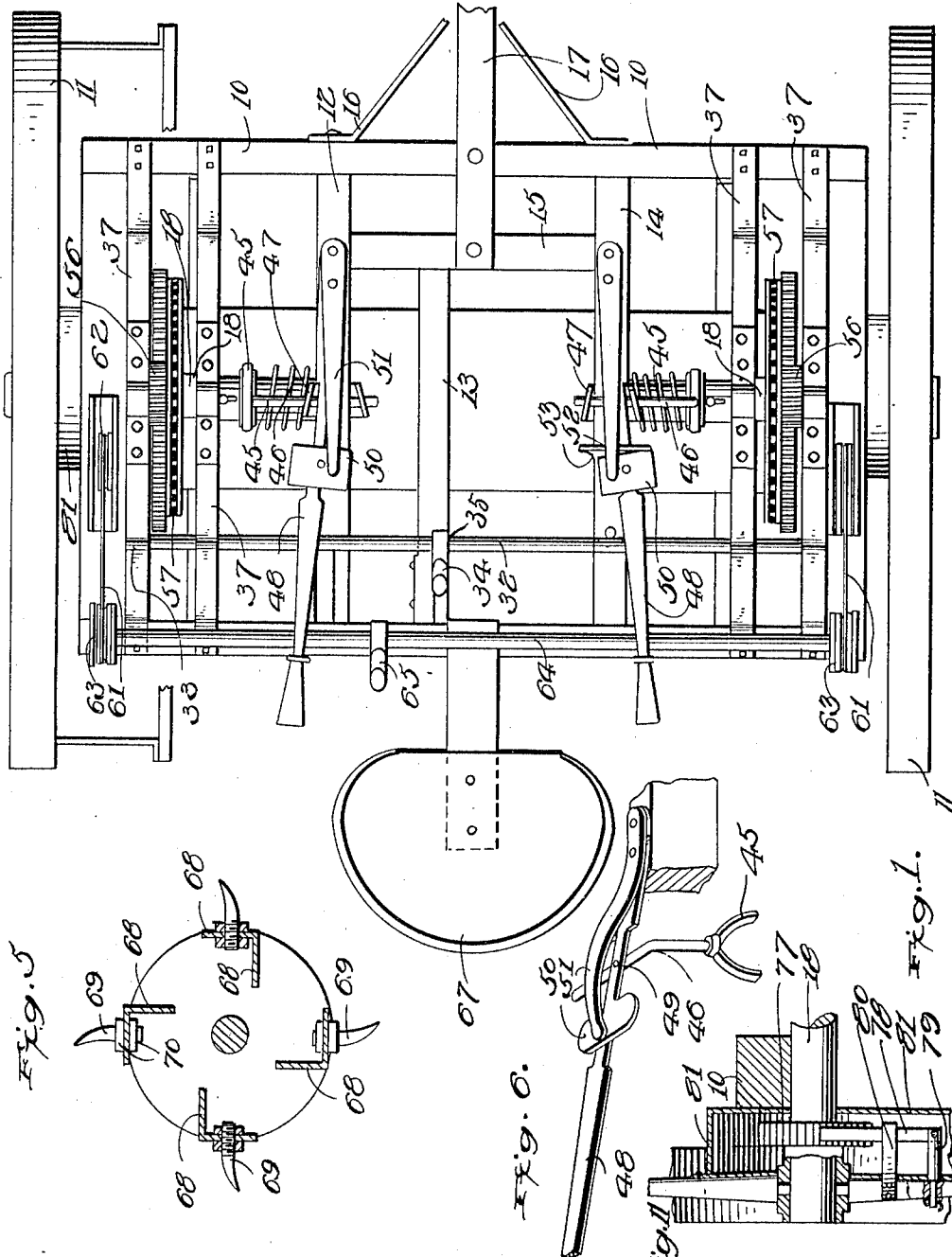


W. C. EVANS & R. CLEMENTS.
PULVERIZING HARROW.
APPLICATION FILED DEC. 26, 1911.

1,061,230.

