

D. K. WILSON & E. BUSWELL.

MANURE SPREADER.

APPLICATION FILED MAR. 23, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

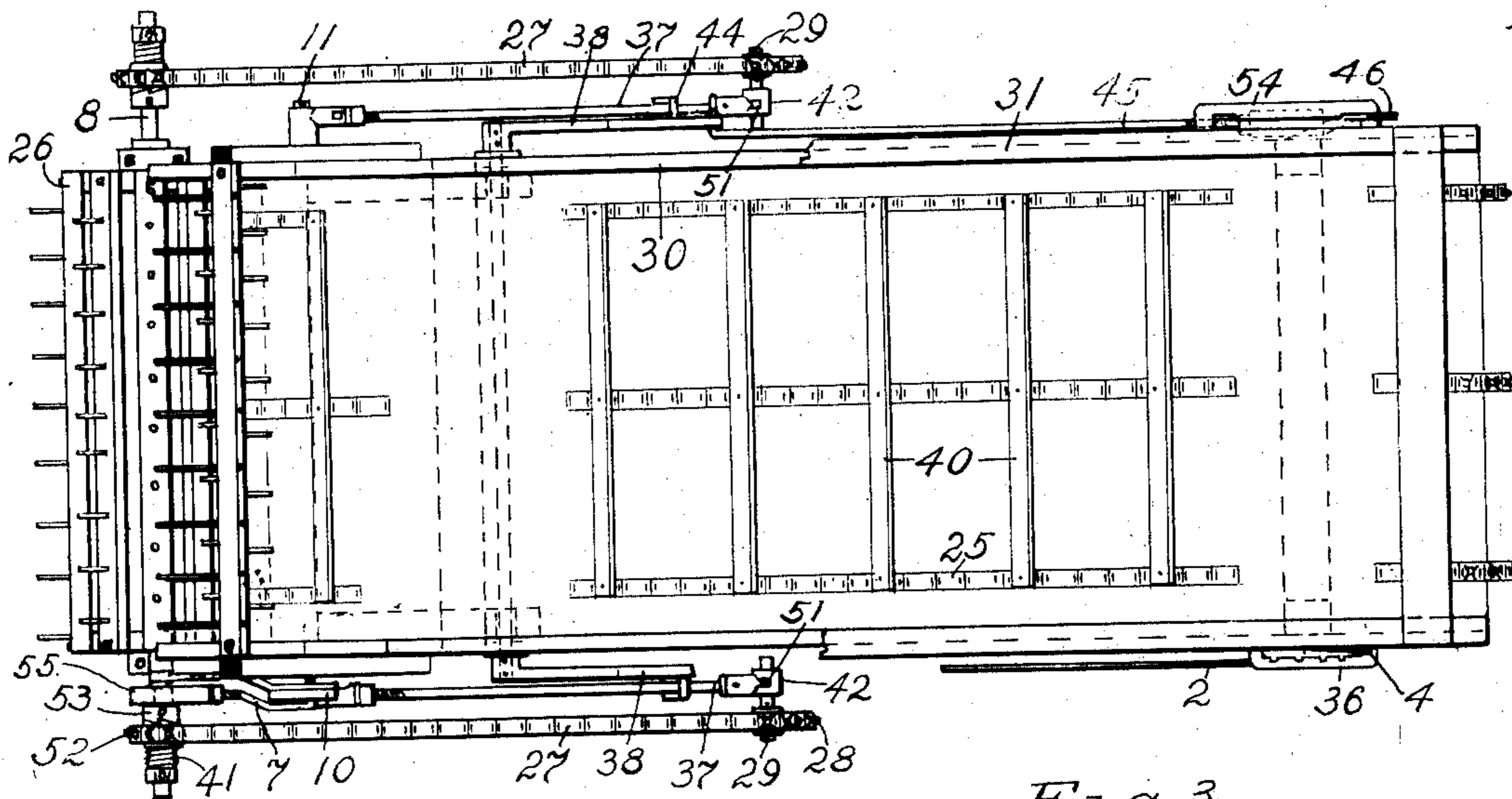


Fig. 3.

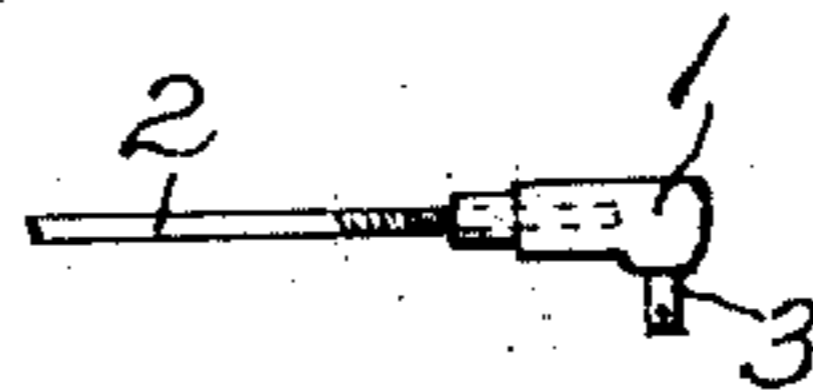


Fig. 2.

