

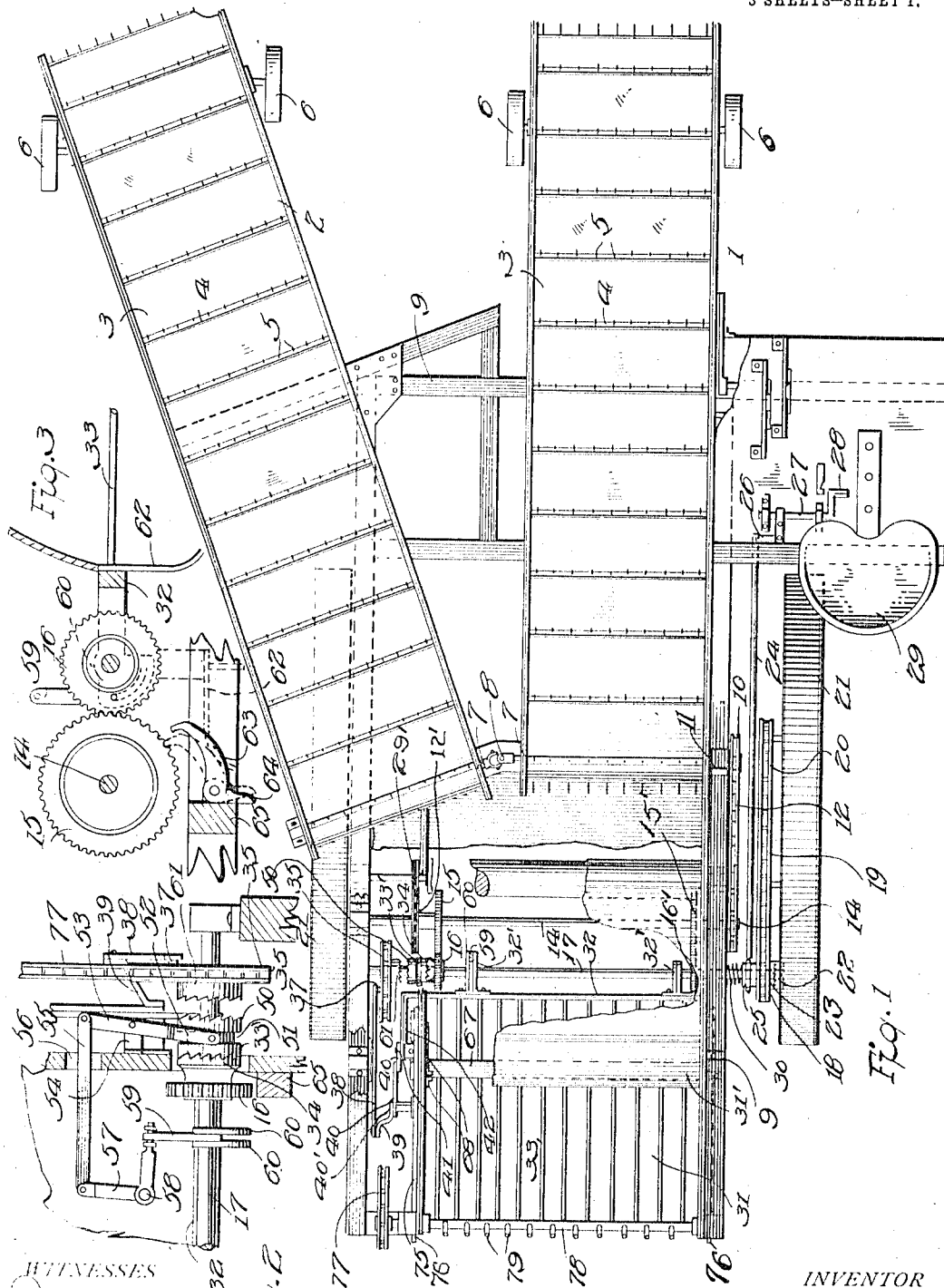
V. C. BRYANT.
BEAN HARVESTER.

APPLICATION FILED SEPT. 9, 1911.

1,053,567.

Patented Feb. 18, 1913.

