Oct. 17, 1939. G. H. MORRIS 2,176,541

ROD WEEDER

Filed March 28, 1938 3 Sheets-Sheet 1

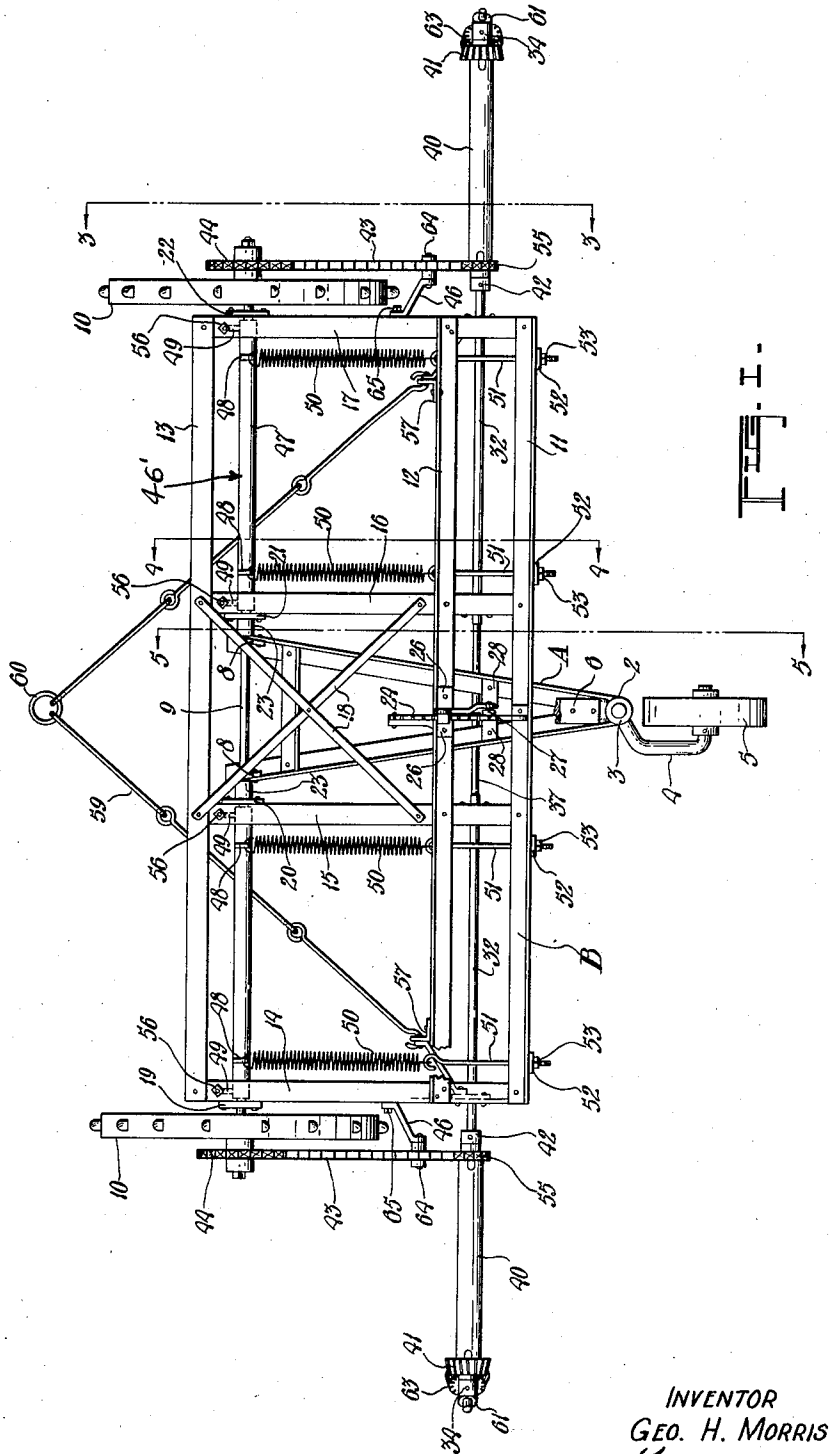


FIG. 1.

