J. R. AYERS.

GUANO SOWER.

APPLICATION FILED MAY 1, 1912.

1,068,381.

Patented July 22, 1913.

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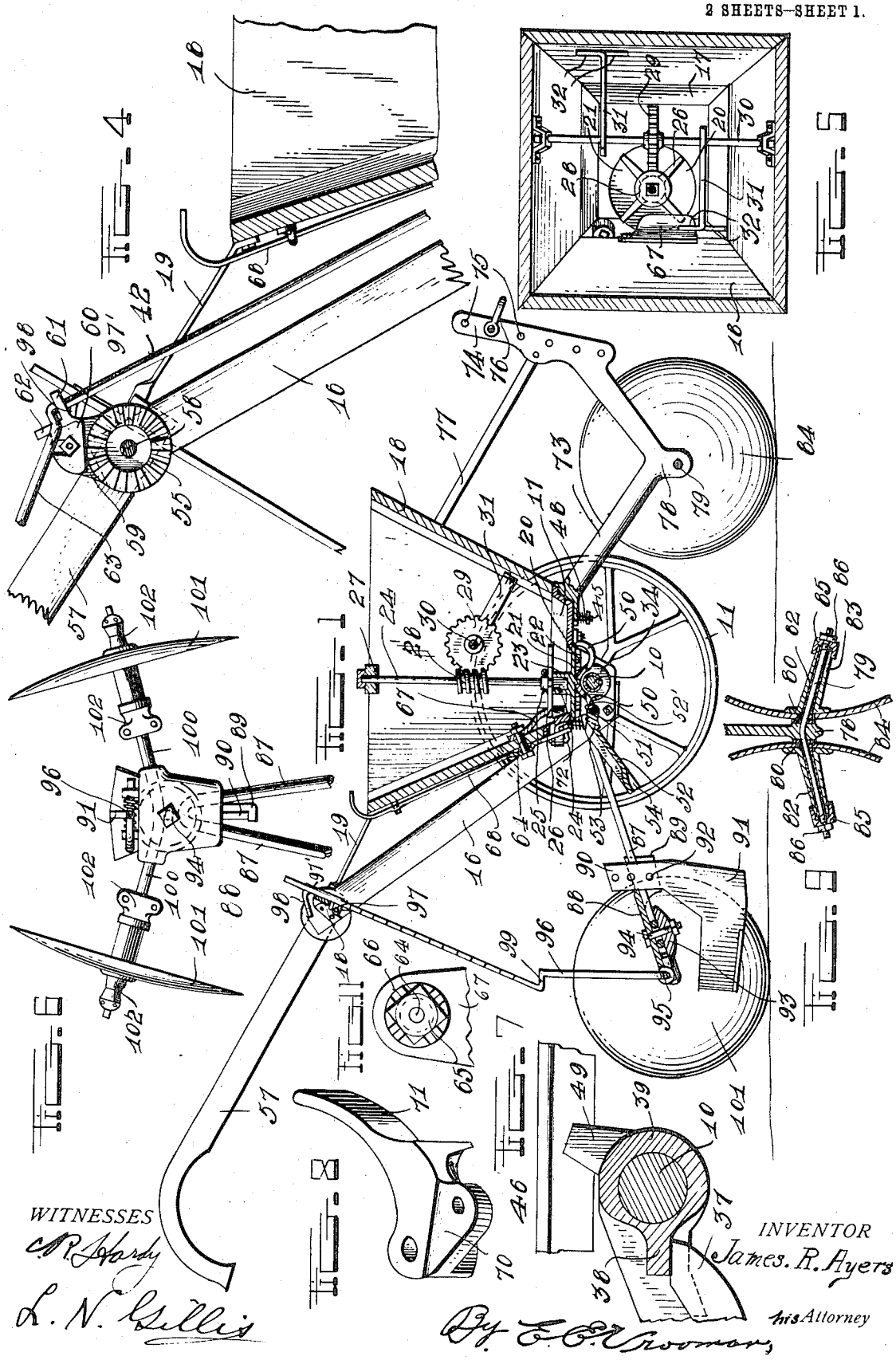

