

(No Model.)

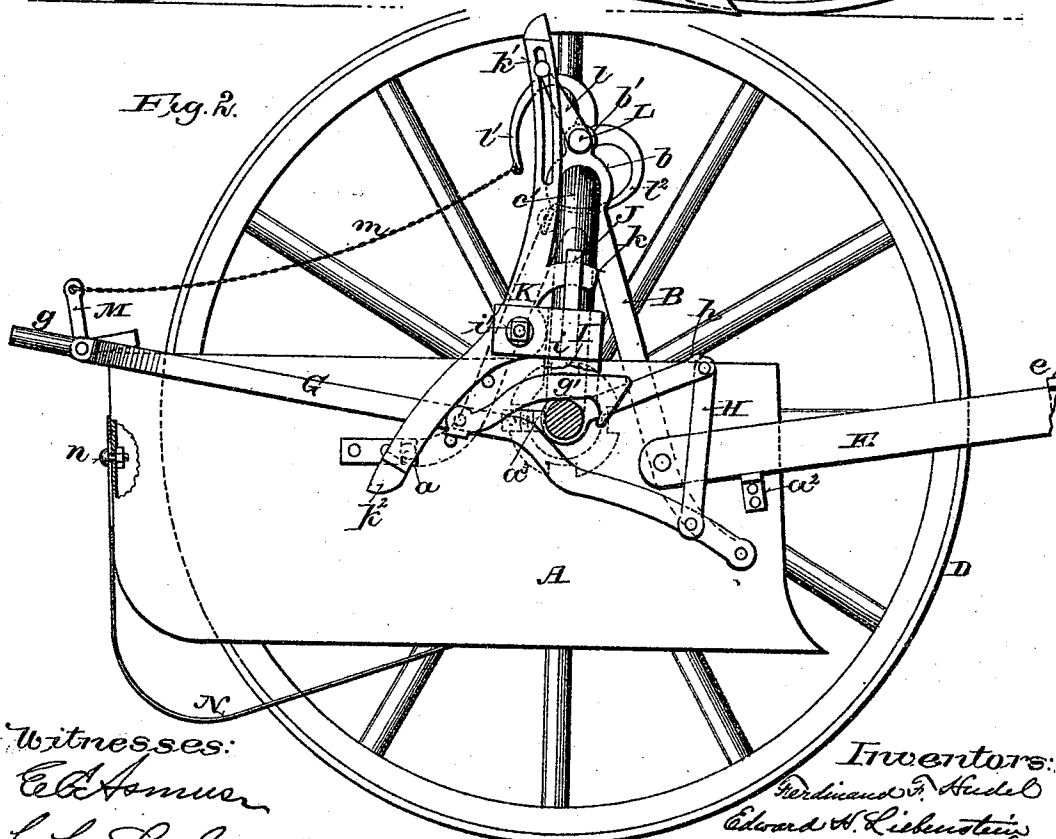
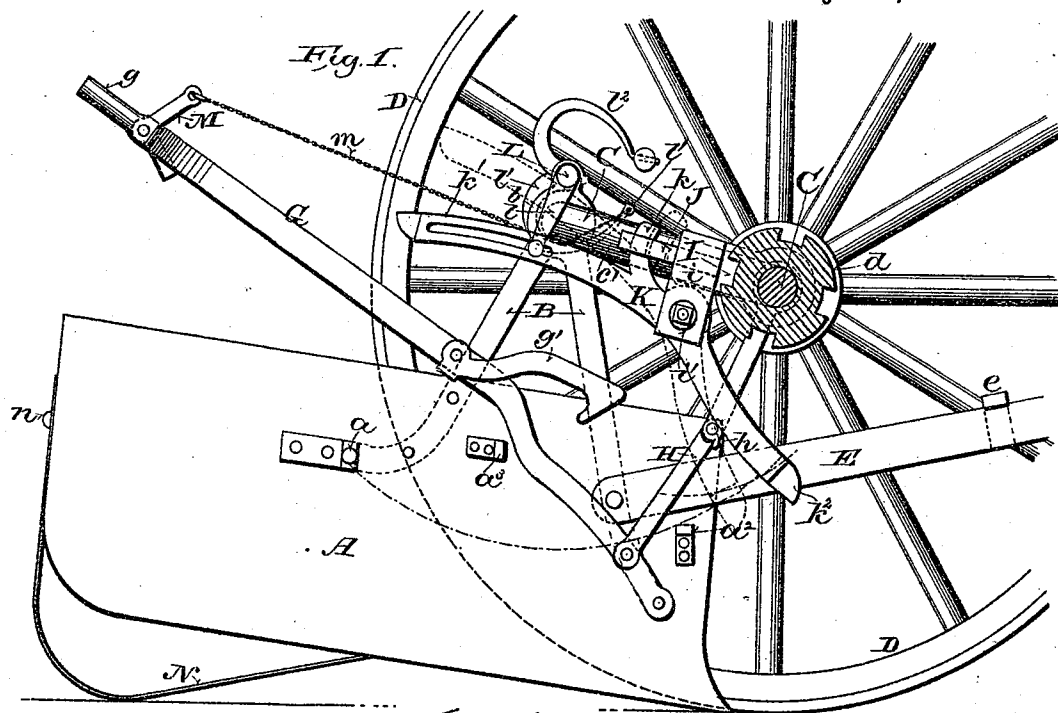
3 Sheets—Sheet 1.

