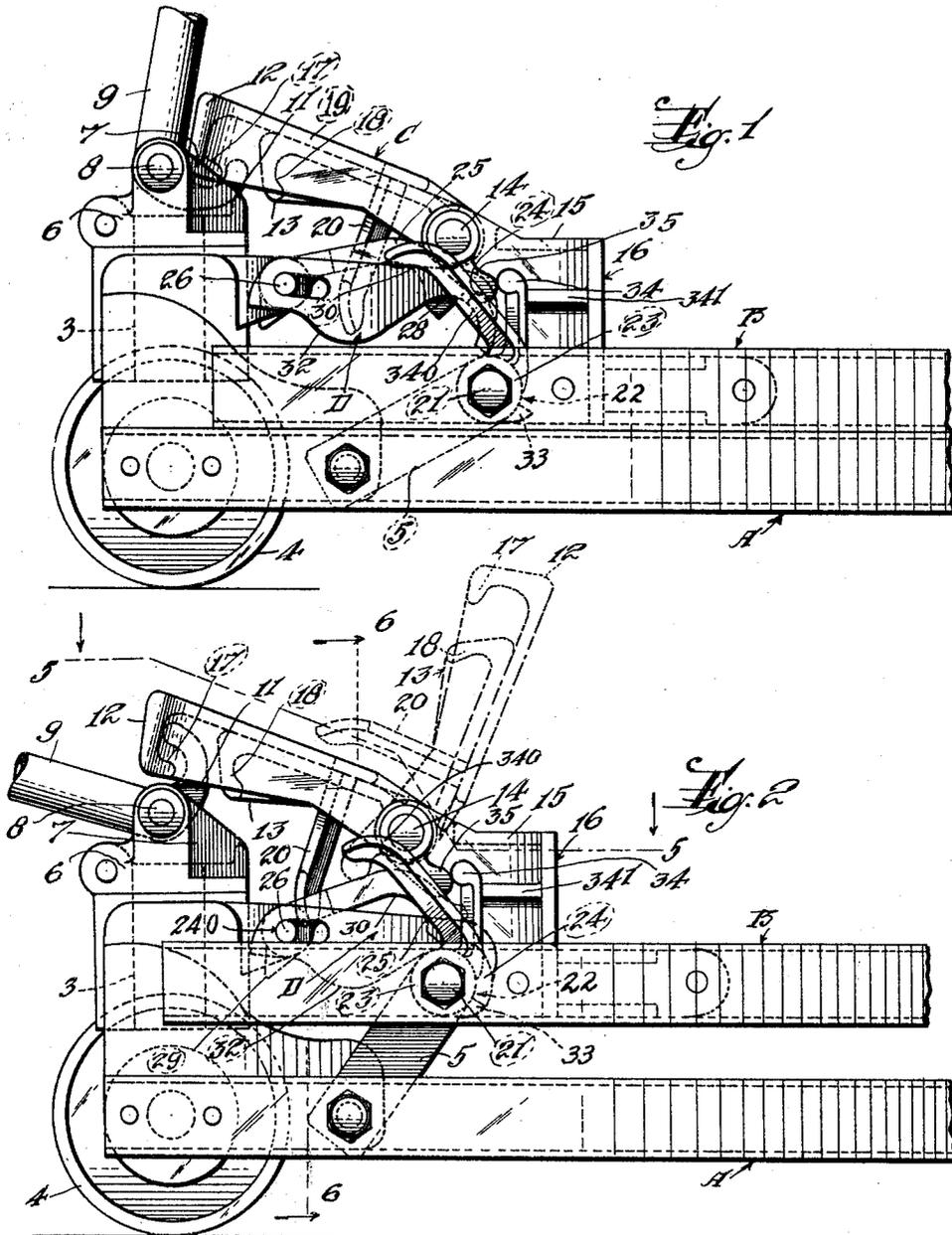
H. S. GERMOND ET AL

1,908,139

DOUBLE LIFT ELEVATING TRUCK

Filed Feb. 3, 1931

5 Sheets-Sheet 1



Inventors
Henry S. Germond
and Arthur Williams,
Attorneys
By
Everett Rook.

May 9, 1933.

