No. 890,597. PATENTED JUNE 16, 1908.

J. BODA.

MANURE SPREADER.

APPLICATION FILED FEB. 25, 1907.

5 SHEETS—SHEET 1.

Fig. 8

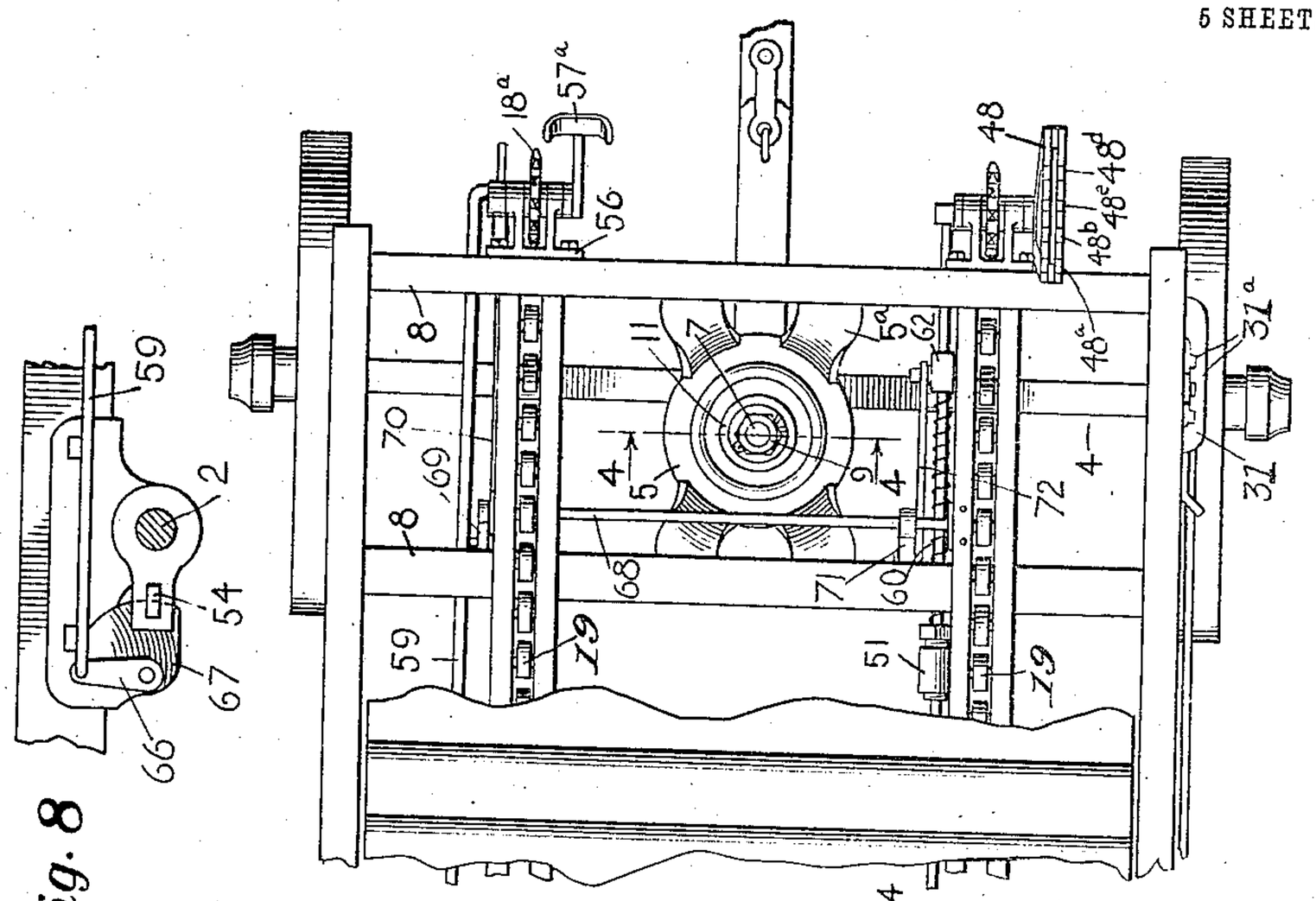
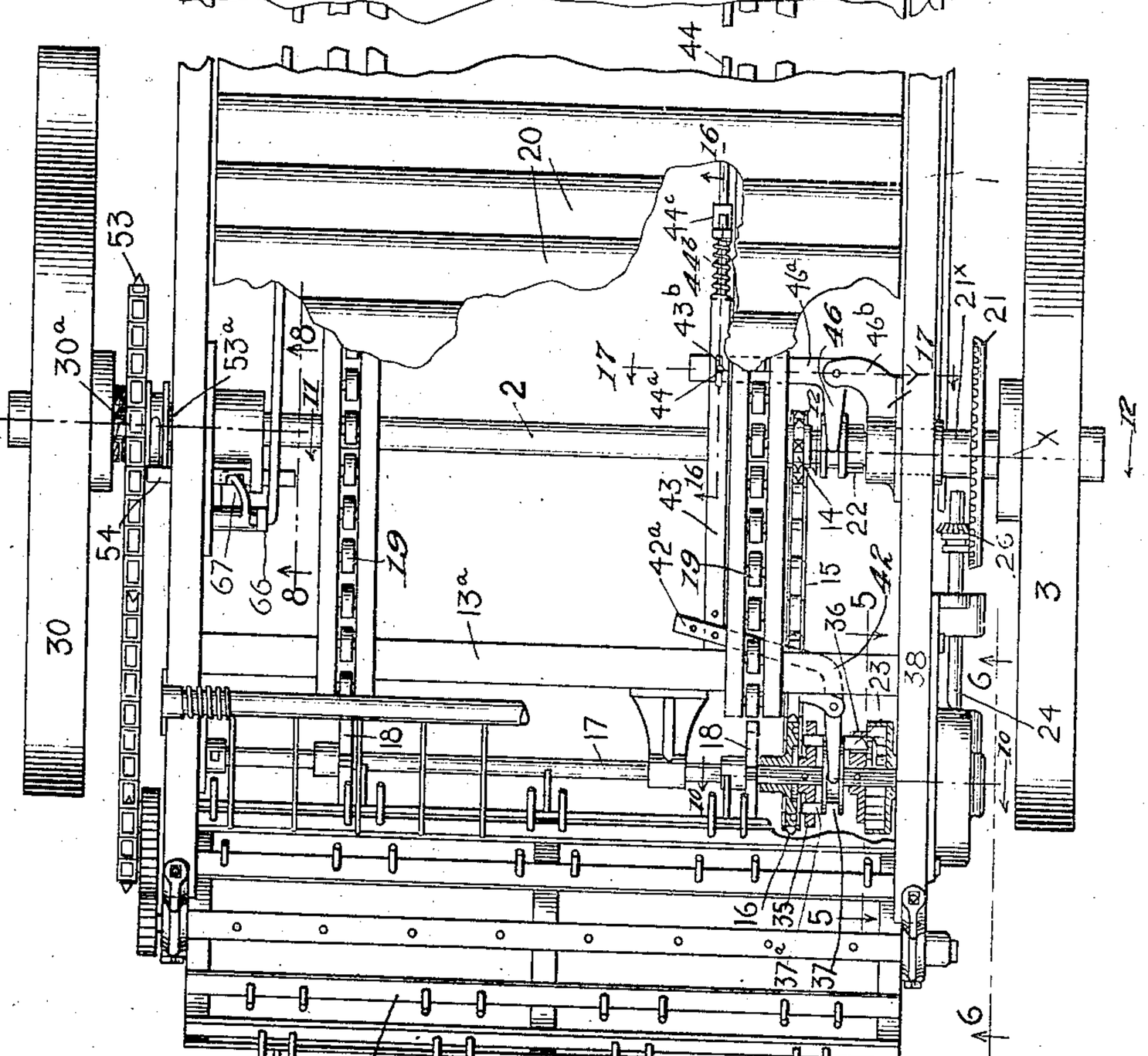


