

No. 750,067.

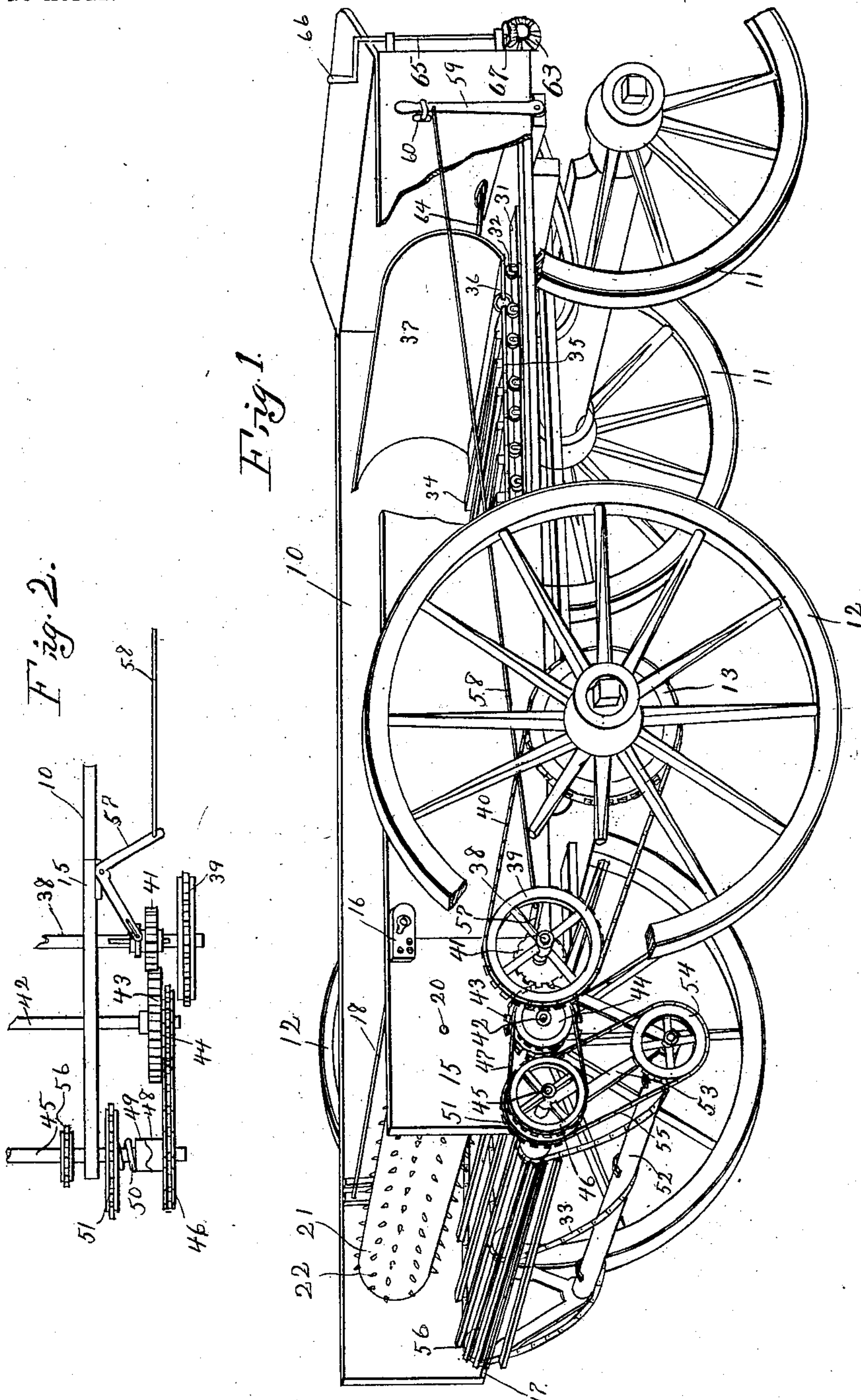
PATENTED JAN. 19, 1904.

C. W. SMITH.
MANURE SPREADER.

APPLICATION FILED NOV. 28, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

L. L. Leibrock.
A. Davies.

Inventor: Charles W. Smith.

