

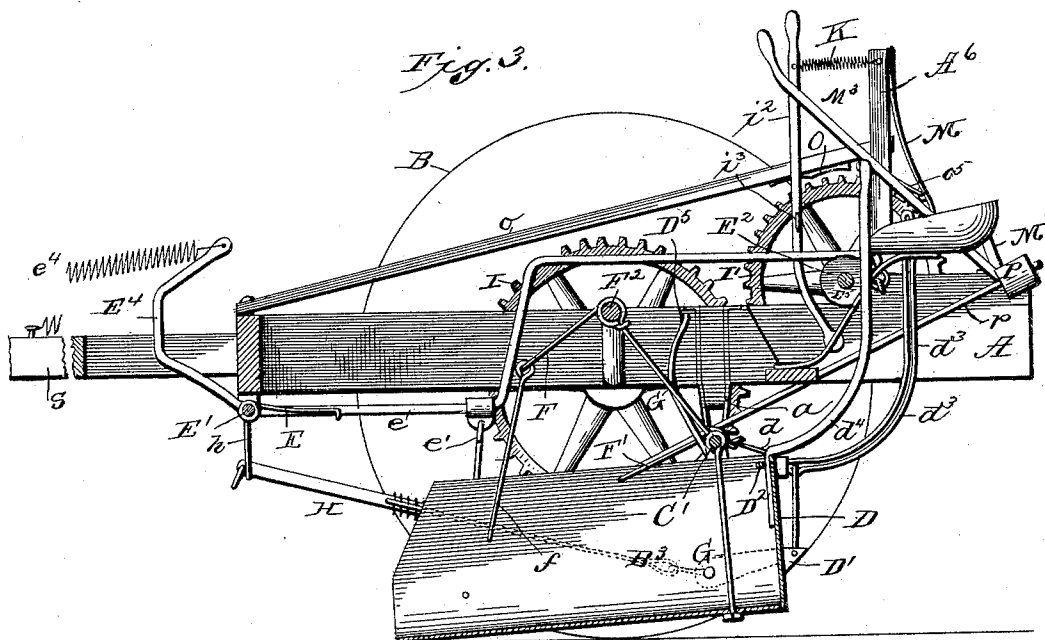
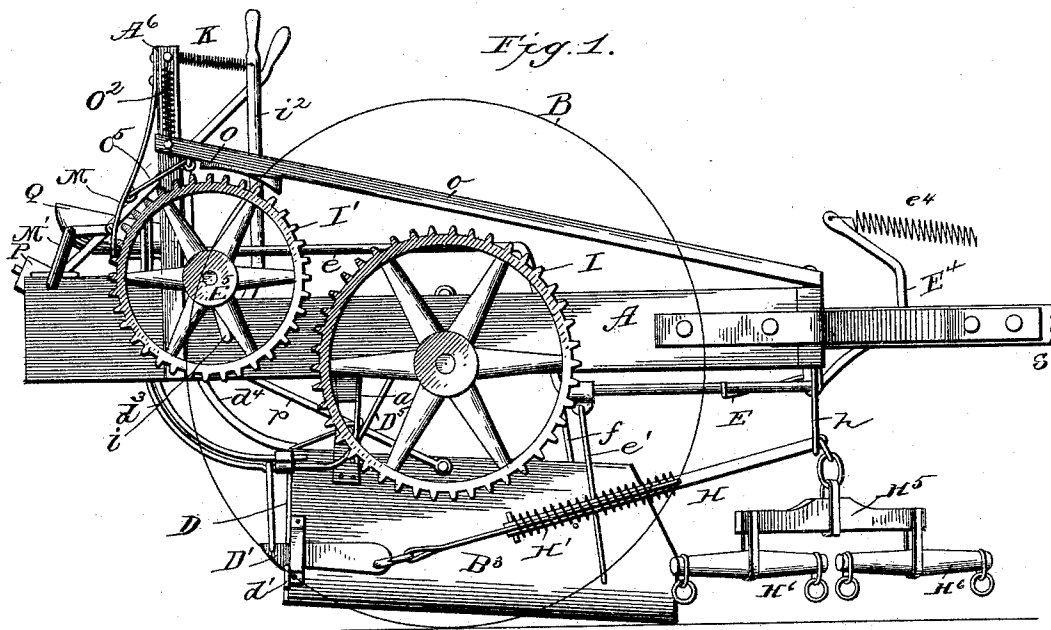
(No Model.)

