

J. R. HOWELL.
RIDING HARROW.
APPLICATION FILED NOV. 13, 1911.

1,055,913.

Patented Mar. 11, 1913.

3 SHEETS—SHEET 1.

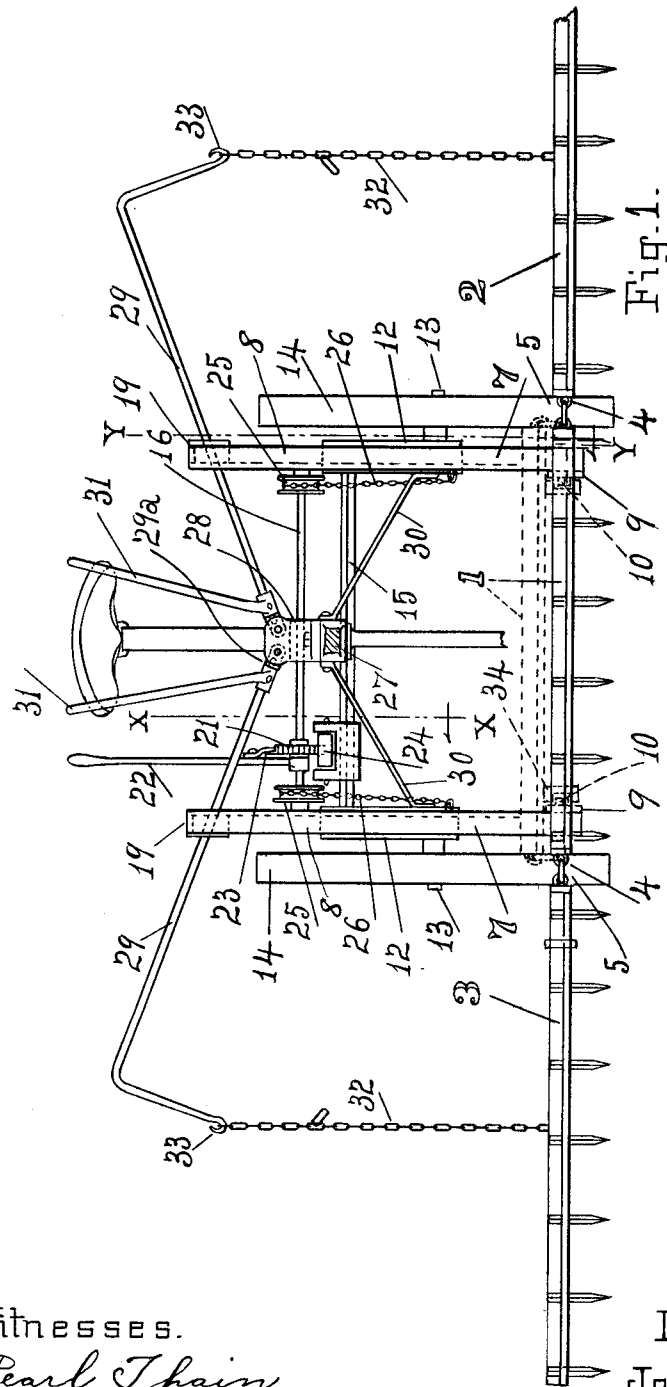


Fig. 1.

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by Atty N. Dubois.

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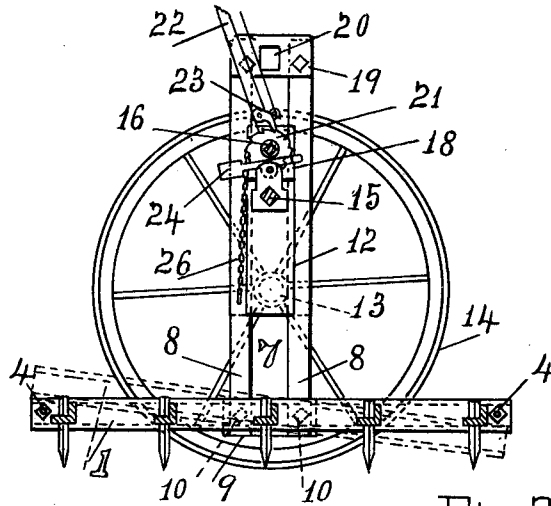


Fig. 3.

