

(No Model.)

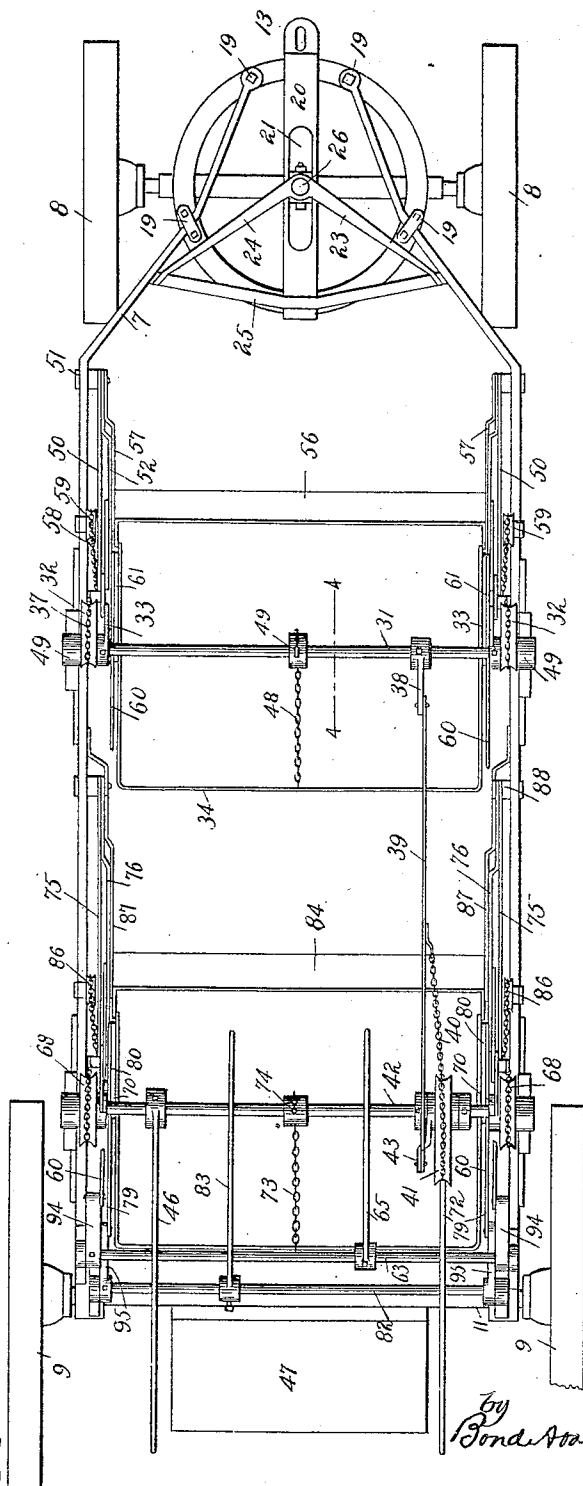
4 Sheets—Sheet 1.

T. R. McKNIGHT.
WHEELED SCRAPER.

No. 529,564.

Patented Nov. 20, 1894.

Fig. 1.



Witnesses.
St. M. R. R. R.
Wm. S. R. R.

Inventor.
Thomas R. McKnight.
By Bond, Adams, Piers and Jackson
His Atty.

(No Model.)

