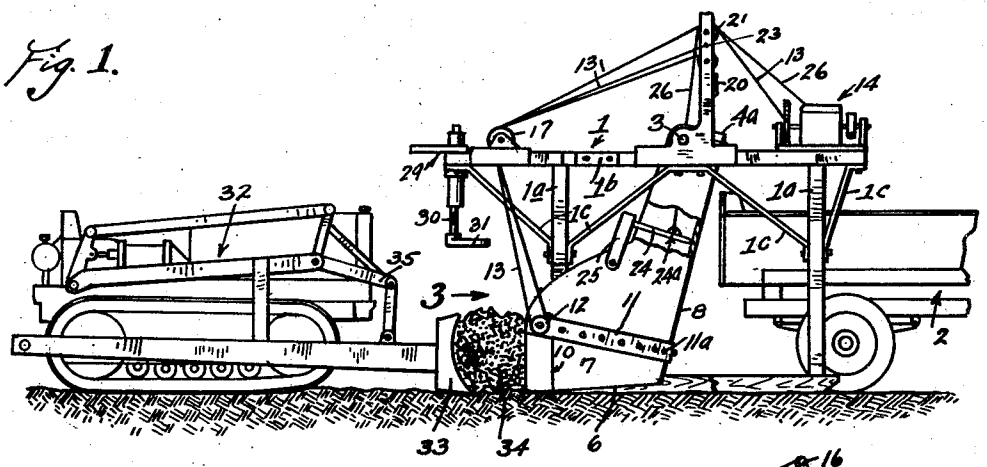
March 5, 1940. J. H. STOUT 2,192,210

MATERIAL LOADING DEVICE FOR ROADWAY VEHICLES

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Fig. 1.



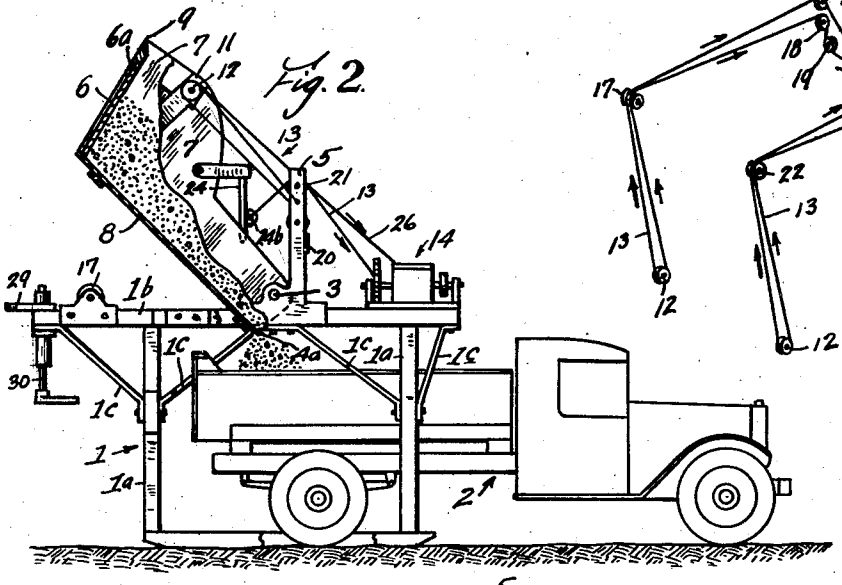


Fig. 2.

Fig. 4.

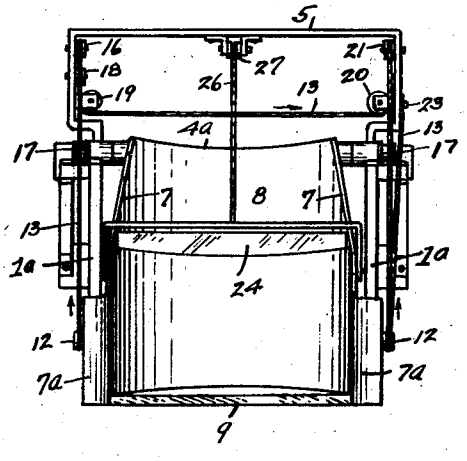


Fig. 3.

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MATERIAL LOADING DEVICE FOR ROADWAY VEHICLES

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Fig. 5.

