

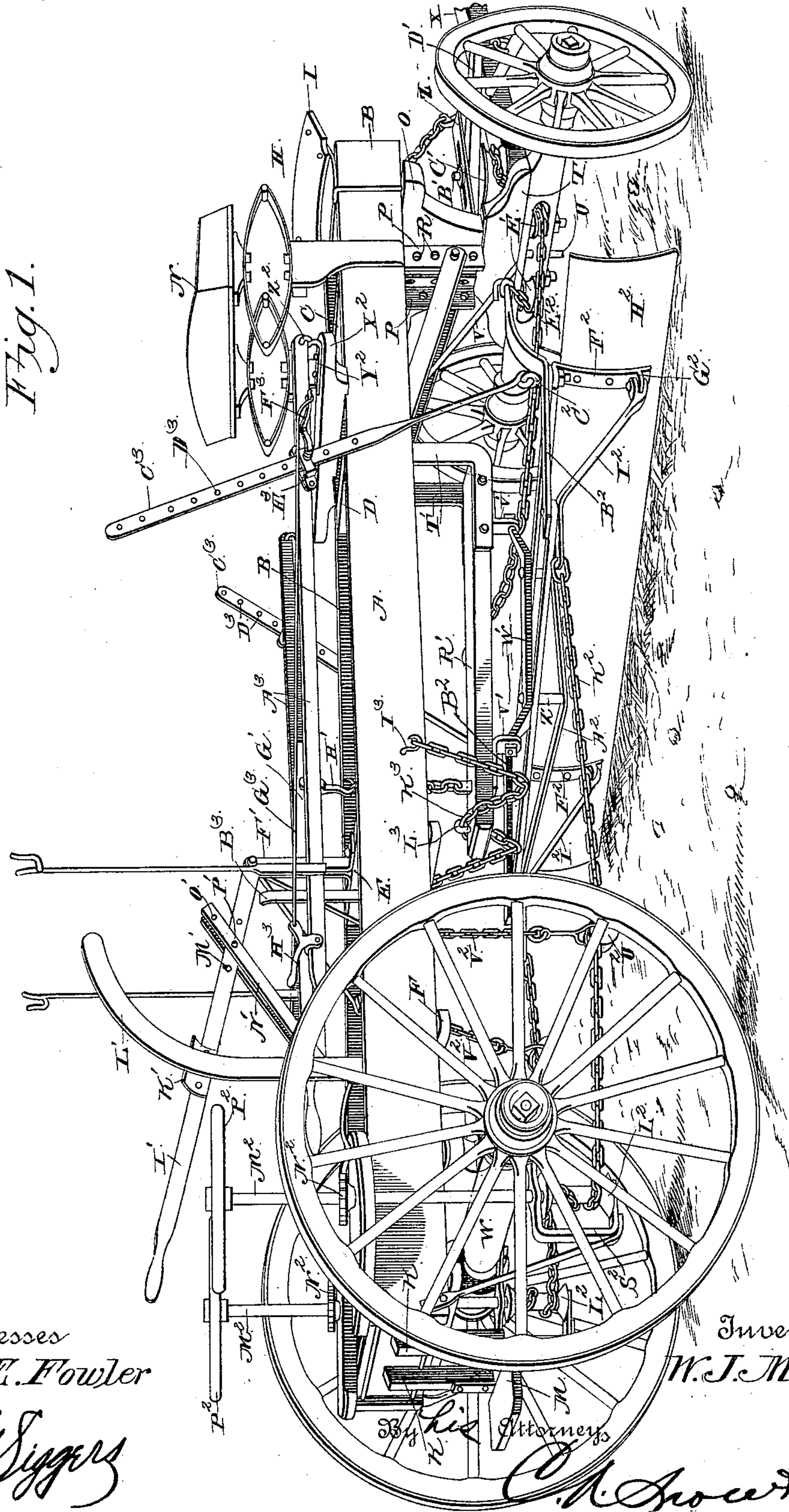
(No Model.)

4 Sheets—Sheet 1.

W. J. MARTIN.  
ROAD SCRAPER AND GRADER.

No. 377,082.

Patented Jan. 31, 1888.



Witnesses  
M. E. Fowler

*E. L. Siggers*

Inventor  
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By *W. J. Martin* Attorneys

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(No Model.)

