(No Model.) 4 Sheets—Sheet 1.

J. W. SCOTT.

COMBINED ELEVATOR AND DUMP.

No. 537,858. Patented Apr. 23, 1895.

FIG. 1.

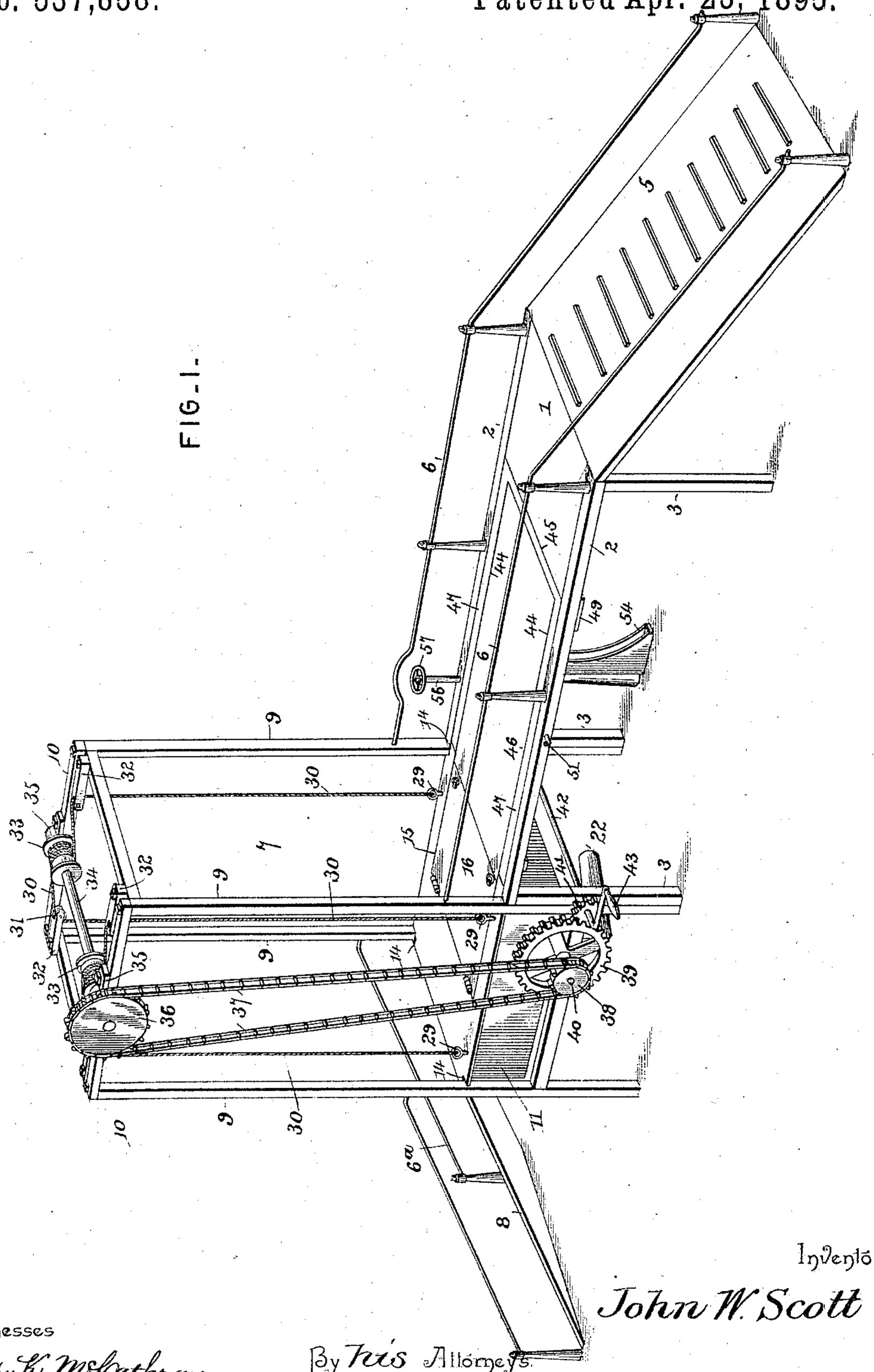

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FIG. 6.