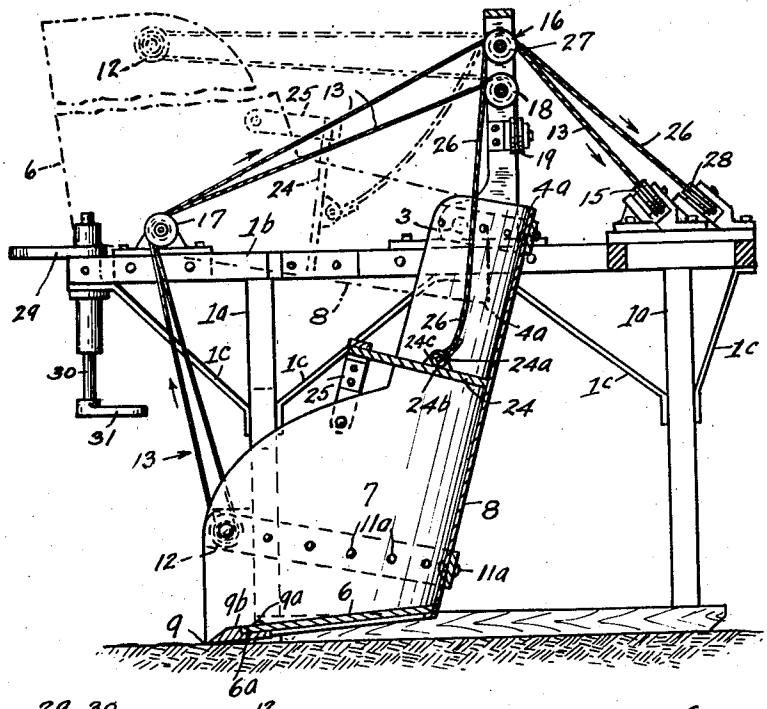
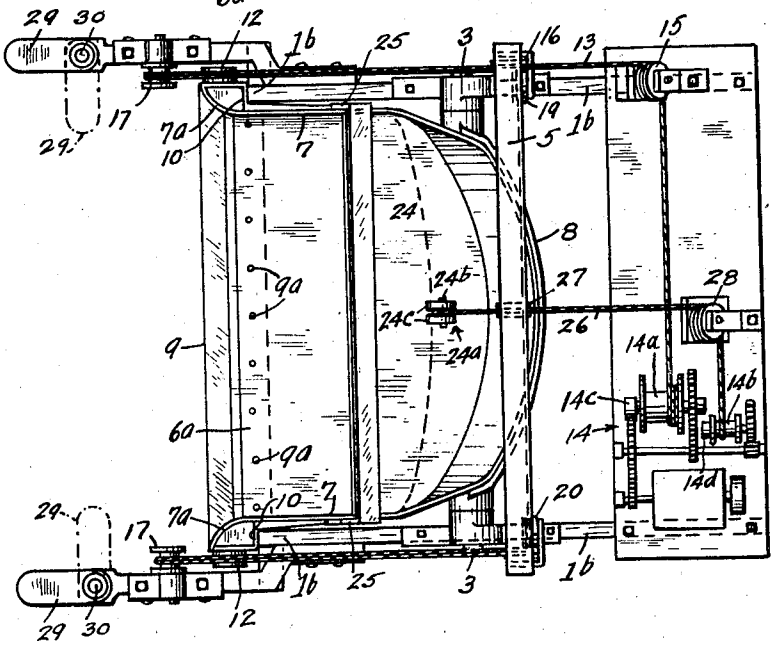


Fig. 6.



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MATERIAL LOADING DEVICE FOR ROADWAY VEHICLES

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Fig. 7.

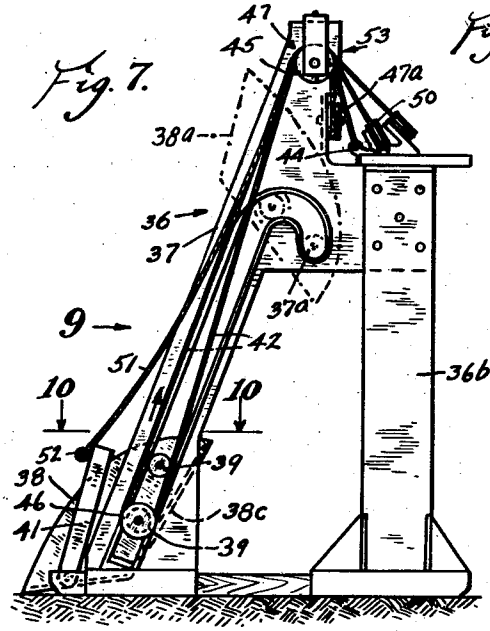
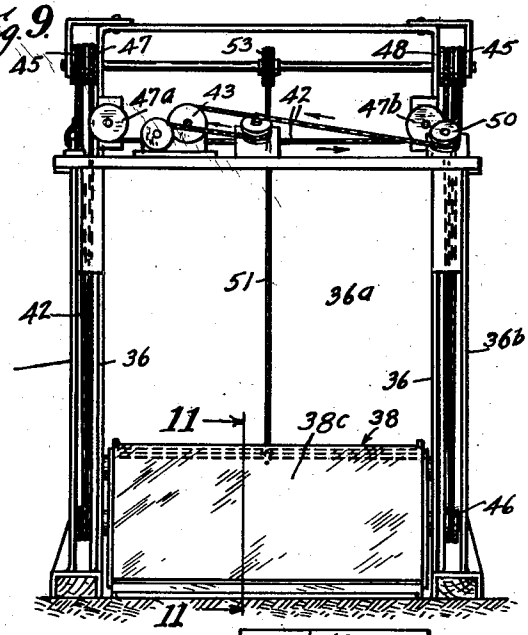


Fig. 9.



