No. 855,126. PATENTED MAY 28, 1907.

E. PALM.

MANURE SPREADER.

APPLICATION FILED JAN. 7, 1907.

3 SHEETS—SHEET 1.

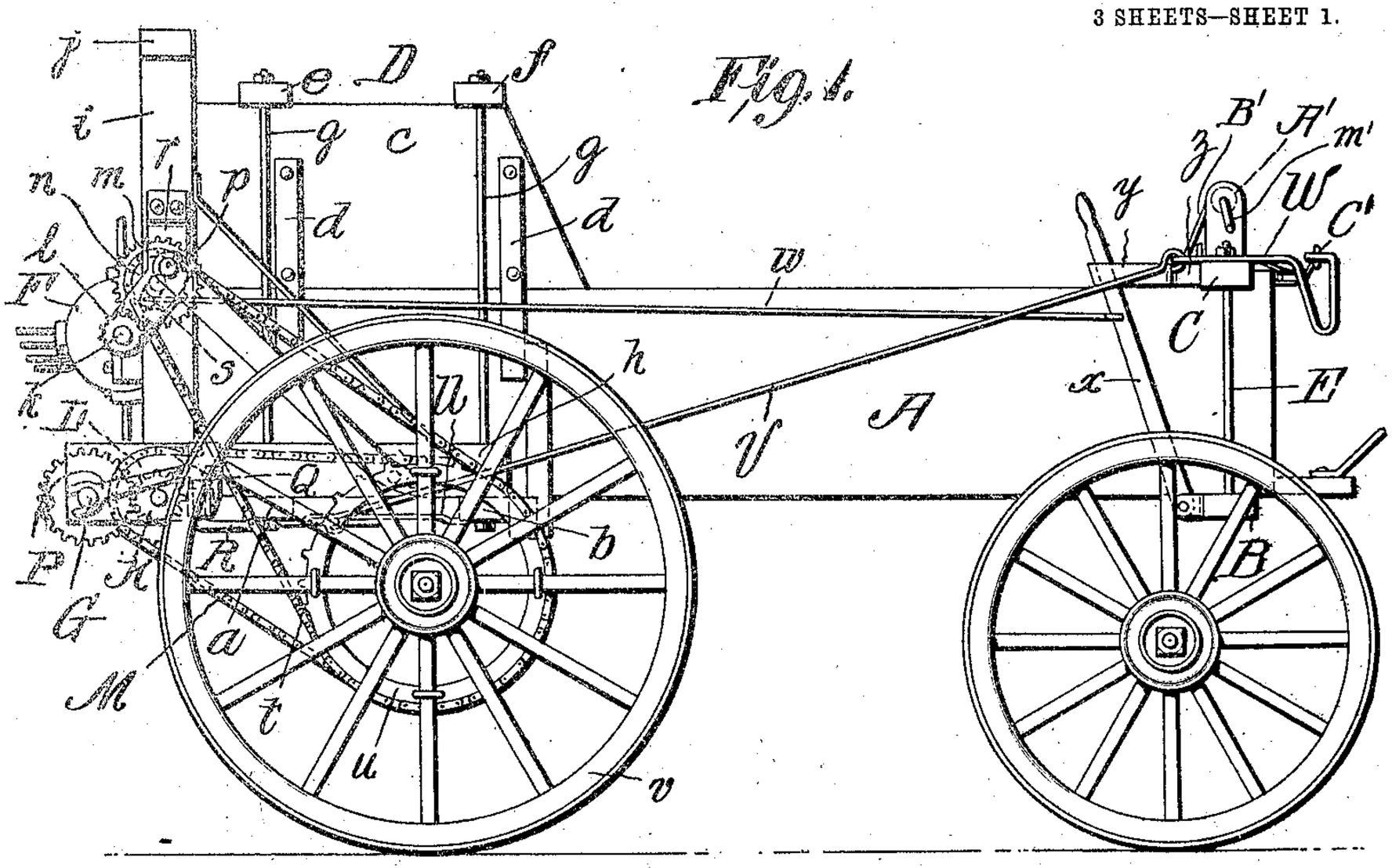

Fig. 1.

