

E. L. WELSH.
 ROTARY SPIKE TOOTH HARROW AND WEEDER,
 APPLICATION FILED JAN. 22, 1918.

1,289,023.

Patented Dec. 24, 1918.
 2 SHEETS—SHEET 1.

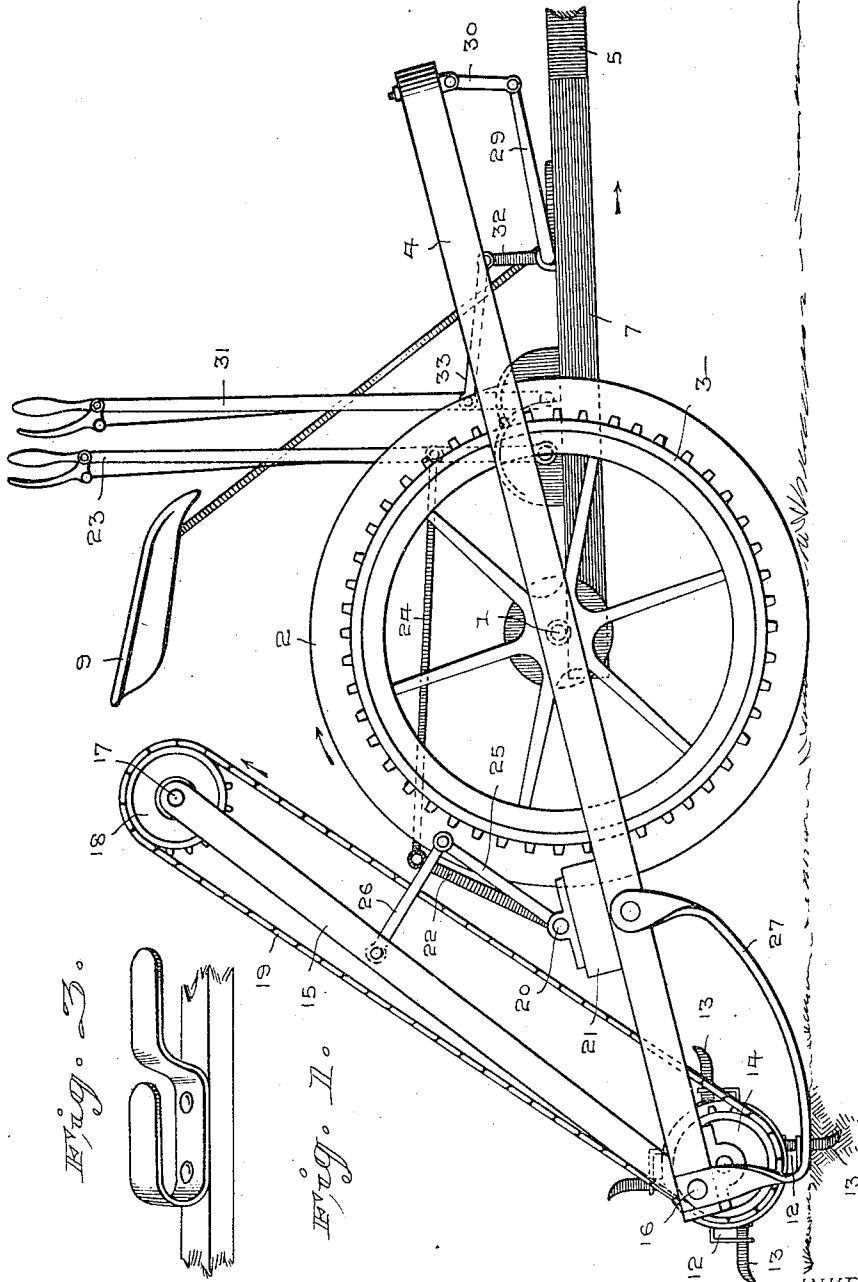


Fig. 3.

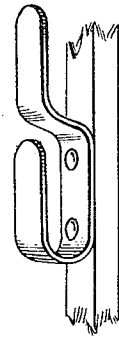


Fig. 7.