WITNESSES

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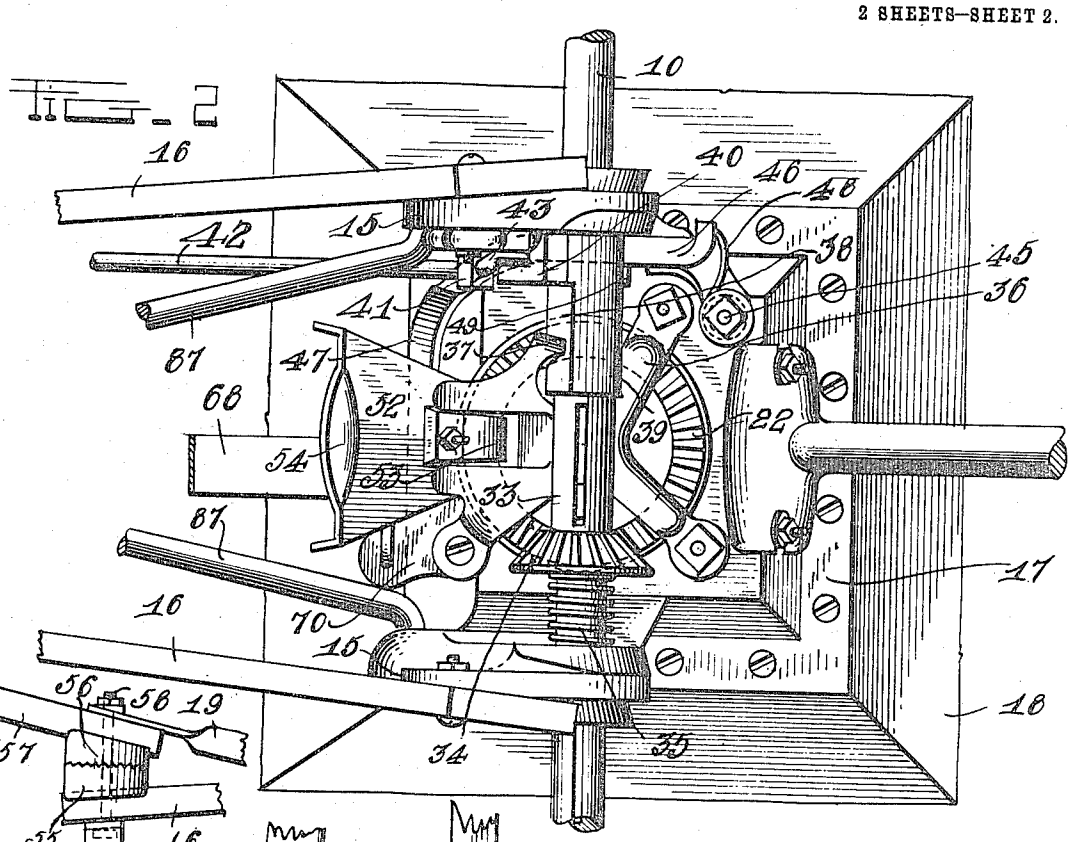