3 Sheets—Sheet 1.

C. RATH.
WHEELED SCRAPER.

No. 482,414.

Patented Sept. 13, 1892.



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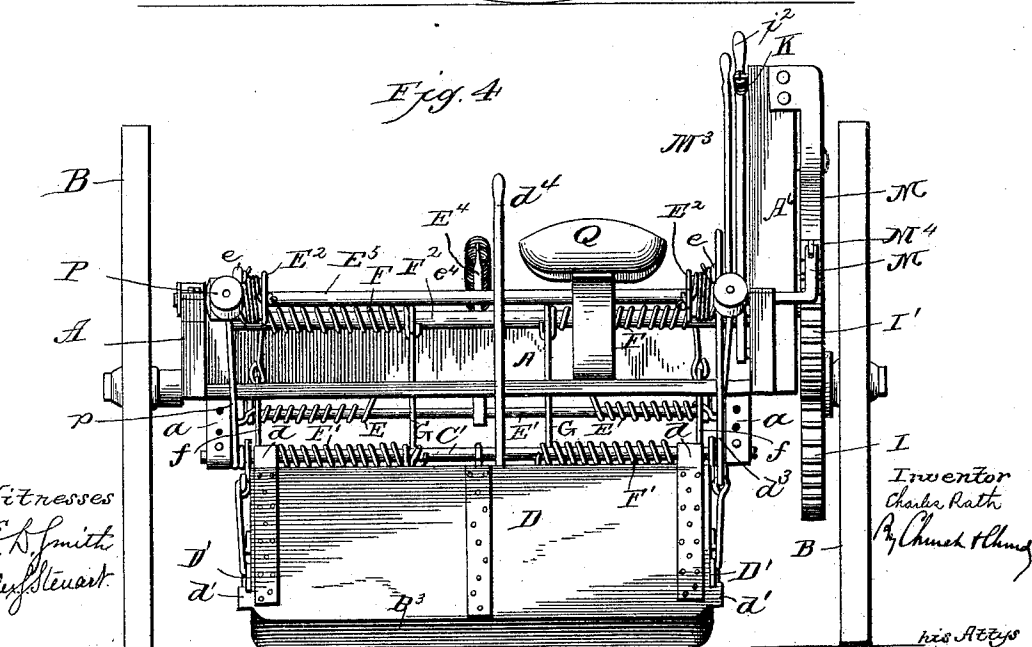
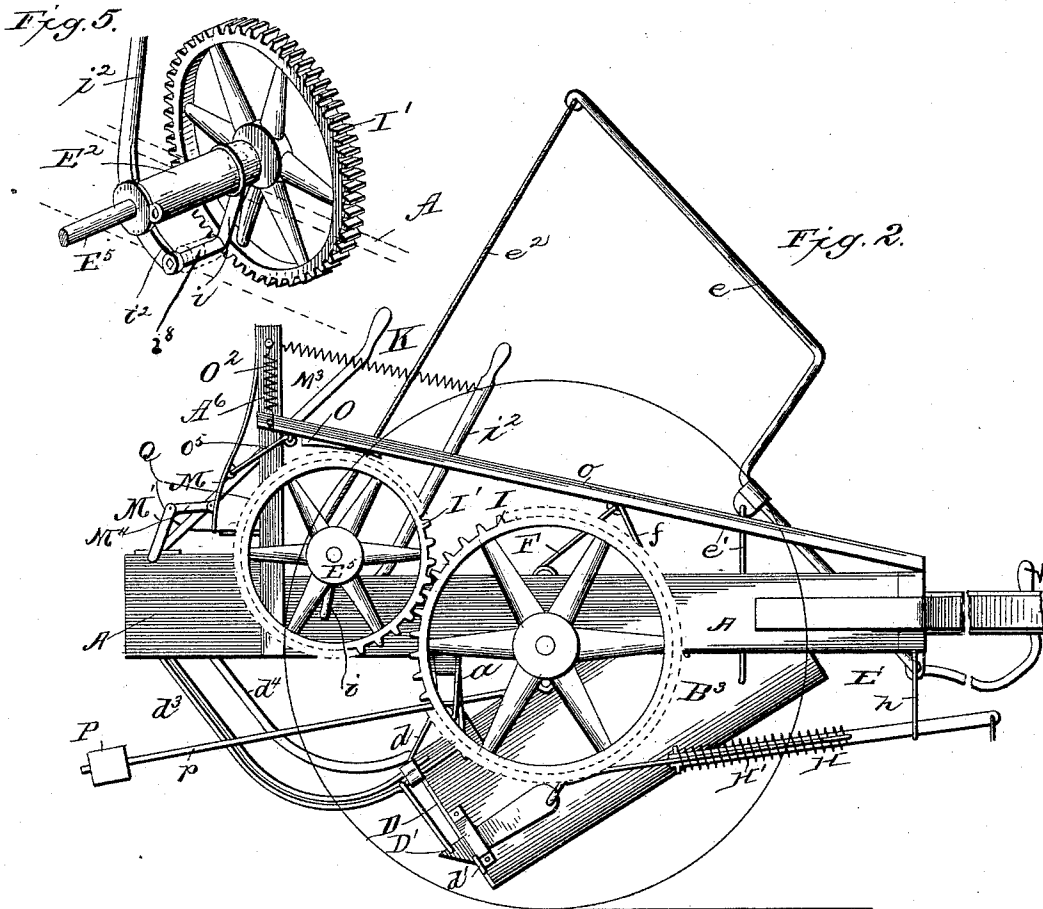
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3 Sheets—Sheet 3.

