Feb. 21, 1939. C. LE BLEU 2,148,359

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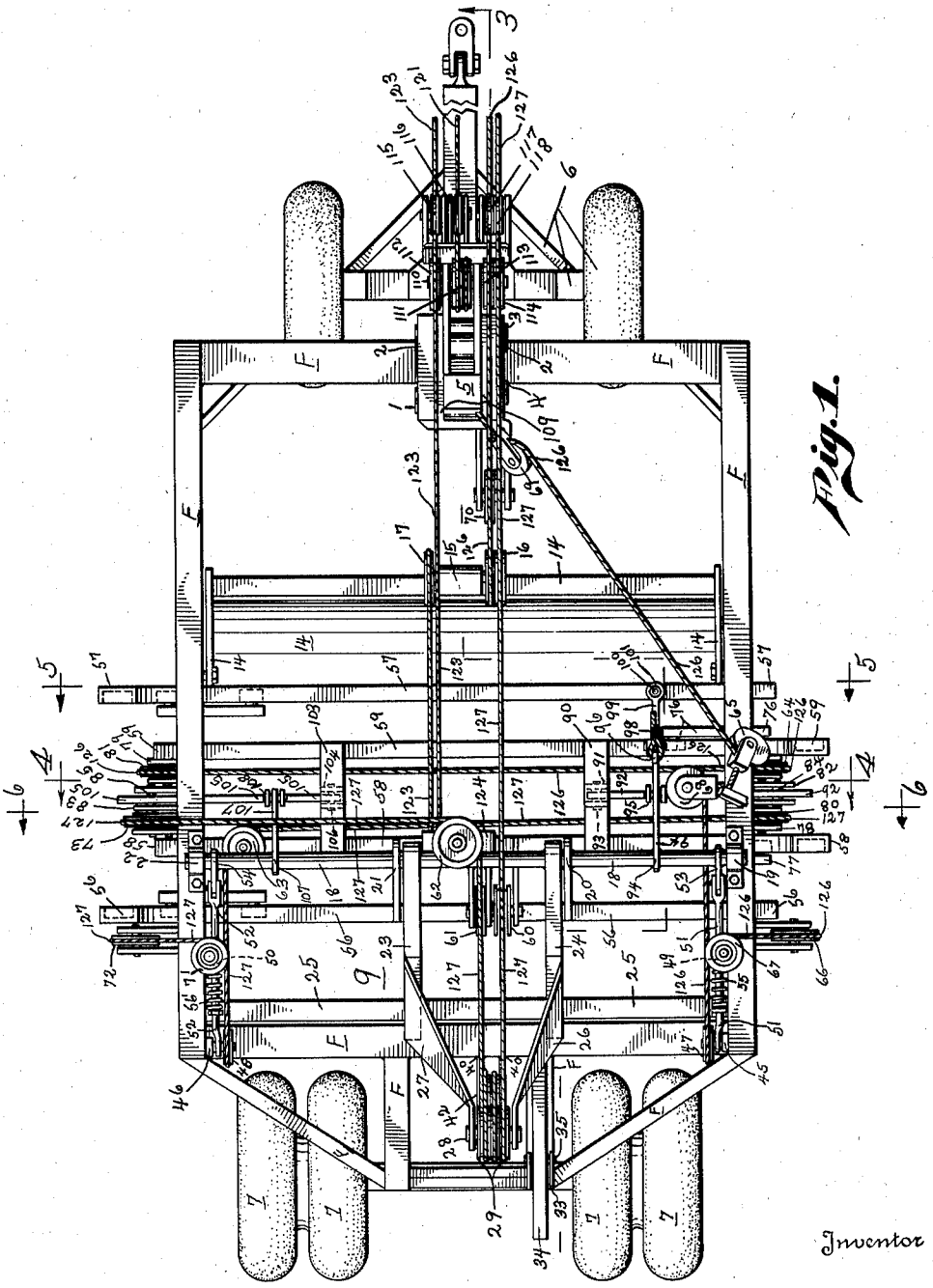


Fig. 1.