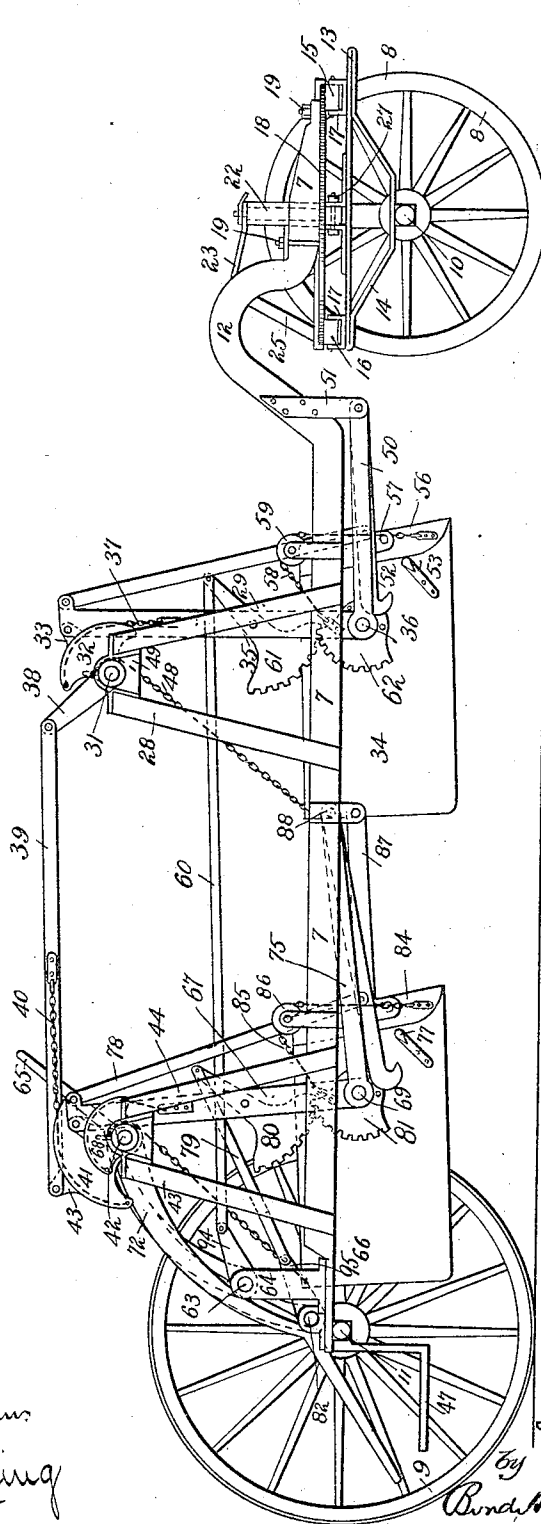
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Fig. 2.



Witnesses.

