No. 797,074. PATENTED AUG. 15, 1905.

J. C. & W. J. POPE.

FERTILIZER DISTRIBUTER.

APPLICATION FILED SEPT. 8, 1904.

2 SHEETS—SHEET 1.

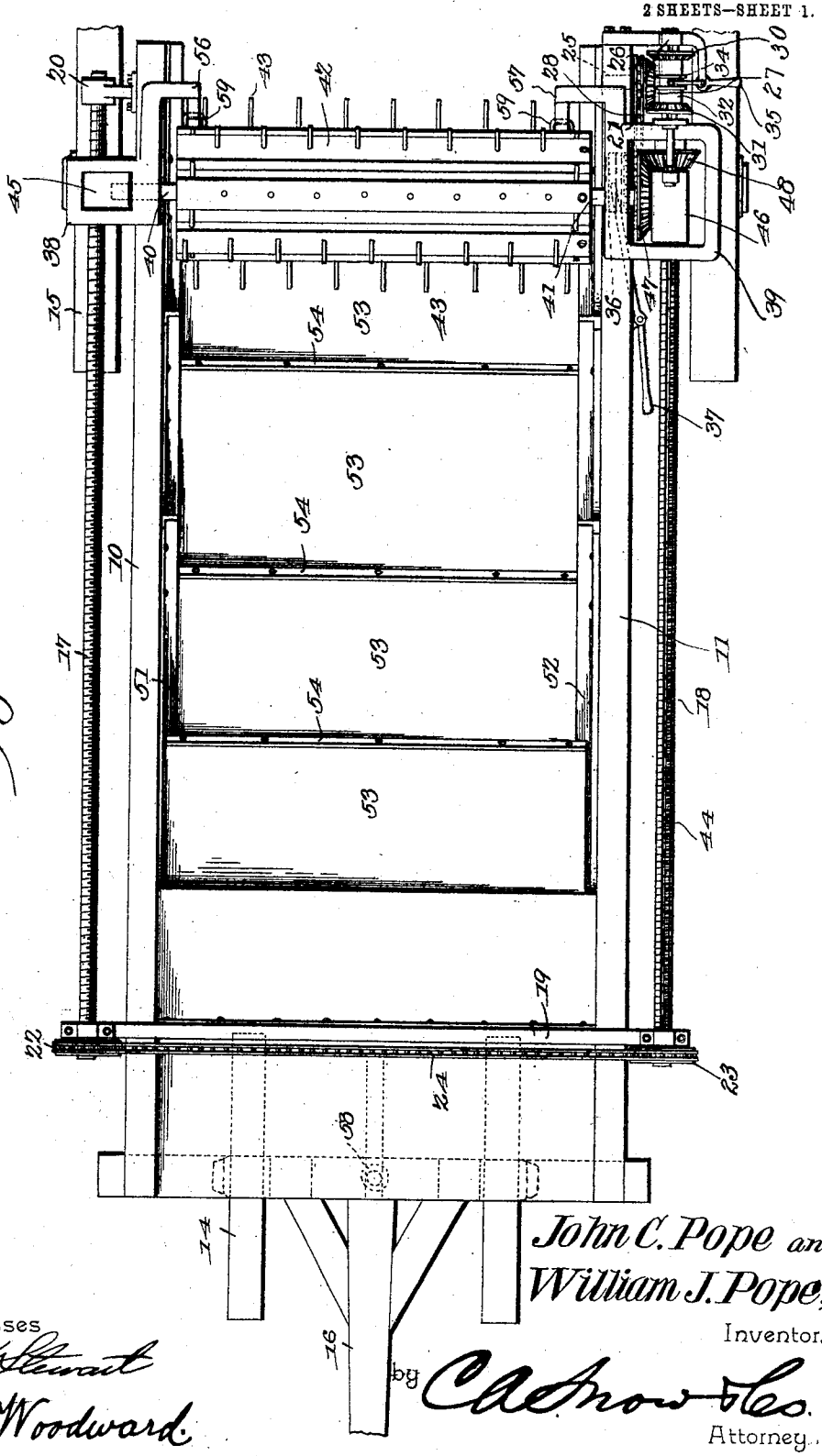


Fig. 1.