Fig. 2

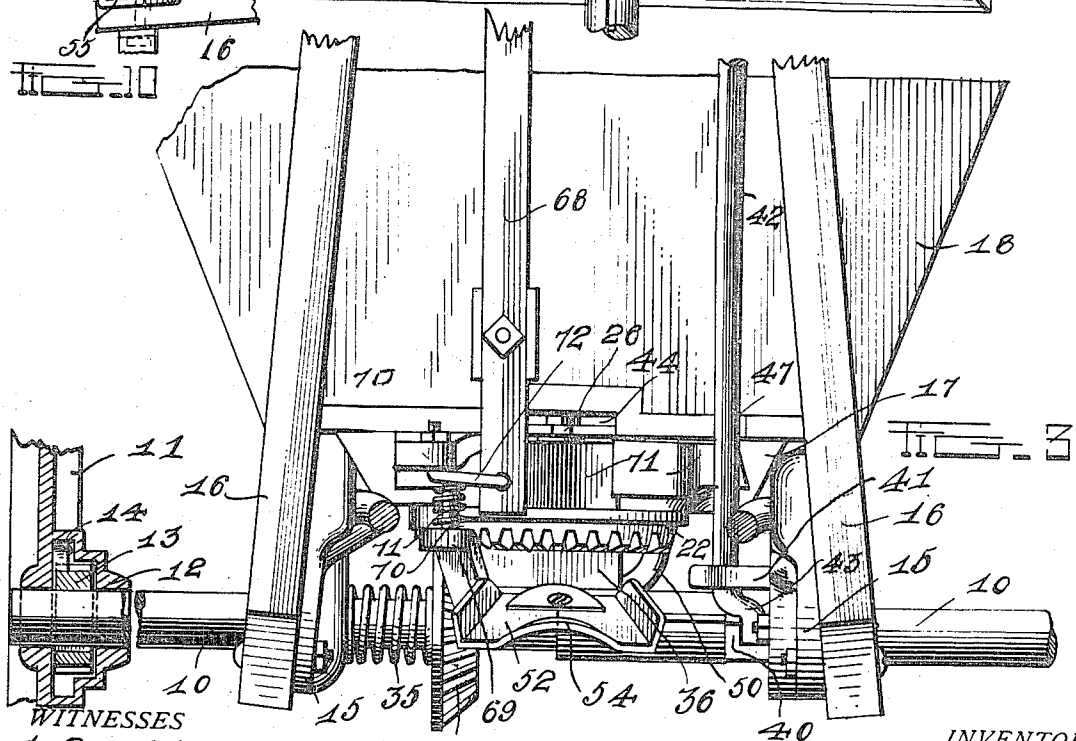

Fig. 3

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UNITED STATES PATENT OFFICE.

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GUANO-SOWER.

1,068,381. Specification of Letters Patent. Patented July 22, 1913.

Application filed May 1, 1912. Serial No. 694,549.

To all whom it may concern:

Be it known that I, JAMES R. AYERS, a citizen of the United States, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented certain new and useful Improvements in Guano-Sowers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to agricultural machinery and has special reference to a guano sower of the type wherein the guano is carried in a hopper and distributed therefrom in a furrow.

One object of the invention is to provide a single lever which will control a cut off for the feed, and at the same time move an inner gate covering shelf, this operation having previously required two levers.

Another object of the invention is to provide means for closing the escape gate of the hopper which will operate simultaneously with the means for throwing the device out of gear.

Another object of the invention is to provide for an improved form of bearing for the upper end of the shifting rod, the bearing being combined with an adjusting clamp.

With the above and other objects in view the invention consists in general of certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described, illustrated in the accompanying drawings, and specifically claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and Figure 1 is a vertical median section taken through a guano distributer constructed in accordance with this invention. Fig. 2 is a detail bottom plan view showing the parts beneath the hopper. Fig. 3 is a detail partial rear view partly in section. Fig. 4 is an enlarged detail view of the rear upper portion of the hopper and the members adjacent thereto. Fig. 5 is a detail plan view of the lower portion of the hopper. Fig. 6 is a detail view of the rear or covering wheels. Fig. 7 is a detail view of a certain sleeve with the lug thereon used to control the gate closing lever. Fig. 8 is a detail perspective of the regulating gate. Fig. 9 is a detail section showing the mounting of the front wheels. Fig. 10 is a detail view showing the means of adjusting the handles. Fig. 11 is a detail view of a certain shelf or cover plate.

Mounted upon an axle 10 are ground wheels 11, each of which is provided with a hollow skeleton hub 12, within the recess of which is carried a ratchet 13, the same being keyed or otherwise fastened to the axle 10. Carried on each wheel within the skeleton hub is a spring pawl 14 arranged to engage the ratchet so that as the device is moved forwardly the axle will turn with the wheels and when the device is moved to the rear the axle will not turn therewith.

Mounted upon the axle 10 are certain brackets 15 and secured to the rear ends of these brackets are frame members 16. Carried by the upper ends of these brackets is a hopper bottom 17 which is preferably made of cast iron, malleable iron or the like material. Extending upward from this hopper bottom is a hopper 18 preferably of wood. The upper ends of the members 16 are connected by means of a suitable brace bar and each of these members is braced to the upper edge of the hopper by a brace 19.