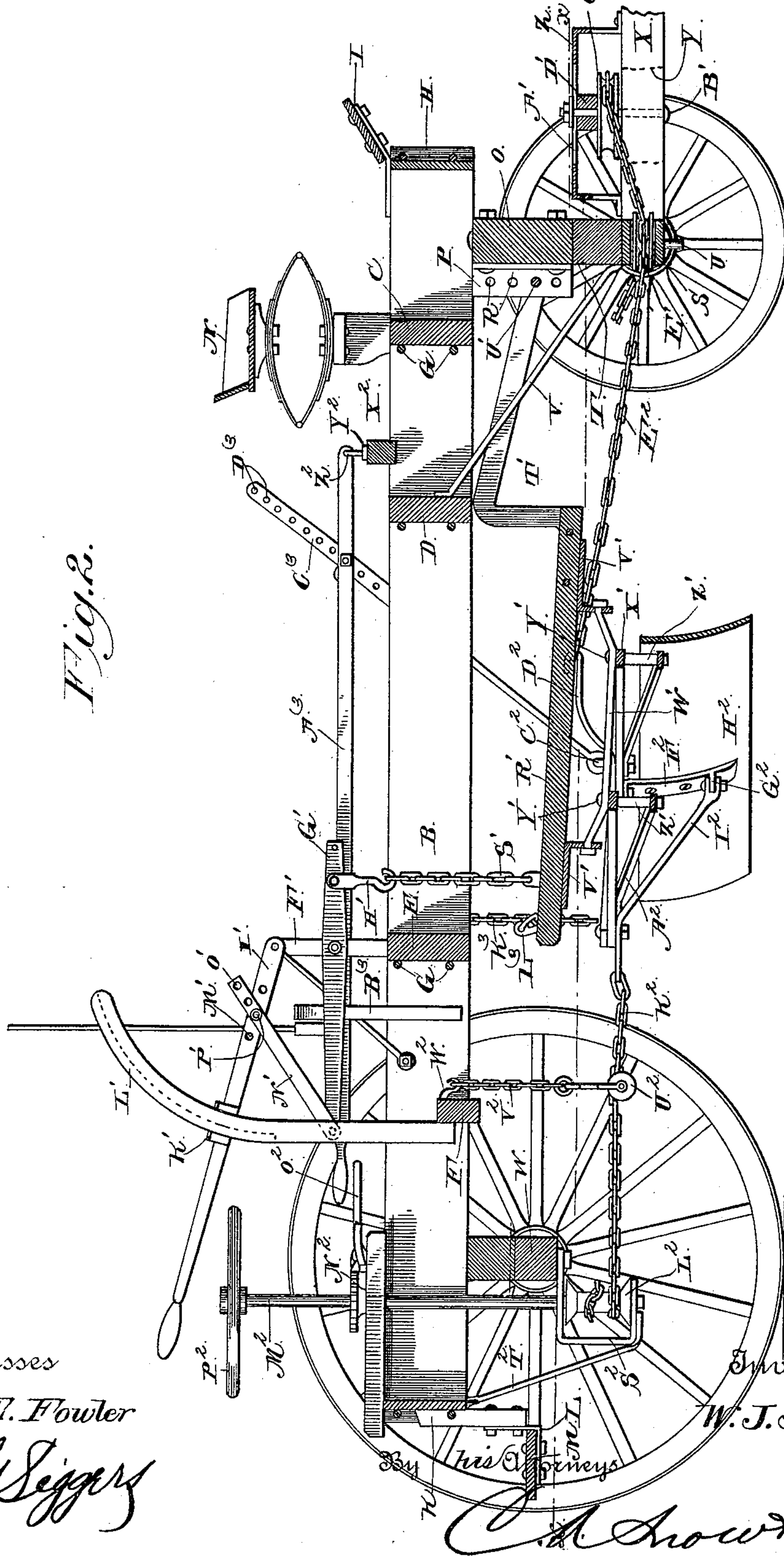
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Fig. 2.