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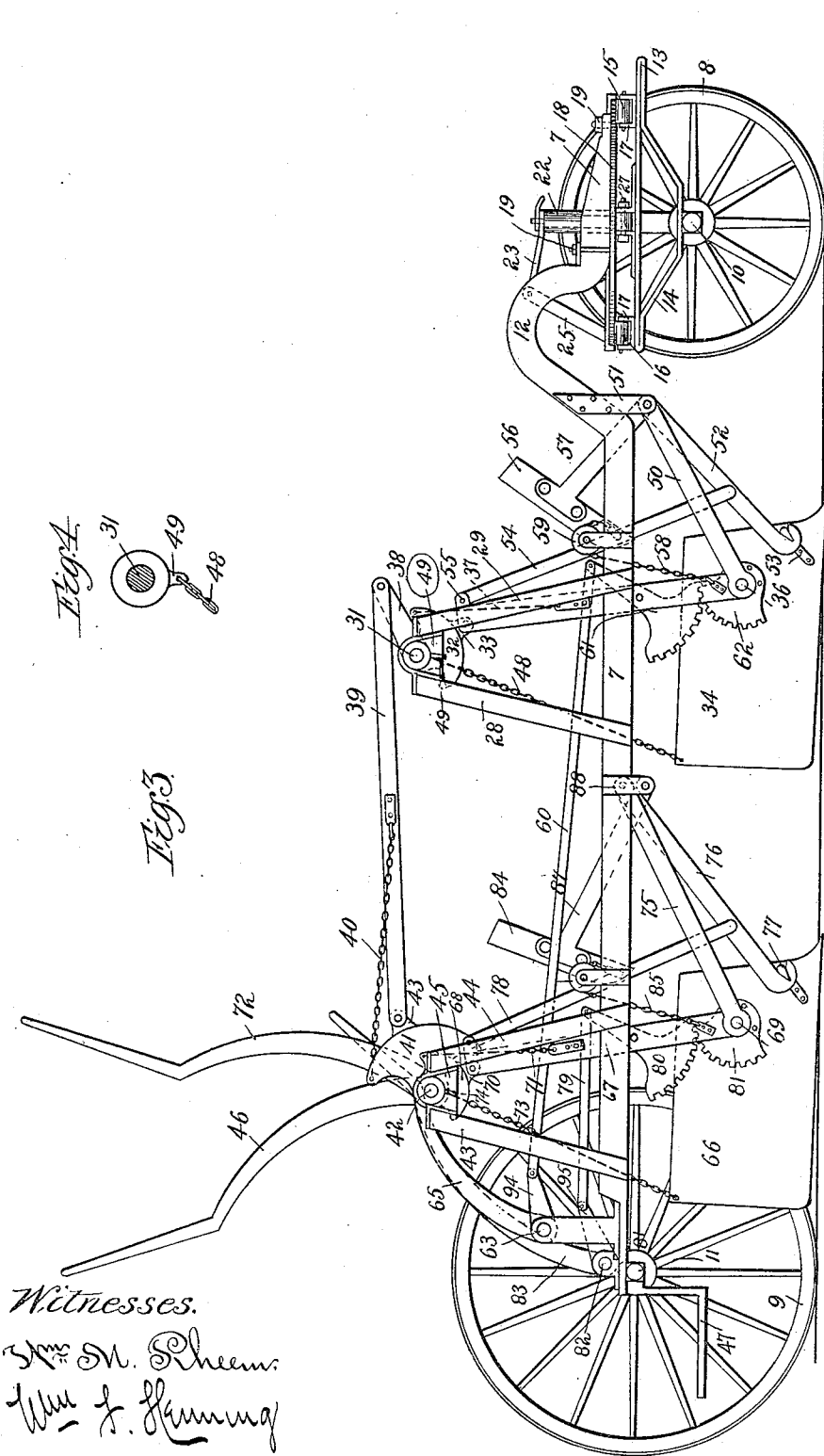
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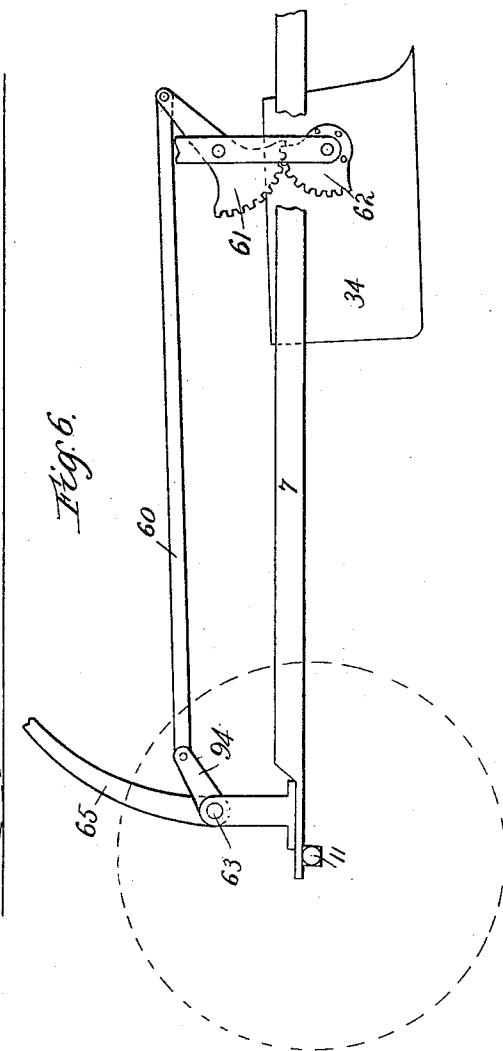
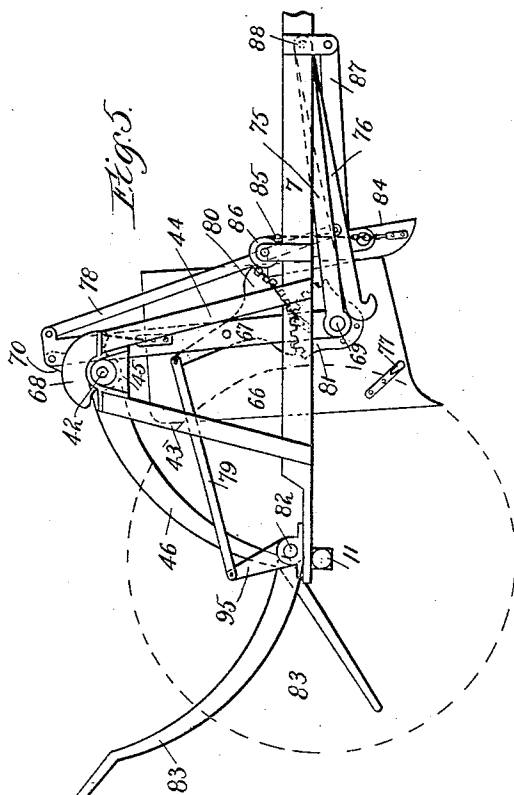
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4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