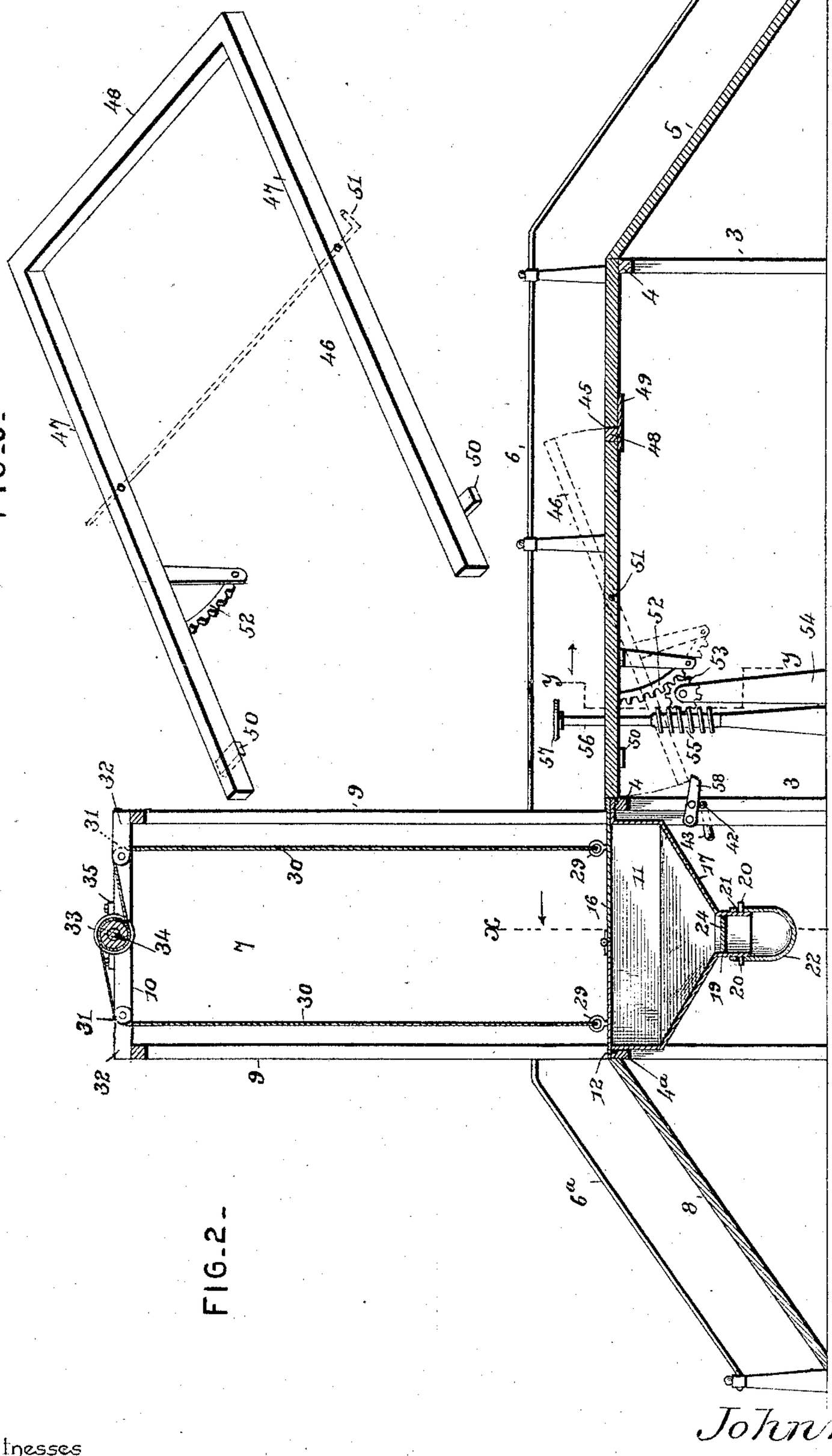

FIG. 2.