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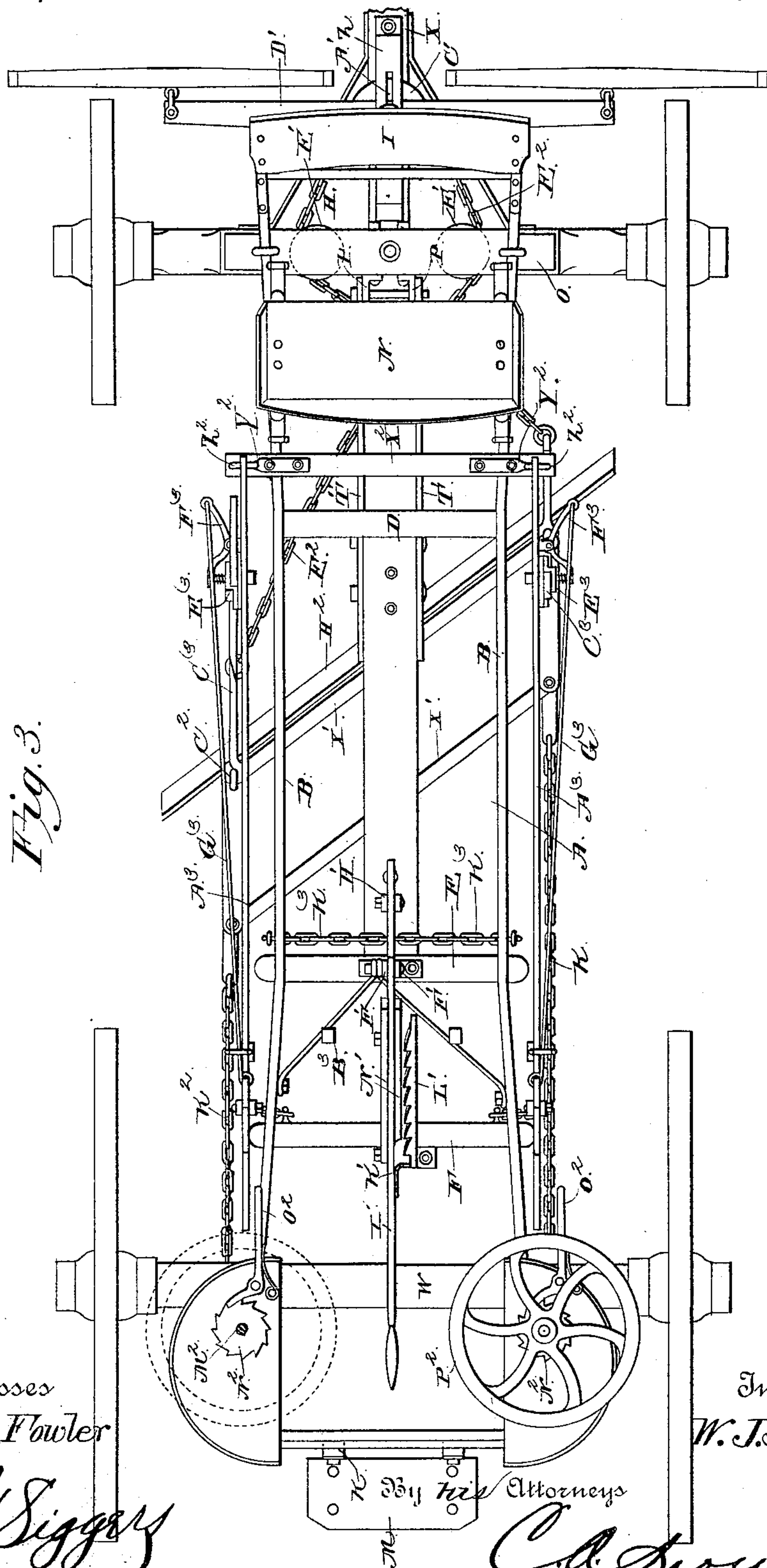