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WHEELED SCRAPER.

SPECIFICATION forming part of Letters Patent No. 529,564, dated November 20, 1894.

Application filed January 22, 1894. Serial No. 497,666. (No model.)

To all whom it may concern:

Be it known that I, THOMAS R. MCKNIGHT, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Wheeled Scrapers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view. Fig. 2 is a side elevation showing the scraper loaded. Fig. 3 is a side elevation showing the scraper in position for loading. Fig. 4 is a detail, being a vertical section on line 4—4 of Fig. 1. Fig. 5 is a detail, showing the position of one of the scraper bowls during the process of dumping; and Fig. 6 is a detail, showing a modified form of apparatus for dumping the scraper bowls.

My invention relates to wheeled scrapers used in road making, grading, &c., and for other similar purposes, and has to do more particularly with scrapers which are provided with bowls so constructed that they will be adapted to scrape up the earth so that it may be carried off and dumped at some convenient point, thereby saving the extra work and expense of loading the earth into wagons for removal. As frequently heretofore constructed scrapers of this description have been provided with a single bowl, and as such bowls could not be made large enough to contain more than part of a wagon load of dirt it has not been practicable to use such scrapers for transporting the dirt except for short distances, it being found to be more economical to load the dirt into wagons when it had to be transported any considerable distance. The re-loading of the dirt is, however, attended with considerable expense.

The principal object of my invention is to provide an improved scraper which will have a capacity equal to that of the ordinary dirt wagon, so that the dirt may be scraped up and transported any distance within the limits practicable for a dirt wagon.

Another object of my invention is to provide means for dumping the load easily and without loss of time, thereby avoiding the objections due to the use of the ordinary dirt wagon, in which the operation of unloading is slow and laborious.

My invention also has for its object to provide certain other improvements in the construction of road scrapers which will be hereinafter pointed out.

I accomplish the objects of my invention as hereinafter specified and as illustrated in the drawings. That which I regard as new will be set forth in the claims.

Broadly stated, my invention consists in two or more scraper bowls supported behind one another by a suitable carriage, and arranged to be operated by suitable mechanism for the purpose either of scraping the dirt, of transporting it, or of dumping it.

In the accompanying drawings I have shown a scraper having two scraper bowls, one being arranged directly behind and in line with the other, but for certain purposes three or more scraper bowls might be provided, and, instead of arranging them one behind the other, they might be arranged so as to project laterally beyond each other, or be adjusted in other ways, and therefore I do not wish to limit myself either to a scraper having the number of bowls herein shown, nor to the specific arrangement of such bowls, as herein illustrated.