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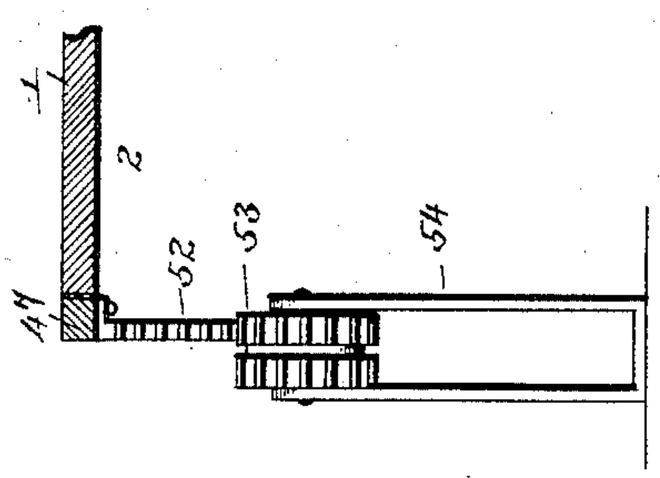

FIG. 4.

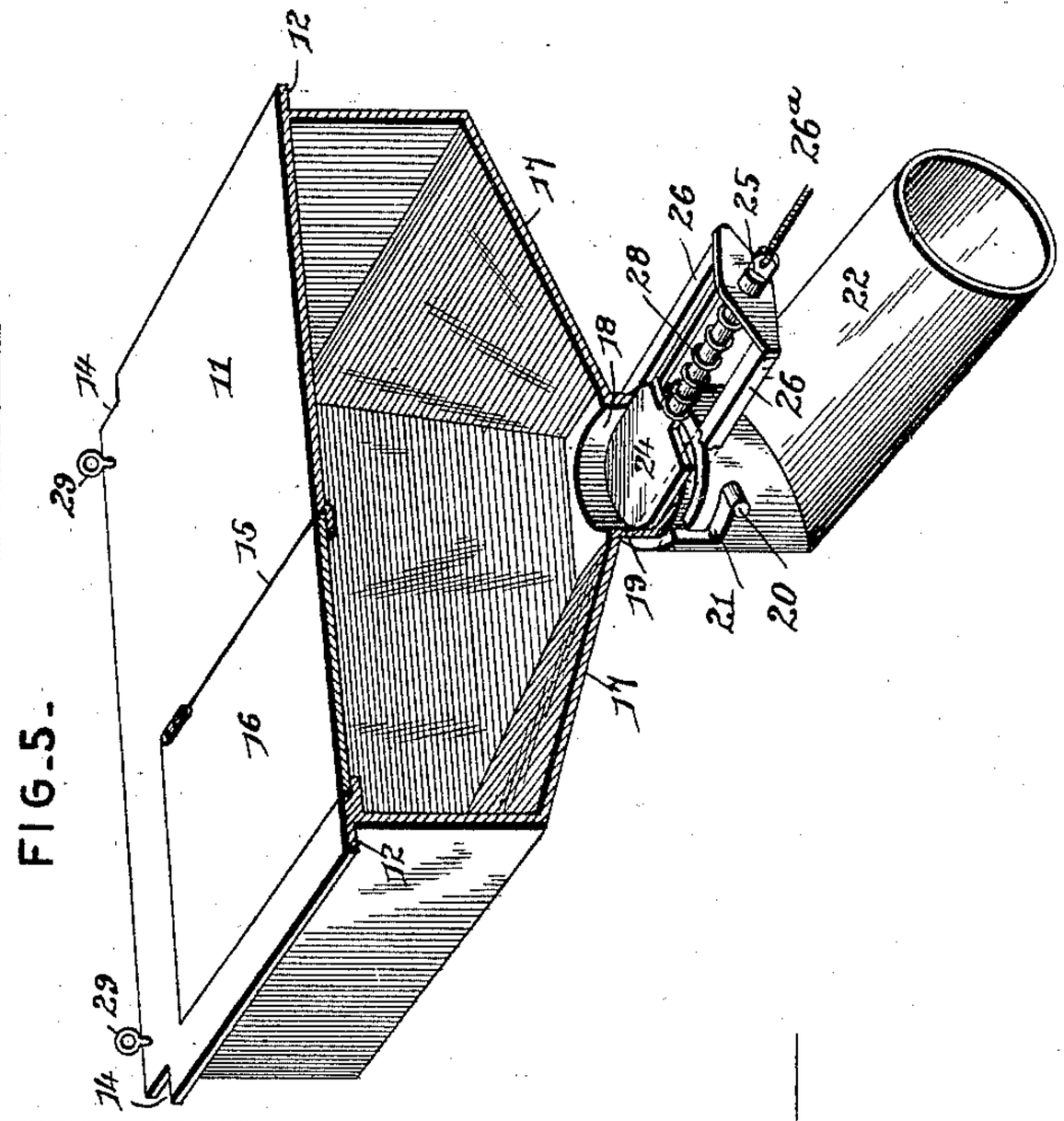

FIG. 5.

