

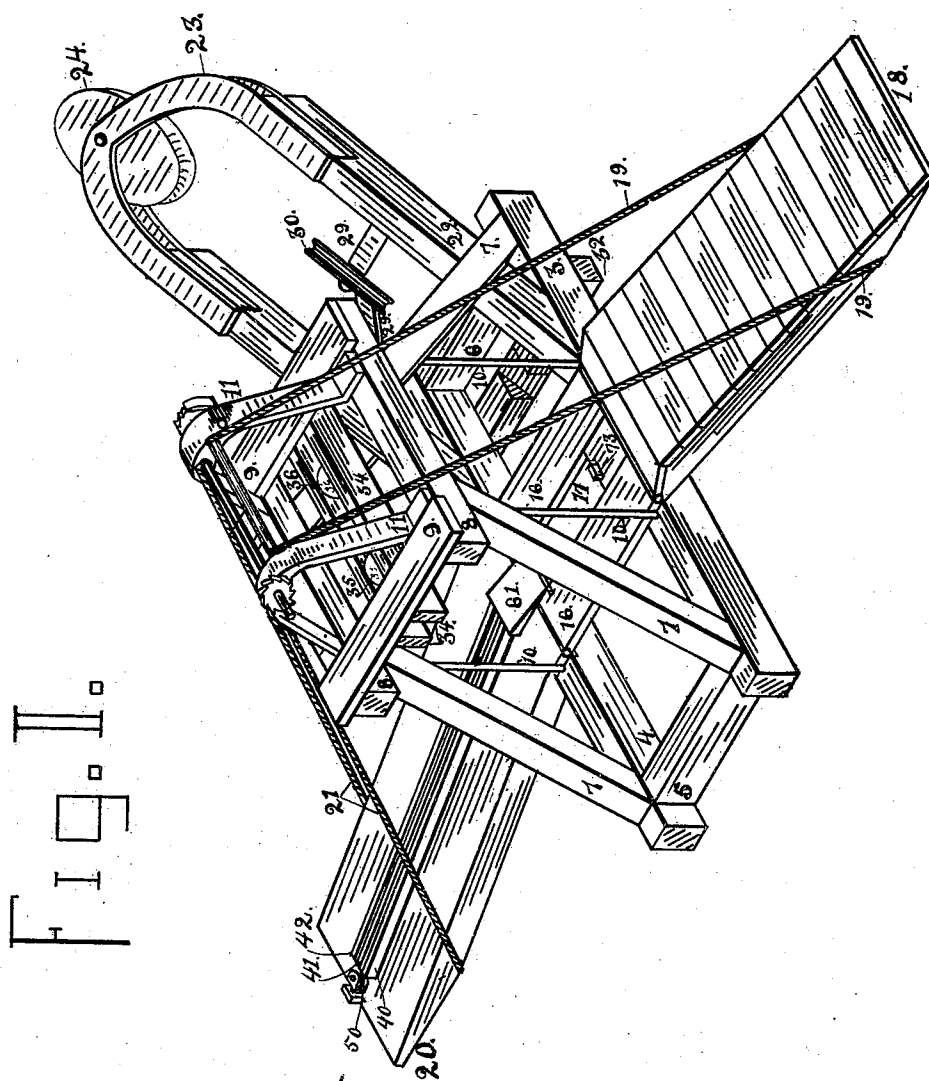
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6 Sheets—Sheet 1.

J. OPPOLD.
EARTH LOADING MACHINE.

No. 503,250.

Patented Aug. 15, 1893.



Witnesses.
B. C. Schundy.
J. E. Roney

Inventor.
Joseph Oppold.
By L. L. Miller
att'y.

