July 4, 1939. C. LE BLEU 2,164,461

SCRAPER

Filed Feb. 19, 1937 5 Sheets-Sheet 1

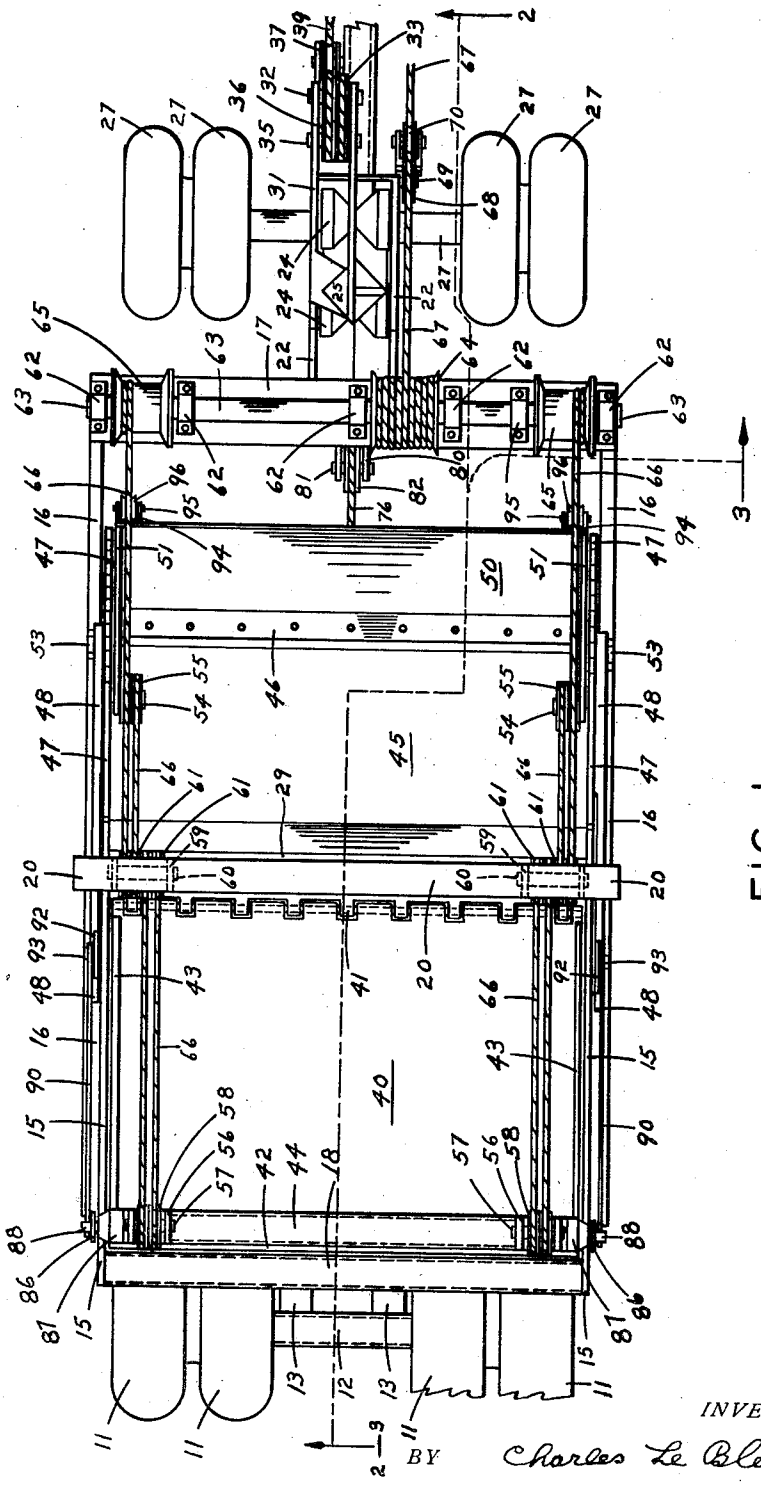


FIG. 1

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