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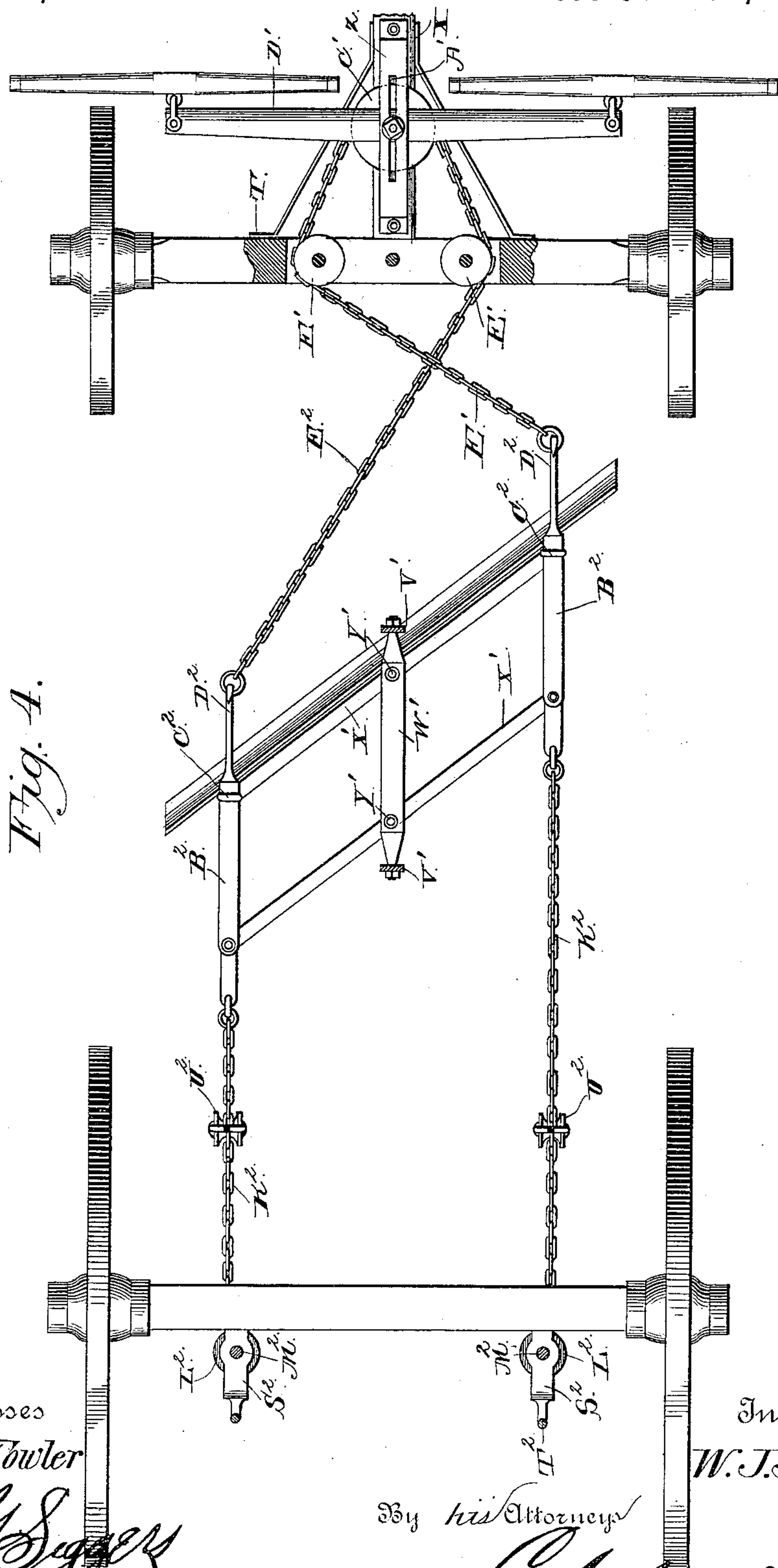


