

W. F. ELKIN.  
 BEET TOPPER AND PULLER.  
 APPLICATION FILED APR. 11, 1908.

938,306.

Patented Oct. 26, 1909.  
 3 SHEETS—SHEET 1.

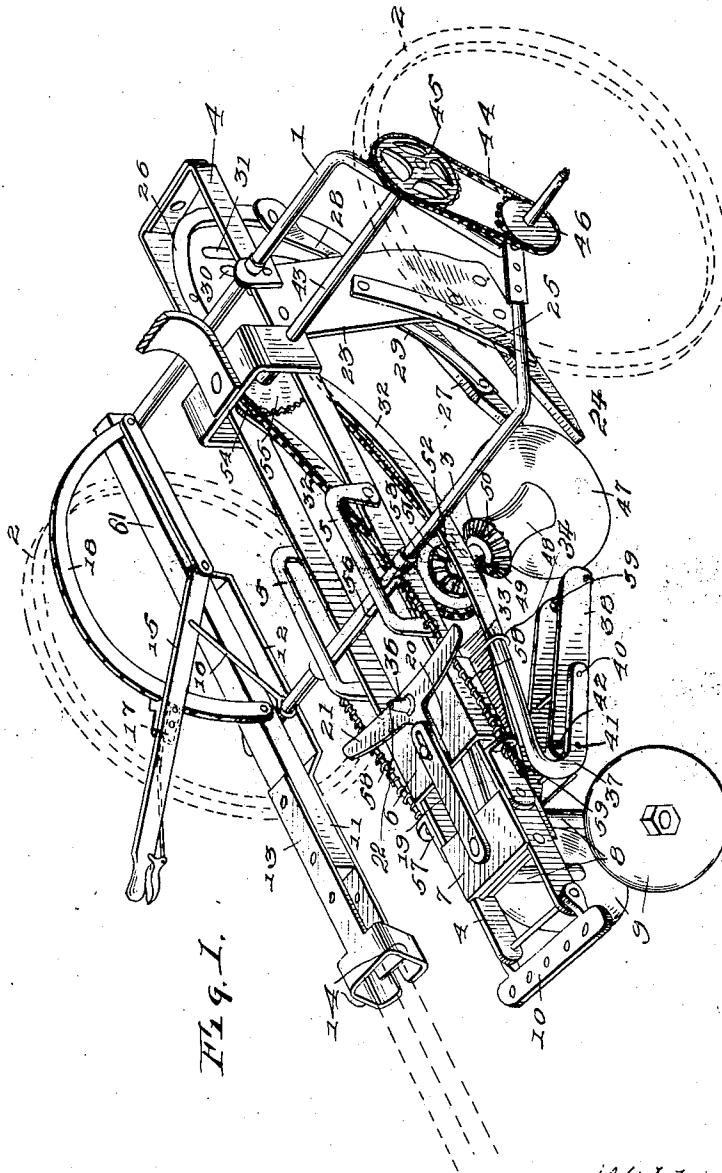


Fig. 1.

