

(No Model.)

2 Sheets—Sheet 1.

L. SPANGLER.
ROTARY HARROW.

No. 576,061.

Patented Jan. 26, 1897.

Fig. 1.

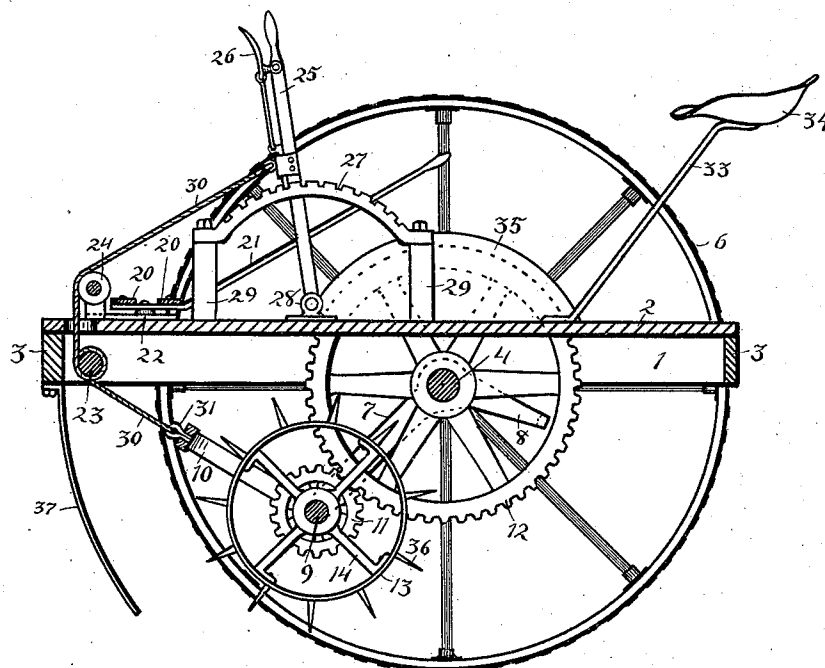
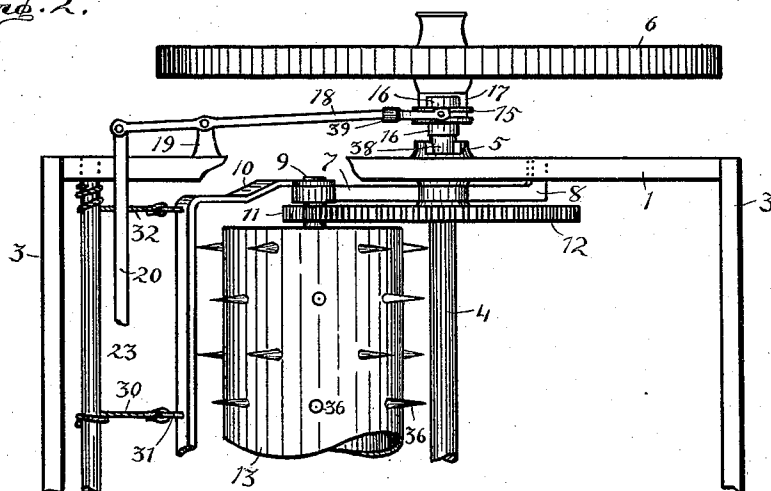


Fig. 2.



WITNESSES:

Leonard Spangler

INVENTOR

Albert Klingmann

BY W. J. Burns

S. W. Wilson

his ATTORNEY.

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Fig. 3.

