Nov. 18, 1941. L. F. BROWNELL 2,263,028

DIRT HANDLING DEVICE

Filed Feb. 24, 1940 5 Sheets-Sheet 1

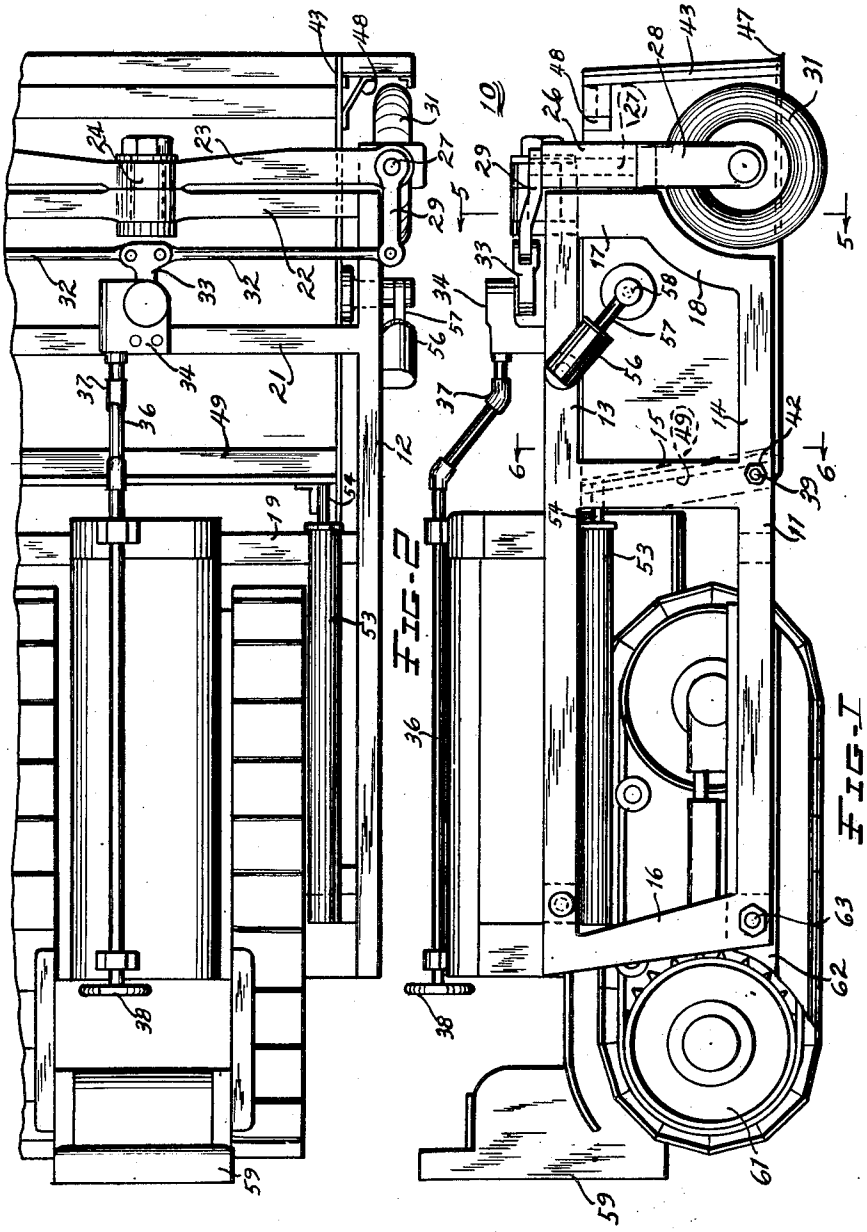


FIG-2

FIG-1

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Nov. 18, 1941. L. F. BROWNELL 2,263,028

