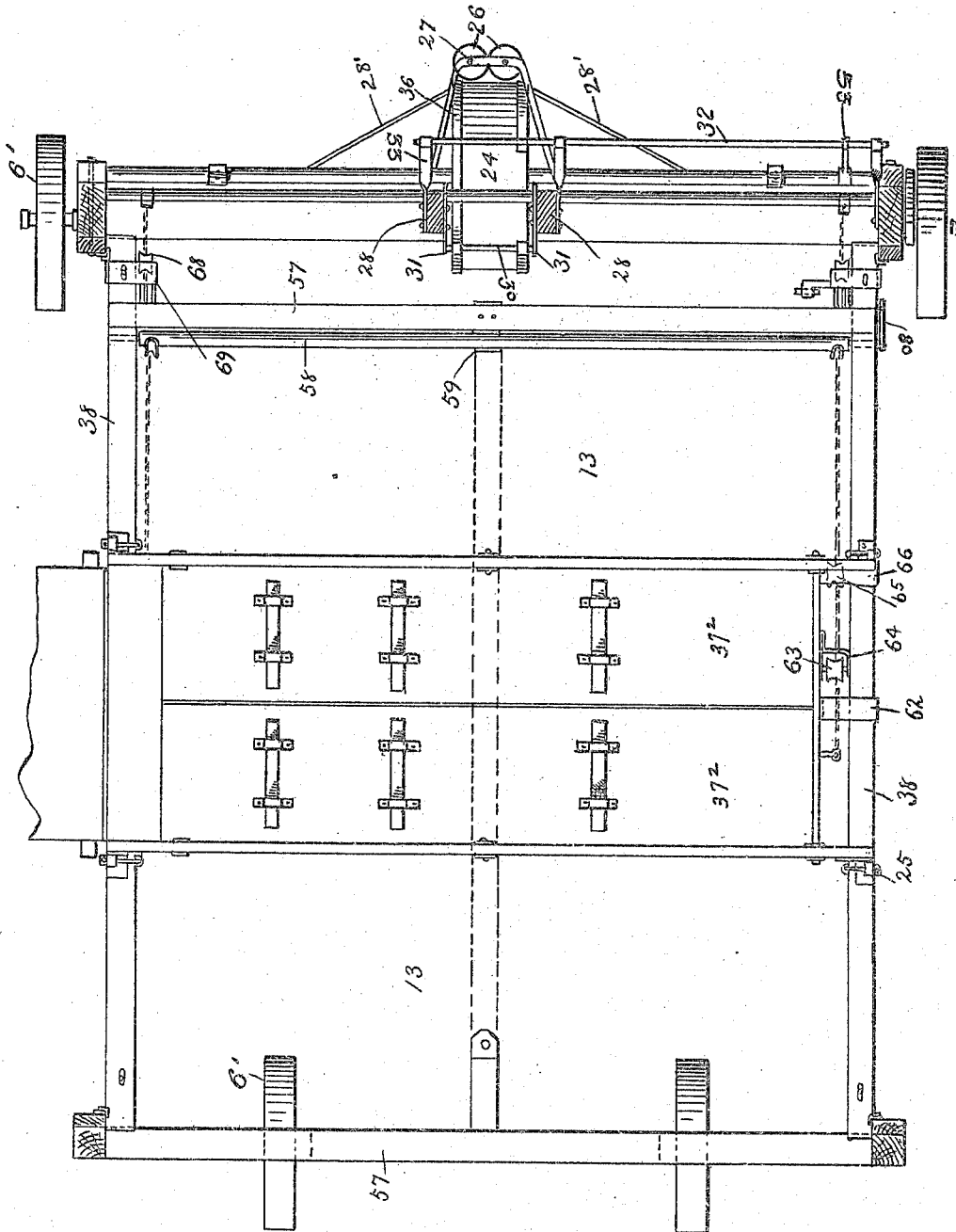


957,969.

G. F. KOENIG.
HOISTING DEVICE.
APPLICATION FILED NOV. 2, 1908.

Patented May 17, 1910.