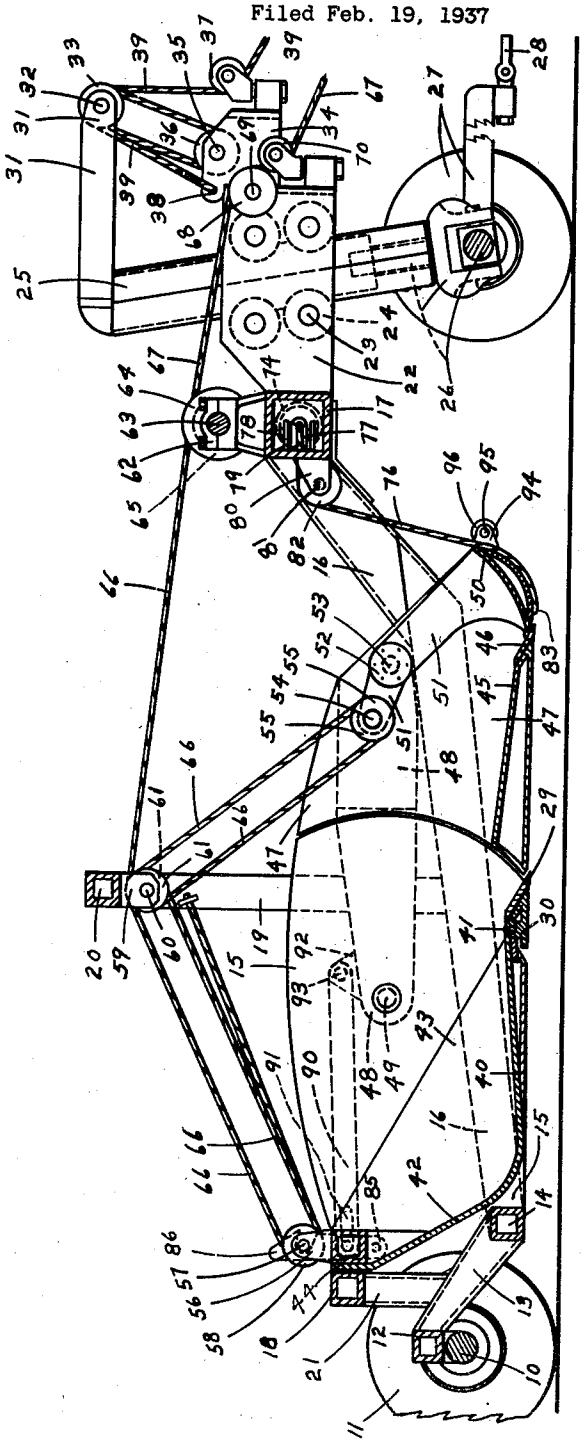


FIG. 2

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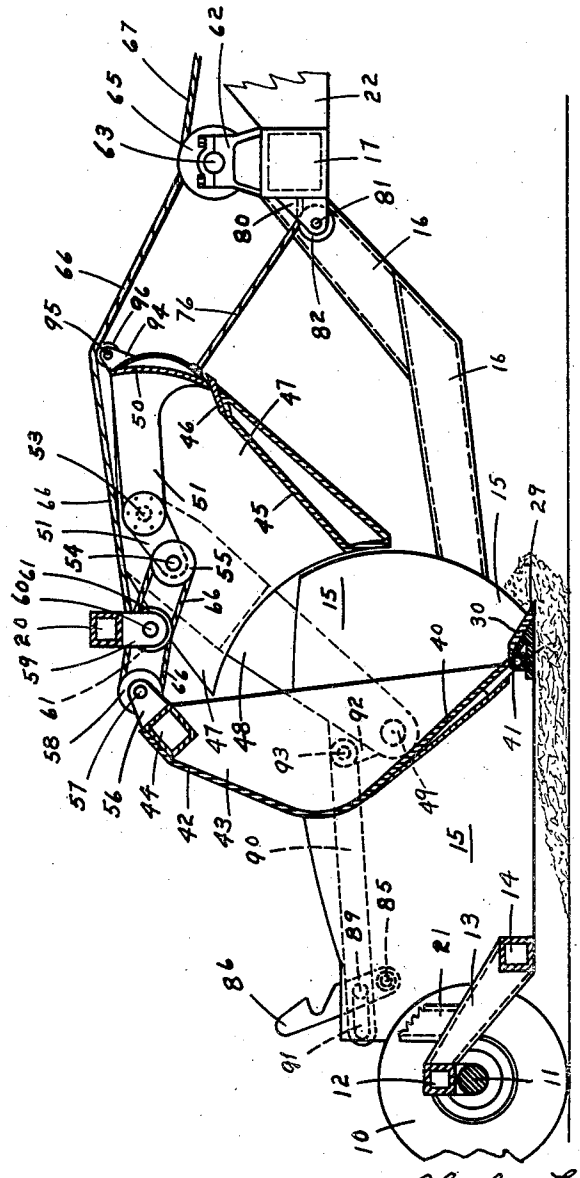
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FIG. 3