Fig. 1



WITNESSES:

John M. Culver

J. S. Abbott

INVENTOR

Joseph Boda

by Burton & Burton

his Attys.

No. 890,597. PATENTED JUNE 16, 1908.

J. BODA.

MANURE SPREADER.

APPLICATION FILED FEB. 25, 1907.

5 SHEETS—SHEET 2.

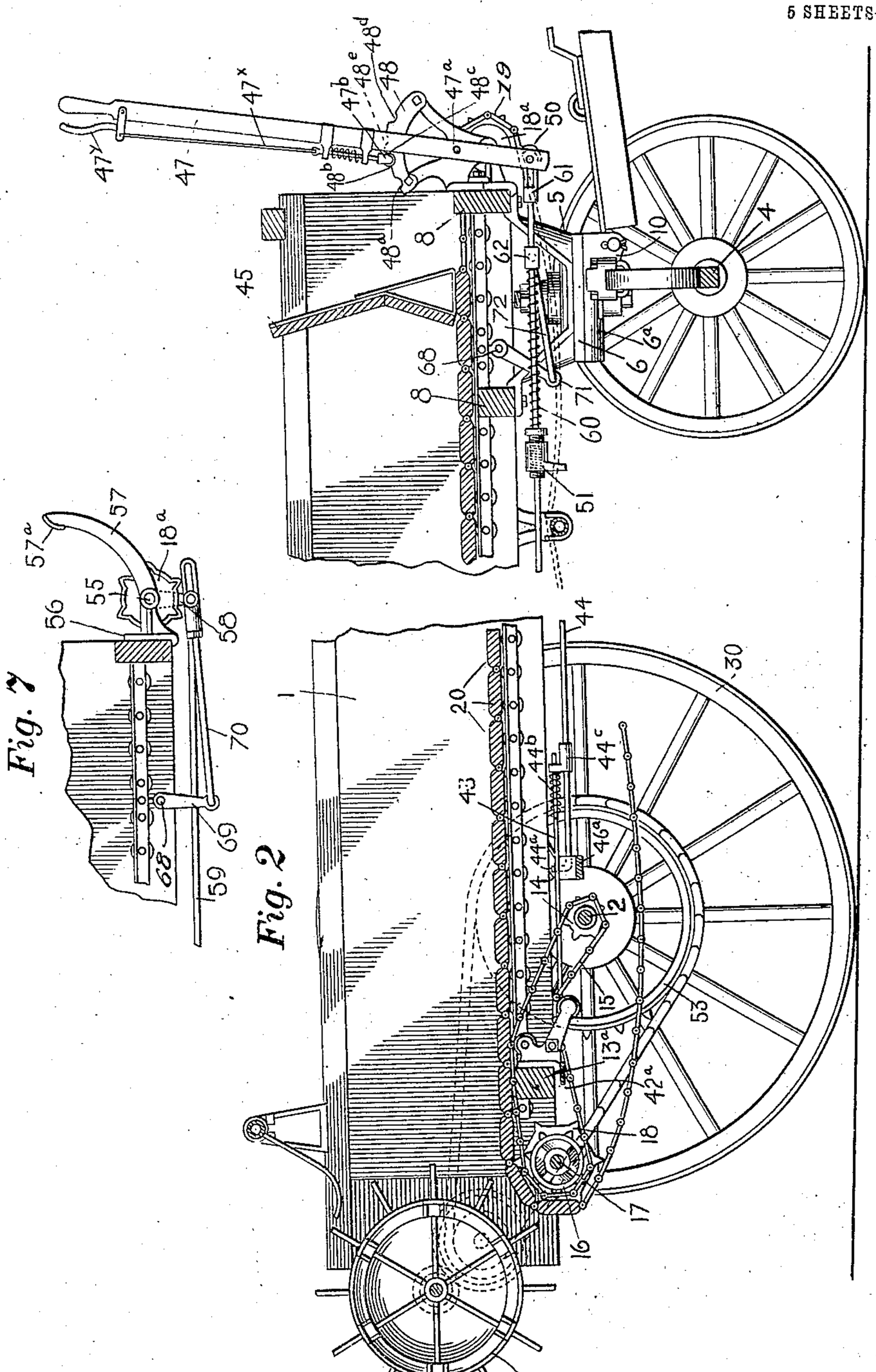


Fig. 7

Fig. 2

WITNESSES:

John M. Culver

J S Abbott

INVENTOR

Joseph Boda

by Burton & Burton

his Attys

No. 890,597. PATENTED JUNE 16, 1908.

J. BODA.

MANURE SPREADER.

APPLICATION FILED FEB. 25, 1907.