F. F. HUDEL & E. H. LIEBENSTEIN.

WHEELED SCRAPER,

No. 501,145.

Patented July 11, 1893.



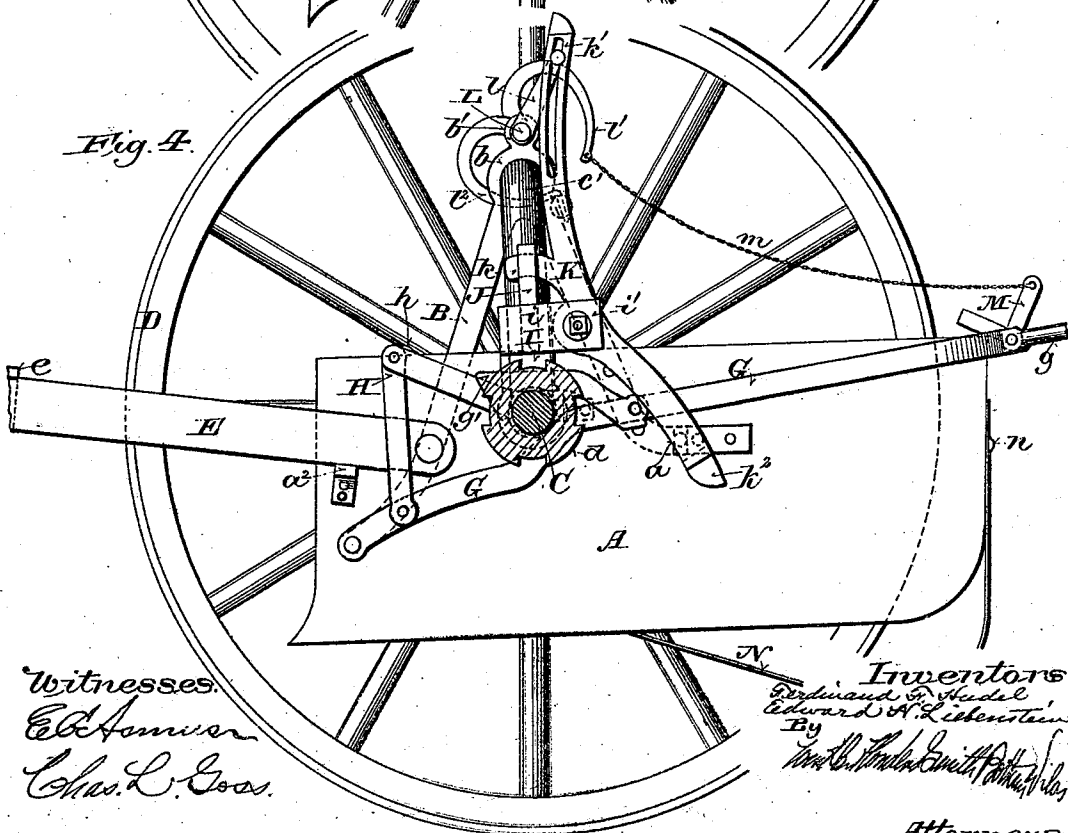
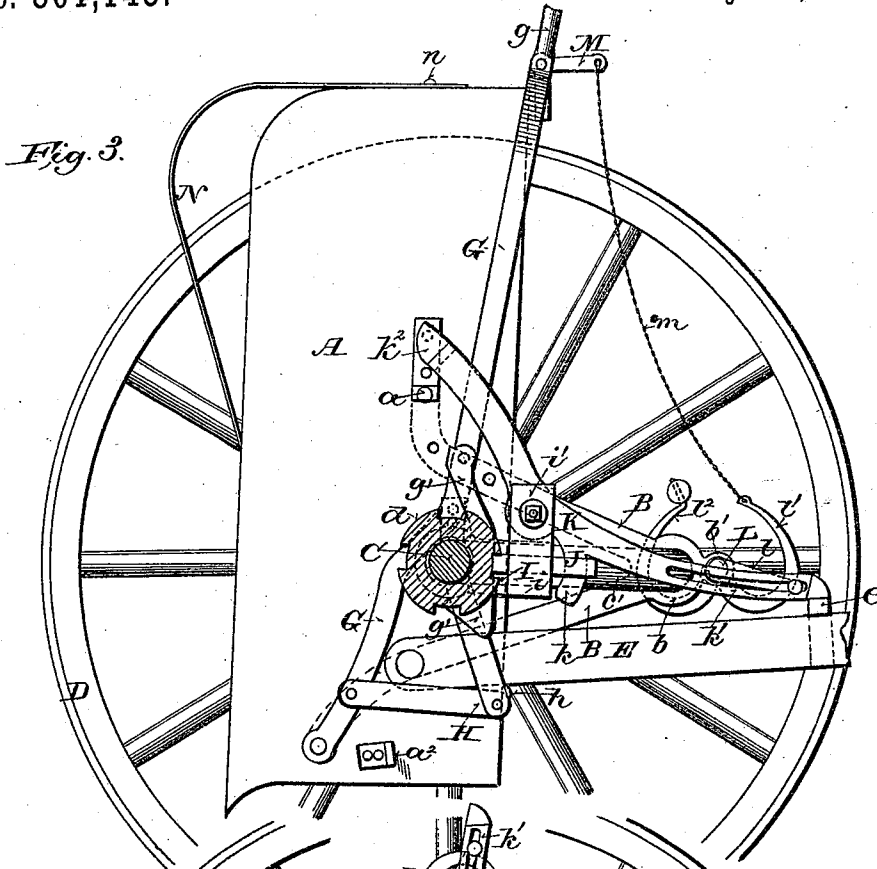
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3 Sheets—Sheet 2.

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(No Model.)