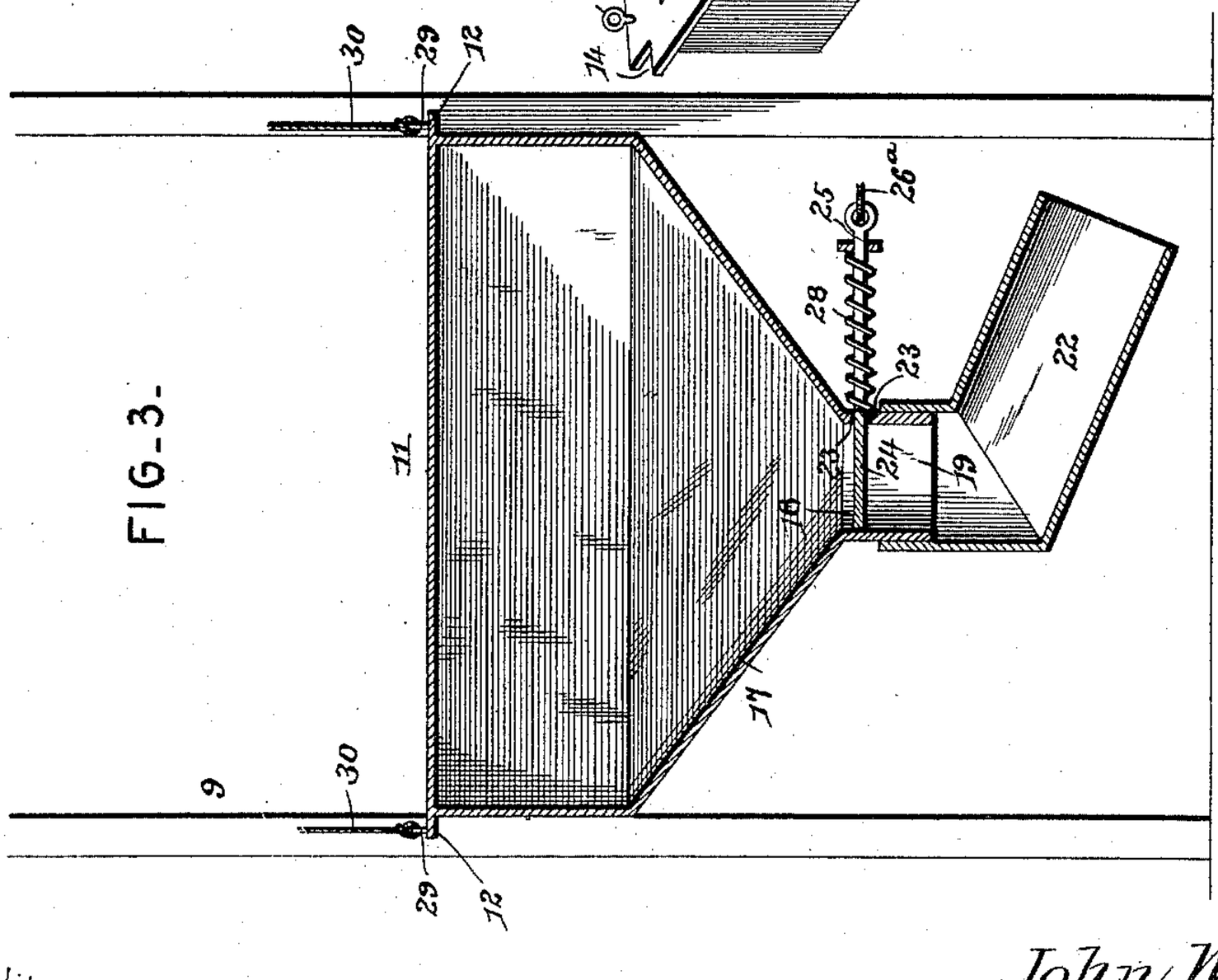

FIG. 3.