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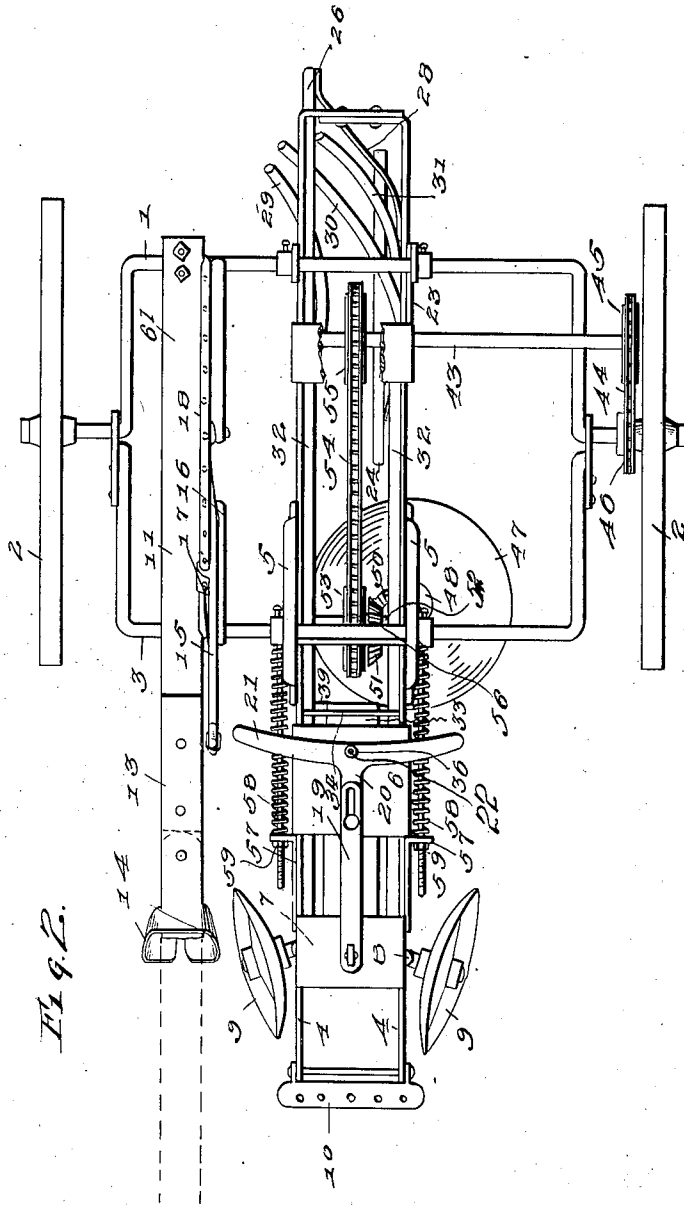


Fig. 2.

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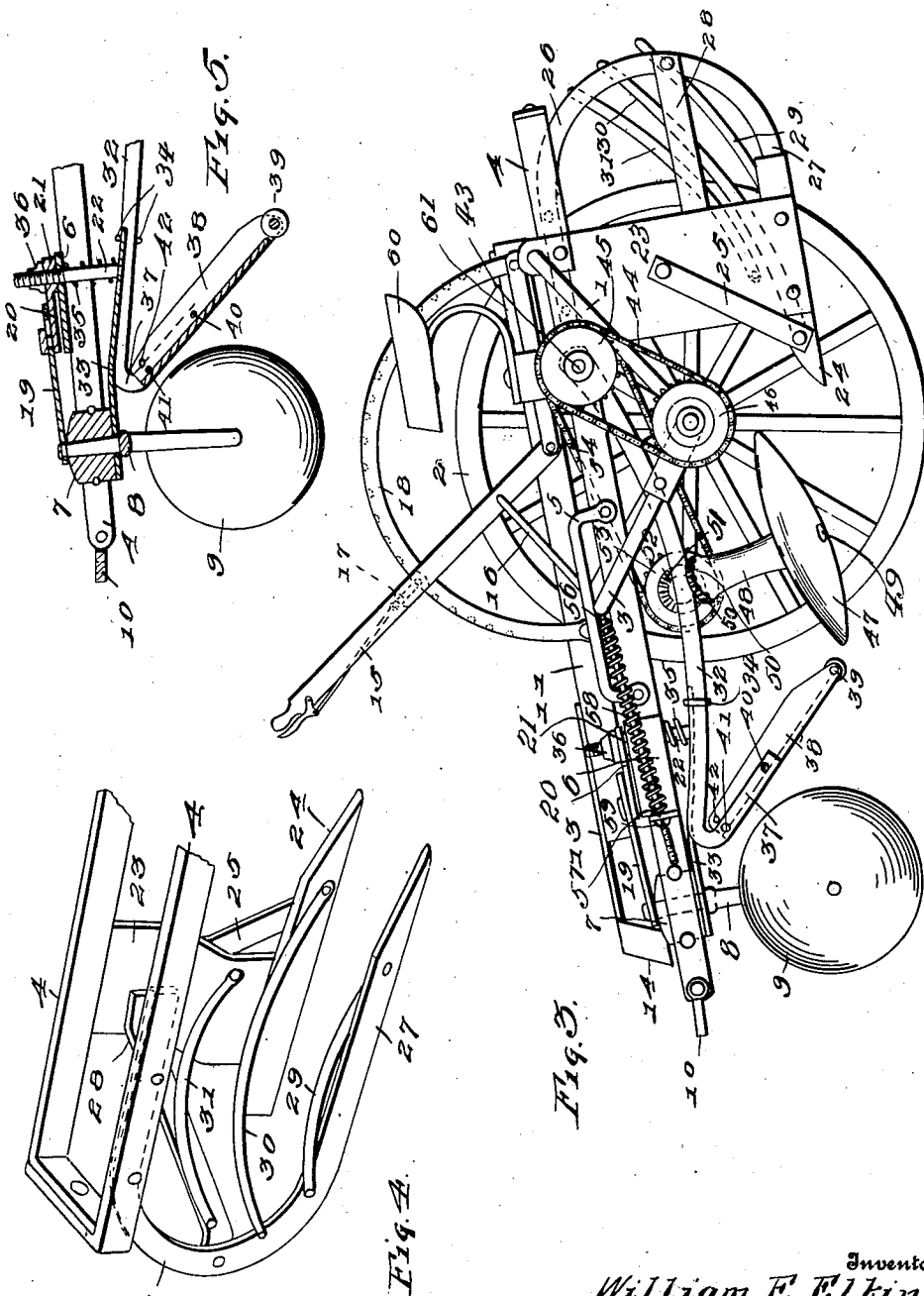
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# UNITED STATES PATENT OFFICE.