5 SHEETS—SHEET 3.

Fig. 6

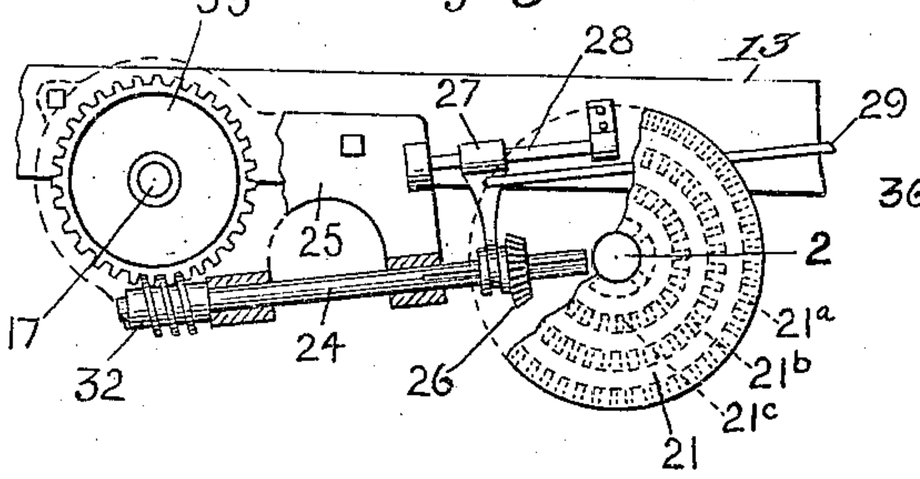


Fig. 5

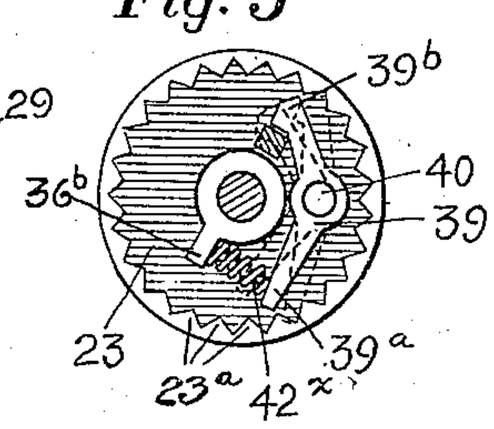


Fig. 4

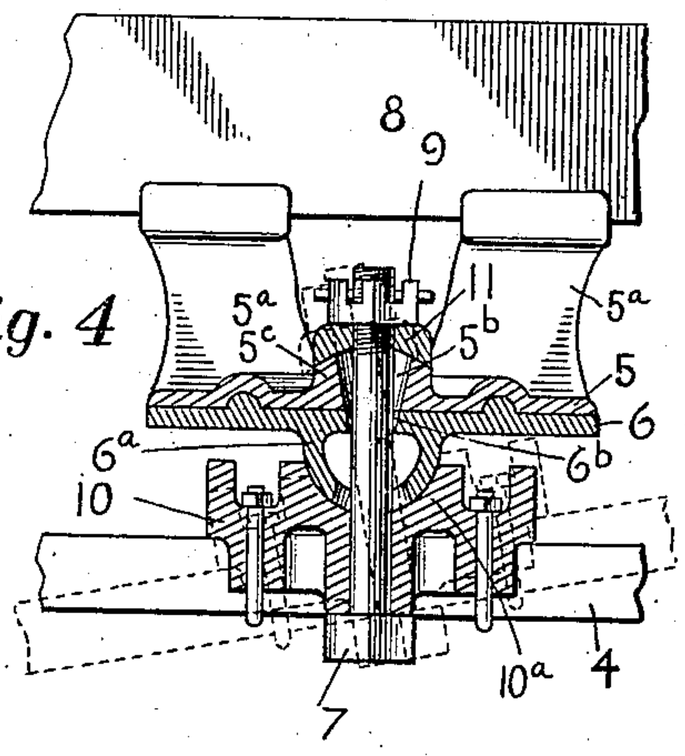


Fig. 3

WITNESSES:

John M Culver

J S Abbott

INVENTOR

Joseph Boda

by Burton & Burton

his Attys

No. 890,597. PATENTED JUNE 16, 1908.

J. BODA.

MANURE SPREADER.

APPLICATION FILED FEB. 25, 1907.