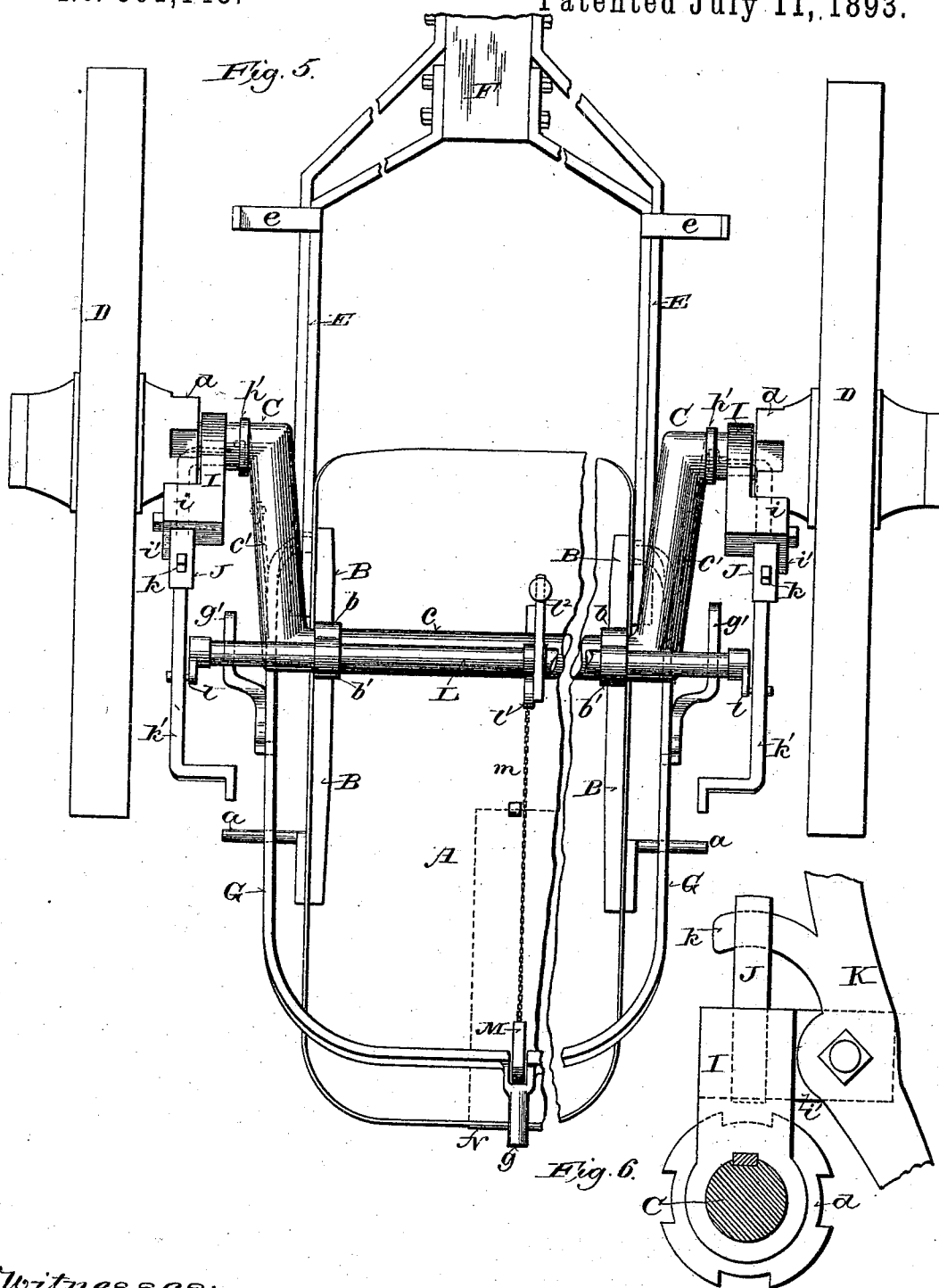
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WHEELED SCRAPER,

No. 501,145.

Patented July 11, 1893.



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# UNITED STATES PATENT OFFICE.

FERDINAND F. HUDEL AND EDWARD H. LIEBENSTEIN, OF LAKE, WISCONSIN.

## WHEELED SCRAPER.

SPECIFICATION forming part of Letters Patent No. 501,145, dated July 11, 1893.

Application filed September 8, 1890. Serial No. 364,262. (No model.)

*To all whom it may concern:*

Be it known that we, FERDINAND F. HUDEL and EDWARD H. LIEBENSTEIN, of the town of Lake, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Wheeled Scrapers; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main objects of our invention are to facilitate the operation of a scraper, to relieve the necks of the team from unnecessary weight, to utilize the draft of the team for raising and dumping the scraper, and to enable one attendant to manage the team and operate the scraper.

It consists essentially of certain peculiarities of construction and arrangement hereinafter particularly described and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a side elevation of the scraper, showing the scoop lowered into working position. Fig. 2 is a like view of the same with the scoop raised into position for transporting the load to any desired point. Fig. 3 is a like view showing the scoop in position for dumping. Fig. 4 is an elevation of the side of the machine opposite to that shown in Fig. 1. (the axle and the inner end of the hub of the front wheel being shown in vertical section and the remainder of the wheel being removed, in Figs. 1, 3 and 4, and the entire front wheel being removed and the front end of the axle shown in cross-section, in Fig. 2). Fig. 5 is a plan view, and Fig. 6 is a detail on an enlarged scale of the locking device or clutch employed to lift and dump the scoop.

