No. 844,476. PATENTED FEB. 19, 1907.

T. M. E. SEIERUP.

HARVESTER.

APPLICATION FILED MAR. 31, 1906.

4 SHEETS—SHEET 1.

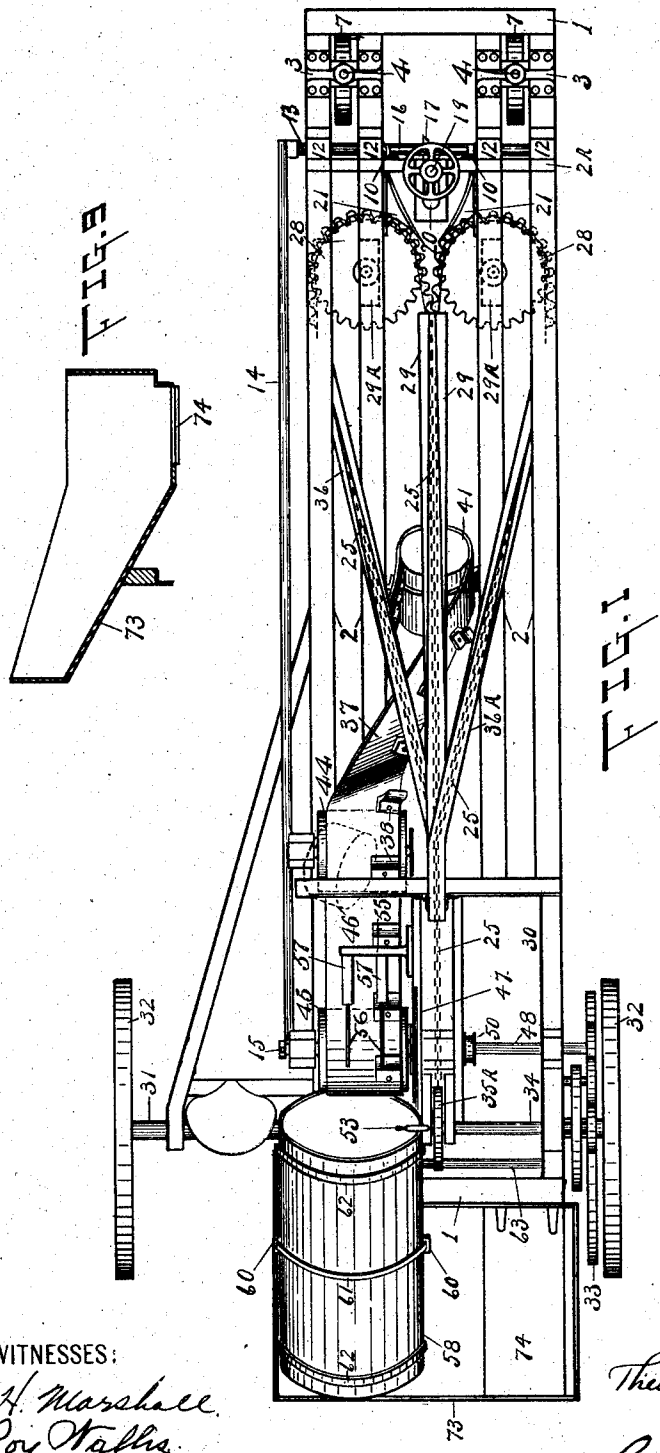


FIG. 1

FIG. 3

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4 SHEETS—SHEET 2.