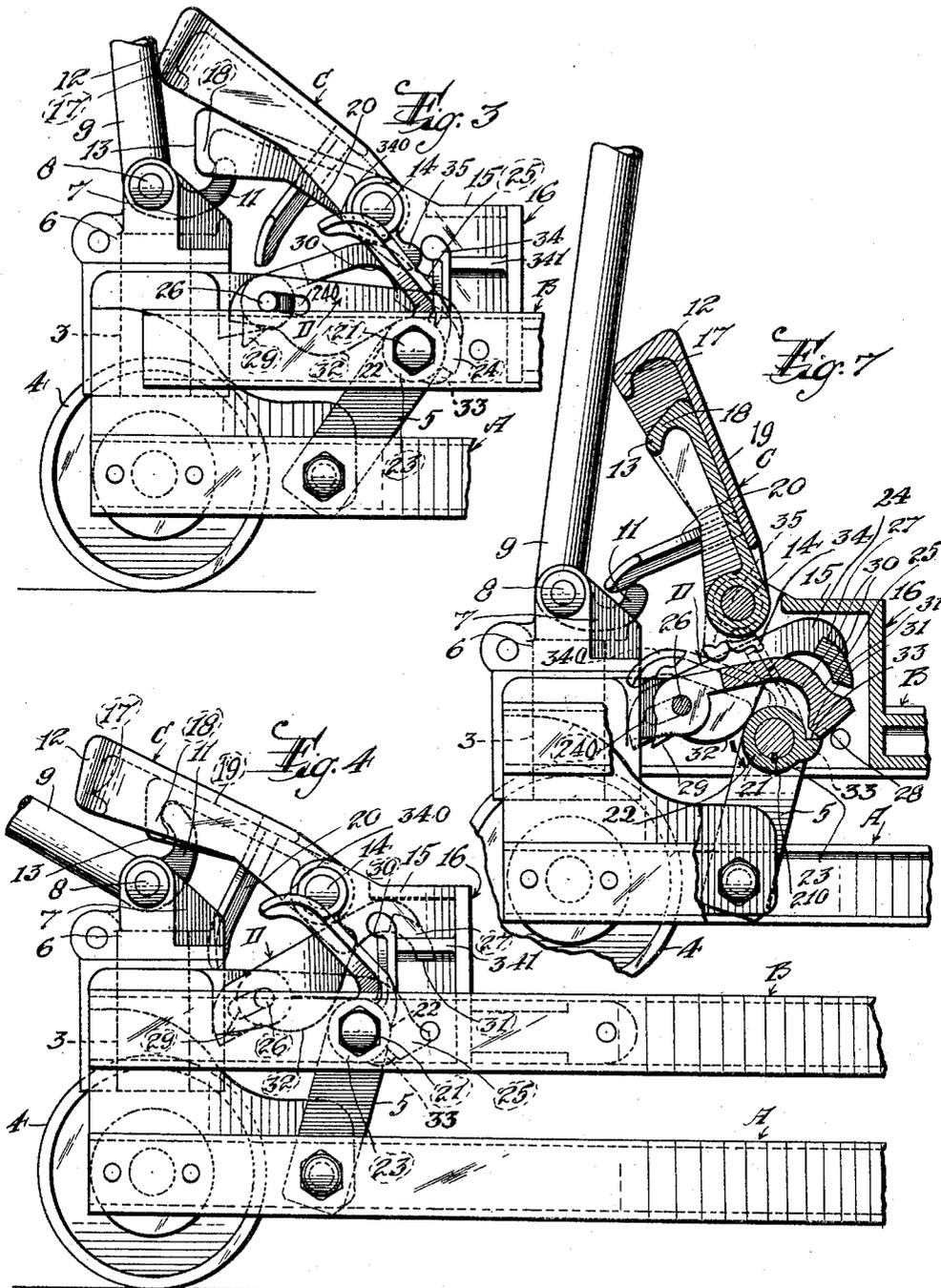
H. S. GERMOND ET AL

1,908,139

DOUBLE LIFT ELEVATING TRUCK

Filed Feb. 3, 1931

5 Sheets-Sheet 2



Henry S. Germond Inventors
and Arthur Williams,
By Attorneys,
Wentworth & Rook.

May 9, 1933.

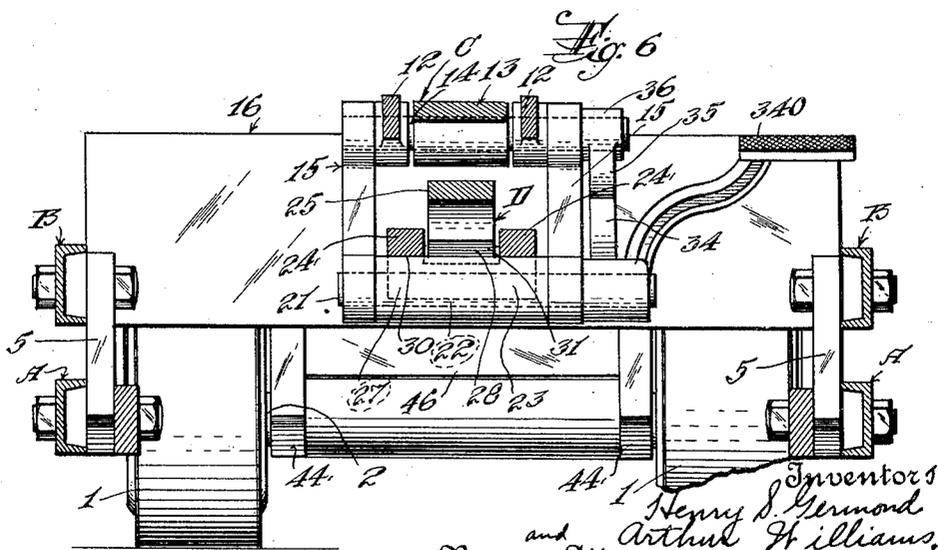
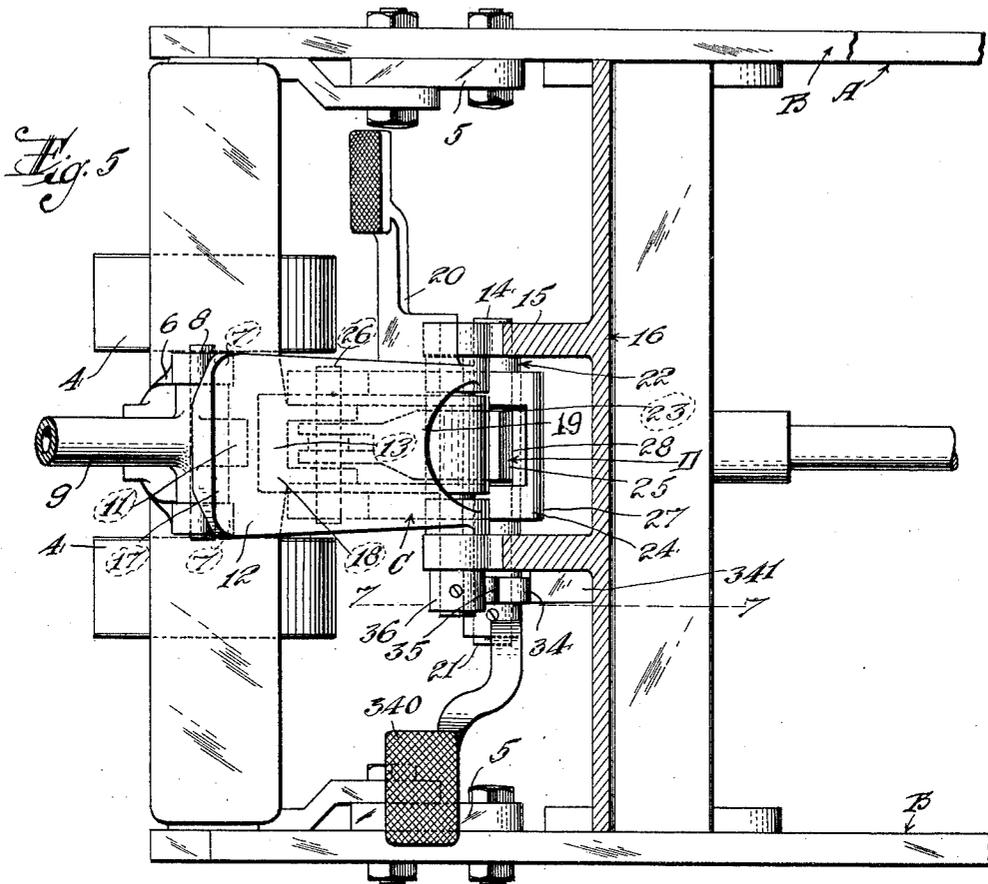
H. S. GERMOND ET AL

1,908,139

DOUBLE LIFT ELEVATING TRUCK

Filed Feb. 3, 1931

5 Sheets-Sheet 3



Inventors
Henry S. Germond
and
Arthur Williams,
Attorneys
By
W. C. Cook,

May 9, 1933.