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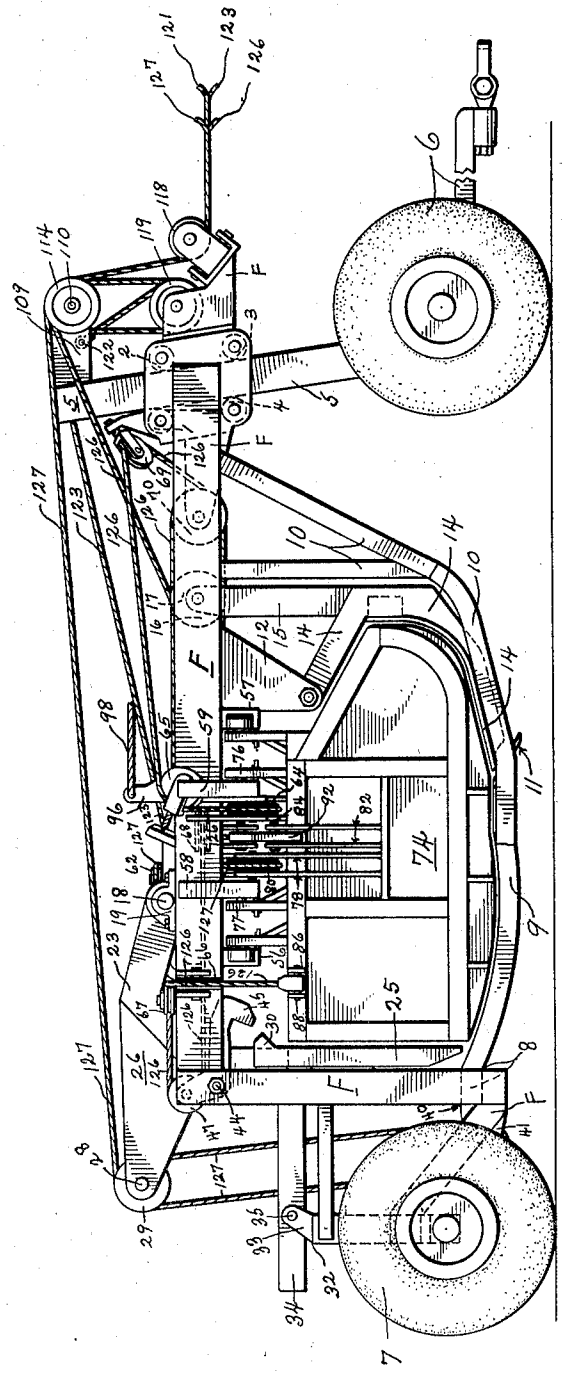


Fig. 2.

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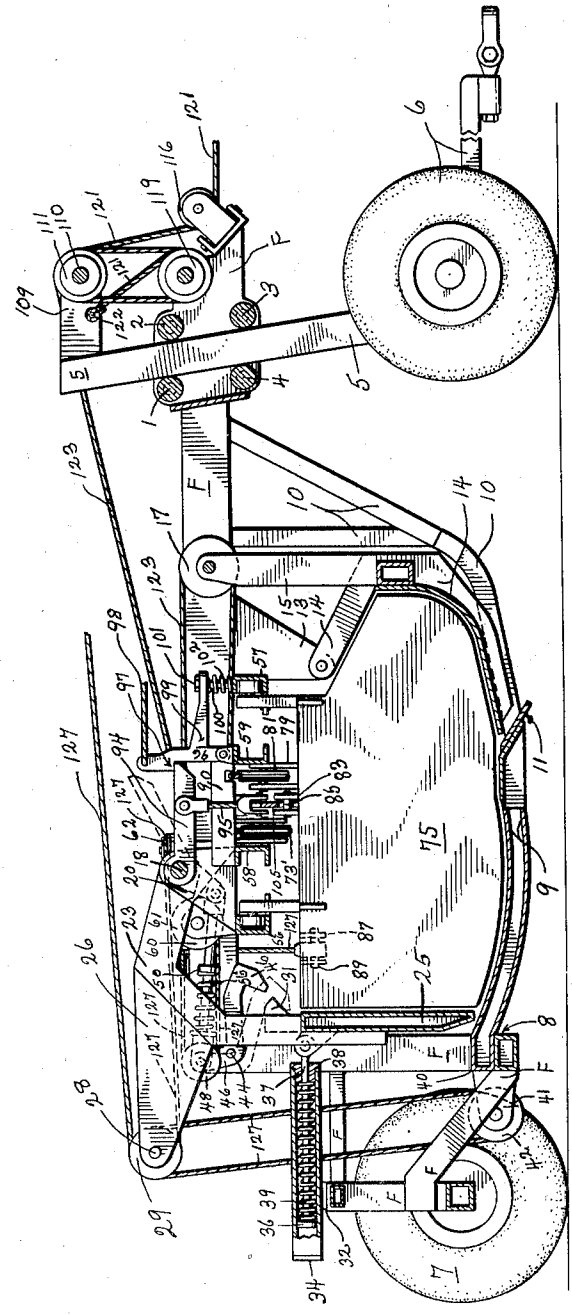


Fig. 3.