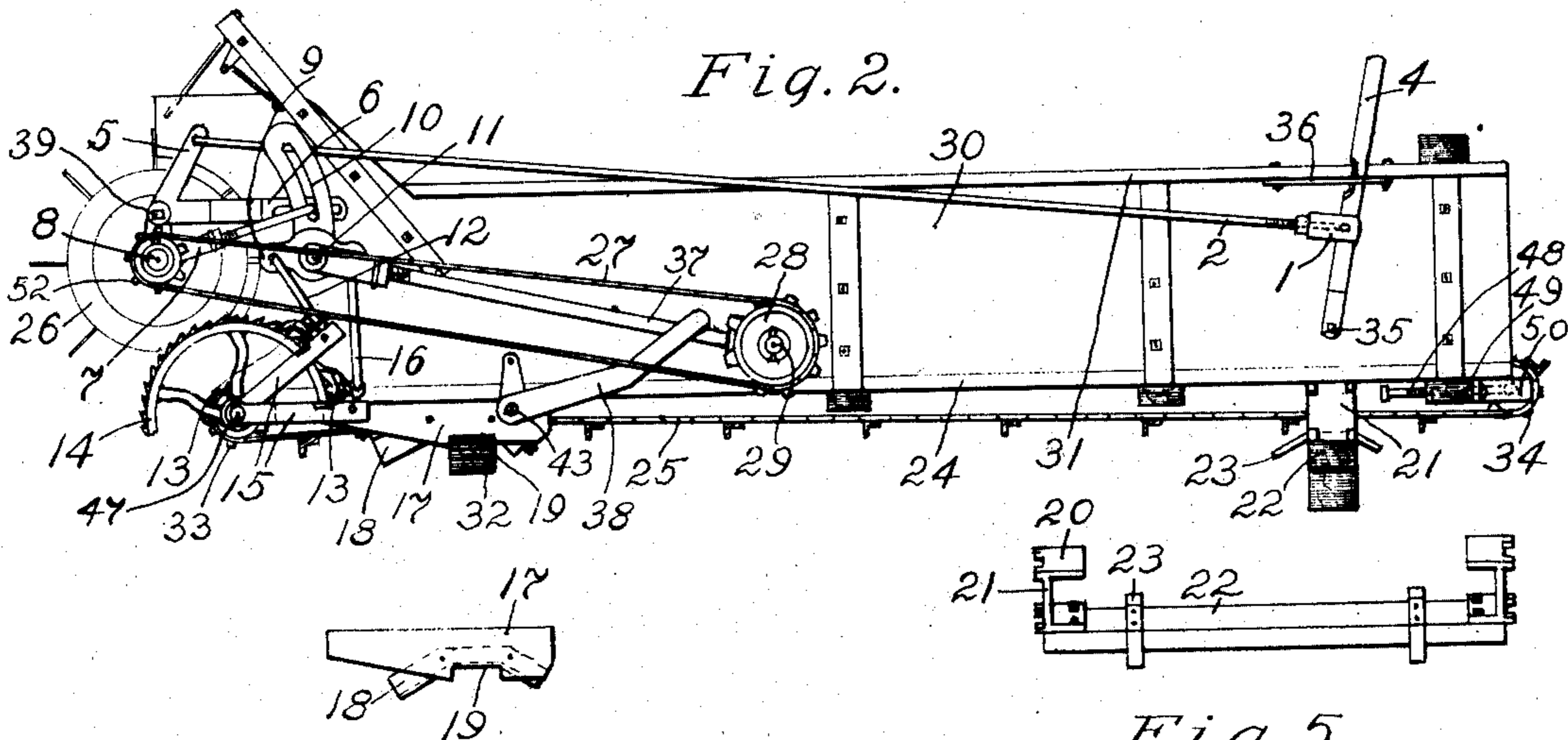


Fig. 4.