5 SHEETS—SHEET 1.



Witnesses
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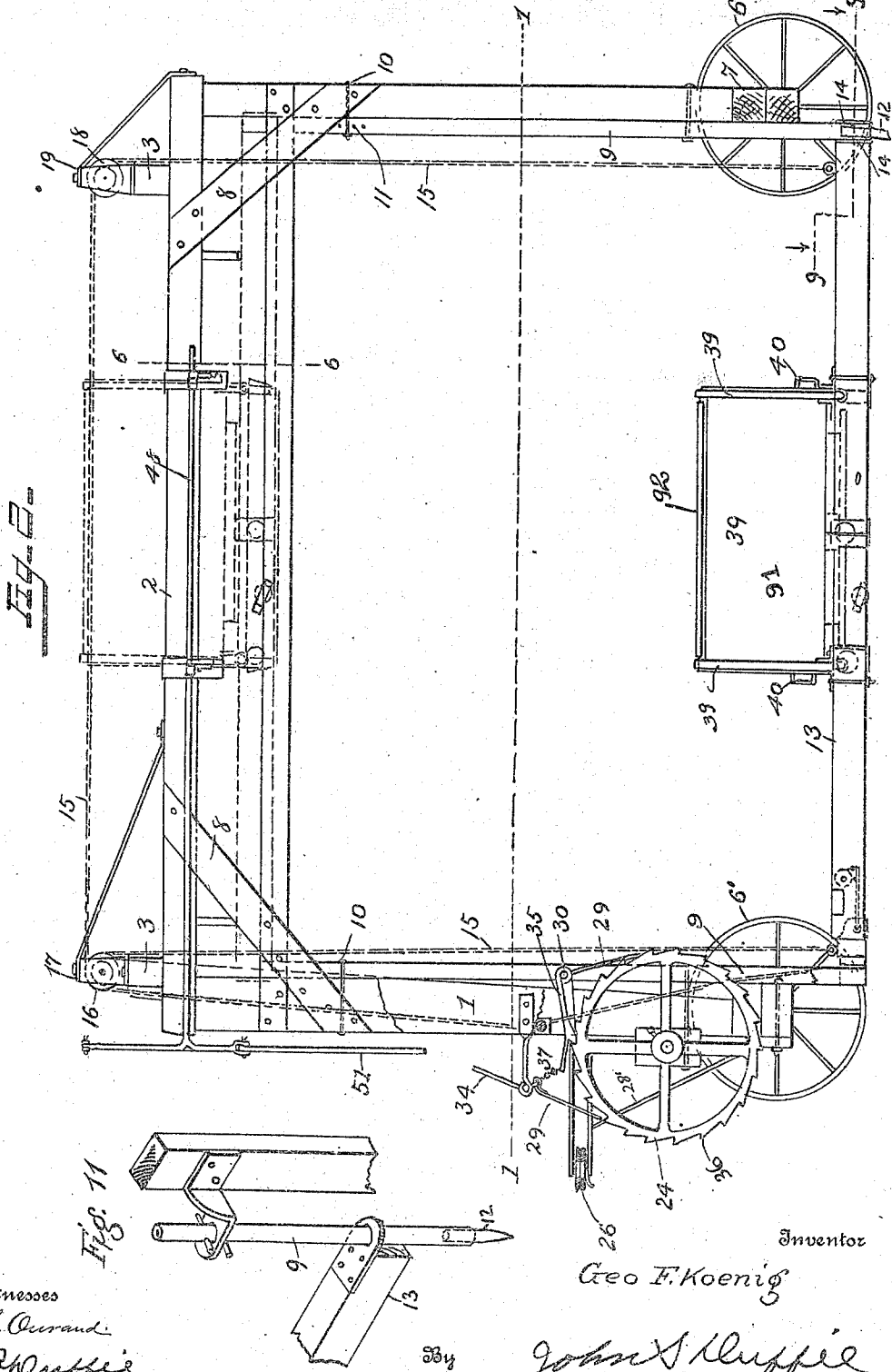
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6 SHEETS—SHEET 2.



Witnesses
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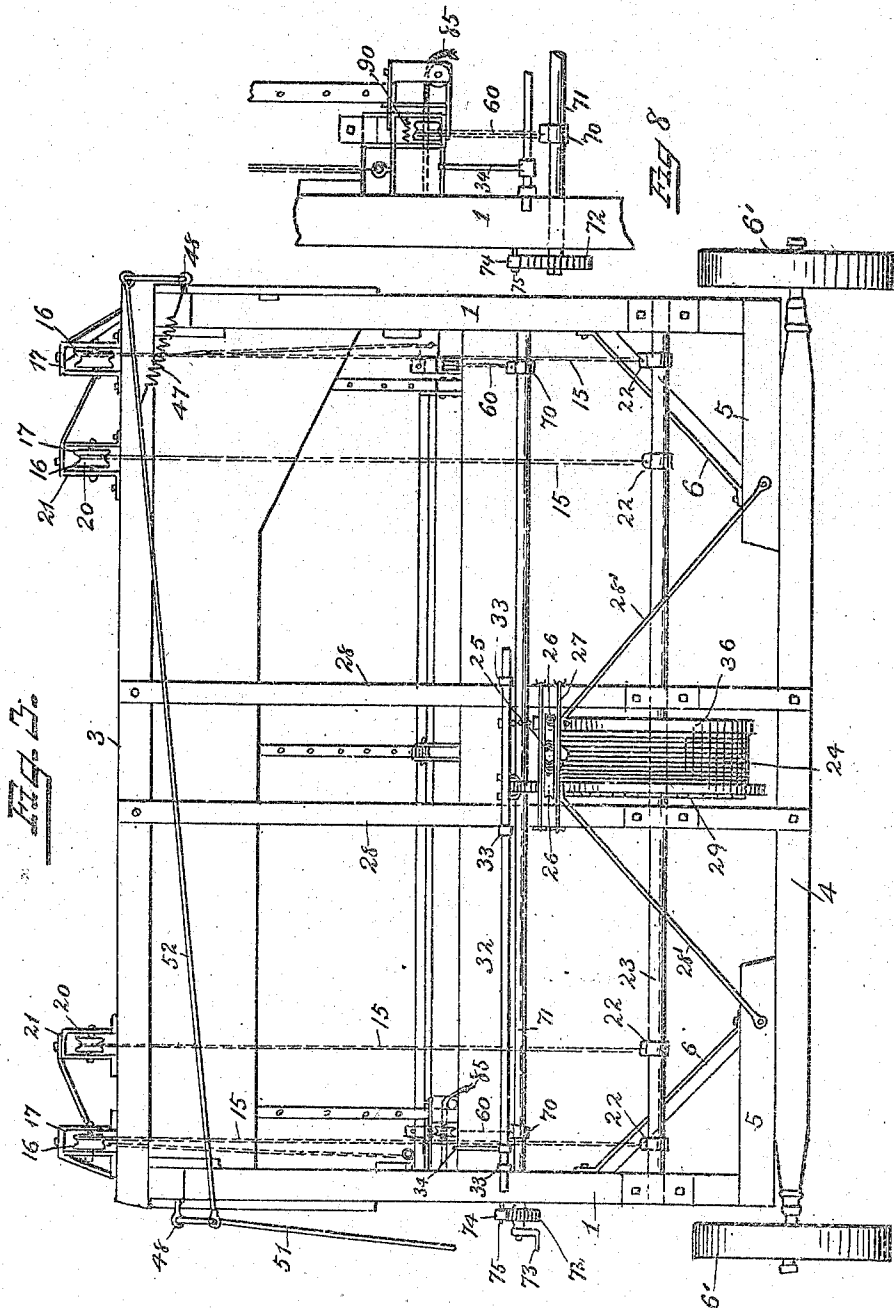
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5 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.