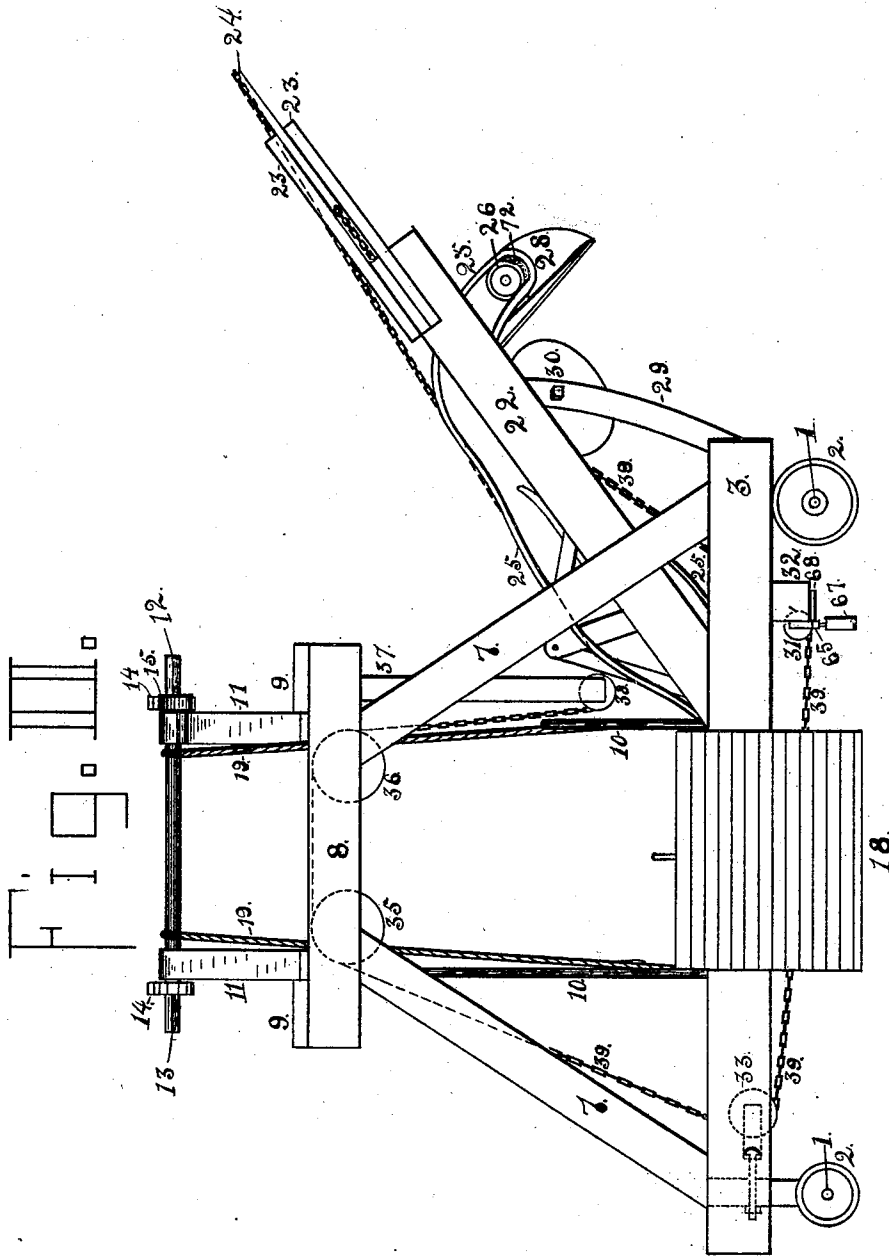
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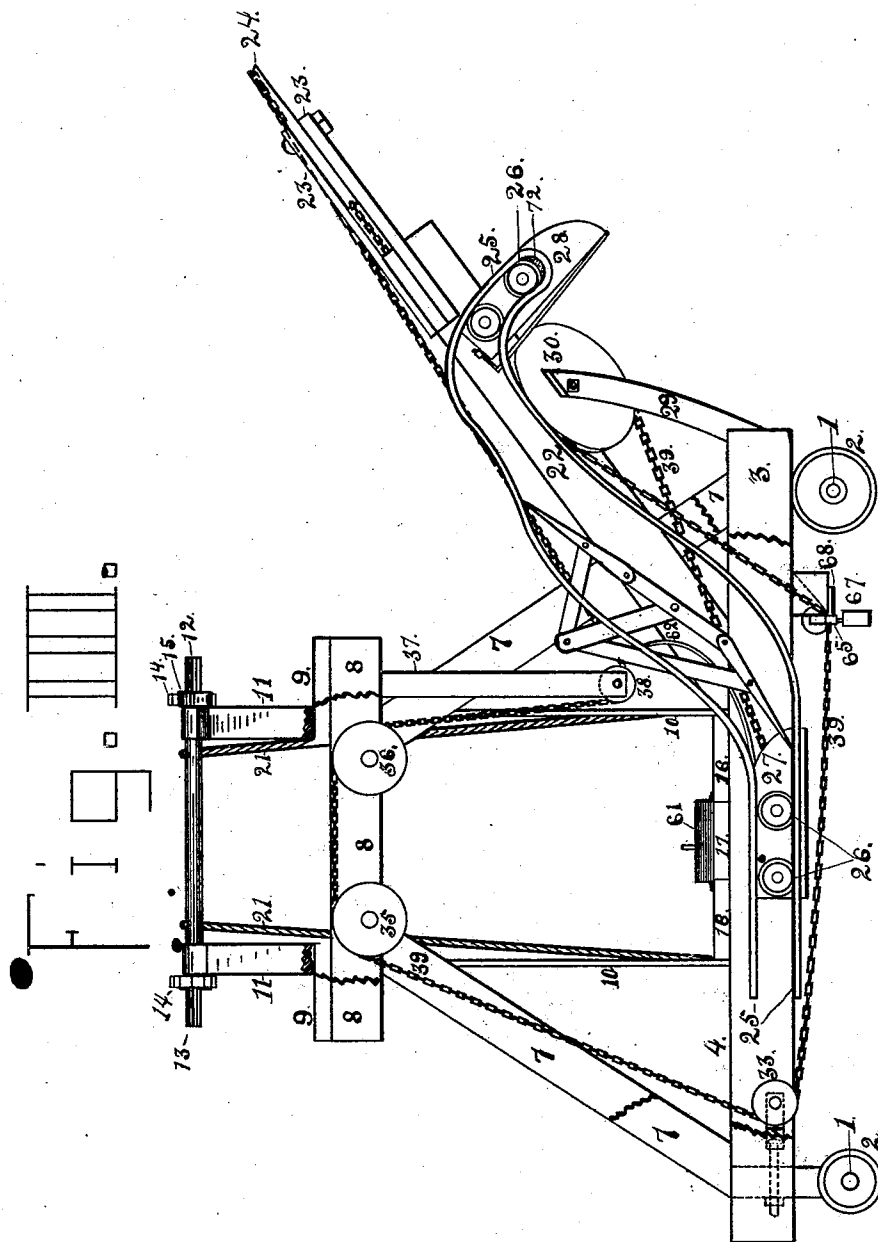