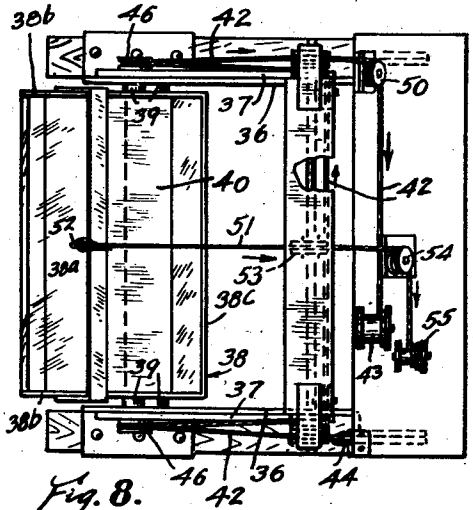
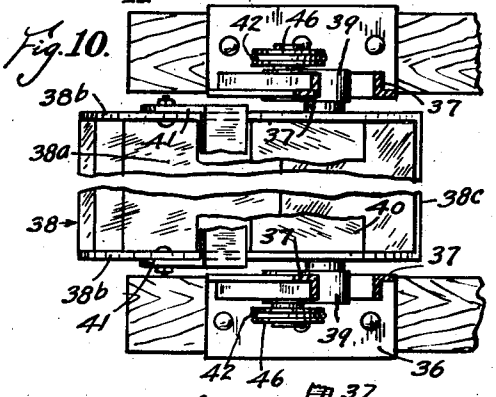


Fig. 8.

Fig. 10.



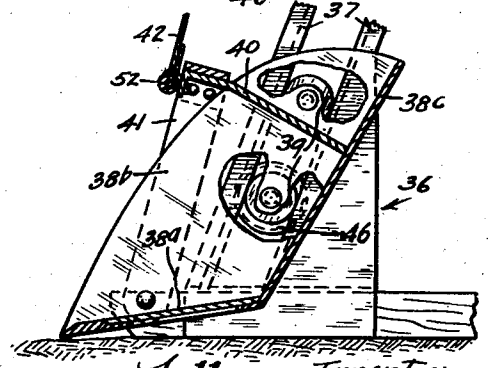


Fig. 11

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MATERIAL LOADING DEVICE FOR ROADWAY VEHICLES

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Fig. 12.

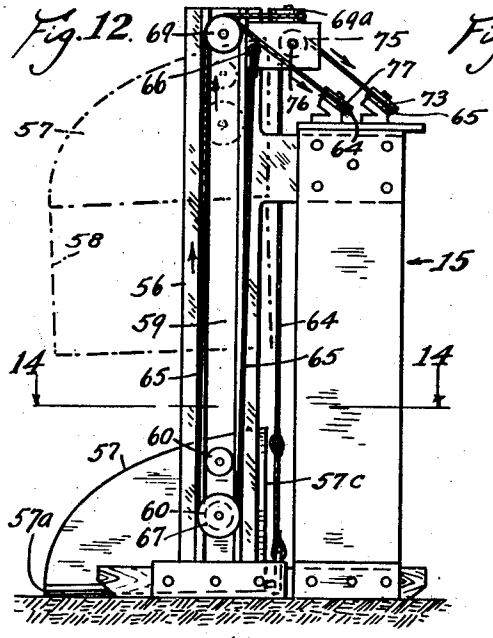
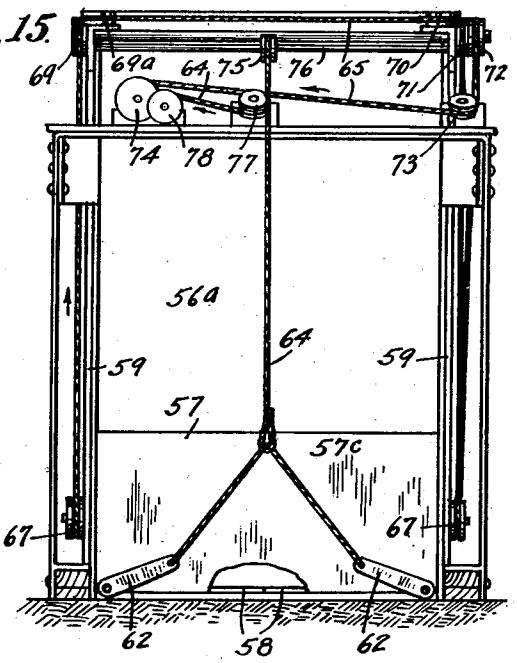


Fig. 15.



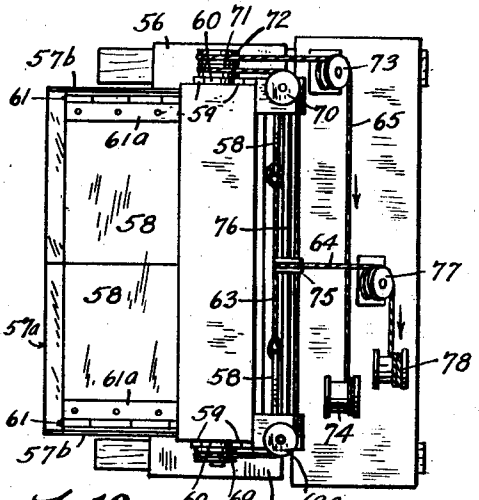
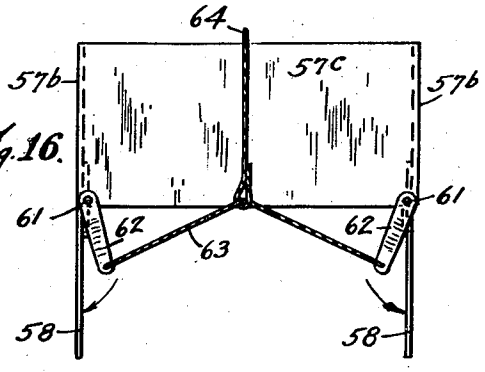


Fig. 13.

Fig. 16.