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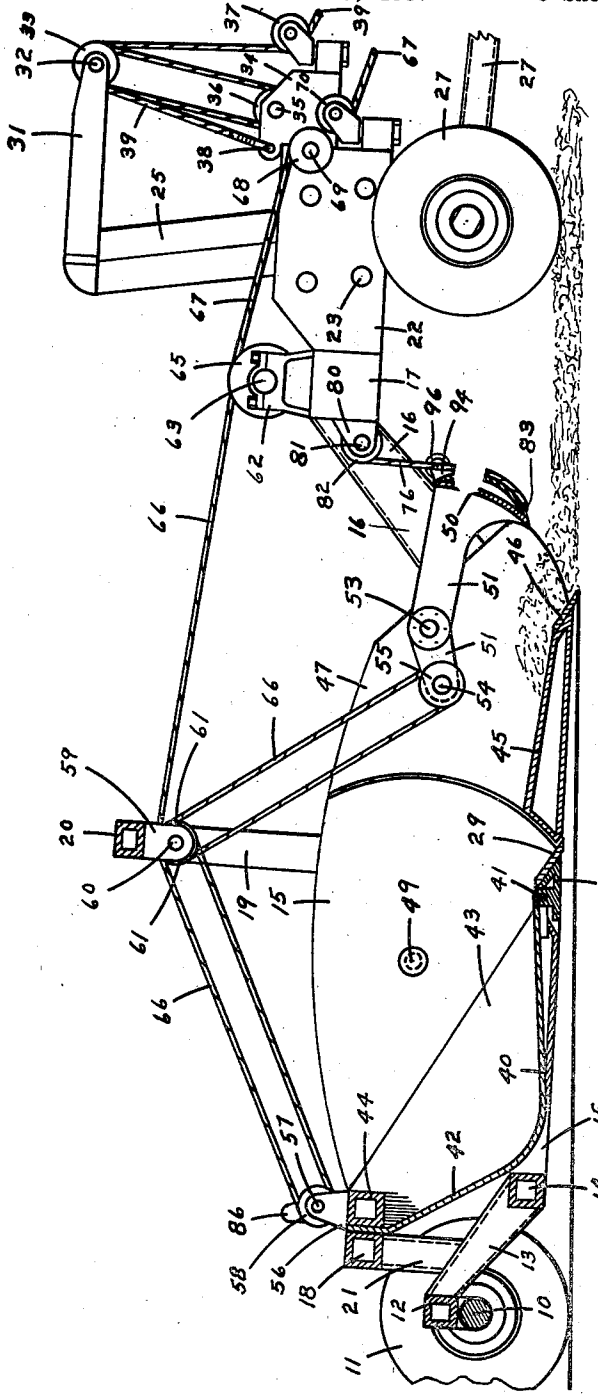


FIG. 4

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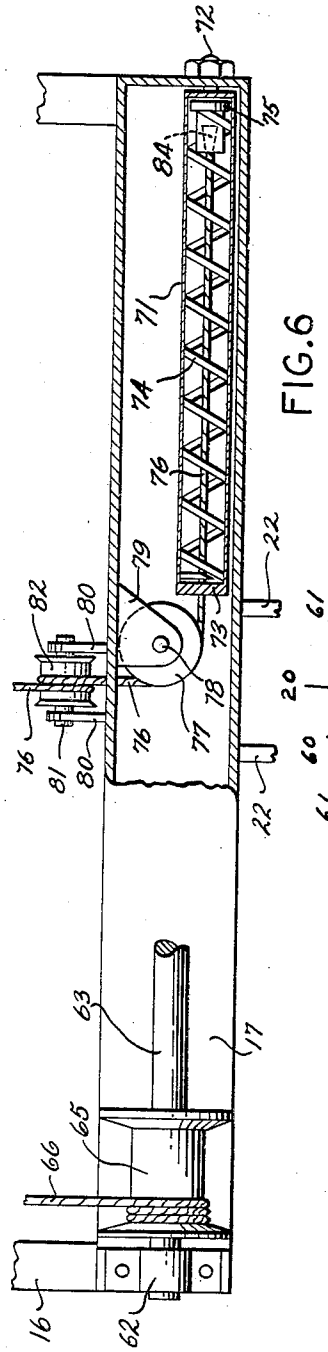