By Orwig Lane
Attys.

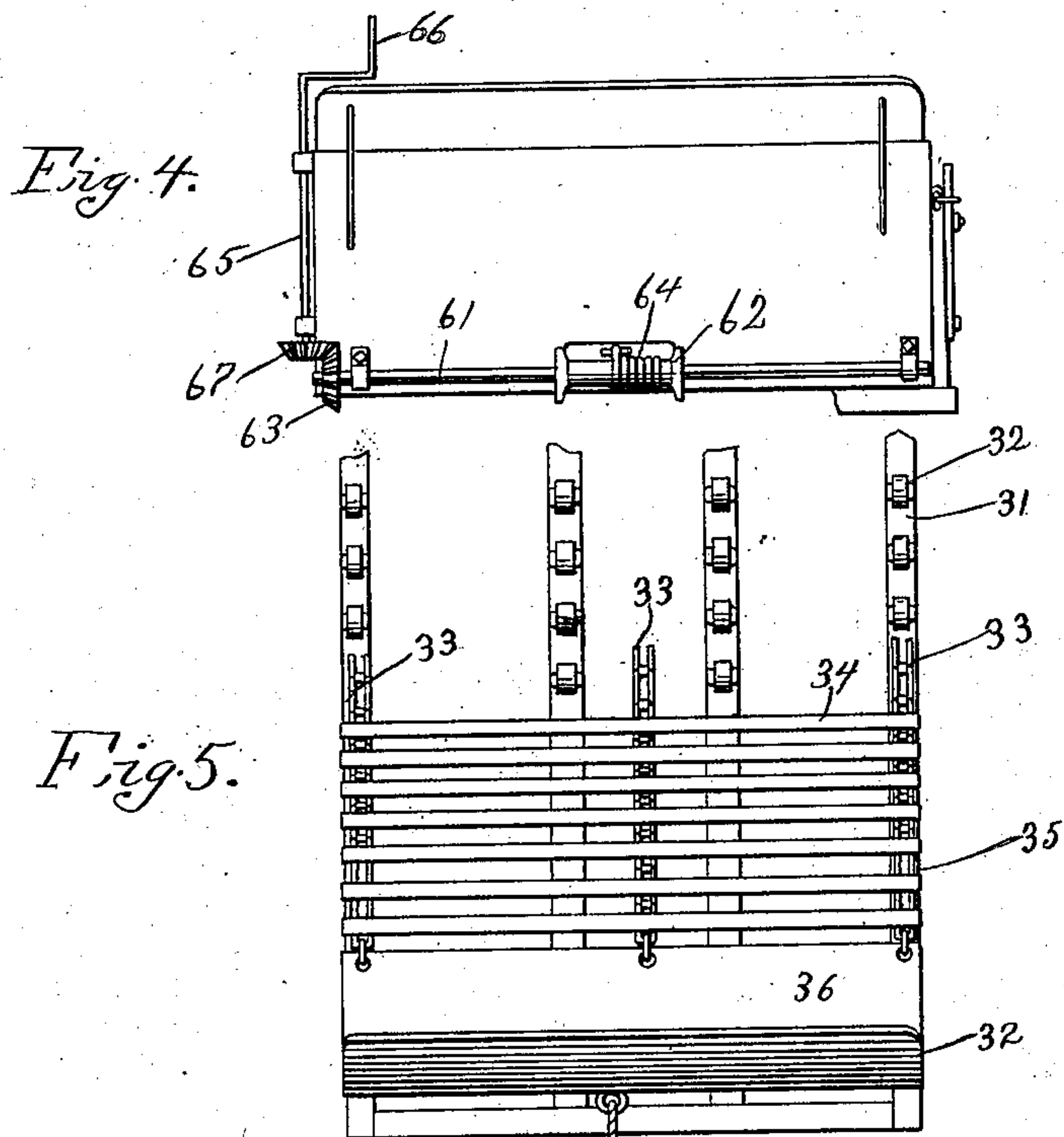