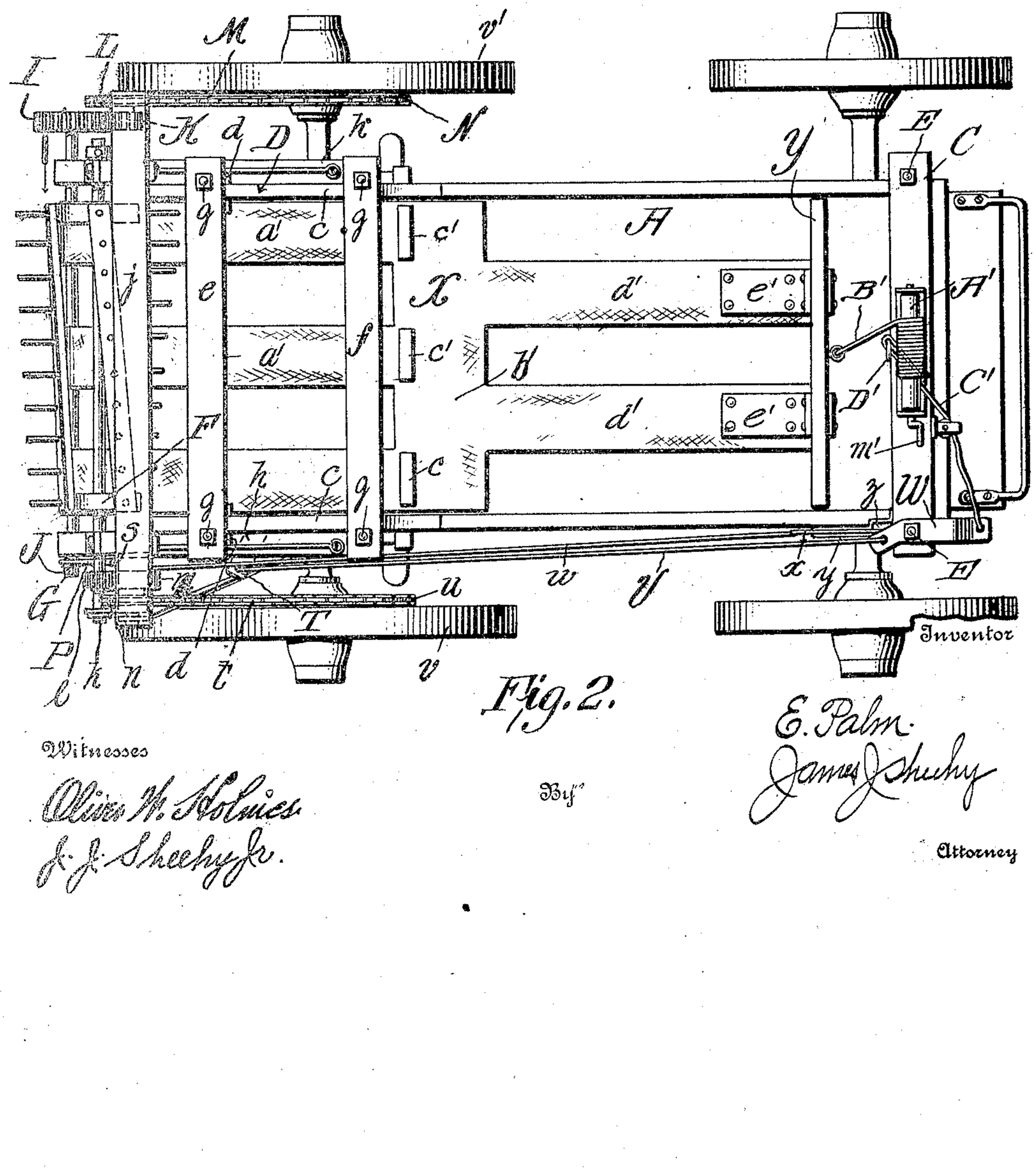

Fig. 2.