H. S. GERMOND ET AL
DOUBLE LIFT ELEVATING TRUCK

1,908,139

Filed Feb. 3, 1931

5 Sheets-Sheet 4

Fig. 8

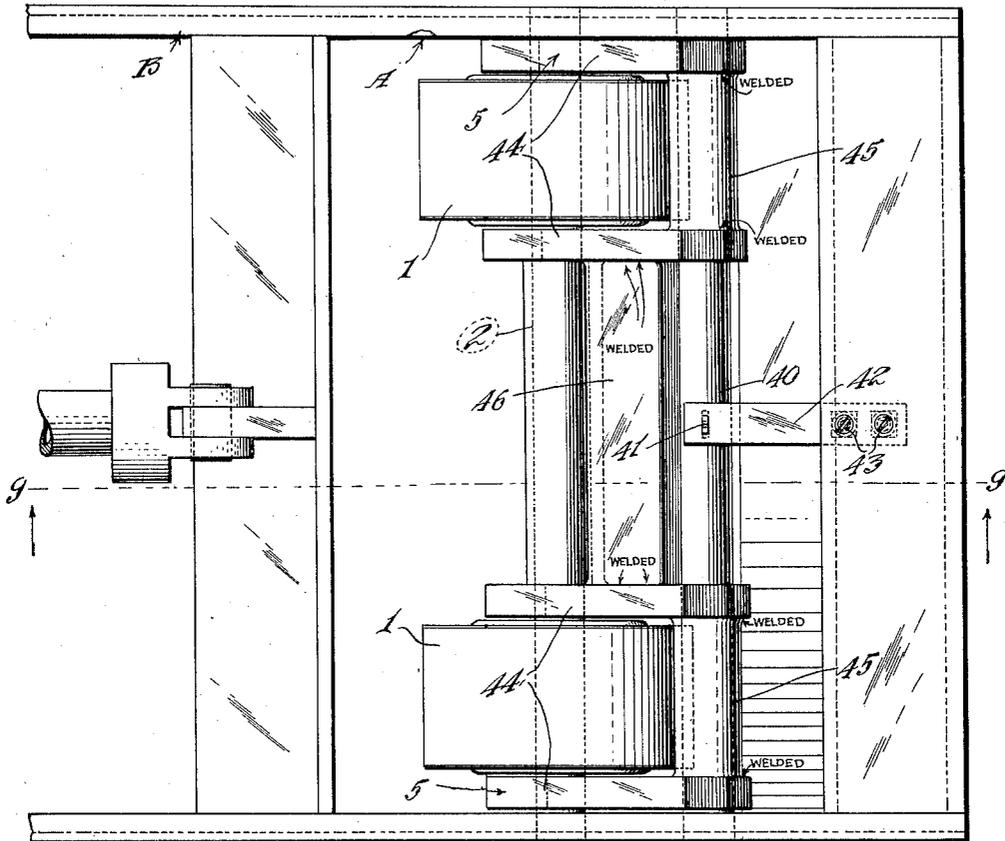
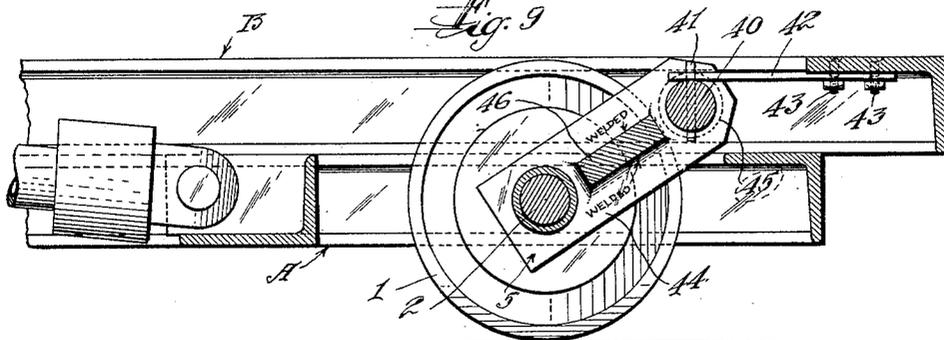


Fig. 9



INVENTORS
Henry S. Germond and
BY Arthur Williams,
W. C. Cook,
ATTORNEYS

May 9, 1933.