WILLIAM F. ELKIN, OF LAWRENCE, KANSAS.

BEET TOPPER AND PULLER.

938,306.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed April 11, 1908. Serial No. 426,509.

*To all whom it may concern:*

Be it known that I, WILLIAM F. ELKIN, citizen of the United States, residing at Lawrence, in the county of Douglas and State of Kansas, have invented certain new and useful Improvements in Beet Toppers and Pullers, of which the following is a specification.

The present invention provides a machine particularly designed for removing the tops of beets or like vegetables and uprooting or lifting the same, the machine being of such construction as to be adjustable and to meet varying conditions and at all times under control so as to be properly steered and thrown into and out of action as may be required.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a perspective view of a machine for topping and uprooting beets embodying the invention. Fig. 2 is a top plan view of the machine. Fig. 3 is a side view of the machine. Fig. 4 is a detail perspective view of the rear portion of the main frame, the runners or lifters and the curved rods for directing the beets to one side of the row after being lifted. Fig. 5 is a vertical central longitudinal section of the front portion of the machine, showing the disk cutters, the gage and the adjunctive parts.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The machine embodies a crank axle 1 and ground wheels 2 loosely mounted upon the crank arms of the crank axle, one of said ground wheels constituting a driver for operating the topping mechanism. A U-frame 3 has its side members loosely connected with the crank arms of the crank axle 1 and inclines upwardly and down-

wardly in an opposite direction to the crank portion of the axle 1. The main frame is mounted upon the crank axle and the U-frame and comprises longitudinal bars 4 and suitable transverse connecting pieces. The longitudinal bars 4 extend in parallel relation and are mounted upon the horizontal portion of the crank axle 1 and are provided with keepers 5 which receive the horizontal portion of the U-frame 3, said keepers 5 consisting of rods or bars having their end portions bent and secured to the longitudinal bars 4, leaving a space between their lower sides and the upper edges of the bars 4 to receive the horizontal portion of the frame 3. A plate 6 is secured to the longitudinal bars 4 and has its edge portions bent to extend alongside of said bars 4 to which they are secured in any way. A block 7 is secured between the front portions of the bars 4 and pivotally supports a forked frame 8 provided with disk cutters 9. A clevis 10 is connected to the front ends of the bars 4 and is of such construction as to admit of the point of attachment of the draft being adjusted laterally to overcome side draft or to secure any desired result.

A pole or tongue, which comprises the front and rear sections 11 and 61 respectively, is connected at its rear end to the horizontal portion of the crank 1 and is provided with a keeper 12 which receives the horizontal portion of the U-frame 3. The keeper 12 consists of an iron strap secured to the under side of the pole or tongue and having a portion offset to form the space in which the horizontal portion of the U-frame 3 operates. This metal strap extends forward of the forward portion of the pole or tongue. A second iron or strap 13 is attached to the upper side of the forward portion or section 11 of the pole and extends forward therefrom and is provided with lateral guards 14 which embrace opposite sides of the front portion of the pole. A lever 15 is pivoted to the rear section or part of the pole and a link 16 connects it with the U-frame 3 to admit of the latter being swung upward when it is required to lift the operating parts from the ground, as when turning the machine to recross the field, or when moving from one place to another. A latch bolt 17 applied to the lever 15 coöperates with a curved bar 18 secured to the rear section 61 of the pole or tongue so as to secure

the U-frame 3 when raised or moved to the required position.