Patented May 6, 1913.

3 SHEETS—SHEET 1.



WITNESSES
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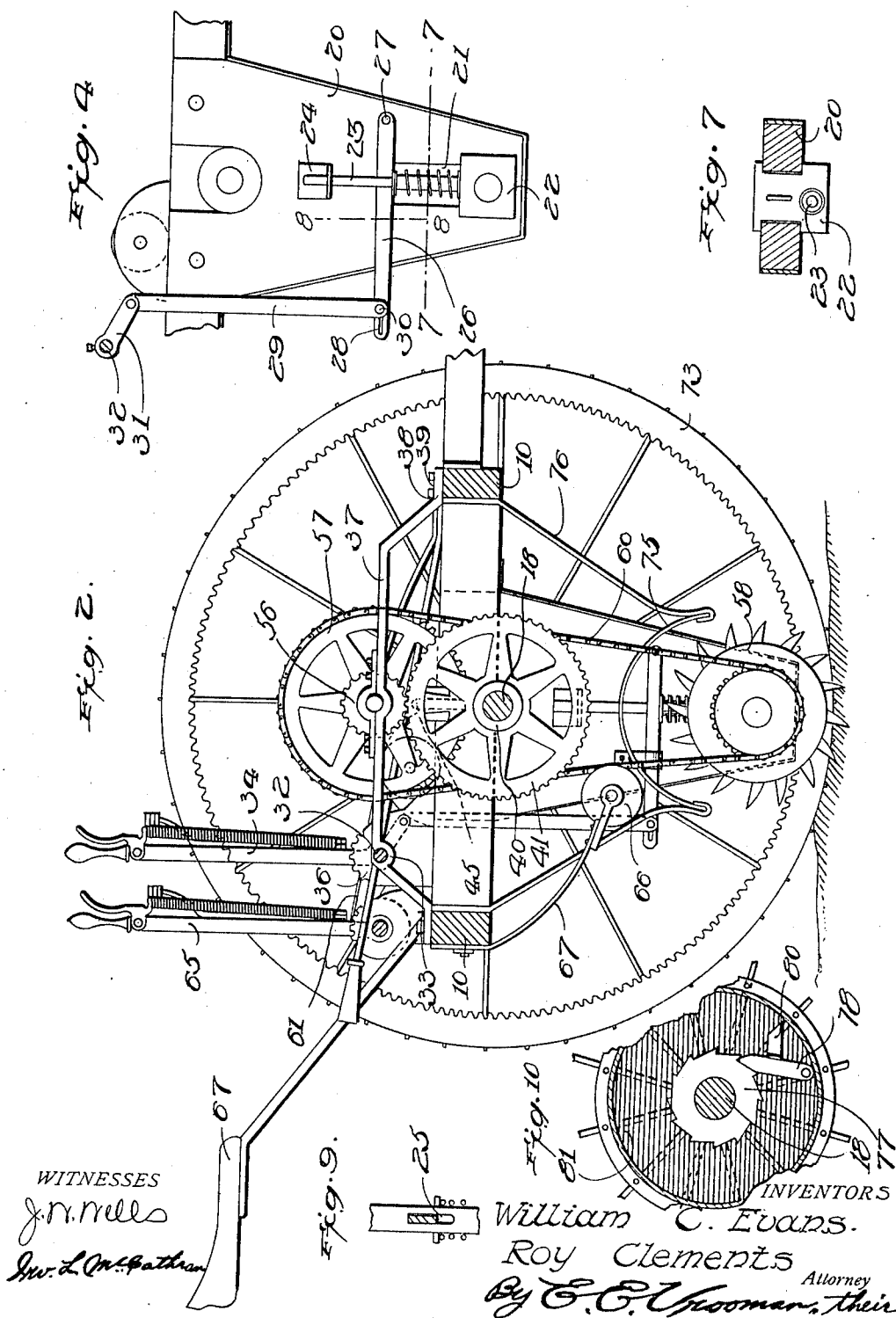
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