FIG. 6

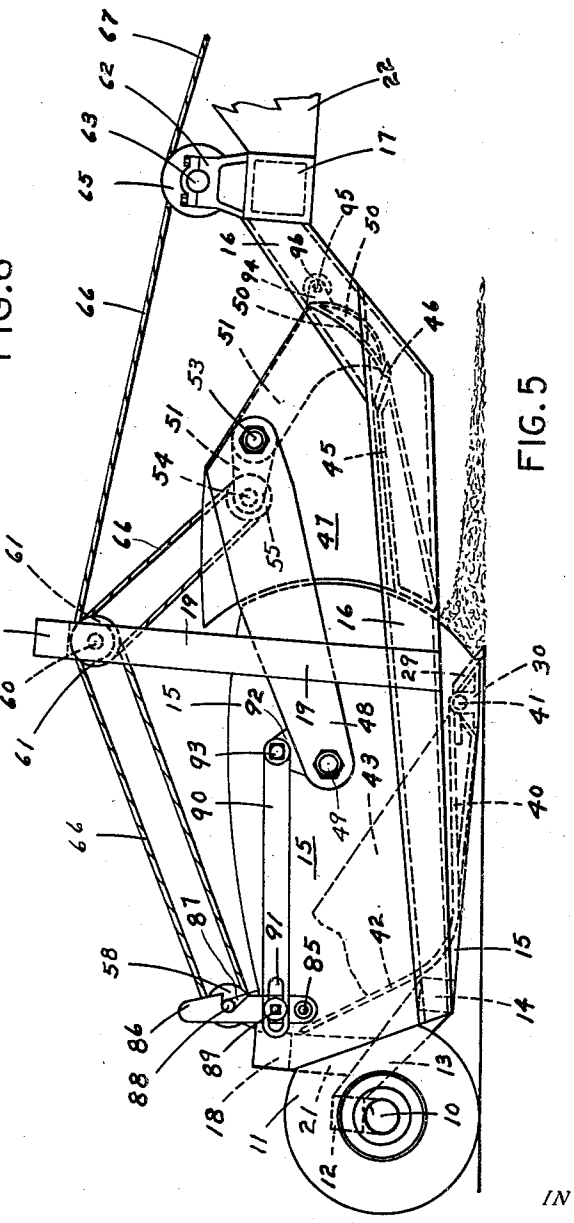


FIG. 5

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Patented July 4, 1939

2,164,461

UNITED STATES PATENT OFFICE

2,164,461

SCRAPER

Charles Le Bleu, Los Angeles, Calif.

Application February 19, 1937, Serial No. 126,629

15 Claims. (Cl. 37—126)

This invention relates generally to scrapers for excavating, transporting, leveling, grading etc.; and particularly to scrapers of large capacity by means of which large quantities of materials may be transported.

An object of the invention is the provision of a scraper having a plurality of carriers adapted to be loaded successively until all carriers are full.

Another object of the invention is to mount and operate the carriers whereby same may be loaded successively until all carriers are full, said carriers co-operating one with the other to retain the material until ready for discharge.

Another object of my invention is the provision in a scraper, of a large capacity carrier comprising a plurality of smaller carriers provided each with a scraper for scraping up material therefor, said carriers co-operating one with the other to retain the scraped up material until ready for discharge.

Still another object of the invention is the provision in a scraper, of a main carrier, an auxiliary carrier disposed forwardly of the main carrier and relative thereto, and a shutter operably disposed forwardly of the auxiliary carrier for selectively opening and closing the front end of the auxiliary carrier, said main carrier, auxiliary carrier and shutter co-operating to retain material until ready for discharge.

Still other objects, features and advantages of this invention will be apparent to those skilled in the art upon detailed perusal of the accompanying drawings and the following specifications, wherein I exemplify and describe my invention, but it is to be understood that my invention is susceptible to modification in the combination, correlation and construction of parts, members and features without departing from the spirit of the invention as defined in the annexed claims.

In the drawings similar characters of reference designate corresponding parts in the several views.

In the drawings:

Figure 1 is a plan view of my invention in carrying position.

Figure 2 is a side elevation in section of Figure 1, parts being in carrying position, taken on broken line 2—2.

Figure 3 is a fragmentary side elevation in section taken on broken line 3—3 showing the carriers disposed in discharge position.