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Fig. 5.

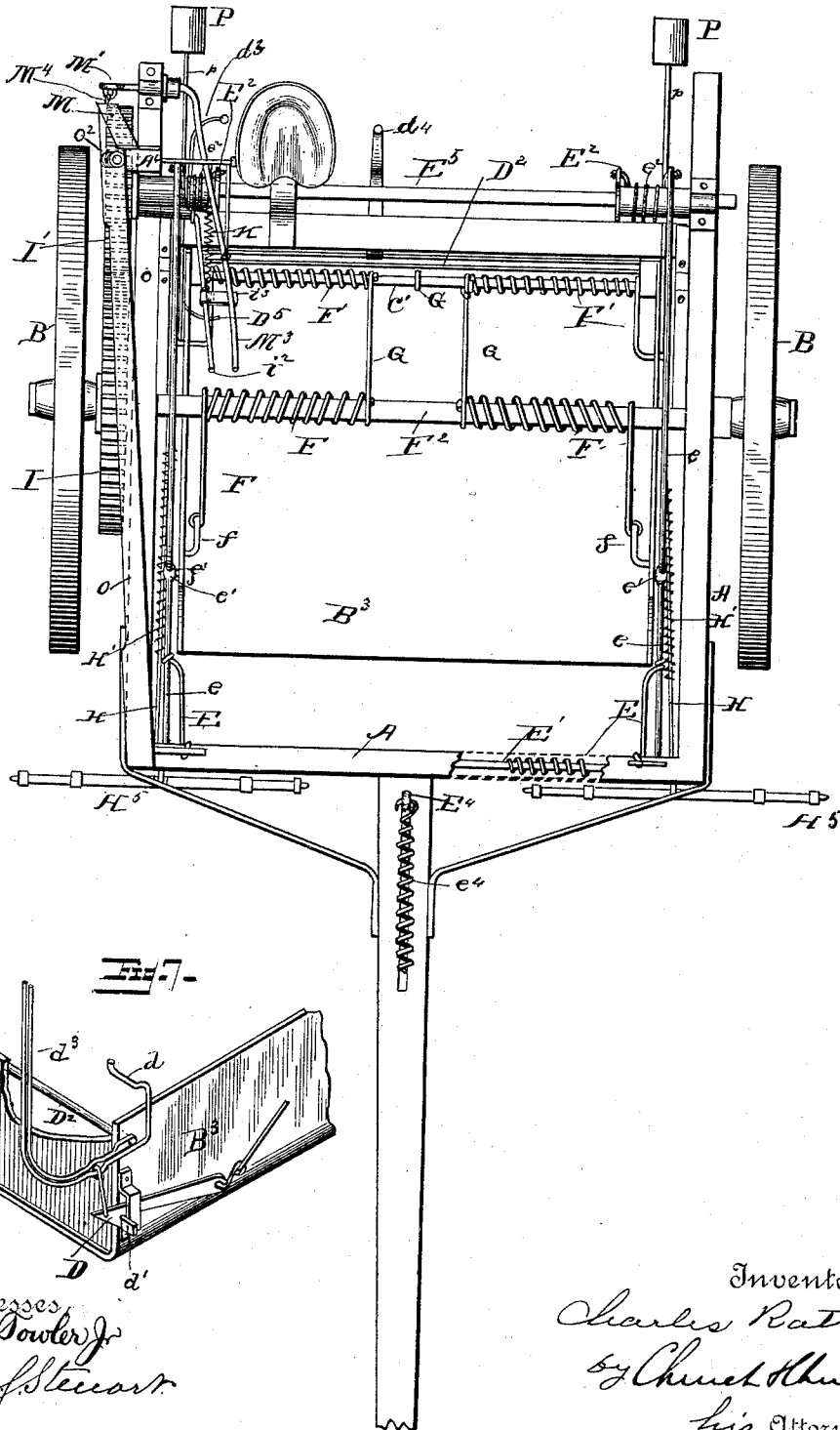
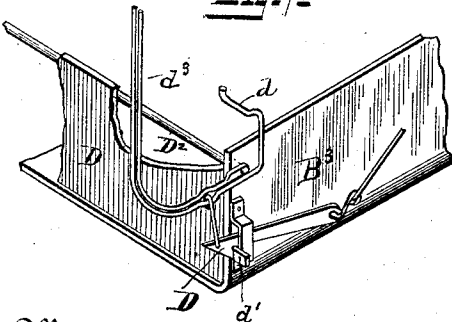


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES RATH, OF MOBEETIE, TEXAS.

WHEELED SCRAPER.

SPECIFICATION forming part of Letters Patent No. 482,414, dated September 13, 1892.

Application filed January 20, 1891. Serial No. 378,461. (No model.)

To all whom it may concern:

Be it known that I, CHARLES RATH, of Mobettie, in the county of Wheeler and State of Texas, have invented certain new and useful
5 Improvements in Wheeled Scrapers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the
10 letters of reference marked thereon.

This invention relates to improvements in that class of scrapers which are adapted to gather up loose dirt or other material, convey the same to the point desired, and there discharge it; and it has for its object to provide
15 a scraper of this class, in which the handling of the scraper-bowl to load, convey, and discharge the dirt may be accomplished with little or no labor on the part of the operator.

The invention may be said to consist, broadly, of a scraper in which the lowering of the bowl and raising of the same when loaded is automatically accomplished, the mechanism for performing the two operations being driven
20 from the ground-wheel and placed under the control of the driver or operator.

More specifically the invention consists of a scraper in which the bowl is raised when loaded by means of springs or their equivalent, which are wound or the power accumulated during the time the scraper is returning
30 without its load.