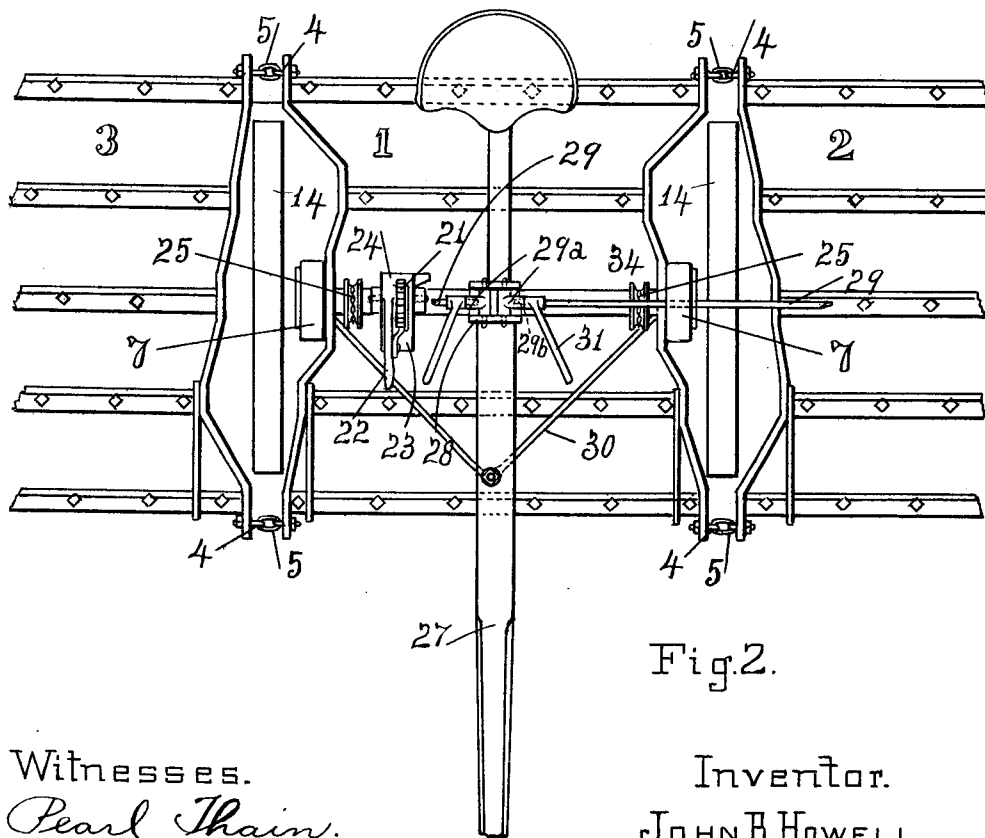


Fig. 2.

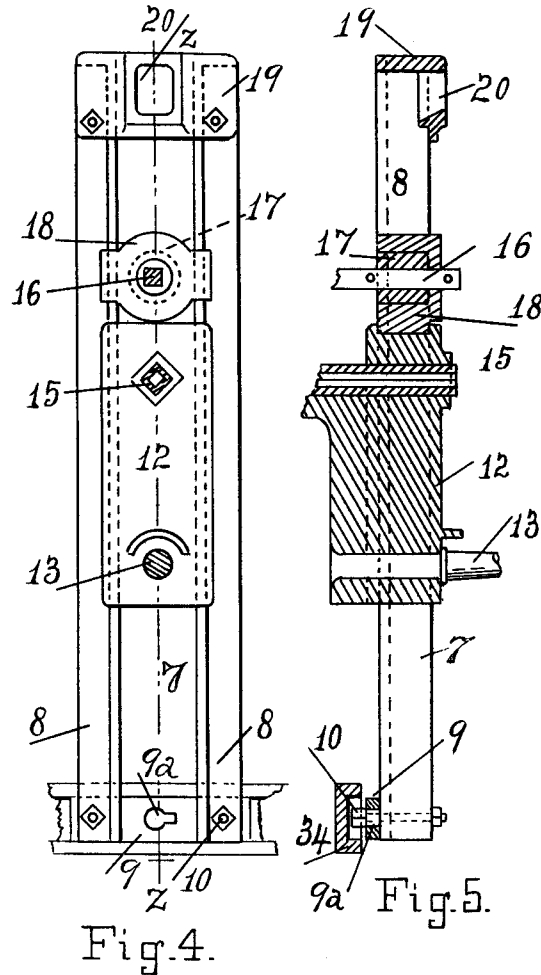
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UNITED STATES PATENT OFFICE.

