

Aug. 11, 1936.

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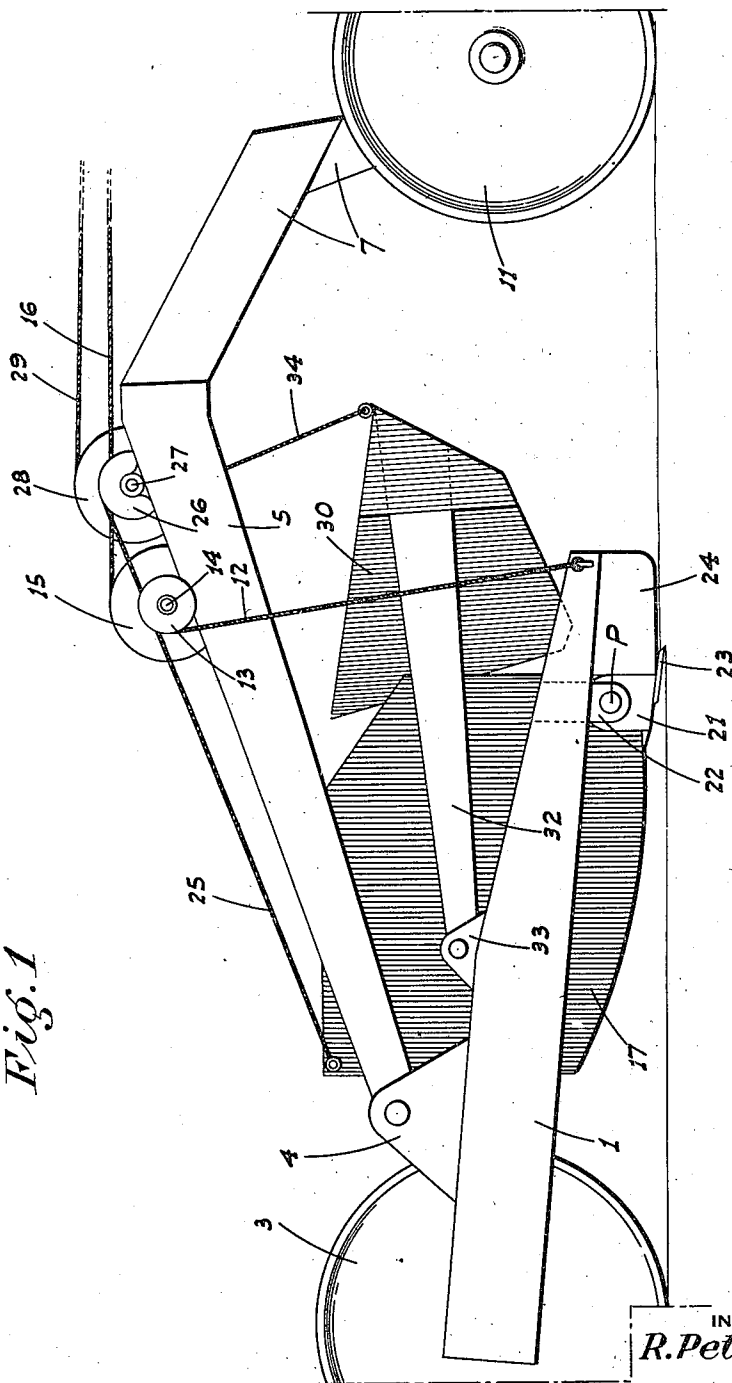
2,050,856

