

No. 681,886.

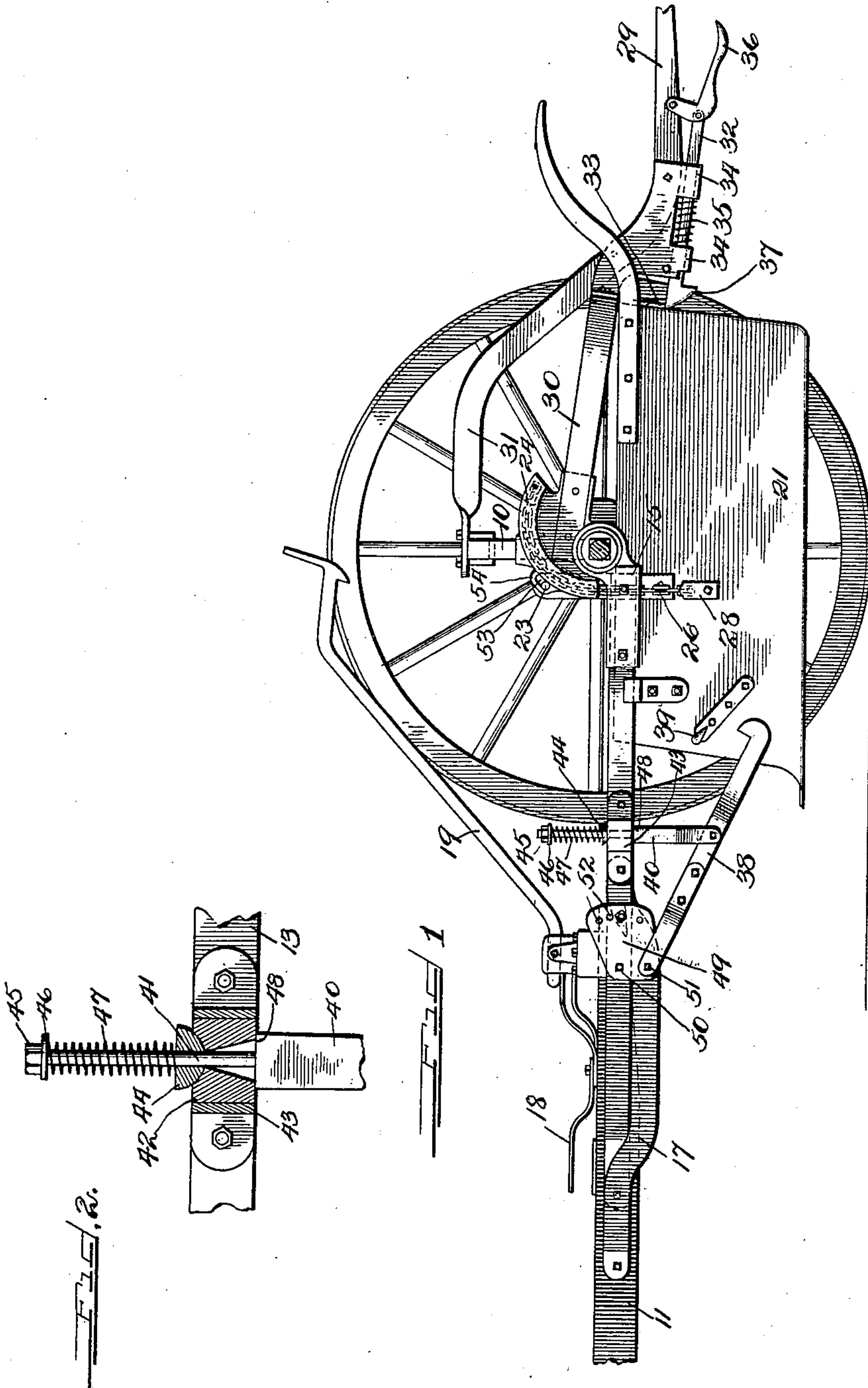
Patented Sept. 3, 1901.