In the drawings,—7 indicates the frame of the machine, which is mounted upon front wheels 8 and rear wheels 9.

10 indicates the front axle, and 11 the rear axle. The frame 7 is provided at its forward end with a goose neck 12, as shown in Fig. 2.

13 indicates a plate, which is supported upon braces 14 carried by the forward axle 10, as shown in Fig. 2. The plate 13 is located centrally of the axle, and is arranged at right angles thereto. The plate 13 carries, upon its upper side and near its opposite ends, rollers 15—16 journaled in suitable boxes 17, as shown in Fig. 2.

18 indicates a circle or fifth wheel, which is secured to the forward end of the frame 7, preferably by bolts 19, and is arranged to rest upon the rollers 15—16, as shown in Fig. 2, thus providing a firm bearing for the forward end of the frame.

20 indicates a bar, which is secured upon the circle 18 over the plate 13, as shown in Fig. 1. The bar 20 is provided with a central slot 21, as shown in Fig. 1.

22 indicates a sleeve, which is arranged in a vertical position over the central point of the forward axle 10, and is secured rigidly to the frame 7 by braces 23—24—25, as shown in Figs. 1 and 2.

26 indicates the king bolt, which is pivoted by a pivot 27 to the plate 13, and extends upward through the sleeve 22, as shown in Fig. 2. The pivot 27 is in line with the plate 13, so that a lateral oscillation of the forward axle or of the forward part of the frame 7 is permitted, thereby permitting the scraper to adjust itself to the inequalities of the ground.

28—29 indicate standards which rise at the forward portion of the frame 7, a pair being located at each side of said frame. The standards 28—29 are connected at their upper ends by a suitable plate 30, the plates 30 at opposite sides of the machine forming bearings for a shaft 31 which extends across the machine, as shown in Fig. 1. The shaft 31 carries near each end a segment 32 having a groove in its periphery, and having also a lug 33 arranged about midway of such segment.

34 indicates a scraper bowl, which is supported from the shaft 31 by means of bars 35, the lower ends of which are pivotally connected by pivots 36 to the sides of the bowl near its forward portion, the upper ends of said bars being pivotally connected to the lugs 33. By rocking the shaft 31 the forward portion of the bowl may be raised or lowered.

37 indicates chains, one of which is connected to the rear portion of each segment 32 and to the adjacent bar 35 at a point intermediate between the ends of said bar, as best shown in Fig. 2. The chains 37 are adapted to lie in the grooves in the segments, the arrangement being such that by rocking the shaft 31 the bars 35 may be raised or lowered by means of the chains 37 acting through the bars 35.

It will be seen from the foregoing description that both the bars 35 and chains 37 act to elevate or lower the forward portion of the scraper bowl. The object of using both devices is to secure the greatest possible leverage in raising the bowl, and at the same time to provide means for forcibly depressing the forward edge of the bowl, as is necessary in grading. As shown, the chains 37 are connected to the segments 32 at points nearer to the shaft than the points where the bars 35 are pivoted to the lugs 33. Therefore when the shaft 31 is rotated or rocked, as will be hereinafter set forth, a greater leverage is secured through the chain than could be secured through the bars 35. For the purpose of raising the scraper bowl, therefore, the best results are secured through the chains 37, but since the chains are inoperative for the purpose of forcing the scraper bowl down, the bars 35 are introduced for the purpose of affording a rigid connecting device which will enable the operator to forcibly depress the scraper bowl when he so desires.