DIRT HANDLING DEVICE

Filed Feb. 24, 1940 5 Sheets-Sheet 2

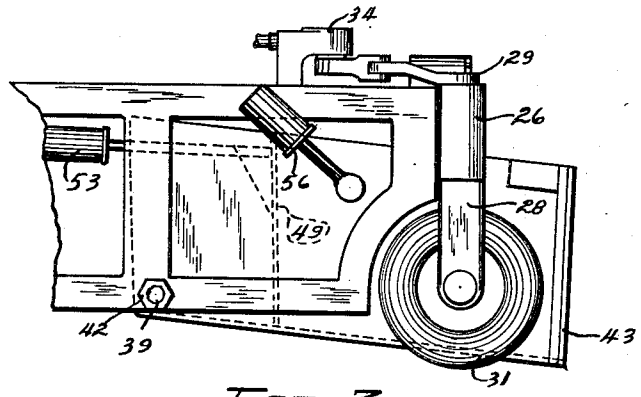


FIG 3

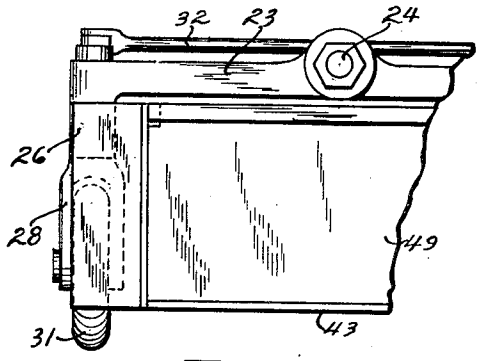


FIG-4

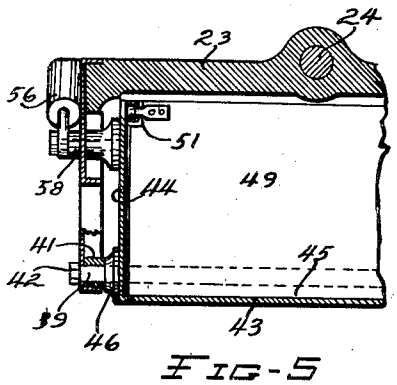


FIG-5

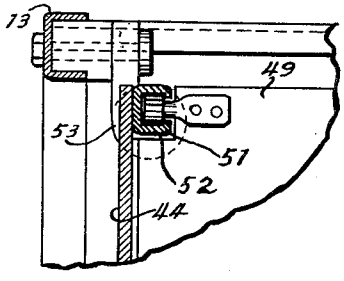


FIG-6

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DIRT HANDLING DEVICE

Filed Feb. 24, 1940 5 Sheets-Sheet 3

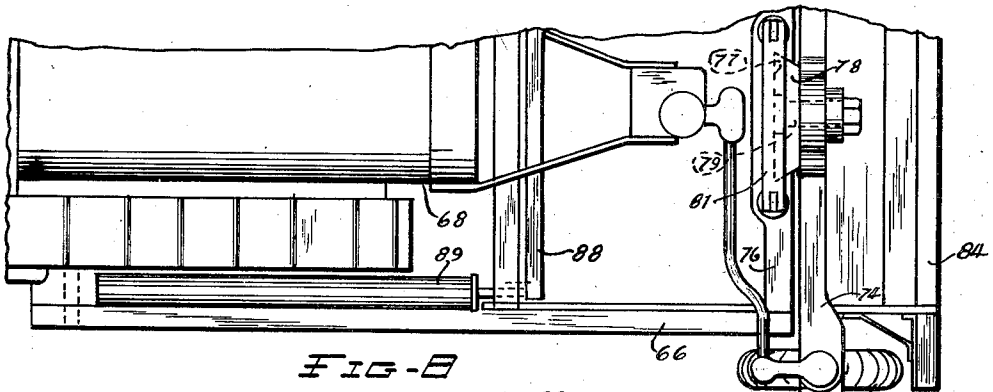


FIG-8

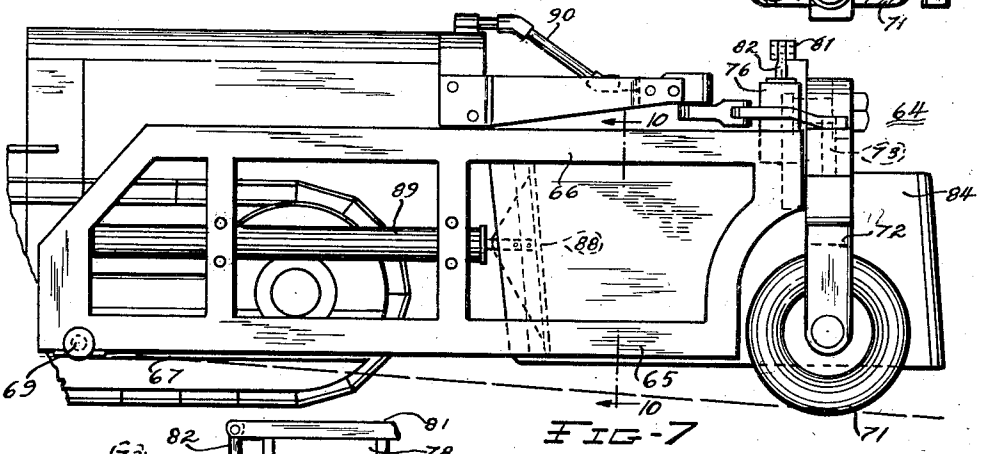


FIG-7

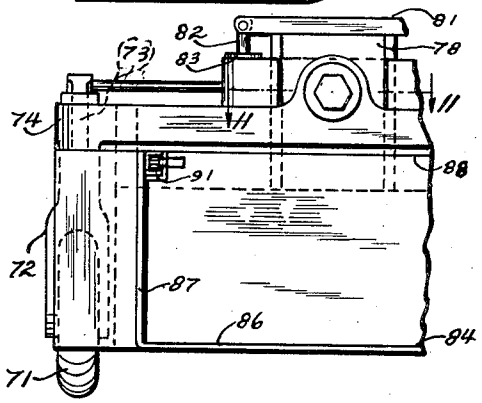


FIG-9

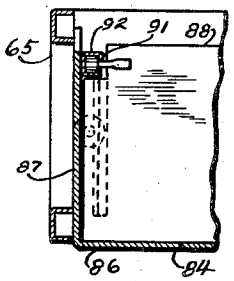


FIG-10

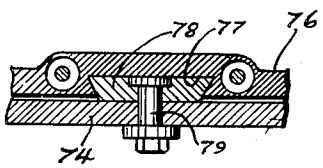


FIG-11