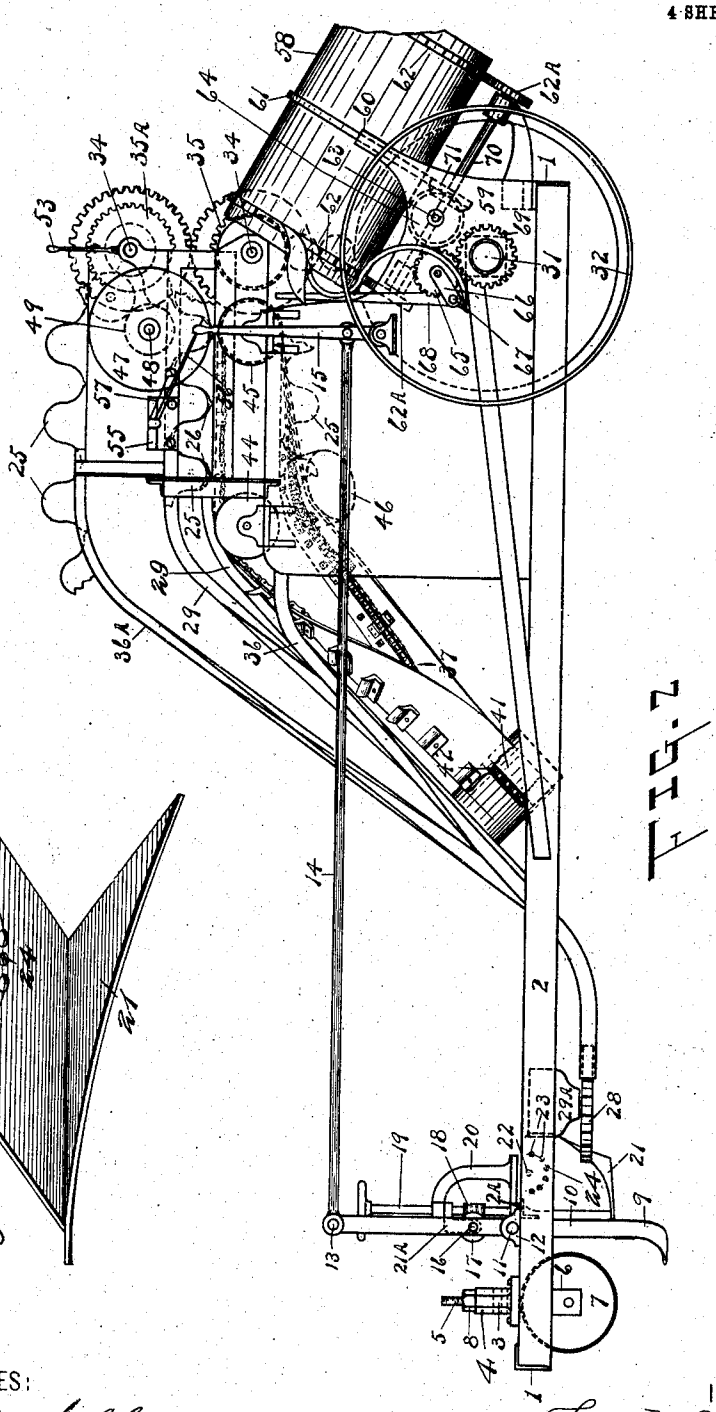


FIG. 7.

Fig. 13.

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4 SHEETS—SHEET 3.

FIG. 1.

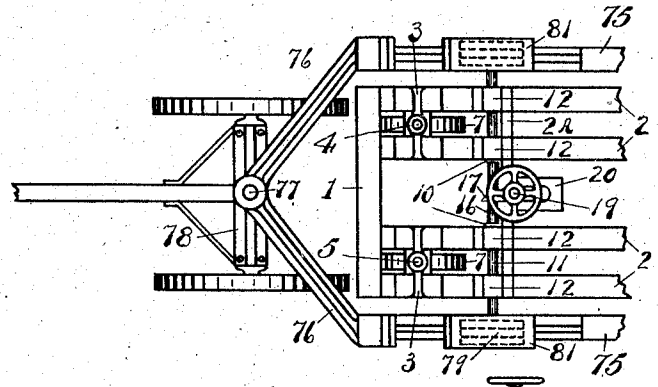


FIG. 1A.