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Filed March 28, 1938 3 Sheets-Sheet 2

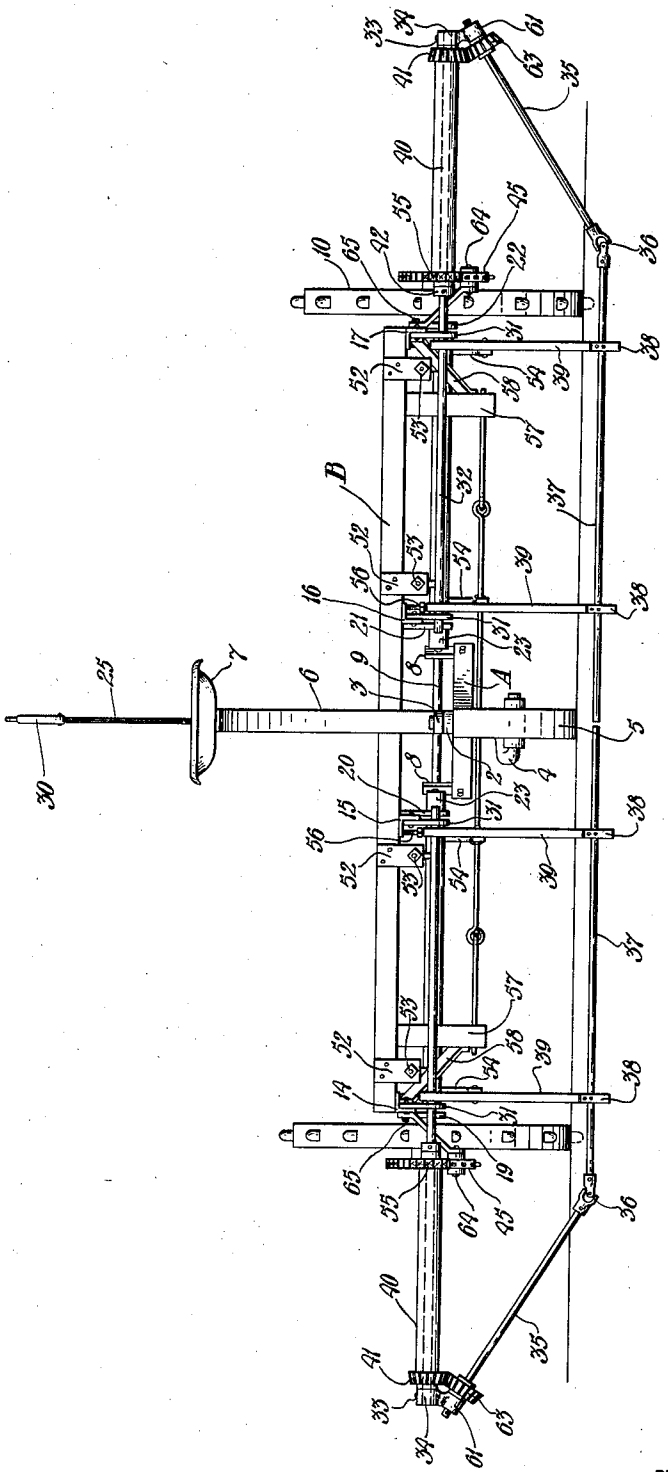


Fig. 2.