3 SHEETS-SHEET 1.



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Fig. 4

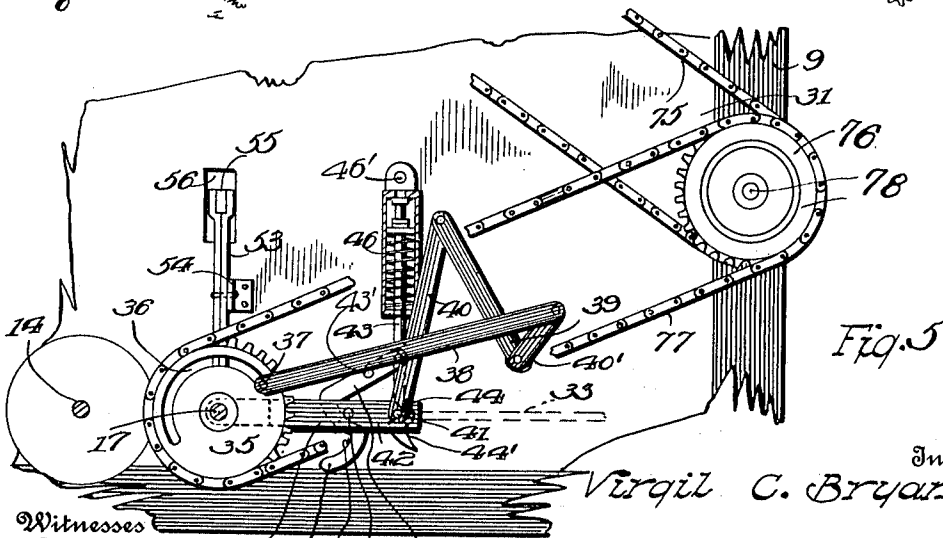
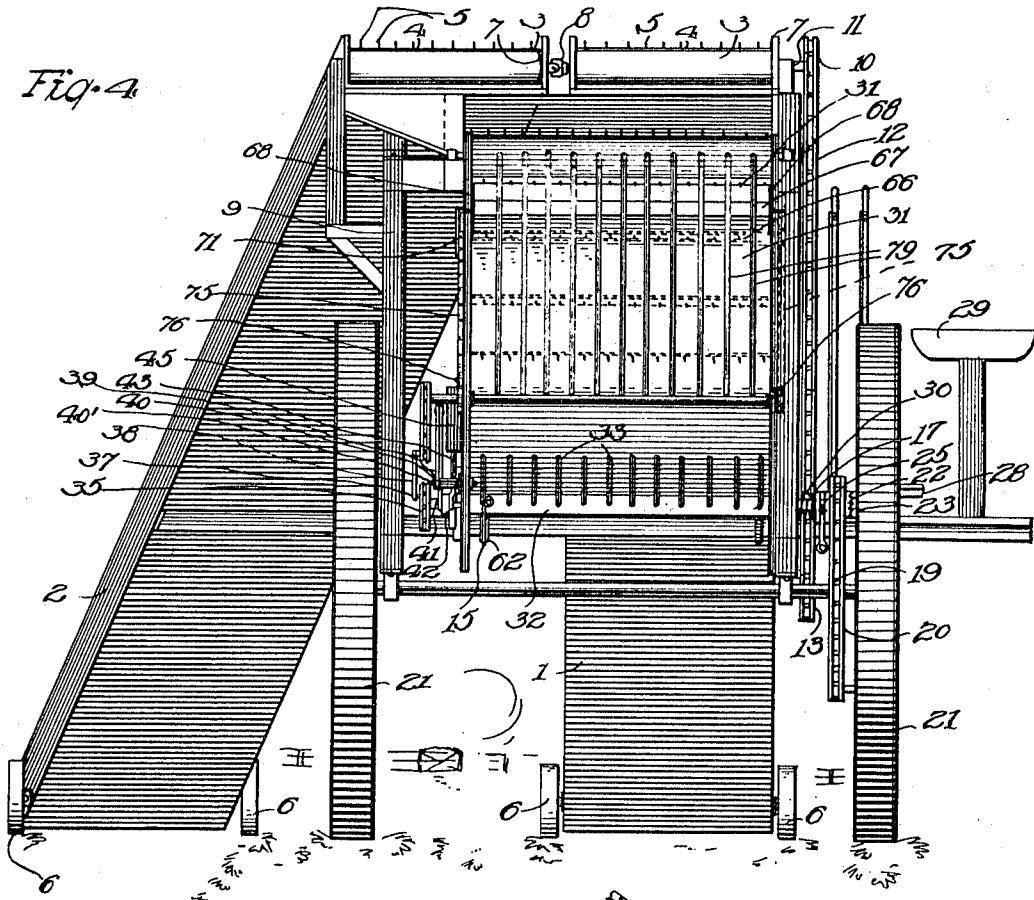