CARRIER SCRAPER

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4 Sheets-Sheet 1

Fig. 1



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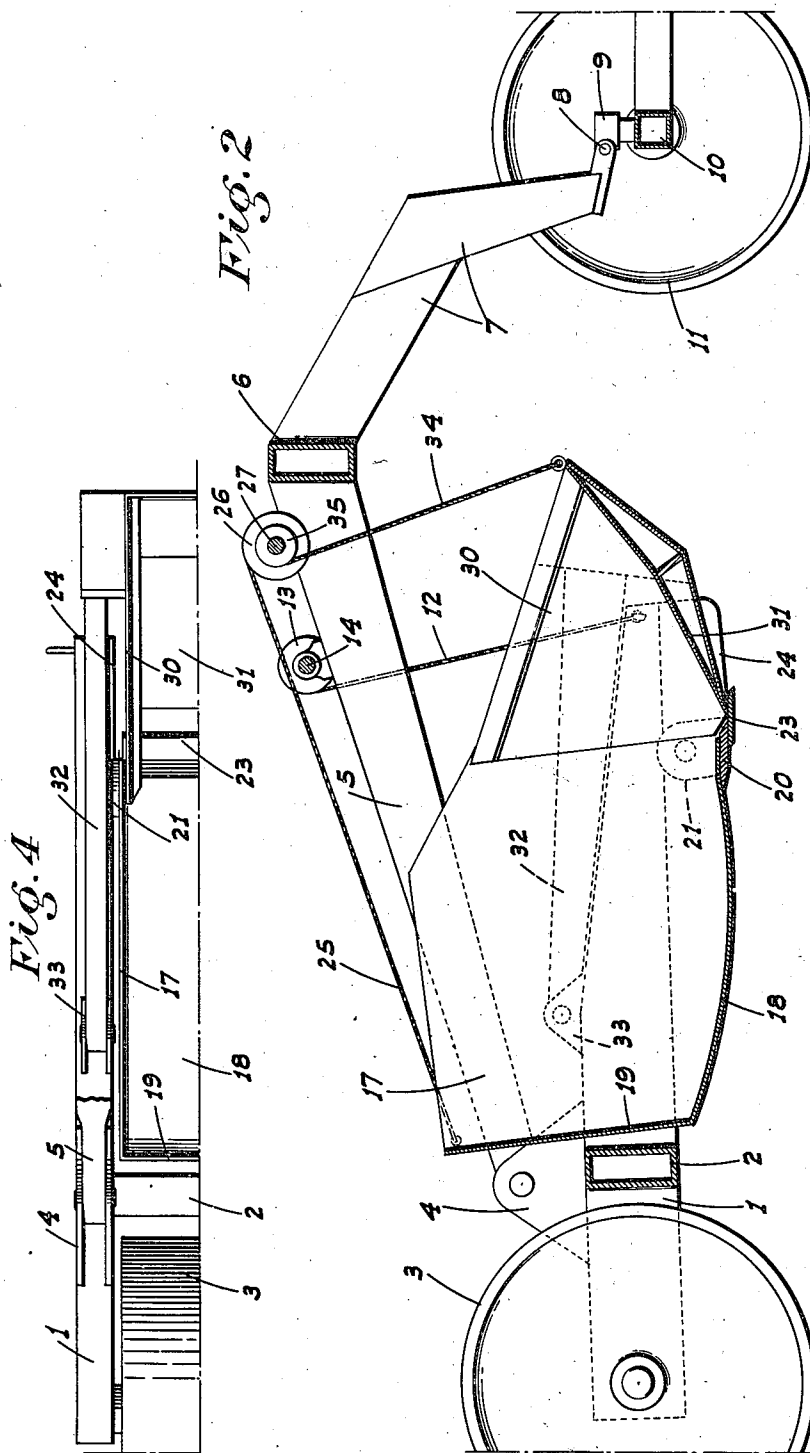