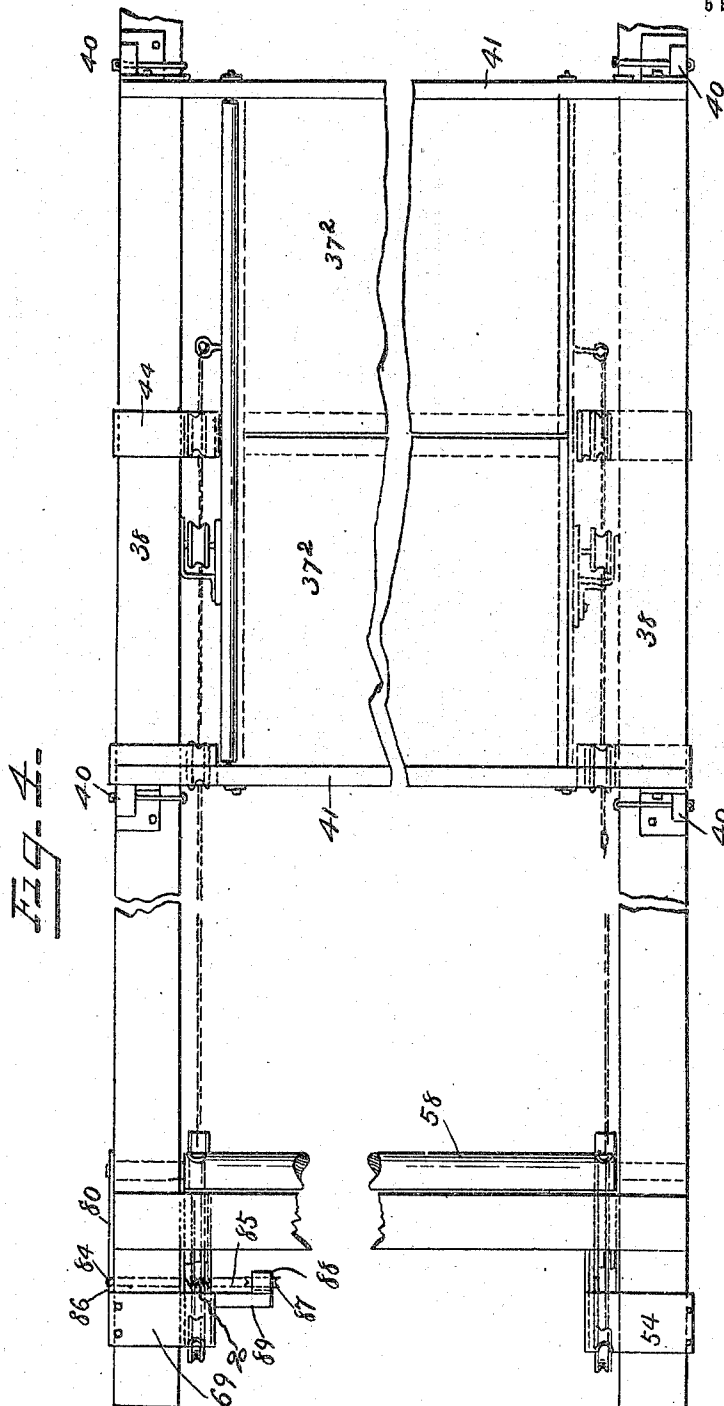


Fig. 4.