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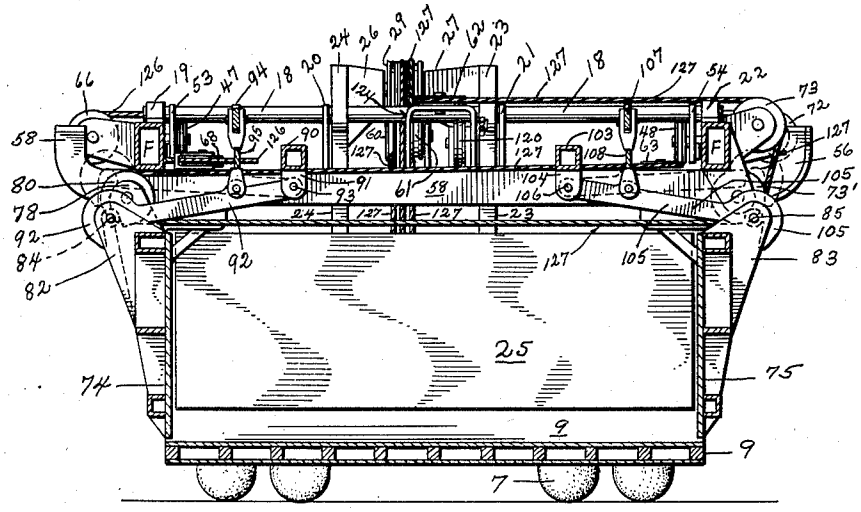


Fig. 4.

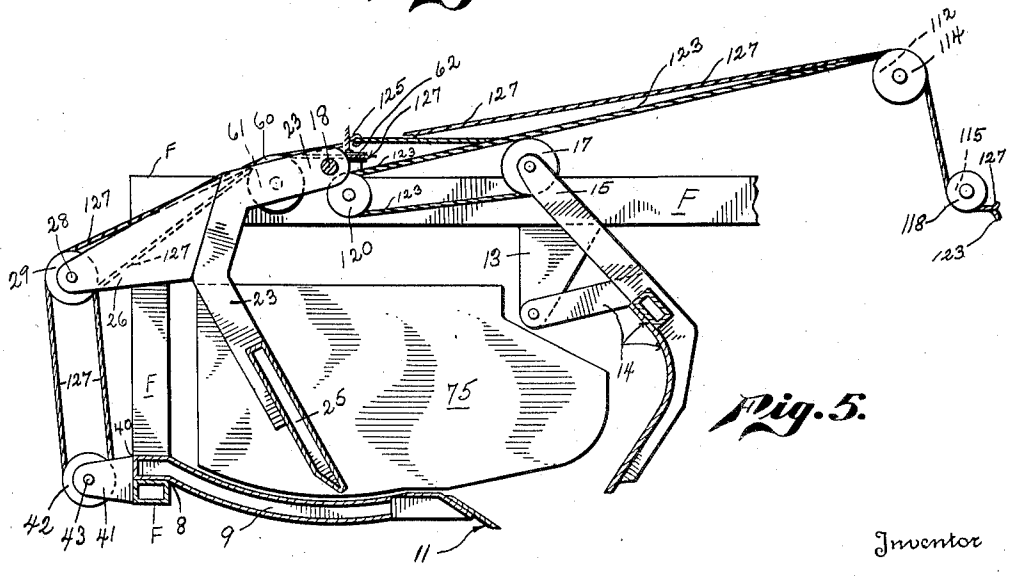


Fig. 5.

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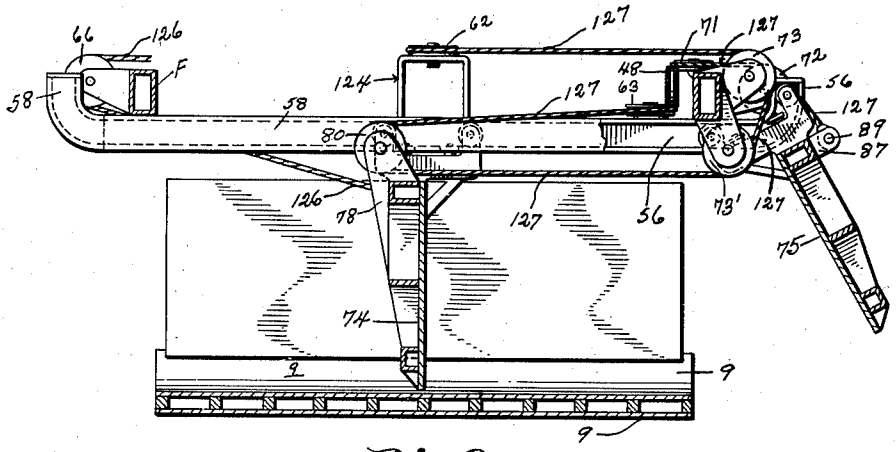


Fig. 6.