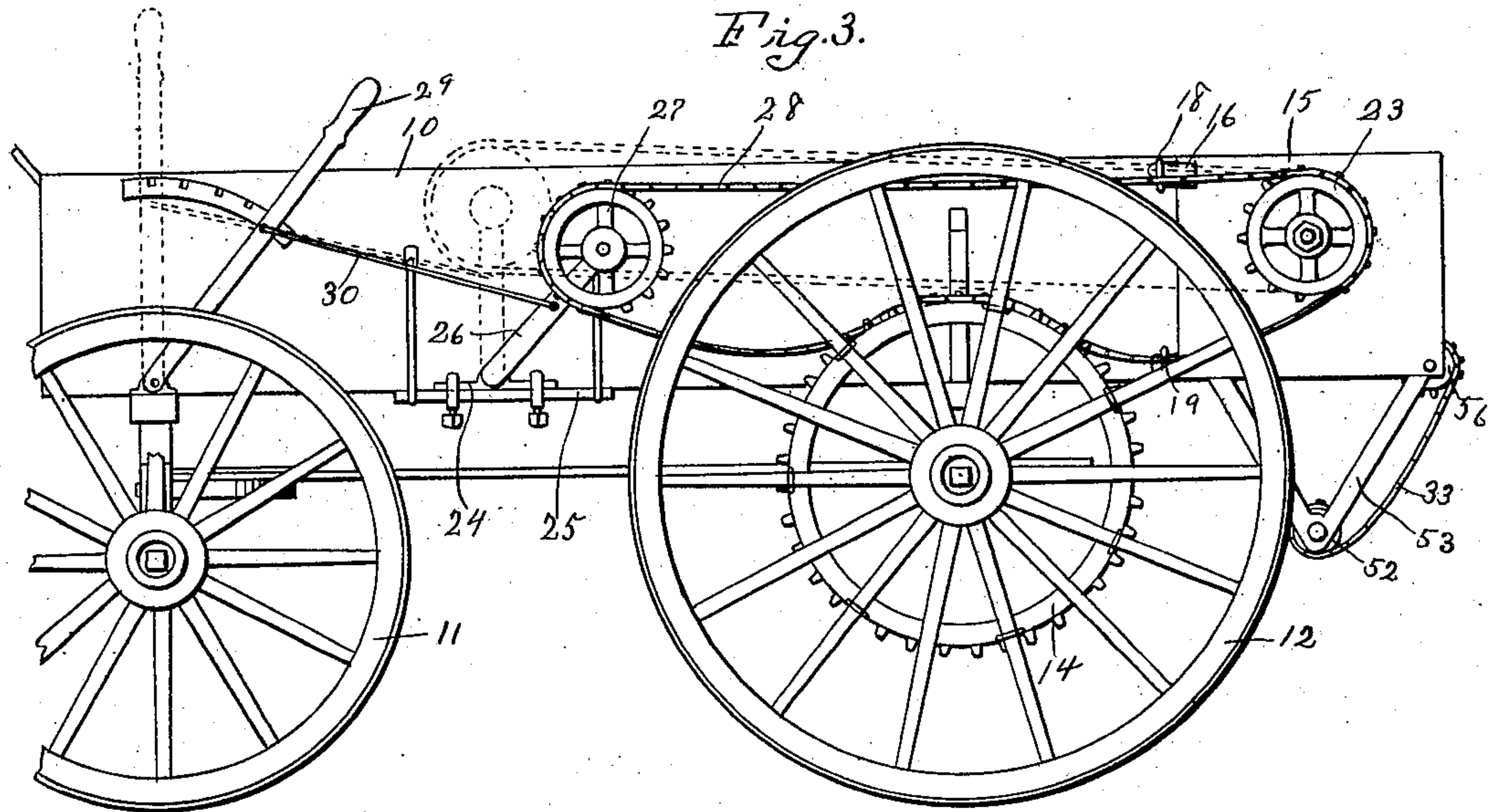
No. 750,067.