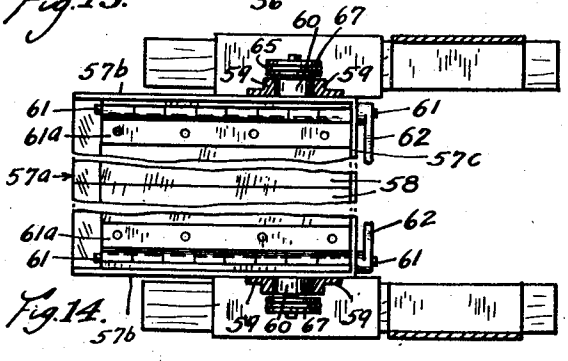


Fig. 14.

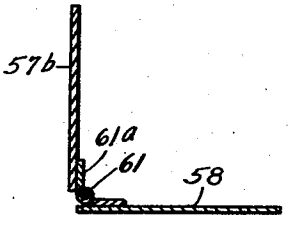


Fig. 17.

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UNITED STATES PATENT OFFICE

2,192,210

MATERIAL LOADING DEVICE FOR ROADWAY VEHICLES

John H. Stout, North Bonneville, Wash.

Application February 25, 1936, Serial No. 65,567

12 Claims. (Cl. 214—130)

The object of my invention is to provide means by which a so-called bulldozer or road builder can be utilized in the collection of materials to be removed in excavation work and moved in small quantities into a skip and dumped by the latter into a truck. To this end I have devised a simple portable elevator comprising a frame including a skip having a sideless forward edge, side walls and a back, the back forming a pouring spout, the skip being movable and having a vertical component of movement so as to be lifted upwardly so that the contents of said skip can be dumped into a vehicle, such for example, as into a motor truck with a dump body.

It has long been recognized that roads can be leveled off and horizontal cuts can be made more quickly with a bulldozer or trail builder than by any other single piece of apparatus known to the art and utilized in excavation work. A road builder or bulldozer is a tractor having a forwardly extending blade preferably concave in section, which blade is vertically adjustable over a narrow range. The tractor moves said blade forward to define a horizontal surface pushing the dirt removed in front of the blade. When apparatus of this character is used in building roads on side hills, the dirt can be merely shoved over the bank. Also, when the road is made over uneven ground, the dirt removed from cuts can be placed in fills by this apparatus. It has the disadvantage, however, that it cannot be used for lifting the dirt vertically into the trucks, and thus has not supplanted steam shovels for this operation.

By my invention, a road builder or bulldozer can be used in connection with an elevator embodying my invention and the excess dirt moved along the grade into the mouth of the vertically movable skip and dumped by the latter into a truck and hauled expeditiously to a point for dumping.

The skip may be pivotally mounted on a straddling type frame and arranged so that a truck can move beneath the stradding frame and the skip lifted so that the contents may be dumped into the truck body. The skip can also be lifted vertically and provided with a trap door to permit the discharge of dirt into a truck body. A skip can also be moved up an inclined plane to a point of discharge above a truck body.

Further details of my invention are hereinafter described with reference to the accompanying drawings, in which:

Fig. 1 is a diagrammatic illustration of the manner in which a bulldozer or trail biulder can move a quantity of dirt into the open mouth of the skip of an elevator embodying my invention and a truck may be located adjacent said elevator to permit ready discharge from the skip to said truck;

Fig. 2 illustrates said truck and elevator with a skip tipped into discharge position, the skip being shown broken away to illustrate the manner in which the material is discharged;

Fig. 3 is an elevation taken in the direction of the arrow 3 in Fig. 1;

Fig. 4 is a diagrammatic illustration of the manner in which the skip manipulating cable is arranged so that a single cable and a single drum may be used for moving the skip, said cable engaging both sides of the latter in a loop to obtain maximum purchase to lift the heavy load carried by said skip;

Fig. 5 is a larger scaled section thru an elevator embodying my invention shown in load-receiving position, the skip being shown in dotted lines in an intermediate position in which it may be lodged to permit vehicles to run under the tunnel-like frame of said elevator;

Fig. 6 is a plan view of said elevator and the operation of the locking devices for arranging said skip at intermediate positions is indicated in dotted lines therein;

Fig. 7 is an elevation of a modification of my invention by which the skip is lifted from load-receiving position to discharging position along an inclined plane;

Fig. 8 is a plan view of the modification shown in Fig. 7;

Fig. 9 is a side elevation of said modification taken in the direction of the arrow 9 in Fig. 7;

Fig. 10 is a foreshortened plan section taken on a larger scale looking down into the skip of said elevator and showing the guide connections therefor, said figure being taken on the line 10—10 in Fig. 7;

Fig. 11 is a larger scaled vertical section taken thru the skip on the line 11—11 in Fig. 9, parts of the skip being shown broken away to illustrate the guiding connections therefor;

Fig. 12 is a side elevation of a still further modification of my invention in which the skip is lifted vertically and is provided with trap doors to permit the discharge of the contents of said skip;

Fig. 13 is a plan view of the modification shown in Fig. 12;

Fig. 14 is a plan section thru the modification shown in Fig. 12 shown on an enlarged scale, said sections being foreshortened and being taken substantially on a line 14—14 in Fig. 12;

Fig. 15 is an elevation of the modification shown in Fig. 12 taken substantially in the direction of the arrow 15 in Fig. 12 looking at the back of said skip and showing the means for actuating the trap doors which constitute the bottom of said skip;

Fig. 16 is a view diagrammatically illustrating the manner in which said trap doors are opened to discharge the contents of said skip; and

Fig. 17 is a larger scaled detail showing the manner in which the trap doors are hinged to the side walls of said skip.