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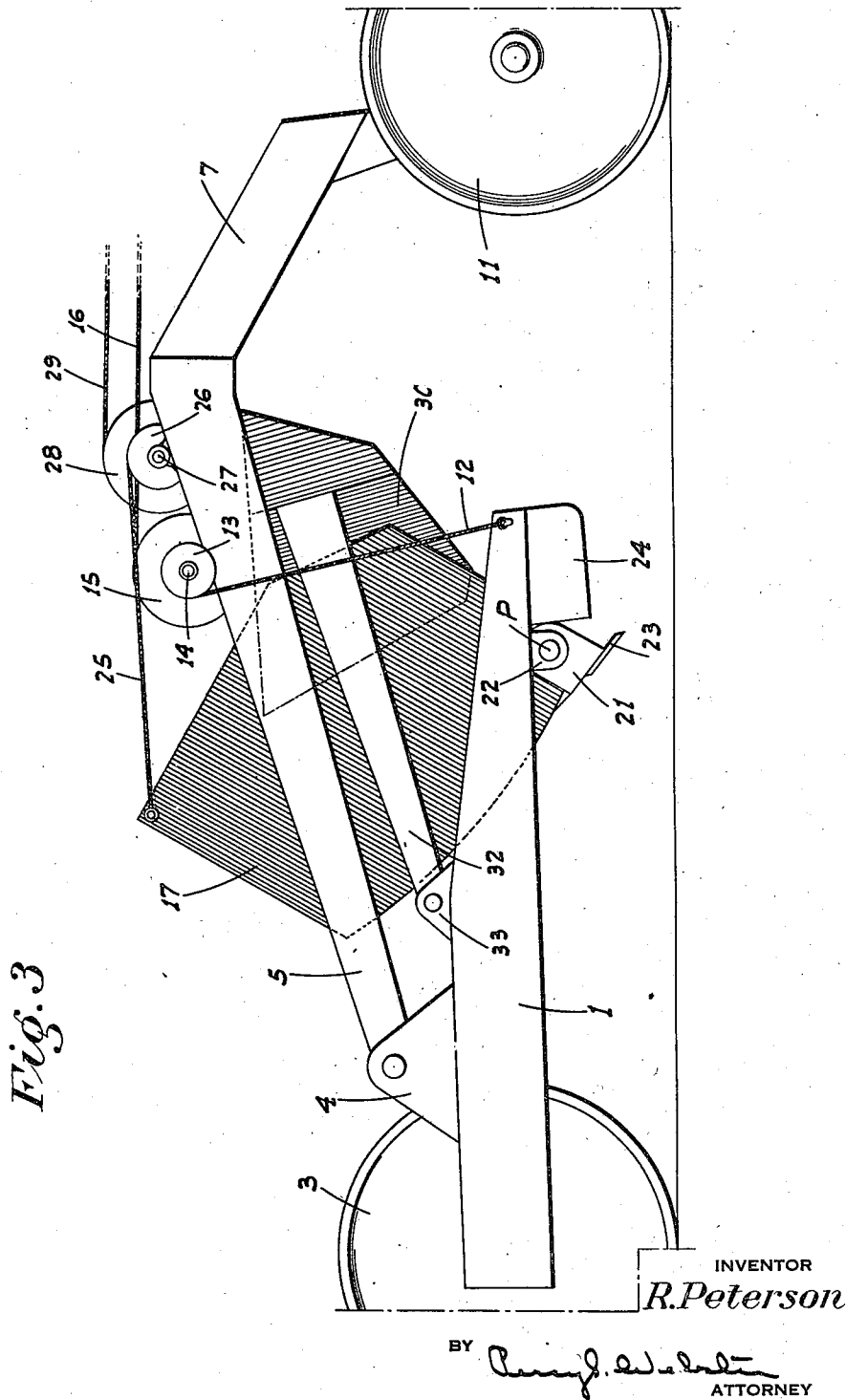
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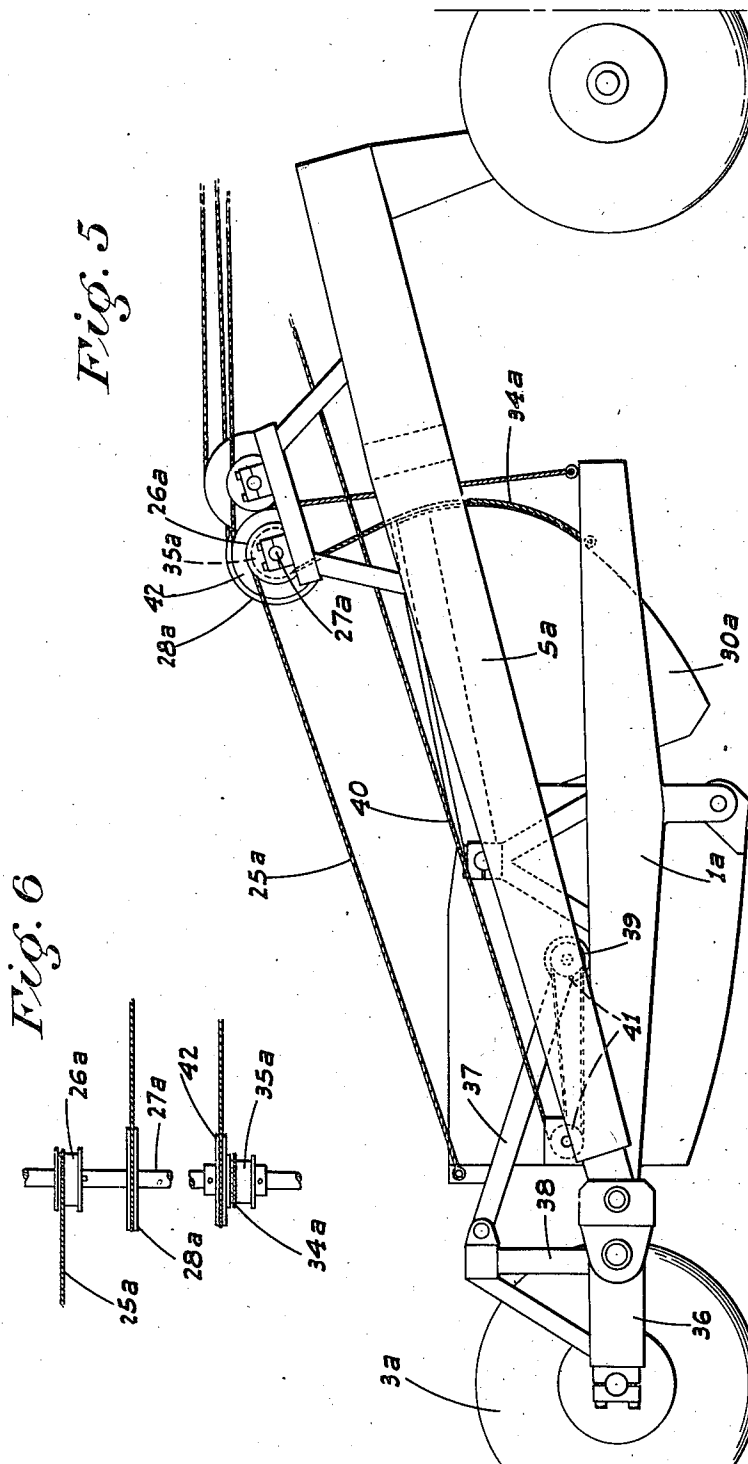
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CARRIER SCRAPER