Witnesses

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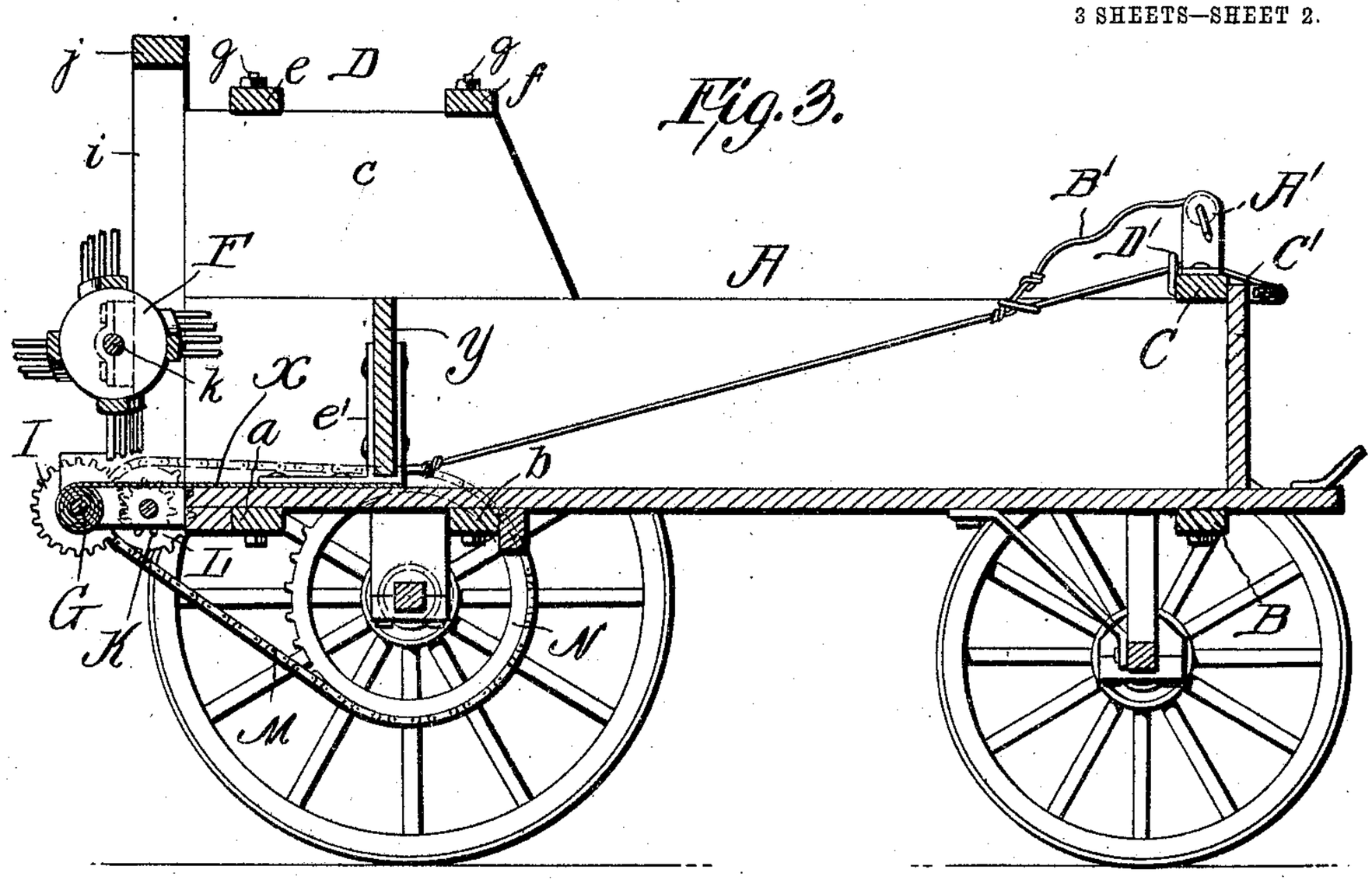
3 SHEETS—SHEET 2.

Fig. 3.