The invention further consists in certain novel details of construction and combinations and arrangements of parts to be herein-
35 after described, and pointed out particularly in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a side elevation of a scraper constructed in accordance with my invention with the bowl lowered in position for loading. Fig. 2 is a similar view with the bowl elevated for carrying the load, and with the gears meshing to lower the bowl and rewind the springs as the
40 scraper is advanced. Fig. 3 is a section through the machine, looking toward the side shown in Figs. 1 and 2. Fig. 4 is a rear elevation. Fig. 5 is a detail of the operating mechanism for the shifting-gear. Fig. 6 is a
50 top plan view of the scraper. Fig. 7 is a detail view.

Similar letters of reference in the several figures indicate the same parts.

The frame A, wheels B, and scraper-bowl may be of any ordinary construction. In the
55 preferred form, and as shown in the drawings, however, the scraper-bowl is open at front and rear, and the load is retained within the bowl by means of the dumping-door D at the rear end. As is usual in this class of scrap-
60 ers, the bowl is capable of a vertical movement, preferably, however, by being adjustably pivoted near the rear end in the hangers *a*, depending from the frame A, with
65 mechanism to be presently described for controlling the movement of the front edge of the scraper-bowl. The dumping-door D is mounted in forwardly-extending arms *d*, pivotally connected to the shaft C', carrying the
70 scraper-bowl, by which arrangement the door is caused to close more certainly as the front edge of the bowl is lowered to receive loads. Suitable catches D' are pivoted on the side of
75 the scraper-bowl for co-operation with projections *d'* in the door, said catches being connected to the crank-shaft D² for simultaneous operation, and the said shaft is operated to release the catches by means of the
80 foot-lever D³ or the hand extension thereof *d*³. In case the door does not close the operator may close it by means of a handle D⁴, connected to the top of the door.

As has been before intimated, the scraper-bowl when loaded is elevated by means of power accumulated during the time the scraper
85 is running light, and in the preferred form. I accomplish this result by means of spring-pressed crank-arms connected to the bowl forward of its pivotal point. In the construction shown in the drawings a number of springs
90 and counter-weights are employed, the main power, however, being stored in the springs E surrounding and at one end connected to the shaft E', journaled in the front bar of the frame A. The shaft E' is provided with rear-
95 wardly-extending arms or crank ends *e*, which at an intermediate point are connected to the front portion of the scraper-bowl by links *e'*. The rearwardly-extending ends of the arms *e* are connected by flexible connections *e*² with
100 a winding drum or drums E², controlled by the operator and adapted to be thrown into or

out of gear with one of the ground-wheels at will. Thus during the time the scraper is returning to the place for receiving its load the drums are thrown into gear, the bowl lowered, and the power accumulated for raising the bowl when loaded.

Where it is not desired to have the springs E so large as would be necessary for them to raise the loaded bowl unaided they may be supplemented by other springs. For instance, as shown, springs F are coiled around the central portion of the axle F² and connected to the scraper-bowl by links f, and springs F' are coiled around the shaft-carrying scraper-bowl with their ends connected to the sides of the bowl. The tendency of these springs is of course to raise the bowl, and their inner ends may be connected to the axle and shaft, respectively, but are preferably held by the stay and supporting rods G, extending from the axle to the scraper-bowl supporting-shaft, and from the latter to the bottom of the bowl, thereby binding the parts firmly together and preventing the bowl from sagging at the center.

In addition to the springs last mentioned, or in lieu of the same, the shaft E' may be provided with a forwardly and upwardly extending arm E⁴, to the upper end of which is connected a spiral spring extending out on the tongue.

To further insure the elevation of the scraper-bowl, the doubletrees to which the horses are hitched instead of being connected directly to the frame are connected to spring-links H, having their rear ends connected to the scraper-bowl well back below its center of oscillation. As shown, they are connected to the pivots of the latches D, and hence the draft of the horses always tends to elevate the bowl, such tendency being prevented by the positively-operating lowering mechanism before described. The front ends of the links are supported in hangers h, and springs H' are interposed in the links in any well-known manner to relieve sudden shocks or strain, and, further, to facilitate the handling of the scraper-bowl. Thus it will be seen that should all the springs be dispensed with the device would yet be operative, because the draft of the horses would elevate the bowl when loaded and the bowl is positively moved downward into position for loading.