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4 Claims. (Cl. 37—126)

This invention relates to tractor drawn power controlled scrapers of the front-end dumping type, having a front-end apron preventing the load from spilling out of said end when it is being carried.

The main objects of my invention are to mount the bowl so that the pull of the tractor tends to push the digging blade into the ground instead of the reverse as is ordinarily the case; so that a very high clearance at both ends may be readily obtained when necessary in order to pass over large obstructions; and so that the blade of the bowl may be tilted to alter the cutting angle with the ground without materially altering the level of the blade or the depth of cut.

I have also mounted and arranged the apron in connection with the bowl in such a manner that while the dirt is effectively prevented from spilling, it cannot become jammed or clogged between the apron and bowl and prevent proper operation of the apron.

I have also arranged the apron control so that when the bowl is tilted to a dumping position, the apron will be automatically raised well clear of the bowl so as to offer no interference with rapid discharge of the dirt.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of the scraper in its digging position.

Figure 2 is a sectional elevation of the scraper in its transporting or dirt carrying position.

Figure 3 is a side elevation of the scraper in its dumping position.

Figure 4 is a fragmentary top plan view of the same.

Figure 5 is a side view of a modified form of the scraper.

Figure 6 is a fragmentary plan showing the separate bowl control drums.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes a pair of side beams rigidly connected near their rear end by a cross beam 2, and supported rearwardly of said cross beam by wheels

3. Adjacent the cross beam upstanding ears 4 are mounted on the beams 1, in which are pivoted the adjacent ends of upwardly sloping and forwardly extending beams 5 which are connected at their upper forward ends by a cross beam 6. From the beam 6 a rigid beam and arm structure,

indicated generally at 7, extends forwardly and downwardly at a relatively abrupt angle. At its lower end this structure is transversely pivoted as at 8 on a block 9 which is turnably mounted on a vertical axis on the transverse stationary axle 10 of the front wheel truck 11, which truck is adapted to be connected to the draw bar of a tractor. The beams 5, 6 and 7 together form a rigid and relatively high arch frame and will be so referred to hereinafter.