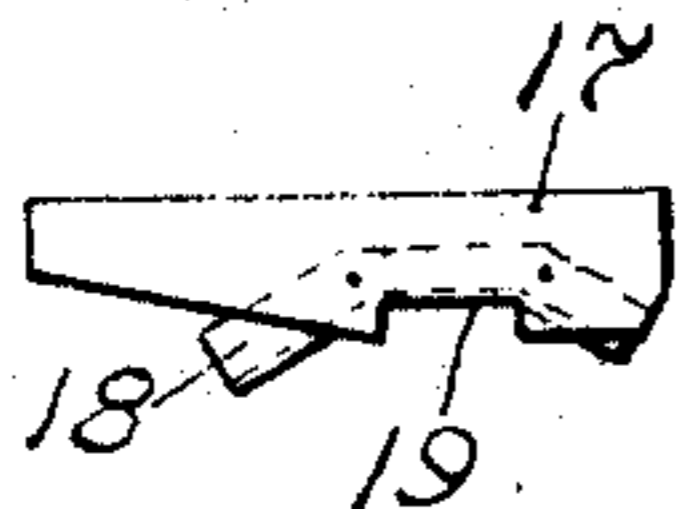
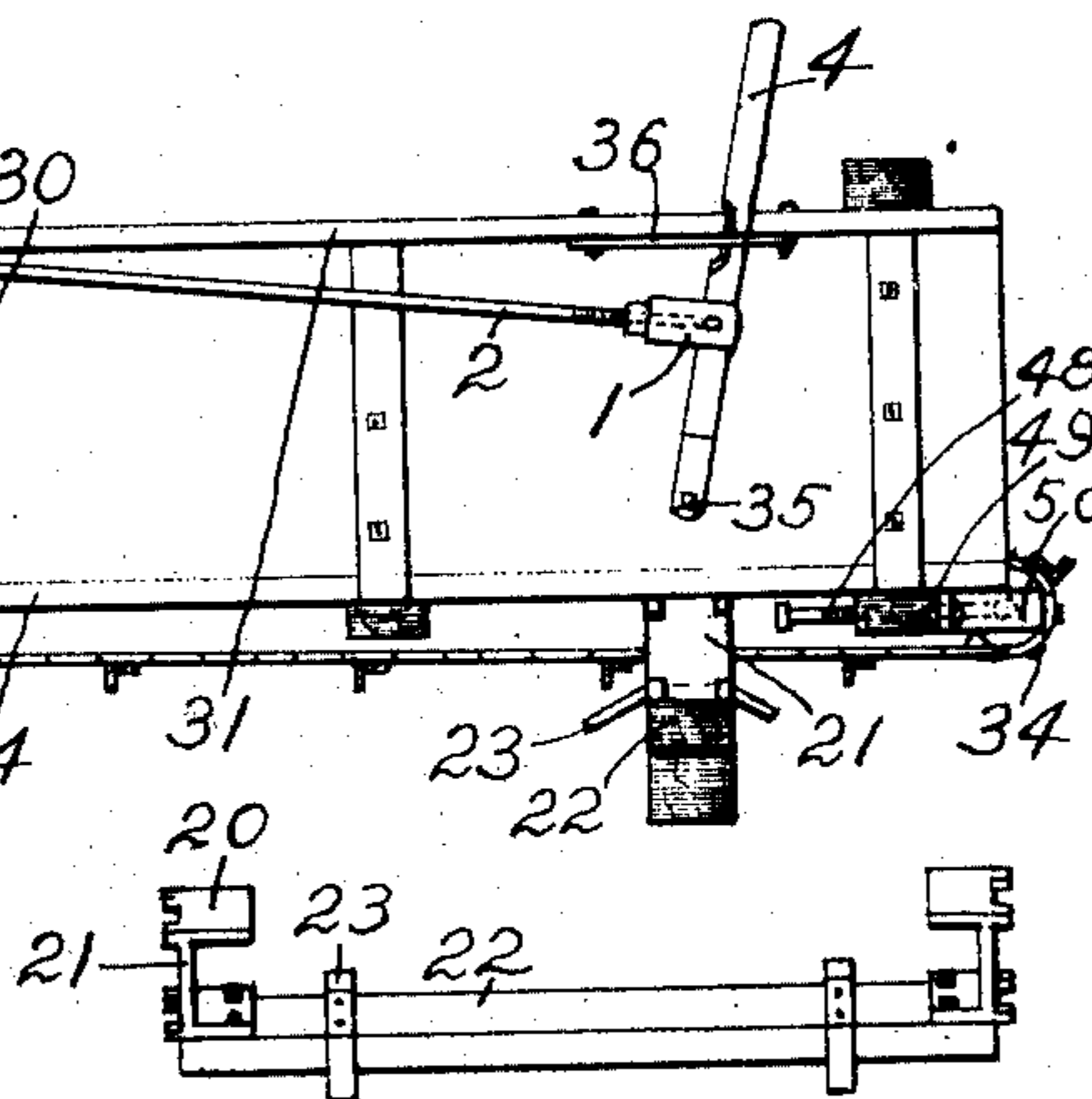


Fig. 5.



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No. 883,269.

PATENTED MAR. 31, 1908.

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MANURE SPREADER.

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3 SHEETS—SHEET 2.

Fig. 6.