Witnesses

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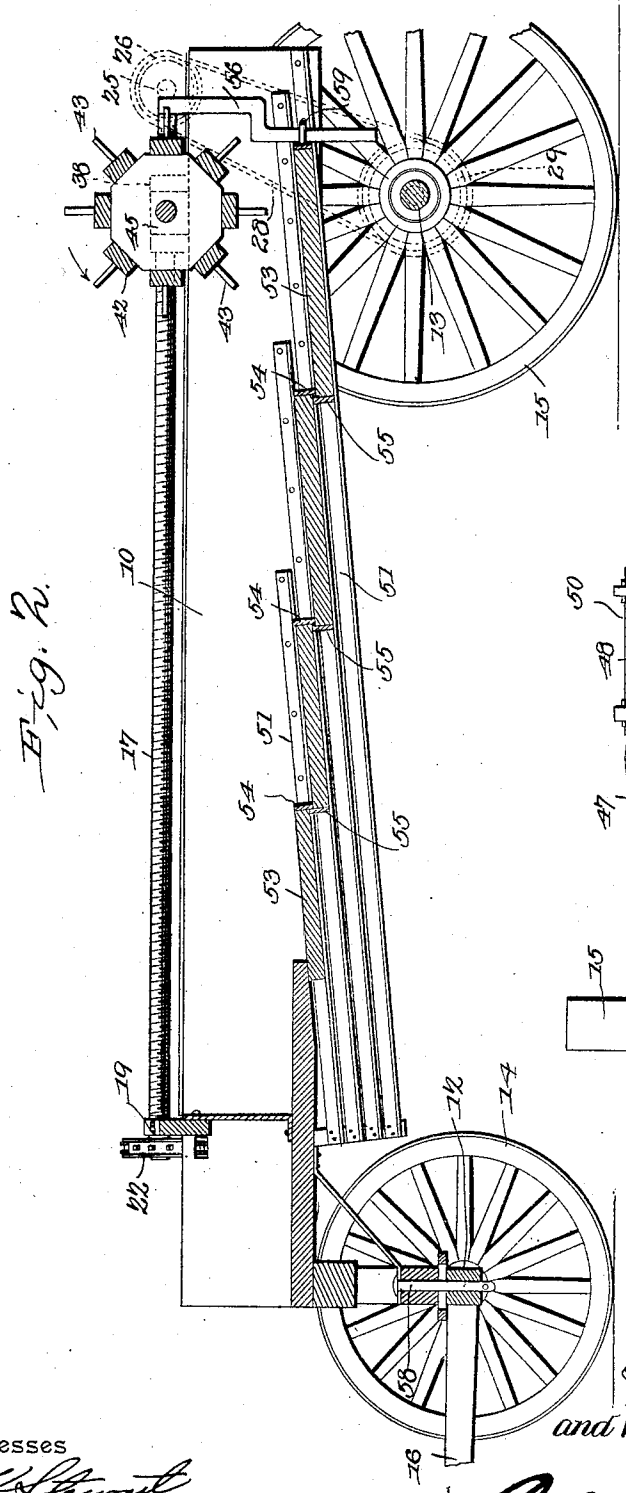


Fig. 2.

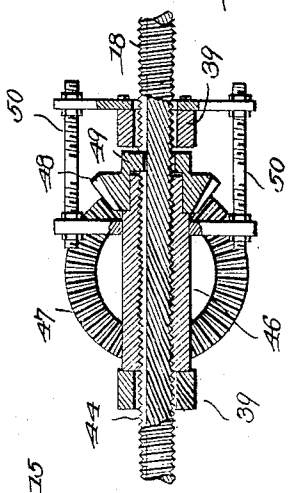


Fig. 4.