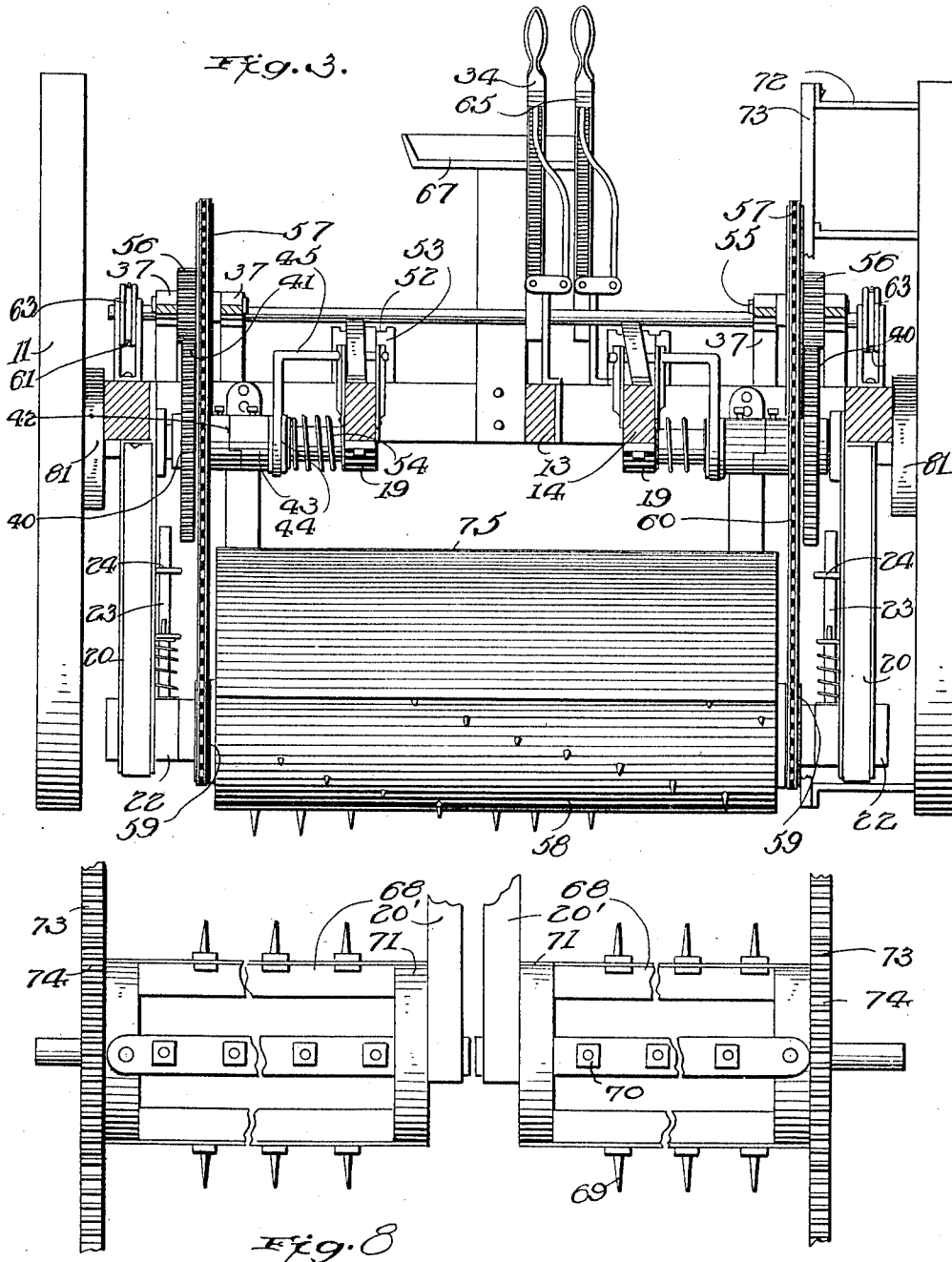
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3 SHEETS—SHEET 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM CAREL EVANS AND ROY CLEMENTS, OF SEDALIA, MISSOURI.