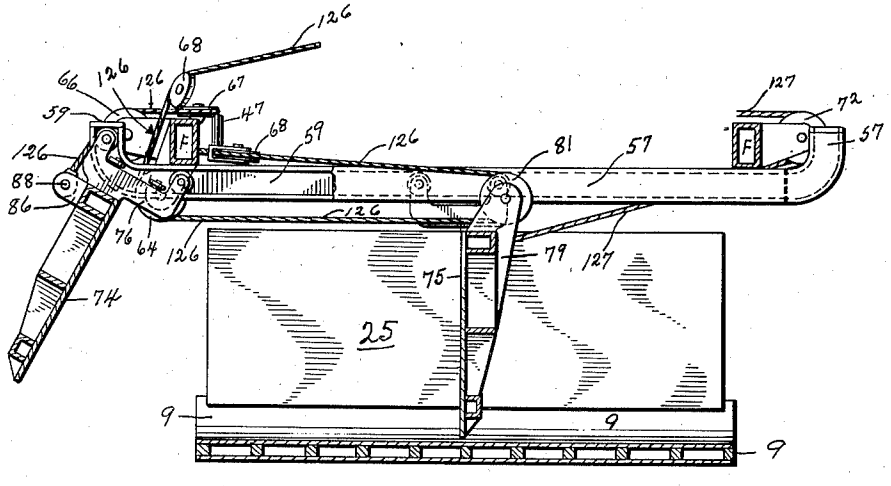


Fig. 7.

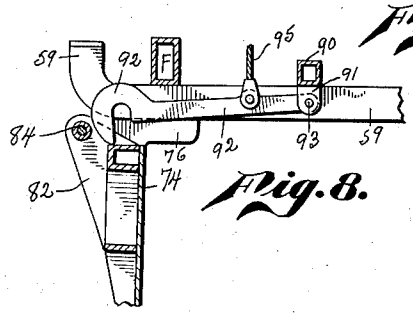


Fig. 8.

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UNITED STATES PATENT OFFICE

2,148,359

SCRAPER

Charles Le Bleu, Los Angeles, Calif.

Application September 16, 1935, Serial No. 40,847

13 Claims. (Cl. 37—126)

This invention relates generally to material digging, scraping, leveling and transporting devices as used in leveling ground, building roads, excavating, grading, transporting materials etc., and particularly to that class of material moving apparatus known as scrapers by means of which materials are scraped up and transported.

The principal object of the invention is to provide, in a scraping device adapted to scrape up and load onto a material supporting bottom, materials which it is desired to remove and transport, means whereby materials may be discharged from said bottom into the path of the line of travel or to the side thereof.

Reference is hereby made to my pending application Serial No. 19,946 filed May 6, 1935, wherein I disclose a scraper adapted to discharge materials in the path of the line of travel or to the side thereof. However, preparatory to discharging materials to the side, the bowl must be faced outwardly relative to the main frame before operating the discharging mechanism.

More specifically then, it is an object of this invention to provide, in a scraper, such correlation and construction of parts, members and features, that the load of materials may be discharged to the side of the device, or in the path of the line of travel thereof, without the necessity of first facing the material supporting bottom at right angles to the line of travel or transversely thereof.

Still another object is the provision in a scraping and transporting device of the class described, a bottom adapted to scrape up and support materials, means for ejecting said materials from said bottom in a direction longitudinal of the line of travel of the device, and certain other means for ejecting materials from said bottom in a direction transversely of the line of travel at the side of said bottom.

Still another object is the provision in a device of the class described, a bottom adapted to scrape up and carry materials, a means to move said materials across said bottom longitudinally of the line of travel to be ejected in the path thereof and means to move said materials across said bottom transversely of the line of travel to be ejected at the side thereof.

Still another object is the provision in a scraping apparatus, a bottom adapted for scraping up and carrying materials and end gates and side gates arranged relative to said bottom and mounted for movement with respect thereto.

Still another object is the provision in a scraping apparatus, a main frame structure adapted to be moved across the surface of the earth, a bottom for scraping up and supporting materials rigid with said frame structure, and means to discharge materials from said bottom into the path of the line of travel, or to the side thereof.