Vertical movement of the side beams 1 about the wheels 3 as an axis is controlled by suitable means such as cables 12 connected to the forward ends of the beams and extending forwardly on the outside of the beams 5 to and fastened on drums 13. These drums are mounted on a cross shaft 14 journaled on the beams 5, another drum 15 being also secured on the shaft 14. A cable 16 extends about and is anchored on the drum 15 and extends upwardly to a suitable power controlled device on the tractor.

The bowl of the scraper is disposed between the beams 1 and the arch frame and comprises side plates 17, a concavely curved bottom plate 18, and a rear circumferentially vertical plate 19. A heavy bar 20 extends across and under the front end of the bottom plate, being turned up at its ends to form ears 21 which are pivoted as at P on brackets 22 rigid with and depending from the under side of the beams 1. A ground engaging blade 23 is mounted on and extends forwardly from under the bar 20. Wings 24 rigid with the beams 1 ahead of the blade, normally cooperate with the adjacent portions of the side plates of the bowl and prevent dirt engaged by the blade 23 from passing around the side edges thereof and retain all such dirt between the side plates of the bowl.

Tilting of the bowl about the pivot P is controlled from the rear end of the bowl by suitable means. In the present instance such means is shown as cutting cables 25 connected thereto at the sides and back adjacent the top and extending to and about drums 26 mounted on a cross shaft 27 journaled on the beams 5. Another drum 28 is also mounted on said shaft, being attached to a cable 29 which also extends forwardly to the power device on the tractor. By means of this control the bowl may be tilted slightly to set the blade at any desired angle relative to the ground, or it may be swung upwardly and forwardly to a full dumping position, as shown in Figure 3. It will be noticed that the cables 25 normally extend at a flat acute angle to the horizontal, so that when the beams 1 are raised or

lowered to correspondingly raise and lower the bowl, the bowl will not be tilted to any material extent.

The front apron, to form a closure for the bowl when the latter is raised to a carrying position, comprises side wings 30 to overlap the side plates of the bowl inwardly thereof and in clearance relation thereto, and a bottom plate 31 to extend to and engage the blade 23, and sloping upwardly thence to the upper forward corners of the side wings. Arms 32 engage and are secured to said wings only ahead of the bowl as shown and extend rearwardly and alongside the bowl in clearance relation thereto to pivot mountings on ears 33 upstanding from the beams 1 in front of the ears 4.

Vertical movement of the apron relative to the bowl is controlled by a cable 34 connected to the front end thereof and extending to and about a drum 35 on the shaft 27, so that the movement of the apron is controlled in common with the tilting of the bowl. The cable 34 is arranged so that when the bowl is lowered to a digging position by the lowering of the beams 1 relative to the arch frame by manipulation of the cables 12, said apron remains suspended from its cable some distance above the blade of the bowl and the ground, as shown in Figure 1. When the bowl is raised by upward movement of the beams 1 it gradually approaches the apron, which completely cooperates with the bowl to make a closure therewith when said bowl has reached a substantially horizontal position, as shown in Figure 2.

Dumping of the bowl when a leveling action is not desired may be effected when the bowl is thus raised and as previously stated is controlled by a forward pull on the cables 25. At the same time the cable 34 will be wound on its drum to raise the apron. The proportionate sizes of the drums 26 and 35 are such that by the time the bowl has assumed a full dumping position, the apron will be raised to its limit of movement under the arch frame as shown in Figure 3. In this manner a large discharge clearance between the bowl and apron is automatically obtained.

If when the load is being carried or at other times it is desired to clear a large obstruction in front of the scraper it is only necessary to raise the beams 1, the operation also raising the bowl and apron a corresponding distance as a unit. On account of the height of the arch frame relative to the normal position of the beams 1, this raising can be carried out to such an extent that the bottom of the bowl will clear anything which can pass under the front axle 10.

By reason of the particular positioning of the point of connection between the arch frame and the side beams, and the pivot of the bowl on the beams, a pull on the arch frame—which is a draft unit—has a tendency to press the beams and consequently the blade of the bowl into the ground as is desired.