Fig. 5

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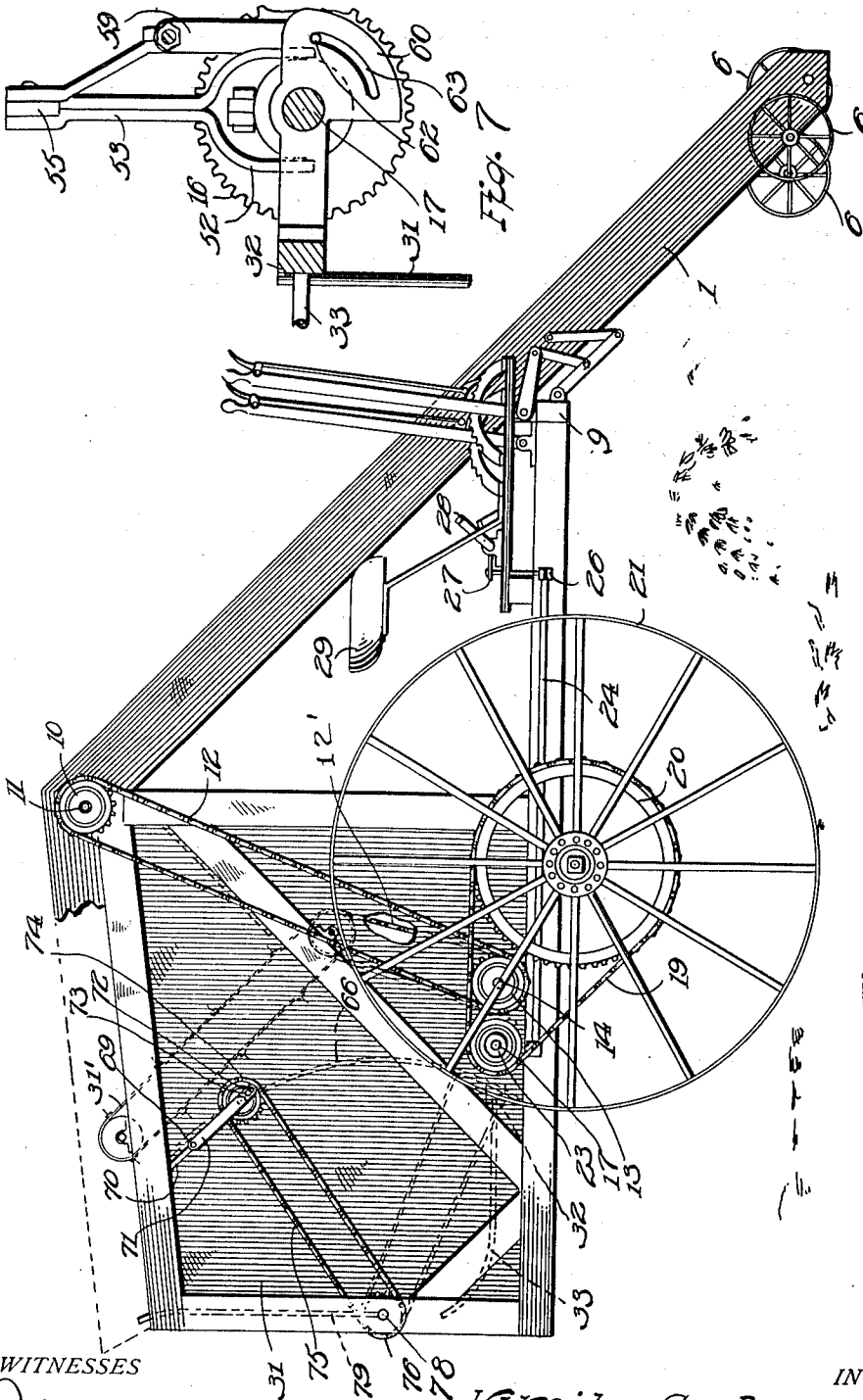
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WITNESSES

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BEAN-HARVESTER.