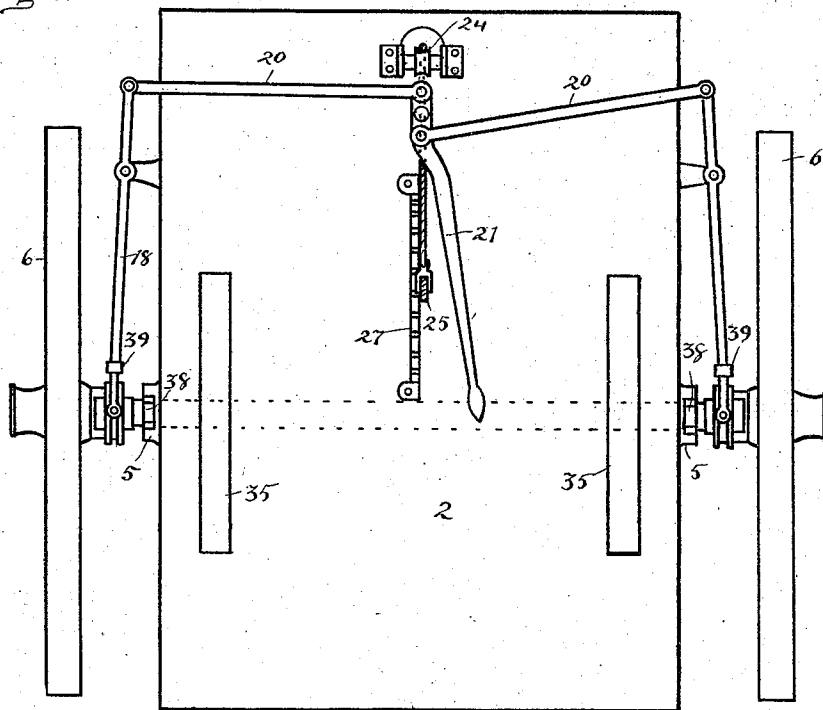


Fig. 4.

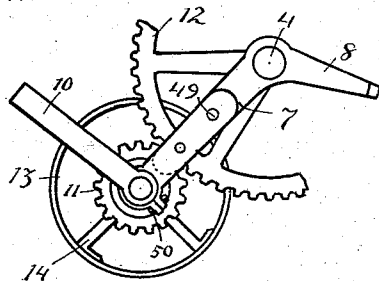
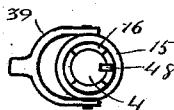


Fig. 5.



WITNESSES:

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INVENTOR

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his ATTORNEY.

UNITED STATES PATENT OFFICE.

LEONARD SPANGLER, OF LAFAYETTE, INDIANA.

ROTARY HARROW.

SPECIFICATION forming part of Letters Patent No. 576,061, dated January 26, 1897.

Application filed October 19, 1896. Serial No. 609,311. (No model.)

To all whom it may concern:

Be it known that I, LEONARD SPANGLER, a citizen of the United States, residing at Lafayette, in the county of Tippecanoe and State of Indiana, have invented certain new and useful Improvements in Rotary Harrows; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in rotary harrows wherein a rotating cylinder having a number of teeth is suspended from a carriage and driven by the motion of the axle of said carriage, and also wherein means are provided for raising and lowering said cylinder.

The objects of my invention are, first, to provide a portable harrow, and, second, to provide a rotatable harrow so mounted that it may be lifted from the earth and thrown into or out of gear. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section showing the relative position of parts; Fig. 2, a plan showing a portion of the device with the platform removed; Fig. 3, a plan showing top of platform and arrangement of controlling-levers; Fig. 4, a detail showing swinging hanger, &c., for the cylinder, and Fig. 5 a detail showing clutch keyed to the axle.

Similar numerals of reference refer to similar parts throughout the several views.

The bed consists of the parallel side pieces 1 1, connected at their respective ends by the fore and after cross-pieces 3 3, and the platform is secured to the top of the frame thus formed. The axle 4 is mounted in suitable boxes 5 5, secured to the under sides of the said side pieces, and is adapted to rotate freely therein. The driving or ground wheels 6 6 are mounted loosely upon the outward extremities of said axle. The driving-gears 12 are rigidly mounted upon the axle 4 and are adapted to drive the smaller gears 11, which are rigidly mounted upon the shaft 9.