T. R. MCKNIGHT.
WHEELED SCRAPER.

(Application filed June 15, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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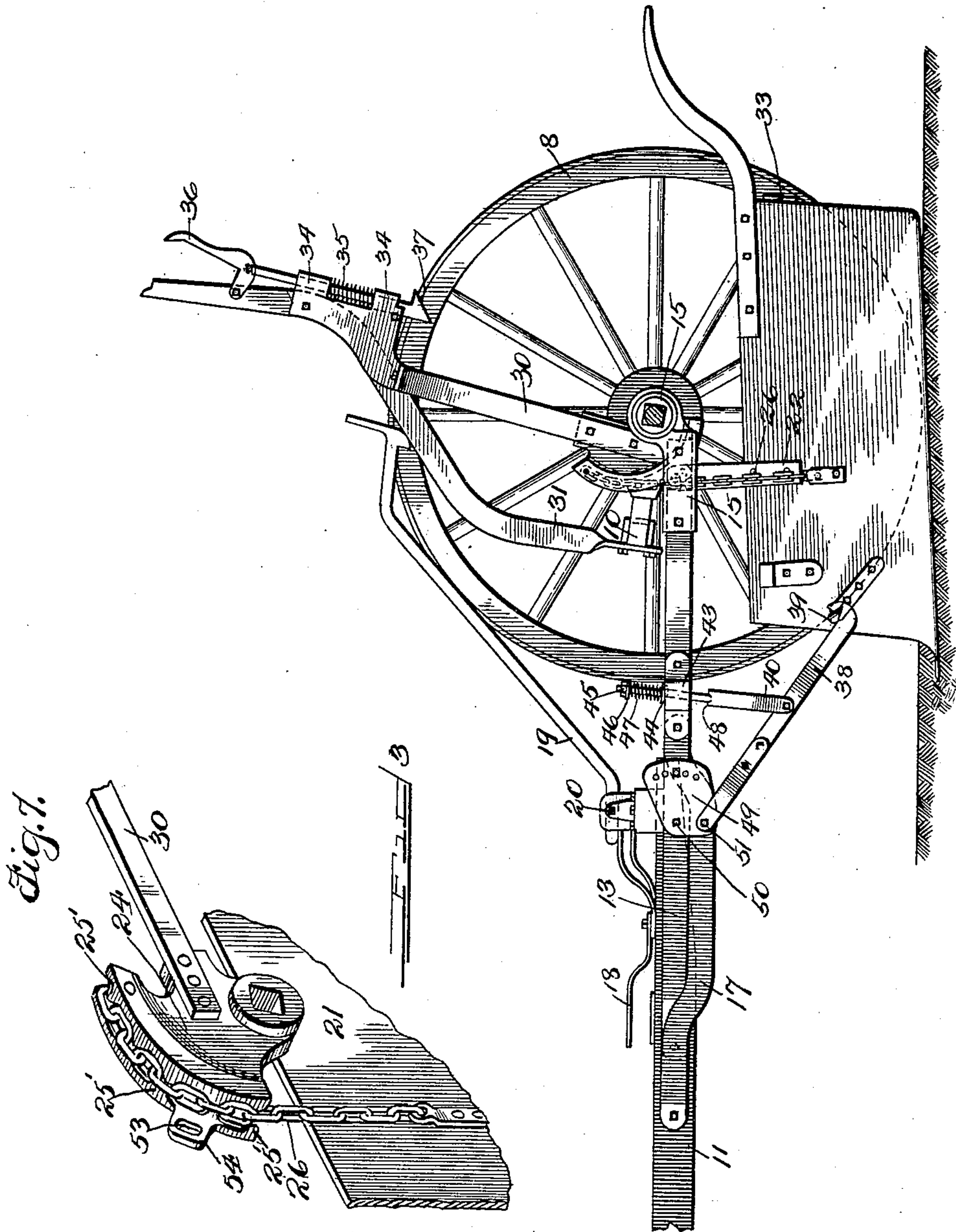
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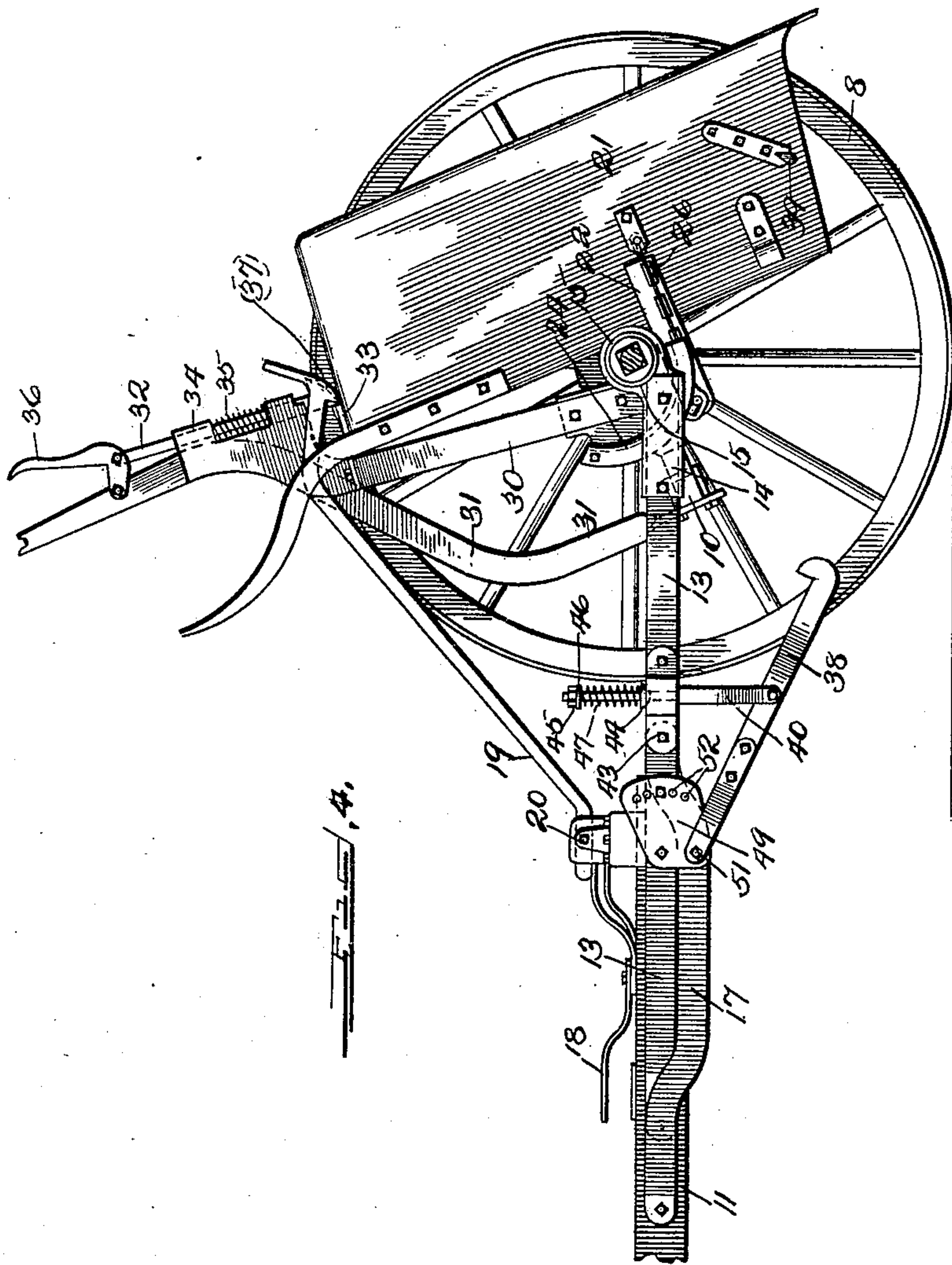