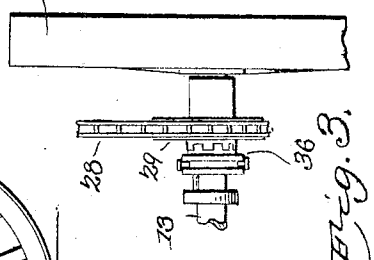


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN C. POPE AND WILLIAM J. POPE, OF PLANO, ILLINOIS.

FERTILIZER-DISTRIBUTER.

No. 797,074. Specification of Letters Patent. Patented Aug. 15, 1905.

Application filed September 8, 1904. Serial No. 223,724.

To all whom it may concern:

Be it known that we, JOHN C. POPE and WILLIAM J. POPE, citizens of the United States, residing at Plano, in the county of Kendall and State of Illinois, have invented a new and useful Fertilizer-Distributer, of which the following is a specification.

This invention relates to fertilizer-distributers, and has for its object to improve the construction and facilitate and equalize the discharge of the material.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in certain novel features of construction, as hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which corresponding parts are denoted by like designating characters, is illustrated the preferred form of the embodiment of the invention capable of carrying the same into practical operation, it being understood that the invention is not necessarily limited thereto, as various changes in the shape, proportions, and general assemblage of the parts may be resorted to without departing from the principle of the invention or sacrificing any of its advantages.

In the drawings thus employed, Figure 1 is a plan view. Fig. 2 is a longitudinal sectional elevation of the improved apparatus. Fig. 3 is a detail of the axle clutch mechanism. Fig. 4 is an enlarged sectional detail of the drum-operating mechanism.

The improved device comprises a receiver for the material to be distributed formed with spaced side members 10 11 and mounted upon axles 12 13 and bearing-wheels 14 15, the forward axle swiveled, as at 58, and provided with a draft-tongue, as at 16, to provide for the transportation of the apparatus.

Mounted for rotation along the side members 10 11 and spaced therefrom are threaded shafts 17 18, being connected at one end in a transverse bar 19 and at the other end in bearings 20 21 and one of the screw-rods provided with a longitudinal channel 44. Adjacent to the bar 19 the shafts 17 18 are provided with chain-pulleys 22 23, connected by an endless chain 24, so that the rotary movement of one shaft will be communicated to the other shaft. A short stub-shaft 25 is connected to the side member 11 and provided with a chain-pulley 26 and bevel-gear 27, the chain-pulley connected by an endless chain 28 to a chain-pulley 29 on the adjacent rear axle 13 and the gear 27 adapted for alternate engagement by pinions 30 31 on a sleeve 32, slidable on the rearward unthreaded end of the rod 18, the sleeve being rotatable therewith. The sleeve 32 is also provided with a peripheral channel 34, in which a shipper-lever 35 operates to actuate the sleeve and throw the pinions alternately into engagement with the gear 27. By this arrangement it will be obvious that at the forward movement of the receptacle the motion of the rear axle will be imparted to the threaded shafts, and by actuating the shipper-lever 35 forward or back the screw-rods may be rotated in either direction desired without changing the direction of motion of the vehicle.

The chain-wheel 29 is disposed for connection to the axle 13 by a clutch mechanism 36 operative by a lever 37 to provide for throwing the mechanism out of gear when not required or when the apparatus is being moved from place to place.

Mounted for movement longitudinally of the side members 10 11 are bearing-frames 38 39, in which the journals 40 41 of a drum 42 are rotatively mounted, the drum having spaced spurs 43 and disposed transversely of the receptacle, with the spurs operating near the floor of the same. Nuts 45 46 are disposed for engagement, respectively, with the threaded shafts 17 18 within the frames 38 39 and clamped by suitable means therein, so as not to rotate with the shafts. By this means it will be obvious that the drum will be carried bodily along the receiver by the rotation of the threaded shafts.