PATENTED JAN. 19, 1904.

C. W. SMITH.
MANURE SPREADER.
APPLICATION FILED NOV. 28, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:
L. L. Leibrock
A. Davies

Inventor: Charles W. Smith
by Orwig Lane Attys.

UNITED STATES PATENT OFFICE.

CHARLES W. SMITH, OF BUFFALO CENTER, IOWA.

MANURE-SPREADER.

SPECIFICATION forming part of Letters Patent No. 750,067, dated January 19, 1904.

Application filed November 28, 1902. Serial No. 133,164. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. SMITH, a citizen of the United States, residing at Buffalo Center, in the county of Winnebago and State of Iowa, have invented certain new and useful Improvements in Manure-Spreaders, of which the following is a specification.

My objects are to provide a device of this class to be used in the nature of an attachment that may be readily, quickly, and easily connected with or detached from any ordinary wagon.

More specifically, it is my object to provide a frame detachably connected with and in the nature of an extension for the rear end of the wagon-box, said frame containing the spreading mechanism and the device for actuating same.

A further object is to provide an improved flexible apron and a roller-support therefor, which support is designed to rest on the bottom of the wagon-box and the apron to rest on top of the roller-support, said apron when in its extended position completely covering the bottom of the wagon and designed to receive and support the load.

A further object is to provide means of simple, durable, and inexpensive construction for slowly moving the apron containing the load toward the rear end of the frame and under the spreader, said means being actuated from the wagon-wheel and controlled by a lever near the front of the wagon-box.

A further object is to provide an improved front for the apron shaped in such a manner as to coact with the spreader in such a way that the spreader may engage and discharge every particle of the load on the apron.

A further object is to provide an independent means for operating the apron and the spreader, so that one may run while the other is stationary.

A further object is to provide means whereby the apron may be automatically stopped and again started when the load presses against the spreader beyond a certain predetermined degree.

A further object is to provide simple, durable, and easily-operated means for returning

the apron to its starting position after the load has been discharged.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows in perspective the complete device applied to the wagon, parts being broken away to illustrate certain details which would otherwise be hidden. Fig. 2 shows a top or plan view of a part of the gearing device at one side of the auxiliary frame. Fig. 3 shows a side elevation of the complete device, taken from the side opposite from that illustrated in Fig. 1 and showing by dotted lines the position of the spreader-actuating chain when set to be inoperative. Fig. 4 shows a front end view of the wagon-box, illustrating the device for returning the apron to its starting position; and Fig. 5 shows a top or plan view of the forward end portion of the apron mounted on the roller-support and having the curved front attached thereto.

Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate the wagon-box, 11 the front wheels of the wagon, and 12 the rear wheels, all of the ordinary construction. On one of the rear wheels is a sprocket-rim 13, and on the other rear wheel is a sprocket-rim 14.

The attachment comprises an independent or extension frame having side pieces 15, provided with forwardly-projecting lugs 16 at its forward edge to overlap the rear portion of the sides of the wagon-box. It is also provided with a solid bottom 17 and is held in place on the wagon-box by means of a cross-rod 18 at the top passed through the lugs 16 and through the sides of the wagon-box, and at its lower end pins 19 are provided to pass through the lugs 16 and into the sides of the wagon-box. Mounted in the central portion of the sides of the frame 15 is a transverse shaft 20, having fixed thereto between the sides 15 a cylinder 21, having radial pins or teeth 22. On one end of the shaft 20 is a

sprocket-wheel 23. This sprocket-wheel is driven during the advance of the wagon as follows: The numeral 24 indicates a bearing detachably secured to the bracket 25. Mounted in the bearing 24 is an arm 26, having on its outer end a sprocket-wheel 27, and a sprocket-chain 28 connects wheels 27 and 23, and when said wheel 27 is in the position shown in solid lines in Fig. 3 the under portion of the sprocket-chain 28 rests upon and is engaged by the sprocket-rim 14. When it is desired to hold the sprocket-chain 28 inoperative, the arm 26 is swung upwardly and forwardly to the position shown by dotted lines in Fig. 3, and in this position the chain is supported above the sprocket-rim 14. I have provided means for adjusting the arm 26 as follows: The numeral 29 indicates a lever fulcrumed at the front of the wagon-box, and a rod 30 connects it with the arm 26. Hence with the arm 26 at its lower limit of movement the spreader is rotated during the advance of the wagon, and the operator may, by manipulation of the lever 29, elevate the chain 28 out of contact with the sprocket-rim 14, and thus hold the spreader inoperative.