PULVERIZING-HARROW.

1,061,230.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed December 26, 1911. Serial No. 667,736.

To all whom it may concern:

Be it known that we, WILLIAM CAREL EVANS and ROY CLEMENTS, citizens of the United States, residing at Sedalia, in the county of Pettis and State of Missouri, have invented certain new and useful Improvements in Pulverizing-Harrows, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to rotary harrows, and the principal object of the same is to provide a strong and serviceable machine in which the pulverizing roller is yieldably mounted so that shocks and jars incidental to use will be absorbed and in which novel means are employed for adjusting the roller relative to the ground and in which means are provided whereby the roller can be readily rendered inactive when desired.

20 Another object of this invention is the production of efficient means for operating the releasing levers for allowing the adjustment of the harrow rollers from the seat of the machine.

25 Still another object of this invention is the production of efficient gear means whereby the harrow rollers may be efficiently driven.

30 With these and other objects in view this invention consists of certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

35 In the drawings—Figure 1 is a top plan view of the harrow. Fig. 2 is a central longitudinal section thereof. Fig. 3 is a central transverse section thereof. Fig. 4 is a detail view in side elevation of one of the hanger bearings of the harrow. Fig. 5 is a transverse section of the harrow roller. Fig. 6 is a detail perspective view of the clutch shifting mechanism. Fig. 7 is a horizontal sectional view taken on line 7—7 of Fig. 4. Fig. 8 is a detail view of the pulverizing roller which may be used in connection with the present invention. Fig. 9 is a fragmentary section taken on the line 8—8 of Fig. 4. Fig. 10 is a side elevation of the ratchet carried by the driving wheels showing the casing therefor in section. Fig. 11 is a vertical section through the hub of the wheel showing the arrangement of the ratchet device as carried by the shaft.

55 As will be seen from the accompanying drawings, by carefully considering Fig. 1,

10 comprises a frame which is preferably rectangular in shape and which is supported by means of wheels 11. A plurality of brace beams 12, 13 and 14 are carried by the frame 10. A beam 15 connects the forward ends of the brace-beams 12 and 14 and the central brace beam 13 has its forward end secured to said beam 15. Braces 16 project from the forward end of the frame 10 and engage the tongue 17. Axles 18 project from the ends of the frame 10 and have their inner ends journaled in journal brackets 19 supported by the beams 12 and 14. As previously explained, the axles 18 are supported by means of the wheels 11 thereby imparting rotary movement to the axles 18 when the harrow is propelled. Hanger brackets 20 depend from the central portion of each end of the frame 10, said brackets being provided with central vertical guiding slots 21 in their lower portions. Bearing boxes 22 are slidable in the slots 21 and the boxes 22 have their inner ends equipped with vertical rods 23. These vertical rods 23 are slidably mounted in guide plates 24 which plates project laterally from the inner faces of the brackets 20, at an intermediate point. Said rods are provided with longitudinal slots 25 through which the releasing levers 26 extend. These releasing levers 26 are pivotally secured to the brackets 20 as at 27. The levers 26 are slotted longitudinally at their outer ends as at 28, and the lower end of the elevating link 29 is secured within said slot by means of a journal pin 30. A coil spring is interposed between the box 22 and lever 26, for normally holding the lever 26 and box 22 in correct spaced relation. The upper end of the elevating link 29 is secured to the outer end of the elevating crank 31, which crank is connected to a shaft 32. The shaft 32 has its opposite ends secured in journals 33, and this shaft 32 supports centrally thereof, an operating lever 34. A supporting journal 35 carrying a quadrant is carried by the brace member 13 and this quadrant 36 is adapted to coöperate with the lever 34 for holding the releasing levers 26 in an adjusted position when said lever 34 is operated. By carefully considering Fig. 1, it will be seen that the operating lever 34 is placed directly in front of the seat, thereby making it convenient for the operator of the harrow to conveniently operate the levers 26, without changing his position.