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ROD WEEDER

Filed March 28, 1938 3 Sheets-Sheet 3

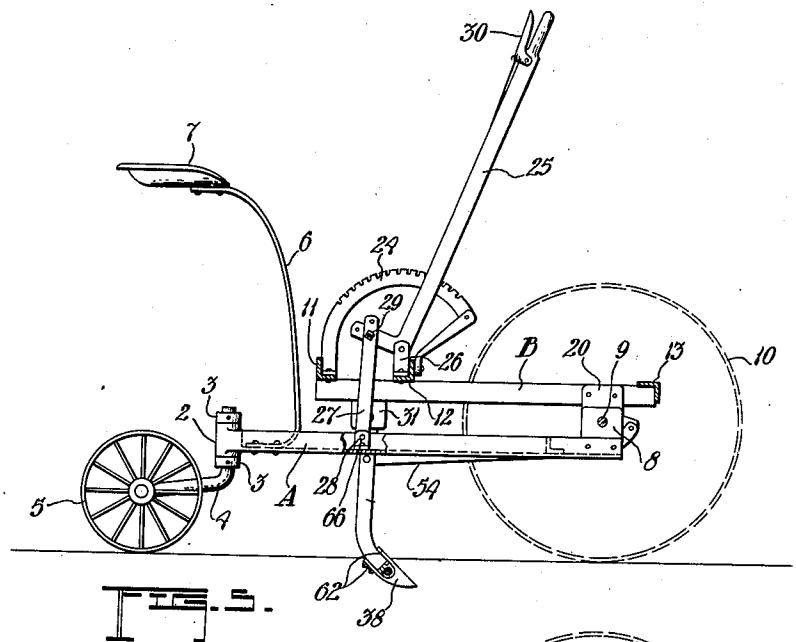


FIG. 5.

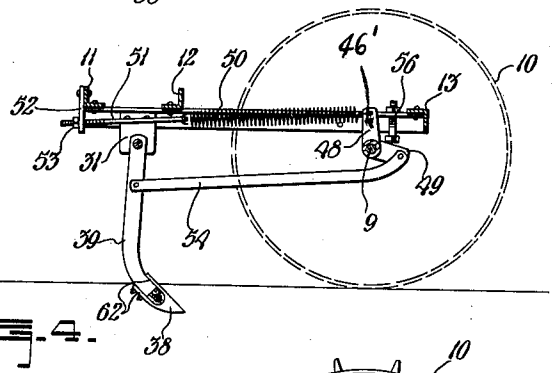


FIG. 4.

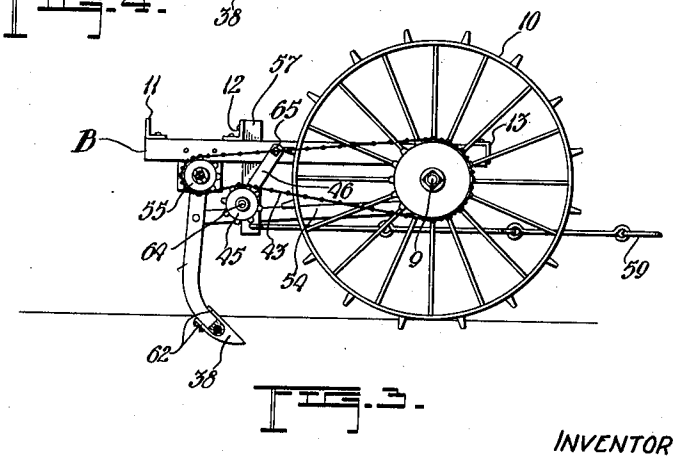


FIG. 3.

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Patented Oct. 17, 1939 2,176,541

UNITED STATES PATENT OFFICE

2,176,541

ROD WEEDER

George H. Morris, Bangor, Saskatchewan, Canada

Application March 28, 1938, Serial No. 198,566

2 Claims. (Cl. 97—42)

My invention relates to improvements in weeding implements, an object of my invention being to provide a device of the character herewithin described, which has a positive weed eradicating action, and which is adaptable to large scale operations.

A further object of my invention is to provide a device of the character herewithin described, which will eradicate weeds having roots extending to considerable depth, and lay them upon the surface of the soil to decompose.

A further object of my invention is to provide a device of the character herewithin described, which will mulch the soil to a depth of a few inches beneath the surface thereof, and simultaneously pack the soil firmly therebelow, thus preventing soil drifting and the evaporation of moisture.

A further object of my invention is to provide a device of the character herewithin described, which will not become fouled with trash and weeds during the operation thereof due to the rods not being stationary at any time, such as occurs in turning the present types of rod weeders, and which will be well balanced and free from side draft.

A further object of my invention is to provide a device of the character herewithin described, which may be operated upon stony land without danger of damage to the mechanism thereof.

A still further object of my invention is to provide a device of the character herewithin described, which is easy to operate, economical to manufacture, and which will not easily become out of order.

With the above more important objects in view and such other minor objects as may appear as the specification proceeds, my invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawings, in which:

Fig. 1 is a plan view of my rod weeder.

Fig. 2 is a rear elevational view of the same.

Fig. 3 is a sectional view along the line 3—3 in Fig. 1.

Fig. 4 is a sectional view along the line 4—4 in Fig. 1.

Fig. 5 is a sectional view along the line 5—5 in Fig. 1.

In the drawings, like characters of reference indicate corresponding parts of the different figures.