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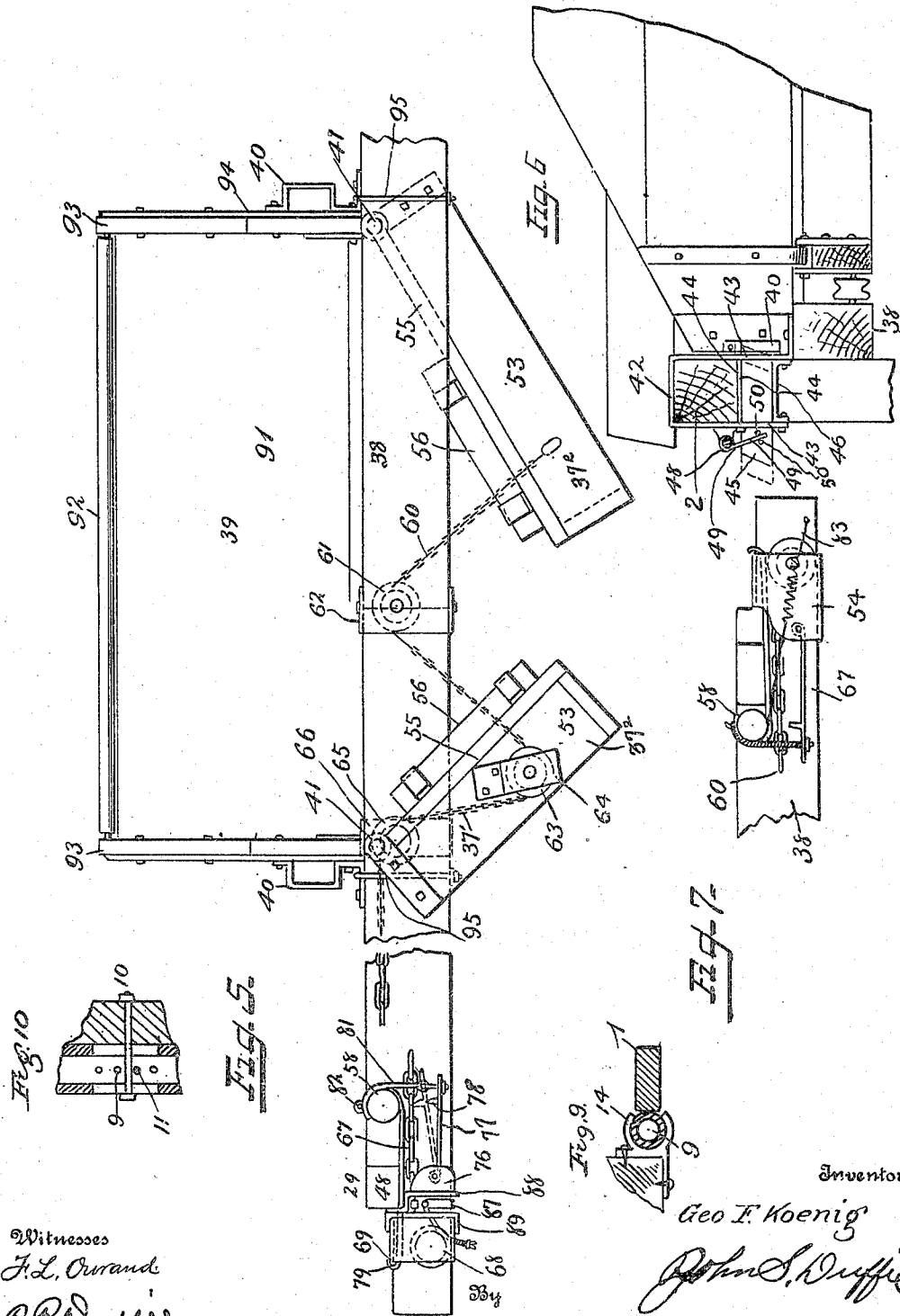
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Patented May 17, 1910.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

GEORGE F. KOENIG, OF LE SUEUR, MINNESOTA.

HOISTING DEVICE.

957,969.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed November 2, 1908. Serial No. 460,642.

To all whom it may concern:

Be it known that I, GEORGE F. KOENIG, a citizen of the United States, residing at Le Sueur, in the county of Lesueur and State of Minnesota, have invented certain new and useful Improvements in Hoisting Devices, of which the following is a specification.

My invention has relation to new and useful improvements in hoisting-machines, and has to do especially with improvements upon my former Patent, No. 847,667, patented March 19, 1907.

The main object of my present invention is to more nearly perfect my device, above mentioned, in the respect that it will be of greater efficiency, such improvements being derived after actual experiment and experience, and while succeeding in greater efficiency, at the same time tending to lessen the chance of accident, the latter of which objects being kept constantly in mind in designing this machinery.