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DIRT HANDLING DEVICE

Filed Feb. 24, 1940 5 Sheets-Sheet 4

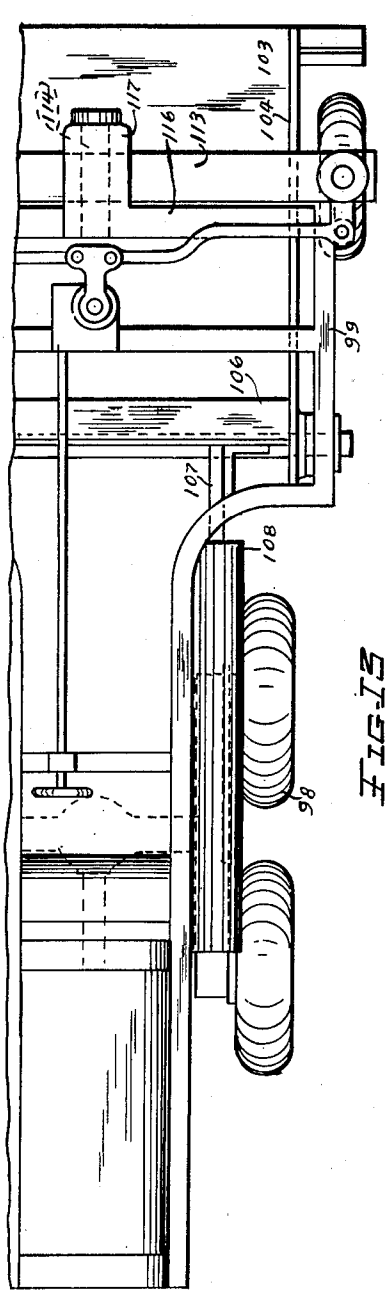


FIG. 13

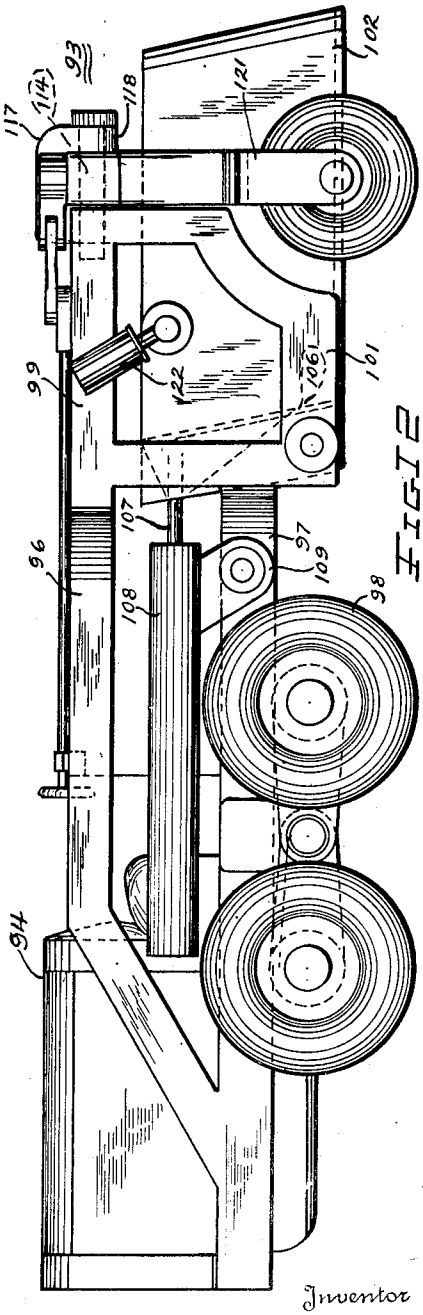


FIG. 12

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DIRT HANDLING DEVICE

Filed Feb. 24, 1940 5 Sheets-Sheet 5

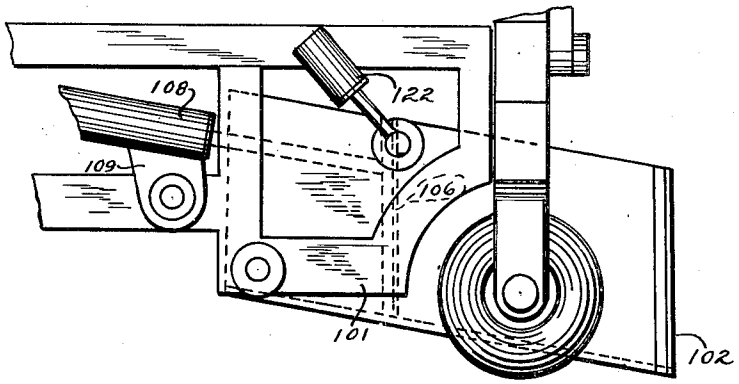


FIG-14

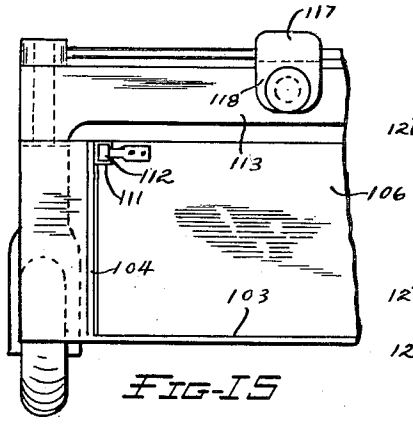


FIG-15

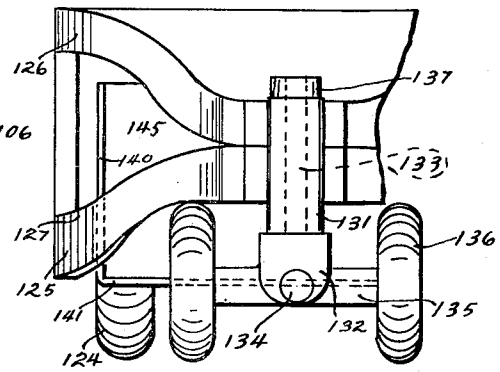


FIG-17

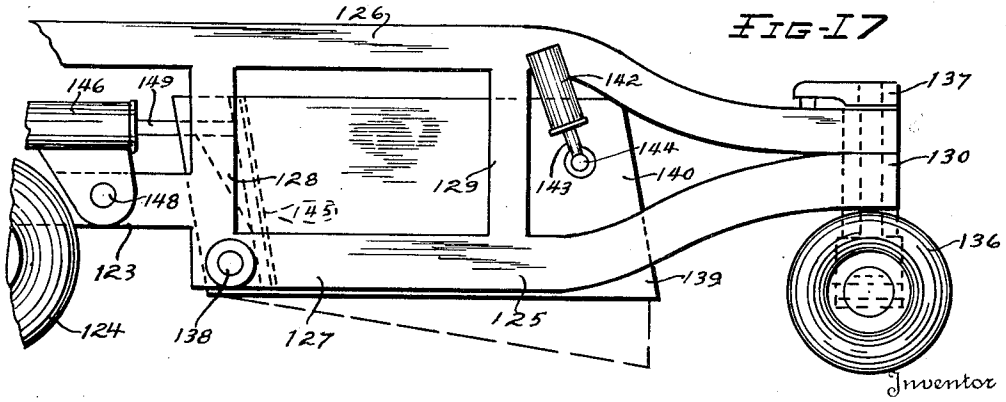


FIG-16

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Patented Nov. 18, 1941 2,263,028