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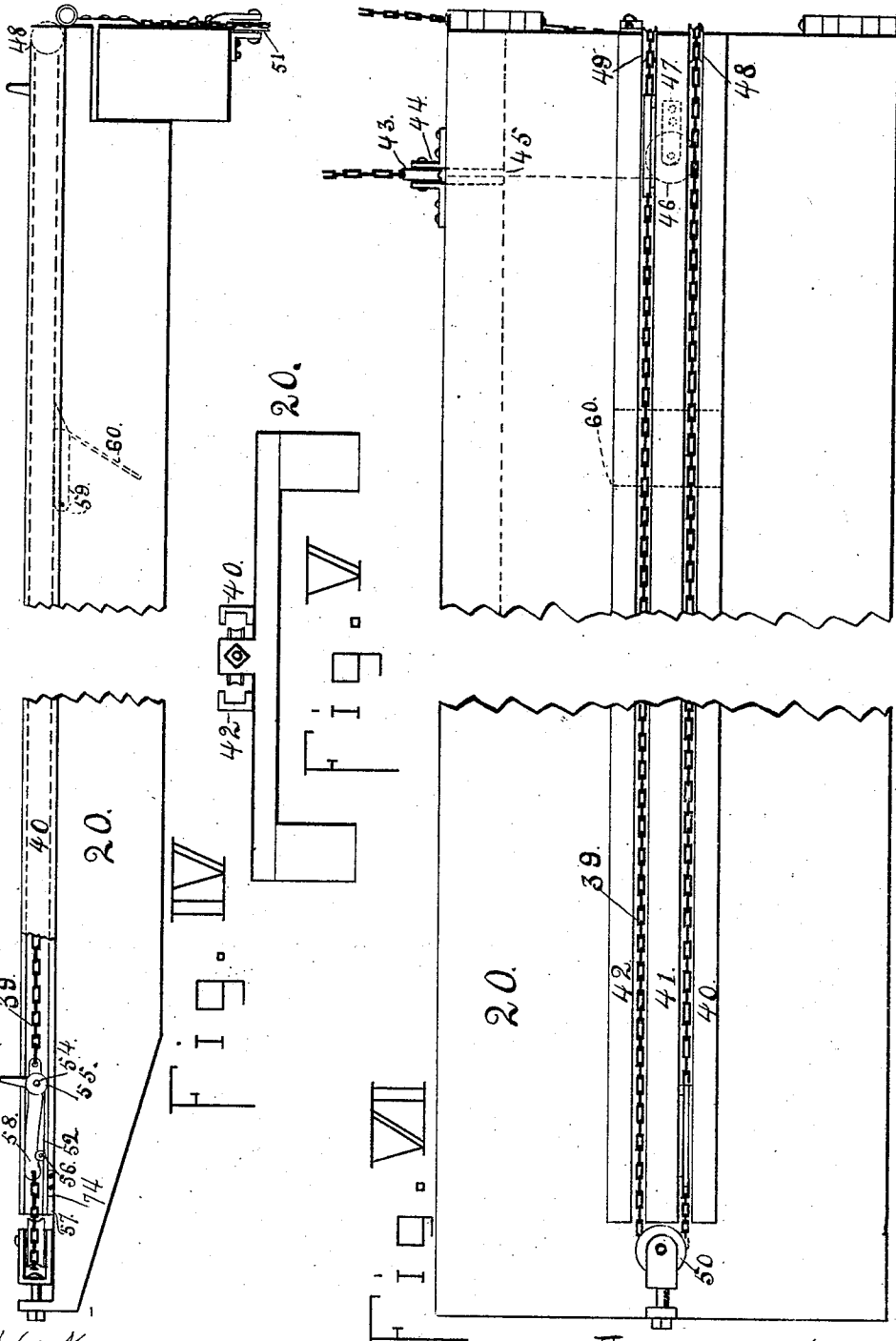
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