5 SHEETS—SHEET 4.

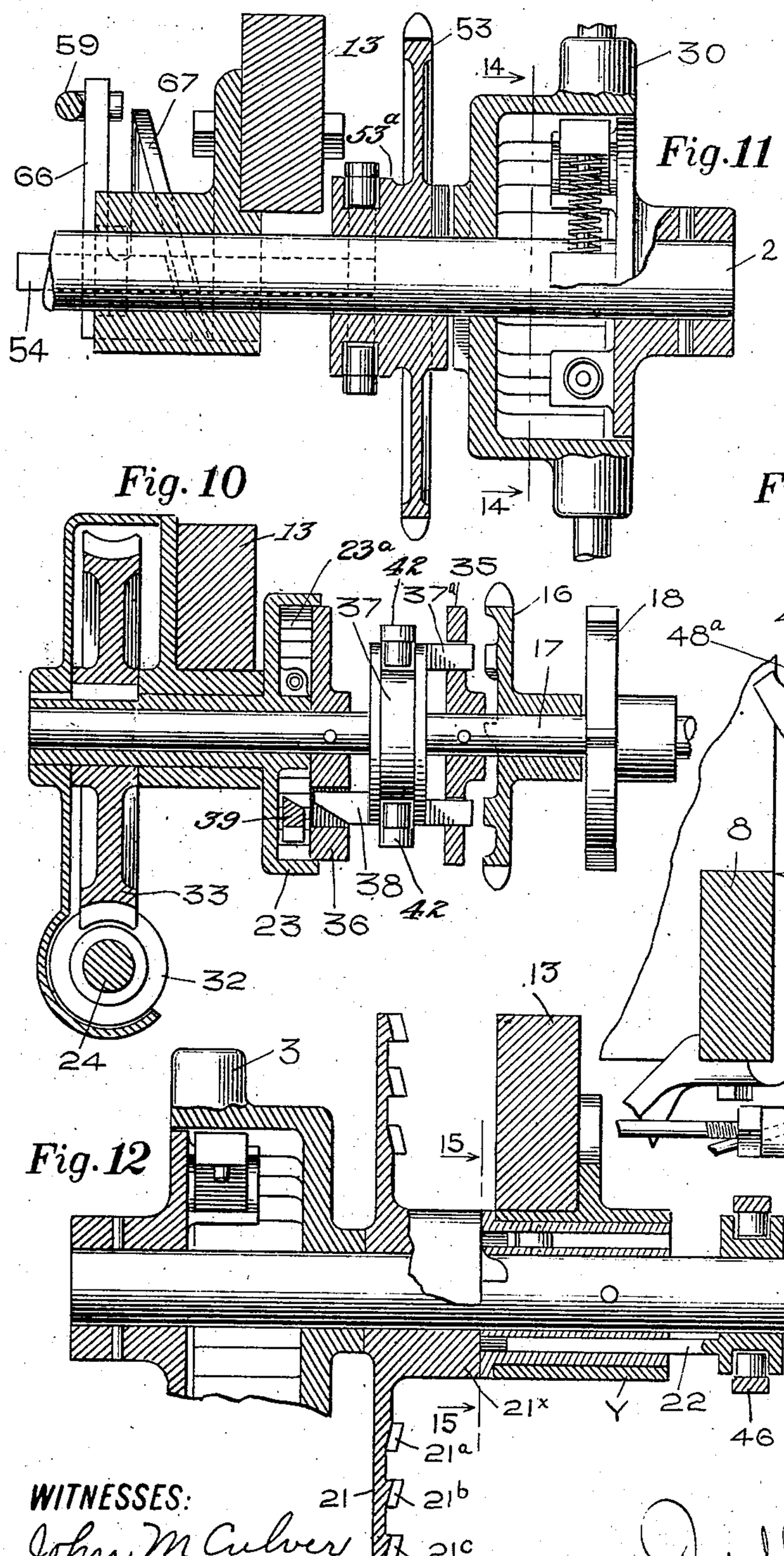


Fig. 11

Fig. 10

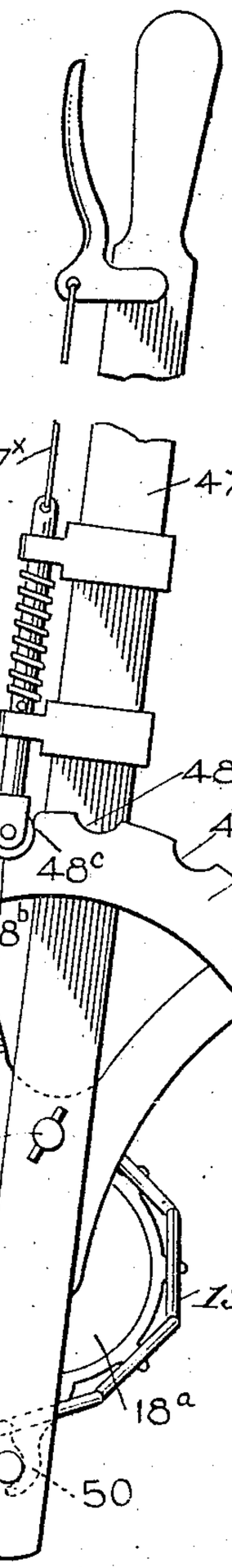


Fig. 9

Fig. 12

WITNESSES:

John M Culver

M. Gertrude Ady.

INVENTOR

Joseph Boda

by Burton & Burton

his attys

No. 890,597. PATENTED JUNE 16, 1908.

J. BODA.

MANURE SPREADER.

APPLICATION FILED FEB. 25, 1907.

5 SHEETS—SHEET 5.

Fig. 13

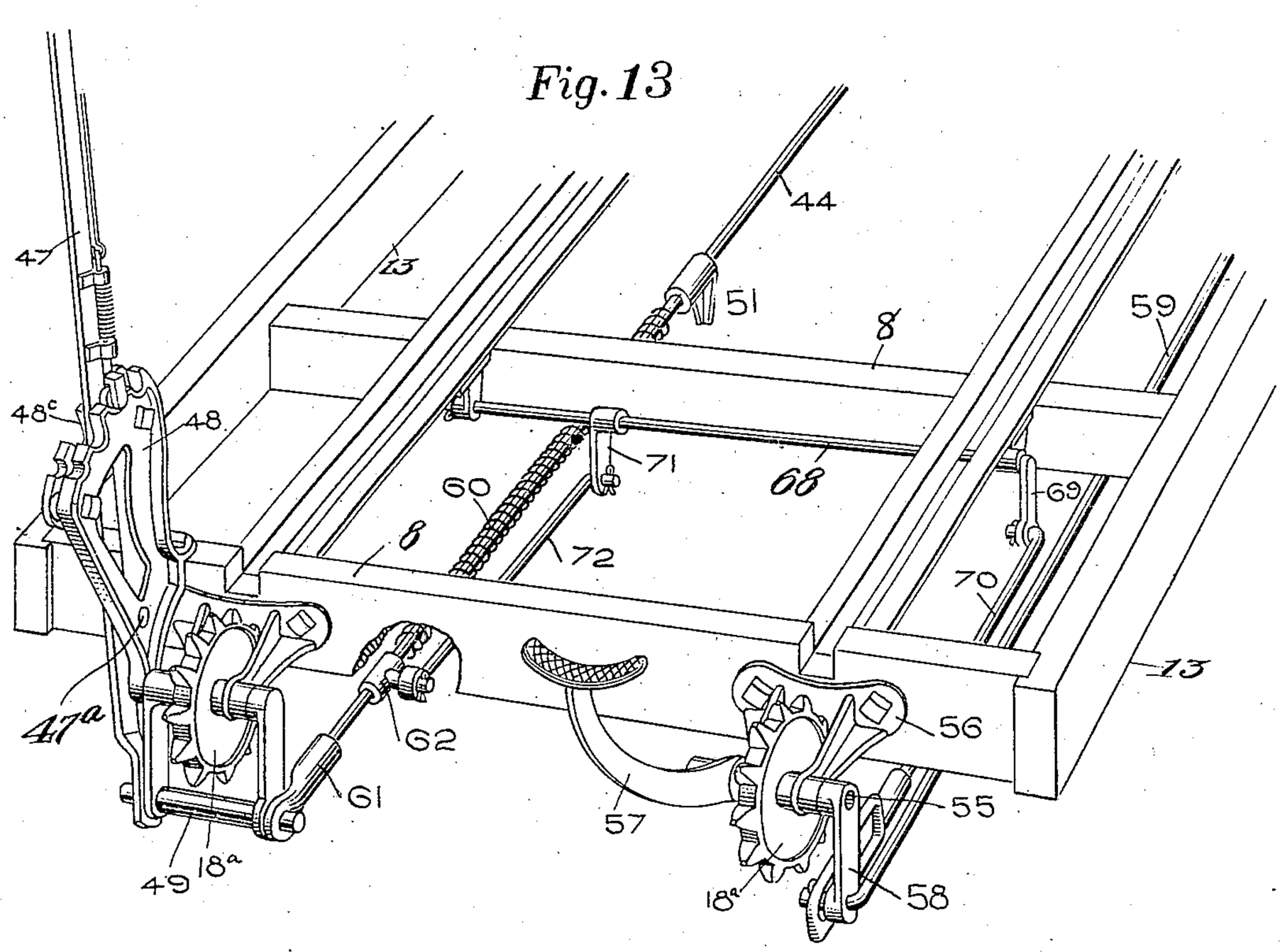


Fig. 17.