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COMBINED ELEVATOR AND DUMP.

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FIG. 8.

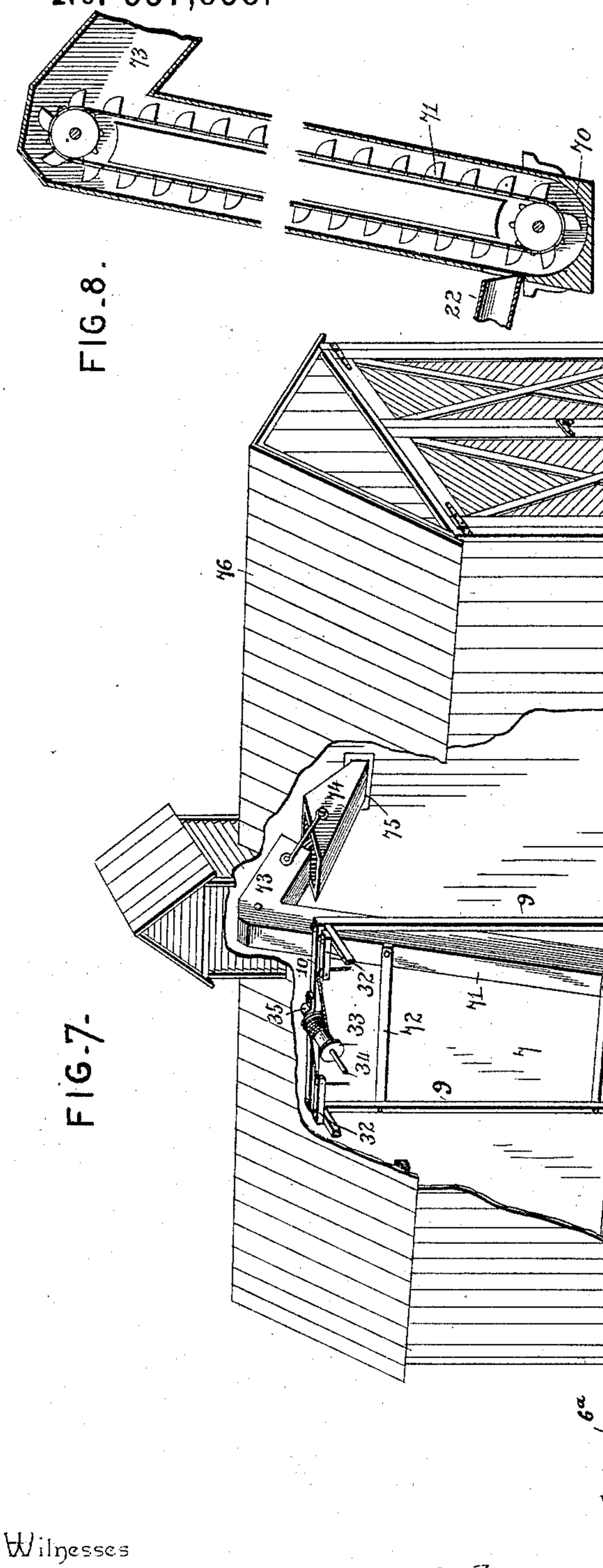

FIG. 7.

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UNITED STATES PATENT OFFICE.

JOHN W. SCOTT, OF CHICAGO, ILLINOIS.

COMBINED ELEVATOR AND DUMP.

SPECIFICATION forming part of Letters Patent No. 537,858, dated April 23, 1895.

Application filed July 30, 1894. Serial No. 518,959. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. SCOTT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Combined Elevator and Dump, of which the following is a specification.

This invention relates to combined dumps and elevators for grain and other material.

The main and primary object of the present invention is to provide a new and useful apparatus of this character that shall be portable, so as to be easily transported from place to place, while at the same time providing simple and efficient means for conveniently and quickly handling grain, or other material by providing for the dumping of such grain or other material from the loaded wagons and directly elevating the dumped material to the point of discharge into a railway car, granary, or the like.