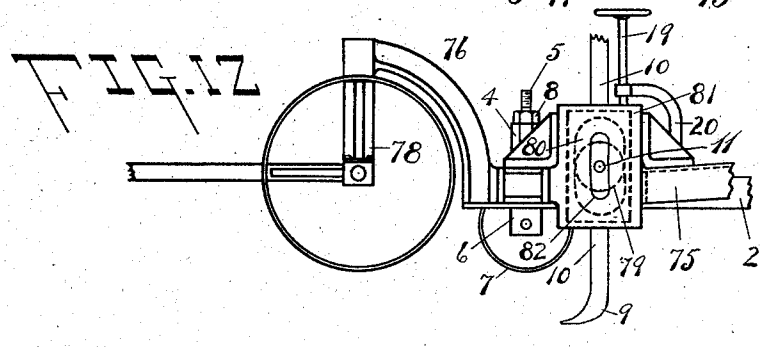
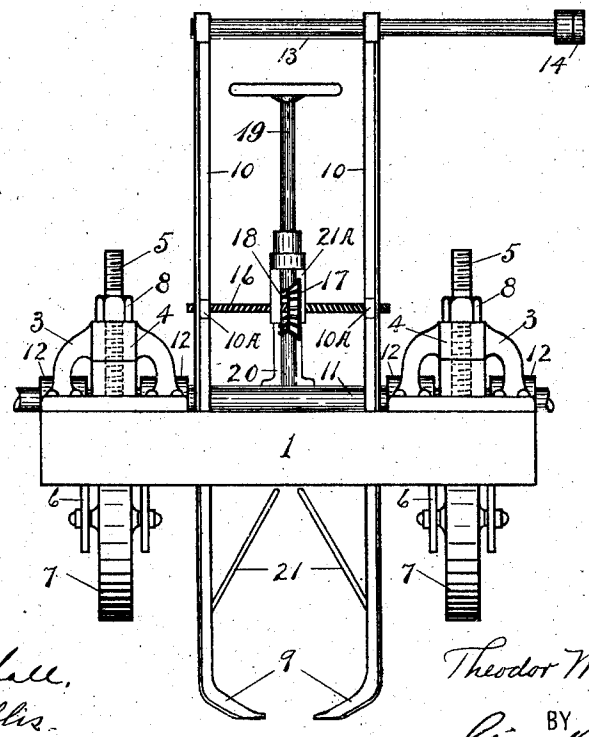


FIG. 3.



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4 SHEETS—SHEET 4.