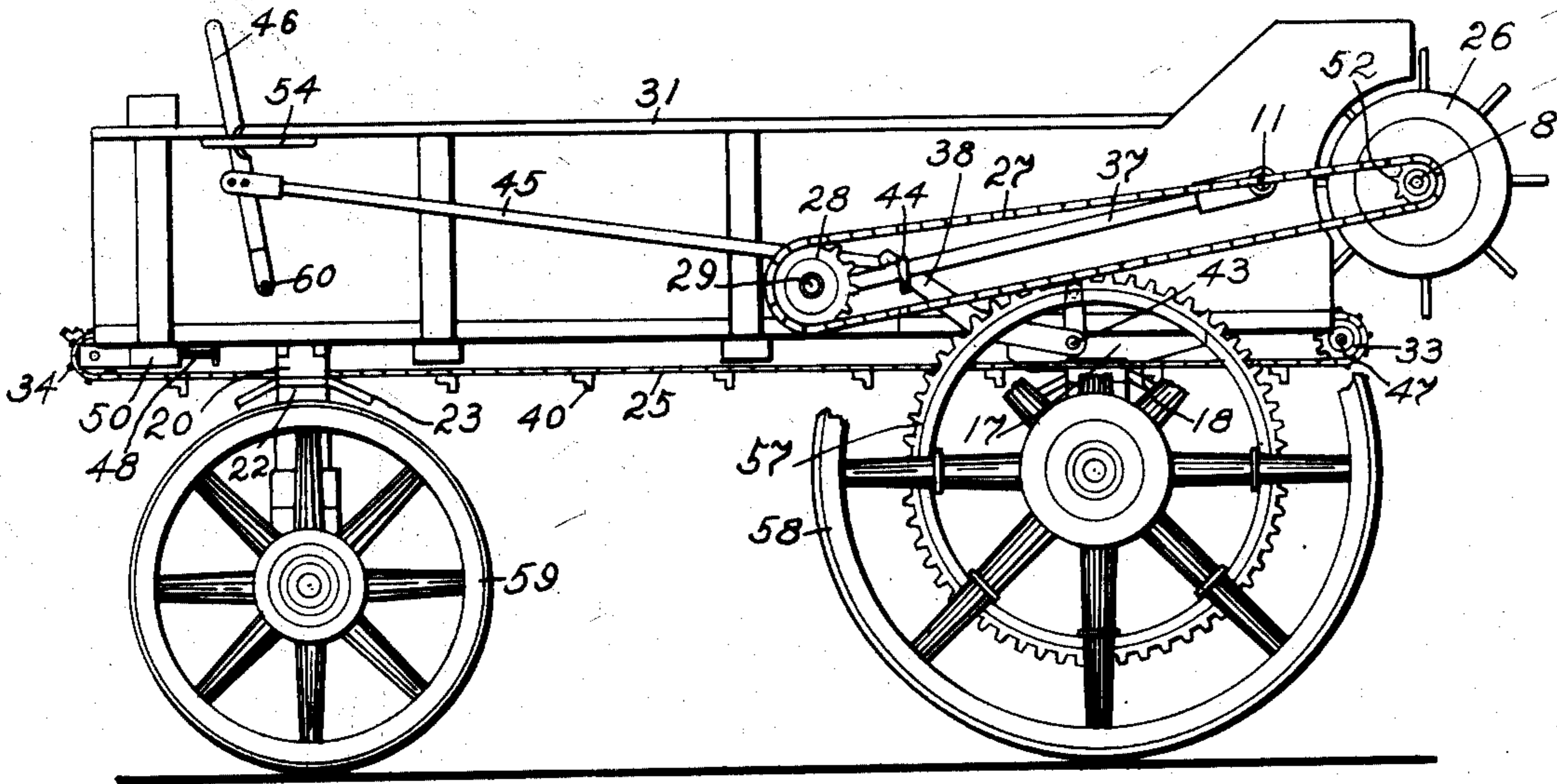


Fig. 7.