The shaft 31 is rocked for the purpose of

raising or lowering the forward portion of the scraper bowl by means of an arm 38 which is rigidly connected to said shaft, and is connected by a connecting bar 39 and chain 40 to a segment 41 loosely mounted upon a shaft 42 located at the rear of the machine, as shown in Fig. 1. The bar 39 is connected to a lug 43 rigidly secured to the segment 41, as shown in Fig. 1, the arrangement of the chain 40 and rear connection of the bar 39 being similar to that in which the bars 35 and chains 37 are connected to their respective segments 32. The shaft 42 is supported by suitable standards 43—44 and connecting plates 45, which are substantially similar to the standards 28—29 and plates 30.

46 indicates a lever, which is rigidly connected to the segment 41 and is arranged in a convenient position to be manipulated by the operator, who stands upon a platform 47 arranged at the rear of the machine, as shown in Fig. 3.

For the purpose of supporting the rear of the scraper bowl, both during the process of loading and after loading, I provide a chain 48 the lower end of which is centrally connected to the rear of the scraper bowl, as shown in Fig. 1, its upper end being connected to an arm 49 centrally projecting from the shaft 31, as best shown in Figs. 3 and 4. The arrangement of the arm 49 is such that when the shaft 31 is rocked to lower the bowl into position for loading said arm will be on the under side of said shaft, as shown in Fig. 3, thereby permitting the rear of the scraper bowl to descend until the bottom of the bowl arrives at a suitable position for loading. When the shaft 31 is rocked to move the bowl into the position shown in Fig. 2, which it assumes when used for transporting the load, the arm 49 will be moved forward and upward, thereby exerting an upward pull upon the chain 48 and raising the rear portion of the scraper bowl into the proper position.

50 indicates braces, which extend from hangers 51 secured to the forward portion of the frame 7 back to the pivots 36 to which they are connected.

52 indicates hooks, one of which is pivoted to each hanger 51, and extends backward engaging hooks 53 secured to each side of the scraper bowl, as shown in Fig. 3. The hooks 52 serve to hold the scraper bowl in position when loading. The hooks 52 are elevated to move them out of the way when the scraper bowl is loaded, by means of connecting rods 54 which are connected to said hooks and to lugs 55 projecting from the upper ends of the bars 35, as shown in Fig. 2. By this arrangement when the bars 35 are moved upward the hooks 52 will be moved upward out of the way, and when said bars are moved downward the hooks 52 will also be moved downward into operative position.

To avoid spilling the load from the scraper bowls I provide each bowl with an end gate 56 which is adapted to fit across the forward

end of the bowl, as shown in Figs. 1 and 2. The end gate 56 of the forward scraper bowl is pivotally connected by bars 57 to the hangers 51, and is raised or lowered by means of chains 58 which are connected to the lower ends of the bars 35 or to the scraper bowl and to the lower edges of the end gate, as shown in Fig. 3. The chains 58 run over pulleys 59 mounted upon the sides of the frame 7. By this construction when the scraper bowl is depressed the end gate 56 will be elevated, thereby exposing the front of the bowl, and when the bowl is elevated the end gate will be lowered into position to close the front of the bowl.

The forward scraper bowl is dumped by means of rods 60, the forward ends of which are connected to segmental racks 61 pivoted to the bars 35. The segments 61 are adapted to mesh with fixed segments 62 carried by the scraper bowl, as shown in Fig. 2. The rear ends of the rods 60 are connected to arms 94 carried by a shaft 63 mounted in brackets 63 rising from opposite sides of the rear portion of the frame 7, as shown in Figs. 1 and 3. By rocking the shaft 63, therefore, the segments 61 may be rocked, and the scraper bowl dumped. The shaft 63 is rocked for the purpose of dumping the scraper by means of a lever 65.

Arranged back of the forward scraper bowl 34 is a second scraper bowl 66, which is connected by bars 67 to segments 68 fixedly mounted upon the shaft 42. The arrangement of the bars 67 is similar to that of the bars 35, they being pivoted at their lower ends by pivots 69 to the sides of the scraper bowl, their upper ends being pivotally connected to lugs 70 upon the segments 68. The bars 67 are also connected to the segments 68 by chains 71, arranged similarly to the chains 37.