UNITED STATES PATENT OFFICE

2,263,028

DIRT HANDLING DEVICE

Laferd F. Brownell, Warren, Pa.

Application February 24, 1940, Serial No. 320,689

16 Claims. (Cl. 37—124)

This invention relates to an improvement in dirt handling devices and more particularly to those of the type used for scraping, hauling, and leveling.

In its preferred form, the invention comprises a device that may form part of, or be attached to, a tractor or other heavy duty vehicle, and consists of an adjustable loading, carrying, and emptying member located forwardly of the vehicle to which it is attached, being equipped with front end wheel support. In operation, the member precedes the powered vehicle.

Prior to this invention, dirt handling devices of this nature have consisted of a wheeled vehicle having a one or more element dirt carrying scoop, and were adapted to be attached to and towed behind a powered vehicle. Devices of this nature are primarily utilized in scraping up and hauling quantities of loose dirt. They are not intended to, and are generally incapable of dumping at exact locations, such as special fills over banks, etc., and, furthermore, cannot level the dirt thus hauled and dumped. This is due generally to the necessity of the powered vehicle preceding the dirt handling device to a dumping location, or, if the dumping device is capable of being backed into position by the powered vehicle, being provided with means for dumping in a direction and manner opposite to that of loading. The dirt handling devices, applied to or located forwardly of a powered vehicle, are in the nature of road scrapers, ditch diggers or shovels, and are individually incapable of digging or scraping, carrying, and leveling large quantities of dirt.

The present invention is intended to eliminate the heretofore necessary use of several types of dirt handling devices by combining certain features, hereinafter described, in one device. To accomplish this, the dirt handling device is located forwardly of the powered vehicle and in operation always precedes the vehicle. Thus the operator may keep the powered vehicle on firm ground, load the device, raise it, carry and empty the dirt at a given location, and, through use of the same device, level or bank the dirt as may be required. The operator is not required to turn around and divert attention from the direction of travel of the powered vehicle in the operation of the device. Furthermore, it is possible, particularly in road filling and grading work, to dig, carry, dump, and level large quantities of dirt with greater rapidity through the use of a single device, whereas, in the past this work has been accomplished through the successive use of a scraper, dirt loader and carrier, and bulldozer.

One of the objects of the invention lies in the provision of a dirt handling device that may form part of or be applied to the front end of a powered vehicle.

Another object of the invention lies in the provision of a dirt handling device, the forward end of which is wheel supported and the rear end attached to and carried by a powered vehicle.

Another object of the invention lies in the provision of a dirt handling device at the front end of a powered vehicle that is capable of loading and carrying large quantities of dirt for considerable distances and at a speed limited only by that of the powered vehicle.

Another object of the invention lies in the provision of a dirt handling device located at the front end of a powered vehicle that is capable of carrying, emptying, and leveling large quantities of dirt.

Another object of the invention lies in the provision of a device located at the front end of a powered vehicle that may be used for surfacing or leveling dirt, as may be required, in the building and grading of roads.

Other and further objects and advantages of the invention will be more fully understood from a consideration of the following specification taken in conjunction with the accompanying drawings; and in which

Figure 1 is a side elevation of a dirt handling device embodying one form of the invention applied to the front end of a tractor of the caterpillar type;

Figure 2 is a fragmentary plan view of the structure of Figure 1;

Figure 3 is a fragmentary side elevational view of the device in scraping and loading position;

Figure 4 is a fragmentary front end view of the device showing a wheel support and steering mechanism;

Figure 5 is a fragmentary transverse vertical sectional view of the device, being taken substantially on the line 5—5 of Figure 1;

Figure 6 is a further fragmentary transverse vertical sectional view, being taken substantially on the line 6—6 of Figure 1;

Figure 7 is a side elevational view of a modification of a dirt handling device attached to the front end of a tractor or other powered vehicle;

Figure 8 is a fragmentary plan view of the structure of Figure 7;

Figure 9 is a fragmentary front elevational view of the structure of Figure 7;

Figure 10 is a fragmentary transverse vertical

sectional view, taken substantially on the line 10—10 of Figure 7;

Figure 11 is a fragmentary horizontal sectional view, taken substantially on the line 11—11 of Figure 9;

Figure 12 is a side elevational view of another modification of the device wherein it is applied to and forms part of a dual wheel driven vehicle;

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

Figure 14 is a fragmentary side elevational view showing the device of the modification of Figure 12 in scraping and loading position;

Figure 15 is a fragmentary front elevational view of the modification shown in Figure 12;

Figure 16 is a side elevational view of a further modification of the dirt handling device in which the loading and carrying scoop is positioned between a pair of supporting wheels and the front end of a powered vehicle; and

Figure 17 is a fragmentary front elevational view of the modification of Figure 16.