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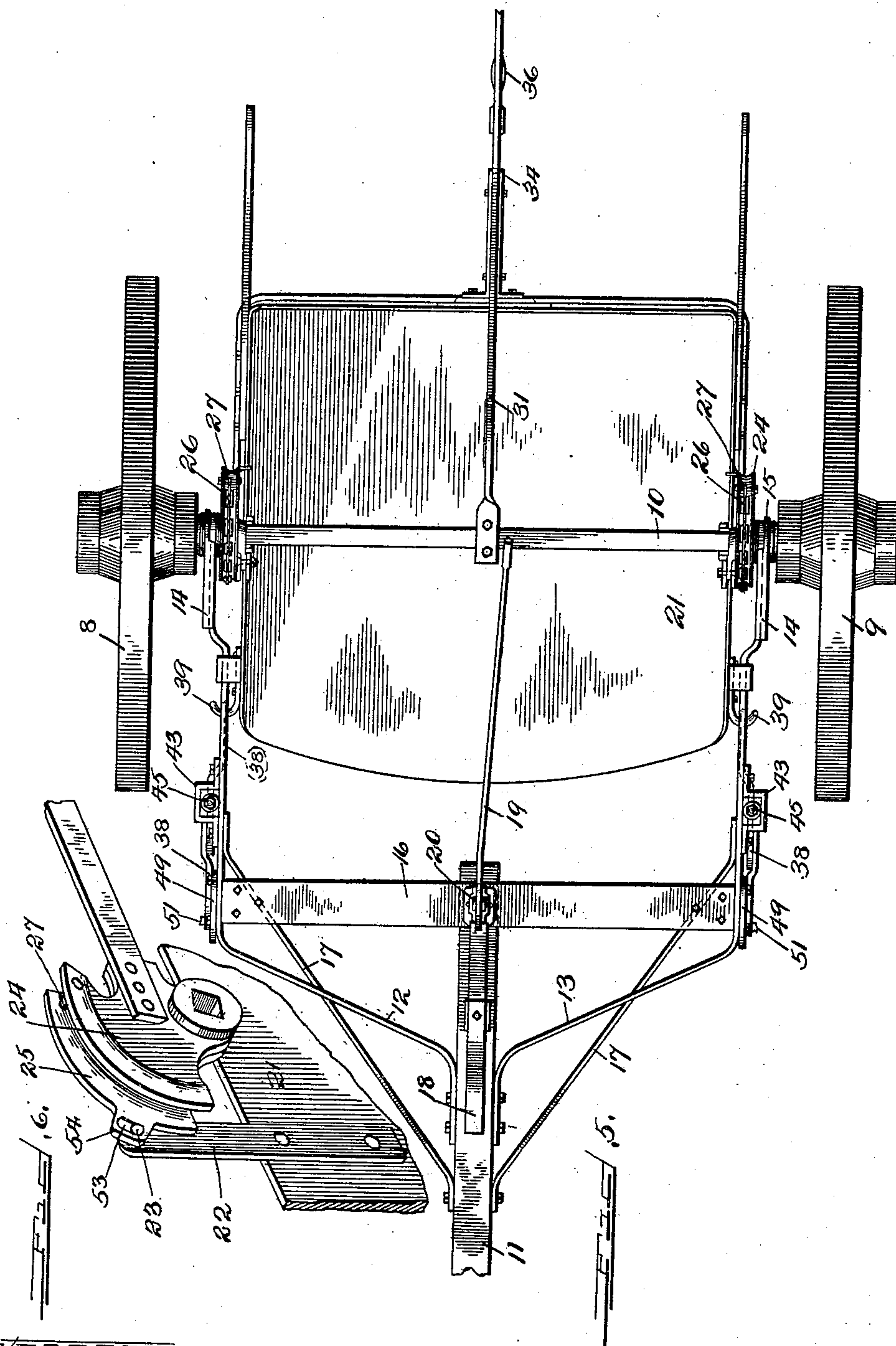
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4 Sheets—Sheet 4.