Still another object is to provide of a novel main frame structure, and means of control therefor, that is particularly adapted to the mounting of a bottom and end gates and side gates movable relative thereto.

Still another object is the provision in a scraping apparatus comprising a frame, a bottom carried by said frame and side gates movably mounted relative to said bottom, of means to releasably retain said side gates in their normal position at opposite sides of said bottom.

These objects together with other objects and advantages pertaining to structure will appear as the following description is read in connection with the accompanying drawings, wherein I have shown for purposes of illustration and not of limitation, a preferred form of structure and mechanism embodying my invention.

In the drawings—

Figure 1 is a top plan view of a scraper embodying my invention.

Figure 2 is a side elevation of Figure 1.

Figure 3 is a sectional elevation taken on a line 3—3, see Figure 1.

Figure 4 is a sectional elevation taken on a line 4—4, see Figure 1.

Figure 5 is a fragmentary side elevation in section illustrating the arrangement and action of the front and rear gates.

Figure 6 is a fragmentary frontal view in section taken on a line 6—6 illustrating the arrangement and action of the side gates when dumping to the left.

Figure 7 is a fragmentary frontal view in section taken on a line 5—5 illustrating the arrangement and action of the side gates when dumping to the right.

Figure 8 is a fragmentary view showing the arrangement of the latch mechanism for releasably retaining the side gates in position at each side of the bottom.

Referring now more specifically to structure by alluding to characters of reference on the drawings, Figures 1 to 8 inclusive, F, generally, designates a suitable frame structure. Incorporated in the frame at its forward end are nonfriction members 1, 2, 3 and 4, spaced apart and arranged to mount the front end of the frame for vertical movement on upstanding arm 5 swivelably connected at its lower end to a front

pony truck 6, adapted for connection to a draft device.

The rear end of said frame F is suitably mounted on rolling supports 7.

Attached to the frame F at 8 is a suitably constructed bottom 9 attached at its forward end to the frame F by brace means 10. A scraper blade 11 is detachably secured to the forward edge of the bottom 10.

Attached to the main frame F, at each side thereof are brackets 12 and 13. Pivotly mounted on the lower ends of brackets 12 and 13 is a front gate 14 provided with an upwardly projecting arm 15 carrying at its upper end on either side thereof sheaves 16 and 17.

Extending transversely of the frame F and journaled in suitable bearings 19, 20, 21 and 22 secured thereto, is a crank shaft 18.

Journaled on crank shaft 18 between bearings 20 and 21, is a pair of arms 23 and 24 carrying a transversely extending rear gate 25 for horizontal swinging movement. Secured to arms 23 and 24, are rearwardly extending arms 26 and 27 carrying between their rear ends, by means of pin 28, a multiplicity of sheaves 29.

Secured to the rear gate at each end thereof is a pair of stops 30 and 31.

Secured to the frame F at 32 are brackets 33 pivotally supporting a boxlike structure 34 at 35. In the boxlike structure 34 is a block 36 secured to a rod 37 pivotally connected at its outer end to the rear gate 25. The boxlike structure 34 is provided at its forward end with a head 38 having an opening through which the rod 37 passes. Encircling the rod 37 inside the boxlike structure 34 and interposed between the block 36 and the head 38 is a compression spring 39.

Secured to the frame F at 40 are bracket means 41 carrying a multiplicity of sheaves 42 on a pin 43. Sheaves 29 and 42 are disposed and arranged in an operating relationship.

Pivotally secured to the frame F at either side thereof, as at 44, are latch bars 45 and 46 adapted at their lower forward end for engagement with stops 30 and 31 mounted on the rear gate 25, said latch bar being arranged and mounted relative to said stops 30 and 31. The upwardly extending portion of latch bars 45 and 46 carry at their upper ends a sheave 47 and 48. Secured to frame F forwardly of sheaves 47 and 48, are suitable brackets 49 and 50 provided with a suitable opening therethrough for passage of rods 51 and 52 pivotly connected at their rear ends respectively, to the upper ends of latch bars 45 and 46, and at their forward ends respectively to crank arms 53 and 54 rigidly secured to crank shaft 18. Encircling each of rods 51 and 52 between the rear ends thereof and the brackets 49 and 50, are compression springs 55 and 56'.

Suitable trolley beams 56, 57, 58, and 59, extend transversely of the frame F and are suitably secured to the under side thereof.

Suitably arranged and mounted on trolley beams 56 and 58 are sheaves 60, 61, 62 and 63 and on the frame F, sheaves 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 73' and 120 the purposes of which will be explained later in connection with the winding and operation of the cables.