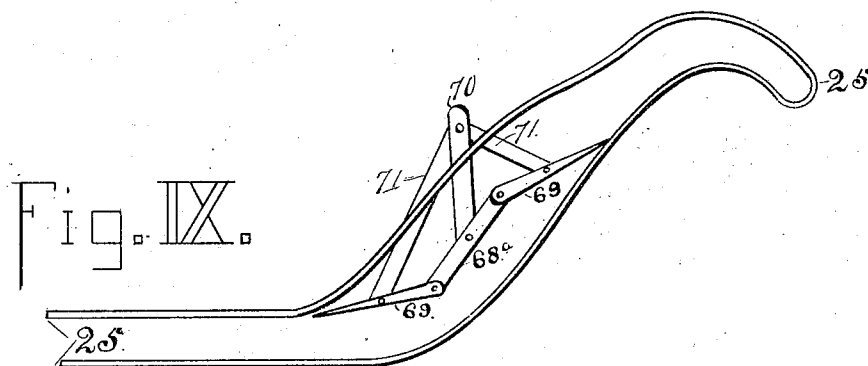
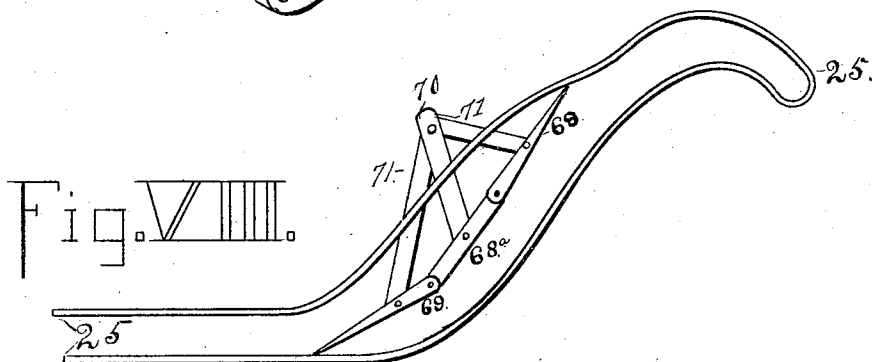
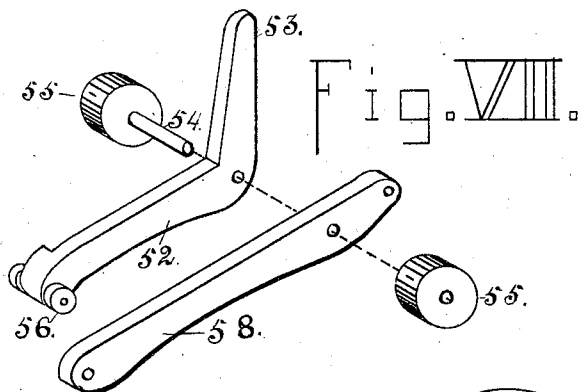
(No Model.)