1,053,567.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, VIRGIL C. BRYANT, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Bean-Harvesters, of which the following is a specification.

This invention relates to machines for gathering crops such as peas, beans and the like. Crops of this kind are grown in rows approximately three feet apart and the rows are cut by machines drawn by horses. As such crops are now gathered, it is necessary to follow the machine with forks and throw the vines into piles, to be loaded into vehicles.

This invention has for its object to provide in a machine of this kind a hinged bottom for the receptacle into which the vines are gathered which is automatically released and swung open by the weight of the vines which have accumulated in said receptacle.

The invention further has for its object to provide in a machine of this kind means for cutting off the vines as they are conveyed into the receptacle where they are gathered in the machine, in conjunction with means for pushing the vines through and out of the receptacle.

With these and other objects in view, the invention consists of certain novel combinations, constructions and arrangements of parts as will be hereinafter fully described and set forth in the claims.

Referring to the accompanying drawings: Figure 1 is a plan view, with parts broken away, of a machine for gathering crops such as peas, beans and the like, with the improvements constructed in accordance with this invention applied thereto. Fig. 2 is an enlarged detail view of a portion of the operating mechanism showing a clutch device for moving the swinging bottom of the receptacle into and out of engagement with the driving mechanism. Fig. 3 is an enlarged detail view in vertical section with parts broken away of a portion of the swinging bottom of the receptacle and its operating mechanism and a locking pawl employed therewith. Fig. 4 is a rear end view of the machine. Fig. 5 is an enlarged detail view of one side of a portion of the receptacle for gathering vines and showing, parts broken away, a mechanism for automatically closing the swinging bottom of the receptacle.

Fig. 6 is a side view of the machine. Fig. 7 is an enlarged detail view in vertical section of a portion of the swinging bottom of the receptacle and mechanism connected therewith for restoring it to closed position.

In the accompanying drawings is shown a machine for gathering crops such as peas, beans and the like, in which two inclined conveyers or elevators 1 and 2 are employed, the elevator 1 being longitudinally in alignment with the machine and the elevator 2 being located at an angle to the elevator 1 so as to locate the forward end of each of the elevators in parallel rows in which the vines are located.

The elevators may be constructed in any suitable and well-known manner and, as here shown, are each provided with an endless belt 3 having a number of transverse slats 4 spaced apart from each other and each provided with a row of teeth 5.

In order to adapt the forward end of the elevators to run over the ground each is provided with a pair of wheels 6, the wheels 6 of the elevator 2 being so located as to run in a straight line parallel with the line of direction of the elevator 1. The rollers 7 on the upper end of the elevators 1 and 2 are connected at their adjacent ends by a universal joint 8. The several parts of the machine are mounted in a suitable framework 9 and the elevators 1 and 2 are operated by means of a toothed wheel 10 and a stub shaft 11 mounted in the frame 9 and projecting from one of the rollers 7. The toothed wheel 10 is connected by an endless chain 12 to a toothed wheel 13 mounted upon a quill on one end of the shaft 14 having its bearings in the frame 9 of the machine, the said quill having mounted thereon a toothed wheel 15 which meshes with a toothed wheel 16 keyed on the shaft 17. The said shaft 17 has its bearings in the frame 9 and projects beyond one side of said frame, as shown in Fig. 1, and has on its outer end a toothed wheel 18 connected by an endless chain belt 19 with a toothed wheel 20 mounted on one of the driving wheels 21 of the machine.