Normally positioned at opposite sides of the bottom 9 and movably ararnged relative thereto, are side gates 74 and 75. Since the mechanism for mounting these side gates for movement transversely of the bottom 9 is identical except for spacing, only one will be described.

The gate 74 is normally positioned at the right hand edge of the bottom 9, arranged relative thereto and extends longitudinally of the scraper. Gate 74 is provided with a pair of suitably constructed roller carriages 76 and 77 rigid therewith and adapted to be mounted on trolley beams 58 and 59 for movement therealong transversely of the bottom 9, see Figures 6 and 7.

The gates 74 and 75 are provided with brackets 78 and 79 carrying sheaves 80 and 81. Gates 74 and 75 also carry brackets 82 and 83 carrying latch rollers 84 and 85. These gates are also provided with brackets 86 and 87 carrying pins 88 and 89.

A short beam 90 is secured at its opposite ends to trolley beams 58 and 59 and is provided with brackets 91 pivotly suporting the inner end of a latch bar 92 by means of a pin 93. The outer end of latch bar 92 is adapted to releasably engage roller 84 when the gate 74 is in normal position. Crank shaft 18 carries a crank arm 94. A flexible member 95 is connected at its upper end to crank arm 94 and at its lower end to latch bar 92 intermediate the ends thereof. Trolley beam 59 has pivoted thereto, an upstanding arm 96 provided with a detent 97 for engagement with the forward end of crank arm 94. The upper end of upstanding arm 96 carries a pull rope 98 that extends forwardly to within easy reach of the operator. Upstanding arm 96 carries a horizontally extending arm 99. A stud bolt 100 projects upwardly from trolley beam 57, passing through an over size or slotted hole in the end of arm 99 and carries an adjusting nut 101 on its outer end. A compression spring 102 encircles stud bolt 100 between the under side of arm 99 and the top side of trolley beam 57.

A short beam 103 is secured at its opposite ends to trolley beams 58 and 59 and is provided with brackets 104 pivotly supporting the inner end of a latch bar 105 by means of a pin 106. The outer end of latch bar 105 is adapted to releasably engage roller 85 when the gate 75 is in the normal position. Crank shaft 18 carries a crank arm 107. A flexible member 108 connects the outer end of crank arm 107 to latch bar 105 intermediate the ends thereof.

The upper end of upstanding arm 5 carries a pair of forwardly extending arms 109 provided at the forward end thereof with a pin 110 having journaled thereon sheaves 111, 112, 113 and 114. Pivotly mounted on the forward end of frame F is direction change sheaves 115, 116, 117 and 118. Also journaled on the forward end of frame F, just rearwardly of the direction change sheaves, is sheave 119 arranged relative to sheave 111 above.

Cable windings about the various sheaves and the operation of the device will now be described.

The mounting of sheaves 111, 112, 113 and 114 on the one hand and sheaves 119 on the other hand may be reversed if desired. That is to say, sheaves 111, 112, 113 and 114 may be mounted on the forward end of the frame F, and sheaves 119 may then be mounted on the forward end of arms 109 carried by upstanding arm 5. Again sheaves 111 and 119 may be mounted as shown in the drawings, and the sheaves 112, 113 and 114 may be mounted on the forward end of frame F instead of on the arms 109 as shown.

The elevation of scraper blade 11 with respect to the surface of the earth is controlled by the manipulation of cable 121 anchored to arms 109 at 122 and passing around and about sheaves 111 and 119, thence about direction change sheave 116 and extending thence forwardly to a winding

drum, not shown. Thus slack in cable 121 will permit the forward end of frame F to move downwardly on the upstanding arm 5 and consequently the scraper blade 11 will be lowered. Rewinding the cable 121 on the winding drum will result in lifting the forward end of frame F thus raising the scraper blade 11. This operation may be repeated at will as often as desired.

Winding drums herein referred to are of conventional design therefore not shown.

Cable 123 is anchored to a bracket 124, rigid with trolley beam 58, as shown at 125. Cable 123 extends thence forwardly and then clockwise about sheave 17, thence rearwardly and then clockwise about sheave 120, thence forwardly to and over sheave 112, thence downwardly to and under direction change sheave 115, thence to a winding drum. Thus, operation of the winding drum to wind up cable 123 will result in opening the front gate 14 as, for example, in Figure 5. Releasing the winding drum will permit cable 123 to unwind and allow the front gate to close, for example, as in Figures 2 and 3.