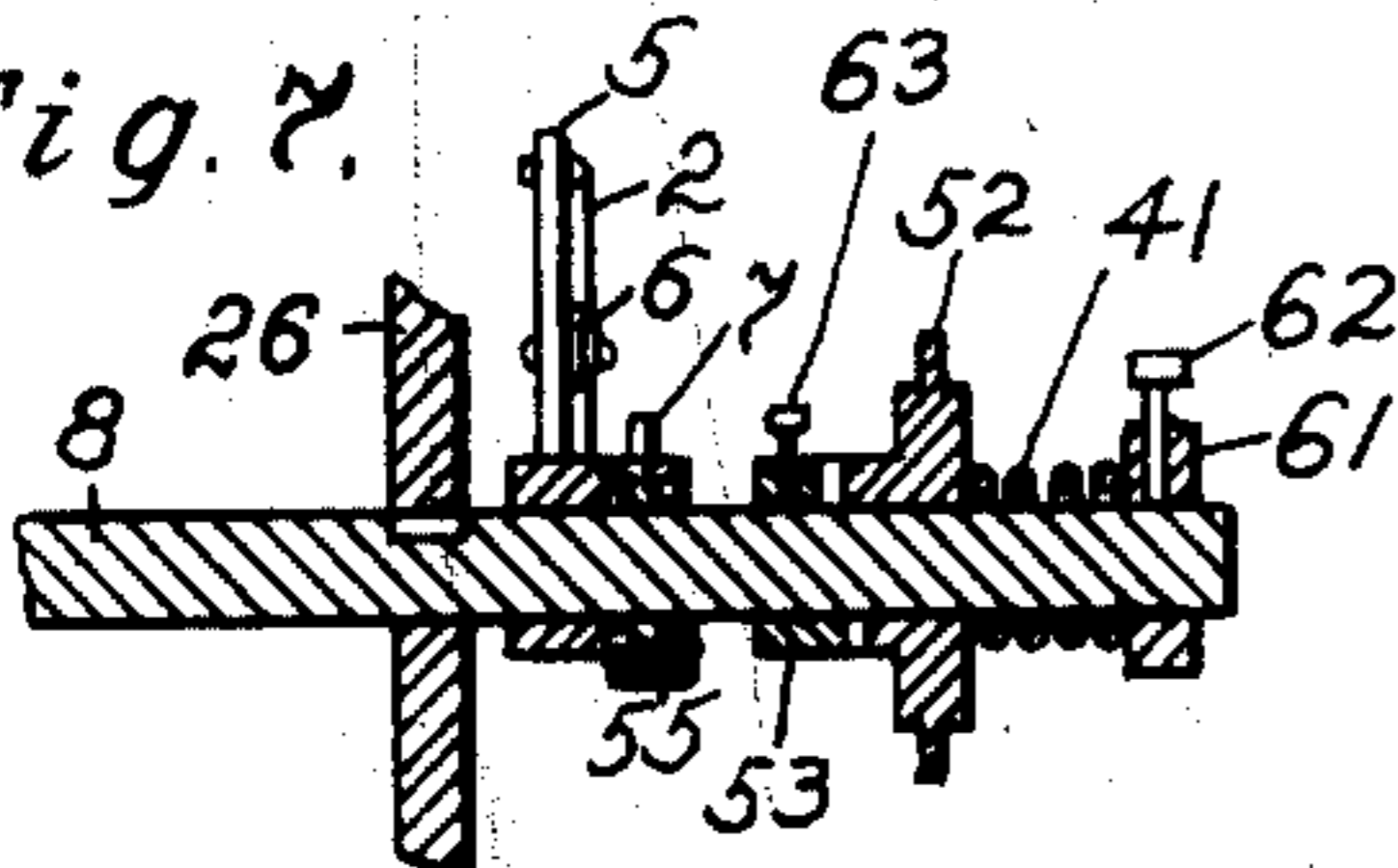


Fig. 9.

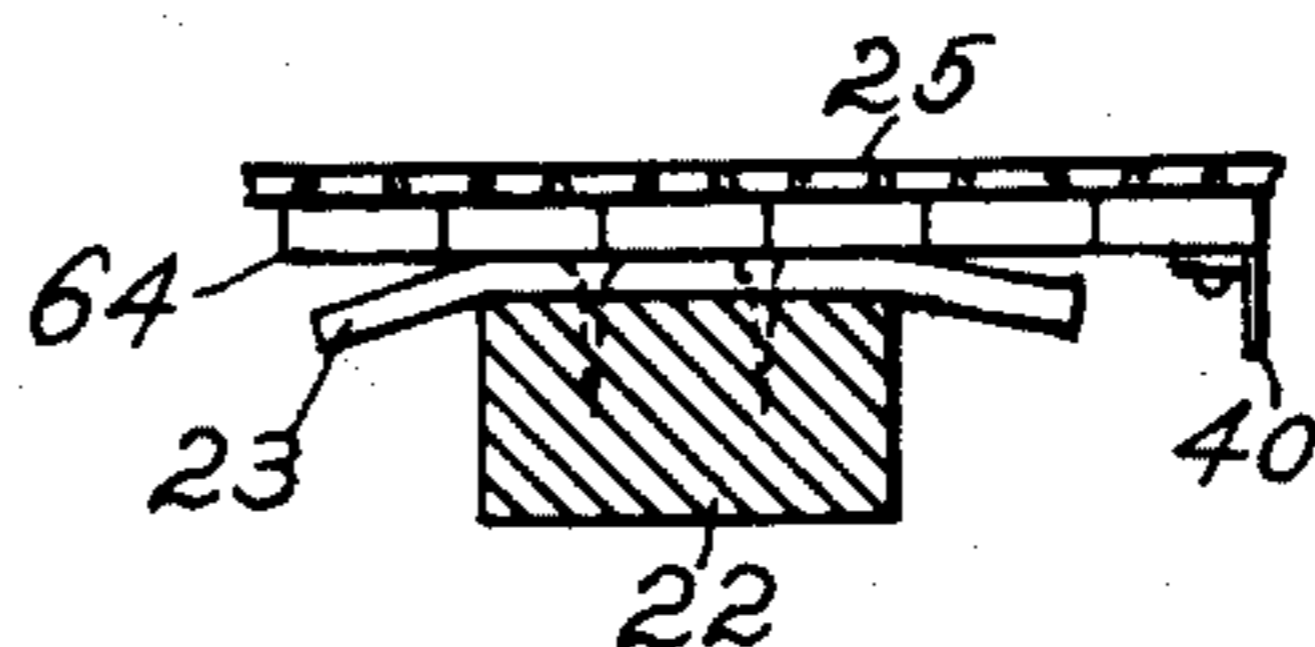
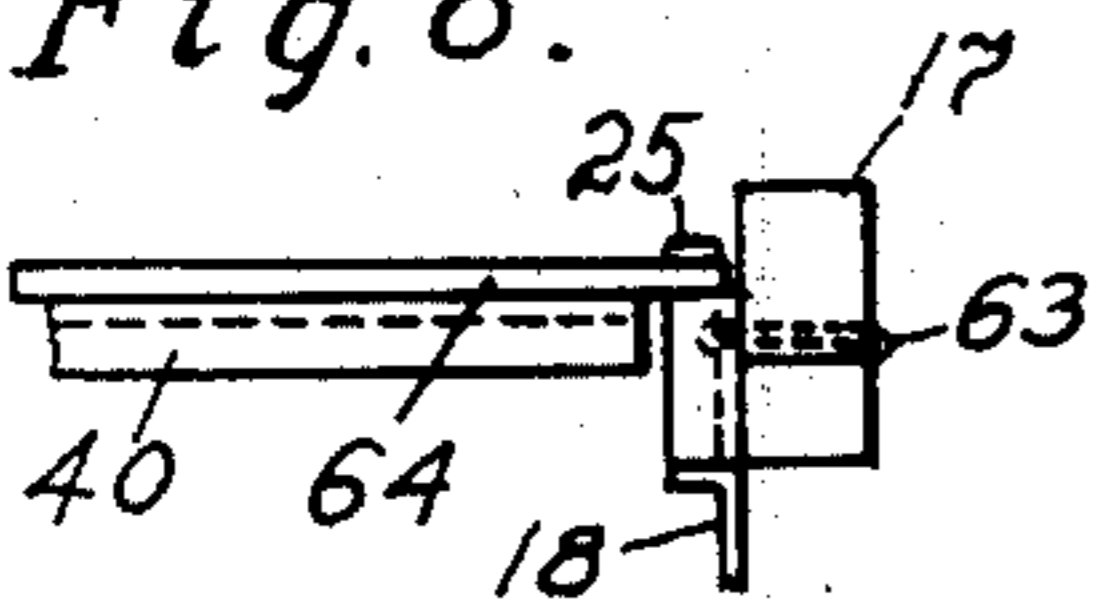