The forked frame 8 has its stem mounted in the block 7 and its forked members are provided at their lower ends with outwardly extended arms upon which the disk cutters 9 are mounted, said arms being slightly inclined so as to cause the disk cutters 9 to forwardly converge. A bar 19 is connected at its front end to the upper end of the stem of the forked frame 8 and extends rearwardly and has connection with a forward extension 20 of a foot lever 21 mounted upon the plate 6. By operating the foot lever 21 the forked frame 8 may be turned to the right or to the left to properly steer the machine so as to insure the disk cutters 9 operating upon opposite sides of the rows of beets or other vegetables to be lifted. A rod 22 is mounted loosely in the plate 6 and forms a pivotal support for the foot lever 21. A standard 23 is rigidly connected at its upper end to the left hand bar 4 and is provided at its lower end with a runner 24 which is adapted to penetrate the soil at one side of the beet or like vegetable and lift the same. The runner 24 is tapered at its front end. A colter 25 extends across the angle formed between the front end of the runner 24 and the standard 23 and is connected to each in such a manner as to admit of its ready removal to be sharpened or for any other purpose. A beam 26 is connected at its upper end to the right hand bar 4 and curves downward and forward, providing a runner 27 corresponding with the runner 24 and cooperating therewith to lift the beets or the like to be harvested. A brace 28 connects the standard 23 and beam 26 to strengthen the same and hold them apart the required distance. The runner 27 is set with its point slightly in the rear of the point of the runner 24 and both runners are about in the same horizontal plane so as to exert a like force in lifting the beets in the operation of the machine. A series of curved rods cooperates with the runners or lifters to direct the beets to one side of the row, said rods acting in much the same manner as the mold board of a plow. The lowermost curved rod 29 is attached to the runner 27. The next curved rod 30 is connected to the runner 24. The topmost curved rod is made fast to the lower portion of the standard 23. As the beets are lifted by the front ends of the runners 24 and 27 and pass rearward between the same, they are further elevated and directed laterally by means of the curved rods 29 and 30, the topmost curved rod 31 serving to prevent the beets from passing over the curved rod 30.

Beams 32 have pivotal connection at their rear ends with the main frame and extend forwardly and downwardly and are supported at or near their front ends by means of a flat spring 33. The spring 33 is secured

at its front end to the block 7 and its rear portion passes between rods 34 connecting the beams 32 near their front ends. The spring 33 is supplemented in its action by means of a coil spring 35 which is mounted upon the rod 22 and confined between the plate 6 and the spring 33. A nut 36 threaded upon the projecting end of the rod 22 serves to hold the foot lever 21 in place and to provide means for regulating the tension of the spring 35 and incidentally the tension of the spring 33. The spring 33 is secured at its rear extremity to the lower end of the rod 22 and as the nut 36 is fed downwardly on the rod 22 the end of the spring 33 is raised to increase the tension of the same. The front ends of the beams 32 are recurved as shown at 37 and incline rearwardly and downwardly. A gage 38 is supported between the recurved ends 37 and is of trough form, being constructed of a plate of metal having its longitudinal edge portions bent upwardly. This gage inclines rearwardly and downwardly and is provided at its lower end with a roller 39 which travels upon the ground and prevents injury to the beets or the like being harvested. The gage is adjustable and is mounted upon a tie rod 40 connecting the lower extremities of the recurved ends 37. A pin 41 secures the gage in the adjusted position by passing through openings in the front portions of the recurved ends 37 and through selected openings of a series of openings 42 provided in the side pieces of the gage 38. The side pieces of the gage prevent the earth from passing over the gage and they also receive the tie rod 40 and the pin 41. A shaft 43 is mounted in the longitudinal bars 4 and receives the upper rear ends of the beams 32, thereby serving to pivotally connect said beams with the main frame. The shaft 43 is adapted to be driven from one of the ground wheels 2 by means of a sprocket chain 44, the same passing around a sprocket wheel 45 fast to the outer end of the shaft 43 and a sprocket wheel 46 connected to the ground wheel used as a driver. The topping mechanism consists of a disk cutter 47 which is fast to the lower end of a sleeve 48 and which sleeve is mounted upon a spindle 49 pendent from one of the beams 32 and rigidly connected thereto. A bevel gear 50 is provided at the upper end of the sleeve 48 and meshes with a bevel gear 51 mounted loosely upon a pin 52 connecting the beams 32. A sprocket wheel 53 connected to or formed with the bevel gear 51 is connected by sprocket chain 54 with a sprocket wheel 55 fast to the inner end of the shaft 43 so as to transmit motion from said shaft to the cutter or topper. A cutting portion of the disk 47 operates immediately in the rear of the gage 38 and is thereby enabled to remove the tops close to the beets without injuring the same. By having the