The journals 33 are formed in one corner of the supporting brace 37, which brace has its laterally extending feet 38 secured to the frame 10 by means of the bolts 39.

5 The manner of mounting the boxes 22 in the slots 21 permits the pulverizing cylinder (to be described) that is carried by said boxes to have a limited yielding movement so that shocks and jars incidental to striking obstructions will be absorbed.

10 The axle 18 carries a hub 40 of a gear wheel 41, which gear wheel is loosely mounted thereon. This hub 40 is provided with a clutch face 42 which is adapted to be engaged by a clutch sleeve 43, which sleeve is slidable on the axle 18. Of course, as the clutch sleeve 43 is drawn into engagement with the clutch face 42, the gear wheel 41, and hub 40 will be locked in engagement with the axle 18. A sleeve 43 is provided with a circumferential groove 44 which is engaged by the end fork 45. The end fork 45 is provided with an angle end 46 which works in the bracket 47 carried by the beam 12. A hand lever 48 has one end pivotally connected to the beam 12, said lever having an intermediate pivotal connection 49 with the shifting lever 47. The hand lever 48 is provided with a plate 50 upon which one end of a leaf spring 51 bears to normally and selectively hold the lever in engagement with the notches 52 of a plate 53 carried by the beams 12 and 14. The notches 52 are arranged so that when the lever 48 is in one of said notches, the sleeve 43 will be locked to the hub 40, and when in the other notch, the said sleeve will be held disengaged from said hub. A spring 54 is constantly exerting a pressure toward the sleeve 43 for holding the sleeve 43 in engagement with the hub 40.

45 Stub shafts 55 are supported by means of the brackets 37, and these stub shafts support auxiliary gear wheels 56, which in turn are keyed to the sprocket wheels 57. Gear wheels 56 mesh with the gear wheels 40 as illustrated clearly in Fig. 3, and as the gear wheels 40 are rotated, a rotary movement will be imparted to the gears 56 and sprocket wheels 57.

50 Pulverizing rollers 58 are carried by the boxes 22 and sprocket wheels 59 are carried by the shaft which supports the pulverizing rollers 58. This sprocket wheel 59 coöperates with the sprocket chain 60 which also coöperates with the sprocket wheels 57 for imparting rotary movement to the pulverizing roller 58 as the harrow is propelled and when the clutch mechanism is thrown into operation. It should be understood, and also obvious by considering Fig. 3, that a complete set of driving and clutch mechanism is employed upon each side of the machine for coöperating with each wheel 65 whereby the pulverizing roller may be effi-

ciently operated. It will, however, be understood that, if it is so desired, only one set of driving and clutch mechanism may be employed where the size of the machine should be such as to not require the additional set of driving mechanism.

70 Cables 61 extend from the boxes 22 and pass over the pulleys 62 which are carried by the frame 10 and these cables are wound upon one end of the pulleys 63 which pulleys are carried by the shaft 64 journaled in the rear end of the frame 10. A hand lever 65 is employed for operating said shaft 64 so that the cables will raise the boxes 22 whereby the pulverizing roller is lifted from the ground. As will be obvious before the roller can be raised, the lever 34 must be shifted thereby withdrawing the lever out of engagement with the quadrant 36.

85 As previously stated, the operating levers 34 and 65 are placed adjacent the operator's seat as well as the levers for operating the clutch mechanism so that the operator may readily operate the levers without leaving the seat 67'.