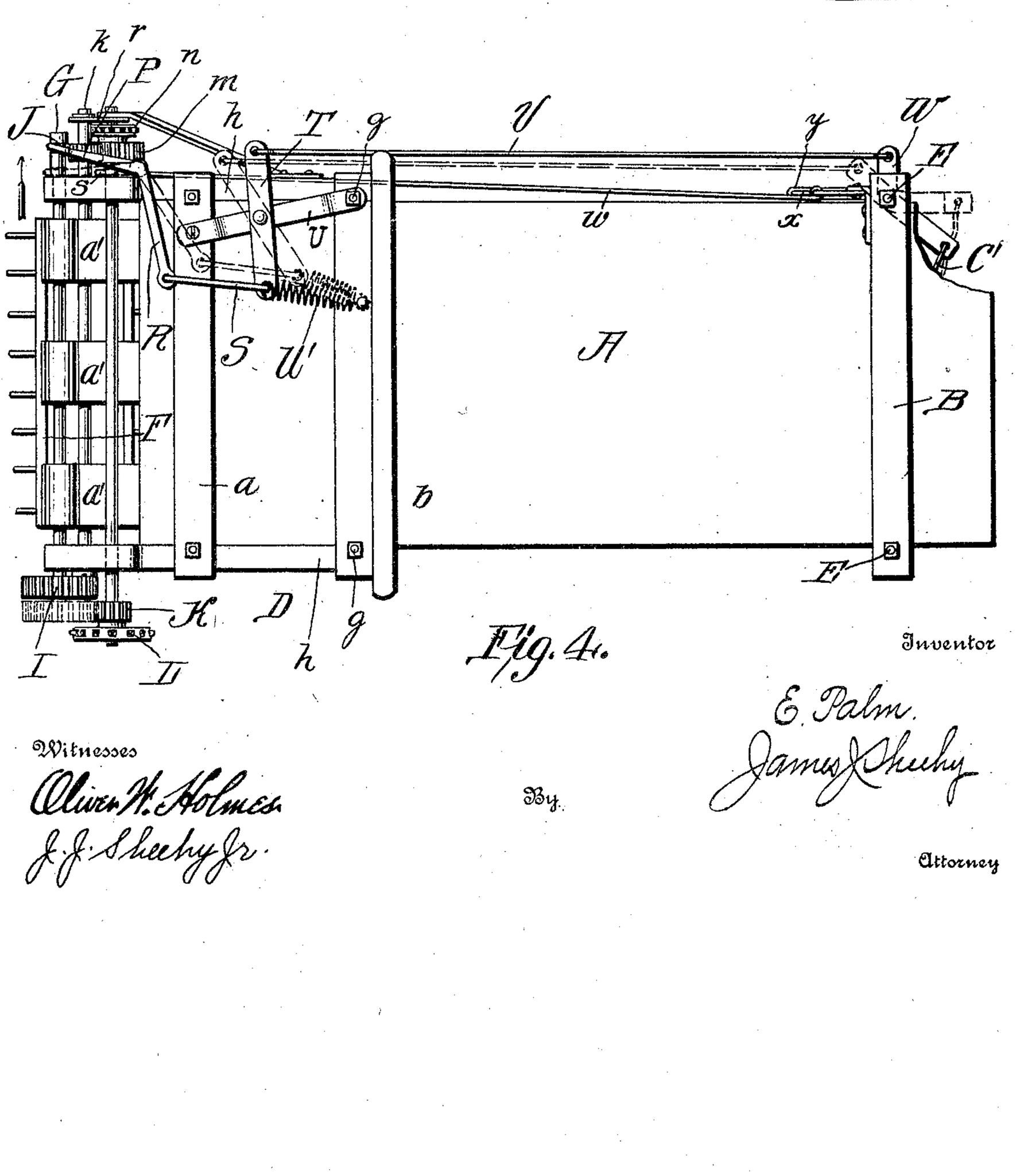


Fig. 4.

Witnesses

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3 SHEETS—SHEET 3.

Fig. 5.