A represents the scoop, made of the usual or any suitable form, of sheet metal, and suspended by inverted V-shaped hangers B B, from the crank axle C, the hangers being bolted at their ends to the sides of the scoop, and formed at their angles with collars b b,

through which the crank c, of the axle C, loosely passes. At the ends of the crank arms c' c' the axle C is formed with journals upon which are mounted the supporting wheels D D.

E E are draw bars pivoted to each side of the scoop A near its front end and extending therefrom forward parallel with each other, and then bent inwardly toward the pole F (a portion of which is shown in Fig. 5) to which they are bolted or otherwise rigidly attached. For the purpose of strength and stiffness these draw bars are preferably made double, as shown in Fig. 5, the inwardly bent ends of the draw bars on each side of the machine diverging so as to separate the points of attachment thereof.

G represents a forked lever, the ends of which are pivoted to the sides of the scoop A near its front end and are connected a short distance from said pivot points, by jointed rods H, with the axle C, just inside of the wheels D. One arm of the jointed connecting rod on each side of the machine is formed or provided with a projection h, which prevents the sections composing the rod from being drawn into the same straight line by the lowering of the lever G. The lower section of the connecting rod on each side is pivoted to the adjacent arm of lever G, and the upper section is formed with a collar h' encircling the axle C, which is capable of turning therein. The lever G is formed, when the scoop is elevated as shown in Figs. 2 and 4, to pass over and outside of its rear upper edge, and is provided at or near the center of its rear cross portion with a handle g.

To the outside of the arms of the lever G on both sides of the scoop are attached the forwardly projecting hooks g', so located and arranged as to pass over the axle C, a short distance inside of the hubs of the wheels D, when the scoop is raised into the position shown in Figs. 2 and 4, and to engage with said axle and thereby hold said scoop in its elevated carrying position until said hooks are disengaged, as hereinafter described.

To prevent the scoop from falling back when it is being raised into a carrying position, shown in Figs. 2 and 4, we make one of the hooks g', shown in Fig. 2, a little longer than

the other shown in Fig. 4, so that the longer hook will engage with the axle C, before the crank arms  $c'$  of the axle have arrived at a vertical position. These hooks  $g'$  may be  
 5 pivoted to the arms of lever G and provided with stops to limit their descent, or they may be rigidly attached to said lever in the required position to permit of their passing over and engaging with the axle C.

10 The inner ends of the hubs  $d$  of the wheels D are notched, at intervals around their peripheries, and to the axle C adjacent thereto are keyed or otherwise suitably fixed arms II, formed with sleeves  $i$ , transverse to the axes  
 15 of and overhanging the notched peripheries of the hubs  $d$ .

J J are dogs or pins inserted and movable in said sleeves  $i$ , into and out of engagement with the notches in the hubs  $d$ .

20 To laterally projecting ears  $i'$ , formed on the arms I are pivoted the levers K K, which have curved arms  $k$ , loosely passing through and engaging with perforations in the outer ends of the dogs J. These levers are also formed  
 25 or provided on the same side of their fulcrums with the slotted arms  $k'$ , and on the opposite side of their fulcrums and approximately in line with the arms  $k'$ , with arms  $k^2$ . These arms  $k'$  and  $k^2$  are bent inwardly at their  
 30 ends, as shown in Fig. 5, toward the sides of the scoop, so as to engage, the arms  $k^2$  with stops  $a$ , attached to the sides of the scoop when the latter is raised into carrying position, and the arms  $k'$  with the stops  $e$ , projecting outwardly from the draw bars E, when  
 35 the scoop is turned into the position shown in Fig. 3, for dumping.