Fig. 8.



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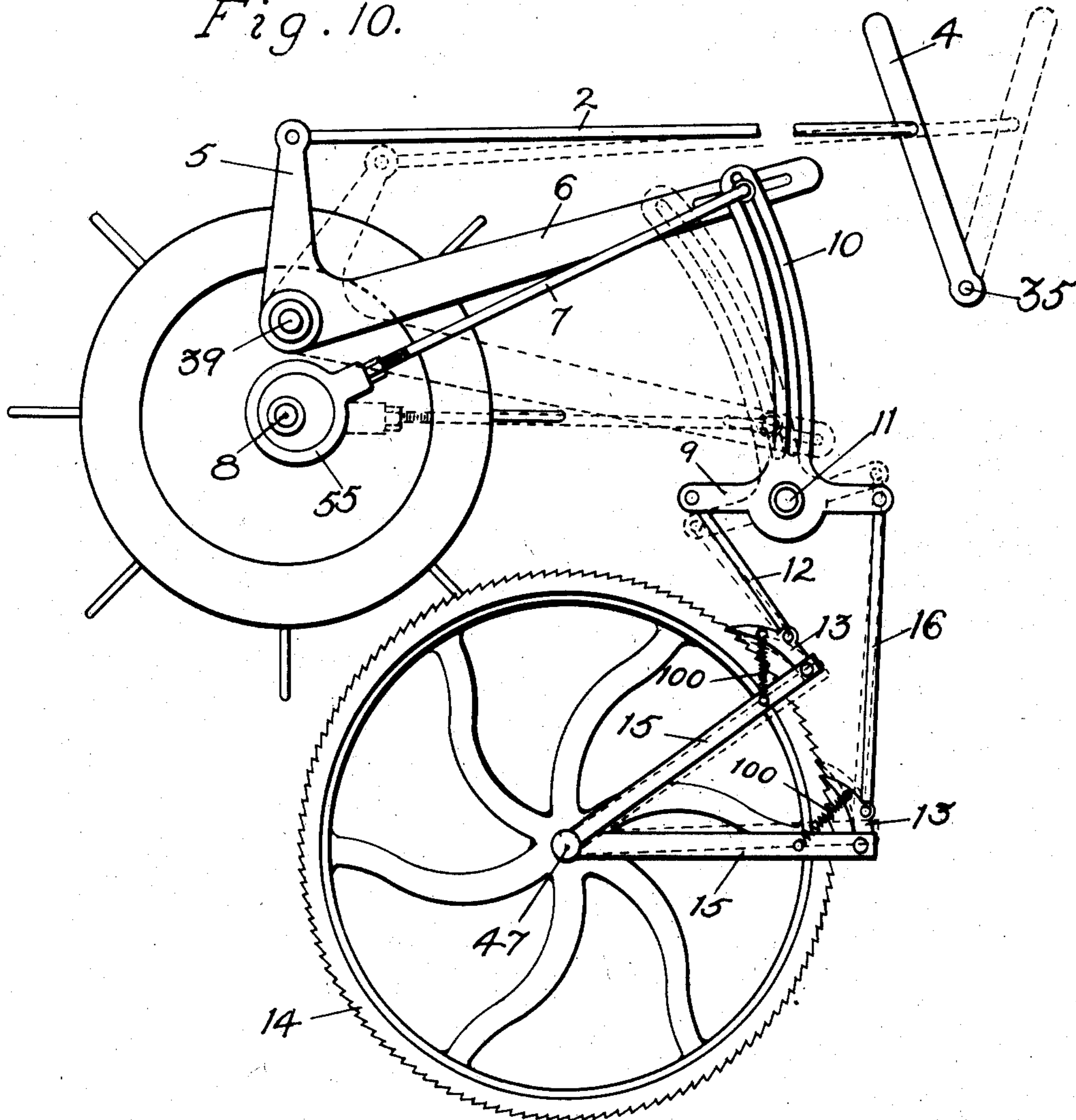
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3 SHEETS—SHEET 3.