The journal 41 of the drum 42 is extended into the frame 39, which is necessarily larger than the frame 38, and provided on its end with a bevel-gear 47, engaging a bevel-pinion 48, journaled on a bearing upon the nut 46, and provided with a feather key or lug 49, extending into the longitudinal channel 44 in the threaded shaft 18. The nut 46 in the frame 39 is provided with clamp-bolts 50, whereby it is coupled firmly to the frame, while at the same time the shaft 18 and pinion 48 rotate freely therein. By this simple arrangement it will be obvious that when the shafts 17 18 are rotated by the forward movement of the receptacle and the drum carried bodily along the same the drum will also be rotated simultaneously with its bodily movement.

Attached to the inner faces of the side members 10 11 are spaced guideways 51 52 pro-

gressive in lengths from the forward to the rear ends and inclined to the horizontal plane of the side members. Slidably supported in the guideways are a plurality of floor-sections 53, overlapping at their adjacent edges and adapted when distended to form a continuous collapsible floor to the receptacle and adapted when withdrawn to underlap at the forward end of the receptacle. The rear edge of each floor-section is provided with a depending lip 54, and the forward edge of each section is provided with a projecting lug 55 for engaging the lip of the section next behind as the sections are distended. The sliding carrier-frames 38 39 are provided, respectively, with depending arms 56 57, engaging loops 59 on the outermost or lowermost of the floor-sections 53, so that as the carrier-frames and drum are moved along the receptacle, as above described, the floor-sections will be moved simultaneously therewith. The guideways 51 52 are preferably of "L" iron or steel bars suitably braced and supported.

In operating the apparatus care should be taken that in driving the apparatus to the source of the supply of the material the drum 42 should be moved to the rear of the receptacle, which will also cause the floor-sections 53 to be distended or placed in position to receive the load of material. The clutch 36 will then be disconnected until the apparatus has been driven to the point where the distribution is to begin. The clutch 36 is then connected and the shipper-lever 35 moved to its rearward position to cause the rearward pinion 30 to be engaged by the gear 27 and the forward pinion 31 to be disengaged therefrom. Then as the vehicle is driven forward the motion of the rear axle and carrier-wheels 15 will be imparted to the screw-rods 18 17 and through the pinion 48 to the drum 43, which in rapidly rotating throws the material rearwardly in finely-divided particles and uniformly distributes the same. At the same time that the drum is rotated it is moved slowly toward the material and the floor-sections 53 are also slowly withdrawn as fast as the material is removed from them, so that the drum is required to throw the material to the same distance at all parts of its progress over the receptacle. Thus the floor offers no obstruction to the free distribution of the material, as it is withdrawn simultaneously with the forward movement of the revolving drum toward the material to be distributed. When the material has been discharged, the drum will be at the forward end of the receptacle and the floor-sections all withdrawn and disposed one above the other beneath the forward end, as will be obvious. The apparatus is then returned to the source of supply and the shipper-lever 35 reversed in position to throw the pinion 30 into engagement with the gear 27 and disconnect the pinion 31, which will reverse the motion of the screw-rods 17 18, so that as the apparatus is driven back for another load of material the motion of the rear axle 13 and wheel 15 will be utilized to return the drum and floor-sections to their rearward positions. Of course it will be understood that the clutch 36 will be operated as required to prevent undue prolongation of the motion of the screw-rods in either direction.

It will thus be noted that a simply-constructed and efficient apparatus is provided wherein the movable distributing member operates toward the material instead of moving the material toward the distributing member as in prior devices of this character, thereby securing an increased uniformity of distribution and requiring less power to operate the apparatus.

The apparatus may be constructed of any required material or of any required capacity and will be found very useful and effectual for the purposes described.

Having fully described the invention, what is claimed is—

1. A receiver having a collapsible bottom comprising a plurality of slides, and independent supporting means for each of said slides.

2. A receiver having a collapsible bottom comprising a plurality of slides movable in different planes adjacent to one another, and independent supporting means for each of said slides.

3. A receiver having a collapsible bottom comprising a plurality of slides, and a distributing member movable longitudinally of the receiver.