The roller-support comprises a frame 31 designed to rest upon the bottom of the wagon-box and provided with a series of antifriction-rollers 32 on its longitudinal strips. Resting upon this roller-support is a flexible apron composed of three parallel sprocket-chains 33 and cross-pieces 34, connecting them, said cross-pieces being of substantially the same length as the width of the wagon-box. Attached to the forward ends of the chains is a flat cross-piece 36, having at its forward end an upwardly-extending semicylindrical front piece 37, which front piece is of substantially the same height as the sides of the wagon-box. The flexible apron is drawn toward the rear end of the wagon during the advance of the wagon as follows: The numeral 38 indicates a shaft extended transversely of the extension-frame and having thereon a sprocket-wheel 39, connecting with sprocket-rim 13 by chain 40, and a gear-wheel 41 is fixed to this shaft 38. Extending parallel with the shaft 38 is a second shaft 42, having thereon a gear-wheel 43, meshed with gear-wheel 41 and also having a sprocket-wheel 44. Parallel with the shaft 42 is a third shaft 45 at the rear end of the extension-frame. Rotatably mounted on this shaft is a sprocket-wheel 46, connected with sprocket-wheel 44 by means of a chain 47. The hub of the sprocket-wheel 46 is provided with rounded teeth on its inner face to engage coacting rounded teeth on clutch 49, which clutch is slidingly but non-rotatably mounted upon the shaft 45 and is held against the hub 48 by the spring 50. Fixed to the shaft 45 is a sprocket-wheel 51, and mounted beneath the extension-frame is a roller-shaft 52, supported in the bracket 53 and having a sprocket-

wheel 54 connected with the sprocket-wheel 51 by means of a sprocket-chain 55, so that when the shaft 45 is driven the lower shaft 52 will also be turned. Mounted upon the central portion of shaft 45 are three sprocket-wheels 56, over which the chains 38 of the flexible apron are passed, the ends of said chains being fixed to the lower shaft 52. I have also provided means whereby the endless apron may be stopped or started by the operator at the front of the wagon as follows: The said gear-wheel 41 is slidingly and non-rotatably mounted upon its shaft 38, and connected with the hub of the gear-wheel 41 is a bell-crank lever 57, fulcrumed to the extension-frame and connecting with a rod 58, the forward end of which is attached to a lever 59, pivoted at the front of the wagon-box. A bracket 60 is provided to engage said lever and hold it at its forward limit of movement, in which the gear-wheel 41 is held in mesh with the gear-wheel 43. I have provided means whereby the apron may be drawn to its forward limit of movement by an operator at the front of the wagon-box as follows: The numeral 61 indicates a shaft mounted in bearing at the front of the wagon-box and having a spool 62 attached to its central portion and a bevel gear-wheel 63 at one end. Wound upon spool 62 is a cable 64, the other end of the cable being attached to the front of the apron, as shown in Fig. 5. Mounted in suitable bearings at the front of the wagon-box is an upright shaft 65, having a crank 66 at its top and a bevel gear-wheel 67 at its lower end meshed with the gear-wheel 63. Obviously a manipulation of the crank 66 will wind the cable 64 upon the spool 62 and draw the apron to its forward limit.

In practical use and assuming the attachment to be mounted on the wagon and assuming, further, that the wagon is being advanced over a field the spreader is constantly rotated by the chain 28, engaging the sprocket-rim 14. Said spreader rests against and engages the rear portion of the load, and the teeth on the roller serve to tear apart and separate the particles of the load and throw them to a point in the rear of the wagon. The operation of this spreader may be stopped by moving the handle 29 forwardly. At the same time the flexible apron is being slowly wound upon the shaft 52 by means of the gearing device shown and described. If at any time the load should press upon the spreader with too great a force, the shaft 45 and the shaft 42 will temporarily be stopped, while the sprocket-wheel 46 continues to rotate, the round toothed edges of the hub 48 and the clutch 49 permitting this movement. During the time the apron is thus held inoperative the spreader continues to rotate, and in a short while the load is removed from engagement with the spreader, and the apron may again move, this starting and stopping of the apron being automatic.