WITNESSES:

Thomas Aley
Frank B. Hoffman

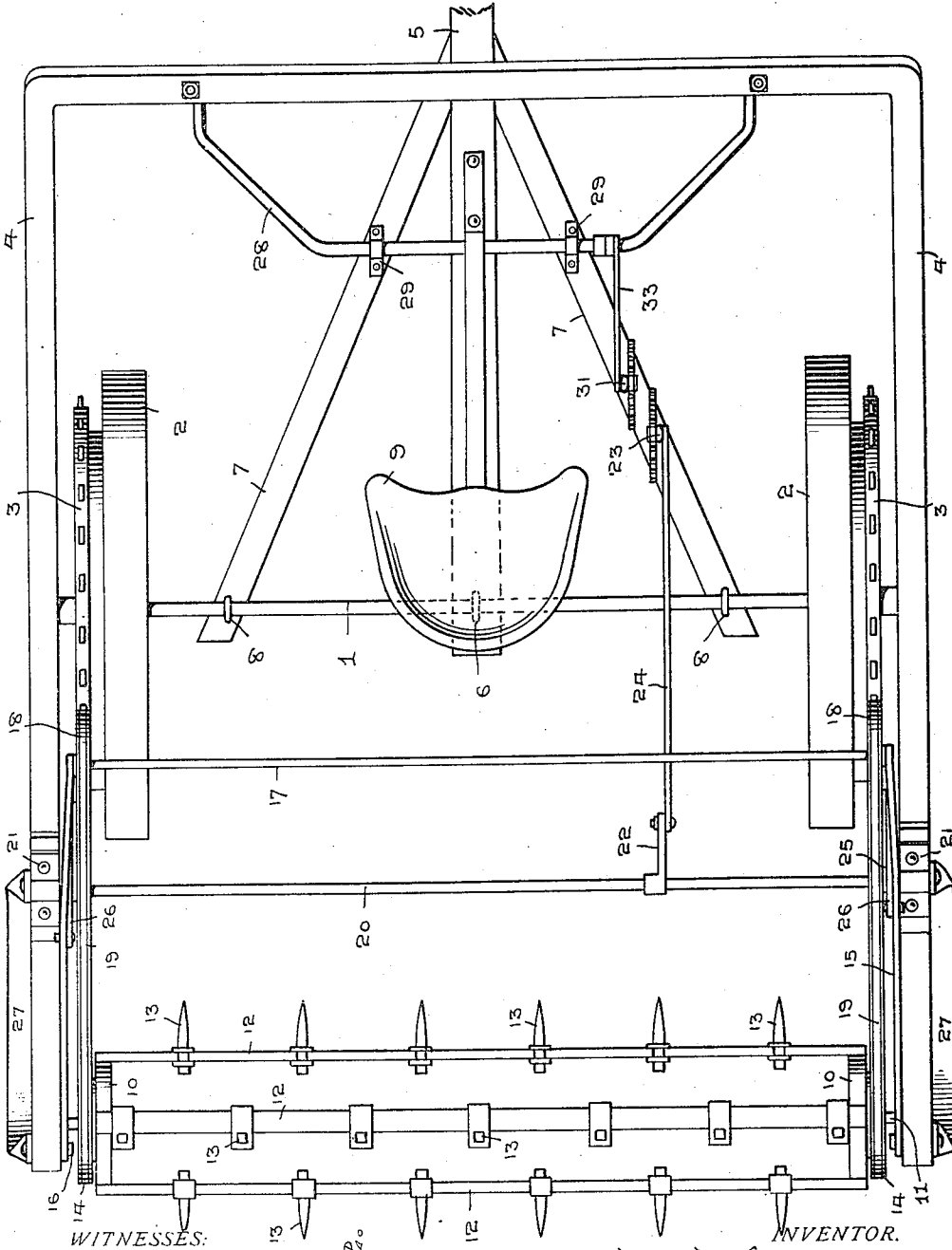
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E. L. WELSH.
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 Fig. 2.

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UNITED STATES PATENT OFFICE.

ELISHA L. WELSH, OF HOOD RIVER, OREGON.

ROTARY SPIKE-TOOTH HARROW AND WEEDER.

1,289,023.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ELISHA L. WELSH, a citizen of the United States, residing at Hood River, in the county of Hood River and State of Oregon, have invented certain new and useful Improvements in Rotary Spike-Tooth Harrows and Weeders; and I do hereby 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.

This invention relates to harrows and more particularly to a rotary spike tooth harrow and weeder, and has for its prime object to produce one wherein means is provided for revolving the harrow teeth or weeder blades in the same direction as the direction of travel of the machine in order that when the teeth are used they may be utilized to dislodge and throw up on the surface of the ground, rocks, roots or other obstacles.

A further object of the invention is to provide a rotary harrow embodying means whereby the harrow teeth may be revolved in a direction opposite to the travel of the machine.