Another object of my invention is to simplify the construction of my device already patented.

With these and other objects in view, my invention consists of the novel construction and arrangement of parts as are hereinafter fully described in the following specification, illustrated in the accompanying drawings forming a part thereof, and particularly pointed out in the claims hereunto appended.

Reference being had to the drawings, Figure 1 is a horizontal sectional view of my improved hoisting device, taken on the line 1—1 of Fig. 2. Fig. 2 is a side elevation thereof. Fig. 3 is a front elevational view of my invention. Fig. 4 is a top plan view of the platform, central portion broken away. Fig. 5 is a side elevational view of the platform, showing the trap-doors in open position. Fig. 6 is a vertical sectional view of Fig. 2, taken on the line 6—6, disclosing the manner of locking the platform in elevated position. Fig. 7 is a detail view of the clutch, by the aid of which the trap-doors are held in closed position. Fig. 8 is an enlargement of a portion of Fig. 3. Fig. 9 is a horizontal segmental detail sectional view of Fig. 2, taken on the line 9—9. Fig. 10 is a detail vertical sectional view of Fig. 1, disclosing the manner in which the platform guides are capable of being raised and lowered. Fig. 11 is a perspective view of a modified form of the manner of adjustably

holding the platform guides, as illustrated in Fig. 2, and the manner in which the platform eyes are slidably held to said guides.

Referring more particularly to the drawings, my invention is described as follows:— The vertical beams 1, are connected together longitudinally, by means of longitudinal beams 2, secured at the upper ends of said vertical beams 1. Said vertical beams are connected together transversely, by means of the transverse beams 3, at their upper ends, and by means of the axles 4, at their lower ends, one of said axles being connected to the lower ends of the rear vertical beams, by the use of inwardly extending beams 5, secured at right-angles to the lower ends of said vertical beams, and held substantially in position by braces 6. Said beams 5, are in turn secured to the axles 4. The front vertical beams are connected to a transverse beam 7, under which the front axle is pivotally connected.

The whole frame, which is mounted on wheels 6¹, is built sufficiently high to allow a three-horse team to pass thereunder. Said device is transferred from place to place by means of draft animals hitched to a tongue, (not shown) secured to the front axle thereof. Said frame is further braced by means of the slanting braces 8, one end of each being secured to one of said longitudinal beams 2, the other to one of said vertical beams.

Adjustably secured to each vertical beam is a platform guide 9, which is held to its adjacent vertical beam by bolts 10, (see Fig. 10) which pass the said beam and vertically disposed slots cut in said platform guide. Cut in the platform guides are perforations 11, wherethrough are passed pins to hold said guides at whatever height is desired. Said guides are made hollow, for the reception of stakes 12, driven in the ground, said stakes for the purpose of holding the frame substantially against movement.

A platform 13, having secured at each corner an eye 14, is adapted to be raised and lowered by means of chains 15. Said eyes 14, receive guides 9, preventing any perceptible sway of said platform. An advantage of having this arrangement is, that should one of the chains, supporting one of the corners of said platform, break, the eye at that corner would bind against its guide, thus preventing accident to a large extent. The chains secured to the rear corners of said platform pass over pulleys 16, jour-

naled in suitable bearings in the boxes 17. Those connected to the front corners of the platform pass over pulleys 18, mounted in boxes 19, thence to pulleys 20, mounted in boxes 21. All of said chains terminate in collars 22, secured to the shaft 23, whereon is keyed the drum 24. Entwining around said drum is a rope or cable 25, which is adapted to rotate said drum when unwound by the use of draft animals, thus rotating said shaft 23, causing the cables to entwine thereon, which in turn raise said platform. Said cable 25, works between two trolley wheels 26, mounted between two bent-rods 27, secured to the vertical uprights 28, which are in turn secured to the transverse beam 3, and said axle 4. Braces 28¹, are secured to the lower of said bent-rods, extending slantingly downward, their lower ends secured to the beams 5. When the platform is being lowered, its speed is regulated by means of a band brake 29, which passes around said drum. One end of the band brake is secured to a rod 30, held between two forward extensions 31, secured to said vertical uprights 28; the other end of said brake is secured to a shaft 32, which passes through eyes formed in the rearward extensions 33. A handle 34, is secured near one end of said shaft 32, by means of which said band brake is manipulated. A dog 35, which is also connected to said rod 30, is adapted to engage ratchet teeth 36, formed at one of the edges of said drum 24. A short chain 37, is connected to the outer end of said dog, extending upward, being secured to said shaft 32. Thus, when said handle is raised, loosening the band brake, the dog 35, engages teeth 36, allowing the operator to stop the platform at any desired point. When said dog is thrown out of engagement, and the platform is moving downwardly, it will be readily seen that the band brake is brought into play, giving the operator the means whereby he may regulate its speed or stop its motion should he desire.