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WHEELED SCRAPER.

SPECIFICATION forming part of Letters Patent No. 681,886, dated September 3, 1901.

Application filed June 15, 1901. Serial No. 64,634. (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.

My invention relates to wheeled scrapers of the type involving the use of a scraper-pan supported on a wheeled carriage, the pan being movable into various positions for loading, carrying, and dumping.

In my Patent No. 672,798, dated April 23, 1901, I have set forth an improved construction of scraper having the lifting devices for raising the pan so arranged that the point at which the weight is sustained by the lifting mechanism moves toward the fulcrum of the lifting-lever when said lever is operated to raise the pan, so that the operator has a greater leverage when the load to be lifted is increased by reason of the lifting of the pan clear of the ground as it moves from loading to carrying position, the special mechanism shown in connection with my said patent consisting of rack-bars operated by cam-shaped racks so arranged as to secure the operation above described. In part my present invention involves a similar principle, one of the objects of the invention being to secure a similar operation of the lifting devices and at the same time provide for suspending the scraper-pan flexibly from the lifting devices.

A further object is to provide a scraper-pan flexibly suspended from its carriage with means for forcibly holding it in contact with the ground while being loaded without interfering with the flexibility of its suspension.

Further objects are to provide for adjusting the position of the pan when in loading position and to provide certain other improvements which will be hereinafter set forth.

What I regard as new will be set forth in the claims.

In the drawings, Figure 1 is a side elevation of a scraper, one wheel being removed, showing the pan in carrying position. Fig. 2 is a detail, being a partial longitudinal vertical section, illustrating the mounting of the supporting-bars which hold the draft-hooks

in position. Fig. 3 is a side elevation, one wheel being removed, showing the pan in loading position. Fig. 4 is a similar view showing the pan after it has been dumped. Fig. 5 is a plan view. Fig. 6 is a perspective view illustrating the lifting devices for the pan, and Fig. 7 is a perspective view illustrating a more improved form of the lifting devices.

Referring to the drawings, 8 9 indicate the wheels of the carriage, which, as shown in Fig. 5, are connected by an arched axle 10.

11 indicates a tongue, which is connected by straps 12 13 with the ends of the arched axle 10. Said straps extend from the tongue back to the axle-spindles in substantially the same horizontal plane as the spindles, as shown in Fig. 4, so that the draft devices, being on substantially the level of the axle-spindles, do not interfere with the proper loading of the pan. As best shown in Figs. 4 and 5, the straps 12 13 are provided with brackets 14, having collars 15, which fit upon the axle-spindles inside the wheels, so that the axle may rotate freely in said collars.

16 indicates a cross-bar, which holds the straps 12 13 apart and braces the draft devices.

17 indicates tongue-braces.

18 indicates a hammer-strap.

19 indicates the usual latch for the pan, which is pivoted upon the tongue at 20 in the usual way.

21 indicates the scraper-pan, which is of the usual shape. It is provided at each side with a vertically-extending bar 22, which is fixedly secured to the side of the pan and is provided at its upper end with a laterally-projecting pin 23, as best shown in Fig. 6, the object of which will be hereinafter set forth.

24 indicates eccentric lifting blocks or cams which are mounted on the axle 10, one at each side of the pan, as best shown in Fig. 5, the outer surface of each of said blocks being curved, as shown in Fig. 6, and being so arranged that the upper portion of the periphery of each of said blocks lies at a considerably-greater distance from the axle than the lower portion of the periphery thereof. In the periphery of each of said blocks is a groove 25, as best shown in Fig. 6. Said groove is adapted to receive a flexible connection, such

as a chain 26, by which the lifting-block is connected to the pan. (Best illustrated in Figs. 1 and 3.) In the construction shown in Fig. 6 the grooves 25 in the peripheries of the lifting-blocks are simple grooves of uniform width throughout their length, and the chains are connected to the lifting-blocks only by pins 27, secured in the lifting-blocks near the upper ends of the grooves, as shown in Fig. 6, so that the chains lie in said grooves. It is sometimes desirable to provide the lifting-blocks with additional means for engaging the chain positively, and to this end in the construction shown in Fig. 7 the lifting-blocks are provided with lugs 25', which project inwardly from the sides of the grooves and are so spaced apart that the links of the chain fit between them, as shown in Fig. 7, the operation being like that of a cam sprocket wheel and chain. This construction is superior to that shown in Fig. 6, since there is a positive engagement between the lifting-blocks and the chains at several points and the power is applied to the chains more efficiently. The lower portion of each of the chains 26 is connected to one side of the pan at a point forward of the center thereof, preferably by means of a strap 28. (Shown in Fig. 1.) The straps 28 are placed below and substantially in line with the bars 22, as shown in Figs. 1 and 3. By this construction it will be seen that by rocking the lifting-blocks 24 the pan may be raised or lowered and at the same time will be moved forward or backward with reference to the axle. By rocking the lifting-blocks backward the pan will be raised, and inasmuch as the lower portion of the groove lies nearer the axle than the upper portion thereof the chain will lie closer to the axle when the pan is raised, and will consequently be moved relatively backward. On the other hand, when the lifting-blocks are rocked in the opposite direction the pan will be lowered and at the same time moved forward with respect to the axle, since the upper portion of the blocks, from which the pan will then be suspended by the chains 26, lies at a greater distance from the axle. The advantage of this construction is that the operator has a greater leverage during the latter part of the lifting operation than during the first part thereof. This is desirable, inasmuch as less power is required to raise the front portion of the pan alone than to raise the entire pan, as must be done during the latter part of the operation of raising the pan from loading to carrying position. The lifting-blocks are rocked to raise and lower the pan by means of a lifting-lever 10 which is connected to the blocks by straps 30, the whole forming a bifurcated lever. The lifting-lever 29 is also connected to the axle 10 by a strap 31, so that the axle, as well as the blocks, is rocked when the lever 29 is operated. The lever 29 carries a latch 32, which engages a lug 33 on the rear end of the pan to hold the pan in carrying position, as