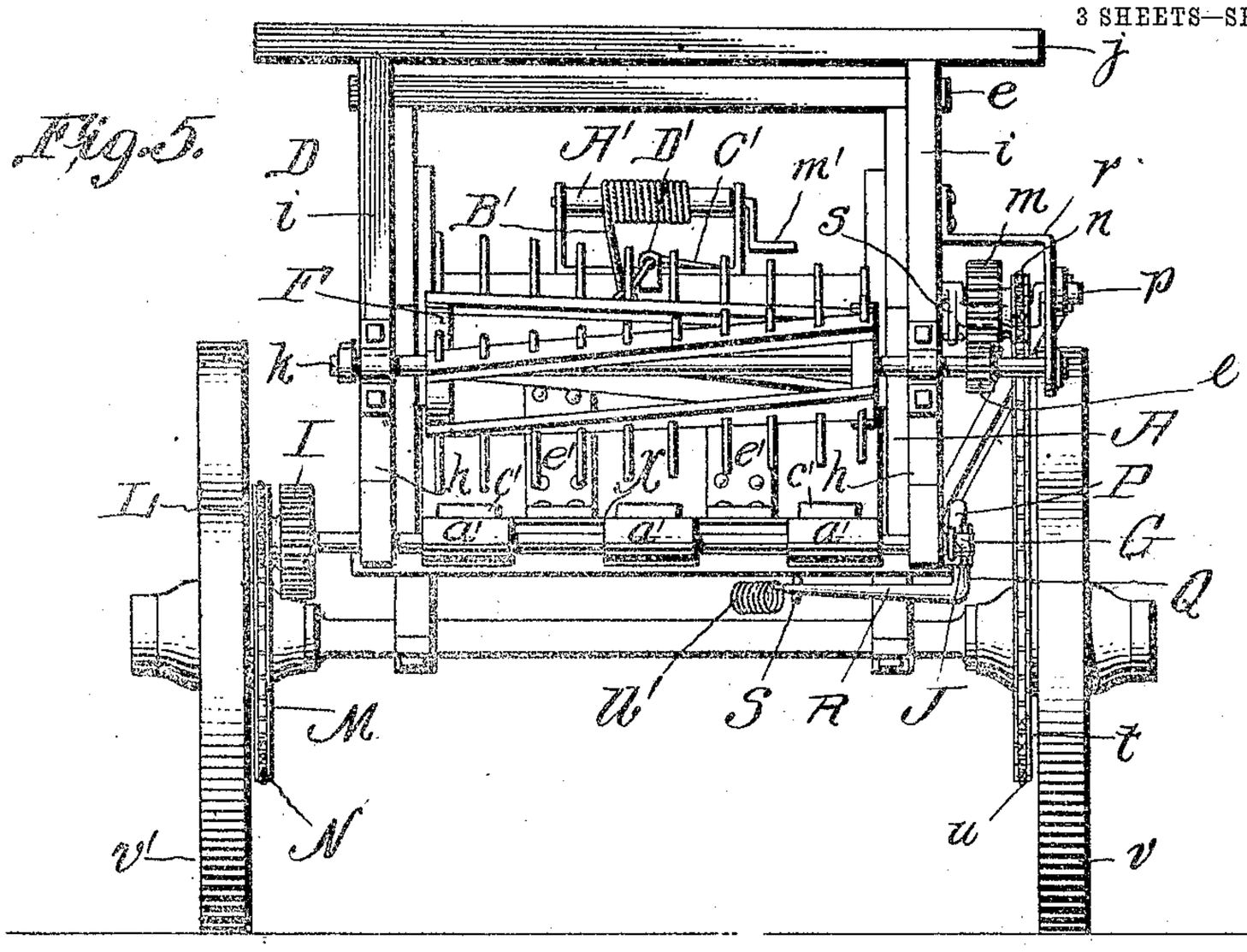
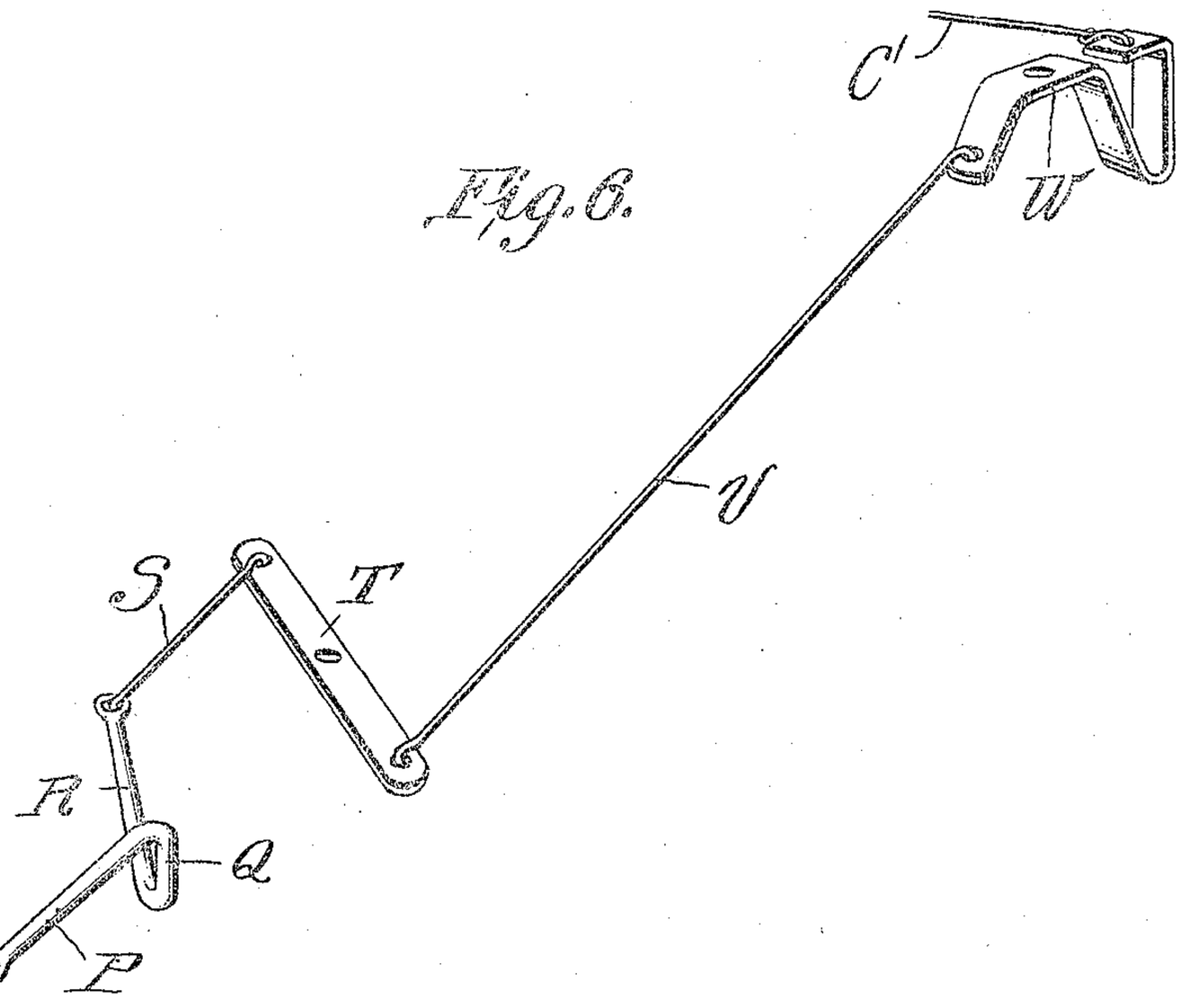