The shaft 17 has secured to its outer end a clutch 22 which engages a clutch 23 mounted on the toothed wheel 18 and movable with said wheel into and out of engagement with said clutch by means of a rod 24 connected with a collar 25 on the toothed wheel 18 and provided at its forward end with a crank lever 26 which in turn is connected with a

crank shaft 27 provided with a pedal 28 located in front of the driving seat 29. The toothed wheel 18 and its clutch 23 are held in engagement with the clutch 22 by means of a coil spring 30 mounted on the shaft 17 between the frame 9 and the collar 25.

31 indicates a receptacle for the vines which are conveyed thereto by the elevators 1 and 2 and the third elevator 31'. The receptacle 31 is provided with a bottom consisting of a cross bar 32 mounted by means of bracket arms 32' upon the shaft 17, the bar 32 being provided with rods 33 which project horizontally across the bottom of the receptacle 31, as shown in Fig. 1.

In order to connect the driving mechanism with the elevator 31' a clutch 33' is mounted on a feather key on the shaft 17 and is movable by suitable lever mechanism into and out of engagement with a clutch 34 on the toothed wheel 16. By this means by throwing the toothed wheel 16 into engagement with the shaft 17 motion is transmitted to the toothed wheel 15, thence through the wheel 15', to sprocket gear 29', endless chain 12', to the elevator 31'. Mounted on the shaft 17 at one side of the receptacle 31 is a toothed wheel 35 provided with arc-shaped slot 36 concentric with the shaft 17, and in said slot 36 at one end thereof is located a pin 37 on one end of a bar 38 which is pivotally connected at its other end to one end of a bell crank lever 39, the other end of said crank 39 being pivoted to link 40 and pivoted at 40' to one side of the receptacle 31, the other end of the other arm 40 being pivotally connected at 41 to an arm 42 projecting from the bar 32. Rods 33 and the bar 32 are held in horizontal position by means of a rod 43 having on its lower end a hook 44 which engages a pin 41 which projects through the arm 42, said rod 43 projecting into a casing 45 in which is located a coil spring 46, the casing 45, being pivotally mounted at 46'. The hook 44 engages the pin 41 and when a mass of vines has accumulated upon the rods 33, the weight thereof will cause the arm 42 to be swung downward, pulling down the rod 43 against the spring 46. A lever 47 is provided pivoted at 43' to the side of the receptacle 31 and also pivoted to the arm 42, and formed with a hook shaped portion 48. The hook 44 is provided with a cam-shaped end 44' and the hook shaped portion 48 is provided with a cam shaped portion 48' adapted to engage the pin 49 in the arm 42. As the rod 43 moves downward it is also forced to the right on account of being pivoted to 47, which describes an arc about 43'. At the same time the rotary movement of 47 swings the hook shaped portion 48 clear of the pin 49. When a certain point in the downward movement of the rod 43 is reached, the hook 44 is pushed so far to the

right that the pin 41 is disengaged allowing the arm 42 and rods 33 with the supported vines to fall downward. In order that the bottom composed of the rods 33 may be moved to its normal closed position, the clutch 33' is connected with a second clutch 50 by means of the grooved connection 51 in which is located a fork 52, on the end of a lever arm 53 pivoted to a bracket 54 in the side of the receptacle 31. The lever 53 is pivotally connected by means of a bar 55 with a bell crank lever 57 pivoted at 58 to the curved shield 66, the other end of said bell crank lever 57 being pivotally connected to an arm 59 pivoted at its other end between two plates 60 of the bracket arm 32' which is mounted on the shaft 17.

It will be seen from the foregoing that when the bottom falls, the bracket arms 32' are rotated on the shaft 17 throwing upward the arm 59 which in turn operates the bell crank 57, bar 55 and the forked lever 53, throwing the clutch 50 into engagement with the clutch 61 on the wheel 35. Rotation of the shaft 17 will cause the wheel 35 to make a half rotation before it picks up the pin 37, which has been brought to the other end of the slot 36 from the position shown in Fig. 5 when the bottom is swung open. The pin 37 is carried around with the toothed wheel 35, thereby pushing back the arm 38, and, through the lever mechanism connected therewith, raising the arm 42 and causing the pin 49 to move over the cam-shaped end 48' of the piece 47, rotating the same, thus pushing 43 to one side until the pin 41 is above the hook 44, when the pin 49 passes into the recessed portion of 48. The spring 46 moves the rod 43 upward and the latter is constrained to move to the left on account of the arc described by 47 and thus the hook 44 is made to engage the pin 41. In this opening movement of the rods 33, an arm 62 depending from the bar 32 is swung against a pawl 63 mounted on the frame of the machine beneath the toothed wheel 15 and having a heel 64 resting against the cross bar 65 of the frame, said arm 62 moving the pawl 63 into engagement with the toothed wheel 15 so as to lock the same and stop the operation of the wheel 15'.