Fig. 4.

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# UNITED STATES PATENT OFFICE.

WELLINGTON J. MARTIN, OF MOUNT PLEASANT, ASSIGNOR TO THE IOWA ROAD GRADER AND DITCHER MANUFACTURING COMPANY, OF BURLINGTON, IOWA.

## ROAD SCRAPER AND GRADER.

SPECIFICATION forming part of Letters Patent No. 377,082, dated January 31, 1888.

Application filed August 25, 1887. Serial No. 247,869. (No model.)

*To all whom it may concern:*

Be it known that I, WELLINGTON J. MARTIN, a citizen of the United States, residing at Mount Pleasant, in the county of Henry and State of Iowa, have invented a new and useful Improvement in Road Scrapers and Graders, of which the following is a specification.

My invention relates to an improvement in road scrapers and graders; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a road scraper and grader embodying my improvements. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a top plan view. Fig. 4 is a horizontal sectional view taken on the line *x x* of Fig. 2.

A represents the body or frame, which comprises the sides B, arranged parallel with each other and having their front and rear ends diverged, as shown in Fig. 3, thereby making the ends of the frame or body wider than the central portion thereof and making the rear end of the frame or body wider than its front end. The sides of the frame or body are connected together by transverse beams C, D, E, and F, arranged at suitable distances apart, as shown at Fig. 2. Bolt-rods G also extend transversely through the sides of the frame or body and connect the same to the ends of the cross-beams, thereby rendering the frame or body extremely strong and durable. Over the front end, H, of the frame or body extends a foot-board, I, and from the rear end of the frame or body depend vertical bars K, having angle-plates L attached thereto, and serving to support the step M, by means of which the operator may get onto or off the frame.

N represents the seat for the driver, which is secured above the upper side of the bed or body near the front end thereof.

O represents the head-block, which is arranged under the front end of the frame or body. On the rear side of this head-block are bolted a pair of vertical angle-plates, P, pro-

vided with a vertical series of aligned openings, R.

S represents the front axle.

T represents the sand-board, which is arranged on the upper side of the same, at the center thereof, and U represents the king-bolt, which extends through the vertical aligned opening made in the center of the head-block, the sand-board, and the front axle.

A recess is made in the upper side of the front axle, at the center thereof, to receive the front end of a brace-rod, V, through which the king bolt passes, and the rear end of the said brace-rod is bolted to the cross-beam D of the frame or body. The rear end of the frame or body is supported on the rear axle, W, in the usual manner.

X represents the tongue, which is attached to the front axle, and is provided near its rear end with a vertical longitudinal slot, Y. A hammer-strap, Z, is secured at both ends on the upper side of the tongue, at the rear end thereof, and is provided with a longitudinal slot, A', which is arranged over and registers with the slot Y.

B' represents a vertical longitudinally-movable bolt, which extends through the slots Y and A'. On this bolt is journaled a pulley, C', which bears on the upper side of the tongue, and whiffletree D' is fulcrumed on the said bolt and bears upon the upper side of the pulley. A horizontal opening is made in the central portion of the front axle, and in the said opening are journaled sheaves or pulleys E', one of which is arranged on either side of the king-bolt.

On the upper side of the cross-beam E, at the center thereof, is secured a pair of vertical standards, F', between which, at a suitable distance from their lower ends, is fulcrumed a lever, G', from the short front end of which depends a hook, H'.

I' represents a hand-lever, which is pivoted between the upper ends of the standards F' and extends rearward therefrom, the said lever being provided on one side with a flange or lip, K', adapted to engage the ratchet-teeth. On the upper curved portion of a standard, L', which extends upward from the central



portion of the frame or body, a series of openings,  $M'$ , are made in the lever  $I'$ , near the pivoted end thereof.

$N'$  represents a pair of rods, which have their lower ends pivoted to the rear end of lever  $G'$ . The front upper ends of the said rods are provided with a series of openings,  $O'$ , adapted to register with their openings  $M'$ , and bolt  $P'$  passes through one of the openings  $O'$  and one of the openings  $M'$ , and thereby pivots the rods to the lever  $I'$ , as will be readily understood.

$R'$  represents a longitudinal beam, the rear portion of which is suspended from the hook  $H'$  by means of a chain,  $S'$ . To opposite sides of the front end of the beam are bolted forwardly-extending arms  $T'$ , which are first extended upward from the front end of the beam, then curved, as shown, and have their front ends attached to the plates  $P$  by means of a pivotal bolt,  $U'$ , which passes through the said arms and through either of the openings  $R$ . By this construction the front ends of arms  $T'$  may be attached to the plates at any desired point, and thereby form a vertically-adjustable means for connecting the front end of the beam  $R'$  to the main frame or body of the machine. On the under side of the beam  $R'$ , near its front and rear ends, are bolted metallic plates  $V'$ , which have their inner ends turned downward and provided with aligned openings, in which are journaled the upturned ends of the longitudinal bar  $W'$ .

$X'$  represents a pair of parallel bars, which have their centers connected to the under side of the bar  $W'$ , near the ends thereof, by means of pivotal bolts  $Y'$ . Said bolts extend downward a suitable distance and pass through hollow vertical tubular sleeves  $Z'$  and through the central portions of truss-rods  $A^2$ , which are arranged on the under sides of the parallel bars  $X'$ . Said rods have their ends extended upward and connected to the under sides of the said parallel bars, and said ends are pivotally bolted to the outer ends of the bars  $X'$ , as shown in Figs. 1 and 4. The bolts which connect the front bar,  $X'$ , to the ends of bars  $B^2$  have eyes  $C^2$  formed at their upper ends. The bars  $B^2$  have their front ends extended to form hooks  $D^2$ .