In the modification shown in Figures 1 to 6, inclusive, I show an elevator in which the skip is pivotally mounted and is adapted to move about said pivot from load receiving position, as shown in Fig. 1, to discharge position as shown in Fig. 2. The elevator in said figures comprises a straddling frame 1 made up of vertical members 1a and horizontal members 1b. The frame is of sufficient height to permit an automobile truck 2 to run beneath it. The members of said frame are braced by members 1c extending diagonally between the horizontal members and the vertical members. The exact form of the frame plays no part in my invention, but the one illustrated suits the purpose of this elevator and is simple, sturdy and inexpensive. Extending midway of the horizontal members 1b are a pair of horizontal pivot stub shafts 3. The skip 4 is pivotally secured to the frame by said shaft. The pivotal connection upon said shaft with the skip is made adjacent the discharge end 4a of said skip. This permits the skip to be raised a substantial distance into the air to discharge its load into the body of the truck as is illustrated in Fig. 2.

A gantry frame 5 extends above the horizontal members and is secured to the latter. The cable or wire rope 13 which moves said skip from load-receiving position to discharge position extends across sheaves carried by said gantry frame and will hereinafter be described in detail.

The skip is provided with a sideless forward edge 6a to its back 6. Sides 7 are joined thereto and a bottom 8 extends between the two sides. When the skip is arranged in load-receiving position, the bottom extends more or less vertically, as is shown in Fig. 1, but when arranged in discharge position, it constitutes the load-carrying member and it is down said bottom that the load is discharged into the automobile truck. The bottom is of curved contour, as is shown in Fig. 6, and constitutes a pouring spout directing the load from the center of the curved bottom to locate it in the lateral center of the truck which is arranged directly beneath the pouring spout. The bottom member 8 is substantially longer than the back 6, the back being sufficiently long to provide depth for the skip to accommodate a load of sufficient size.

The forward edge 6a of the back, that is the receiving edge, is protected by a removable lip member 9. This is fixed to said forward edge by rivets or bolts 9a and is tapered in section, as is shown in Fig. 5. The lip member is provided with an offset shouldered portion 9b for receiving said forward edge, as is shown in said Fig. 5, and the lip member extends beyond said forward edge 6a and underneath the latter to protect said back member 6 against wear.

The forward edges of the side members 7 terminate in outwardly flared portions 7a. Behind said flared portions are abutting shoulders 10 which are adapted to be moved into abutting engagement with the forward vertical members 1a when the skip is arranged in load receiving position as is shown in Fig. 6. Said abutting shoulders also bear against the forward end of the lower horizontal members 1b and prevent the skip from being moved back when it is receiving a load across the forward edge of the back 6 and the lip member 9 protecting said forward edge.

An encircling band 11 of heavier material extends about the side walls and bottom of the skip and is riveted to said parts by rivets 11a. At the ends of said band 11, sheaves 12 are arranged. The lifting cable 13 is looped about said sheaves, said lifting cable being adapted to move the skip upwardly about its pivot shaft 3 into its discharge position shown in Fig. 2. Thus, the major portion of the strains are sustained by said sheaves and the encircling band, which extends about the skip and thus is favorably positioned to sustain said strains.

I arrange a hoist 14 upon the top of the frame. This is diagrammatically illustrated in Fig. 6 and it is to be understood that said hoist could be of any convenient form and could be powered by any suitable motor, electric, internal combustion, or steam, as is desired.

I provide a single lifting cable 13, which is spooled in and paid out by the main drum 14a of the hoist so that said cable will tend to lift both sides of the skip equally. The cable extends from said main drum 14a to an angularly disposed block 15 in lateral alinement with said drum. The cable then passes over a block or sheave 16 upon one end of the gantry frame 5, thence over an idler sheave 17 upon the forward end of the frame on the same side of the frame as the sheave 16 and in alinement therewith. The cable then extends downwardly, being looped about one of the sheaves 12 on the skip 4. In Fig. 6, it is the sheave on the upper side of said skip. The cable then passes back over the idler sheave 17 to a sheave 18 on the gantry frame below the sheave 16. A sheave 19 is arranged slightly below and normal to the sheave 18 and the cable passes next over the said sheave 19 to the sheave 20 at the opposite side of the gantry frame which is disposed similarly to the said sheave 19. It then turns upwardly about a sheave 21 to an idler sheave 22 on the forward end of the gantry frame on the bottom side, as viewed in Fig. 6. The cable then is looped about the sheave 12 carried by the skip 4 on that side and returns over the sheave 22 and back to a point of securing 23 on the rear end of said frame. The arrangement of said cable and sheaves is best shown diagrammatically in Fig. 4. The manner in which the cable is threaded about said sheaves is opposed to the arrows shown in said figure, which arrows indicate the manner in which the cable is spooled in when being wound about the main drum 14a of the hoist 14, rather than when it is paid out as has been described in this specification.