Reference is now had to the drawings, and particularly to Figures 1 to 6, inclusive, wherein one modification of a dirt handling device, embodying the invention, is shown, being generally indicated by the reference numeral 10. The device comprises a frame 11 having duplicate side members 12. These members may consist of upper and lower rails 13 and 14, connected by middle and rear vertical rails 15 and 16. At their forward ends the rails 13 and 14 are connected by a member 17, the lower portion 18 of which is rearwardly offset to accommodate a wheel support for the device. The members 12 are spacedly joined by several cross members, such as indicated at 19, 21, and 22. At the forward end of the device, a top cross member 23 is provided. By means of a suitable shaft or pin 24, the member 23 is pivotally joined to the member 22. The ends of the member 23 extend beyond the sides of the device and terminate in downwardly projecting portions 26. A vertical opening is made through the portion 26, and the shaft 27 of a fork 28 projects upwardly therethrough, being fitted above the member 23 with a lever arm 29. The arms of the fork 28 mount an axle shaft which carries a suitable wheel 31. The arms 29 are pivotally connected through rods 32 with an arm 33 that projects upwardly into a gear housing 34. Extending rearwardly from the housing 34 is a steering shaft 36. A worm and gear structure in the housing 34 serves to transform rotational movement of shaft 36 into lateral movement of rods 32 and arms 29 for the purpose of steering wheels 31. As shown in the drawings, one or more universal joints 37 may be provided to accommodate the shaft 36 to any type of powered vehicle. The shaft is, of course, provided with a suitable steering wheel 38.

Connecting the lower rails 14, somewhat forwardly of the cross member 19, is a shaft 39. This shaft is carried by the rails 13 in bushings 41 and fitted with nuts 42. Between the members 12 is a scoop, generally indicated by the numeral 43. This scoop includes side walls 44 and base wall 45. The shaft 39 projects through a suitably reinforced portion 46 of the side walls 44 adjacent the rear end of the scoop, and serves to mount said scoop for pivotal movement with respect to the frame 11. The forward end 47 of the base wall 45 may be formed with a scraper edge, substantially as shown, that may be extended laterally beyond the width of the scoop and is braced, as indicated at 48. A rear wall 49 is mounted in the scoop 43. The upper corners of this wall are provided with bearing blocks 51 adapted to ride in guide channels 52 that are joined to or formed integral with the upper sides 44 of the scoop. The wall 49 is capable of being moved from the rear to the front end of the scoop in any suitable manner, as, for example, through the use of hydraulic rams 53. These rams are secured one to each of the members 12, and include shafts 54 that are securely fastened to the wall 49. When the rams are actuated, from a suitable pressure source common in tractors of the type to which the invention is applicable, the shafts simultaneously move forward, causing the rear wall 49 to move forward, in the same position with respect to the scoop as it is shown to occupy in the drawings.

The scoop 43, being pivotally supported at the rear end on shaft 39, is adjustable from the position shown in Figure 1 to a position such, for example, as indicated in Figure 3, in any suitable manner, as by means of a pair of small hydraulic rams 56. The cylinder of each of these rams is pivotally mounted on the outer face of the upper rails 13 of the device, and the shaft 57 thereof is joined to a lug 58, carried by the side walls 44 of the scoop. It will be understood that these rams have positive support in all positions and, consequently, the operator of the device may incline the scoop 43 about its pivot to any desired extent.

The modification of the invention of the device above described is applicable, with only slight variation, to the front end of any of several types of powered vehicles. In the disclosure of the invention under consideration, it is applied to the forward end of a tractor 59 of endless tread type. Intermediate the tread carrying wheels 61 of tractors of this type, a portion 62 of the frame is exposed. The rear ends of the members 12 are joined through a pivotal connection 63 with the member 62 of the tractor. Thus the device is capable of vertical, pivotal movement with respect to the tractor.

From the foregoing, it will be understood that the scoop 43 may be pivotally lowered, by means of rams 56, into dirt digging or scraping position, such as is indicated in Figure 3 of the drawings, and that the operator of the tractor may see exactly the work being accomplished without diverting attention from its direction of travel. Furthermore, the device is adaptable for use over uneven ground by reason of the pivotal connection of the wheels 31 through member 23 and shaft 24. In other words, the tractor may be on level ground and the wheels 31 on uneven ground, and the scoop and frame 11 will not be laterally strained or twisted. When the scoop has been filled with dirt, the rams 56 are again operated to raise the forward edge 47 out of contact with the ground. The load may now be transported to any given point, such, for example, as the edge of a bank, and the operator may then actuate rams 53 which will move the rear wall 49 of the scoop forwardly, forcing the load therefrom at the desired location. If the dirt thus dumped is not positioned as desired, the operator may back the vehicle, tilt the scoop, and, since the wall 49 is still positioned at the forward end thereof, use the device as a bulldozer.

Reference is now had to Figures 7 to 11, inclusive, wherein a modification of the dirt handling device, forming the subject of the invention, is shown, being generally indicated by the

reference numeral 64. In this modification, a frame 65 is comprised of side members 66, connected in a manner similar to that heretofore described. These members are pivotally joined to side frame members 67 of a tractor 68 by shafts 69. The forward end of the frame is supported by wheels 71 mounted in forks 72. The upper end of each of these forks terminates in a shaft 73 that is mounted in reinforced ends of a cross member 74. The cross member 74 is located just forwardly of a cross support 76. Centrally of the support 76 is a guideway 77. A block 78 is mounted in the guideway 77 and has pivotal connection through a shaft 79 with the cross member 74. The upper end of the block 78 is provided with a member 81, the ends of which extend laterally beyond said block. To these ends are secured the ends of shafts 82, which constitute the exposed portions of pistons for hydraulic rams 83. The rams 83 may be formed in the support 76 and serve as a variable support between the wheel support and the frame of the device. Hydraulic rams 83 have been shown since tractors of the type to which the invention is applicable are frequently equipped to operate such rams. It will be understood, however, that other adjustable means may be employed.