With these and other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the drawings: Figure 1 is a perspective view of a combined dump and elevator constructed in accordance with this invention. Fig. 2 is a central vertical longitudinal sectional view thereof. Fig. 3 is a vertical transverse sectional view on the line *x*—*x* of Fig. 2. Fig. 4 is a similar view on the line *y*—*y* of Fig. 2. Fig. 5 is a detail in perspective partly in section of the vertically movable elevator hopper. Fig. 6 is a similar view of the tilting dump frame. Fig. 7 is a perspective view, partly in section, of the apparatus employed in connection with a separate elevator, and a protecting apparatus building. Fig. 8 is a longitudinal sectional view of the separate elevator shown in Fig. 7.

Referring to the accompanying drawings, 1 designates an elevated drive platform for wagons that are to be unloaded of their contents for the purpose of elevating such contents into a railway car, granary or the like, and said elevated drive platform 1, is secured in a horizontal position between the opposite parallel supporting frames 2, that are provided at opposite ends with the upright standards 3, that serve to support the drive platform at the proper elevation above the ground or other point where the apparatus is located, and the said opposite supporting frames 2, are connected at their opposite ends by the end cross bars 4, on which rest the opposite ends of the platform 1, and which form a firm support for the platform, while at the same time completing a structure wherein the several parts thereof may be readily taken apart and set up again as may be required.

At one end of the elevated drive platform 1, is arranged an inclined end platform 5, leading up thereto to provide for carrying the unloaded wagons down onto the ground, and at opposite sides of the main platform 1 and the end platform 5, are arranged the longitudinal railings 6, which subserve the usual function of railings, and at the end of the drive platform opposite the inclined platform 5, is arranged an upright derrick tower 7, leading up to one side of which is an inclined end platform 8, having side railings 6ª, and which provides for carrying the loaded wagons onto the drive platform 1, to be dumped.

The upright derrick tower 7, is arranged close against one end of the frames 2, that support the platform 1, and essentially comprises four upright guide posts 9, securely connected together at their upper ends by a frame of horizontal connecting bars 10, and said derrick tower is sufficiently high to reach up to the point where the grain or other material is to be elevated for loading into the top of a railway car, granary, or the like. The derrick tower 7, accommodates for movement therein between the guide or corner posts 9, thereof, an elevator hopper 11. The elevator hopper 11, loosely registers in the space between the posts 9, and is provided with a flat top having the opposite side supporting flanges 12, which, when the hopper is in its lowered position, rest on one of the cross bars 4 of the frames 2, and a similar bar 4ª, connecting two of the posts 9 at the upper end of the inclined platform 8, so that when lowered the flat top of the hopper will align with the drive platform 1, to admit of the passage of the wagons from the platform 8, to the drive platform 1, to be dumped.

The vertically movable elevator hopper 11, is provided at the four corners thereof with

the guides 14, that embrace the posts 9, of the derrick tower to hold the hopper steady in its up and down movements, and the said hopper essentially comprises a rectangular box inclosed at the top and provided in such closed top with a door opening 15, that is adapted to be closed by the door 16, hinged on top of the hopper and of a width less than the width of the platform 1 to form wheel spaces on top of the hopper at the ends of the door. The hopper or hopper box 11, is provided with a contracted bottom 17, that tapers into the bottom discharge opening 18, from which projects the discharge neck 19, provided at diametrically opposite sides with the lock studs or pins 20, with which are adapted to be removably engaged the diametrically opposite bayonet slots 21, of the inclined delivery spout 22, which, when the hopper or hopper box is elevated to the proper height, serves to deliver the grain or other material into the top of a railway car, a granary or other point of deposit.

The bottom discharge neck 19, of the hopper 11, is provided in one side with the gate opening 23, which accommodates therein the normally closed cut off gate 24, which is adapted to cover the bottom discharge opening of the hopper to prevent the material from running out of the same until the gate is drawn out, and said cut-off gate is provided at one side with the pull rod 25, that is supported to work in the off-standing guide bracket 26, projected from one side of the neck 19, and having connected to the outer end thereof the pull cord or wire 26, which is manipulated to open the gate 24, to allow the contents of the hopper to run out through the neck 19, and the said cut-off gate is held normally closed within the hopper neck 19, by means of the closing spring 28, coiled on the rod 25, inside of the bracket 26.