$E^2$  represents a chain which passes around the pulley  $C'$ , over opposite sides of the sheaves  $E'$ , and has its rear ends crossed and connected to the hooks  $D^2$ , as shown.

$F^2$  represents a pair of brackets, which are curved, as shown, and have their upper ends bent rearward at right angles and pivoted to the lower ends of the eyebolts  $C^2$ . From the rear sides of these brackets, near their lower ends, project lugs  $G^2$ .

$H^2$  represents a scraping blade, which is preferably made of steel, and is of suitable length and width, is curved in transverse section, as shown, and is arranged transversely on the front sides of the brackets  $F^2$  and bolted to the same.

$I^2$  represents a pair of rods, which have their

front ends bifurcated, so as to receive the lugs  $G^2$  of the brackets and bolted thereto. The said rods extend upward and rearward from the said brackets, and are bolted to the under side of the rear bar,  $X'$ , by the same bolts which connect the said bar to the rear ends of the bars  $B^2$ , and from the said bolts the bars  $I^2$  extend rearward and are connected to chains  $K^2$ . The rear ends of the said chains are attached to drums  $L^2$ , formed at their lower ends of a pair of vertical shafts,  $M^2$ , which shafts are journaled in the body or frame, as shown, are provided with ratchet-wheels  $N^2$ , normally engaged by spring-actuated dogs  $O^2$ , and have hand-wheels or levers  $P^2$  at their upper ends, by means of which the shafts may be turned, so as to wind the rear ends of the chains  $K^2$  on the drums or uncoil the said chains therefrom. The lower portions of the shafts  $M^2$  are journaled in yokes  $S^2$ , that are pivoted to the lower side of the rear axle and depend therefrom.

$T^2$  represents a pair of brace rods, which have their lower ends attached to the lower side of the said yokes and their upper ends bolted to the rear end of the frame or body  $A$ .

The chains  $K^2$  pass over supporting sheaves  $U^2$ , which are suspended from chains  $V^2$ , that are attached to hooks  $W^2$ , projecting from the front side of the cross-beam  $F$ .

$X^2$  represents a cross-beam, which is arranged on the upper side of the bed or body at a suitable distance from the front end thereof. On the upper side of the said beam, at its ends, are bolted plates  $Y^2$ , the outer ends of which form eyes  $Z^2$ .

$A^3$  represents a pair of levers, which have their front ends pivoted to the eyes  $Z^2$ . The said levers extend rearward over the frame or body  $A$ , are arranged parallel with each other, and bear against the outer sides of driving-standards  $B^3$ , which are attached to the inner sides of the body or frame and rise therefrom. The rear ends of these levers extend nearly to the rear end of the bed or frame within reach of the operator stationed on the rear end of the bed or frame.

$C^3$  represents a pair of rods, which are rounded at their lower ends and hooked to eyebolts  $C^2$ . The upper portions of the said rods are flattened on opposite sides, provided with a series of openings,  $D^3$ , and are passed through keepers  $E^3$ , which are attached to the outer sides of the levers  $A^3$  at a suitable distance from the front ends thereof. On the said levers are pivoted spring-actuated dogs  $F^3$ , having studs which extend through openings made in the keepers  $E^3$ , and are adapted to engage the openings  $D^3$  and thereby pivot the rods  $C^3$  to the levers at any desired vertical adjustment. Rods  $G^3$  extend forward from the pivoted dogs to thumb-levers  $H^3$ , which are pivoted to the levers  $A^3$  near the ends of the latter. On the outer sides of the bed or body  $A$  are hooks  $I^3$ .

$K^3$  represents a chain, the central portion of which is connected to the rear ends of the



beam R' by means of a keeper or staple, L<sup>3</sup>. The ends of the chains are attached to the hooks L<sup>3</sup>, and the function of the said chain is to secure the beam at any desired lateral adjustment under the bed or body, and thereby permit either end of the scraping-blade to be projected beyond the side of the machine, thus adapting the latter to be used in cutting down banks. When the beam R' is arranged under the center of the bed or body, as illustrated in Fig. 3, the chain K<sup>3</sup> prevents lateral movement of the scraper.