The frame 65 rigidly mounts a scoop 84 that includes bottom and side walls 86 and 87. A rear wall 88 is provided for the scoop and is movable from the rear to the forward end thereof by means of suitable connection with hydraulic rams 89 that are secured, in any suitable manner, to the side members 66 of the frame 65. Wall 88 may be provided with suitable guide blocks 91 that ride in channels 92 secured to the side walls 87.

The wheels 71 may be provided with a steering mechanism generally indicated by the numeral 84, or may be of the caster type and adapted to freely follow the direction taken by the tractor. When it is desired to use the device, the operator of the tractor causes rams 83 to lower the frame 65 and scoop 86 from the full to the dotted line position of Figure 7. This brings the front or scraper edge of the scoop into contact with the ground and forward movement of the tractor causes dirt to be collected by the scoop. When the scoop has been filled, the operator actuates rams 83 to raise the frame and scoop. The load may now be moved to a desired location and rams 89 actuated to move the rear wall 88 of the scoop forwardly to evacuate the dirt.

Reference is now had to a further modification of the invention shown in Figures 12 to 15, inclusive, of the drawings. In this instance, the dirt handling device, generally indicated by the numeral 93, is applicable to a dual wheel-drive, rear-motored vehicle 94. As is mommon practice in dual wheel-drive vehicles for use with dirt handling devices, a pair of front wheels are necessary to maintain proper balance, and since the dual wheels are not separately powered, as is the case with caterpillar tractors, the front wheels are utilized to steer the vehicle. Under these circumstances, the device 93 may be made an integral part of the vehicle 94. Upper and lower side members 96 and 97 extend forwardly of the forward vehicle wheels 98 and are laterally outwardly curved, being joined to or made integral with the side members 99 of the device. The side members 99 include lower rails 101, to the rear ends of which a scoop 102 is pivotally secured. The scoop includes bottom and side walls 103 and 104. An adjustable rear wall 106 is provided for the scoop, being capable of movement throughout the scoop's length through connection with rods 107 of hydraulic rams 108. By means of brackets 109, rams 108 are pivotally joined at their forward ends to the rails 97 of the vehicle in order that rods 107 may, at all times, move in a direction parallel with the scoop 102, whether it be in the carrying or digging and scraping position. Suitable guideways 111 may be provided in the side walls of the scoop to receive blocks 112 that are joined to the upper corners of the wall 106. The forward ends of the side members 99 are connected by a substantial cross member 113 that is pivotally connected, through a shaft 114, with a cross brace 116. In the present disclosure this connection may be had through an element 117 that extends over the cross members 113 and terminates in a downwardly extending portion 118. Thus, the shaft 114 projects through the portion 118 and the brace 116, and pivotally positions the cross member 113 therebetween. Any suitable steering mechanism, such as heretofore described in connection with the other modifications of the invention, may be provided by which to turn wheels 119. These wheels are mounted in forks 121 that depend from the ends of the cross member 113.

In this last described modification of the invention any heavy load carried by the scoop 102 is, to some extent, counter-balanced by the rear position of the motor of the vehicle. The type of vehicle to which this modification is applicable is more mobile than a vehicle of the caterpillar tractor type and, consequently, the device may not only load itself, but rapidly transport a load over a considerable distance and empty and position the load thus deposited. The scoop 102 is moved from the position of Figure 12 to that of Figure 14, in any suitable manner, as by a pair of hydraulic rams 122. These rams may be positioned substantially as the rams 56 shown in the modification of Figure 1 of the drawings.

A still further modification of the invention, as applied to or forming the forward end of a powered vehicle, is shown in Figures 16 and 17, to which attention is now directed. In this modification, the frame of a powered vehicle 123 extends forwardly of the driving wheels 124 and is attached to or made integral with a frame 125 that includes upper and lower side rails 126 and 127. Suitable vertical rails 128 and 129 connect the upper and lower rails. As shown in the drawings, the upper rail, rearwardly of the device, is integral with an upper rail of the vehicle frame 123. The rails 126 and 127, on each side of the device, converge vertically to form a forward wheel-mount 130. These rails also converge inwardly from the sides, as may be clearly seen in Figure 17. A suitable housing 131 is carried by, or may form part of the converging ends of the upper and lower rails 126 and 127. A member 132 abuts the lower end of the housing 131 and includes a shaft 133 projecting upwardly through said housing. The support 132 is connected through a pivot member 134 with an axle housing 135 through which a suitable shaft projects to mount wheels 136. The upper end of shaft 133 is fitted with an arm 137, to the free end of which suitable steering mechanism (not shown) may be attached. Due to the pivotal connection of the support 132 with the axle housing 135, the wheels 136 are capable of adjusting themselves, during

use of the device, to uneven ground without canting or in any way twisting the frame 125 with respect to the vehicle of which it forms a part.

A rod 138 connects the rear ends of rails 127 and serves to pivotally mount the rear end of a scoop 139 that comprises side walls 140 and bottom wall 141. Forwardly of each of the vertical rails 129 and, in the present instance carried by the rails 126, are small hydraulic rams 142, the piston shafts 143 of which are joined through pivots 144 to the sides 140 of the scoop. These rams are operable, in any conventional manner, by the operator of the vehicle to adjust the scoop from one to the other of the positions indicated in Figure 16 of the drawings. The rear wall 145 of the scoop is movable forwardly to the front edge to evacuate a load of dirt, and, for this purpose, is connected with hydraulic rams 146. As in the modification shown in Figure 12, the rams are provided, at their forward ends, with brackets 147 that are joined through pivots 148 to the frame 123 of the vehicle. The piston shaft 149 of each ram is rigidly connected, in any suitable manner, with the wall 145 and, when these rams are operated, said wall is moved forwardly or rearwardly of the scoop. Although not shown in this modification, suitable guides to prevent jamming or twisting of the wall 145 may be provided in the side walls of the scoop, substantially as has been heretofore shown and described in Figures 6 and 10 of the drawings.