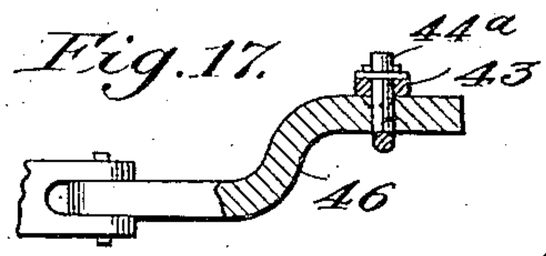


Fig. 15

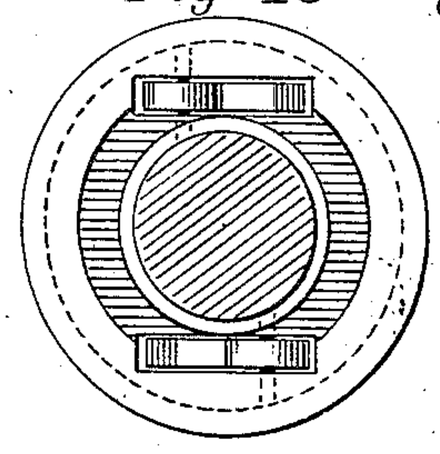


Fig. 14

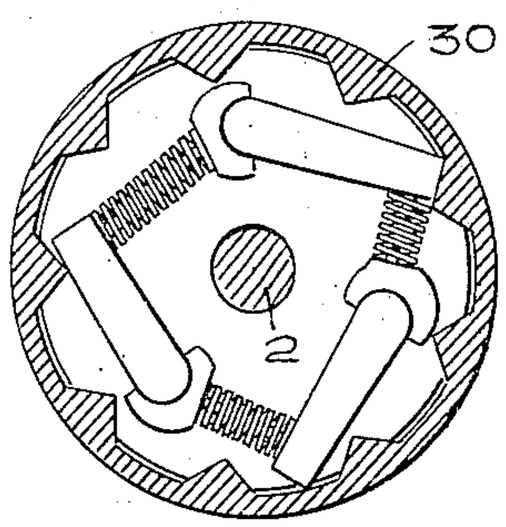
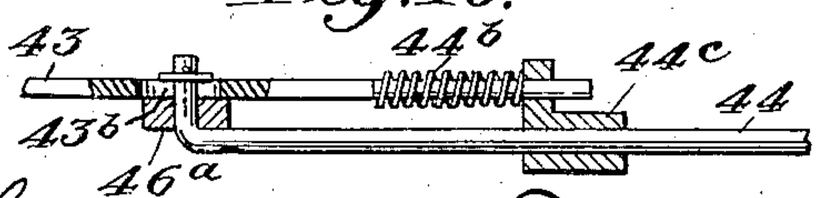


Fig. 16.



WITNESSES:

John M Culver

M. Gertrude Ady.

INVENTOR

Joseph Boda

by Burton & Burton

his attys

UNITED STATES PATENT OFFICE.

JOSEPH BODA, OF PLANO, ILLINOIS, ASSIGNOR TO INDEPENDENT HARVESTER COMPANY, OF PLANO, ILLINOIS, A CORPORATION OF MAINE.

MANURE-SPREADER.

No. 890,597. Specification of Letters Patent. Patented June 16, 1908.

Application filed February 25, 1907. Serial No. 359,104.

To all whom it may concern:

Be it known that I, JOSEPH BODA, a citizen of the United States, residing at Plano, in the county of Kendall and State of Illinois, have invented new and useful Improvements in Manure-Spreaders, of which the following is a specification, reference being had to the drawings, forming a part thereof.

This invention is designed as an improvement in details of construction upon manure spreaders now in use.

The invention consists in the features of construction which are hereinafter described and shown in the drawings as indicated by the claims.

In the drawings:—Figure 1 is a plan view of a manure spreading apparatus embodying my improvements. Fig. 2 is a longitudinal section of the same. Fig. 3 is a detail front elevation of a portion of the front axle and bolster and operating devices mounted thereon. Fig. 4 is a transverse detail section at the axis of the king bolt. Fig. 5 is a detail view of the disengageable clutch device for driving the feeding apron. Fig. 6 is a detail section at the line 6—6 on Fig. 1 showing the transmission of power from the axle to the conveyer-operating-shaft portions of the gearing case, being broken away to show the interior details. Fig. 7 is a detail section at the line 7—7 on Fig. 3. Fig. 8 is a detail section at the line 8—8 on Fig. 1. Fig. 9 is a detail side elevation of a hand-operated lever and locking segment by which the driver controls the movement of the feeding devices. Fig. 10 is a detail section at the line 10—10 on Figs. 1 and 6. Fig. 11 is a section at the line 11—11 on Fig. 1. Fig. 12 is a section at the line 12—12 on Fig. 1. Fig. 13 is a perspective of the forward end of the frame and of the operating devices. Fig. 14 is a section at the line 14—14 on Fig. 11. Fig. 15 is a section at the line 15—15 on Fig. 12. Fig. 16 is a detail section at the line 16—16 on Fig. 1. Fig. 17 is a detail section at the line 17—17 on Fig. 1.

As customary in devices of this class, this invention comprises a box, 1, of the nature of a wagon box, and framework for carrying it corresponding to the customary framework of a wagon, the structure being mounted upon two axles, the rear axle, 2, being supported on traction wheels, 3, 3, from which power is communicated to the mechanism mounted upon the frame, the front axle, 4, being swiveled to the frame by means of a turn table and king bolt, the turn table comprising an upper plate, 5, and lower plate, 6, secured together by the king bolt, 7. The upper plate, 5, of the turn table is formed at the lower end of four upwardly diverging bracket arms, 5^a, upon which are mounted bolsters, 8, 8, one upon the two forward of said arms and the other upon the two rearward of them, the king bolt extending up at the center between said four arms, within which there is convenient space for applying to said king bolt a securing nut, 9, and other devices hereinafter specified.

To provide for transverse oscillation of the front axle relatively to the rear axle and frame so that the frame and mechanism thereon may not be subjected to torsional or bending strain when the machine is traveling over uneven ground. The lower blade, 6, of the turn table is provided with a downwardly extending semi-cylindrical longitudinal boss, 6^a, for which a correspondingly cylindrically shaped seat is provided at 10^a in the upper side of a fitting, 10, which is secured to the axle, 4, the king-bolt-aperture, in the plate 5, and in the plate, 6, being hour-glass-shaped with its narrowest point at the intersection of its axis with the axis of the cylindrical boss, 6^a, so that the lateral oscillation of the axle in whose fitting, 10, the king-bolt is definitely held at its lower part, may be accommodated. And for the more perfect action of the joint thus provided, the boss, 5^c, in which is formed the upper portion of the king-bolt-aperture is convexly curved in the arc of a spherical segment at its upper end, and a washer, 11, having a corresponding concave curvature in its lower side seats upon said convex upper end of the boss under the king-bolt-retaining nut, 9. These features, although shown in the drawings, are not the subject of this application, which relates to devices for controlling the action of the conveyer or feeding apron, which will now be described.