Briefly, my invention comprises a wheeled chassis, a movable frame mounted thereupon, a double drive rod weeder mechanism pivotally mounted upon the frame and a spring tension mechanism designed to allow the rod weeder mechanism to swing backwardly and upwardly upon striking an obstacle during the operation thereof.

I will now describe my invention in greater detail, reference being had to the accompanying drawings.

My invention consists essentially of a chassis 1, comprising an A shaped portion A, and a rectangular framework B. A vertically disposed bearing 2 is located upon the converging end of the portion A, and is formed integral therewith. Through this bearing, and pivotally secured thereto by the bushings 3, extends one end of a shaft 4, a small freely mounted wheel 5 being secured upon the lower end thereof. An upwardly extending strip of spring steel 6 is bolted to the rearward portion of the A shaped chassis at its lower end, and supports a saddle 7, secured at the apex thereof.

At the forward end of the A shaped portion of the chassis 1, securely bolted to the side members thereof, are two bearing plates 8, drilled to act as bearings for a main axle 9, a pair of ground engaging wheels 10 being rotatably mounted upon the outer ends thereof.

My rectangular frame consists essentially of three long angle bars 11, 12 and 13, and four lateral bars of a similar nature 14, 15, 16, and 17, all securely bolted together. Two diagonally extending braces 18 add rigidity to the frame. Bolted to the vertical sides of the lateral angle bars 14, 15, 16, 17, and near the forward portion of the frame B, are drilled plates 19, 20, 21, 22, through the drillings of which the axle 9 extends. Bushings 23 are mounted upon the axle 9 between the plates 20, 21, and 8, for the purpose of spacing the A portion of the chassis centrally between the lateral bars 15 and 16.

In front of the saddle 7, I have bolted to the angle bars 11 and 12 of my frame B, a notched quadrant 24, clearly illustrated in Fig. 5 of the accompanying drawings. An L shaped lever 25 is pivotally mounted at the heel thereof upon two small brackets 26, which are centrally located between the ends of the quadrant 24, and are securely bolted to the angle bar 12. A link 27 is pivotally mounted at its lower extremity upon a bolt 66, extending between two brackets 28, which are securely bolted to the chassis A. The upper end of the arm 27 is equipped with a plurality of drill holes, engageable with any one of a similar plurality of drill holes in the short arm of the lever 25, a bolt 29 passing therethrough. The handle

of the lever 25 is equipped with a trigger release 30, for setting the lever at any point desired along the quadrant.

In alignment across the rearward portion of the frame B, drilled plates 31 are securely bolted to the vertical sides of the lateral bars 14, 15, 16 and 17.

I will now describe the right hand section of my rod weeder, the left hand section being similar in every respect.

By means of a set screw 33, a bushing 34 is secured to the outer end of a shaft 32, which is mounted upon the drilled plates 31. A collar 61, located beneath the bushing 34, is angularly disposed with respect to the longitudinal axis of said bushing, and is formed integral therewith. A connecting shaft 35 is rotatably mounted at its upper end, in the collar 61, and is secured therein by a washer and cotter pin attached in the usual manner to the upper extremity thereof. The lower end of this connecting shaft is linked by means of a universal joint 36 to the outer end of a weeder rod 37, which is rotatably mounted upon the removable shoes 38. These shoes consist of drilled plates, pointed and sharpened upon the forward portions and along the upper edges thereof, and extended at the rearward portions into drilled fingers 62, by means of which they are bolted to the lower ends of the standards 39, of the configuration illustrated in Fig. 4 of the drawings accompanying this specification. These standards are pivotally secured at the upper ends thereof, upon the shaft 32 adjacent the bearing plates 31. Rotatably mounted upon the shaft 32 is a sprocket 55, drive sleeve 40, and a bevel gear 41, all rigidly secured one to the other and held in place between the collar 34 and the bushing 42. A bevel gear 63 is keyed to the connecting shaft 35, and engages with the bevel gear 41. A drive chain 43 extends around the sprocket 55 and a driving sprocket 44, which is concentrically secured to the driving wheel 10, or formed integral therewith.