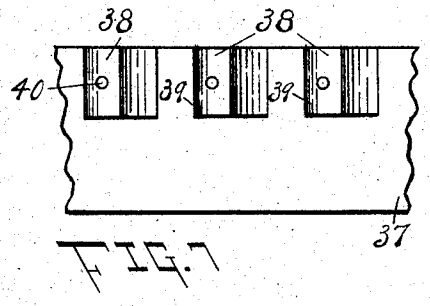


FIG. 7

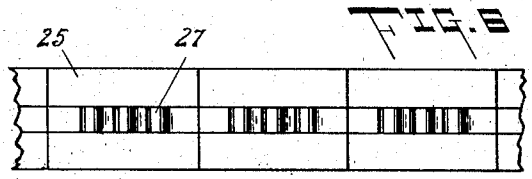


FIG. 8

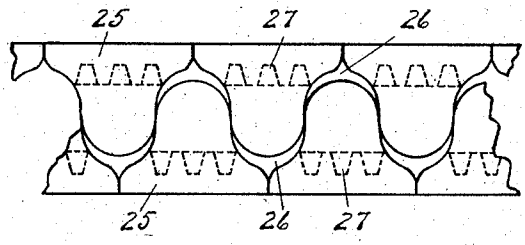


FIG. 5

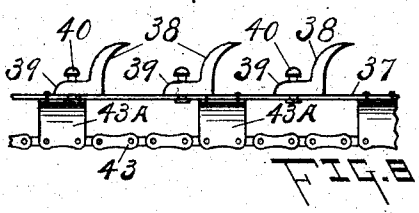


FIG. 6

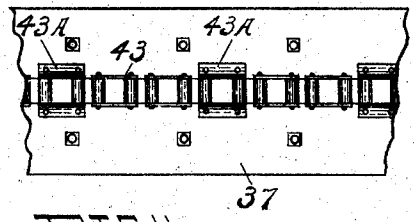


FIG. 4

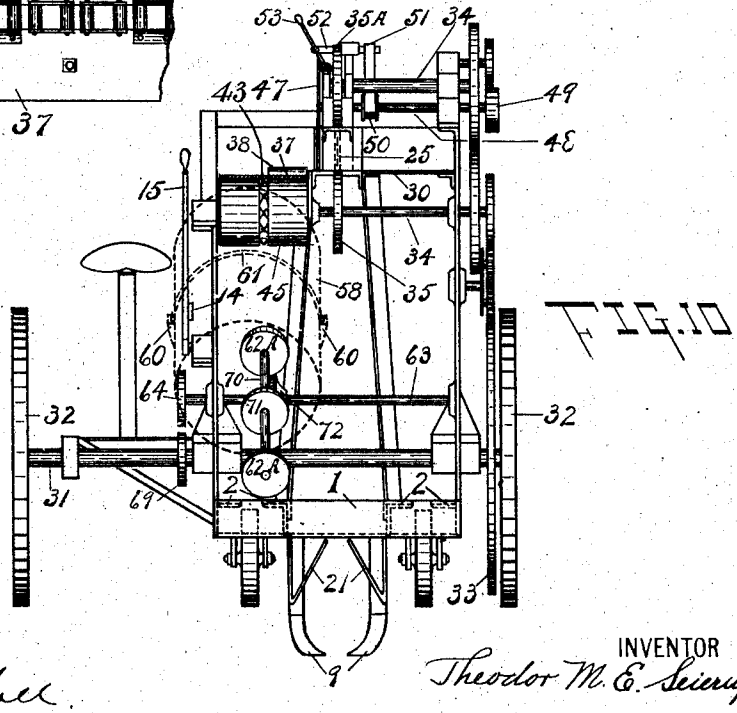


FIG. 10

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UNITED STATES PATENT OFFICE.

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HARVESTER.

No. 844,476. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed March 31, 1906. Serial No. 309,160.

To all whom it may concern:

Be it known that I, THEODOR M. E. SEIERUP, a citizen of the United States, residing at Reese, in the county of Tuscola and State of Michigan, have invented certain new and useful Improvements in Harvesters; 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.

My invention relates to harvesters, and more particularly in the present embodiment thereof to beet-harvesters, one object of which is to raise the beets from the soil without first topping them. In attaining this result I provide in one machine means for loosening the soil around the beets; secondly, means for confining and guiding the tops to the conveyer; thirdly, a conveyer adapted to grasp the beet-tops and raise the beets out of the ground; fourthly, a means for topping the beets, and, lastly, a means for cleaning the beets. In view thereof another object of my invention is the provision of an improved means for loosening the soil around or on opposite sides of the rows of beets.

Another object of my invention is the provision of means for collecting, confining, and guiding the beet-tops toward the conveyer.

A still further object of my invention is the provision of an inclined conveyer adapted to firmly grasp the beet-tops and by its inclination to actually pull or raise the beets out of the ground.

A still further object is the provision of means for adjusting the height of the loosening or plowing means, the guiding means, and the conveying means relative to the beets and their tops.

A further object is the provision of adjustable means for topping the beets after they are received on the machine.

Another object is the provision of means operating in conjunction with but separate from the conveyer for altering the positions of the beets as they ascend to the machine in order to properly present them to the cutter.

A still further object is the provision of means adapted to receive and clean the beets after they have been topped.

A further object is the provision of means adapted to collect and discharge the beets in piles at the option of the operator.

In attaining these objects it is necessary that the operating parts be synchronized relative to each other, and my invention further consists in certain other novel features and combinations of parts, together with their equivalents, such as will be more fully described hereinafter and particularly pointed out in the claims.

My invention is not wholly confined to the harvesting of beets, as its essential features may be utilized in harvesting other vegetables, as turnips, chicory, carrots, and the like.

In the accompanying drawings, illustrating one embodiment of my invention, Figure 1 is a top plan view of the machine. Fig. 2 is a side view thereof, parts removed to better disclose the construction. Fig. 3 is a detail view of the manner of varying the plows to accord with the sizes of beets being harvested. Fig. 4 is a detail bottom plan view of a portion of a supporting-belt. Fig. 5 is a detail top plan view of a section of the conveyer-chain. Fig. 6 is another detail of a section of the conveyer-chain, showing the gear-teeth. Fig. 7 is a detail view of a section of the supporting-belt. Fig. 8 is a detail view of a section of the supporting-belt, showing the sprocket-chain applied thereto. Fig. 9 is a detail sectional view of the hopper. Fig. 10 is a rear view of the machine. Fig. 11 is a top plan view of the auxiliary frame. Fig. 12 is a detail side view of a portion of the auxiliary frame, and Fig. 13 is a detail perspective view of one of the bunching-guides.