A still further object of the invention is to provide means for adjusting the cutting depth of the harrow teeth.

A still further object of the invention is to generally improve and simplify the construction of a harrow of this character and to provide one which is efficient in use and of comparatively inexpensive construction.

With these and other objects in view as will appear as the description proceeds, the invention comprises the various novel features of construction, combination and arrangement of parts as will be fully described hereinafter and afterward specifically claimed.

Referring to the drawings,

Figure 1 represents a side elevation of my rotary harrow and weeder.

Fig. 2 represents a top plan view of the machine, and

Fig. 3 represents a detail perspective view of one of the weeder blades.

Similar characters of reference are used to denote corresponding parts throughout the accompanying drawings and the following description.

In order that the construction and operation of the invention may be readily comprehended, I have illustrated an improved embodiment thereof in the accompanying drawings, and will now proceed to fully describe the same, in connection with said drawings, in which 1 is the axle on which are mounted supporting wheels 2. Each of these wheels has a large sprocket wheel 3 attached to the spokes. 4 is a metallic U-shaped main frame journaled on the ends of the axle 1 at points intermediate its sides. A draft tongue 5 has its rear end attached to the axle 1 by U-bolts or other suitable fastening means 6. 7 indicates brace bars connected at their forward ends to the tongue 5 and at their rear ends to the axle 1 by U-bolts or other suitable fastening means 8. A seat 9 is conveniently mounted on the tongue 5.

A rotary spike tooth frame is mounted at the rear end of the main supporting frame 4 and comprises a pair of circular heads 10 through which extend a supporting shaft 11 journaled in the sides of the main frame 4. These heads are connected by bars 12 to which are connected spike teeth 13. It is, of course, to be understood that when it is desirable to use the machine as a weeder, these spike teeth can be detached and weeder blades, such as shown in Fig. 3, substituted therefor. The shaft 11 is provided at opposite ends with sprocket wheels 14 arranged adjacent the heads 10.

Supporting bars are indicated by the numeral 15 and have their lower ends pivotally connected as at 16 to the sides of the main frame 4, and their upper ends connected by a shaft 17 on which is mounted sprocket wheels 18. These sprocket wheels are connected to the sprocket wheels 14 by chain belts 19. A rock shaft 20 is journaled in bearings 21 transversely of the main frame 4 in rear of the supporting wheels, and has rigidly attached thereto an arm 22, which projects upwardly therefrom. A ratchet lever 23 is pivotally mounted on one of the brace bars 7 and is connected to the arm 22 by a link 24. 25 indicates a pair of rocker arms attached to the rock shaft 20 adjacent its opposite ends. These rocker arms project upwardly and are pivotally connected to the supporting bars 15 by links 26. By this construction it will be noted

that by the actuation of the ratchet lever 23 that the chain belts 19 can be lowered and raised into and out of engagement with the large sprocket wheel 3, thus providing means for manually controlling the rotation of the rotary tooth frame.

When the chains 19, or rather the lower stretches of the chains, are lowered into engagement with the sprocket wheels 3, the rotary tooth frame will revolve in the opposite direction to the direction of travel of the machine, thus causing the teeth 13 to dislodge, pick up or throw up rocks, sticks or other obstacles onto the surface of the ground, at the same time permitting the teeth to dig down into the ground and tend to prevent the frame from rising off of the ground, especially when the teeth encounter hard ground or any solid objects that may happen to be in the ground.

It is also to be understood that should it be desired to revolve the rotary spike tooth frame in a direction the same as the travel of the machine, the upper ends of the chains 19 are removed from the sprocket 18, by opening one of the links of each respective chain, and trained around the large sprocket wheels 3 and again operatively connected together. Under some conditions of harrowing, this particular arrangement and operation of the rotary frame will be most effective in harrowing or weeding.

A substantially U-shaped runner or shoe 27 is attached to each side of the main frame 4 at its rear end and are adapted to bear upon the ground and prevent the teeth of the rotary frame from penetrating too far into the ground.

A substantially U-shaped rock shaft 28 is journaled in bearings 29 on the brace bars 7. The arms of this rock shaft project forwardly and are connected to the under side of the forward end of the main frame 4 by links 30. 31 is a ratchet lever mounted on one of the brace bars 7 and is pivotally connected to an upstanding arm 32 on the rock shaft 28 by a link 33. By this construction it will be apparent that by the actuation of the ratchet lever 31 the rear end of the main frame 4 can be raised and lowered at will to vary the cutting depth of the teeth carried by the rotary frame.