H. S. GERMOND ET AL
DOUBLE LIFT ELEVATING TRUCK

1,908,139

Filed Feb. 3, 1931

5 Sheets—Sheet 5

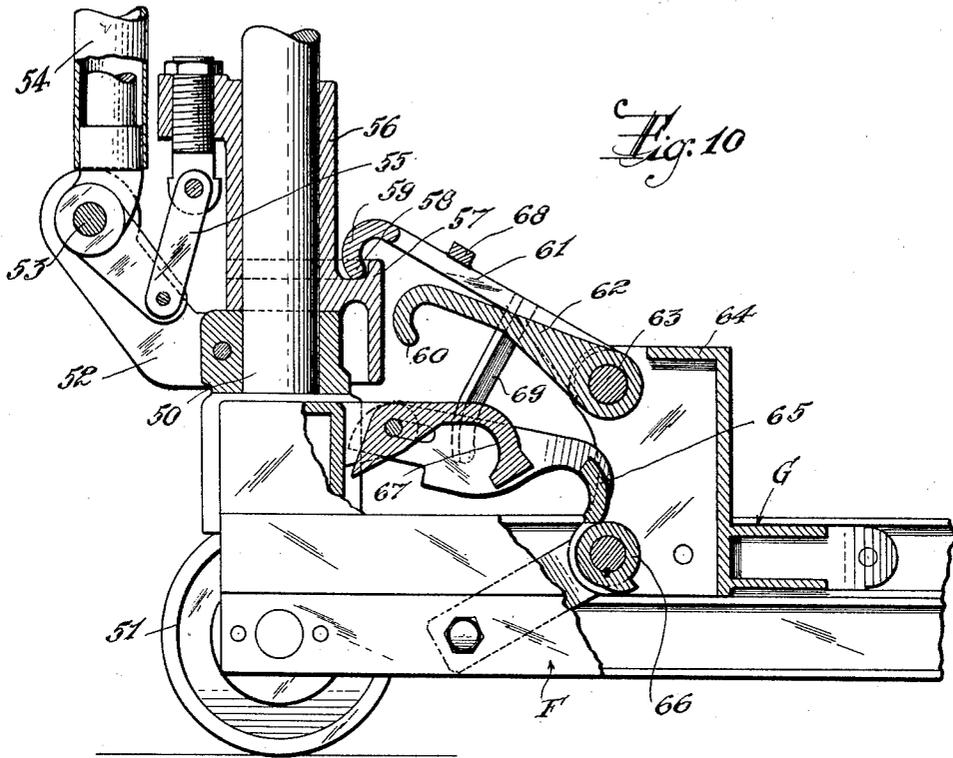


Fig. 10

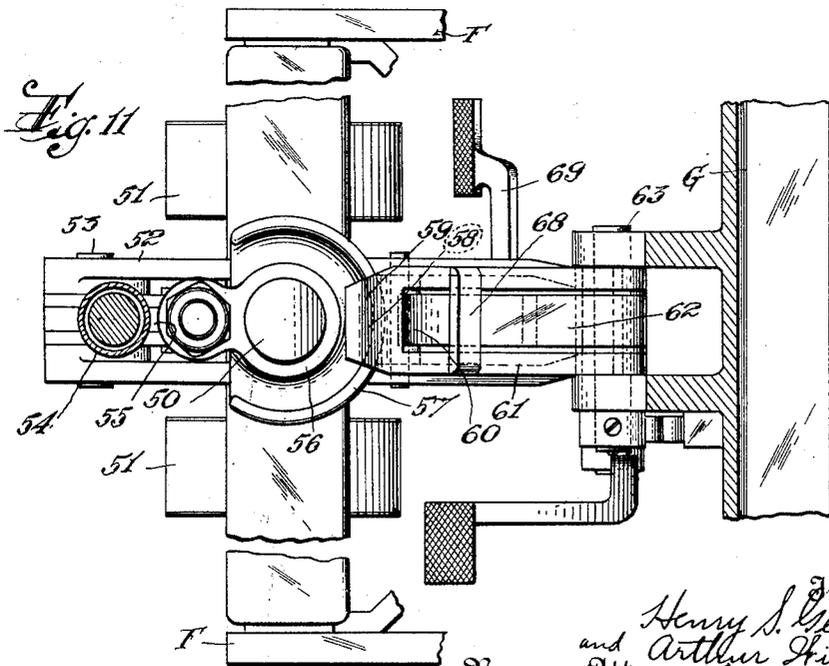


Fig. 11

Inventor,
Henry S. Germond
and Arthur Williams,
Attorneys
Everett & Cook,

By

UNITED STATES PATENT OFFICE

HENRY S. GERMOND, OF BAYONNE, NEW JERSEY, AND ARTHUR WILLIAMS, OF NATICK, MASSACHUSETTS, ASSIGNORS TO SAID HENRY S. GERMOND

DOUBLE-LIFT ELEVATING TRUCK

Application filed February 3, 1931. Serial No. 513,072.

This invention relates in general to elevating trucks of the type including a main frame mounted on wheels and adapted to be moved about and steered by a draft handle and pushed beneath a load which is to be transported, said main frame carrying an elevating platform adapted to be raised by swinging of the draft handle in a vertical plane to elevate the load from the floor, and said platform being locked in elevated position by a latch mechanism.

More particularly the invention relates to that type of elevating trucks including a link or hook pivotally connected at one end to the elevating platform and adapted to be separably connected at its other end with the draft handle so that the platform can be elevated by swinging of the handle in vertical planes.

One object of the invention is to provide an elevating truck of this character embodying a novel and improved construction whereby the platform may be elevated step by step, the construction including two lifting links to connect with the draft handle so that the platform may be raised one step while one link is engaged with the handle, after which the platform may be elevated another step by connection of the draft handle to the other link.

A further object is to provide an elevating truck of the character described having two lifting links disposed in nested relation and pivotally connected to the elevating platform on the same axis, one link being longer than the other so that they may be successively connected to the draft handle to raise the elevating platform step-by-step.

Other objects are to provide in an elevating truck, a novel and improved double latch mechanism including two latch hooks arranged in nested relation and pivotally connected to the truck on a common axis, said hooks cooperating with a common latch keeper and being of different length so as to successively be engaged by the latch keeper during raising of the elevating platform; to provide such double latch mechanism of the general character described in the copending application of Henry S. Ger-

mond, Serial No. 398,612, filed October 10, 1929 and including a substantially cylindrical and axially rotatable latch keeper to be successively engaged by the latch hooks and having means for releasing each latch hook therefrom upon rotation of the latch keeper; to provide a novel elevating link construction for connecting the main frame of the truck to the elevating platform, and to obtain other advantages and results as will be brought out by the following description.

Referring to the accompanying drawings in which the corresponding and like parts are designated throughout the several views by the same reference character,

Figure 1 is a fragmentary side elevation of an elevating truck embodying our invention, showing the elevating platform in its lowermost position.

Figure 2 is a similar view showing the platform raised to the first step in its elevation.

Figures 3 and 4 are similar views showing respectively, the beginning and ending of the second step in the elevation of a platform.

Figure 5 is a horizontal sectional view on the line 5-5 of Figure 2.

Figure 6 is a vertical sectional view taken on the line 6-6 of Figure 2.

Figure 7 is a fragmentary sectional view on the line 7-7 of Figure 5, showing the manner of releasing the latch hook from the keeper.

Figure 8 is a fragmentary top plan view of the rear end of the truck.

Figure 9 is a vertical sectional view on the line 9-9 of Figure 8.

Figure 10 is a fragmentary longitudinal vertical sectional view through a modified construction, and

Figure 11 is a top plan view thereof.

In the specific embodiment of the invention shown on the drawings, the reference character A designates the frame of the truck which may be of any suitable construction and is mounted at the rear end on wheels 1 journaled on a transverse shaft 2 (see Fig. 8). The forward end of the frame A is provided substantially centrally of its

width with a king pin 3 revolubly journaled in the frame and carrying at its lower end a pair of steering wheels 4, this construction enabling the truck to be steered by rotation of the king pin 3.