In order to prevent the vines from choking up the conveyer mechanism as they are brought to the receptacle 31, a cutting apparatus is provided as follows: A curved shield 66 is located in the receptacle extending transversely across the same side by side thereof beneath the conveyer 31', the upper end of which is located above the upper edge of said shield. Extending across the receptacle adjacent to the upper edge of the shield 66 and beneath the same is a knife 67 slidable in guides on the sides of the receptacle, as, for example, pairs of angle

irons 68, each end of said knife having a pin 69 located in the slot 70 in the sides of the receptacle and between each pair of angle irons 68. The pins 69 are each mounted on the upper end of a link 71 pivotally connected at the other end by means of a pin 72 in slot 73 of the link 71 to a toothed wheel 74, each of said toothed wheels 74 being connected by an endless belt or chain 75 with a toothed wheel 76 which is keyed on the shaft 78 and which is in turn connected by an endless belt 77 with the toothed wheel 35. Mounted on the shaft 78 of the toothed wheels 76 are a number of rods 79 which in the rotation of the shaft 78 pass through the receptacle 31 when the bottom drops and serve to remove any vines which may remain in the receptacle. It will thus be seen that by the rotation of the toothed wheels 76 a movement will be imparted to the links 71 thereby causing the knife 67 to be thrust forward from beneath the shield 66 cutting off the vines which cling to the elevator 31', the latter being stationary at this time.

The operation of the machine is as follows: When the machine is run over the ground, the elevators 1 and 2 pick up the material and convey it to the elevator 31' which in turn delivers it to the receptacle 31. When the receptacle is filled, the weight of the accumulated material causes the arm 42 to be released from the hook 44 thereby permitting the bottom to swing open thereby disengaging the clutch 33' from 34, stopping the elevator 31' on which the vines accumulate while the dumping operation is completed. As hereinbefore described, this same movement connects the clutch 50 to clutch 61 and acts through the shaft 17 and toothed wheel 35 and the link mechanism connected therewith to cause said link mechanism to raise the bottom to its normal closed position after the contents of receptacle have been discharged, the hook 46 snapping into engagement with the pin 41. The motion of the operating parts being

transmitted to the toothed pulleys connected with the links 71 on which the knife 67 is mounted. The knife 67 will be operated to cut the vines intermittently as the rods 79 are carried in a circular direction through the receptacle 31.

What I claim is:—

1. In a harvester, a vehicle, a receptacle having a hinged bottom, a spring supported hook normally holding said bottom in closed position, agitating means in said receptacle, a lever mechanism connected with said hook whereby said hook will release said bottom when the latter is fully loaded, conveying means adjacent said receptacle, and means for operating said harvester.

2. In an apparatus of the kind described, a vehicle having a receptacle at its rear end with a hinged bottom, a spring-supported hook normally holding said bottom in closed position, a lever mechanism connected with said hook, a number of movable rods located in said receptacle for agitating the contents of the same, a mechanism for operating said rods connected with said lever mechanism, an inclined elevator located adjacent to said receptacle with its upper end above the same, a pair of inclined elevators projecting from the front of the vehicle with their outer ends spaced apart from each other the distance between two furrows, and their upper ends adjacent to said first-named elevator, a mechanism connecting the driving wheels of the vehicle with said elevators and with the mechanism operating said rods, and means for disconnecting the driving mechanism from elevator adjacent to said receptacle and connecting it with the rod operating mechanism.

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

VIRGIL C. BRYANT.

Witnesses:

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THOS. CURTIS.