Fig. 10.



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UNITED STATES PATENT OFFICE.

DALTON K. WILSON AND EUGENE BUSWELL, OF WATERLOO, IOWA, ASSIGNORS TO THE
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MANURE-SPREADER.

No. 883,269.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed March 23, 1907. Serial No. 364,051.

To all whom it may concern:

Be it known that we, DALTON K. WILSON and EUGENE BUSWELL, citizens of the United States of America, and residents of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Manure-Spreaders, of which the following is a specification.

Our invention relates to improvements in manure spreaders, and the objects of our improvements are, first, to provide a new and efficient device for varying the speed of the apron relative to the advance of the machine, second, to furnish improved bolster-brackets for supporting the detachable box on the running-gear of any ordinary wagon, and third to otherwise simplify and adapt the mechanism and render its parts adjustable as will be hereinafter fully indicated. These objects we have accomplished by the means which are hereinafter described and claimed, and which are illustrated in the drawings hereto annexed, in which,

Figure 1 is a plan view of our improved manure-spreader, provided with an endless apron, Fig. 2 is a right side elevation of the same, Fig. 3 is a detail view of the adjustable connection between one of the side-rods and its forward pivot-block, Fig. 4 is a detail view of one of the rear bracket-guides, and Fig. 5 is a front elevation of one of the front bolster-connections with its brackets and guides. Fig. 6 is a left hand side elevation of said machine. Fig. 7 is a vertical longitudinal section of the right hand end of the beater shaft. Fig. 8 is a rear elevation of one of the rear chain guides. Fig. 9 is an enlarged detail side elevation of one of the front chain guides. Fig. 10 is an enlarged detail view of the intermediate mechanism between and connected to the beater-drum shaft and the apron-shaft, indicating the positions of its moving parts when set for discontinuing the movement of the apron independently of the rotation of said beater-drum shaft.

Similar reference numerals refer to similar parts throughout the several views.

Our improved manure spreader mechanism is arranged and suitably adapted to be placed upon and adjusted to the running-gear of any ordinary four-wheeled wagon.

It consists of a body formed principally of the bottom 24 having sides 30, the latter

capped with rails 31. A shaft 8 is placed transversely to the rear end of the box thus formed, the rear end of such box being open, so that its contents may be carried to an impact with the beater-wheel 26, when the endless apron, composed of endless chains 25 carrying upwardly flanged slats 40, is moving to the rear.

The spreader has two hand-operated levers, 4 and 46, for use as follows. The lever 4 has its lower end pivoted on a stud 35 on the outside of the side 30 on the right, and works back and forward within a rack-bar 36, and engages one or the other of its notches as desired to control the speed of the apron. Pivottally connected to the lever 4 on a stud 3 is a sleeve 1, whose rear end is provided with an interiorly threaded bore wherein is adjustably received the threaded front end of the side or connecting rod 2. This adjustment is furnished for the purpose of taking up any slackness or lost motion accruing through wear on the regulating parts of the speed-controlling mechanism. The rear end of the rod 2 is bent inwardly and pivoted in an opening in the member 5 of the bell-crank lever 5—6. Said bell-crank lever is fulcrumed on a stud 39 on an upright which is supported about the shaft 8, and the member 6 is slotted as shown to receive the inturned front end of the lever 7. The rear end of the lever 7 is connected to an eccentric strap movable over an eccentric 55 fixed on the shaft 8, and has an adjustable joint for taking up slackness caused by wear of the parts. The inturned front end of the lever 7 passes through a slot in the plate 10, whose lower end is pivoted to a short stub shaft 11 on which is also centrally pivoted a double crank 9, the parts 9 and 10 being integrally connected. In the rear end of the crank 9 is pivoted the upper end of a link 12 and in the front end of 9 is pivoted the upper end of a link 16, the lower end of each link being pivoted in a lug on each pawl 13, the latter being pivottally secured to the forward ends of the levers 15, whose rear ends are fulcrumed on the end of the shaft 47.

The shaft 47 carries the sprocket-wheels 33 which engage the sprocket-chains 25 at the rear, the front ends of said chains being carried over idler sprocket-wheels 34 at the front. The ends of the shafts on which the wheels 34 are pivottally mounted, are secured

to the front ends of slide-bolts 48 adjustable through the cross-beam 49 and brackets 50, and by this means any slackness in the endless apron chains 25 may be taken up. The ratchet-wheel 14 which is secured to the shaft 47 carrying the apron-sprocket wheel 33 has its teeth engaged by the pawls 13. The rear end of a connecting rod 37 is pivoted on the stub shaft 11, the front end of said rod being seated in a sleeve 42, the latter having a transverse perforation or bearing for a short shaft 29, said shaft being adjustably secured to said sleeve by means of a set-screw 51. The outer end of the shaft 20 carries a rotatably mounted sprocket-wheel 28, a sprocket-chain 27 connecting the wheels 28 and 52 on each side of the spreader, as shown in Fig. 1. On each end a sleeve 53 is secured to the shaft 8 by means of a set-screw 63, the outer ends of said sleeves having teeth to engage similar teeth on the inner ends of the hubs of the transversely slidable sprocket-wheels 52. The extreme ends of the shaft 8 have terminal caps 61 having set-screws 62 between which and the wheels 53 are placed tension springs 41, which serve to retain said wheels with the teeth of their hubs in normal engagement with the teeth of the sleeves 53. If it is desired to so place the sprocket-chains 27 that they will contact with the driving sprockets fixed to the inner faces of the driving-wheels of a running gear of a certain amount of separation apart, the adjustment is made by sliding the shafts 29 in their bearings and the sleeves 53 on the shaft 8 a proper distance, and then securing them with their respective set-screws.