In the type of scraper shown in Figure 5 the general construction and arrangement of the parts is the same as above described. One of the rear wheels 3a is vertically adjustable however, which enables the blade of the scraper bowl to be disposed with a transverse tilt as is very advantageous in connection with road grading and similar operations. The adjustment of this wheel may of course be effected in various ways. In the present instance, I have shown this wheel as supported by a horizontal arm 36 pivoted on the rear end of the adjacent frame beam 1a. A

forwardly projecting control arm 37 is pivoted at its rear end on the upper end of a post 38 upstanding from and rigid with the arm 36, said arm 37 having a roller 39 on its forward end riding on the beam 1a. A control cable 40 leading from the tractor extends about and between sheaves 41 mounted on the beam 1a and the arm 37, in such a manner that a pull on the cable pushes the arm 37 rearwardly and consequently rolls the wheel 3a relative to the scraper and causes the scraper blade to be raised relative to the ground at the corresponding end.

The control means of the front apron 30a of the scraper instead of being connected to the control means of the main bowl 17a for coordinating movement as was the case in the first described type, is merely separate from said bowl control means so that the bowl and apron may be separately raised or tilted. To effect this, the drums 26a about which the control cables 25a or the main bowl pass, are not positively connected to the drum 35a about which the lift cable 34a of the apron passes. In the arrangement shown in Figures 5 and 6, while all the drums are on a common shaft 27a, and the drums 26a and their control drum 28a are fast thereon, the drum 35a is loose on the shaft and has its own control drum 42 connected thereto as a unit.

The advantage of this separate control arrangement is that it enables me to obtain a fuller loading of the apron than is otherwise the case and permits the use of an apron of greater capacity, with a correspondingly greater loading capacity of the scraper as a whole. This loading of the apron is accomplished by tilting the bowl forwardly somewhat without moving the apron from its normal loading position after the dirt has moved into the apron from the bowl with the loading of the latter and has assumed a natural slope in the apron. The raising of the bowl causes some of the dirt therein to spill into the apron so that the amount retained in the apron is increased. This discharging of some of the dirt from the bowl leaves room therein for more dirt and the bowl is then relowered to digging position to scrape up more dirt until it is completely filled and will not take any more. Also in this scraper the beams 5a of the main frame are disposed outwardly of the beams 1a, which enables the overall height of the structure to be lowered without affecting the height to which the bowl and apron may be raised.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by 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 scraper including wheel-supported side beams, a bowl disposed between the beams, means pivoting the bowl adjacent its forward end and bottom on the beams, means to move the beams in a vertical plane whereby the bowl may be raised to a carrying position, an apron to close the front end of the bowl when the latter is in such position, arms projecting rearwardly from the apron and pivoted at their rear ends

on the beams, means applied to the bowl adjacent its upper rear end for tilting the same forwardly, and means applied to the apron to lift the same from said bowl closing position, said bowl tilting and apron lifting means being arranged to function simultaneously.

2. A scraper including wheel-supported side beams, a bowl disposed between the beams, means pivoting the bowl adjacent its forward end and bottom on the beams, means to move the beams in a vertical plane whereby the bowl may be raised to a carrying position, an apron to close the front end of the bowl when the latter is in such position, said apron including side wings projecting inwardly of the sides of the bowl in clearance relation thereto, arms projecting rearwardly from and secured to the apron wings ahead of the bowl and pivoted at their rear ends on the beams, means to tilt the bowl upwardly and forwardly to a dumping position, and means to maintain the apron in predetermined positions relative to the bowl with the vertical and tilting movements of the latter.

3. A scraper including side beams, wheels sup-

porting the same adjacent their rear end, an arch frame pivoted at its rear end on the beams in front of the wheels, means supporting the front end of the arch frame ahead of the beams, a bowl disposed between the beams and frame under the latter, means pivoting the bowl on the beams, means between the beams and frame to raise and lower said beams about the wheels as an axis to raise and lower the bowl, and separate means to tilt the latter to a dumping position about its pivotal connection with the beams.

4. A structure as in claim 3, in which said bowl tilting means includes a cable connected to the bowl adjacent a top rear corner and extending thence forwardly, and a selectively rotated drum on the frame about which said cable passes and to which it is secured; said cable being disposed at a flat acute angle to the horizontal when the bowl is in a digging position so that with the raising of the beams, the setting of the bowl relative to a horizontal plane will not be materially altered.

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