shown in Fig. 1. The latch 32 is mounted in bearings 34, carried by the lever 29, and is normally held in engagement with the lug 33 by a spring 35. It is moved longitudinally to carry it out of engagement with said lug by a hand-lever 36, pivoted to the lever 29, as shown in Fig. 1. When released, it automatically engages the lug 33, when the pan is raised to carrying position by reason of its having a beveled surface 37 on its under side which strikes the lug 33, thereby forcing the latch back until it passes below the lug, when the spring 35 moves it into engagement therewith.

38 indicates draft-hooks, the forward ends of which are supported by the straps 12 13, their rear ends extending back and projecting beyond the forward side edges of the pan. Said hooks are adapted to engage hooks 39, carried by the pan. The engagement of the hooks 38 and 39 is such that when the scraper-pan is in carrying position the hooks 39 lie above and out of engagement with the hooks 38; but when the pan is lowered to loading position the hooks 39 move down into engagement with the hooks 38, carrying said hooks downward, this arrangement being maintained while the pan is being loaded. The hooks 38 are held upward in position to engage the hooks 39 by supporting-bars 40, mounted in suitable bearings in the straps 12 13. The construction and mounting of the supporting-bars 40 are best shown in Figs. 2 and 4, from which it will be seen that the upper portion of each of the bars 40 is reduced to form a rod 41, which extends through a bearing-block 42, carried by one of the draft-straps 12 or 13 and secured to a clip 43. The bearing-block 42 is flared at the bottom, as shown in Fig. 2, to permit a slight oscillation of the rod 41. The upper portion of each of the bearing-blocks 42 is provided with a concave recess to receive a hemispherical block 44, mounted on the rod 41, as shown in Fig. 2. At its upper end the rod 41 carries a nut 45 and collar 46, between which and the block 44 is a spring 47. By this construction the spring 47 acts to hold up the rod 41 and bar 40. A shoulder 48, provided at the bottom of the rod 41, bears against the under side of the block 42, as shown in Fig. 2. By thus holding up the bar 40 the draft-hook 38, to which it is pivotally connected at its lower end, is also held up; but said hook may be carried downward, as may be necessary when the scraper-pan is lowered to loading position, as shown in Fig. 3. The object of providing for oscillation of the supporting-bar 40 is to permit longitudinal adjustment of the draft-hooks 38. This adjustment is secured by pivoting the forward end of each hook 38 to a supporting-plate 49, said plate being pivoted at 50 to one of the straps 12 or 13 and being adapted to rock upon its pivot to carry the pivot 51 of the draft-hook forward or backward, thereby moving the draft-hook correspondingly. The plate 49 is se-

cured in various positions of adjustment by means of pins passing through adjusting-holes 52 and into a suitable hole provided in the strap 12 or 13. By providing for adjusting the draft-hooks longitudinally I provide for adjusting the position of the scraper-pan in loading.