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6 Sheets—Sheet 6.

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Fig. X.

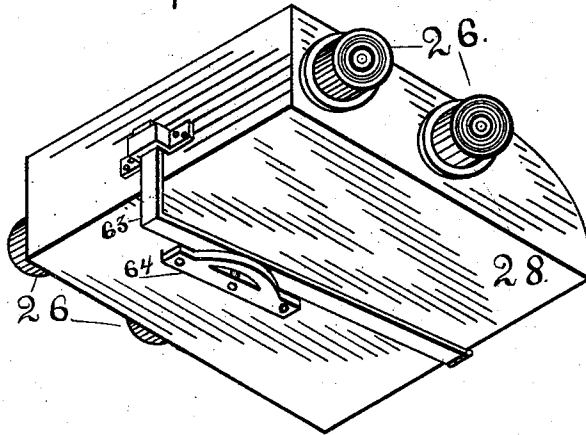
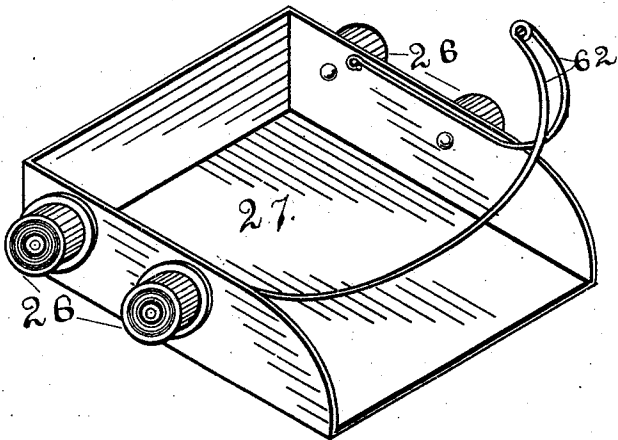


Fig. XII.



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UNITED STATES PATENT OFFICE.

JOSEPH OPPOLD, OF GRANT, IOWA.

EARTH-LOADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 503,250, dated August 15, 1893.

Application filed May 3, 1893. Serial No. 472,915. (No model.)

to all whom it may concern:

Be it known that I, JOSEPH OPPOLD, a citizen of the United States, residing in the town of Grant, county of Franklin, State of Iowa, have invented certain new and useful Improvements in Earth-Loading Machines, of which the following is a specification.

The object of this invention is to produce a machine for elevating earth, gravel, manure or other substances which may be handled by horse scrapers, into the box of the wagon or other carrying vehicle provided for its transportation, the power necessary for such elevation being furnished by the team of horses operating the scraper, and is applied immediately after the dumping of their load into the elevator bucket. To attain this result I provide an elevated platform with inclined approaches on either side and through the center of the platform, an opening under which two elevating buckets alternately rest to receive the load from the scraper which is dumped therein. Then as the departing team descends from the platform on the declining way, their double-trees engage a projection from an endless chain to which the elevating buckets are connected, and draw the same outward the length of the platform. This raises the loaded bucket up its inclined track, dumps its load at the upper end thereof and moves the empty bucket into the "receiving" position beneath the opening in the platform. For convenience in moving from place to place I mount the whole structure upon carrying wheels and by means of a two shaft windlass, raise the inclining ways into a folded position.