Both traction wheels, 3 and 30, are clutched on the rear axle, 2, for driving the latter in forward travel of the machine, as is customary in two-wheeled traction machinery. The clutch connections are not illustrated in the drawings, being indicated conventionally only by the clutch case, x, at the center of the traction wheels respectively. Fast on the axle, 2, is a sprocket pinion, 14, which,

by means of a chain, 15, drives a sprocket wheel, 16, mounted loose on a transverse shaft, 17, on which made fast are the sprocket wheels, 18, 18, of the conveyer or feeding apron, which latter consists of the chains, 19, 19, and their connecting slats, 20, the foremost of which carries the follow board, 45. Loose on the axle, 2, journaled in the bearing bracket, Y, secured to the frame bar, 13, is a clutch sleeve hub, 21^x, of a multiple bevel gear, 21, having any desired number of concentric banks of bevel gear teeth, 21^a, 21^b, 21^c, the gear being outside the frame bar and bearing. The inner end of the clutch sleeve hub, 21^x, is engaged with the counterpart clutch element, 22, which is feathered on the axle, 2, for sliding into and out of engagement with the said clutch sleeve hub. From the gear, 21, motion is communicated to the shaft, 17, by means of a counter-shaft, 24, which is journaled in a bracket, 25, mounted on the frame bar, 13, and has feathered on it at one end a bevel gear, 26, adapted to engage in one of the banks of bevel gear teeth, 21^a, 21^b and 21^c, of the gear, 21, and arranged to be adjusted into engagement with any one of said banks of teeth by means of a forked slide, 27, engaging an annular groove in the hub of said bevel gear, 26, the slide being mounted for sliding on a rod, 28, supported by the frame bar parallel with the shaft, 24, said forked slide having connected to it a link, 29, which extends forward and is engaged at its forward end with a notched retaining bracket, 31, mounted on the side of the box, 1, having notches, 31^a, corresponding respectively to the several banks of bevel gear teeth on the gear, 21.

At the rear end of the shaft, 24, is carried a worm, 32, which engages with and drives the gear, 33, loose on the outer end of the shaft, 17. The adjustment of the beveled pinion, 26, into engagement with the several banks of gear teeth, 21^a, 21^b, 21^c, serves to regulate the rate of movement of the conveyer or feeding apron so as to cause it to distribute a greater or less quantity of fertilizer per acre or per rod of travel of the machine over the ground. The gear, 33, is, however, loose on the shaft, 17, its hub extending through the shaft bearing to the inner side of the frame bar, 13, and carrying at its inner end rigid with it a clutch wheel, 23, which in the form shown has an internal ratchet rim on the side facing the sprocket wheel, 16, the face of which, toward the clutch wheel, 23, is formed to constitute one element of a clutch, and fast on the shaft, 17, between said clutch-faced sprocket wheel and the clutch wheel, 23, there are secured the coöperating clutch elements consisting of two disks, 35 and 36, each independently fast on the shaft, 17, and between them loose for sliding on the shaft there is a peripherally grooved disk, 37, having at one side fingers, 37^a, which project through the disk, 35, for engagement with the clutch shoulders of the clutch sprocket wheel, 16, and projecting from the other side a single cam finger, 38, which extends through an aperture in the disk, 36, and when thrust through said aperture, encounters by its tapered or cam-shaped end one arm of a dog, 39, which is fulcrumed at 40 on the disk, 36, facing the clutch wheel, 23. Said clutch wheel has interior angular teeth, 23^a, with which the two arms of the dog, 39, are adapted to be engaged, the arm, 39^a, engaging said teeth for locking the clutch wheel against rotation in the direction corresponding to the reverse or return movement forward of the conveyer and the arm, 39^b, engaging them for driving in the direction corresponding to the rearward or feeding movement of the conveyer. A spring 42, is provided, reacting between a lug, 36^b, on the hub of the disk, 36, and the arm, 39^a, of the dog, for holding said arm normally engaged with, and the arm, 39^b, normally disengaged from, the clutch wheel, 23. When the cam finger, 38, is thrust a certain distance toward the face of the clutch wheel 23 it engages the dog by its beveled end and forces the latter into position shown in full line in Fig. 5, at which position both arms, 39^a and 39^b, are out of engagement with the clutch. Further movement of the cam finger in the same direction crowds the dog over to a position at which the arm 39^a, is disengaged and the arm 39^b, is engaged with the clutch wheel. The movement of the grooved disk, 37, on the shaft, 17, away from the sprocket clutch wheel, 16, far enough to disengage the fingers, 37^a, from the latter brings the cam finger, 38, to the side of the dog, 39, but does not move the dog from its position of engagement of the arm, 39^a, with the clutch rim where it acts as a retaining pawl preventing reverse movement of the clutch wheel but permitting its rotation in the direction due to the gear-and-worm connection with the gear, 33 which is the direction for rearward feeding movement of the conveyer apron. Still further movement of the clutch element, 37, toward the clutch disk, 23, forces the arm, 39^b, of the dog, 39, into driving engagement with the clutch disk so that the latter rotates the shaft, 17, in reverse direction from that in which it is driven when clutched to the sprocket wheel, 16. The movement communicated through said clutch wheel, 16, is the movement for carrying the conveyer apron back to starting point for receiving a new load, and the movement communicated through the gears, 21 and 33, and the clutch disk, 23, is the feeding movement of the apron for delivering the material toward the rear of the box within reach of the distributer. For shifting the clutch disk, 37, as described, its groove is engaged by a forked shipping

lever 42 fulcrumed on the transverse frame bar, 13[a], and having a transversely extending arm, 42[a], having connected to it a link, 43. A link, 44, connected as hereinafter described for being moved at will by the operator has an upturned end, 44[a], which passes through the arm, 46[a], of the bell-crank-shipping lever, 46, fulcrumed on the frame bracket, 46[b], and engages in the slot, 43[b], in the link, 43. Fast on the link, 44, there is an abutment, 44[c], through which the reduced end of the link, 43, extends, and a spring, 44[b], coiled about said reduced end reacts between said abutment and the shoulder which is formed on the link, 43, by reducing it. This spring, it will be noticed, is in position to be compressed by longitudinal movement rearward of the link, 44, and tends to hold the two links extended to the full limit allowed by the slot, 43[b]. The bell-crank-shipping lever, 46, has its shorter arm forked and engages the peripheral groove of the clutch element, 22, for moving it into and out of engagement with the inner end of the clutch sleeve hub, 21[x], of the gear, 21.