The operation of my invention is as follows: The scraping-blade is arranged in an oblique position, so as to cause it to throw the excavated earth to either end of the scraping-blade desired, and thereby cause the earth to be thrown to the center or to the sides of the road, as may be necessary, by turning the shaft M<sup>2</sup>, so as to release one of the chains K<sup>2</sup> and draw upon the other chain K<sup>2</sup>, and thereby swing the parallel bars X' to the desired position, this movement of the parallel bars being permitted by the chain E<sup>2</sup>, which passes over the sheaves C' and E', as will be readily understood. The chains V<sup>2</sup>, which carry the sheaves U<sup>2</sup>, over which the chains K<sup>2</sup> pass, serve to support the said chains K<sup>2</sup> at a suitable height and prevent them from sagging. In order to lower the scraping-blades to the ground, the operator raises the rear end of the lever I', thereby causing the said lever, which is connected to the lever G' by the pitman N', to lower the front end of the lever G', and thereby lower the rear end of the beam R', which is suspended from the said lever G' by the chain S'. As before stated, the front end of the beam R' may be adjusted vertically by reason of the openings R in the angle-plates C. If it is desired to tilt the scraping-blades so that one end thereof will be lower than the other, this may be accomplished by raising one of the levers A<sup>3</sup>, as will be readily understood. When the said levers are arranged in the same horizontal plane, the scraping-blade will be arranged in a horizontal position and will maintain itself therein, owing to the bar W', which is journaled longitudinally under the beam R'.

It will be observed by reference to Figs. 2 and 4 that a team hitched to the singletrees with which the whiffletree is provided exert their draft directly upon the swinging frame composed of the parallel bars X' and B<sup>2</sup>, which support the scraping-blade, and thereby the draft is applied directly to the center of the scraping-blade, thus serving to direct the latter in a straight line when in operation and preventing it from moving endwise when it encounters slight obstructions. When an obstruction of any considerable magnitude is encountered, the operator depresses the rear end of the lever I', and thereby raises the scraping-blade to permit the same to pass freely over the obstruction. The ratchet-teeth with which the standard L' is provided serve to retain the lever I' at any desired angle, and thereby en-

able the scraping-blade to be sustained at any desired height.

Having thus described my invention, I claim—

1. The combination, in a scraper and grader, of the beam R' and the swinging frame suspended from the said beam, pivoted longitudinally under the same and thereby adapted to tilt or incline, and carrying the scraping-blade, substantially as described.

2. The combination, in a scraper and grader, of the beam R', the rod W', journaled longitudinally under the said beam, and the frame having the parallel bars X' pivoted under the bar W', the said frame carrying the scraping-blade, and means to turn the frame and blade to any desired angle, substantially as described.

3. The combination, in a scraper and grader, of the vertically-movable beam R', the frame pivoted longitudinally thereunder, suspended therefrom, and having the parallel bars X', adapted to be swung in any desired direction, means to swing the said frame in a horizontal plane and thereby arrange it in any desired oblique position, the levers attached to the ends of the frame and adapted to incline the same to any desired angle, and the scraping-blade attached to the frame, substantially as described.

4. The combination, in a scraper and grader, of the beam R', the rod W', journaled longitudinally under the same, the parallel bars X', pivoted centrally to the said bar W', the bars B<sup>2</sup>, pivotally connected to the ends of the bars X', the brackets F<sup>2</sup>, depending from one of the bars X', and the scraping-blade attached to the said brackets, substantially as described.

5. In a scraper and grader, the combination of the bars X', arranged parallel with each other and connected together, the trusses A<sup>2</sup> on the under side of the said parallel bars, brackets F<sup>2</sup>, depending from one of the said bars, and the scraping-blade attached to said brackets, substantially as described.

6. The combination of the beam R', the rod W', journaled under the same, parallel bars X', pivoted centrally to the rod W', the bars B<sup>2</sup>, pivotally connected to the ends of the bars X' and connecting the same together, the brackets F<sup>2</sup>, depending from the front bars X', and the braces I<sup>2</sup>, extending from the lower ends of the said brackets to the outer ends of the rear bar X', substantially as described.

7. The combination of the bed or frame A, mounted on wheels, the vertically-movable beam R', arranged under the same, and the frame suspended from the said beam, pivoted longitudinally thereunder, and having the scraping blade and lever to raise and lower the beam, substantially as described.