JOHN R. HOWELL, OF SPRINGFIELD, ILLINOIS.

RIDING-HARROW.

1,055,913.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Original application filed September 12, 1910, Serial No. 581,568. Divided and this application filed November 13, 1911. Serial No. 659,910.

To all whom it may concern:

Be it known that I, JOHN R. HOWELL, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented a new and useful Riding-Harrow, of which the following is a specification.

The invention relates to sectional riding harrows.

The purposes of the invention are: to provide means connecting the central section and the wing sections so that the central section will be vertically movable independently of the wing sections or may be raised in connection with the wing sections at the option of the user; to provide means connecting the sections in such manner that the wing sections will oscillate on axes parallel to the line of draft of the machine and the central section will have limited oscillation on an axis at right angles to the axes of the wing sections; and to provide other novel and useful features of construction shown in the drawings, hereinafter described and finally recited in the claims.

Figure 1 is a front elevation of the machine; Fig. 2 is a top plan; Fig. 3 is a vertical transverse section on the line X. X. of Fig. 1; Fig. 4 is an enlarged partial vertical transverse section on the line Y. Y. of Fig. 1; and Fig. 5 is a vertical section on the line Z. Z. of Fig. 4.

The drawings are largely in the nature of diagrams and where precise constructions are not shown or described it is to be understood that the structural features may be of any approved serviceable construction.

The central section 1 is flexibly connected with the wing sections 2 and 3 by eye-bolts 4 and links 5.

There are two vertical lifter frames 7 each comprising a pair of spaced angle bars 8. Pivot plates 9 are secured near the lower ends of the bars 8, by square headed bolts 10. The middle tooth-bar of the central section has pivots fitting in central holes 9^a of the pivot plates 9 so that the section will oscillate on the pivots. Axle blocks 12 on which the frames slide have laterally extending spindles 13 on which the supporting wheels 14 rotate. The axle 15 is securely connected with the axle blocks 12. A transverse lifter shaft 16 is provided with cir-

cular bushings 17 which rotate in suitable bearings, in the blocks 18. The blocks 18 lie on top of the axle blocks 12 and fit loosely between the bars 8 so that the frames 7 will slide on both blocks. Plates 19 having transverse holes 20 are secured at the upper ends of the angle bars 8.

A ratchet wheel 21 is secured on the lifter shaft 16. A lever 22 oscillative on the shaft 16 is equipped with a pawl 23 which engages the teeth of the ratchet wheel 21 so that by moving the upper end of the lever alternately forward and rearward, the pawl engaging on the teeth of the ratchet wheel will cause partial rotation of the shaft 16 at each movement of the lever 22. A weighted latch 24 is mounted to oscillate adjacent to the wheel 21 and the weighted end of the latch tends to gravitate downward to normally keep the other member of the latch in engagement with the teeth of the ratchet wheel. The forward end of the latch is adapted to be released from the ratchet wheel by downward pressure on that end of the latch.

Sheaves 25 are secured on the shaft 16. Chains 26 have one end connected with the sheaves 25 and the other end connected with the frames 7 so that upon rotating the shaft 16 the chains 26 winding on the sheaves 25 will lift the frames 7.

The tongue 27 is centrally secured on the axle 15 and is connected with the axle blocks 12 by braces 30. A vertical standard 28 stationary on the tongue 27 supports the lifter arms 29. The lifter arms 29 are angular as shown and extend through the holes 20 in the plates 19 and the inner ends of the arms have pivots 29^b turning in holes in swiveled blocks 29^a on the standard 28. Levers 31 connected with the arms 29 serve to turn the arms in their bearings.

The lifter frames and the hinge connections of the wing sections with the central section are in such relation to each other that the weight of the lifter frames tends to "break" the hinges connecting the wing sections with the central section so that each section hugs the ground independently of the other sections.

Chains 32 connect the arms 29 with the wing sections 2 and 3 respectively, so that when the upper ends of the levers 31 are

moved in one direction they will turn the arms 29 to lift the sections and when the levers are moved in the opposite direction the wing sections will be lowered. Hooks 33 at the outer ends of the arms 29 support the chains 32 and different links of the chains 32 may be hooked onto hooks 33 to change the length of the connection of the wing sections with the lifter arms 29. When the chains 32 are slack the central section may be lifted vertically independently of the wing sections. When the chains are taut the sections all run on one level and may all be raised or lowered together. This adjustment is valuable especially in cultivating young corn as all the sections can be adjusted to make a light cut and all cut to the same depth. When traveling on the road, the wing sections will be hooked up high enough to pass over obstructions.