Cable 126 is a common operating means for applying power to the closing of the front gate 14 to the position shown in Figures 2 and 3, for swinging side gate 74 outwardly to position shown in Figure 7, and for pulling the side gate 75 transversely across the bottom 9 to eject the load outside the path of the line of travel to the right side of the bottom 9. Cable 126 is attached to side gate 74 near the rear end thereof by a pin 88 as shown and then extends upwardly to and over sheave 66, thence to and about sheave 67, then rearwardly to and downwardly about sheave 47, thence forwardly to and counterclockwise about sheave 68, thence transversely of the frame F to and downwardly around about sheave 81, then back across the frame F to and upwardly about sheave 64 thence upwardly to and about sheave 65, then forwardly to and downwardly about sheave 69, thence passing back and forth around and about sheaves 16 and 70, thence upwardly to and downwardly about sheave 113 to and under direction change sheave 117, thence to a winding drum not shown. Assuming the front gate and related parts being in the position shown in Figure 5 and the side gates 74 and 75 and the rear gate 25 in their normal positions as shown in Figures 2 and 3, then since the crank shaft 18 and connected parts and the side gates 74 and 75 are latched against movement, operation of a winding drum to wind up cable 126 will result in applying power to the closing of the front gate 14 from the position shown in Figure 5 to the closed position shown in Figures 2 and 3. Now, assume all parts in the position shown in Figures 2 and 3. To eject the load to the right side of the device, the operator first applies a pull to the pull rope 98 thus withdrawing the detent 97 from engagement with the forward end of latch bar 94, and while thus disengaged the winding drum is operated to wind up cable 126. Since the front gate is now closed and cannot move further, and since the crank shaft 18 is not latched against movement, then as the cable 126 is wound up the sheave 47 mounted on the upper end of latch bar 45 will first be drawn forward and due to the connection of the upper ends of latch bars 47 and 48 with the crank arms 53 and 54 carried by crank shaft 18, and the connection of latch bars 92 and 105 with the forward ends of crank arms 94 and 107 carried by crank shaft 18, then simultaneously, latch bars 92 and 105 will be lifted from engagement with rollers 84 and 85 carried by side gates 74 and 75 respectively and the lower ends of latch bars 45 and 46 will be moved into engagement with stops 30 and 31 respectively. Thus the rear gate 25 is latched against forward swinging movement and the side gates 74 and 75 unlatched and free to move so that continued winding up of cable 126 will next swing side gate 74 outwardly to the position shown in Figure 7 after which side gate 75 will move transversely across the bottom 9 to push the load out of the side thereof. Returning the side gates to normal position is better explained following an explanation of ejecting the load at the front side or mouth of the bottom 9, or to the left side thereof.

Cable 127 is a common operating means for applying power to the rear gate to swing the same forwardly to eject the load at the mouth of the bottom 9, to swing side gate 75 outwardly as shown in Figure 6 and pull the side gate 74 transversely across the bottom 9 to eject the load outside the path of the line of travel to the left side of the bottom 9. Cable 127 is pivotly connected by a pin 89, see Figure 3, to side gate 75 extending upwardly therefrom to and over sheave 72, then to and about sheave 71, thence extending rearwardly to and round about sheave 48, then forwardly to and clockwise about sheave 63, then transversely to and clockwise about sheave 62, thence rearwardly to and round about back and forth over sheaves 29 and 42, thence forwardly above sheave 60 to and downwardly over sheave 14, then under direction change sheave 118 to a winding drum not shown.

Assuming all parts to be in position shown in Figures 1, 2 and 3, then ejecting the load to the front over the scraper blade 11 in the path of the line of travel is accomplished as follows: A winding drum is operated to wind up cable 123 thus resulting in opening the front gate 14 to a position shown in Figure 5. Then a winding drum is operated to wind up cable 127 thus pulling sheave 29 downwardly and swinging rear gate 25 forwardly about its pivotal mounting on crank shaft 18. Figure 5 shows the rear gate 25 swinging forward. When the load has been discharged the cable 127 is released and compression spring 39 returns the rear gate to its normal position.

Again assuming all parts to be in position shown in Figures 1, 2, and 3, then to eject the load to the left, the same procedure is followed as in dumping to the right, substituting however, cable 127 for cable 126. A pull is applied to pull rope 98 and then a winding drum is operated to wind up cable 127 thus resulting first in unlatching the side gates and latching the rear gate in position at the rear end of bottom 9, then continued winding up of cable 127 will swing gate 75 outwardly as illustrated in Figure 6 and then pull side gate 74 transversely of the bottom 9 to push the load out at the left side of said bottom. Now to return side gates 74 and 75 to normal position at opposite sides of bottom 9 a winding drum is operated to wind up cable 126 as in dumping to the right.