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

ERIK PALM, OF ELDRED, MINNESOTA.

MANURE-SPREADER.

No. 855,126. Specification of Letters Patent. Patented May 28, 1907.

Application filed January 7, 1907. Serial No. 351,241.

To all whom it may concern:

Be it known that I, ERIK PALM, a citizen of the United States, residing at Eldred, in the county of Polk and State of Minnesota, have invented new and useful Improvements in Manure-Spreaders, of which the following is a specification.

My invention pertains to means for discharging material from wagons while the same are in motion; and it contemplates the provision of efficient discharging means, designed more particularly for use in combination with a toothed cylinder to form a reliable manure spreader.

The invention also contemplates so constructing and arranging the parts of the material discharging and spreading means that the same may be expeditiously and easily secured on a wagon body without the necessity of boring holes in any part of the wagon or entailing other alteration thereof.

Other objects and advantages of the invention will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which:

Figure 1 is a side elevation of a wagon equipped with the construction constituting the present and preferred embodiment of my invention. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal vertical section of the same. Fig. 4 is a detail inverted plan illustrating the wagon body and certain parts of my improvements properly positioned relative thereto. Fig. 5 is a rear elevation of the wagon equipped with my improvements. Fig. 6 is a detail perspective view illustrating a portion of the mechanism for automatically putting the follower out of operation.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which:

A is the body of a wagon, which is of the ordinary or any other approved construction and is open at its rear end.

B and C are the front frame bars of my improvements, and D is the rear frame of the improvements. The frame bars B and C are arranged crosswise below and above the forward portion of the body A, respectively and are connected together by bolts E which serve to hold them against and fix them with respect to the said body. The rear frame D is made up of lower cross-bars *a* and *b* removably arranged below the wagon body A; the foremost of said cross-bars being positioned immediately in rear of the wagon bolster as shown, side boards *c* removably arranged on the side walls of the wagon body and having depending cleats *d* resting at the outer sides of said side walls, cross-bars *e* and *f* removably arranged on the side boards *c* and connected by bolts *g* to the lower cross-bars *a* and *b*, longitudinal bars *h* arranged on and fixedly connected to the end portions of the cross-bars *a* and *b*, upright bars *i*, fixed to and rising from the rear portions of the longitudinal bars *h*, and a crown bar *j* connecting the upper ends of the upright bars *i*. It will be apparent from the foregoing that the frame bars B and C and the several parts of the rear frame D may be readily fixed on the wagon body A without the necessity of boring holes in the body or otherwise altering the same; also, that when it is desired to use the wagon without my improvements, said bars B and C and the rear frame D may be as readily removed from the wagon body A.