An elevating and load sustaining platform B is mounted on the frame A in such a manner that the truck may be pushed beneath a load which is spaced from the floor by means of skids, the said platform being adapted to be elevated on the frame A to raise the load from the floor onto the truck. Any suitable means may be utilized for so mounting the platform on the same, but in the present instance elevating links 5 are shown as pivotally connected between the frame A and the platform B at each end so that forward motion of the platform causes oscillation of the links 5 which in turn raises the platform on the main frame.

For the purpose of drawing the truck from place to place and steering the same, the king pin 3 may have secured thereto a bracket 6 formed with two upwardly projecting spaced ears 7 between which is pivotally mounted between its ends on a pin 8 a draft handle 9, said handle being adapted to swing about its pivot 8 in vertical planes and to revolve the king pin 3 by swinging of the handle in horizontal planes so as to steer the truck. The handle is provided at one end with handholds for drawing the truck, and said handle is also adapted to be operatively connected with the platform B to draw the same forwardly so as to oscillate the links 5 and elevate the platform.

The end of the handle 9 opposite the handholds is provided with a hook 11 to cooperate with a double-lifting link unit C which comprises two links 12 and 13 the second of which is rigidly connected at one end to a shaft 14 journaled on the front end 15 of a skid stop 16 which forms the forward end of the elevating platform and is adapted to engage a skid to limit movement of the truck beneath the skid bearing a load which it is desired to elevate and transport by the truck. One end of the link 12 is pivotally mounted on the shaft 14 for movement relative to the link 13. The link 12 is bifurcated and has at the end opposite its pivot, a hooked head 17 to separably engage the hook 11 on the draft handle. The link 13 has a similar hooked head 18. Movement of the hook 13 relative to the hook 12 is limited in the upward direction by a cross bar or stop 19 on the hook 12, while downward movement of the link 13 is limited by means hereinafter described. The two links 12 and 13 are of different lengths so as to successively engage the handle hook 11, and both links 12 and 13 are normally thrown rearwardly out of engagement with the handle hook 11 as shown by dot and dash lines in Figure 2. When it is desired to raise the platform B,

the links are thrown forwardly so that the hooked head of the link 12 engages the handle hook 11. For throwing the links forwardly we may provide a treadle 20 on the lifting link 12. To raise the platform B, the handle is then swung downwardly as shown in Figure 2 of the drawings, which causes the platform to be pulled forwardly and, due to the links 5, raised vertically. This brings the head 18 of the link 13 into position to be engaged by the handle hook 11, and the platform is held in this elevated position by a latch mechanism D hereinafter described.

The handle 9 is then swung rearwardly beneath the link 12 to bring the handle hook 11 into engagement with the head 18 of the link 13 as shown in Figure 3, after which the handle is swung downwardly and forwardly as shown in Figure 4 so as to complete the elevation of the platform B. The platform is sustained at this position by the latch mechanism D now to be described.

This latch mechanism D includes a shaft 21 on the platform B to which the forward links 5 are connected. Fixed upon this shaft at substantially the center thereof as by a keyed connection 210, is a sleeve or keeper 22 having a substantially cylindrical portion 23 concentric with the shaft with which is arranged to cooperate a pair of latch levers or hooks 24 and 25 which are pivotally connected at one end upon a common shaft 26 to the forward end of the frame A. One of the latch levers, in the present instance the latch lever 24, is bifurcated and has a head 27, while the other latch lever 25 is arranged between the arms of the latch lever 24 and has a head 28. These latch levers 24 and 25 are of different lengths so as to successively cooperate with the keeper 22, one at each step in the elevation of the platform B, and the heads 27 and 28 of the lever swing by action of gravity into substantially the path of movement of the keeper as the platform is raised. Such downward movement of the latch levers is limited by lugs 29 on the pivoted ends of the levers which engage the frame. The head of each of the latch levers has an arcuate hook portion 30 substantially corresponding with the cylindrically curved portions 23 of the keeper 22, and the extremity of each latch lever has an inclined portion 31 which is engaged by the keeper 22 as the platform is raised. In operation, upon movement of the platform upwardly on the first step of the elevation of the platform, as shown in Figure 1, the curved portion of the keeper pushes the latch lever 24 upwardly until the curved portion of the keeper coincides with the hook portion 30 of the latch lever, whereupon the latch lever falls by gravity into engagement with the keeper so as to hold the platform in par-

tially elevated position. On the next step in the elevation of the platform B, as shown in Figure 3, the keeper 22 rides under and in engagement with a cam surface 32 on the latch lever 24 to raise said latch lever upwardly, and as the keeper approaches the second latch lever 25, the latter is raised upwardly until its arcuate portion 30 coincides with the keeper 22, whereupon said latch lever 25 falls by gravity into engagement with the keeper as shown by Figure 4 of the drawings. Due to limited space between the platform and the forward end of the frame, the latch lever 24 has a slot 240 at its pivot to permit longitudinal movement of the lever away from the platform as the latter moves forwardly so that the latch lever does not obstruct movement of the platform.

For disengaging the latch levers 24 and 25 from the keeper when it is desired to lower the platform, the keeper has a cam portion 33 which upon rotation of the keeper in the direction of the arrow in Figure 7 of the drawings engages the extremity of the latch lever and pushes the same upwardly out of engagement with the keeper. For rotating the keeper, the latter may be provided with a foot lever 340. As the keeper is so rotated to release the latch lever, the cam 33 is moved upwardly, and it will be observed that when the latch lever 25 is disengaged from the keeper 22 the elevating platform may descend in one operation by action of gravity, the cam portion 32 on the latch lever 24 holding said latch lever 24 out of the path of the keeper 22 until the keeper has reached the head of said lever, whereupon the cam 33 engages the head of the latch lever and deflects it upwardly to prevent latching engagement of the latch lever with the keeper.