The side bars 34 of the central harrow-section are channel bars and are parallel to the pivot plates 9 and in such relation thereto that the square-heads of the bolts 10 occupy the channels of the channel bars and when the central section oscillates on its pivots (as shown in Fig. 3) the heads of the bolts engaging on the walls of the channel bars limit the scope of oscillation of the central harrow-section.

The eye bolts 4 and the links 5 connect the wing sections with the central section in such manner that the central section may be raised high enough to pass over trash in its path without raising the wing sections; that is to say, the central section has vertical movement independently of the wing sections (as indicated by dotted lines in Fig. 1) and also has limited oscillative movement on its axis transverse to the line of draft of the machine and at right angles to the axes of the wing sections, but all the sections may be raised together as will now be described. To raise the central section without raising the wing sections it is necessary only to move the upper end of the lever 22 rearwardly to cause the chains 26 to wind on the sheaves 25 to lift the central section within the scope of the eyes 4 and the links 5. If it be desired to lift all the sections together the lever 22 will be moved forwardly and rearwardly repeatedly to rotate the shaft to wind the chains 26 on the sheaves and cause the frames 7 to move upwardly carrying with them the central section mounted on the plates 9 and the wing sections supported by the arms 29.

The great flexibility of the harrow causes it to adapt itself to any inequalities in the surface of the ground and admits of raising or lowering each section, to pass obstructions, without interfering with the operation of the other sections.

This application is a division of my application S. N. 581,568, riding harrow, filed

September 12, 1910, which resulted in Patent No. 1008915 granted to me November 14, 1911.

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

1. The combination of an axle; axle blocks connected with the axle and having spindles; wheels rotating on the spindles of the axle blocks; lifter frames adapted to slide on the axle blocks; pivot plates on said lifter-frames; a central harrow-section mounted to oscillate on said pivot plates; an oscillative lifter-shaft parallel to said axle; sheaves on said lifter-shaft; chains connecting said sheaves with said lifter-frames; means controlling the oscillation of said lifter-shaft; and wing sections flexibly connected with said central section to admit of restricted vertical movement of the central section independently of the wing sections.

2. The combination of an axle; axle blocks connected with the axle and having spindles; wheels rotating on the spindles of the axle blocks; lifter-frames adapted to slide on the axle blocks; pivot plates on said lifter-frames; a central harrow-section mounted to oscillate on said pivot plates; an intermittently rotative lifter-shaft parallel to the axle; connecting devices connecting the lifter-shaft with the lifter-frames to raise the frames when the shaft is turned in one direction and lower the frames when the shaft is turned in the opposite direction; and wing sections flexibly connected with said central section to admit of restricted vertical movement of the central section independently of the wing sections.

3. The combination of an axle; axle blocks connected with the axle and having spindles; wheels rotating on the spindles of the axle blocks; lifter-frames adapted to slide on the axle blocks; lifter-arms having a swivel connection with the axle and movable vertically by the lifter-frames respectively; a central harrow-section mounted to oscillate on the lifter-frames; wing sections flexibly connected with the central section; and connecting devices connecting the wing sections with the lifter-arms.

4. In a riding harrow, the combination of an axle and supporting wheels; lifter-frames movable vertically relative to the axle; a central harrow-section supported on the lifter-frames and oscillative on an axis at right angles to the line of draft of the machine; and wing sections connected with the central section and adapted to oscillate on axes at right angles to the axis of the central section.

5. In a riding harrow, the combination of an axle and supporting wheels; lifter frames movable vertically relative to the axle; lifter-arms pivoted and swiveled with re-

spect to the axle and adapted to be raised
by the lifter-frames; a central section
mounted on the lifter-frames; wing sections
having hinge connection with the central
5 section, and connecting devices adjustably
connecting the wing sections with the lifter-
arms.

In witness whereof, I have hereunto
signed my name at Springfield, Illinois this
seventh day of November, 1911.

JOHN R. HOWELL.

Witnesses:

A. L. CONVERSE,
RAY G. TROXELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."