Journaled in suitable bearings on the uprights *i* of the rear frame D are the trunnions *k* of a toothed cylinder F which has for its function to spread manure from the wagon as will be hereinafter pointed out in detail. On one of the said trunnions *k* is fixed a pinion *l*, and with this pinion *l* is designed to be intermeshed a spur gear *m* which is fixed to a sprocket gear *n*. The said gears *m* and *n* are mounted on the intermediate or crank portion of a crank or eccentric shaft *p* which is journaled at its inner end in said upright *i* and at its outer end in a bracket *r* connected to the upright, and is provided adjacent to its inner end with a lateral arm *s*. The sprocket gear *n* is connected by a sprocket belt *t* with a sprocket gear *u* fixed to one wagon wheel *v*, and hence it will be apparent that when the wagon is moved forward and the spur gear *m* is intermeshed with the pinion *l*, the cylinder F will be rotated upward and backward. The arm *s* of shaft *p* is connected through a rod *w* with a hand-lever *x* fulcrumed on the lower frame bar B, and the upper portion of said hand lever *x* is arranged in a loop-shaped guide *y* having a lateral keeper *z* at its forward end. When the said lever *x* is swung to and held by hand or otherwise at the rear end of the guide *y*, it will be observed that the spur gear *m* will be intermeshed with the pinion *l* and the toothed cylinder F will be rotated in the direction stated, while when the lever *x* is moved forward, the spur gear

m will be moved forward and disengaged from the pinion l, and the toothed cylinder F will be rendered idle. The placing of the hand lever x in the keeper z at the forward end of guide y obviously serves to hold the lever against casual rearward movement and in that way retains spur gear m out of engagement with the pinion l. Precedent to moving the hand lever x rearward, said lever is of course moved laterally out of the keeper z.

By virtue of the construction described in the foregoing, it will be apparent that the driver of the wagon is enabled to readily put the toothed cylinder F into and out of operation as occasion demands.

Journaled in the rear ends of the longitudinal bars h of the rear frame D and adapted to be arranged in rear of the bottom of the wagon body A is a shaft G. This shaft G is designed to be rotated and moved endwise in said bars h; and it is provided at one end with a spur gear I, and at its opposite end with a circumferentially-grooved portion J. The spur gear I is intermeshed with a pinion K fixed to a sprocket gear L, and the said sprocket gear L is connected through a sprocket belt M with a sprocket gear N fixed to a wheel v' of the wagon, whereby it will be seen that when the spur gear I and pinion K are intermeshed and the wagon is moved forward, the shaft G will be rotated upward and rearward. It will also be seen that when the shaft G is moved endwise in the direction indicated by arrow to draw the spur gear I out of engagement with the pinion K, the shaft G will be stopped or rendered idle.

Engaging the circumferentially grooved portion J of shaft G is the forked end of an arm P on an upright shaft Q, which shaft Q is journaled in a suitable bearing on one side of the rear frame D and is provided with another and lower arm R. This arm R is connected by a link S to the inner arm of a lever T fulcrumed on a bar U connected to and extending between the frame bars a and b, and to the said inner arm of the lever T is also connected one end of a tractile spring U′ the other end of which is connected to the frame bar b so as to enable the spring to normally hold the gear I in engagement with pinion K. The outer arm of lever T is connected by a rod V with the rear arm of a lever W fulcrumed on the upper, front frame bar C. Thus it will be apparent that when the forward arm of lever W is drawn inward by means presently described, the shaft G will be drawn endwise in the direction indicated by arrow to disengage the spur gear I from pinion K and in that way stop rotation of the shaft G.

X is an apron connected to and designed to be wound on the shaft G, and arranged to move on the bottom of the wagon body A. The said apron may be of any construction and material compatible with the purpose of my invention without involving departure from the scope thereof, though I prefer to have it comprise three strips a' of heavy canvas, connected to the shaft G, a strip b', of similar material connected to the forward ends of the strips a' and extending the full width of the interior of the wagon body, cleats c' arranged over the points at which the strip b' is joined to the strips a', and strips d', of the same material, joined to and extending forward from the strip b'. To the strips d' are fixedly connected the horizontal arms of angle irons e', and to the upright arms of said angle irons is fixedly connected a follower Y which extends the full height and width of the interior of the wagon body A. From this it will be understood that when the wagon body is loaded with manure while the follower Y is in a position adjacent to the forward end of the body, and the wagon is moved forward, the apron will be moved upon the shaft G and the follower will be drawn rearward with the result that the manure will be moved before the follower and pressed toward the toothed cylinder F. It will also be understood that when the toothed cylinder F is in operation, the said cylinder will take up the manure that is pressed toward it, and will throw said manure upward and rearward so as to spread the same over the ground.

A′ is a drum journaled in suitable bearings on the frame bar C and having a crank m'. B′ is a cable connected to and designed to be wound on said drum and also connected to the follower Y, whereby it will be seen that by turning the drum the operator is enabled to draw the follower forward, and C′ is a cable connected at one end to the cable B′ at a slight distance from the end of said cable B′ that is connected to the drum A′, and passed through a guide D′ on frame bar C, and connected at its opposite end to the forward arm of the lever W. By virtue of this provision it will be apparent that when the follower Y reaches a point adjacent to the rear end of the wagon body A and the cable B′ is almost all drawn off the drum A′, said cable B′ will draw the cable C′ rearward with it, when said cable C′ will draw the forward arm of lever W inward, and in that way put the shaft G out of operation through the medium of the connections before described in detail, and stop the apron X and follower Y.