The hopper bottom 17 is provided with an opening 20 which is preferably closed by a plate 21 having a beveled gear 22 formed thereon. Extending upward from the plate 21 is a boss 23 having a suitable recess therein for the reception of the lower end of a rod or shaft 24 whereon is mounted a collar 25 provided with a series of agitator arms 26.

Extending across the top of the hopper is a cross bar 27 in which the upper end of the shaft 24 is journaled. On the shaft 24 is provided a worm 28 which meshes with a worm wheel 29 fixed upon a shaft 30 extending transversely of the hopper. On the shaft 30 are carried agitator arms 31, each formed of a piece of split metal, split at the ends, the split portions being bent in oppositely disposed directions as indicated at 32. It will be noted that as the shaft 24 is rotated, the socket and lower end thereof being square, the agitator fingers 26 will stir the material in the lower part of the hopper while the agitator 31 will act in like manner in the material in the upper part thereof. In order to actuate the plate 21 there is splined upon the axle 10 a sleeve 33 which carries a beveled gear 34 adapted to mesh, when in one position, with the gear 22 and when moved to another position to be out of mesh therewith. In order to hold the two

gears normally in mesh there is provided a spring 35 which bears at one end against the outer face of the gear 34 and at its other end against one of the members 15.

In order to hold the plate 21 in position there is provided a spider 36 which is secured to the underside of the hopper bottom 17, the legs of the spider extending over the plate. Carried by this spider is a guide finger 37 between which and the legs of the spider moves a rib 38 formed on a sliding member or sleeve 39 arranged to slide on the axle 10, the latter being revolubly mounted in said sleeve or member. The sleeve 39 has a rearwardly projecting lug 40 and secured to the member 15 adjacent the sleeve 39 is a guide 41 wherethrough passes a rod 42, the lower end of this rod being bent as at 43 to provide a crank. The end of this crank is fitted in a suitable opening in the lug 40. Now by the rotation of the rod 42 the crank 43 will be actuated and the sleeve 39 caused to move so as to force the gear 34 out of engagement with the gear 22 and to permit of its coming into engagement therewith.

At the rear of the hopper bottom 17 there is provided a delivery gate or opening 44. Extending downward from the hopper bottom 17 is a spring post 45 whereon is pivoted an arm 46 which carries on its rear end a gate 47. On the spring post 45 is a spring 48 (Fig. 1) which constantly urges the arm to close the gate, one end of this spring being engaged against one of the legs of the spider 36 while the other end engages against the inner side of the arm 46. Upon the sleeve 39 is provided a lug 49 which bears against the inner side of the arm 46 and thus controls the position of that arm in connection with the spring 48. Now it will be observed that as the sleeve 39 is moved to throw the two beveled gears out of mesh, at the same time the arm 46 will be released from restraint by the lug 47 and thus permit the spring 48 to close the gate.

The spider 36 is provided with two rearwardly and downwardly extending lugs 50 which are connected by a cross bar 51. Carried by this cross bar is a distributer plate 52 in the form of a hollow trough having an upwardly open hook 52′ at its forward end and in order to retain this hook on the cross bar there is provided a cover plate 53 suitably secured by means of any ordinary mechanism so that the distributer plate is retained on the cross bar. This plate is provided at its rear end with segmental spherical elevated portion 54 so that the distribution is made even across the entire width of the plate.

On the upper end of each of the members 16 there is carried a rose clutch member wherewith co-acts a similar clutch member 56 having handles 57 extending up therefrom. These parts are all held together by means of a single bolt 58 whereto the brace 19 has its respective rear end connected.

One of the members 55 is provided with an upwardly extending lug 59 and to this lug is bolted a bracket 60 having a forwardly extending ear 61 provided thereon. This bracket 60 is provided further with a stop member 62 and through this bracket extends the upper end of the rod 42, the same being provided above the bracket with a crank handle 63. Thus the adjustment for the handles and the adjustment to throw the clutch in and out and open and close the shut-off gate are differently operated and it will be noted that by the operation of the handle 63 the clutch and shut off are simultaneously operated.