To control the tension of the chain 43, a short angled arm 46 is pivotally bolted to the lateral bar 17, and has a sprocket 45, rotatably mounted upon a stub shaft 64 secured to the lower end thereof. By means of the nut and bolt assembly 65, securing the arm 46 to the lateral bar 17, the extent to which the sprocket 45 engages with the underside of the chain 43, and takes up the slack thereof, may be varied.

A principal feature of my invention lies in the provision of a mechanism 46′ for permitting the standards 39 to swing rearwardly and upwardly to pass a ground obstruction and this mechanism 46′ will be seen to be composed in part of a sleeve 47 which is rockably mounted upon the axle 9 between the drilled plates 21 and 22. Integral therewith, and perpendicular to the length and circumference of this sleeve, are the two short arms 48, located upon the upper surface thereof, and also the two short arms 49, having an angular relationship to the short arms 48, and being positioned near the ends of the sleeve 47, as is illustrated. Tension springs 50 are secured at the forward ends thereof to the upper extremities of the short arms 48, and at the rearward ends thereof to the eyes of eyebolts 51.

These latter are bolted to the short plates 52, as seen in Fig. 2, said plates being securely attached to the vertical side of the long angle bar 11. From this arrangement, it will be clearly seen that by means of the nuts 53, the tension upon the springs 50 may be adjusted.

Links 54, of the configuration illustrated in Fig. 4, are pivotally connected at their forward ends to the lower extremities of the short arms 49, and at their rearward ends to the standards 39. To adjust the normal operating position of the standards, bolts 56, equipped with lock nuts, are secured to the lateral bars 15 and 16, and are arranged to bear against the upper edges of the short arms 49.

Securely bolted to the vertical side of the long angle bar 12 are short vertical angle bars 57. Braces 58 further secure the lower ends of these angle bars to the lateral bars 14 and 17 respectively. A chain 59 is secured at each end thereof to one of the angle bars 57. A ring link 60 is placed in the middle of the chain, to which means for pulling the rod weeder may be conveniently attached.

The construction of my device having been described, its mode of operation will now be presented.

As the device described is pulled forward by a tractor or team, the motion of the ground engaging wheels 10 is transmitted through the driving sprocket 44, chain 43, sprocket 55, drive sleeve 40, bevel gears 41 and 63, connecting shaft 35 and universal joint 36 to the weeder rods 37, which are thereby caused to rotate clockwise with reference to Fig. 3. The sharp removable shoes 38 will then cut into the soil and carry the weeder rods therebelow, the depth being adjusted by raising or lowering the whole frame B, by means of the lever 25. The rods, upon striking the stems and roots of weeds, will tear them up and leave them upon the surface to decompose.

During normal operating conditions, the tension of the springs 50, through the short levers 48 and 49 and the links 54, is sufficient to hold the standards 39 in position, but when the rods strike an obstacle such as a rock, the added force overcomes the spring tension and results in the rods and standards being forced backwardly and upwardly until the obstacle is passed over, when they are returned to their normal operating position.

Due to the double drive arrangement upon my rod weeder, it will be clearly seen that whenever it is desired to turn my device, as frequently occurs at the edges of fields etc., whichever of the weeder rods 37, 37, happens to be upon the outside of the curve described in making the turn, will continually revolve in the normal fashion, and thus will not collect weeds and trash.

From the foregoing, it will be readily apparent that I have provided a rod weeder which is characterized by simplicity of construction and efficiency of operation, and which is provided with a mechanism designed to prevent damage to the weeder rods and standards of my device, due to their striking an obstacle.

Since various modifications may be made in the above invention, and many apparently widely different embodiments of the same made within the scope of the claims without departing from the spirit thereof, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense, and I desire only such limitations placed thereon as are specifically expressed in the accompanying claims.

What I claim as my invention is:

1. A rotary rod weeder comprising in combination, a supporting framework, standards secured upon a portion of said framework, a driven rotary rod rotatably secured upon the lower ends of said standards, and resilient linkage extending between said standards and said framework whereby said standards are yieldably maintained in a working position under normal conditions, and are permitted to swing upwardly and backwardly to surmount a ground obstruction.

2. The device as defined in claim 1 in which said linkage comprises a lever fulcrumed upon a portion of said framework, a link extending between said standards and one end of said lever, a tension spring extending between the opposite end of said lever and said framework, a stop for limiting the forward position of said standards, and means for adjusting the tension upon said spring.

GEORGE H. MORRIS.