In the accompanying drawings, Figure I, is an isometric representation of the frame of my earth loading machine. Fig. II, is a side elevation of the complete machine showing the elevating buckets at their extremes of travel. Fig. III, is similar to the preceding figure excepting that the beams of the frame are represented as being broken away to show the respective positions of the working parts of the machine. Fig. IV, is a side elevation of the declining platform, certain portions being removed. Fig. V, is an outer end elevation of the platform illustrated in the preceding and the succeeding figures. Fig. VI, is a plan of the declining platform showing

the course of the endless chain therein. Fig. VII, is an isometric representation of the separated parts of the dog on the endless chain. Figs. VIII, and IX, illustrate the switch in the elevator frame in its two extremes of position. Fig. X, is an isometric representation of the lower elevator bucket and its means of connection with the endless chain. Fig. XI, is a like view of the upper elevator bucket.

In the construction of this earth loading machine I provide a wheeled carriage composed of the axles, 1, their supporting wheels 2, the longitudinal bed beams 3 and 4, and the joining cross beams 5 and 6, near the ends of the longitudinal beams. Above this bed I erect a bridge portion composed of the inclining supports 7, the top beams 8, the connecting pieces 9, and the rods 10, for securing the bridge rigidly to the bed beams. On the top of this bridge I place the windlass frame 11, in which are journaled the windlass shafts 12 and 13, squared at their opposite ends to receive a crank and provided with ratchet wheels 14 and their retaining dogs 15. Across the middle portion of the bed frame I place the two-part floor 16, having an opening 17, therein and at one end of the floor continuing the same and having a pivotal connection with the longitudinal beam 3, is the inclining approach 18, which, having a flexible connection 19, with the windlass shaft 12, may be raised into an elevated position for convenience in transportation. At the opposite side of the bed frame is a like hinged platform, 20, its pivotal joint being at the inner edge of the beam 4 and having like the platform 18, a connection 21, with the windlass shaft 13, where- by the platform 20, may be elevated.

The inclining elevator beams 22, are secured to the bed frame just rearward of the floor 16, and to connect their free outer ends is provided the bow 23, which also supports the sheave 24. A guide frame 25, is secured to the inner face of each one of the elevator beams 22, and running therein and bearing thereon are the flanged wheels 26, pivotally secured to the sides of the elevating buckets 27 and 28. An obliquely inclining brace 29, extends from one of the beams 22, to the opposite bed beam 4, and pivotally connected therewith is the obliquely inclined sheave 30.

A guide sheave 31, (to be more fully described later herein) has a laterally yielding connection with the beam 32, while the sheave 33, is pivotally secured to the fore cross beam 5, and has an adjustable connection therewith. Two pieces 34, depend from the connecting beams 9, and between the adjacent faces of these pieces are journaled the sheaves 35 and 36. A beam 37, is secured between the beams 34, and extending downward therefrom bears at its lower end the sheave 38. Over the sheaves 24, 30, 31, 33, 35, 36, and 38, I run the endless chain 39.

In the longitudinal center of the platform 20, is placed the double track composed of the three rails 40, 41 and 42, the middle one 41, of which has a cross-section of "I" form and the adjacent faces of the rails 40 and 42, are of similar form. The endless chain extends within the channels between the rails, running from the sheave 24, at the upper end of the elevator frame downward to the sheave 43, pivoted in the bracket 44, affixed to the platform 20, near its pivotal connection with the bed frame of the machine. From this sheave the chain extends through an opening 45, in the supporting beam of the platform 20, to the sheave 46, pivoted in the bracket 47, underneath the platform. At the rear end of the rails 40, 41, and 42, are pivoted the sheaves 48 and 49, over the former of which the chain 39 passes, thence down the space between the rails 40 and 41. At the end of the rail 41, in the longitudinal center of the platform 20, and near its free end is the sheave 50, around which the chain passes, turning into the space between the rails 41 and 42, to meet the sheave 49, from whence it passes downward to the pulley 51, located underneath the bed beam 4, and from this point completing the circuit by passing to the obliquely set sheave 30, and from thence to those before mentioned. In the channels between the rails and forming parts of the endless chain are two dogs which are alternately pulled forward by the doubletrees as each team passes over the platform after dumping its load and by which action the endless chain is rolled first one way and then another, each time raising the loaded bucket up the elevator, dumping its contents and lowering the other bucket into position to receive the next scraper load. Each of these dogs is composed of two rigid arms 52 and 53, at right angles to each other, at the junction of which a bearing shaft 54, extends through an opening in the dog and mounted thereon, on opposite sides thereof are two rollers 55, of such a diameter as just to fit between the transverse portions of the rails. Two rollers 56, are pivoted at the end of the arm 52, of the dog on opposite sides thereof and bear upon the lower web of the rails. The link 58, forms a pivotal connection between the dog and the endless chain 39. As before stated the arm 53, of one of the dogs is engaged by the doubletrees as the "scraper" team descends the way 20, drawing it forward