The mechanism for making the connection between the winding drum or drums and ground wheel or wheels now only remains to be described, and while it may be of any well known construction and adapted to make connection with one or both of the wheels I prefer the arrangement shown. A relatively large gear I is connected rigidly to one ground-wheel, and a similar gear I', of somewhat smaller diameter, is mounted rigidly on the drum-shaft, the latter being mounted in movable bearings, which permit of its being shifted

so as to throw the gear-wheels into or out of mesh with each other. I prefer to mount one end of the drum-shaft in a bearing on the end of a crank-arm i on a shaft i², having its bearing in the frame A and provided at its inner end with an operating-handle i³ and a foot-piece i³ to enable the operator with either his hand or his foot to throw the gears into mesh. Normally the two gears are held apart by a spring K, in which position the drum-shaft gear-wheel co-operates with a retaining-pawl M, having the long spring-shank connected to the upright A⁶ on the frame, the object of the long spring-shank being to retain the pawl in engagement with the wheel during the time it is being shifted into or out of gear with the ground-wheel.

The gear I', in connection with the pawl M, constitutes a clutch which may be thrown into gear to wind the springs and out of gear when it is desired to raise the bowl or hold the same stationary.

In order to release the retaining-pawl when it is desired to elevate the scraper-bowl, a crank-shaft M' is provided, having a suitable operating-handle and a link or other connection with the pawl. Were the power tending to elevate the scraper-bowl left to act without interference it might raise the same too violently, and in order to prevent this a brake-block O is mounted on the end of a beam o and adapted to co-operate with the drum-shaft wheel, a link or other connection being made between a brake-beam and pawl or its crank-shaft to enable the pawl to be released and the brake applied by a single movement of the operating-handle. A spring O² is provided for releasing the brake and, if necessary, drawing the pawl inward. The scoop is counterbalanced and the weight on the tongue relieved by two counterbalance-weights P P, mounted on the ends of rearwardly-extending arms p, pivoted on the bowl-supporting shaft and connected to the sides of the bowl forward of said shaft.

In operating the machine the driver sits upon the seat Q, arranged in convenient proximity to the various operating-levers before mentioned, and when he desires to lower the scraper-bowl to receive its load he presses with his foot or hand upon the operating-lever i³ and throws the gear-wheels into mesh, the forward movement of the scraper then causing the winding-drums to rotate and the arms e and scraper-bowl to be lowered. When lowered to the desired point, the operator relieves the pressure upon the said lever and permits the gears to separate, the retaining-pawls then becoming operative to prevent the elevation of the bowl. When the bowl has scraped up its load, the operator throws the pawl out of gear and permits the draft of the horses or the springs to raise the bowl into carrying position, such movement being easily and perfectly controlled by means of

the brake-block. When the dump is reached, the operator releases the holding-catches for the dumping-gate by means of the hand or foot lever $D^5 d^3$, when the pressure of the load against said gate forces it open and the load is discharged at the rear of the bowl. With this construction it is entirely practical to employ scrapers of very large capacity, as the driver has little or none of the work to perform, and any desired number of horses may be employed for the motive power. The scraper shown in the drawings is adapted for four horses, being of extra width and capacity.

Having thus described my invention, what I claim as new is—

1. In a scraper, the combination, with the frame and ground-wheel, of the vertically-movable scraper-bowl with means, substantially as described, for raising the same, and a lowering mechanism for said bowl driven by the ground-wheel for lowering the bowl against the power exerted by the raising mechanism, substantially as described.

2. In a scraper, the combination, with the frame and ground-wheel, of the vertically-movable scraper-bowl, mechanism, substantially as described, for elevating the same, and the crank-shaft connected to the bowl for positively lowering the same driven by the ground-wheel, substantially as described.