The skip 4 is provided with a valve element 24 which controls the discharge of material from said skip when it is arranged in discharging position, as is shown in Fig. 2. Said valve element is carried by two pivoted arms 25. Said valve element is of substantial mass and tends to remain transversely of the bottom 8, that is, in the position it is, shown in Fig. 5. This is true even when the load rests against said valve element when the skip is arranged as shown in Fig. 2. This is because the mass of the load bears against the valve and tends to hold it in position, more or less. The valve element is lifted by means of a cable 26, which engages the valve element at 24a, being secured to a pin 24b, extending between a pair of spaced ears 24c. The cable is guided over a sheave 27 arranged on the under side of the gantry frame 5 and is lead about an angularly inclined sheave 28 and is spooled in upon and paid out by the drum 14b of the

hoist 11. The drum 14a is diagrammatically illustrated as having a clutch 14c and the drum 14d is diagrammatically illustrated as having a clutch 14d, along the faces of said drums, respectively. Such clutches may be of any construction and are provided to permit selective operation of the drums of the hoist and of the operating agencies which said drums control.

At the forward end 1d of the frame, I have provided a pair of bell crank members 29. Said members, in the position shown in Figs. 5 and 6 permit the skip to be moved freely in a vertical plane about the pivot shaft 3. When they are moved to the position shown in dotted lines, they can be arranged beneath the bottom of the skip and hold it in the position shown in dotted lines in Fig. 5. Said bell crank members are carried by vertical shafts 30 at each side of the frame and said shafts are turned by handles 31, respectively. The frame is pendent at this point to give the shaft a relatively long bearing to support the tipping weight imposed upon said members by the weight of the skip. Said members are provided to locate the skip at a position where it provides the maximum height under the frame. These members are moved into operating position when it is desired to run a truck beneath the frame. Said members prevent the skip from moving downwardly into load receiving position and falling upon the trucks. This eliminates the necessity of holding said skip in said position shown in dotted line by the clutches for controlling the hoisting drum for the cable.

The lowermost horizontal member of the frame is preferably formed into a skid 1e at each side of the frame to permit the elevator to be moved along a road surface and over uneven ground. It is to be understood that this elevator is moved along a surface being graded, or where it is used in excavation, and thus must be freely portable. As can be noted in the drawings, the skip has a capacity corresponding to the capacity of the body of the truck. Thus, the skip can be loaded and the contents dumped into the truck, one skip load for each truck. This eliminates the necessity of judging quantities and prevents overloading of said trucks and speeds up the entire operation.

It is, of course, optional whether the capacity of the skip and the truck body correspond, but I deem it highly desirable that they do.

The skip is adapted to receive loads moved into the mouth thereof by a bulldozer diagrammatically illustrated in Fig. 1. A bulldozer comprises a tractor 32 having a horizontally disposed blade 33 at its forward end. The tractor is adapted to push the blade and to gather a load of material 34 across the face of said blade. The material can be shoved into the skip easily and conveniently. As is common in bulldozers, means such as the levers 35 are provided on the tractor for raising and lowering the height of the blade, within limits. The blade can thus be set to scrape off or remove all excess material above a predetermined level and can move it into the mouth of said skip, thus providing a level surface.

In the modifications shown in Figs. 7 to 11, inclusive, an elevator is provided with a skip which is adapted to move up an inclined plane and the guiding devices are adapted to move said skip from load-receiving position to dumping position, without requiring additional tripping mechanism. An elevator built in accordance with said figures comprises a frame 36 in which the forward edge is inclined at an oblique angle to the horizontal and defines a pair of alined guideways 37. A skip 38 is provided with two guide rollers 39, which bear in the guideways 37. Said guide rollers are journalled on the sides of the skip and are spaced apart a substantial distance. The skip is proportioned substantially the same as the skip 4, in the previous modification. The angularity of the back and bottom differ slightly and the contour of the sides also differs, but the function of the skip is identical. The parts are constructed similarly to receive a load moved onto the forward edge of the back 38a of the skip between the side walls 38b and against the bottom 38c. The bottom 38c constitutes the pouring spout for the skip when it is arranged in uppermost or discharge position, as is shown in dotted lines in Fig. 7. A valve 40 is arranged across the discharge end of the bottom 38c and controls the flow of materials therefrom. As in the previous modification, said valve is carried by pivotally mounted arms 41 to the sides 38b of the skip.

The frame, as shown in said modification, is arranged to straddle a truck and defines a tunnel 36a beneath it. The frame could also be constructed so that the skip would discharge into a truck running at right angles to the tunnel if the frame elements 36b were removed. In other words, I do not deem it necessary that the truck into which the skip dumps always must run beneath the frame. It is likewise feasible that it would run alongside of the frame as long as the skip lies above the body of the truck so as to discharge into the latter. This has not been illustrated but is obvious to a person skilled in the art.

The upper ends of the guideways 37 are formed into downwardly curved portions 37a which function to tip the skip to the position shown in dotted lines in Fig. 7, when said skip is pulled upwardly along the guideways. This is produced by the rollers 39 following along the guideways and out into the portions 37a thereof.

As in the previous modification, a single cable 42 is adapted to move the skip upwardly along its guideways and into tipping position. Said cable is coiled in and paid out by a drum 42 diagrammatically illustrated in Fig. 8. It is to be understood that this drum is a part of the hoisting mechanism and is to be provided with a convenient motive power and driving connections. The cable is attached at 44 to the frame 36, extends thru a guide roller 45, is looped about the sheave 46 on that side of the skip, extends upwardly to a guide sheave 47 lying alongside of the guide sheave 45, takes a turn about an idler sheave 47a, then across the frame to a guide sheave 47b, then up to a sheave 48 corresponding to the guide sheave 47; is looped about the other sheave 46 on the side of the skip, extends upwardly again about the sheave 49 corresponding to the guide sheave 45 on the opposite side, extends thru an angularly inclined guide sheave 50 on the upper portion of the frame and then about the periphery of the drum 43. This is in accordance with the arrows diagrammatically illustrating its course in Figs. 7, 8 and 9, respectively.