the length of the rails 40, 41 and 42, thereby moving the endless chain 39, elevating and dumping the loaded bucket and putting in its place the empty bucket, both of which buckets have a connection with the chain. When the dog has reached the outer ends of the rails its forward rollers 56, drop through the opening 57, in the bottom transverse portion thereof, permitting the dog to turn on its bearing shaft 54, disengaging the doubletrees of the departing team and dropping below the upper surface of the rails to be drawn backward when the other dog is drawn forward by the next outgoing team.

At the inner ends and in the lower transverse portion of the rails I place the gravity latches 59, with the guide plate 60, extending downwardly forward therefrom to direct the rollers 55, against the free ends of the latches as the dog moves inward and thereby to raise the forward rollers of the dog again on their track. After admitting the rollers 56, the latches drop back into position presenting an unbroken track surface for the forward movement of the dog. A hood 61, protects the inner ends of the rails and the sheaves at that point.

The elevating buckets 27, and 28, are supported in the inclined track 25, by the flanged wheels 26, pivotally secured to their sides and are connected with the endless chain 39, the former by a curved bail 62, pivoted to its sides near its rear end, and the latter by a bracket 63, secured to the rear part of its bottom by a loop and having a pivotal connection with its forward edge and thus allowing a little latitude for the movement of each bucket. To permit the passage of the latter bucket over the sheave 31, I have provided a bow 64, connected at both ends to the chain 39, and passing around the connection 63, between it and the bucket. This sheave (31) is provided with a narrow flange on one side and is pivotally mounted on the upright arm 65, of a bell crank lever to the other arm, 66, of which, is attached the weight 67, its purpose being to hold the sheave toward the bow 64, and yet yield as the wheel travels the bow. 68 is the pivot of the bell crank lever.

Thus when the elevating bucket 28, passes over the sheave the latter yields and slips from the chain to the bow 64, until the bracket is passed when it again assumes its position on the chain. A switch in the guide frame 25, permits both buckets to travel on the same track; it is constructed as follows: Near the middle portion of each of the guide frames 25, I secure rigidly to the inner faces of the inclining elevator beams 22, the pieces 68^a, and to the ends thereof pivot the tongues 69. An arm 70, extends upwardly from about the center of the piece 68^a, and the links 71, pivotally connect its free end with the tongues 69. These links are of such a length that the switch tongues are moved by the supporting wheels of the passing buckets into relatively proper positions to cause the buckets

to pass without interference. Thus when the lower bucket 28, has ascended, the upper switch is left in the proper position to cause it (the bucket) to descend upon the lower track while the upper bucket 27, will always pass upon the upper side of the switch. A rubber cushion 72, in the upper end of the track, forms a bumper for the dumping bucket and a change in the thickness or the position of the cushion will allow the bucket to incline more or less in dumping as may be desired.

To cause the passing scrapers to dump easily when over the aperture 17, the approach 18, is constructed to have its highest point a little distance before the floor 16, causing the scraper to commence to tilt when passing this point, interposing the trip block 73, to complete the dumping.

The sheaves 33, and 50, are made to be adjustable to take up slack in the endless chain.

Should the travel of the dogs be too little to raise the elevating buckets I add the extension pieces 74, to the bottom flanges of the rails 40, 41 and 42, which will cause the chain 39 to be moved a greater distance backward and forward and thereby give a greater travel to the elevating buckets.