Furthermore, the operator at the front of the wagon may start and stop the movement of the apron by manipulating the lever 59. When the curved front piece of the endless
 5 apron approaches a position close to the spreader and on account of the curvature of the front piece 37 corresponding substantially to the curvature of the spreader, all of the stock upon the apron will be engaged and
 10 thrown off by the spreader. When the wagon is emptied, all of the attachments may be placed in inoperative positions by the levers 29 and 59, and when it is desired to reload the wagon the endless apron is drawn to its for-
 15 ward limit by the crank 66, as before described. The entire attachment may be readily, quickly, and easily removed from the wagon by removing the rod 18, the pins 19, and the sprocket-chains 40 and 28. The roller-
 20 support, which rests within the wagon-bed, is also easily removed, so that the wagon may be used for any ordinary purpose.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of
 25 the United States therefor, is—

1. In a manure-spreader, the combination with a wagon, of a spreading-roller, means for driving the spreading-roller from one of the wagon-wheels, a roller mounted near the
 30 rear end of the wagon-box, a flexible apron having one end wound upon the roller and its body portion resting upon the bottom of the wagon-box, an upright at the forward end of the apron, means for actuating the apron-
 35 roller from one of the wagon-wheels, and a yielding clutch device interposed between the wagon-wheel and the winding-roller of the apron.

2. In a manure-spreader, the combination
 40 with a wagon, of a detachable frame secured to the rear of the wagon-box, a spreading-roller mounted therein, a sprocket-wheel on one end of the spreading-roller, a sprocket-rim secured to the adjacent wagon-wheel, an
 45 arm secured to the wagon-box, a sprocket-wheel carried thereby, a sprocket-chain passed around said wheels and normally resting on top of the sprocket-rim, and means for mov-
 50 ing the arm bearing said sprocket-wheel, to position where the chain will be out of engagement with the sprocket-rim.

3. In a manure-spreader, the combination with a wagon, of a frame detachably connected with the rear end of the wagon-box, a spread-
 55 ing-roller mounted in said frame, means for

driving said roller from one of the wagon-wheels, a roller-shaft rotatably mounted beneath the said frame, a flexible apron resting upon the bottom of the wagon-box and at-
 60 tached to said roller, a curved upright at the forward end of the apron, means driven by one of the wagon-wheels for rotating the said roller, a lever for throwing said roller-driv-
 65 ing means in and out of gear, and a yielding clutch device interposed between the driving wagon-wheel and the said apron-winding roller.

4. In a manure-spreader, the combination with a wagon, of an auxiliary frame detach-
 70 ably connected with the rear of the wagon-box, a spreading-roller mounted in said frame, a frame having rollers on its top surface resting upon the bottom of the wagon-box, a flexible apron resting on top of said rollers, an up-
 75 right at the front end of the apron, a winding-roller mounted in the frame, attached to the rear of the wagon-box and having the rear end of the said apron attached thereto, means
 80 driven by one of the wagon-wheels for winding up the apron on the roller, a cable at- tached to the front end of the apron and man- ually-operated means for winding up the cable to draw the apron forwardly.

5. In a manure-spreader, the combination with a wagon, of an auxiliary frame detach-
 85 ably connected with the rear of the wagon-box, a spreading-roller mounted therein, means for driving the spreading-roller from one of the wagon-wheels, brackets projecting down-
 90 wardly from the frame, an apron-rolling shaft mounted in said brackets, a shaft mounted in the rear of the frame, a number of small sprocket-wheels on said shaft between the side
 95 of the frame, a flexible apron composed of sprocket-chains and cross-pieces, said chains attached at one end to the winding-roller, passed over the said small sprocket-wheels and resting upon the bottom of the wagon-
 100 box, a curved front at the forward end of the apron, and means driven from one of the wagon-wheels for driving the shaft to which the said small sprocket-wheels are attached, and means for gearing said shaft to the apron-
 105 roller shaft, and a yielding clutch interposed between the apron-roller shaft and the mechanism for rotating it, for the purposes stated.

CHARLES W. SMITH.

Witnesses:

C. S. JOHNSTON,
 M. McDERMOTT.