4. A receiver having a collapsible bottom comprising a plurality of slides, and a distributer member mounted for rotation and movable longitudinally of the receiver.

5. A receiver having a collapsible bottom comprising a plurality of slides, distributer-carrying means mounted for longitudinal movement, and slide-engaging means connected with said distributer-carrying means.

6. A distributer having a collapsible bottom comprising a plurality of slides, independent supporting means for each of said slides, and a longitudinally-movable slide-engaging device.

7. A receiver having a collapsible bottom composed of separate sections, a distributing member, movable supports for the latter, and connecting means between said supports and a section of the collapsible bottom.

8. A receiver having a collapsible bottom composed of separate sections and longitudinally-movable supporting means connected with a section of said bottom, and a distributing member mounted for rotation upon said supporting means.

9. A receiver having a collapsible bottom composed of a plurality of slides, a distributing member mounted for rotation transversely of the receiver, and supporting means for said

distributing member movable longitudinally of the receiver.

10. In a fertilizer-distributer, in combination, a receptacle having its floor composed of a plurality of overlapping plates; and a slideway for each of such plates.

11. In a fertilizer-distributer, in combination, a receptacle having its floor composed of a plurality of overlapping interlocking plates; and a slideway for each of such plates.

12. In a fertilizer-distributer, in combination, a receptacle having its floor composed of a plurality of overlapping plates; a slideway for each of such plates; a distributing member; frames carrying such member and adapted to engage the bottom plates to slide them; and guide-rods carrying the frames and mounted on the receptacle.

13. A receiver having a collapsible and extensible bottom composed of separate sections, and a rotary distributer connected and movable with the outermost end section of the collapsible bottom.

14. In an apparatus of the class described, a receiver for the material to be distributed and having a collapsible floor formed of a plurality of slidable sections, and a distributer means mounted for movement parallel with the plane of said floor for simultaneously removing the material and collapsing the floor as the distributer advances thereover.

15. In an apparatus of the class described, a receiver for the material to be distributed and having a collapsible floor formed of a plurality of slidable sections, a rotating drum having radiating spurs and mounted for movement over said material for removing the same and collapsing the floor simultaneously with the advance of the drum thereover.

16. In an apparatus of the class described, a receiver for the material to be distributed and having a collapsible floor formed of a plurality of slidable sections, carrier-frames mounted for movement upon said receiver and supporting a toothed drum, means for moving said frames longitudinally of said receiver, and means for rotating said drum and collapsing the floor.

17. In an apparatus of the class described, a receiver for the material to be distributed, threaded rods mounted for rotation on the sides of said receiver, frames running on the screw-rods, a drum mounted for rotation in said frames, and means for simultaneously rotating said screw-rods and said drum.

18. In an apparatus of the class described, a receiver for the material to be distributed, threaded rods spaced from the sides of said receiver and mounted for rotation thereon, frames mounted for movement longitudinally of said receiver and carrying nuts for engaging said screw-rods, one of said screw-rods having a longitudinal channel, a toothed drum mounted for rotation in said frame and carrying a gear-wheel, a gear-pinion mounted for rotation about said channeled screw-rod and having a fin extending into the channel therein and engaging the gear upon said drum, and means for rotating said screw-rods, whereby said drum is simultaneously rotated and moved along said receiver.

19. In an apparatus of the class described, a receiver for the material to be distributed and having a collapsible floor formed of a plurality of slidable sections, threaded rods spaced from the sides of said receiver and mounted for rotation thereon, frames mounted for movement longitudinally of said receiver and connected to the outermost of said floor-sections and carrying nuts for engaging said screw-rods, a toothed drum mounted for rotation in said frames, and means for simultaneously rotating said screw-rods and said drum to cause the same to remove the material from the receiver as it is moved thereover and collapse the floor as fast as the material is removed.