The elevator hopper or hopper box 11, has arranged at the corners thereof the eyes or other suitable connections 29, to which are attached the lower ends of the elevating cables 30, the upper ends of which pass over the guide pulleys 31, mounted in the pulley brackets 32, arranged at the top of the derrick tower at the corners thereof, and the directly opposite pairs of said elevating cables are reversely wound at their upper ends on the winding drums 33, mounted on opposite portions of the winding shaft 34. The winding shaft 34, is journaled transversely on top of the frame 10, in the bearing boxes 35, and upon one extremity of said winding shaft is mounted the upper sprocket wheel 36, over which passes the upper portion of the sprocket chain 37, the lower portion of which passes over a smaller sprocket wheel 38, mounted at one side of the spur gear wheel 39, journaled on a stub shaft 40, arranged at one side of the tower 7. The wheel 39, is engaged by an operating pinion 41, mounted upon one end of a transverse operating shaft 42, journaled transversely of the frame 2, at one end thereof, and carrying upon its extremities the crank handles 43, which provide means for raising and lowering the elevator hopper 11, through the medium of the gearing and lifting devices described.

At one side of the tower 7, the drive platform 1, is provided with the parallel side slots 44, connected at one end by the transverse end slot 45, and said slots accommodate the movements of the rectangular tilting dump frame 46. The rectangular tilting dump frame 46, comprises the opposite parallel side rails 47 working in slots 44, and the end rail 48, connecting one end of the side rails 47, and adapted to work in the slots 45, and when the said frame 46, is adjusted to its horizontal position the connected rails comprising the same register in the slots 44 and 45, so as to lie flush with the surface of the drive platform, and in being adjusted to its horizontal position the frame 46 is prevented from tilting away from the tower 7, when the loaded wagon is run thereon, by means of the transverse rest plate 49, connecting the opposite side frames 2, directly under the slot 45, and the stop lugs 50, projected from the side rails 47, and engaging under the horizontal portions of the frames 2.

It will be understood that when the loaded wagon is run onto the drive platform the wheels thereof will pass at one side of the ends of the door 16, of the hopper and onto the side rails 47, of the tilting dump frame, that are aligned with the wheel spaces at the ends of the door, and in this position it is simply necessary to tilt the dump frame to tilt the wagon, and in order to admit of this the said dump frame is pivotally mounted intermediate of its ends on the side pivot rods or bolts 51, and at one side of the point of pivot one of the side rails 47, has projected from the under side thereof the segmental rack bar 52, with which meshes one set of teeth of a double pinion 53, mounted in a suitable bearing bracket 54, arranged under the drive platform, and with the other set of teeth of said pinion meshes a worm 55, formed on an upright worm shaft 56, journaled at one side of the drive platform and carrying at its upper end a hand wheel 57, for manipulating the same to adjust the position of the tilting frame 46. With the wheels of the loaded wagon on the rails 47, of the tilting frame, it is simply necessary to manipulate the shaft 56, to incline or tilt the said frame with the wagon thereon toward the derrick tower and hopper, and one end of said tilting frame is limited in its adjustment below the drive platform by engaging against a suitably arranged stop lug or bracket 58. Before tilting the loaded wagon in the manner described, it is necessary to open the door 16, of the hopper and the end gate of the wagon to provide for discharging the contents of the latter into the hopper. When one wagon has been unloaded, the tilting dump frame is lowered to its horizontal position and the empty wagon run off at one

end of the drive platform and another loaded wagon driven up onto the drive platform and on the side rails of the dump frame, and the operation is repeated.

When the hopper 11, has become filled the same is elevated by the means described to discharge the contents thereof through its spout 22, into the car, granary or other receptacle. By reason of the removable connection of the said delivery spout 22, to the discharge neck of the hopper it will be understood that said spout may be disconnected from the hopper, and the boot of a bucket, screw, or similar elevator arranged under the discharge of the hopper so as to provide means for directly elevating the material to the point of deposit as it issues from the hopper without elevating the hopper itself, and this use of the apparatus will be easily understood by those skilled in the art.