By the above arrangement I dispense with the bucket used in my former patent as a counter-balance of the platform, thus materially simplifying my invention. The platform is provided with two trap-doors 37², hinged at their outer edges to the longitudinal beams 38, of said platform, by means of the hinges 41, secured to said trap-doors. Over said trap-doors is mounted a box or hopper 39, provided on its side walls with loops 40. Passing over the longitudinal beams 2, of said frame, are the four clevises 42, the side members 43, of said clevises extending approximately four inches below the beams. Passing through said side members, immediately below the beams 2, are bolts 44. Below these bolts are slots cut in the side members, sufficiently large to receive latches 45. An angle iron 46, holds the lower ends

of each clevis together, said angle iron also supporting the latch 45, so that it will not slip out of place when it is caused to slide out of the path of said loop 40. These latches are so beveled that they will be automatically pushed back when the loops 40, come in contact with them, as long as said loops are pressing upward, then as soon as the loops have fully passed the latch, the coil-spring 47, drives the latch in position by means of the bars 48, having the downwardly extending rods 49, secured thereto, said rods passing between two pins 50, projecting from each latch. The platform is disengaged from its highest position by means of a handle 51, which manipulates each of the bars 48, attaining this result by means of a connecting-rod 52.

Referring again to the trap-doors, it will be observed that they are composed of a plurality of transverse cleats 53. These cleats project a sufficient distance at the outer edge of said trap-doors to permit of said hinges 41, being secured thereto. Each trap-door is provided with a floor 55, composed of any desirable material, and placed in any desirable manner. On the upper surface of said doors are secured cleats or blocks 56, which serve as trip-blocks for the scraper used in connection with my invention. Transverse beams 57, are mortised and bolted into longitudinal beams 38, tending to strengthen the platform against stresses and strains. Rock-shaft 58, is journaled in suitable bearings in longitudinal beams 38, said rock-shaft being supported at its center by means of a block 59, secured to the under surface of one of said transverse beams 57. The utility of rock-shaft 58, will be brought forth later. Secured on the outer surface, near the free ends of the outermost cleats of said trap-door 37², are chains 60. Said chains then pass over pulleys 61, journaled in pulley boxes 62, secured to said longitudinal beams 38, thence under pulleys 63, journaled in suitable boxes 64, secured to the outer surface of the outermost cleats 53, of said trap-door 37². Said chains 60, then pass over pulleys 65, working in pulley boxes 66, secured to said longitudinal beams 38; thence said chains pass through brake mechanisms 67, which will be described later, over pulleys 68, working in pulley boxes 69 and 54, said boxes being secured near the outer ends of longitudinal beams 38. The chains 60, terminate in collars 70, which are formed or secured to the crank-shaft 71, having keyed at its outer end a ratchet wheel 72, also being provided with a handle 73. A pawl 74, pivoted to a pin 75, engages the teeth of said ratchet wheel 72. It will be obvious that by the use of said crank-shaft 71, it will be possible to close the trap-doors at will, after they are sprung and said hopper 39, has been emptied of its contents.

Said brake mechanism 67, is composed of said boxes 69 and 54, each of which has a flange 76, secured thereto. Pivotaly connected to each of said flanges is a clutch 77, having an upwardly projecting pin 78, formed thereto. Guide-rods 79, each have one of their ends hooked to one of said boxes 69 and 54, while the other end is hooked to said rock-shaft 58, which has secured to one of its projecting ends a crank 80. A short rope 81, is secured to each of the free ends of said clutches 77, the other end of each being secured to said rock-shaft 58, by means of a pin 82, or other substantial means. A spring 83, has one of its ends secured to one of the longitudinal beams 38, its other end being secured to said rock-shaft 58. The function of this spring is to effect a partial rotation of said rock-shaft 58, in such a direction that it will release the clutch 77, from engagement with the chain 60, so that the trap-doors may be allowed to swing open. When said trap-doors are closed, a spring-actuated pin 84, having connected to its inner end a rope 85, passes through a perforation 86, in said crank 80. This tends to hold the rock-shaft 58, in such a position against the action of spring 83, that said brake 67, will be held in clutched position. Said rope 85, passes over a pulley 87, rotatably mounted in a box 88, supported by means of a bracket 89. When it is desired to allow said trap-doors to swing in open position, the rope 85, is pulled by the operator against the action of the spring 90, thus disengaging said pin 84, from said crank 80, allowing said spring 83, to rotate the rock-shaft 58, which will release the clutches from engagement with said chains 60, as described. Said hopper 39, is open at one end, and closed at the other, by means of an end gate 91. This end gate is securely fastened to the box, and has over its upper edge a gas-pipe roller 92, journaled in suitable bearings in the sides 93, of said box. Said roller protects the end gate when the whiffletrees and scraper pass over it after dumping their contents in the box. Each corner of this box is securely fastened to the longitudinal beams 38, by means of angle irons 94. These irons are bolted to the sides of the box and to the top surfaces of the longitudinal beams, and are further secured to said longitudinal beams by means of U-shaped fastening rods 95.