Figure 4 is a side elevation in section taken on broken line 3—3 showing the carriers disposed in position for loading the auxiliary carrier.

Figure 5 is a side elevation of the scraper showing the carriers disposed in position for loading the main carrier.

Figure 6 is a plan view, partly in section, of the large transverse beam in front of the carriers showing the shutter operating mechanism therein.

Referring now to the drawings, 10 designates an axle having rolling supports 11 journaled thereon.

Disposed on axle 10 is a beam 12. Arms 13 are rigid at their rear ends with beam 12 and at their front ends with beam 14 rigid at its opposite ends each with the lower rear portion of a side wall 15. Rigid with each of the side walls 15 is a beam 16 rigid at their front ends each with an end of the large transverse beam 17. A beam 18 is rigid at its ends each with the upper rear portion of a side wall 15. Uprights 19 are rigid at their lower ends each with a beam 16 and are cross connected at their top ends by a horizontal beam 20. Vertical posts 21 are rigid at their lower ends with arms 13 and at their upper ends with beam 18. Rigid at their rear ends with the front side of transverse beam 17 are spaced apart members 22, carrying a plurality of relatively spaced pins 23 having journaled thereon rollers 24. Disposed between members 22 and confined by rollers 24 is a post 25 universally mounted at its lower end at 26 on a pony truck 27 adapted at 28 for connection to a draft device. Thus, post 25 is supported on rolling supports and members 22 are disposed for vertical movement on the post to determine the position of scraper 29 relative to the ground. Scraper 29 is detachably secured to a wedge shaped transverse beam 30 rigid at its ends each with a side wall 15.

Means for causing members 22 to move vertically on post 25 are provided as follows: Secured at its rear end to the upper end of post 25 are arms 31 carrying at their front ends a pin 32 having journaled thereon sheaves 33. Mounted on the front ends of members 22 is a bracket 34 carrying a pin 35 having journaled thereon sheaves 36 in operating alignment wth sheaves 33. Swivelly mounted on bracket 34 is a direction change sheave 37. Anchored at an end at 38 is a cable 39. Cable 39 passes thence back and forth about sheaves 33 and 36 and thence about direction change sheave 37, thence to a winding drum (not shown because conventional). Thus cable 39 may be operated to cause members 22 to move vertically on post 25.

The carriers will now be described. A main bottom 40, which I shall designate the main car-

rier, is disposed rearwardly of wedge shaped beam 30 and pivotally mounted thereon at 41 by a piano type hinge. The main carrier 40 includes a back plate 42 and brace plates 43. Rigid with the upper edge of the back plate 42 and rigid at its ends each with a brace plate 43, is a beam 44. Thus it is seen that the main carrier 40 is tiltably disposed behind the scraper 29 to receive material scraped up thereby. Disposed forwardly of the main carrier and scraper 29 is the auxiliary bottom 45 which I shall term the auxiliary carrier. Rigid with the auxiliary carrier 45 is a scraper 46. Auxiliary side walls 47 are rigid with auxiliary bottom 45, one at each side thereof. Rearwardly extending arms 48 are rigid at their front portions each with an auxiliary side wall 47 and are pivotally mounted at their rear ends each on a side wall 15 at 49. Thus, the auxiliary carrier 45 is mounted on the side walls 15 for swinging movement in a vertical plane. A shutter 50 is disposed forwardly of the auxiliary carrier 45 and is provided at its ends each with an arm 51. Each of the arms 51 are provided with a plate 52 carrying a trunnion 53. Trunnion 53 is journaled on auxiliary side walls 47. Thus the shutter 50 is pivotally mounted on side walls 47 for swinging movement in a vertical plane. Arms 51 are provided at their upper ends each with a pin 54 having journaled thereon sheaves 55.

Cross beam 44 rigid with the rear end of the main carrier is provided with two sets of brackets 56 carrying pins 57 having journaled thereon sheaves 58.

Cross beam 20, rigid at its ends each with the upper end of an upright 19, is provided with two sets of brackets 59 carrying pins 60 having journaled thereon sheaves 61.

Large cross beam 17 is provided with a plurality of bearings 62 having journaled therein a shaft 63. A driving drum 64 is rigid with shaft 63. A pair of driven drums 65 are rigid with shaft 63.