It will also be understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

In Fig. 7, of the drawings is illustrated an arrangement of the apparatus wherein the delivery spout of the hopper box 11, discharges directly into the boot 70, of an ordinary endless bucket elevator 71. The endless bucket elevator 71, is conveniently supported at one side of the derrick tower 7 by means of suitable brace supports 72, and the upper discharge neck 73, at the upper end of the said bucket elevator, preferably delivers into a discharge chute 74, which is illustrated as being fitted in a side discharge opening 75, in one side of a protecting building 76, so that the grain that is elevated by the said endless bucket elevator may be loaded into a car or other receptacle arranged at one side of the building 76. The building 76, is illustrated as an ordinary frame structure that entirely covers and incloses therein the hopper box 11, the derrick tower rising thereabove, and the separate elevator 71, so that the principal parts of the apparatus will be thoroughly protected from the weather, while at the same time having the same freedom of operation as if the building were not used.

In connection with the protecting building for the apparatus, the elevated drive platform is illustrated as being lowered to within a foot or two of the ground, and in this arrangement the lower part of the hopper box 11 and its connection with the lower end of the elevator 71, are arranged in a ground pit 77, that is preferably provided with a lining 78, of cement, stone, wood, or other suitable material to properly protect the parts of the apparatus confined within the pit. The object in lowering the drive platform is to avoid the steep inclines at the ends thereof, so that it is not so difficult in hauling the loaded wagon up onto the drive platform.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a combined dump and elevator, the combination of an elevated drive platform, a derrick tower arranged at one end of the drive platform, the elevator hopper guided within said tower and provided with a closed top having a door inclosed opening, a contracted bottom and a bottom discharge neck leading off from the bottom, an inclined delivery spout detachably fitted onto said discharge neck, an off-standing guide bracket projected from one side of said neck, a normally closed cut-off gate working in said discharge neck and provided with a pull rod working in said guide bracket, a spring arranged on the pull rod within the guide bracket to normally close the cut off gate, means for raising and lowering the hopper, and a tilting dump frame mounted on said drive platform, substantially as set forth.

2. In a combined dump and elevator, the combination with a suitably arranged tilting dump frame; of an upright derrick tower comprising suitably connected upright guide posts and provided with opposite cross rest bars near the lower end thereof, an elevator hopper provided at its corners with guides embracing the posts of said tower and with opposite side supporting flanges adapted to rest on said cross bars when the hopper is lowered, a winding shaft journaled on top of said tower and provided on one end with a sprocket wheel, separate winding drums mounted on said winding shaft, guide pulleys arranged at the top corners of the tower, elevating cables connected at their lower ends to the corners of the hopper and passing at their upper ends around said guide pulleys and said winding drums, a spur gear wheel arranged at the lower end of the tower and carrying at one side a sprocket wheel, a sprocket chain passing over the two sprocket wheels, and an operating shaft carrying a pinion meshing with said spur gear wheel, substantially as set forth.

3. In a combined dump and elevator, the combination of an elevated drive platform provided with parallel side slots and a transverse slot connecting one end of the side slots, a rectangular tilting dump frame pivotally mounted on said platform and comprising opposite parallel side rails working in the side slot of the platform and an end rail connecting the side rails and working in the transverse slot of the platform, a rest plate arranged under the transverse slot of the drive platform, stop lugs projected from the side rails of the dump frame to engage under opposite sides of the drive platform, a stop lug or bracket arranged below the dropping end of one of said side rails, means for tilting said dump frame, and a hopper arranged at one end of the drive platform, and provided at the top with a door of a width less than the width of the drive platform to form wheel spaces on top of the hopper that are aligned

with the side rails of said tilting dump frame, substantially as set forth.

4. The combination with an elevated drive platform and an elevator hopper arranged at one end thereof; of a tilting dump frame pivotally mounted on the drive platform and provided with a segmental rack bar projected from its under side, a suitably supported double pinion having one set of teeth meshing with said rack bar, and a vertically arranged worm shaft having the worm thereof meshing with the other set of teeth of the double pinion, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN W. SCOTT.

Witnesses:
GEO. H. PHILLIPS,
R. H. SCHUSTER.