It is desirable that the lifting links 12 and 13 be disconnected from the handle hook 11 simultaneously with the disengagement of the latch levers 24 and 25 whereby the possibility of the platform suddenly descending with a link connected to the handle hook in such a manner as to suddenly jerk the handle upwardly, is obviated. For this purpose the keeper 22 may be provided with an arm 34 to contact with an arm 35 on a collar 36 rigidly connected to the shaft 14, so that as the keeper is rotated to release the latch hooks, the arm 34 swings the arm 35 to rotate the shaft 14 and swing the lifting link 13 upwardly which carries with it the link 12. This mechanism may also be utilized for efficiently throwing the lifting links 12 and 13 from their idle position, shown by dot and dash lines in Figure 2, into engagement with the handle hook 11 simultaneously with the rotation of the keeper 22 to return the cam 33 to its neutral position. This is accomplished by the foot

lever 20 above described. Obviously by depressing the foot lever 20 from the dot and dash position shown in Figure 2, both links 12 and 13 will be thrown forwardly, and the keeper 22 will be rotated in the direction opposite to that indicated by the arrow in Figure 7 to move the cam 33 out of a position which would interfere with the engagement of the latch levers with the keeper. The arm 34 cooperates with a stop lug 341 on the skid stop 15 so as to limit such return movement of the cam 33, and also through the arm 35 to limit downward movement of the lifting link 13.

Another feature of the invention is the construction of the rear lifting link 5 of the truck to prevent wear upon the elevating platform. This construction comprises a shaft 40 secured in the elevating platform and held against rotation by a pinned connection 41 with a strap 42 rigidly secured to the platform as by bolts 43. This construction prevents such rotation of the shaft 40 in the elevating platform as would wear the side bars of the platform and produce looseness, which occurs in known constructions. The rear link construction also includes four struts 44 arranged in two pairs, each pair being pivotally connected to the axle of the transverse shaft 2 with one strut at each side of each wheel. The other ends of the struts of each pair are rigidly connected together by a sleeve 45 which is welded at its ends to the corresponding struts. The inner strut of each pair is rigidly connected to the corresponding strut of the other pair by a web 46 which is welded. The struts 44, web 46 and sleeves 45 thus constitute one rigid unit, and the shaft 40 passes through the sleeves 45 so that all wear and pivotal motion occurs between the shaft 40 which is held against rotation and the sleeves 45. In addition to preventing wear of the side bars of the elevating platform this construction also provides sufficient rigidity to prevent warping or twisting of the struts at the sides of the truck relative to each other.

The invention may also be embodied in an elevating truck of the general character shown and described in United States Patent No. 1,662,604 dated March 13, 1928, as shown in Figures 10 and 11 of the drawings. In this form of the invention the main frame F of the truck is mounted at its rear end upon wheels, (not shown) as usual, and has at its forward end a steering swivel comprising a post or king pin 50 journaled in the main frame and having wheels 51 at its lower end. Upon this post and at the top of the main frame is rigidly secured a bracket 52 on which is pivotally mounted intermediate its ends at 53 a draft handle 54. This draft handle is arranged to oscillate in vertical planes and is connected at one end by a link 55 to a sleeve 56

slidable vertically on the post 50 substantially coaxial with or in the line of axis of the post. Upon this sleeve is an arcuate horizontal flange 57 having an upwardly facing arcuate groove 58 which is adapted to be separably engaged by hooked heads 59 and 60 of lifting links 61 and 62 which are mounted on a shaft 63 journaled in a skid stop 64, secured to the forward end of the elevating platform G. These lifting links 61 and 62 are substantially identical in construction and operation with the lifting links 12 and 13 shown in Figures 1 to 7 of the drawings.

In operation of the truck, oscillation of the draft handle 54 in vertical planes causes raising and lowering of the sleeve 56 on the post 50. When the sleeve is at its lowermost position as shown in Figure 10 of the drawings it may be engaged by either of the elevating links 61 or 62, according to the position of the platform. Assuming the platform to be in its lowermost position as shown in Figure 10, the lifting link 61 engages the arcuate groove 58 so that upon downward swinging of the draft handle, the platform is elevated one step and held in this position by a latch hook 65 and keeper 66 identical in construction and operation with the latch hook 24 and the keeper 21 shown in Figures 1 to 7. This brings the lifting link 62 into a position to engage the arcuate groove 58 when the sleeve 56 is next lowered into the position shown in Figure 10; and upon downward swinging of the draft handle, the platform is raised through the next step of elevation and held in elevated position by the latch hook 67 which corresponds to the latch hook 25.

In this construction, the flange 57 and groove 58 correspond in function to the handle hook 11. Due to the concentric arrangement of the groove 58 with respect to the axis of the steering swivel, the platform may be raised with the handle 54 in any of its steering positions, the flange 57 rotating with respect to the hooked heads of the lifting links as the steering swivel is rotated.

The lifting link 62 is secured rigidly upon the shaft 63 while the link 61 is rotatable on the shaft and has a stop 68 corresponding to the stop 19 on the lifting link 12. The lifting link 61 also has a treadle 69 corresponding to the treadle 20, and the same mechanism shown in Figures 1 to 7 inclusive is utilized for rotating the keeper 66 and throwing the lifting links into their normal inoperative position simultaneously with the release of the latch hooks from the keeper.

While we have shown and described the invention as embodied in certain details of construction it will be understood that this is primarily for the purpose of illustrating the principles of the invention and that

many modifications and changes may be made in the details of construction without departing from the spirit of the invention or the scope of the appended claims.

Having thus described our invention, what we claim is:

1. In an elevating truck, the combination with a main frame mounted on wheels, a draft handle, an elevating platform, and means for raising said platform step-by-step by swinging of said draft-handle in vertical planes, of a plurality of latch hooks independent of each other, and a common latch keeper to cooperate with one of said hooks at the end of each step of movement of said platform and hold said platform against descent.

2. In an elevating truck, the combination with a main frame mounted on wheels, of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft-handle pivoted between its ends on said main frame and having a hook at one end, a pair of lifting links pivotally connected at one end to said platform on the same horizontal axis and each having a hooked head at the other end to engage said handle hook, said lifting links being of different lengths to successively engage said handle hook so that the platform can be raised step-by-step, and latch means for holding said platform in elevated position at the end of each step.

3. The elevating truck set forth in claim 2 wherein the longer lifting link is bifurcated at its pivoted end and the other link is arranged between the arms of the bifurcation so that said lifting links have a nested relation.

4. The elevating truck set forth in claim 1 wherein said latch hooks are of different length and the longer latch hook is bifurcated at its pivoted end while the other latch hook is arranged between the arms of the bifurcation.

5. In an elevating truck, the combination with a main frame mounted on wheels, of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft handle pivoted between its ends on said main frame and having a hook at one end, a pair of lifting links, a shaft rotatable on said platform upon which one of said links is rigidly mounted and the other is pivoted for limited movement relative to the first mentioned link, each link having a hooked head to engage said handle hook and said lifting links being of different lengths to successively engage said handle hook so that the platform can be raised step-by-step, said lifting links being normally swung rearwardly and upwardly away from said handle hook, means for simultaneously actuating both of said lifting links into position to be engaged by

said handle hook, and latch means for holding said platform in elevated position at the end of each step.