For operating the links, 43 and 44, there is provided the hand lever, 47, fulcrumed at 47[a] at the center of the segment bracket, 48, mounted on the forward bolster, 8. The lever arm, 47, extends downward from its fulcrum past the idle sprocket wheel, 18[a], of the conveyer, and is further extended forming a loop, 49, around said sprocket wheel and around the path of the lower ply of the conveyer chain, 19, so as to stand in the path of an abutment, 50, which is located on the chain relatively to the slatted area thereof at a position to encounter the cross bar of the loop, 49, when the follow board, 45, is at the forward limit of its proper path of travel and the conveyer is in position to receive a full load. When said abutment, 50, reaches said cross bar it rocks the lever, 47, swinging it forward at its upper end over the segment, 48. The upper periphery of the segment consists of two arcs of different radii, the first having two notches, 48[a] and 48[b], for engagement of the locking dog, 47[b], on the lever, 47. When the dog is engaged with the rearmost of these projections, 48[a], the clutch connections are engaged for the movement of the conveyer last described by which it returns to loading position, its movement being derived from the sprocket wheel, 14, through the chain, 15, and sprocket clutch wheel, 16. The rocking of the lever forward to engagement of the dog with the notch, 48[b], disengages the conveyer from this driving connection leaving it unengaged. This is effected by the rearward thrust of the link, 44, communicated directly also to the link, 43, operating the shipping lever, 42. The same movement, however, by means of the connection of the link, 44, with the shipping lever, 46, operates the latter for shifting the clutch element, 22, into engagement with the clutch sleeve hub, 21[x], thereby setting in motion the wheel, 33, and the clutch disk, 23, thereon.

When the operator desires to connect the conveyer with the driving power for feeding movement, he will operate the locking dog, 47[b], by means of the link, 47[x], and finger lever, 47[y], of familiar construction shown, to lift the dog past the shoulder, 48[c], on to the higher arc of the segment, 48, and rock the leyer forward to the forward limit where the dog engages with the notch, 48[d]. This movement, through the shipping lever, 42, throws the clutch element, 37, over toward the face of the clutch disk, 23, crowding the dog, 39, from position of engagement of its arm, 39[a], to position of engagement of its arm, 39[b], with the said clutch disk and so locking the disk to the shaft, 17, and driving the conveyer as stated. If for any reason it is desired to adjust the conveyer to any other position than that which it occupies, the lever, 47, will be rocked only far enough forward to engage the dog with the notch, 48[e]. This amount of movement slides the clutch element, 37, toward the disk, 23, so far only as to cause the cam finger, 38, to crowd the dog, 39, out of position of engagement of its arm. 39[a], with the disk and no further, leaving it in position shown in full line in Fig. 5. At this position, the conveyer is not only disengaged from the driving power but also disengaged from any locking device, and may be moved in either direction at will by grasping the slack lower ply of the chain. The movement of the shipping lever, 42, from the position at which the conveyer is at rest to position for giving it its feeding movement is accompanied by a corresponding movement of the shipping lever, 46, sliding the clutch element, 22, more deeply into engagement with the clutch sleeve hub, 21[x], and the two parts thus engaged are constructed for such range of movement after engagement.

On the link, 44, there is mounted an abutment, 51, which extends into the path of the conveyer slats on their lower or return course forward at such position in that path as to be encountered by the advance slat just before the follow-board, 45, reaches the distributer or the limit of its proper feeding movement. Such encounter slides the link, 44, forward and rocks the lever, 47, back over the segment, 48, to the notch, 48[a], while simultaneously operating the shipping levers, 42 and 46, to shift the clutch elements, 37 and 22, the former being moved to first disengage the shaft, 17, from the clutch disk, 23, and afterward to engage it with the clutch sprocket wheel, 16, and the latter being moved to disengage the clutch sleeve hub, 21[x], from the axle, so that the train by which movement is communicated from the axle to shaft, 17, in the reverse direction stands at

rest while said shaft is connected with the axle for rotation in the same direction as the axle by the chain, 15, and sprocket wheel, 16, The abutment, 51, is mounted on the link, 44, for sliding, and a spring, 60, is interposed between it and a stop collar, 61, fast on the link at a forward point. The spring serves the purpose of permitting the abutment to slide on the link without moving the latter either until the spring is fully compressed or until the tension produced is sufficient to start the link forward against the resistance of the engaged clutches. When the disengagement of the clutch has been thus started, the reaction of the spring will insure the completion of the disengaging movement and so cause it to be abrupt instead of gradual, and also to continue after the conveyer stops, insuring the complete disengagement and clearance between the clutch elements which is desirable and the engagement with the wheel, 16, for reverse movement. A loose collar, 62, interposed between the spring and the stop collar, 61, has a further function hereinafter stated.

The distributer, 65, derives its movement from the left-hand traction wheel, 30. This wheel is clutched to a sprocket wheel, 53, on the axle, 2, which extends across the left-hand frame bar and receives and carries the sprocket wheel on the outer side of said frame bar so that it may engage by its ratchet hub, 53[a], the similarly provided hub of the wheel, 30. The sprocket wheel, 53, is mounted for sliding on the axle, and its hub, 53[a], is peripherally grooved for engagement of a forked shipping slide, 54, which is suitably mounted on said frame bar for sliding longitudinally of the axle. The idle sprocket wheel, 18[a], of the left-hand conveyer chain is journaled on a rock shaft, 55, which is mounted in the bracket, 56, at the forward side of the front sill, 8. This rock shaft has a pedal lever arm, 57, carrying a pedal lever, 57[a], at one side of the bracket, and a second lever arm, 58, at the other side. The pedal lever arm extends upward and forward and the other arm extends downward, and to the latter there is connected a rearwardly extending link, 59. This link at its rear end is connected to a lever arm, 66, of a rocking cam, 67, which engages the slide, 54, for operating it to shift the sprocket wheel, 53, into and out of engagement with the hub of the traction wheel, 30. A rock shaft, 68, extending across the conveyer between the upper and lower plies of its chains has at the left-hand end a lever arm, 69, connected by a link, 70, to the lever arm, 58, of the rock shaft, 55, the link being slotted at the latter connection. At the right-hand end, the rock shaft, 68, has a lever arm, 71, connected by a link, 72, to the collar, 62, on the link, 44. When the conveyer slat encounters the abutment, 51, as above described, before any movement is communicated to the link, 44, the abutment is caused to slide not only for compressing the spring, 60, but also and before such compression occurs, until the loose collar, 62, is pushed against the stop collar, 61. In this movement the shaft, 68, is rocked far enough to carry the rear end of the slot, of the link 70, against the pivot stud which connects it with the lever arm, 58, taking up all the play at that connection. The further movement forward of the abutment, 51, for compressing the spring, 60, and causing the encounter of the collars, 62 and 61, sliding the link, 44, at the same time rocks the pedal lever shaft, 55, and by the connections described from that shaft operates the clutch sprocket wheel, 53, for disengagement from the traction wheel, 30, causing the distributer to come to rest when the feeding movement of the conveyer is arrested and its reverse movement commenced, which happens, as above indicated, upon the completion of the forward thrust of the link, 44, which rocks the lever, 47, back to the rear notch 48[a] on the segment, 48. The conveyer commencing its return movement forward and, withdrawing the advance slat from the abutment, 51, leaves the connections in such condition that the operator by depressing the pedal lever, 55, may reëngage the traction wheel, 30, with the distributer train without producing any movement of the link, 44, and therefore without affecting the movement of the conveyer, whether this latter be at rest or in its reverse travel, and by virtue of the same feature of construction the operator may arrest the feeding movement of the conveyer by rocking the lever, 47, back to engagement of its dog with the notch, 48[e], without thereby arresting the action of the distributer, because in the movement communicated by such rocking of the hand lever the link, 44, will slide through the collar, 62, without actuating it and therefore without actuating the devices for disengaging the clutch sprocket wheel, 53, from the traction wheel, 30. The slotted connection of the link, 70, to its operating lever, 57, is necessary in order that the rearward movement of the link, 44, caused by the encounter of the abutment, 50, of the conveyer chain with the cross bar of the loop 49, at the limit of the reverse movement of the conveyer for disengaging the clutch to arrest that movement, may not cause the operation of the clutch for engaging the distributer with the traction wheel, 30, and bringing such distributer into action during the reverse movement of the conveyer when such action is not ordinarily desired.