The operation of my improved machine has already been described to some extent; but I desire to call especial attention to the operation of the lifting devices. When the pan is in carrying position, as shown in Fig. 1, it is flexibly suspended from the lifting-blocks 24 by the chains 26, which are then in the position shown in Figs. 1 and 7. Obviously at this time the weight is sustained by the lifting-blocks at a point nearer the fulcrums thereof than when the lifting-blocks are turned to the position shown in Fig. 3. When the pan is in carrying position, the bars 22 do not interfere with the flexibility of the chains 26, since the pins 23 lie loosely in the slots 53. When the lifting-lever is raised to lower the pan to loading position, the bars 22 come into action and through their instrumentality the pan is forced down and held closely in contact with the ground. The downward pressure applied to the pan may be regulated by moving the lifting-lever to carry the lugs 54 downward to a greater or less extent, and thereby vary the pressure on the pins 23. As soon as the lifting-lever is swung back to raise the pan the pins 23 are released from pressure and the pan is again suspended by the chains 26. The slots 53 in the lugs 54 are made long enough to allow the chains to raise the load to the desired height.

I have described in detail the machine illustrated in the accompanying drawings; but I wish it to be understood that my invention is not restricted to the specific details illustrated and described except in so far as they are particularly claimed.

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

1. In a scraper, the combination of a carriage, a scraper-pan, lifting-lever mechanism for raising the pan, flexible suspending devices suspending the scraper-pan from the carriage, and means arranged to continuously increase the leverage of the lifting-lever mechanism as the pan moves from loading to carrying position, substantially as described.

2. In a scraper, the combination of a carriage, a scraper-pan, lever mechanism for lifting the pan, cam mechanism adapted to be rocked by said lever mechanism, and flexible suspending devices suspending the scraper-pan from said cam mechanism, said cam mechanism being arranged to continuously move the point at which the power is applied to said flexible suspending devices toward the fulcrum of said lever mechanism as the pan moves from loading to carrying position, substantially as described.

3. In a scraper, the combination of a carriage, a scraper-pan, an axle, eccentric lifting-

blocks carried by the axle, lever mechanism for rocking said lifting-blocks, and flexible supporting devices suspending the scraper-pan from said lifting-blocks, said lifting-blocks being arranged to move the point at which the power is applied to said flexible suspending devices toward the fulcrum of said lever mechanism when the weight to be lifted increases as the pan is raised from loading to carrying position, substantially as described.

4. In a scraper, the combination of a carriage, a scraper-pan, an axle, eccentric lifting-blocks carried by the axle, lever mechanism for rocking said lifting-blocks, and chains secured to said lifting-blocks and lying in grooves in the peripheries thereof, said lifting-blocks being arranged to move the point at which the power is applied to said chains toward the fulcrum of said lever mechanism when the weight to be lifted increases as the pan is raised from loading to carrying position, substantially as described.

5. In a scraper, the combination of a carriage, an axle therefor, cam lifting-blocks mounted on said axle, the upper portions of said blocks being a greater distance from the axle than the lower portions thereof, flexible connections secured to said lifting-blocks and resting on the peripheries thereof, a scraper-pan secured to the flexible connecting devices, and a lever for rocking said lifting-blocks, substantially as described.

6. In a scraper, the combination of a carriage, an axle therefor, cam lifting-blocks mounted on said axle, the upper portions of said blocks being a greater distance from the axle than the lower portions thereof, flexible connections secured to said lifting-blocks and resting on the peripheries thereof, a scraper-pan secured to the flexible connecting devices, a lever for rocking said lifting-blocks, and a bar connected to the scraper-pan and to one of said lifting-blocks, substantially as described.

7. In a scraper, the combination of a carriage, an axle therefor, cam lifting-blocks mounted on said axle, the upper portions of said blocks being a greater distance from the axle than the lower portions thereof, flexible connections secured to said lifting-blocks and resting on the peripheries thereof, a scraper-pan secured to the flexible connecting devices, a lever for rocking said lifting-blocks, and a rigid connecting device between said lifting-blocks and the scraper-pan, substantially as described.

8. In a scraper, the combination of a carriage, an axle therefor, cam lifting-blocks mounted on said axle, the upper portions of said blocks being a greater distance from the axle than the lower portions thereof, flexible connections secured to said lifting-blocks and resting on the peripheries thereof, a scraper-pan secured to the flexible connecting devices, a lever for rocking said lifting-blocks, and a rigid connecting device between said

lifting-blocks and the scraper-pan, said rigid connecting device being movably connected to one of said lifting-blocks, substantially as described.