6. In an elevating truck, the combination
 5 with a main frame mounted on wheels, of an
 elevating platform mounted on said main
 frame for composite horizontal and vertical
 movement, a draft handle pivoted between
 its ends on said main frame and having a
 10 hook at one end, a pair of lifting links, a
 shaft rotatable on said platform upon which
 one of said links is rigidly mounted and
 the other is pivoted for limited movement
 relative to the first-mentioned link, each link
 15 having a hooked head to engage said handle
 hook and said lifting links being of different
 lengths to successively engage said handle
 hook so that the platform can be raised step-
 by-step, said lifting links being normally
 20 swung rearwardly and upwardly away from
 said handle hook, means for simultaneously
 actuating both of said lifting links into po-
 sition to be engaged by said handle hook,
 a latch means for holding said platform in
 25 elevated position at the end of each step,
 means for releasing said latch means to per-
 mit descent of said platform, and means for
 throwing both of said lifting links rearwardly
 out of engagement with said handle hook
 30 approximately simultaneously with the re-
 lease of said latch means.

7. An elevating truck, comprising a frame,
 an elevating platform mounted thereon for
 composite vertical and horizontal movement,
 35 means for elevating said platform a latch
 mechanism comprising a rotatable keeper on
 said platform having a curved surface and
 a pair of latch hooks pivotally mounted at
 one end on said frame on a common hori-
 40 zontal axis to successively engage over said
 curved surface when said platform is raised,
 said keeper having a projection which upon
 rotation of said keeper engages each said
 hook and dislodges it from said keeper, and
 45 means for rotating said keeper in one direc-
 tion.

8. The elevating truck set forth in claim 1
 wherein one of said latch hooks has a cam
 surface engaged by said keeper to move and
 50 hold said one latch hook out of engagement
 with said keeper as said platform is ele-
 vated.

9. The elevating truck set forth in claim
 1 wherein said latch hooks are of different
 55 length and the longer latch hook is bifur-
 cated at its pivoted end while the other latch
 hook is arranged between the arms of the
 bifurcation, the longer of said latch hooks
 also having a cam surface engaged by said
 60 keeper to move and hold said longer latch
 hook out of engagement with said keeper as
 said platform is elevated.

10. An elevating truck, comprising a
 frame, an elevating platform mounted there-
 65 on for composite vertical and horizontal

movement, means for elevating said plat-
 form, a latch mechanism comprising a ro-
 tatable keeper on said platform having a
 curved surface and a pair of latch hooks
 70 pivotally mounted at one end on said frame
 on a common horizontal axis to successively
 engage over said curved surface when said
 platform is raised, said keeper having a pro-
 jection which upon rotation of said keeper
 75 engages each said hook and dislodges it
 from said keeper, and means for rotating
 said keeper in one direction, said projection
 as the result of said rotation to release the
 latch hooks being so located as to engage
 80 the latch hooks as the platform descends and
 prevent latching engagement of said latch
 hooks with said keeper.

11. An elevating truck, comprising a
 frame, an elevating platform mounted there-
 on for composite vertical and horizontal 85
 movement, means for elevating said plat-
 form, a latch mechanism comprising a ro-
 tatable keeper on said platform having a
 curved surface and a pair of latch hooks
 90 pivotally mounted at one end on said frame
 on a common horizontal axis and being of
 different lengths to successively engage over
 said curved surface as the platform is raised,
 the longer latch hook being bifurcated and
 95 the other latch hook being arranged between
 the arms of the bifurcation, said keeper hav-
 ing a projection which upon rotation of the
 keeper in one direction engages each said
 hook and dislodges it from said keeper, said
 100 projection as the result of such rotation of
 said keeper being so located as to engage
 the longer latch hook as the platform de-
 scends and prevent latching engagement of
 said longer latch hook with said keeper.

12. In an elevating truck, the combina-
 105 tion with a main frame mounted on wheels,
 of an elevating platform mounted on said
 main frame for composite horizontal and
 vertical movement, a draft handle pivoted
 between its ends on said main frame and
 110 having a hook at one end, a pair of lifting
 links pivotally mounted on said platform on a
 common horizontal axis, each link having
 a hooked head to engage said handle hook
 and said lifting links being of different
 115 lengths to successively engage said handle
 hook so that the platform can be raised step-
 by-step, said links being normally swung
 rearwardly and upwardly away from said
 handle hook, means on the longer of said
 120 lifting links to engage the other whereby
 said links have a limited relative movement
 about their pivot and said links may move
 together from and to their said normal po-
 sition, means for so moving said lifting
 125 links, and latch means for holding said plat-
 form in elevated position at the end of each
 step.

13. In an elevating truck, the combina-
 130 tion with a main frame mounted on wheels,

of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft handle pivoted between its ends on said main frame and
 5 having a hook at one end, a pair of lifting links pivotally mounted on said platform on a common horizontal axis, each link having a hooked head to engage said handle hook and said lifting links being of different
 10 lengths to successively engage said handle hook so that the platform can be raised step-by-step, said links being normally swung rearwardly and upwardly away from said handle hook, means on the longer of
 15 said lifting links to engage the other whereby said links have a limited relative movement about their pivot and said links may move together from and to their said normal position, means for moving said links from
 20 their said normal position to be engaged by said handle hook, latch means for holding said platform in elevated position at the end of each step, means for releasing said latch means to permit descent of said platform,
 25 and means for throwing both of said lifting links rearwardly out of engagement with said handle hook approximately simultaneously with the release of said latch means.

14. In an elevating truck, the combination
 30 with a main frame mounted on wheels of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft-handle pivoted between its end on said main frame to oscillate
 35 in vertical planes, a pair of lifting links pivotally connected at one end to said platform on the same horizontal axis and each having a hooked head at the other end, and means for connecting said handle to said
 40 hooked heads of said lifting links, said lifting links being of different lengths to successively engage said means so that the platform can be raised step-by-step upon oscillation of said handle, and latch means for
 45 holding said platform in elevated position at the end of each step.

15. The elevating truck set forth in claim 14 wherein the longer lifting link is bifurcated at its pivoted end and the other link
 50 is arranged between the arms of the bifurcation so that said lifting links have a nested relation.