I claim:—

1. In a machine for the purpose indicated, in combination with the traction wheels and their axle; the feeding mechanism and connections for operating it in both directions

from the same rotative movement of the axle, said means comprising a shaft which drives the feeding mechanism; two wheels loose thereon; a clutch and gears connecting one of said wheels with the axle for rotation in opposite direction from that of the axle; a sprocket wheel on the axle and a chain therefrom to the other wheel on said shaft for communicating rotation in the same direction as the axle; a clutch device on said shaft connected therewith for rotation and movable longitudinally thereon for engaging said oppositely rotated loose wheels; devices engaging the clutches respectively for shifting them; a lever in control of the driver, and operating connections from such lever to the shifting devices of both clutches.

2. In a machine for the purpose indicated, in combination with the traction wheels and their axle; a conveyer and driving connections for operating it in both directions from the same rotative movement of the axle, said connections comprising a conveyer-driving shaft and the conveyer-driving wheels thereon; two other wheels loose for rotation on said shaft; a clutch and gears connecting one of said wheels with the axle for rotation opposite to that of the axle; a sprocket wheel on the axle and a chain therefrom to the other wheel on said shaft for communicating rotation in the same direction as the axle; a clutch device located on said shaft and means for engaging it with the shaft for rotation, said clutch device being movable on the shaft for engagement alternately with said oppositely rotated loose wheels on said shaft, the first-mentioned clutch being mounted for rotation with the axle, and movable longitudinally on the axle for engagement with and disengagement from the first wheel of said gear train; a clutch-shifting lever for shifting the clutch on the axle; another clutch-shifting lever for shifting the clutch on said shaft; means for operating said levers respectively, and yielding connections between said means adapted to permit the movement of the clutch on the shaft for engagement of the gear-train-driven wheel to be delayed while the clutch on the axle is becoming engaged with the gear train.

3. In a machine for the purpose indicated, in combination with traction wheels and their axle; a conveyer and its driving shaft; mechanism for communicating to said driving shaft rotative movement in both directions from the same rotative movement of the axle, consisting of two wheels loose on said shaft for rotation; a clutch mounted on the shaft for rotation therewith between said loose wheels; a clutch-shifter for shifting it into engagement with either of said wheels; a train having its first wheel on the axle for driving one of said loose wheels, the other of said loose wheels being a sprocket wheel, and a sprocket wheel on the axle and a chain therefrom for driving said loose sprocket wheel; a clutch mounted for rotation with and sliding on the axle for engagement with and disengagement from said first wheel of the gear train; a lever for shifting said clutch; an operating rod positively connected with the last-mentioned clutch-operating lever; another operating rod positively connected with the first-mentioned clutch operating lever; stops on said rods and a spring reacting between them for yieldingly communicating the movement of one to the other; said operating rods having a slotted connection with each other for positive movement of one by the other at the limits of the slot, and means on the conveyer for actuating one of said rods at the limits of the conveyer's travel in each direction.

4. In a machine for the purpose indicated, in combination with traction wheels and their axle, a conveyer for discharging the material and having connections for operating it in both directions from the same rotative movement of the axle, consisting of a shaft and two wheels loose on said shaft for rotation; a clutch mounted on the shaft for rotation therewith between said loose wheels; a clutch-shifter for shifting it into engagement with either of said wheels; a train having its first wheel on the axle for rotating one of said loose wheels in the opposite direction from the axle; means for communicating rotative movement from the axle to the other wheel in the same direction as the axle; a clutch mounted for rotation with and sliding on the axle for engagement with and disengagement from the first wheel of said gear train; separate levers for shifting the two clutches respectively; means for operating both said levers comprising yielding connections between them and a spring operating at the said yielding connection to transmit the lever-operating movement yieldingly to the clutch on said shaft, and a lever mounted in position for operation by the driver operatively connected with said clutch-lever-operating means.

5. In a machine for the purpose indicated, in combination with the traction wheels; a feeding and distributing mechanism; independent means for transmitting power from the traction wheels to said mechanisms respectively, said transmitting means for the feeding mechanism comprising a driving shaft for said feeding mechanism; two oppositely rotated wheels loose on said shaft; a clutch device mounted on said shaft for rotation therewith and movable longitudinally thereon, located between and adapted to be engaged with either of said oppositely rotating wheels; a driving element rotated by a traction wheel; a train for driving one of said two oppositely actuated wheels; a clutch for disengageably engaging said train with said traction-wheel-driven element; levers engag-

ing the clutches respectively for shifting them; connections for operating both said levers; means carried by the feeding mechanism for encountering said connections to move them in a direction for disengaging the clutches, said connections comprising a spring through which the movement is communicated and which is put under tension by such encounter.

6. In a machine for the purpose indicated, in combination with traction wheels; feeding mechanisms and distributing mechanisms; two trains having respectively wheels which derive opposite rotation from the same rotating movement of the traction wheel; a driving shaft for the feeding mechanism; a clutch wheel which connects said shaft with either of said oppositely rotating wheels according to its position; another clutch through which power is independently transmitted from the traction wheel to the distributer; connections for operating said clutches respectively; cross-connections between said clutch-operating connections by which one operates the other; means carried by the feeding mechanism for encountering and actuating the operating connections of the first-mentioned clutch, the cross connections being connected with the last-mentioned clutch-operating connections with a range of play permitting the operation of the distributer-clutch connections for disengagement without actuating the feeding-mechanism-clutch connections.

In testimony whereof, I have hereunto set my hand at Plano, Illinois, this 19th day of February 1907.

JOSEPH BODA.

Witnesses:
IVAN L. SMITH,
BEN M. OLSEN.