When desirable my improvements may be used to advantage for discharging a load from a wagon body, in which event the toothed cylinder F and its appurtenances may be omitted without involving departure from the scope of my invention as claimed.

I have specifically described the construction and relative arrangement of the parts embraced in the present and preferred em-

bodiment of my invention in order to impart a definite understanding of said embodiment. I do not desire, however, to be understood as confining myself to the said specific construction and relative arrangement of parts as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:

1. Means for unloading wagons, comprising a frame, a follower, means for moving the follower, a drum mounted on the frame, a cable connecting the follower with said drum, a second cable connected to the first mentioned cable, and means connected with and operated by the second cable for stopping the follower when it reaches the end of its traverse.

2. Means for unloading wagons, comprising a frame, a follower, means for moving the follower, a lever mounted on the frame, means connected with and operated by said lever for disconnecting the follower from the means for moving the same, a drum mounted on the frame, a cable connecting the follower with said drum, and a second cable connected to the first mentioned cable and with the said lever.

3. Means for unloading wagons, comprising a frame, a movable shaft journaled therein and provided with a gear, a gear engaging the first mentioned gear and adapted to be connected with means for rotating the shaft, a rock-shaft mounted on the frame and having arms one of which is arranged to move the shaft to carry the first mentioned gear out of engagement with the second mentioned gear, a follower, a connection between the follower and the shaft, a lever mounted on the frame and connected with the rock-shaft, a drum mounted on the frame, a cable connecting the follower with said drum, and a second cable connecting the lever with the first mentioned cable.

4. Means for unloading wagons, comprising a frame, a shaft journaled therein, an apron connected to and arranged to be wound on the shaft, a follower connected to the apron, means for rotating the shaft, a lever mounted on the frame, means connected with and operated by said lever for disconnecting the shaft from the means for rotating same, a drum mounted on the frame, a cable connecting the follower with said drum, and a second cable connecting the lever with the first mentioned cable.

5. Means for unloading wagons, comprising a frame, an endwise-movable shaft journaled therein and provided with a spur gear, a pinion intermeshed with said spur gear and adapted to be connected with means for rotating the shaft, a rock-shaft mounted on the frame and having arms one of which is arranged to move the shaft endwise, an apron connected to and arranged to be wound on the shaft, a follower connected to the apron, a lever mounted on the frame and connected with the rock-shaft, a drum mounted on the frame, a cable connecting the follower with said drum, and a second cable connecting the lever with the first mentioned cable.

6. Means for unloading wagons, comprising a frame, a movable shaft journaled therein and provided with a gear, a gear engaging the first mentioned gear and adapted to be connected with means for rotating the shaft, a rock-shaft mounted on the frame and having arms one of which is arranged to move the shaft to carry the first mentioned gear out of engagement with the second mentioned gear, a follower, an apron connected to and arranged to be wound on the shaft and also connected to the follower, a lever mounted on the frame and connected with the rock-shaft, a drum mounted on the frame, a cable connecting the follower with said drum, a second cable connecting the lever with the first mentioned cable, a toothed cylinder mounted in the frame and arranged above the apron, means for rotating said toothed cylinder, and means whereby the operator is enabled to control the rotation of the toothed cylinder.

7. The combination of a wagon having a body, forward frame bars removably secured on the body, a rear frame removably secured on the body and comprising lower cross bars disposed below the body, side boards removably arranged on the side walls of the body and having depending cleats resting at the outer sides of said side bars, cross bars removably arranged on the side boards, bolts connecting said cross bars to the lower cross bars, longitudinal bars arranged on and fixed to the end portions of the lower cross bars, upright bars fixed to and rising from the rear portions of the longitudinal bars, and a crown bar connecting the upper ends of the upright bars, a toothed cylinder journaled in bearings on the upright bars of the rear frame, means for rotating said cylinder, a shaft journaled in the longitudinal bars of the frame a follower movable in the wagon body, a connection between the shaft and said follower, means for rotating the shaft, a drum mounted on the upper of the frame bars, and a connection between the follower and said drum.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ERIK PALM.

Witnesses:
EMIL MARVIN,
O. M. KASBERG.