topping mechanism carried by the beams 32 and said beams provided with the gage 38, the topping mechanism is controlled in its position by the said gage, and when the latter is once set, the cutter operates on all the beets alike.

A spring regulator coöperates with the main frame and the U-frame 3 to admit of the working parts readily adapting themselves to the surface and to adjust the degree of pressure exerted upon the ground. This spring regulator consists of a U-frame 56 having its side members embracing opposite sides of the main frame and passing through openings formed in the outer members of brackets 57 attached to the longitudinal bars 4, the horizontal portion of said frame passing through the keepers 5 and engaging with the front side of the horizontal portion of the U-frame 3. Coil springs 58 are mounted upon the side members of the U-frame 56 and are confined between the outer members of the brackets 57 and the ends of the horizontal portion of the said frame 56. Set nuts 59 are mounted upon the threaded ends of the side members of the frame 56 and are adapted to engage with the outer members of the brackets 57 so as to limit the rearward movement of the said frame 56. As the machine is drawn over the field it is directed so that the disk cutters 9 operate upon opposite sides of the row of beets to be lifted, thereby loosening the earth. The disk cutter 47 severs the tops from the beets and by reason of its form operates effectively and is not liable to choke or gather trash. The runners 24 and 27 act in the capacity of lifters and pass beneath the beets and elevate the same, the beets being directed to one side of the row by means of the curved rods 29, 30 and 31 in the manner specified. The driver mounted upon the seat 60 is enabled to control the foot lever 21 and the lever 15, the latter enabling the machine to be thrown into and out of action by lifting the operating mechanism from the ground.

Having thus described the invention, what is claimed as new is:

1. In combination, a main frame, beams having pivotal connection at one end with said main frame and having their opposite ends recurved, a gage supported by the recurved ends of said beams, and a topping mechanism supported by the said beams and

having its position determined by the said gage.

2. In a beet harvester, the combination with a frame, of beams pivotally disposed at the rear end of said frame and extended forwardly therefrom beneath said frame, a spring carried in the forward end of said frame and connected to the forward ends of said beams for tensionally holding the same in a downward position, a guide carried in the forward ends of said beams for engagement with the ground, a beet topping mechanism intermediately disposed on said beams and means carried at the rear of said frame for raising the beets out of the ground, and depositing the same at one side of the row.

3. In a harvester of the character described, the combination with a frame, of beams pivotally mounted at the rear end of said frame and extended forwardly therefrom, curved portions extended downwardly at the forward ends of said beams, a guide intermediately fulcrumed between the lower ends of said curved portions, the upper end of said guide being adjustably secured to said curved portions, a roller disposed in the lower extremity of said guide, a beet toppler mounted on said beams for movement with said guide and means carried at the rear of said frame for raising beets from the ground and depositing the same at one side of the row.

4. In a harvester of the class described, the combination with a frame, of beams pivotally mounted at the rear of said frame and extended forwardly beneath the same, depending portions curved downwardly from the forward ends of said beams, a guide adjustably positioned between the lower ends of said depending portions, a spring carried by said frame and connected to said beams at the forward ends thereof for tensionally holding said guide against the ground, a beet toppler mounted on said beams for movement with said guide and means carried by said frame for raising beets from the ground and depositing the same at one side of the harvester.

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

WILLIAM F. ELKIN. [L. s.]

Witnesses:

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