To the forward end of the scoop are attached on each side, stops  $a^2$ , which engage  
 40 with the draw bars E, when the scoop is elevated into the position shown in Fig. 2, thereby preventing the front end of the scoop from being tilted upward by the weight of its contents behind the axle upon which it is suspended. To the sides of the scoop are also  
 45 attached stops  $a^3$ , which when the scoop is raised into carrying position, as shown in Fig. 2, engage with the axle C and prevent said scoop from being carried farther forward.  
 50

L is a crank shaft supported parallel with the middle portion  $c$ , of axle C in bearings  $b'$ , formed on or attached to one side of the collars  $b$  of the hangers B. To the ends of this  
 55 shaft are fixed crank arms  $l$ , having crank pins inserted in the slots formed in the arms  $k'$  of levers K. At an intermediate point of the shaft L a curved arm  $l'$  is secured thereto, and counterbalanced by a similarly shaped  
 60 weighted arm  $l^2$ . The arm  $l$  is connected by a chain or cord  $m$ , with an L-shaped lever M, pivoted at its angle in the rear cross-portion of the lever G.

To hold the scoop at the proper angle in  
 65 the ground, a guide N is provided, consisting of a metallic plate attached at one end to the

bottom of the scoop and extending outwardly and rearwardly therefrom and curved upwardly at the other end, which is vertically  
 70 slotted and adjustably attached to the back of the scoop by a bolt  $n$ , or other suitable means, as shown in Fig. 2 so as to permit of the variation of the angle formed by said guide with the bottom of the scoop.

Our improved device operates as follows: 75

The scoop being lowered into the position shown in Fig. 1, is caused by the guide N and the advance of the scraper, to descend at its front edge into the earth and to take up a  
 80 load, the scoop being guided, and the depth to which its front edge is allowed to descend, being controlled by the operator through the lever G and the jointed rods or links II connecting it with the axle C. When filled, the operator depresses lever G, thereby lifting  
 85 the front end of the scoop and at the same time moving the lower forwardly projecting arm of the lever M into engagement with the upper rear edge of the scoop, which throws the upwardly projecting arm of said lever to which  
 90 the chain  $m$  is attached, rearwardly, thereby turning the crank shaft L and raising the arms  $k'$  of levers K as indicated by dotted lines in Fig. 1 so as to move the dogs J into  
 95 engagement with notches in the hubs  $d$  of the supporting wheels D. The axle C being thus locked with the hubs of the wheels D, is turned upwardly, raising the scoop into the position in which it is shown in Fig. 2. The stops  $a^2$  engaging with the draw bars E, prevent the  
 100 scoop from tipping rearwardly, and the stops  $a^3$  engaging with the shoulders formed by the bends in the axle C, arrest the forward movement of the scoop. As the upper portion  $c$ , of axle C, is turned forward by the continued  
 105 advance of the scraper, the stops  $a$  on the scoop, and the intumed ends of arms  $k^2$  approaching in a curve, indicated by dotted line in Fig. 1, engage with each other and automatically withdraw the dogs J out of engagement  
 110 with the notched hubs  $d$  of the supporting wheels. In this position, as shown in Fig. 2 the scoop with its contents is sustained and carried by the axle C and wheels D to any desired point to be dumped. As the levers  
 115 K are turned on their fulcrums by engagement with stops  $a$ , the intumed offsets of arms  $k^2$   $k^2$ , describing curves similar to the shorter dotted arc in Fig. 1, are moved out of engagement with said stops, passing under  
 120 neath them into the position shown in Fig. 2.

To dump the scraper, the operator pulls the chain  $m$  rearwardly and upwardly, thereby throwing the arms  $k'$  of levers K forward, and moving the dogs J into engagement with the  
 125 notched hubs  $d$ . The axle C being thus locked with the wheels D, is turned forward, carrying the scoop into the position in which it is shown in Fig. 3, for discharging its contents. The inwardly projecting ends of the arms  $k'$   
 130 engaging with the stops  $e$  on the draw bars, automatically throw the clutches out of en-

gagement, thereby releasing the axle C and permitting it and the scoop to be returned to the positions in which they are shown in Fig. 1.

Various changes may be made in the details of our improved scraper, without affecting its mode of operation, or departing from the spirit of our invention.