The modification just described further increases the possible uses of the present invention in the handling of quantities of dirt, inasmuch as the scoop 139, with the wall 145 moved to the forward end thereof, may serve as a road surface scraper and, following such work, the wall 145 may be returned to the rear of the scoop and the surface material previously scraped gathered up in the scoop and conveyed to any desired location and evacuated. Following this, the device may be used as a bulldozer to position or level the dirt thus moved.

Applicant has shown and described several modifications of the invention, but it will be apparent that in each modification the dirt handling device is located forwardly of the vehicle to which it is attached, or of which it forms an integral part, and by reason of this position, as well as the adjustability of the scoop and the rear wall thereof, the invention is capable of performing several types of work required in building and grading roads, as well as other work that was formerly accomplished through the use of two or more devices, either alternately attached to the same powered vehicle, or attached to separate powered vehicles. In other words, the invention proposes to eliminate the present necessity of a powered vehicle for each piece of dirt handling equipment by making possible the use of one piece of equipment for all ordinary requirements.

Although applicant has shown and described only a few variations or modifications of his invention in the form of a dirt handling device located forwardly of a powered vehicle and adapted to excavate, scrape, load, dump, and level, it will be understood that other modifications of the structure described may be made and are contemplated insofar as these modifications are within the spirit and scope of the hereunto annexed claims.

Having thus set forth my invention what I claim as new and for which I desire protection by Letters Patent is:

1. A dirt handling device for use with a powered vehicle comprising a frame rigid with the frame of said vehicle and projecting forwardly of and in the line of travel of said vehicle, means mounting a pair of wheels adjacent the forward end of said frame, said means being centrally pivotally joined to said frame to permit generally vertical movement of either of said wheels with respect to said frame, a scoop carried by said frame, the forward end of said scoop being open and formed with a scraping edge of a length at least equal to the width of said scoop, means pivotally joining the rear end of said scoop to said frame and means for adjusting said scoop into and out of scraping and loading position.

2. A dirt handling device for use with a powered vehicle comprising a frame joined to said vehicle in a manner to project forwardly of and in the normal direction of travel of said vehicle, a cross member pivotally joined to the forward end of said frame, wheel mounting means at the ends of said cross member, a scoop carried by said frame, said scoop having base and side walls, the forward edge of said base wall being formed with a scraping edge of a length at least equal to the width of said scoop, means pivotally joining the rear end of said scoop to said frame, means for adjusting said scoop into and out of scraping and loading position and an adjustable back wall for said scoop, said wall being movable forwardly of said scoop to eject the contents thereof.

3. A dirt handling device for use with a powered vehicle comprising a frame rigidly joined to said vehicle in a manner to project forwardly of and in the normal direction of travel of said vehicle, a cross member pivotally joined to the forward end of and extending beyond said frame, wheel mounting means depending from the ends of said cross member, a wheel and fork pivotally associated with the mounting means at each end of said member, means operable from said vehicle to steer said wheels, a scoop carried by said frame, the forward end of said scoop being open and formed with a scraping edge, an adjustable rear wall on said scoop, and means pivotally joining the rear end of said scoop to said frame, said scoop being adjustable to move said edge into and out of scraping position.

4. A dirt handling device for use with a powered vehicle comprising a frame joined to said vehicle in a manner to project forwardly of and in the normal direction of travel of said vehicle, a cross member pivotally joined to the forward end of and extending somewhat beyond said frame, wheel mounting means associated with said cross member, and serving to support the forward end of said device, means connected with and providing for directional movement of said wheel mounting means, whereby to steer said vehicle, a scoop pivotally joined at its rearmost end to said frame, the forward end of said scoop being open and formed with a scraping and digging edge, and means operable to pivot said scoop and move said edge into and out of scraping and digging position.

5. A dirt handling device for use with a powered vehicle comprising a frame positioned forwardly of and in the normal direction of travel of said vehicle, horizontally disposed pivotal means joining the rearmost end of said frame to said vehicle, a cross member pivotally joined to

the forward end of said frame, forks having vertical pivotal association with and depending from said cross member, wheels mounted in said forks and serving to support the forward end of said device, a scoop carried by said frame, horizontal pivotal means joining the rear of said scoop to said frame, means operable to pivotally move said scoop into and out of scraping and loading position and further means for ejecting the contents of said scoop.

6. A dirt handling device for use with a powered vehicle comprising a frame positioned forwardly of and in the line of travel of said vehicle, horizontally disposed pivotal means joining the rear end of said frame to said vehicle, a cross member at the forward end of said frame, wheel mountings carried by said cross member, wheels on said mountings, means connecting said cross member with said frame, said means providing for vertical adjustment of the forward end of said frame with respect to said cross member, a scoop carried by said frame, the forward end of said scoop being open and having a scraping and digging edge, the rear end of said scoop being formed by a non-integral guide mounted wall, and means operable to move said wall lengthwise of said scoop to eject the contents thereof.

7. In a powered vehicle, a dirt handling device having a frame extending forwardly of and in the line of travel of said vehicle, a scoop having integral side and base walls, pivotal means mounting the rear end of the base wall of the scoop on said frame, the forward end of the base wall being at least the width of said scoop and serving as a scraper and digger edge, a rear wall for said scoop, means operable to move said wall to the forward edge of said scoop whereby to eject the scoop contents from its open end and cause said rear wall to serve as a dirt pusher or leveler, and wheeled support for said device, said support being located forwardly of the pivotal connection of said scoop with said frame whereby to provide operative balance for said device the wheeled support being located substantially out of the forward path of said scoop.