The operation of this device is as follows: The operator, desiring to raise the platform from its lowest position, causes the draft animals hitched to the cable 25, to move outward, thus revolving the drum 24, which rotates the shaft 23, whereon entwined the chains 15. During the upward movement of said platform the dog 35, engages the teeth 36, of said drum, to guard against accident. The platform upon reaching its

highest position is locked automatically, when it is held in its elevated position without further attention being necessary. The mechanism necessary to automatically lock said platform consists in the loops secured to said hopper 39. These loops are engaged by the latches 45, which work in the clevises 42, held by the longitudinal beams 2. (See Fig. 6.) The platform being held in its highest position, and the operator desiring to dump the contents of said hopper 39, into a wagon or dray, he springs the trap-doors 37² by releasing the brake mechanisms 67. When said brake mechanisms are released the chains 60, holding the trap-doors, are no longer held taut. The trap-doors therefore, swing wide open, emptying the contents of the hopper 39. The said trap-doors are closed simply by entwining the chains 60, around the shaft 71, said shaft 71, being revolved by means of the crank 73, and regulated by dog and ratchet mechanism. It being desired to lower said platform, the latches 45, are released by manipulation of the handle 51, which partially rotates the bars 48, which in turn withdraw said latches 45, from their normal positions. The platform on its descent is controlled by said band brake 29, held taut, when desired, by manipulating the handle 34, away from the uprights 1.

Though I have specifically described my invention, I may claim the right to make such changes and modifications in the general construction and arrangement of the elements of my device as do not depart from the spirit of the claims hereunto appended, nor fall without the scope of my invention, and which will be obviously necessary in its manufacture.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is—

1. In a hoisting-machine the combination of a truck, a main frame mounted on said truck, a platform, trap-doors hinged in the center of said platform, means for opening and closing said trap-doors, means for raising and lowering said platform, means for guiding said platform comprising platform guides adjustably secured to the vertical beams of said main frame, substantially as described.

2. In a hoisting-machine comprising a main frame, platform guides adjustably secured to one of the inner faces of the vertical beams of said main frame, said platform guides adapted to fit over stakes driven in the ground to hold said main frame substantially in position.

3. In a hoisting-machine comprising a main frame, a platform guide adjustably secured to one of the inner faces of each vertical beam of said main frame, each of said platform guides having vertically dis-

posed slots cut therein near its upper and lower ends, bolts passing through said vertical beams of said main frame and through the slots in said platform guides, said platform guides having a plurality of perforations passing therethrough adjacent to the upper of said vertical slots, pins passing through one or more of these perforations holding said platform guides at whatever position is desired in the scope of their adjustability.

4. In a hoisting-machine a main frame comprising vertical beams, a platform adapted to be elevated and lowered, means for elevating and lowering said platform consisting of the following elements, to wit: a main shaft journaled near the rear end of said machine, chains, two secured at their front ends to the vertical beams of said platform, passing over pulleys journaled over the top and near the front end of said frame, thence rearward over pulleys journaled over the top and near the rear end of said frame and thence downward, winding around said main shaft, and two secured to the side beams of said platform near their rear ends, passing up over pulleys journaled over the top and near the rear end of said frame, and thence downward winding around said main shaft, means, consisting of a drum, for effecting the rotation of said main shaft, means comprising a dog and ratchet for holding said main shaft against reverse rotation when said platform is being hoisted, said ratchet being formed to one of the edges of the drum and its dog pivotally held to the adjacent vertical beam of the frame.

5. In a hoisting machine comprising a main frame, a crank shaft mounted between the rear vertical beams of said main frame, a platform, trap-doors hinged at the center thereof, means for opening and closing said trap-doors, said trap-doors comprising cleats, said means consisting of chains secured on the outer surface of the outermost cleats of the forward of said trap-doors, said chains passing over pulleys journaled in pulley boxes secured to longitudinal beams of the platform, thence under pulleys journaled in suitable boxes secured to the outer surface of the outermost cleats of the rearward trap-door, thence passing over pulleys working in pulley boxes secured to said longitudinal beams, thence said chains pass through brake mechanisms, thence over pulleys working in pulley boxes secured near the outer ends of said longitudinal beams, terminating in collars formed to the aforesaid crank-shaft, a ratchet wheel keyed near the outer end of the crank-shaft, and a handle secured to its outer end, a pawl engaging the teeth of said ratchet wheel to prevent a retrograde motion of said ratchet

wheel while the trap-doors are being closed, substantially as described.

6. In a hoisting device comprising a platform, trap-doors hinged at its center, means for closing said trap-doors comprising chains, means to hold said trap-doors in closed position consisting of brake mechanisms, each of said brake mechanisms consisting of a flange, a clutch pivotally connected at one of its ends to said flange, said clutch having an upwardly projecting pin, a guide rod having one of its ends hooked to a box secured to the rear end of one of the longitudinal beams of said platform, a rock-shaft rotatably mounted between the longitudinal beams of said platform, the other end of said guide-rod hooked around said rock-shaft, a crank provided with an eye secured to the outer end of said rock-shaft, a short rope, one end being secured to the free end of said clutch, the other end being secured to said rock-shaft, a spring, one end secured to one of the longitudinal beams, its other end secured to said rock-shaft, said spring to effect a partial rotation of said rock-shaft to cause said brake mechanism to assume an unclutched position, said crank to rotate said rock-shaft to cause said brake mechanism to assume a clutched position, means, comprising a spring-actuated pin which passes through said eye in said crank, to lock said rock-shaft against rotation, substantially as described.