An operating cable 51 is provided for the valve 40. Said operating cable is secured to an eye 52 in the valve 40, extends about a guide sheave 53, about an angularly inclined guide sheave 54, and is wrapped about the periphery of the drum 55. This drum is also diagrammatically illustrated in Fig. 8 and is not shown provided with operating

connections to a hoist or control device, which much necessarily be provided.

In the Figs. 12 to 17, inclusive, I show a still further modified form of my invention applied to an elevator of this character. In this modification the skip is arranged to move vertically of the frame and is provided with trap doors for discharging the contents of the skip. In this modification, a frame **56** defines a tunnel **56***a* beneath it, thru which a vehicle may be driven for receiving the load carried by the skip **57**. As in the previous modifications, the forward edge **57***a* of the skip bottom is sideless and said skip is provided with sides **57***b* and a back **57***c*. In this modification, the back does not constitute a discharge chute for the dirt lifted by the skip. Said skip moves more or less in a vertical plane and the load is carried by a pair of hinged trap doors **58** constituting the bottom thereof.

The frame defines two spaced vertical guideways **59**. A pair of rollers **60** at each side of the skip engage the guideways and holds the skip in alinement with said guideways. The trap doors are pivotally mounted, respectively, upon pivot pins **61** of their hinged connections **61***a* to the sides of the skip. The trap doors are of equal width and thus abut at the center of the skip, as is illustrated in Fig. 15. A pair of pivoted levers **62** are secured one to each pivot pin **61** and each lever controls one of the trap doors **58**. The free ends of the levers are fastened to the ends of a common cable **63**, which cable is joined at its middle to a tripping cable **64**. As long as the tripping cable remains taut, the levers and the trap doors carried thereby are arranged tightly against each other, as is shown in Fig. 15, to prevent the discharge of material from said skip. When said tripping cable **64** is loosened to the position shown in Fig. 16, the trap doors are permitted to swing down as indicated by the arrows to discharge the contents of the skip.

As in the previous modification, I preferably lift both sides of the skip with a single cable **65**, the end of which is secured at **66** to the top of the frame. A loop in said cable depends from said point of securing about a sheave **67** carried by the side of the skip. This cable then passes over an idler sheave **69** carried by the frame, turns about an angularly disposed sheave **69***a*, extends across the frame to a corresponding sheave **70** over an idler sheave **71**, extends in a loop about the sheave **67** at the opposite side of the skip, extends upwardly about an idler sheave **72** lying alongside of the idler sheave **71**, about the angularly disposed sheave **73** and is secured about the periphery of the hoisting drum **74**.

The lifting cable **65** extends upwardly about a sheave **75** carried by a horizontal shaft **76**, about an angularly disposed sheave **77**, and is secured about a tripping drum **78**. The drums **74** and **78**, respectively, also are shown diagrammatically in Fig. 13 and are part of a hoist provided with controls and operating devices, which are not shown, and the details of which would add nothing to the disclosure.

An appropriate hoist and controls arranged in an appropriate manner could be quickly conceived as provided by a person skilled in the art. In each and all of the modifications of my invention shown in the drawings attached hereto, which modifications have hereinbefore been described, loose material is adapted to be moved into the mouth of the skip forming a part of the elevator mechanism, in the manner illustrated in Fig. 1. Said modifications differ in the manner in which the skips are operated, lifted and their contents discharged. It is to be understood that I have illustrated only preferred structures and operating mechanisms, and my invention is not to be construed to be limited to the specific modifications shown, which are detailed merely for the purpose of illustration.

I claim:

1. A portable loading earth-moving elevator for a roadway vehicle, said elevator provided with a discharging skip having a vertical component of travel, said skip having an open forward edge, sides and a back and adapted to be loaded by a scraper blade having means for pushing the latter, said elevator provided with a frame adapted to straddle said roadway and defining a tunnel for accommodating said vehicle, means for lifting said skip upon said frame and means for dumping said skip.

2. A portable loading earth-moving elevator for a roadway vehicle, said elevator provided with a discharging skip, said skip having an open forward edge, sides, and a back and adapted to be loaded by a scraper blade having means for pushing the latter, a frame of substantial height extending above and adjacent said roadway, a pivotal connection between said frame and the discharge end of said skip, discharge means for rotating said skip about its pivotal axis, the sides of said skip abutting against said frame in receiving position, thereby fixing and limiting the movement thereof at said position.

3. A portable loading earth-moving elevator for a roadway vehicle, said elevator provided with a discharging skip, said skip having an open forward edge, sides and a back and adapted to be loaded by a scraper blade having means for pushing the latter, a frame of substantial height extending above and adjacent said roadway, a pivotal connection between said frame and the discharge end of said skip, discharge means for rotating said skip about its pivotal axis, the sides of said skip abutting against said frame in receiving position, thereby fixing and limiting the movement thereof at said position and the side walls of said skip flaring outwardly towards said forward edge about the abutment of the skip with said frame.