A pair of cables 66 are anchored at an end in any conventional manner to the rigid uprights 19 at any convenient point such for example as connections 66' on uprights 19 as shown in Fig. 2 of the drawings and pass thence each, back and forth about a set of relatively arranged sheave block assemblies 58 and 61, thence back and forth about sheave block assemblies 55 and 61, thence forwardly each to a winding drum 65 to which said cables 66 are anchored.

A cable 67 is anchored to and wound up on a winding drum 64 and passes thence forwardly to and then downwardly about sheave 68 journaled on pin 69 rigid with the front end of a member 22. Cable 68 passes thence downwardly thence forwardly about a direction change sheave 70 to a winding drum not shown (because conventional).

Shutter 50 is provided with means for raising it to open position as follows: Referring now especially to Figures 1, 2 and 6, it will be seen that the large cross beam 17 is provided with a tubular member 71, see Figure 6, attached at 72 to beam 17. Tubular member 71 is provided at its opposite end with a plug 73 having an opening therethrough substantially centrally thereof. Encased in tubular member 71 is a coil spring 74 provided at an end with a plug 75. Anchored in plug 75 at 84 is a cable 76 extending thence through the opening in the plug 73, thence about a sheave 77 journaled on a pin 78 carried by brackets 79 rigid with beam 17. Beam 17 also carries brackets 80 provided with a pin 81 having journaled thereon sheave means 82. Cable 76 passes thence from sheave 77 to sheave means 82 and is wound thereabout as shown and passed thence downwardly to a connection with shutter 50 as indicated at 83. When the spring 71 is in the position indicated in Figure 6, the shutter 50 would be substantially in the position indicated in Figure 4.

Latch means are provided to releasably secure the main carrier 40 against movement toward discharge position until the auxiliary carrier has been discharged, as follows: Side walls 15 are each provided with pins 85, see Figure 5, having pivotally mounted thereon an upstanding latch arms 86. Rigid with the main carrier 40 on beam 44, see Figure 1, are brackets 87 having projections 88 rigid therewith. Referring again to Figure 5, latch arms 86 are adapted as shown to engage projections 88, and means are provided for disengaging latch arm 86 and projection 88 as follows: Latch arms 86 are provided with projecting pins 89. Control bars 90 are provided with elongated openings 91 in their rear ends adapted to receive projecting pins 89. Arms 49 are provided with brackets 92 to which the forward end of control bars 90 are pivotally secured at 93. Thus, when the auxiliary carrier has been raised to the position indicated in Figure 3, control bars 90 will have moved rearwardly until the forward end of the elongated openings 91 have contacted pins 89 and moved latch arms 86 to the disengaged position of Figure 3, after which the main carrier may be moved to discharge position.

Mounted on each end of shutter 50 and relative to cable 66 is a bracket 94 carrying a pin 95 having journaled thereon, a roller 96 the function of which will be described under operation.

Operation of the device will now be described.

Being in the carrying position of Figure 2, to discharge the carriers by causing them to assume the position of Figure 3, cable 67 is operated to unwind cable from winding drum 64 and thus rotate shaft 63 and winding drums 65 in a clockwise direction resulting in winding up cables 66 on winding drums 65. The winding up of cables 66 will raise the auxiliary carrier 45 to the position shown in Figure 3 in which position material may spill outwardly therefrom. Raising the auxiliary carrier 45 from the position of Figure 2 to that of Figure 3 will result in moving latch arm 86 from engagement with projection 88 and cable 66 may be further wound up to dispose the main carrier in the discharge position of Figure 3. Thus means is applied to the carriers to cause their discharge successively.

The device being in the position of Figure 3, the carriers may be caused to again assume the position of Figure 2 by releasing cable 67 and thus permitting the winding drums to rotate in a counter clockwise direction until the carriers again rest in the position of Figure 2.

The device being in the position of Figure 2, it may be caused to assume the loading position of Figure 4 as follows: Cable 67 is again released thus allowing spring 74 to expand, spring 74 being in a compressed state in Figures 2 and 3, resulting in a force being applied to cable 76 to raise the shutter 50. Cable 39 may be operated to lower the front end of the main supporting structure until scraper 46 is in scraping contact with the surface to be treated as indicated in Figure 4. In this position, Figure 4, the scraper is drawn across a surface to be treated until the

auxiliary carrier is loaded with material. Cables 66 are then wound up resulting in first closing the shutter 58 and subsequently raising the auxiliary carrier to the position of Figure 5, and cable 39 may at the same time be operated to lower the scraper 29 to the position of Figure 5, in which position the scraper continues to move across the surface to be treated until the main carrier is loaded, at which point cables 66 may be operated to lower the auxiliary carrier to close the opening between scraper 29 and the rear end of the auxiliary carrier 45, and cable 39 may be operated to raise the scrapers from contact with the surface to be treated and again dispose the loaded device in the position of Figure 2.