7. In a hoisting device comprising a platform, trap-doors hinged at its center, means for closing said trap-doors comprising chains, means to hold said trap-doors in closed position consisting of brake mechanisms, each of said brake mechanisms consisting of a flange, a clutch pivotally connected at one of its ends to said flange, said clutch having an upwardly projecting pin, a guide rod having one of its ends hooked to a box secured to the rear end of one of the longitudinal beams of said platform, a rock-shaft rotatably mounted between the longitudinal beams of said platform, the other end of said guide-rod hooked around said rock-shaft, a crank provided with an eye secured to the outer end of said rock-shaft, a short rope, one end being secured to the free end of said clutch, the other end being secured to said rock-shaft, a spring, one end secured to one of the longitudinal beams, its other end secured to said rock-shaft, said spring to effect a partial rotation of said rock-shaft to cause said brake mechanism to assume an unclutched position, said crank to rotate said rock-shaft to cause said brake mechanism to assume a clutched position, means to lock said rock-shaft against rotation, consisting of a spring-actuated pin passing through the eye of said crank, means to unlock said rock-shaft so as to allow it to

rotate responsive to the tension of said first-mentioned spring, substantially as described and set forth.

8. In a hoisting device comprising a platform, trap-doors hinged at its center, means for closing said trap-doors comprising chains, means to hold said trap-doors in closed position consisting of brake mechanisms, each of said brake mechanisms consisting of a flange, a clutch pivotally connected at one of its ends to said flange, said clutch having an upwardly projecting pin, a guide-rod having one of its ends hooked to a box secured to the rear end of one of the longitudinal beams of said platform, a rock-shaft rotatably mounted between the longitudinal beams of said platform, the other end of said guide-rod hooked around said rock-shaft, a crank provided with an eye secured to the outer end of said rock-shaft, a short rope, one end being secured to the free end of said clutch, the other end being secured to said rock-shaft, a spring, one end secured to one of the longitudinal beams, its other end secured to said rock-shaft, said spring to effect a partial rotation of said rock-shaft to cause said brake mechanism to assume an unclutched position, said crank to rotate said rock-shaft to cause said brake mechanism to assume a clutched position, means to lock said rock-shaft against rotation, consisting of a spring-actuated pin passing through the eye of said crank, means to unlock said rock-shaft so as to allow it to rotate responsive to the tension of said first-mentioned spring, said means consisting of a short rope connected to the inner end of said spring-actuated pin, a pulley mounted in a box supported by suitable means, said short rope working over said pulley, said pin becoming disengaged when the same is pulled against the action of its spring by means of said short rope, substantially as set forth.

9. In a hoisting device comprising a main frame, a platform, a hopper mounted on longitudinal beams of said platform, loops, one of each secured to each corner of said hopper, means to engage said loops, each of which consists of a latch, a clevis fitting over one of the longitudinal beams of the main frame, the side members thereof extending approximately four inches below said beam, a bolt passing through said side members immediately below said beam, an

angle iron holding the side members of said clevis together at their lower ends, said latch working in vertical slots cut in said side members between said bolt and said angle iron, means to cause said latch to assume a latched position, means to cause said latch to be disengaged from said loops, substantially as set forth.

10. In a hoisting-machine a main frame comprising longitudinal beams, a platform comprising a hopper having a loop secured to each corner thereof, means comprising latches to engage said loops to hold said platform in its highest elevated position, means to disengage said latches from their respective loops consisting of bars, downwardly extending rods secured to said bars, two pins projecting from each latch, one of each of said downwardly extending rods working between them, a connecting-rod connecting said bars together, a handle secured to one end of said connecting-rod to manipulate the same, a spring, one end of which is secured to said main frame, its other end connected to said connecting-rod, the tension of said spring tending to cause said latches to normally assume a latched position, substantially as shown and described.

11. In a device of the character described comprising a platform having a hopper mounted thereon, said hopper being open at one end and closed at the other by means of an end gate, a gas-pipe roller journaled in suitable bearings in the side walls of said box, directly over the upper edge of said end gate, each corner of said box being fastened to the platform by substantial means.

12. In a hoisting-machine having a platform comprising longitudinal beams, a hopper, means to secure said hopper to said longitudinal beams, angle irons constituting said means, said angle irons bolted to the sides of the box and to the top surfaces of the longitudinal beams, U-shaped fastening rods as further means of securing the angle irons to said longitudinal beams, substantially as described.

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

GEORGE F. KOENIG.

Witnesses:

ORD J. PARKER,
J. A. ANDEREGG.