It is, of course, to be understood that spring teeth or other forms of cutting knives may be used in lieu of those shown to more readily adapt the machine to the particular kind of work it is intended to perform.

From the foregoing description taken in connection with the accompanying drawings, it is to be understood that while I have described only a single form of my invention, that I do not desire to be limited to the exact structural details thus illustrated and described, but desire to have it understood that such other details of construction and ar-

rangement of parts may be made when desired as are within the scope of the invention and the appended claims.

Having fully described my invention, what I claim as new is:

1. A rotary harrow and weeder comprising a wheeled frame, a vertically disposed frame pivotally mounted at the rear thereof, rotatable teeth carried by the lower portion of said vertical frame, a driving chain thereon for rotating said teeth toward said wheeled frame, a gear upon the wheeled frame to engage the outer face of said chain, and means for shifting said frame and chain toward and from said gear.

2. A rotary harrow and weeder comprising a wheeled frame, a rotary frame arranged in the rear thereof, teeth carried by said rotary frame, a driving chain for rotating said rotary frame toward said wheeled frame, and a gear disposed upon the axle of said wheeled frame and adapted to engage the outer face of said chain for driving in one direction or the inner face of said chain for driving in an opposite direction.

3. A rotary harrow and weeder comprising a wheeled frame, a beam pivotally mounted thereon, a vertically inclined frame disposed at the rear end of said beam, a toothed rotary frame carried by the beam at said rear end, a driving gear carried at the upper end of the vertically inclined frame, a driving chain extending from said gear to the axis of said toothed frame, and means for driving said chain from the wheeled frame.

4. A rotary harrow and weeder comprising a wheeled frame, a beam pivotally mounted thereon, a vertically inclined frame disposed at the rear end of said beam, a toothed rotary frame carried by the beam at said rear end, a driving gear carried at the upper end of the vertically inclined frame, a driving chain extending from said gear to the axis of said toothed frame, a gear upon the axis of said wheeled frame, and means for shifting said chain toward and from said gear.

5. A rotary harrow and weeder comprising a wheeled frame, a beam pivotally mounted thereon, a vertically inclined frame disposed at the rear end of said beam, a toothed rotary frame carried by the beam at said rear end, a driving gear carried at the upper end of the vertically inclined frame, a driving chain extending from said gear to the axis of said toothed frame, a gear upon the axis of said wheeled frame, a toggle connection between said beam and vertically inclined frame for shifting the latter, and means for operating said connection.

6. A rotary harrow and weeder comprising a wheeled frame, a beam pivotally mounted thereon, a vertically inclined frame disposed at the rear end of said beam, a

toothed rotary frame carried by the beam at said rear end, a driving gear carried at the upper end of the vertically inclined frame, a driving chain extending from said gear to the axis of said toothed frame, a gear upon the axis of said wheeled frame, a toggle connection between said beam and vertically inclined frame for shifting the latter, means for operating said connection, means for adjusting the front end of said beam, and a riding shoe carried by the rear end of said beam.

7. A rotary harrow and weeder comprising a wheeled frame, a beam pivotally mounted thereon, a vertically inclined frame disposed at the rear end of said beam, a toothed rotary frame carried by the beam at said rear end, a driving gear carried at the upper end of the vertically inclined frame, a driving chain extending from said gear to the axis of said toothed frame, a gear upon the axis of said wheeled frame, a toggle connection between said beam and vertically inclined frame for shifting the latter, means for operating said connection, means for adjusting the front end of said beam, and a U-shaped runner or shoe attached at its opposite ends to the rear portion of said beam.

8. A rotary harrow and weeder comprising a main frame, supporting wheels journaled in said main frame intermediate its ends, a large sprocket wheel attached to each of said supporting wheels, a rotary frame journaled at the rear end of the main frame, supporting bars having their lower ends pivoted to the main frame adjacent said rotary frame and extending upwardly above the supporting wheels, a shaft journaled in the upper ends of said supporting bars, sprocket wheels mounted on said shaft, sprocket wheels carried by the opposite ends of said rotary frame, drive chains connecting said last-named sprockets with said first-named sprockets, and manually operable means for lowering and raising said upright supporting bars to throw the lower stretch of the chains into and out of engagement with said large sprocket wheels.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELISHA L. WELSH.

Witnesses:

H. PATTON,
A. W. ONTHANK.

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