From the foregoing description it is apparent that I have exemplified and described such a device as substantially fulfills the objects of the invention as set forth.

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

1. In a scraper, a main carrier, an auxiliary carrier open at both ends and disposed forwardly of the main carrier in operating relation thereto, a scraper disposed at the front end of each carrier for scraping up material, both carriers being adapted to discharge onto the ground, and common means applied to the carriers to cause same to discharge successively.

2. In a scraper, a main carrier, a scraper disposed at the front end of the main carrier for scraping up material therefor, an auxiliary carrier, open at both ends and disposed forwardly of the main carrier, a scraper disposed at the front end of the auxiliary carrier for scraping up material therefor, means mounting the auxiliary carrier in front of the main carrier for movement relative thereto, both of said carriers being adapted to discharge onto the ground at their adjacent ends, and common operating means associated with said carriers, said common operating means being applied to the carriers to control the discharging of same successively.

3. In a scraper, a main carrier, a scraper disposd at the front end of the main carrier for scraping up material therefor; an auxiliary carrier, open at both ends, in front of the main carrier; a scraper disposed at the front end of the auxiliary carrier for scraping up material therefor; means mounting the auxiliary carrier in front of the main carrier for cooperating movement relative thereto; both carriers being adapted to discharge onto the ground at their adjacent ends; and a common means applied to the carriers to control the discharging of same successively.

4. In a scraper, a main carrier, a scraper disposed at the front end of the main carrier for scraping up material therefor, an auxiliary carrier open at both ends, a scraper disposed at the front end of the auxiliary carrier for scraping up material therefor, means mounting the auxiliary carrier in front of the main carrier for co-operating movement relative thereto, both carriers being adapted to discharge onto the ground at their adjacent ends, and a common means applied to the auxiliary carrier and the main carrier to control the discharging of same successively in the order last above mentioned.

5. In a scraper, a main carrier, a scraper disposed at the front end of the main carrier, an auxiliary carrier open at both ends, a scraper disposed at the front end of the auxiliary carrier, a shutter adapted to open and close the front end of the auxiliary carrier disposed in front thereof and mounted for co-operating movement relative thereto, means mounting the auxiliary carrier in front of the main carrier for co-operating movement relative thereto, both carriers being adapted to discharge onto the ground at their adjacent ends, and means applied to the carriers to control the discharging of same successively.

6. In a scraper, adapted to be moved across a surface to be treated for scraping up material therefrom, a main carrier having an integral bottom and rear wall, a first scraper disposed at the front end of the main carrier for scraping up material therefor, an auxiliary carrier open at both ends and provided with a second scraper at its front end for scraping up material therefor, means mounting the auxiliary carrier in front of the main carrier for co-operating movement relative thereto, said auxiliary carrier normally constituting an extension of the main carrier closing the same, and common operating means associated with both of said carriers, said common operating means being adapted to raise the same to expose said first scraper and the main carrier to the on coming material.

7. In a scraper adapted to be moved across a surface to be treated for scraping up material therefrom, a main carrier having an integral bottom and rear wall, a first scraper disposed at the front end of the main carrier for scraping up material therefor; an auxiliary carrier open at both ends and provided with a second scraper at its front end for scraping up material therefor, means mounting the auxiliary carrier in front of the main carrier for cooperating movement relative thereto, said auxiliary carrier normally constituting an extension of the main carrier to prevent material spilling outwardly therebetween, common operating means asociated with both of said carriers, said common operating means being adapted to raise the auxiliary carrier when same has been loaded for exposing said first scraper and the main carrier to the on coming material for loading the main carrier.

8. In a scraper adapted to be moved across a surface to be treated for scraping up material therefrom, a main carrier having an integral bottom and rear wall, a first scraper disposed at the front end of the main carrier for scraping up material therefor, an auxiliary carrier open at its front and rear ends and provided with a second scraper at its front end for scraping up material therefor, means mounting the auxiliary carrier in front of the main carrier for co-operating movement relative thereto, both carriers being adapted to be disposed in load gathering position, said auxiliary carrier normally constituting an extension of the main carrier closing the front end thereof in loading position of the auxiliary carrier, common operating means associated with both of said carriers, said common operating means being adapted to raise the auxiliary carrier when same has been loaded for exposing said first scraper and the main carrier to the on coming material for loading the main carrier.