Extending from the rear wall of the hopper 18 is a bolt 64 forming a short shaft. This bolt is provided on one end with a head 65 which fits between lugs 66 formed on the end of a cover plate 67 so that as the bolt is rotated the cover plate will be moved. This cover plate fits down closely over the path of the fingers 26 and is arranged to control the amount of fertilizer permitted to be acted on by the fingers it being simply necessary to vary the position of the cover plate in order to accomplish this result. The other end of the bolt passes through a lever 68, the latter being securely clamped to this lever so that as the lever is moved the bolt will be rotated. Carried by a lug 69 on the spider 36 and by the bottom 17 is a spring post 70 which is surrounded by a spring 71 which bears at its lower end against the lug 69 and at its upper end against the pivoted portion of a member 70 which carries a gate 71 arranged to regulate the opening 44. This member 70 has its rearwardly extended portion connected by a link 72 with the lever 68. By means of this arrangement as the gate 71 is closed so, simultaneously, is the member 67 raised or lowered with reference to the fingers 26.

Firmly secured to the hopper bottom 17 is a hitch iron 73 which is substantially V-shaped and is provided at its forward end with upstanding arm 74 having a series of openings 75 therein for the attachment of a clevis 76. This hitch iron is braced to the hopper by means of braces 77 suitably secured thereto. In the bottom part of the V of the hitch iron there is provided a downwardly extending ear 78 and through this ear passes a V-shaped rod 79 having threaded outer ends. On this rod at each side of the lug 78 is a washer 80. Outside of the washer are provided thimbles 82 whereon are fitted the hubs 83 of disks 84, the latter being held in position by suitable washers 85 which bear against the ends of the sleeves and are held in position by nuts 86. Thus, by this construction no strain is brought upon the hitch

iron laterally since all the strain intended to separate the two disks 84 is brought directly on the rod 79.

At 87 Fig. 6 is a substantially V-shaped rod having outturned ends which are pivoted in the members 15 and extend downwardly and rearwardly therefrom. Carried upon this member 87 is a plate 88 which rests on top of the members 87 and is provided with a downwardly extended portion 89 for the reception of the shank 90 of a colter 91 which has suitable openings 92 in the upper end to provide an adjustment therefor. Beneath the members 87 is a washer 93 and a bolt 94 serves to hold the plate and washer together.

Extending rearwardly from the plate 88 are eyes 95 wherethrough passes the bottom end of a bent rod 96. This rod is surrounded at the bottom end with a spring 97 which serves to constantly brace the upper end of the rod backward. On the upper end of this rod is an adjustable clamp 97' which carries a hook 98, the latter extending over the cross bar 18 so that by proper adjustment of the clamp on the rod 96 the depth of the cut of the rear disks may be regulated. The rod 96 is provided with a Z-shaped bend 99 intermediate its length so that by depressing the handles 57 until this hook catches on the cross bar 19 the device may be transported from place to place on the ground wheels 11 without either of the disks touching the ground.

Between the plate 88 and washer 93 is held a V-shaped rod 100 whereon is mounted the rear disks 101, the construction being precisely similar to that of the front disks except that clamps 102 are used to space the disks on the rod so that the width of the cut at the rear may be adjusted.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that many minor changes may be made in the form and construction thereof without departing from the material principles of the invention and it is therefore not wished to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope claimed.

Having thus described the invention, what is claimed as new, is:—

1. In a guano sower, a hopper, said hopper being provided with a delivery opening in its lower portion, an agitator mounted to rotate in a horizontal plane adjacent said delivery opening, a gate for said delivery opening, a plate pivoted in said hopper to swing in a substantially vertical direction to and from the agitator, and common means to close said gate and move said plate.

2. In a guano sower, a hopper provided with a delivery opening, a rotatable agitator mounted in advance of said delivery opening and rotating in a horizontal plane, a gate pivoted to swing in a horizontal plane beneath said hopper to control the opening, a pivot pin extending through the rear wall of said hopper above said opening, a plate having one end fixed to said pin to swing to and from the agitator, a lever fixed to the other end of said pivot pin whereby when the lever is moved the plate will be swung, and a connection between said lever and gate.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JAMES R. AYERS.

Witnesses:
J. R. AYERS, Jr.,
J. P. STEPHENSON.