5 9. In a scraper, the combination of a carriage, a scraper-pan, a draft-hook adapted to engage the forward portion of the pan, and means for adjusting said draft-hook longitudinally to vary the loading position of the
10 pan, substantially as described.

10. In a scraper, the combination of a carriage, a scraper-pan, means for raising said pan from loading to carrying position, draft mechanism adapted to engage the forward
15 portion of the pan when in loading position, and means for adjusting said draft mechanism longitudinally to vary the loading position of the pan, substantially as described.

11. In a scraper, the combination of a carriage, a scraper-pan, draft-hooks adapted to engage said pan when in loading position, said draft-hooks being pivotally connected at their forward ends with the frame of the machine, and means for adjusting the pivots of
20 said draft-hooks longitudinally, substantially as described.

12. In a scraper, the combination of a carriage, a scraper-pan, a draft-hook adapted to engage said pan when in loading position,
30 and a swinging plate pivotally connected to said draft-hook and to the frame of the carriage, said plate being movable to adjust said draft-hook longitudinally, substantially as described.

13. In a scraper, the combination of a carriage, a scraper-pan, draft devices, a draft-hook pivotally connected to said draft devices, devices carried by the scraper-pan adapted to be engaged from the under side by
40 said draft-hook, springs normally holding said hook in a raised position, and means for longitudinally adjusting said draft-hook, substantially as described.

14. In a scraper, the combination of a carriage, a scraper-pan, lever mechanism for raising the pan, cam mechanism operated by said lever mechanism, flexible suspending devices suspending the scraper-pan from said cam mechanism, said cam mechanism being arranged to move the point at which the power is applied to said flexible suspending devices toward the fulcrum of said lever mechanism when the pan moves from loading to carrying position, and means for holding the scraper-pan down while in loading position, substantially as described.
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15. In a scraper, the combination of a carriage, a scraper-pan, eccentric rocking lifting-blocks, lever mechanism for rocking said lifting-blocks, flexible suspending devices connected to said lifting-blocks and to the scraper-pan, and rigid bars connected to the scraper-pan and loosely connected with the

lifting-blocks for holding the scraper-pan down while in loading position, substantially
65 as described.

16. In a scraper, the combination of a carriage, a scraper-pan, eccentric lifting-blocks, lever mechanism for rocking said lifting-blocks, chains connected to the scraper-pan
70 and lying in grooves in the peripheries of said lifting-blocks, and lugs in said grooves adapted to engage links of said chains, substantially as described.

17. In a scraper, the combination of a carriage, a scraper-pan, eccentric lifting-blocks, means for rocking said lifting-blocks, and chains secured to the pan for suspending said pan from the lifting-blocks, said blocks having means at different distances from the pivots of said lifting-blocks for positively engaging links of the chain, said lifting-blocks being arranged to move the point at which the power is applied to said chains toward the pivots of said lifting-blocks when the weight increases
80 as the pan is raised from loading to carrying position, substantially as described.

18. In a scraper, the combination of a carriage, a scraper-pan, longitudinally-adjustable draft-hooks, devices carried by the pan
90 adapted to be engaged by said draft-hooks, bars supporting said draft-hooks, and springs holding said supporting-bars normally in their uppermost position, substantially as described.

19. In a scraper, the combination of a carriage, a scraper-pan, lifting-lever mechanism for raising the pan, flexible suspending devices suspending the pan from the carriage, means arranged to increase the leverage of the lifting-lever mechanism when the pan moves from loading to carrying position, and means for holding the scraper-pan down while in loading position, substantially as described.
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20. In a scraper, the combination of a carriage, a scraper-pan flexibly suspended therefrom, lever mechanism for raising the pan, and means for moving the point at which the weight is sustained by said lever mechanism toward the fulcrum thereof when said lever mechanism is operated to raise the pan, substantially as described.
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21. In a scraper, the combination of a carriage, a scraper-pan flexibly suspended therefrom, lever mechanism for raising the pan, means for moving the point at which the weight is sustained by said lever mechanism toward the fulcrum thereof when said lever mechanism is operated to raise the pan, and rigid means for holding the pan down when
115 in loading position, substantially as described.

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