The lever 46 adapted to engage a dentated rack-bar 54 on the left side of the spreader has its lower end pivoted on a stud 60 to the left outer side of the box, and to it is pivoted the front intumed end of a connecting-rod 45, whose rear end is turned outwardly and pivoted in a crank 38 secured to a shaft 43 transverse of and under the bottom 24. Secured to the right end of the shaft 43 is a like crank 38, and each crank 38 carries a perforated lug 44 which incloses the levers 37. When it is desired to rotate the beater-wheel 26, the lever 46 is thrown forward to the front notch in the rack-bar 54, and the crank 38 thus lowered with the lug 44, the connecting rod 37, and the shaft 29, which lowers the sprocket-chain 27 on each side upon the driving sprocket-wheels 57 attached to the wagon drive-wheels, the shaft 43 as it turns, lowering the right-side crank 38 and through its medium the right side sprocket-chain 27. To stop the rotation of said beater-wheel, the lever 46 is thrown to the rearward notch in rack-bar 54, which reverses the above described movements of said parts and elevates the sprocket-chains 27 from off the driving sprocket-wheels.

Our improved spreader is adapted to be

fitted to wagon running-gear of different dimensions mounted on carrying wheels 58 and 59, and has for an intermediate support for its front end a cross-beam 22, the latter, which is shown in perspective in Fig. 5, being arranged so as to be set upon the forward bolster of such running-gear. The beam 22 carries at each end a bracket support 21 having a top plate 20. The front end of the box of the spreader rests upon the plates 20. In the proper positions, guides 23 are attached to the top of the cross-beam 22, and have depending ends, and are adapted to be used as supports for the apron 64, the ends of the slats of said apron being slidable over said guides.

Fastened to the bottom of the rear part of the spreader box 24 on each side are hangers 17, provided with recesses 19 to receive and engage the top part of the rear bolster of the running gear. Each hanger 17 has a guide 18 attached to its inner side, as shown in Fig. 4, as a guide for the chains 25 in the rear.

The shaft 8 is rotated when the lever 46 is thrown forwardly to lower the chain 27 into engagement with the driving sprocket-wheel 57. When the shaft 8 is rotated the eccentric 55 causes the pitman 7 to oscillate the lever 10 and through it the lever 9 which draws on the pawls 13 alternately, one pawl clicking back while the other rotates the ratchet-wheel 14. The rate of speed of the apron 25 is adjusted by throwing the lever 4 so as to move the forward end of the pitman 7 up or down to rock the lever 10 through a larger or a smaller angle, so that at each impulse the pawls 13 may rotate the ratchet-wheel 14 over the space of a larger or smaller number of teeth. When the intumed end of the pitman 7 moves to the bottom of the slot in the lever 10 the throw of the pawls is at its maximum and several teeth are passed over on the ratchet-wheel at each stroke. When the intumed end of said pitman is moved to the top of said slot the effect of each stroke is reduced to a minimum, in fact the stroke of the pawls is less in amplitude than the length of a tooth on the ratchet-wheel, and as indicated by the dotted lines in Fig. 10, the pawls do not move away from the teeth on which they rest but simply move thereover with a short stroke less than the length of the teeth, and do not become disengaged therefrom, which results in stopping the rotation of the ratchet-wheel and the movement of the apron. By this means the movement of the apron may be stopped independently of the rotation of the beater-drum, which is desirable at times of certain emergencies. The apron may be started in motion again by shifting the lever 4 a notch or more forward, to lengthen the throw of the pawls enough so that they may disengage with the teeth of the ratchet-wheel.

Having described our invention what we claim as new, and desire to secure by Letters Patent, is—

5 In a manure spreader, in combination, a box mounted on carrying-wheels, a movable apron in said box, a ratchet-wheel adapted to move said apron, a beater-drum secured to a rotatable shaft at one end of said apron, an eccentric secured on one end of said
10 shaft, a strap on said eccentric having a projecting pitman, a bell-crank lever whose lower member is slotted pivoted to said box, a hand-lever pivoted to said box, a connecting-rod between said hand-lever and the
15 upper member of said bell-crank lever, a second bell-crank lever whose upper member is slotted pivoted to said box and provided

with oppositely directed lower arms, arms pivoted on the end of the ratchet-wheel shaft, pawls pivoted to said arms and
20 adapted to operatively engage the teeth of said ratchet-wheel, connecting-rods between said pawls and the oppositely directed arms of the second bell-crank lever, the outer end of the said pitman being adapted to enter
25 and slidably engage the slots in both said bell-crank levers.

Signed at Waterloo, Iowa, this 4th day of Mch. 1907.

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EUGENE BUSWELL.

Witnesses:

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G. C. KENNEDY.