To return the side gates to normal position after dumping to the right as heretofore explained, a winding drum is operated to wind up cable 127.

From the foregoing description it will be apparent to one versed in the art that I have disclosed and described a device as substantially fulfills the objects of the invention as set forth, and while these specifications set forth in detail

the present preferred construction of the device, in practice such arrangement, correlation and construction of parts, members and construction of parts, members and features may be resorted to as do not form a departure from the spirit of the invention, as defined in the appended claims.

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

1. A device of the class described including a frame, a material supporting bottom carried by said frame, a scraper rigid with said bottom and end gates and side gates mounted in relation to said bottom for movement with respect thereto, whereby materials may be selectively discharged in the path of travel of the device or to the side thereof.

2. In a device of the class described, a frame, a material supporting bottom carried by said frame, a scraper carried by said bottom, end gates and side gates for said bottom and means mounting said gates for movement relative thereto whereby the entire load of materials may be selectively discharged in the path of the line of travel of the device or to the side thereof.

3. A device of the class described including a frame, a material supporting bottom rigid with said frame a scraper carried by said bottom, end gates and side gates for said bottom and means mounting said gates with relation to said bottom for movement relative thereto whereby the entire load of materials may be ejected at the front end of said bottom or selectively at either side thereof.

4. In a device of the class described, a frame, a material supporting bottom rigid with said frame, a scraper carried by said bottom, end gates and side gates for said bottom and means supporting said gates on said frame with relation to said bottom for movement relative thereto and means whereby said gates may be manipulated to selectively eject the load at the forward end of said bottom or at the side thereof.

5. In a device of the class described, a frame, a bottom carried by said frame, end gates and side gates for said bottom, means mounting said gates with relation to said bottom for movement relative thereto, means to manipulate said end gates to discharge the load in the path of the line of travel and means to manipulate said side gates to discharge the load outside the path of the line of travel to the side of the device.

6. In a device of the class described, a frame, a bottom carried by said frame, end gates and side gates for said bottom, means mounting said end gates relative to said bottom for swinging movement whereby said load may be discharged at the end of said bottom and means mounting said side gates relative to said bottom for collective horizontal movement whereby the load may be discharged at the side of said bottom.

7. In a device of the class described, a frame, a bottom rigid with said frame, side gates for said bottom, trolley beams mounted transversely of said frame, means mounting said side gates on said trolley beams for horizontal movement therealong, end gates for said bottom, means mounting said end gates on said frame for swinging movement and control means for manipulating said side gates and said end gates to selectively eject the load at the end of said bottom in the path of the line of travel or to either side thereof.

8. In a device of the class described, a frame, a bottom carried by said frame, end gates and side gates for said bottom, means mounting said gates with relation to said bottom for movement relative thereto and a common operating means for selectively operating said side gates or one of said end gates and a second common operating means for selectively operating said side gates or the other of said end gates.

9. In a device of the class described, a frame, a bottom carried by said frame, end gates and side gates for said bottom, means mounting said gates with relation to said bottom for movement relative thereto and a common operating means for selectively operating an end gate or swinging a side gate outwardly and pulling the other side gate transversely of said bottom and a second common operating means for selectively operating the other of said end gates or swinging a side gate outwardly and pulling the other of said side gates transversely of the bottom.

10. In a device of the class described, a frame, a bottom carried by said frame, side gates for said bottom, means mounting said gates with relation to said bottom for movement therealong from one side to the other and means for releasably retaining said gates in normal position at the opposite sides of said bottom.

11. In a device of the class described, a frame, a bottom carried by said frame, side gates for said bottom, means mounting said gates with relation to said bottom for movement therealong from one side to the other, means for releasably retaining said gates in normal position at the opposite sides of said bottom and means to release said gates for movement.

12. In a device of the class described, a frame, a bottom positioned underneath said frame and attached thereto, a scraper rigid with said bottom, end gates and side gates for said bottom, means supporting said gates with relation to said bottom for movement therealong from one side to the other, control means for manipulating said gates and means to control the operative and inoperative position of the device.

13. In a scraper including a frame, a main material supporting bottom rigid therewith, a scraper blade carried by the main bottom, a front gate disposed forwardly of and confronting the main bottom and adapted to be moved to and from the main bottom and side gates disposed with said bottoms extending from the rear end of the main bottom to the front end of the front gate, said side gates being mounted relative to said bottoms for movement transversely thereof from side to side.

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