9. In a scraper adapted to be moved across a surface to be treated for scraping up material therefrom, a first carrier having an integral bottom and rear wall open at its front end, a first scraper disposed at the front end of the first carrier for scraping up material therefor, a second carrier open at its front and rear ends and provided with a second scraper at its front end for scraping up material therefor, means mounting

the second carrier in front of the first carrier for movement relative thereto, both carriers being adapted to be disposed in load gathering position, common operating means associated with both carriers for moving said carriers to their various relative positions with relation to each other, said second carrier normally constituting an extension of the first carrier closing the front end thereof in loading position of the second carrier, said common operating means raising the second carrier when same has been loaded for exposing said first scraper and said first carrier to the on coming material for loading the first carrier.

10. In a scraper, a main supporting structure including spaced apart side walls as rigid integral parts thereof, a first carrier having an integral bottom and rear wall tiltably disposed between the side walls, a first scraper disposed with the side walls and said first carrier forwardly of said first carrier, a second carrier open at its front and rear ends and provided with a second scraper at its front end for scraping up material therefor, means mounting the second carrier in front of the first carrier for movement relative thereto, both carriers being adapted to be disposed in load gathering position, common operating means associated with both carriers for moving said carriers to their various relative positions with relation to each other, said second carrier normally constituting an extension of said first carrier closing the front end thereof in load gathering position of said second carrier, said common operating means raising said second carrier when same has been loaded for exposing said first scraper and said first carrier to the on coming material for loading said first carrier.

11. In a scraper, a main supporting structure including spaced apart side walls as rigid integral parts thereof, a first scraper rigid with the side walls, a first carrier having an integral bottom and rear wall tiltably disposed between the side walls behind the first scraper, a second carrier open at its front and rear ends and provided with a second scraper at its front end for scraping up material therefor, means mounting the second carrier in front of the first carrier for movement relative thereto, both carries being adapted to be disposed in load gathering position, common operating means associated with both carriers for moving said carriers to their various relative positions with relation to each other, said second carrier normally constituting an extension of said first carrier closing the front end thereof in load gathering position of said second carrier, said common operating means raising said second carrier when same has been loaded for exposing said first scraper and said first carrier to the oncoming material for loading said first carrier.

12. In a scraper, a main supporting structure including spaced apart side walls as rigid integral parts thereof, a first scraper rigid with the side walls, a first carrier having an integral bottom and rear wall tiltably disposed between the side walls behind the scraper, a second carrier open at its front and rear ends and provided with a second scraper at its front end for scraping up material therefor, means mounting the second carrier in front of the first carrier for movement relative thereto, said second carrier normally constituting an extension of the first carrier to prevent material spilling outwardly therebetween, both carriers being adapted to discharge onto the ground at their adjacent ends, and common operating means applied to the carriers to control the discharging of same successively.

13. In a scraper, a first carrier having an integral bottom and rear wall open at its front end, a second carrier open at both ends and disposed in front of the first carrier and normally constituting an extension thereof, a scraper disposed at the front end of each carrier for scraping up materials, means mounting the second carrier in front of the first carrier for movement relative thereto, both carriers being adapted to dischage onto the ground at their adjacent ends, and common operating means applied to said carriers to control the discharging of same successively.

14. In a scraper of the type described having a main carrier, a scraper disposed at the front end of the main carrier for scraping up material therefor, an auxiliary carrier open at both ends, means mounting the auxiliary carrier in front of the main carrier for cooperating movement relative thereto, said carriers being adapted to discharge at their adjacent ends, shutter means adapted to open and close the front end of the auxiliary carrier disposed in front thereof and mounted for movement relative thereto and common means in combination with the carriers whereby the carriers will be discharged successively.

15. In a scraper of the type described, a main carrier, an auxiliary carrier open at both ends and disposed forwardly and in operative relationship thereto, a scraper disposed at the front end of each carrier for scraping up material, both carriers being adapted to discharge on to the ground at their adjacent ends, shutter means adapted to open and close the front end of the auxiliary carrier, and common means in combination with the carriers whereby the carriers will be discharged successively.

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