8. The combination of the bed or frame A, mounted on wheels, the beam R', arranged under the same and vertically movable, the swinging frame suspended from the said beam and adapted to be turned to any desired position in a horizontal or vertical direction, the



levers attached to the said beam to raise and lower the same, the levers  $A^3$ , connected to the ends of the swinging frame to incline the latter in a vertical direction and thereby raise either end of the scraping-blade attached to the frame, the shaft  $M^2$ , having the drums, and the chains connected to the said drums and to the swinging frame, whereby the latter may be turned in a horizontal direction, substantially as described.

9. The combination of the frame or body mounted on wheels, the frame having the scraping-blade arranged under the frame or body A, the longitudinally-movable pulley  $C'$ , connected to the whiffletree, to which the draft-animals are attached, and the chain passed over the said pulley and connected to the frame carrying the scraper, whereby the draft will be applied directly to the scraper, substantially as described.

10. The combination of the main frame or bed mounted on wheels, the beam  $R'$ , having its front end connected thereto and vertically adjustable thereon, the lever connected to the rear end of the said beam to raise and lower the same, and the swinging frame suspended from the beam  $R'$  and adapted to turn in either a horizontal or a vertical direction, and the scraping-blade attached to the said suspended frame, substantially as described.

11. The combination of the main frame or bed mounted on wheels, the vertically-movable beam  $R'$  under the same, the said beam carrying the scraping-blade, the lever  $G'$ , fulcrumed on the main frame and connected to the beam  $R'$ , also fulcrumed to the main frame, and the link  $N'$ , connecting the lever  $I'$  to the lever  $G'$ , substantially as described.

12. The combination of the main frame mounted on wheels, the beam  $R'$ , arranged under the main frame, the swinging frame suspended from the said beam and to which the scraping-blade is connected, the levers  $A^3$ , and the links or rods  $C^3$ , connecting the swinging frame to the said levers and detachably attached to the latter, substantially as described.

13. The combination of the main frame or body mounted on wheels, the beam  $R'$ , arranged under the same, the swinging frame suspended from the said beam and carrying the scraping-blade, the levers  $A^3$ , fulcrumed on the main frame and having the keepers  $E^3$  and the detents  $F^3$ , and the link or rod  $C^3$ , attached to the ends of the swinging frame, passed through the keepers  $E^3$ , and engaged by the detents  $F^3$ , whereby the said links or rods are adjustably attached to the levers  $A^3$ , substantially as described.

14. The combination of the main frame or body, the vertically-movable beam  $R'$ , arranged under the same, the swinging frame suspended

from the said beam and carrying the scraping-blade, the shaft  $M^2$ , journaled in the main frame and having the drums and chains  $K^2$ , connecting the end of the swinging frame to the said drums, and the vertically-adjustable chains  $V^2$ , depending from the main frame and having the sheaves  $U^2$ , over which the chains  $K^2$  pass, substantially as described.

15. The combination of the bed or frame A, mounted on wheels, the beam  $R'$ , arranged under the same, the swinging frame suspended from and pivoted longitudinally under the said beam, the scraping-blade secured to the said frame, and the levers connected to opposite sides of the frame to tilt or incline the same in either direction, substantially as described.

16. The main frame or body A, comprising the side boards, B, having their ends diverged, and the cross-beams connecting the said boards together, substantially as described.

17. The combination of the frame or body A, the rear axle arranged under the same, the head-block O under the front end of the frame, the front axle pivoted under the head-block, the plates P on the rear side of the head-block and having the vertical series of openings R, and the beam  $R'$ , having the curved arms  $T'$  extending from its front end, the front ends of the said arms being pivoted on a bolt extending through two of the aligned openings R, substantially as described.

18. The combination of the main frame or body having the rear axle, the head-block under the front end of the frame or body, the sand-board under the head-block, the front axle under the sand-board, the king-bolt passing through the centers of the head-block, sand-board, and front axle, the sheaves  $E'$ , journaled on either side of the said king-bolt and arranged in an opening in the front axle, the tongue, the bolt  $B'$ , movably journaled therein, the sheave  $C'$  and whiffletree pivoted on the said tongue, the beam having its front end connected to the head-block, the said beam carrying the swinging suspended frame to which the scraping-blade is attached, the chain  $E^2$ , passed over the front side of the pulley  $C'$ , over opposite sides of the sheaves  $E'$ , and having its rear ends crossed and connected to the swinging suspended frame, whereby the draft will be applied directly to the scraper, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WELLINGTON J. MARTIN.

Witnesses:

W. I. BABB,  
C. W. HOWARD.