16. In an elevating truck, the combination
 55 with a main frame mounted on wheels, of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft handle pivoted between its ends on said main frame to oscillate
 60 in vertical planes, a pair of lifting links, a shaft rotatable on said platform upon which one of said links is rigidly mounted and the other is pivoted for limited movement relative to the first-mentioned link,
 65 means for connecting said handle to said

lifting links, each link having a hooked head to engage said means and said lifting links being of different lengths to successively engage said means so that the platform can be raised step-by-step upon oscillation of said
 70 handle, said lifting links being normally swung rearwardly and upwardly away from said means, means for simultaneously actuating both of said lifting links into position to be engaged by the first-mentioned
 75 means, and latch means for holding said platform in elevated position at the end of each step.

17. In an elevating truck, the combination
 80 with a main frame mounted on wheels, of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft handle pivoted between its ends on said main frame, a pair of lifting links, a shaft rotatable on said
 85 platform upon which one of said links is rigidly mounted and the other is pivoted for limited movement relative to the first-mentioned link, means for connecting said lifting links to said handle, each link having a hooked head to engage said means and
 90 said lifting links being of different lengths to successively engage said means so that the platform can be raised step-by-step, said lifting links being normally swung rearwardly and upwardly away from said means, means for simultaneously actuating
 95 both of said lifting links into position to be engaged by the first-mentioned means, and latch means for holding said platform in elevated position at the end of each step, means for releasing said latch means to permit descent of said platform, and means for throwing both of said lifting links rearwardly out of engagement with said first-mentioned means approximately simultaneously with the release of said latch means.
 100

18. In an elevating truck, the combination
 110 with a main frame mounted on wheels, of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft handle pivoted between its ends on said main frame to oscillate in vertical planes, a pair of lifting links pivotally mounted on said platform on a
 115 common horizontal axis, means for connecting said handle to said lifting links, each link having a hooked head to engage said means and said lifting links being of different lengths to successively engage said
 120 means so that the platform can be raised step-by-step upon oscillation of said handle, said links being normally swung rearwardly and upwardly away from said means for connecting said links to said handle, means on the longer of said lifting links to engage the other whereby said links have a limited relative movement about their pivot and said links may move together from and to their said normal position, means for so
 125
 130

moving said lifting links, and latch means for holding said platform in elevated position at the end of each step.

19. In an elevating truck, the combination with a main frame mounted on wheels, of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft handle pivoted between its ends on said main frame to oscillate in vertical planes, a pair of lifting links, pivotally mounted on said platform on a common horizontal axis, means for connecting said handle to said lifting links each link having a hooked head to engage said means and said lifting links being of different lengths to successively engage said means so that the platform can be raised step-by-step, upon oscillation of said handle, said links being normally swung rearwardly and upwardly away from said means, means on the longer of said lifting links to engage the other whereby said links have a limited relative movement about their pivot and said links may move together from and to their said normal position, means for moving said links from their said normal position to be engaged by the first-mentioned means, latch means for holding said platform in elevated position at the end of each step, means for releasing said latch means to permit descent of said platform, and means for throwing both of said lifting links rearwardly out of engagement with said first-mentioned means approximately simultaneously with the release of said latch means.

20. An elevating truck comprising a main frame mounted on wheels at its rear end, a wheeled steering swivel journaled in the front end of said frame, a member vertically movable coaxially with said steering swivel, a draft handle pivotally mounted on said steering swivel to oscillate in vertical planes, an operative connection between said handle and said member to raise and lower the latter as the handle is oscillated, a plurality of lifting links pivotally connected at one end to said platform, said member and the other ends of said links being formed to separably connect so that vertical movement of said member elevates said platform, said links being of different lengths to successively connect with said member so that the platform can be elevated step-by-step upon oscillation of said handle, and latch means to hold said platform in elevated position at the end of each step.

21. An elevating truck comprising a main frame mounted on wheels at its rear end, a wheeled steering swivel journaled in the front end of said frame, a member vertically movable coaxially with said steering swivel and having a horizontal coaxial upwardly facing arcuate groove, a draft handle pivotally mounted on said steering swivel to os-

illate in vertical planes, an operative connection between said handle and said member to raise and lower the latter as the handle is oscillated, a plurality of lifting links pivotally mounted at one end on said platform, said links being of different lengths and having hooked heads at their other ends to separably successively engage said groove so that upward movement of said member elevates said platform and the platform can be elevated step-by-step upon oscillation of said handle, and latch means to hold said platform in elevated position at the end of each step.

22. In an elevating truck, the combination with a main frame mounted on wheels, of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft-handle pivoted between its ends on said main frame to oscillate in vertical planes, a pair of lifting links pivotally connected at one end to said platform and each having a hooked head at the other end, and means for connecting said handle successively to said hooked heads of said lifting links upon oscillation of the handle, so that the platform can be raised step by step.

23. In an elevating truck, the combination with a main frame mounted on wheels, of an elevating platform mounted on said main frame for composite horizontal and vertical movement, a draft-handle pivoted between its ends on said main frame to oscillate in vertical planes, a pair of lifting links pivotally connected at one end to said platform and each having a hooked head at the other end, and means for connecting said handle successively to said hooked heads of said lifting links upon oscillation of the handle so that the platform can be raised step by step, said links being normally swung rearwardly and upwardly away from said means, means on one of said lifting links to engage the other whereby said links have a limited relative movement about their pivot and said links may move together from and to their said normal position, means for moving said links from their said normal position to be engaged by said means for connecting said links to said handle, latch means for holding said platform in elevated position at the end of each step, means for releasing said latch means to permit descent of said platform, and means for throwing both of said lifting links rearwardly out of engagement with said means for connecting the links to the handle approximately simultaneously with the release of said latch means.

24. In an elevating truck, the combination with a main frame mounted on wheels, a draft handle, an elevating platform, and means for raising said platform step by step by swinging of said draft-handle in

vertical planes comprising a pair of links
to successively directly connect said plat-
form and said handle during successive
movements of said handle in the same di-
5 rection and disconnect said platform and
said handle during successive movements of
said handle in the opposite direction, and
means for holding said platform in its ele-
vated positions upon each disconnection of
10 said platform from said handle.

HENRY S. GERMOND.
ARTHUR WILLIAMS.

15

20

25

30

35

40

45

50

55

60

65