3. In a scraper, the combination, with the frame and ground-wheel, of the vertically-movable scraper-bowl, a spring for elevating the same, and a crank-shaft driven by the ground-wheel for lowering the bowl against the tension of the spring, substantially as described.

4. In a scraper, the combination, with the frame and ground-wheel, of the vertically-movable scraper-bowl, the spring for elevating the bowl, and connections between the bowl and ground-wheel for lowering the same against the tension of the spring, substantially as described.

5. In a scraper, the combination, with the frame and ground-wheel, of the vertically-movable scraper-bowl, the spring for elevating the same, the crank-arms for lowering the bowl against the tension of the spring, flexible connections and the winding-drums driven by the ground-wheel for operating the crank-arms, substantially as described.

6. In a scraper, the combination, with the frame, ground-wheels, and the vertically-movable scraper-bowl, of the spring for elevating the same, connections between the scraper-bowl and ground-wheel for lowering the same against the tension of said spring, and the clutch interposed in said connections, whereby the bowl may be permitted to return to an elevated position under the influence of the spring, substantially as described.

7. In a scraper, the combination, with the frame and ground-wheels, of the vertically-

movable scraper-bowl, mechanism, substantially as described, for automatically elevating the same, an arm connected to the bowl for depressing the same, a winding-drum connected to said arm, and a shifting-gear connection between said winding-drum and ground-wheel, substantially as described.

8. In a scraper, the combination, with the frame, ground-wheels, vertically-movable scraper-bowl, and mechanism, substantially as described, for elevating the same, of the arm connected to the bowl, the winding-drum connected to the crank-arms, the gear-wheel on the ground-wheel, and the shifting-gear meshing therewith and connected to the drum-shaft, substantially as described.

9. In a scraper, the combination, with the frame, ground-wheels, vertically-movable scraper-bowl, and mechanism for raising the same, substantially as described, of the arm connected to said bowl for depressing the same, the winding-drum connected to said arm, the gear-wheel on the ground-wheel, the shifting-gear on the drum-shaft, adapted to mesh with said first-mentioned gear, and the spring-pawl for holding said shifting-gear and drums against the power of the elevating mechanism, substantially as described.

10. In a scraper, the combination, with the frame and ground-wheels, the vertically-movable scraper-bowl, and mechanism, substantially as described, for elevating the same, of the arm connected to the bowl, the winding-drum, the gear on the ground-wheel, shifting-gear, and the crank-shaft in which said shifting-gear is mounted, having the operating-handle, substantially as described.

11. In a scraper, the combination, with the vertically-movable scraper-bowl, mechanism, substantially as described, for elevating the same, of the ground-wheels, and connections between said bowl and ground-wheel for depressing the bowl against the power of the elevating mechanism, and a brake for retarding the upward movement of the bowl, substantially as described.

12. In a scraper, the combination, with the vertically-movable scraper-bowl, mechanism, substantially as described, for elevating the bowl, and the ground-wheel, of a gear on the ground-wheels, a shifting-gear adapted to mesh with the gear on the ground-wheel to lower the bowl, mechanism connecting said shifting-gear and bowl, a pawl for arresting said shifting-gear, a brake, and an operating-handle connected to said pawl and brake, whereby when the handle is moved to release the pawl the brake is applied, and vice versa, substantially as described.

13. In a scraper, the combination, with the frame, ground-wheels, scraper-bowl hung in horizontal bearings in the frame, and mechanism for depressing the bowl from the ground-wheel, as described, of the draft-links connected to the bowl below its pivotal

point and passing through guides at the front end of the frame, substantially as described.

14. In a scraper, the combination, with the
5 frame, ground-wheels, scraper-bowl hung in horizontal bearings in the frame, and mechanism for depressing said bowl, substantially as described, of the spring draft-links con-

nected to the bowl below its pivotal point and passing through guides at the front of the frame, substantially as described.

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