In use my loading machine is drawn to the desired position the ways 18, and 20, lowered to the ground and the teams with the loaded scrapers driven up the approach 18. Upon passing the highest point in this platform the scraper tilts and immediately striking the trip block 73, the load is dumped through the opening 17, into the receiving elevator bucket. The teams pass onward down the way 20, their doubletrees engaging one of the dogs on the chain 39, whereby the chain is rotated and the newly filled bucket is elevated and dumped in the wagon box or other receptacle placed for its reception. At the end of the track the forward supporting rollers of the dog drop through the opening 57, in the lower web of the track allowing the dog to tilt forward on its bearing shaft 54, releasing the doubletrees and assuming a recumbent position to be drawn backward to the inner end of the track when the other dog is being drawn forward by the next outgoing team. When the returning dog approaches near to the inner end of the track the rollers 56, are guided upward by the plate 60, against the latches 59, which yield and permit the rollers again to pass upward upon the track, falling into place when they have passed and presenting to the wheels of the outgoing dog a continuous track. In this way the dogs are alternately drawn forward and backward, moving the chain first one way and then the other and elevating and dumping the buckets and their loads.

I claim as my invention—

1. In an earth loading machine, in combination, an endless chain, an elevator track, an elevating bucket attached to the chain and a projection from the chain for connecting the

propulsive power thereto to rotate the same and to move the bucket.

2. In an earth loading machine, in combination, an endless chain, a bucket connected therewith, an elevator track, supporting wheels for the bucket to engage the track, sheaves for supporting the chain and a projection from the chain for engaging the propulsive power.

3. In an earth loading machine, in combination, a supporting frame, an endless chain mounted on sheaves therein, an elevator track in the frame, an elevator bucket having a connection with the chain, wheels on the track for supporting the bucket and a projection from the endless chain for engaging the propulsive power.

4. In an earth loading machine, in combination, a main frame, two inclining ways pivotally connected therewith, an inclining elevator frame in the main frame, an elevator track thereon, an endless chain, supporting sheaves therefor, an elevator bucket having a connection with the endless chain, supporting wheels for the bucket for running on the elevator track and a projection from the chain for engaging the propulsive power.

5. In an earth loading machine, in combination, a main frame, two inclining ways pivotally connected therewith, an inclining elevator frame in the main frame, an elevator track thereon, an endless chain in the main frame and in one of the inclining ways, an elevator bucket connected with the chain, sheaves for supporting the chain and a projection from the chain extending above the surface of the inclining way for engaging the propulsive power.

6. In an earth loading machine, in combination, a main frame, two inclining ways pivotally connected to the sides thereof an inclining elevator frame in the main frame, an elevator track thereon, an endless chain in the main frame and in one of the inclining ways, an elevator bucket connected to the chain, supporting wheels for the bucket and a two arm dog, running on the before mentioned way, having a link connection with the endless chain for engaging the doubletrees of the outgoing team and thereby to elevate the buckets.

7. In an earth loading machine, in combination, a main frame, supporting wheels therefor, two inclining ways pivotally connected to the sides thereof, an inclining elevator frame on the main frame, an elevator track thereon, an endless chain in the main frame and in one of the inclining ways, a two arm dog, bearing rollers journaled on the sides thereof, a supporting track for the rollers upon the inclined way, and an opening in the track at its outer end to admit the passage of certain ones of the rollers mentioned.

8. In an earth loading machine, in combination, a main frame, supporting wheels therefor, two inclining ways pivotally connected

- to the sides thereof, a track upon one of the ways, an inclining elevator frame on the main frame, an elevator track thereon, an endless chain in the main frame and a portion thereof also extending parallel with the track on the inclining way, a dog on the chain having a pivotal connection therewith, supporting rollers for the dog for bearing upon the track, an opening in the outer end of the track through which the forward bearing rollers may pass, a guide shield underneath the inner end of the rails and a pivoted section therein for readmitting the rollers to run upon the track.
9. In an earth loading machine, in combination, a main frame, supporting wheels therefor, two inclining ways pivotally connected to the sides thereof, an inclining elevator frame on the main frame, an elevator track thereon, an endless chain in the main frame, supporting sheaves therefor, a bell crank lever pivoted on the frame, a weight depending from one arm thereof one of the beforementioned supporting sheaves pivoted upon the other arm of the bell crank lever, a bow extending from one side of the endless chain upon which bow this sheave runs to pass the connection with the elevator bucket.
10. In an elevating device, in combination, an elevator track, two elevators thereon, a switch in the track having a fixed center and tongues pivoted at each end thereof, an arm extending from the center piece, a link connection between the free ends of the arm and the two pivotal tongues whereby they are moved in relatively opposite directions when motion is imparted to either.

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Witnesses:

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