8. In a powered vehicle, a dirt handling device having a frame extending forwardly of and in the line of travel of said vehicle, a scoop having side and base walls, the rear end of said scoop being pivotally joined to said frame, means operable to adjust said scoop about its pivotal connection with said frame into and out of scraping and loading position, wheeled support for said device, said support being located forwardly of the load center of said scoop, an upright end wall for said scoop, said wheeled support being located substantially out of the forward path of said scoop, means connected with and operable to move said end wall lengthwise of said scoop to eject the contents thereof, said end wall, when moved to the forward end of said scoop, serving as a dirt pusher or leveler.

9. A dirt handling device for use with a powered vehicle comprising a frame positioned forwardly of and in the line of travel of said vehicle, horizontally disposed pivotal means joining the rear end of said frame to said vehicle, a cross member pivotally joined to the forward end of said frame, vertically pivoted forks depending from the ends of said cross member, wheels mounted in said forks, steering means on said vehicle associated with and adapted to simultaneously rotate said forks and wheels, a scoop carried by said frame, a forward end on said scoop serving as a scraper and digger, a rear wall on said scoop, said rear wall being movable forwardly of said scoop to evacuate the contents thereof, horizontal pivotal means joining the rear end of said scoop to said frame, and means operable to pivotally move said scoop into and out of scraping and loading position.

10. A dirt handling device for use with a powered vehicle comprising a frame positioned forwardly of and in the line of travel of said vehicle, horizontally disposed pivotal means joining the rear end of said frame to said vehicle, a cross member at the forward end of said frame, a block, said frame having guideways for receiving said block, horizontal pivotal means connecting said block and said cross member, means mounting steerable wheels, said means having vertical pivotal association with the said cross member, means operable to vertically adjust the forward end of said frame with respect to said cross member, and a scoop carried by said frame, said scoop being open at its forward end and formed with a scraping and digging edge.

11. A dirt handling device for use with a powered vehicle comprising a frame positioned forwardly of and in the line of travel of said vehicle, horizontally disposed pivotal means joining the rear end of said frame to said vehicle, a cross member pivotally joined to and extending laterally beyond the forward end of said frame, vertically pivoted forks depending from the ends of said cross member, wheels mounted in said forks, means operable to turn said forks and steer said vehicle, a scoop having side and base walls, horizontally disposed pivotal means mounting the rear end of the base wall of said scoop on said frame, the forward end of the base wall being at least the width of said scoop and serving as a scraper and digger edge, a rear wall for said scoop, guide means mounting said rear wall for movement lengthwise of said scoop, means carried by said frame operable to move said rear wall to the forward edge of said scoop whereby said rear wall may serve as a dirt pusher or leveler, and further means operable to adjust the forward edge of said scoop into and out of scraping and loading position.

12. In a powered vehicle, a dirt handling device having a frame extending forwardly of and in the line of travel of said vehicle, a scoop, the rear end of said scoop being pivotally joined to said frame, means operable to adjust said scoop about its pivotal connection with said frame into and out of loading and carrying positions, mobile support for that portion of said frame extending forwardly of said vehicle, said support being located forwardly of the pivotal connection of said scoop with said frame to give operative balance to said device and substantially out of the forward path of said scoop, an end wall for said scoop, and means connected with and operable to move said end wall lengthwise of said scoop to eject the contents thereof, said end wall, when at the forward end of said scoop, serving as a dirt pusher and leveler.

13. In a powered vehicle, a dirt handling device having a frame extending beyond one end and in the line of travel of said vehicle, means mounting said frame for pivotal movement about an axis arranged transversely of said vehicle, a scoop, the rear end of said scoop being pivotally connected with that portion of said frame extending beyond said vehicle end, mobile means joined to said frame forwardly of the pivotal connection of said scoop with said frame and substantially out of the forward path of said

scoop, said mobile means serving to maintain operative load balance of said scoop, and means in said scoop operable to eject the contents thereof.

14. A dirt handling device for use with a powered vehicle comprising a frame rigid with the frame of said vehicle and directed forwardly and in the line of travel thereof, a scoop, the rear end of said scoop being pivotally connected with the frame of said device, means operably connected with and adapted to adjust said scoop about its pivotal connection with said device frame, mobile support for said device, said support being disposed forwardly of the pivotal connection of said scoop with said device frame and serving to maintain operative balance of said device, said support being located substantially out of the forward path of said scoop, an end wall for said scoop, and means connected with and operable to move said end wall to eject the contents of said scoop.

15. A dirt handling device for use with a powered vehicle comprising a frame adapted to extend forwardly of and in the line of travel of said vehicle, a scoop, the rear end of said scoop being pivotally connected with said frame, mobile support for said frame, said support being located forwardly of the pivotal connection of said scoop with said frame and serving to give operative balance to said device, said support being located substantially out of the forward path of said scoop, an end wall for said scoop, means connected with and operable to move said wall lengthwise of said scoop, and further means operably connected with and adapted to pivotally move said scoop into and out of loading and carrying positions.

16. In a powered vehicle, a dirt handling device having a frame extending beyond one end and in the line of travel of said vehicle, means mounting said frame for pivotal movement about an axis arranged transversely of said vehicle, a scoop carried by that portion of said frame extending beyond said vehicle end, mobile means joined to said frame forwardly of the rear end and substantially out of the forward path of said scoop, said mobile means serving to maintain operative load balance of said scoop, and means in said scoop operable to eject the contents thereof.

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