4. A portable loading earth-moving elevator for a roadway vehicle, said elevator provided with a discharging skip, said skip having an open forward edge, sides and a back and adapted to be loaded by a scraper blade having means for pushing the latter, a frame of substantial height extending above and adjacent said roadway, a pivotal connection between said frame and the discharge end of said skip, discharge means for rotating said skip about its pivotal axis and a removable lip secured to and guarding said forward edge of the skip.

5. A portable loading earth-moving elevator for a roadway vehicle, said elevator provided with a discharging skip, said skip having an open forward edge, sides, and a back and adapted to be loaded by a scraper blade having means for pushing the latter, a frame of substantial height extending above and adjacent said roadway, a pivotal connection between said frame and the discharge end of said skip and discharge means, including a single continuous cable defining two separated bights engaging said skip for rotating said skip about its pivotal axis and retractable by a single agency.

6. A device of the character described adapted for use with a pusher-type blade scraper of a

portable loading, non-digging elevator provided with a vertically extending frame defining a load receiving station for a separate roadway vehicle, said elevator provided with a discharging skip having a vertical component of travel from a receiving position to a discharge position where said skip extends above said load receiving station, said skip having an open forward edge which in receiving position extends horizontally at substantially ground level and away from said frame to accommodate material over said forward edge, said skip provided with vertically extending side and back walls, and means for moving said skip from receiving position to discharge position and means for dumping said skip.

7. A device of the character described adapted for use with a pusher-type blade scraper of a portable loading, non-digging elevator provided with a vertically extending frame defining a load receiving station for a separate roadway vehicle, said elevator provided with a discharging skip having a vertical component of travel from a receiving position to a discharge position where said skip extends above said load receiving station, said skip having an open forward edge which in receiving position extends horizontally at substantially ground level and away from said frame to accommodate material over said forward edge, said skip provided with vertically extending side and back walls, said skip being proportioned to the capacity of said roadway vehicle into which it discharges, and means for moving said skip from receiving position to discharge position and means for dumping said skip.

8. A device of the character described adapted for use with a pusher-type blade scraper of a portable loading, non-digging elevator provided with a vertically extending frame defining a load receiving station for a separate roadway vehicle, said elevator provided with a discharging skip having a vertical component of travel from a receiving position to a discharge position where said skip extends above said load receiving station, said skip having an open forward edge which in receiving position extends horizontally at substantially ground level and away from said frame to accommodate material over said forward edge, said skip provided with vertically extending side and back walls, the back wall of said skip defining a pouring spout, and means for moving said skip from receiving position to discharge position and means for tipping and dumping said skip.

9. A device of the character described adapted for use with a pusher-type blade scraper of a portable loading, non-digging elevator provided with a vertically extending frame defining a load reeciving station for a separate roadway vehicle, said elevator provided with a discharging skip having a vertical component of travel from a receiving position to a discharge position where said skip extends above said load receiving station, said skip having an open forward edge which in receiving position extends horizontally at substantially ground level and away from said frame to accommodate material over said forward edge, said skip provided with vertically extending side and back walls, control means upon said skip for regulating the discharge of material therefrom, and means for moving said skip from receiving position to discharge position and means for dumping said skip.

10. A device of the character described adapted for use with a pusher-type blade scraper of a portable loading, non-digging elevator provided with a vertically extending frame defining a load receiving station for a separate roadway vehicle, said elevator provided with a discharging skip having a vertical component of travel from a receiving position to a discharge position where said skip extends above said load receiving station, said skip having an open forward edge which in receiving position extends horizontally at substantially ground level and away from said frame to accommodate material over said forward edge, said skip provided with vertically extending side and back walls, means for moving said skip from receiving position to discharge position and means for dumping said skip, and adjustable means carried by said frame for fixing said skip at a position intermediate receiving and discharge positions.

11. A device of the character described adapted for use with a pusher-type blade scraper of a portable loading, non-digging elevator provided with a vertically extending frame defining a load receiving station for a separate roadway vehicle, said elevator provided with a discharging skip having a vertical component of travel from a receiving position to a discharge position where said skip extends above said load receiving station, said skip having an open forward edge which in receiving position extends horizontally at substantially ground level and away from said frame to accommodate material over said forward edge, said skip provided with vertically extending side and back walls, the back wall of said skip defining a pouring spout, means for moving said skip from receiving position to discharge position and means for tipping and dumping said skip, and a pivotal connection arranged between said frame and said skip, means for rotating said skip about said pivotal connection, a band encircling said skip adjacent said forward edge, said band carrying connections with the means for rotating said skip about its pivotal connection.

12. A device of the character described adapted for use with a pusher-type blade scraper of a portable loading, non-digging elevator provided with a vertically extending frame defining a load receiving station for a separate roadway vehicle, said elevator provided with a discharging skip having a vertical component of travel from a receiving position to a discharge position where said skip extends above said load receiving station, said skip having an open forward edge which in receiving position extends horizontally at substantially ground level and away from said frame to accommodate material over said forward edge, said skip provided with vertically extending side and back walls, said skip being proportioned to the capacity of said roadway vehicle into which it discharges, the back wall of said skip defining a pouring spout, means for moving said skip from receiving position to discharge position and means for tipping and dumping said skip, control means upon said skip for regulating the discharge of material therefrom, and a pivotal connection arranged between said frame and said skip, means for rotating said skip about said pivotal connection, a band encircling said skip adjacent said forward edge, said band carrying connections with the means for rotating said skip about its pivotal connection.

JOHN H. STOUT.