Swinging hangers 7 are loosely mounted upon the axle 4, the depending ends of said hangers being perforated, thus providing bearings for the cylinder-shaft 9, which is mounted therein. The said hangers are adapted to swing in a radius having the said axle for a center. The downward movement of the hangers is limited by the turned ends of the extending arms 8, which are integral with said hangers and are adapted to come into contact with the lower sides of the side pieces 1 1.

The cylinder 13 may be constructed of any suitable material, that of sheet metal being preferred. The teeth 36, projecting from the cylinder, may be secured by any well-known means. The cylinder is rigidly mounted upon the shaft 9 by means of spiders 14 14, between the above-mentioned hangers. A U-shaped iron 10, having its respective ends loosely secured to the ends of the shaft 9, is suspended from the cables 30 32, the cable-fastenings being made by means of the eyes 31. The central cable 30 extends from its lower fastening upward to the rotatable shaft 23 and encircles said shaft, thence upward through the platform 2, over the idler 24, and then to the lever 25, to which it is secured. The cables 32 extend from the iron 10 to the shaft 23 and are secured thereto. By this construction the cylinder may be raised or lowered in accordance with the movement of the lever 25, which is provided with a latch 26, by means of which it may be securely set in any position within the scope of the sector 27. The action of the cable 30 rotates the shaft 23. This coils the cables 32 about the said shaft, thus aiding in lifting the weight of the cylinder.

Between the respective hubs of the ground-wheels 6 and the boxes 5 are mounted the clutches 15, having the lateral jaws 16. The said clutches are keyed upon the axle 4 and are adapted to revolve with said shaft and to slide laterally upon said shaft. The clutches are actuated by the levers 18, which are pivoted to the brackets 19. The connecting-rods 20 are secured, respectively, to the forward ends of the levers 18 and to the hand-lever 21 on either side of the pivot 22, which secures the said lever. Thus when the said lever is

shifted laterally the clutches are actuated in accordance with the movement of said lever. By this construction the clutches may be thrown into engagement with the ground-wheels or they may be shifted inwardly and locked into the recesses 38 in the boxes 5, thus preventing the axle 4 from rotating.

In operation the clutches are thrown into engagement with the ground-wheels and the revolving cylinder is lowered until the teeth of the cylinder penetrate the ground to the desired depth, and as the machine is moved forward the ground over which it travels is shattered by the rapidly-moving teeth.

A shield 37 is suspended from the front end of the carriage to prevent dust and other particles from being thrown forward.

In Fig. 4 the hanger 7 is shown made in two pieces overlapping each other and the teeth removed from the cylinder. By this construction the hangers may be lengthened by removing the bolts 49 and again secured in lower perforations made in the hanger for that purpose. This will disengage the gears 11 from the driving-gears 12, and the machine may then be used as a roller.

The lower bearings of the hangers may be made split, as shown in Fig. 4, and secured by bolts 50, thus permitting the removal of the shaft 9, together with the cylinder mount-

ed thereon, and facilitating the removal of the teeth from the cylinder.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a rotary harrow, the combination of a platform having the boxes 5, the axle 4 mounted therein, the ground-wheels loosely mounted upon the ends of said axle respectively, the driving-gears 12 rigidly mounted upon said axle, the swinging hangers loosely mounted upon said axle, said hangers having the arms 8 adapted to limit their rearward movement, the shaft 9 mounted in said hangers, the gears 11 rigidly mounted upon said shaft and adapted to be driven by the gears 12, the toothed cylinder 13 mounted upon said shaft, means for raising and lowering said cylinder, the clutches 15 loosely keyed upon the axle 4 and adapted to be thrown into engagement with the ground-wheels and also to be shifted therefrom and thrown into engagement with the boxes 5, and means for shifting said clutches, substantially as shown and described.

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

LEONARD SPANGLER.

Witnesses:

JOHN T. SOLLER,
WILLIAM F. SEEGER.