72 indicates a lever for rocking the shaft 42.

73 indicates a chain, which is connected to the rear of the scraper bowl 66 at its lower end, and at its upper end to an arm 74 carried by the shaft 42, which arm is similar to the arm 49, the operation of the chain 73 being similar to that of the chain 48.

75 indicates braces pivoted to the pivots 69 and to the sides of the frame 7, as shown in Fig. 3.

76 indicates hooks, which are also pivoted to the sides of the frame 7, and arranged to engage hooks 77 carried at the sides of the scraper bowl 66, as shown.

78 indicates connecting rods for operating the hooks 76, which rods are arranged similarly to the hooks 54. The rear bowl 66 is dumped by means of rods 79, the forward ends of which are connected to segments 80 pivoted to the bars 67 and adapted to mesh with segments 81 fixedly secured to the sides of the scraper bowl. The rear ends of the rods 79 are connected to arms 95 carried by a shaft 82 arranged at the rear of the machine. The shaft 82 is adapted to be rocked by a lever 83.

By rocking the shaft 82, therefore, the rear bowl may be dumped.

84 indicates an end gate for the scraper bowl 66, the operation of which is similar to that of the gate 56, it being operated by chains 85 connected to the lower ends of the bars 67 and to the lower portions of the gate 84, and passing over a pulley 86. The gate 84 is pivotally connected by bars 87 to hangers 88 arranged at the opposite sides of the frame 7.

From the foregoing description it will be seen that the operator, standing upon the platform at the rear of the machine, has full control of both scraper bowls and may load them or dump them together or separately at pleasure; and as the load which may be carried by my improved machine may equal or exceed that of the average dirt wagon the use of dirt wagons may be dispensed with, as the scrapers themselves can be used for carrying the load to any distance for which it will be practicable to use a wagon. The labor of loading is also very greatly reduced, so that a material saving in that respect is effected.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with supporting devices, and pivotally mounted segments, as 32, carried thereby, of bars, as 35, pivotally connected to said segments, a scraper bowl pivotally connected to said bars, and flexible connections, as 37, connected to said segments at a point nearer to the axis of said segments than the point of connection of the bars 35 to said segments, substantially as described.

2. The combination with supporting devices, of a shaft 31, an arm 49 projecting therefrom, a flexible connection 48 connected at its upper end to said arm, a scraper bowl connected at its rear end to the lower end of said flexible connection, means for raising and lowering the forward portion of said scraper bowl by rocking said shaft 31, and for rigidly holding it in its lowered position, substantially as described.

3. The combination with supporting devices, of a shaft 31, segments 32 mounted thereupon, a scraper bowl, bars 35 connecting said segments to said scraper bowl, hooks 52, hooks 53 carried by said scraper bowl and adapted to be engaged by said hooks 52, and bars 54 connected to said hooks 52 and to the upper end of said bars 35, substantially as described.

4. The combination with a carriage, of a scraper bowl 34, means for raising and lowering said scraper bowl, an end gate 56 pivotally supported by said carriage, pulleys 59, and a chain 58 connected to said scraper bowl and to the lower portion of said end gate, substantially as described.

5. The combination with a circle 18, of a plate 13, rollers 15—16 mounted thereupon, a sleeve 22, and a king bolt pivotally connected to said plate 13 and adapted to fit in said sleeve, substantially as described.

6. The combination with a carriage frame and a circle plate 18, rigidly secured thereto, of a plate 13 arranged above and secured to the axle, and forming a support for the circle
5 plate 18, and a king-bolt pivotally connected to said plate and connecting said circle-plate thereto, substantially as described.

7. The combination with a carriage frame and a circle plate rigidly secured thereto, of

a support secured to the axle, and a king-bolt 10 pivoted to said support above the axle and connecting said support to said circle plate, substantially as described.

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Witnesses:

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