20. In an apparatus of the class described, a receiver for the material to be distributed having spaced side members provided with spaced guideways inclined to the longitudinal plane of said side members, floor-sections slidably disposed in said guideways and having interlocking edges for forming a continuous floor to said receptacle when extended, and a distributer means mounted for movement over the material in said receiver, and means whereby said floor will be collapsed simultaneously with the progress of the distributer means and the discharge of the material from the receiver.

21. In an apparatus of the class described, a receiver for the material to be distributed having spaced side members provided with spaced guideways inclined to the longitudinal plane of said side members, floor-sections slidably disposed in said guideways and having interlocking edges for forming a continuous floor to said receptacle when extended, a toothed drum mounted for rotation transversely of said receiver and movable longitudinally of the same, and means whereby said floor-sections will be collapsed simultaneously with the progress of said roller and the removal of the material from the receiver.

22. In an apparatus of the class described, a receiver for the material to be distributed having spaced side members provided with spaced guideways inclined to the longitudinal plane of said side members, floor-sections slidably disposed in said guideways and having interlocking edges for forming a continuous floor to said receptacle when extended, carrier-frames mounted for movement upon said side members and having depending arms for engaging the outermost of said slidable floor-sections, a toothed drum mounted for rotation in said frames and movable therewith, and

means whereby said drum may be simultaneously rotated with the movement of said frames and connected floor-sections.

23. In an apparatus of the class described, a receiver for the material to be distributed having spaced side members provided with spaced guideways inclined to the longitudinal plane of said side members, floor-sections slidably disposed in said guideways and having interlocking edges for forming a continuous floor to said receptacle when extended, carrier-frames mounted for movement upon said side members and having depending arms for engaging the outermost of said slidable floor-sections, a toothed drum mounted for rotation in said frames and movable therewith, threaded rods spaced from the sides of said receiver and mounted for rotation thereon and likewise rotative through said carrier-frames, nuts engaging said screw-rods within said frame, means for rotating said screw-rods, and means for communicating the rotative movement of said screw-rods to said drum.

24. In an apparatus of the class described, a receiver for the material to be distributed and mounted for movement over the ground and having spaced side members provided with spaced guideways inclined to the longitudinal plane of said side members, a plurality of floor-sections slidably disposed in said guideways and having interlocking edges for forming a continuous floor to said receptacle when extended, carrier-frames mounted for movement upon said side members and having depending arms for engaging the outermost of said slidable floor-sections, a toothed drum mounted for rotation in said frames and movable therewith, threaded rods spaced from the sides of said receiver and mounted for rotation thereon and likewise rotative through said frames, nuts engaging said screw-rods within said carrier-frames, a gear-pinion carried by one of said screw-rods within one of said frames and rotative with the screw-rod, a gear carried by said drum and engaging said pinion, and means for communicating motion from the running-gear of said receptacle to said screw-rods.

25. In an apparatus of the class described, a receiver for the material to be distributed and mounted for movement over the ground and having spaced side members provided with spaced guideways inclined to the longitudinal plane of said side members, a plurality of floor-sections slidably disposed in said guideways and having interlocking edges for forming a continuous floor to said receptacle when extended, carrier-frames mounted for movement upon said side members and having depending arms for engaging the outermost of said slidable floor-sections, a toothed drum mounted for rotation in said frames and movable therewith, threaded rods spaced from the sides of said receiver and mounted for rotation thereon and likewise rotative through said frames, nuts engaging said screw-rods within said carrier-frames, a gear-pinion carried by one of said screw-rods within one of said frames and rotative with the screw-rod, a gear carried by said drum and engaging said pinion, an endless chain belt connecting said screw-rods, a counter-shaft connected by an endless chain to one of the carrier-wheels of said receiver member, and gears between said counter-shaft and one of said screw-rods, whereby the forward motion of said carrier-wheels will be communicated to said screw-rods and thence to the drum and carrier-frames and floor-sections.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JOHN C. POPE.
WILLIAM J. POPE.

Witnesses:
L. D. HENNING,
C. N. LAWSON.