90 A tightening roller 66 is carried by a spring arm 67 depending from the rear of the frame 10. This spring arm holds the roller 66 in contact with the sprocket chain 60 for keeping said chain tight at all times.

95 In Fig. 8, we have shown an embodiment of the present invention, wherein the pulverizing roller consists of a plurality of longitudinally extending bars 68 which are right angular in cross section, and carry spike teeth 69 held in place by means of lock nuts 70. Of course, the roller may be made to extend entirely across the machine instead of using two rollers, as illustrated in Fig. 8, without departing from the spirit of the invention. In the construction as illustrated in Fig. 8, however, two short rollers are used, the inner ends of which are supported by means of central brackets 20'. The ends of the bars 68 are supported by means of disks 71. Brackets 72 are carried by one of the drive wheels 11, and these brackets carry at their inner end a rack wheel 73 which is adapted to engage the gear wheels 74 carried by the outer ends of the harrow rollers. Of course, if so desired a rack 73 may be carried by each of the drive wheels as illustrated in Fig. 8 where two rollers are employed. Of course, if it is so desired, a solid roller 58 may be used in place of the rollers consisting of the longitudinal strips as illustrated in Fig. 8.

120 A hood 75 is suspended from the frame 10 by the arms 76, said hood being over the roller 58 so that the mechanism of the harrow is protected from dirt and the like that may be thrown by the roller.

125 A ratchet wheel 77 is carried by the axle 18 and the pawl 78 is carried by the wheel 130

and is adapted to engage the ratchet 77 for rotating the ratchet when the wheel is revolved, thereby causing the harrow mechanism to operate. The dog or pawl 78 is carried by the pin 79 and this pawl 78 is held in engagement with the ratchet by means of a flat spring 80. The ratchet mechanism is positioned within a casing 81.

Of course, it should be understood that a ratchet device may be carried by each wheel of the vehicle and this ratchet device is to allow the harrow to turn around a corner where one wheel would be traveling at a greater speed than the other wheel. When this is so, the ratchet carried by one wheel will easily rotate relative to the dog 78 preventing any binding of the harrow mechanism. It should be understood that the gear rim 73 is adapted to be used when a gear is employed in place of the sprocket chain above described, and that the same has no function when the sprocket or other driving means is employed and is only intended for use as an auxiliary driving means in case a gear is attached to the harrow roller.

What is claimed is:—

1. A harrow of the class described comprising a frame, supporting wheels therefor, hanger frames carried by said first mentioned frame, brackets positioned above said frame, a main driving sprocket carried by said bracket, a main driving gear, an auxiliary driving gear associated with said main sprocket wheel, a harrow roller suspended below said frame, a sprocket chain driving said harrow roller from said main sprocket

wheel, clutch members associated with said sprocket wheels, actuating levers carried by said frame and cooperating with said clutches extending rearwardly of said frame in such a manner as to have easy access thereto from the seat of said frame for throwing said clutch into and out of an operative position.

2. A device of the class described comprising a frame, wheels supporting said frame, brackets suspended from said frame, a harrow roller slidably mounted upon said brackets, a pivoted lever secured to said brackets and capable of swinging movement thereon for raising and lowering said harrow, the outer end of said lever provided with a longitudinally extending slot, a lifting lever carried by said frame within the rear thereof, a vertical link connecting said lever for facilitating a direct upward pull upon said first mentioned lever when said lifting lever is operated, a bracket carried by said frame and provided with a journal at one corner thereof, a shaft positioned in said journal supporting said operating lever, and said bracket adapted to rigidly brace said operating lever, and a driving sprocket wheel carried by said bracket and cooperating with said harrow roller for operating the same.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

WILLIAM CAREL EVANS.
ROY CLEMENTS.

Witnesses:

BENJAMIN HARRISON BARTON,
CLIVE SIDNEY MCGINNIS.