We claim—

1. In a scraper, the combination with a crank shaped axle and supporting wheels mounted and capable of turning thereon of a scoop suspended by suitable hangers from said axle and a forked lever pivoted to the sides of said scoop near its front end and fulcrumed to and connected with the axle in line with the axis of the wheels, by jointed rods having pivot connections at their ends with said lever and axle substantially as and for the purposes set forth.

2. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended by hangers directly from the crank portion of said axle, clutches arranged to lock said axle with said wheels, suitable means under the control of the operator for throwing said clutches into engagement, and stops arranged to automatically throw said clutches out of engagement, substantially as and for the purposes set forth.

3. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, draw bars pivotally connected with said scoop, a guide attached at an inclination to the bottom of said scoop, and a controlling lever pivoted to the sides of said scoop and connected by jointed rods or links with the axle in line with the axis of the wheels, substantially as and for the purposes set forth.

4. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, clutches arranged to lock said axle with said wheels, a controlling lever pivoted to the sides of said scoop and connected by jointed rods with said axle, and hooks on said lever arranged to engage with said axle and hold said scoop in its elevated carrying position, substantially as and for the purposes set forth.

5. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, clutches arranged to lock said axle with said wheels and thereby raise said scoop, a forked lever pivoted to the sides of said scoop and connected by jointed rods or links with said axle, hooks on said lever arranged to engage with said axle and hold said scoop in an elevated position, and stops on the sides of said scoop arranged to engage with said axle and limit the forward movement of the scoop, substantially as and for the purposes set forth.

6. In a scraper, the combination with a

crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, draw bars pivotally connected with said scoop, clutches arranged to lock said axle with said wheels, a forked controlling lever pivoted to the sides of said scoop and connected on each side by jointed rods or links with said axle, stops near the front end of said scoop arranged to engage with said draw bars when the scoop is elevated and prevent the same from being tilted rearwardly, and stops on the sides of said scoop arranged to engage with said axle and arrest the forward movement of said scoop when the same is elevated, substantially as and for the purposes set forth.

7. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, draw bars pivotally connected with the sides of said scoop, clutches comprising dogs carried by arms fixed upon said axle, notched hubs in connection with the supporting wheels, levers fulcrumed to the arms carrying said dogs, a shaft provided with cranks which engage with one set of arms of said levers whereby said clutches are thrown into engagement by the operator, and stops arranged to be engaged by said levers and to automatically throw said clutches out of engagement when the scoop is elevated into carrying position and when it is dumped, substantially as and for the purposes set forth.

8. In a scraper, the combination with a crank shaped axle and supporting wheels capable of turning thereon, of a scoop suspended from said axle, clutches arranged to lock said axle with said wheels, levers connected with and arranged to operate said clutches, a shaft provided with cranks which engage with said levers, a forked controlling lever pivoted to the sides of said scoop and connected with said axle, and an angular lever pivoted in said controlling lever and connected with an arm on said crank shaft, substantially as and for the purposes set forth.

9. In a scraper, the combination with a crank axle and wheels capable of turning thereon, of a scoop suspended from said axle, dogs carried by arms fixed upon said axle and arranged to engage with said wheels, levers fulcrumed to said arms and connected with said dogs, a cross shaft carried by said axle and provided with cranks which engage with said levers, a forked controlling lever pivoted to the sides of said scoop and connected with said axle, hooks on the sides of said lever arranged to engage with said axle to hold the scoop in an elevated position, a trip lever pivoted in said controlling lever, connected with an arm on said crank shaft and arranged when the controlling lever is depressed to be engaged by said scoop so as to shift the dog-controlling levers, draw bars pivoted to the sides of said scoop, and stops arranged to arrest and hold the scoop in place when elevated

into carrying position, and stops arranged to automatically move said dogs out of engagement with said wheels after the scoop has been raised into carrying position, or has  
5 been turned into position for dumping, substantially as and for the purposes set forth.

In testimony that we claim the foregoing as

our own we affix our signatures in presence of two witnesses.

FERDINAND F. HUDEL.

EDWARD H. LIEBENSTEIN.

Witnesses:

CHAS. L. GOSS,

E. G. ASMUS.