Preferably the machine embodying my invention is constructed where possible of angle-iron, the main frame comprising front and rear angle-irons 1 1, connected at their opposite ends by means of the preferably parallel side angle-irons 2 2, 2 2, the side angle-irons being arranged in pairs, as shown.

Conveniently located at the forward end of the frame are the brackets 3 3, suitably secured to the forward ends of the side bars of the frame in any approved manner, the brackets each provided with a preferably vertically disposed threaded sleeve 4 4, adapted to receive the threaded stems or standards 5 5 of the forks 6 6, in which are journaled the wheels 7 7, lock-nuts 8 8 being

applied to the upper ends of the stems to retain them in their adjusted positions. In the form herein shown the wheels are not swiveled relative to the forks, and hence will remain in any position in which they are set.

The connection between the wheels and the forward end of the frame is such as to permit an adjustment of the forward end of the frame toward and from the ground, whereby to vary the depth to which the plows will penetrate and also vary the relation of the guides and conveyer relative to the beet-tops.

Located in the rear of the adjustable wheels and in the space between the two inner side bars 2 2 are the plows 9 9, secured to the lower ends of the stocks 10 10, conveniently formed of angle-iron, which stocks are slidably mounted in any convenient manner on a shaft 11, suitably journaled in bearings 12 12 on the side bars. The plow-stocks may conveniently extend some distance above the frame and are connected at their upper ends by means of a rod 13, on which the upper ends of the stocks are slidably mounted in any convenient manner. This rod preferably extends laterally beyond the frame and has a link 14 secured thereto, the link extending rearwardly to a lever 15 near the operator's seat, by means of which lever the plow-stocks and plows may be tilted in one direction or the other to take into the ground at more or less of an angle. Furthermore, by this construction if either plow should engage an obstruction the operator by backing the vehicle a short distance can swing the plows forwardly, so that they will avoid the stone and can then drive forward until the obstruction is passed. A stop 2^A extends across the frame to limit the rearward movement of the plow-stocks.

The above constructions of the adjustable wheels and the plows are merely one of a number of arrangements which my invention is capable of assuming, and I do not wish to be understood as limiting myself to the precise forms shown.

It often happens in large fields that beets in one portion of the field will vary in size from those in another portion of the field, and in order to loosen the dirt or soil as closely as possible to the beets without injury to the beets it is desirable that the plows be arranged so as to be adjusted at a greater or lesser distance apart, and as one means for accomplishing this end I have feathered the plow-stocks to the shaft 11 and rod 13 and connect the stocks at points intermediate the shaft and rod by means of a right and left threaded screw 16, the ends of which are received in correspondingly-threaded apertures in the stocks or in lugs 10^A 10^A, carried thereby. A gear 17 is secured to the screw and is adapted to be engaged or operated by a worm 18, mounted on a rod 19, suitably supported in a bracket 20, mounted on the shaft 11, and held in engagement with the gear by a strap 21^A, the bracket and rod 19 rocking with the shaft and plow-stocks. A rotation of the gear 17 in one direction or the other will operate to simultaneously and equally draw the plowshares together or move them apart to permit of an adjustment relative to the sizes of beets being harvested. Obviously, also, this adjustment will admit of the use of the machine with other vegetables than beets.

The present embodiment of my invention contemplates the employment of conveyers adapted to grasp the beet-top; but as such tops are spread out it becomes necessary to use some means for collecting and bunching the tops, and as one means for accomplishing this end I have shown the following mechanism: Directly behind the plows are located the converging guides 21 21, of an approximate **V** shape in rear elevation, the inner laterally-inclined plates of each guide gradually diminishing as they approach the forward ends of the guides, which terminate in points normally adapted to lie just above the surface of the soil. The edge of each inclined plate is gently curved, as shown, to avoid injuring the beet-tops. The vertical plates of the guides are preferably pivotally secured to the inner side bars, as at 22, and are each provided with a semicircular row of apertures 23 23, adapted to register with a single aperture in each of the angle-irons and adapted to receive a pin 24, located in the aperture in the angle-iron. By this arrangement the angle of the guides may be varied in order that the points of the guides may lie closer to or farther from the surface of the ground, according to the manner in which the beet-tops are lying.

By leaving the tops on the beets I am enabled to draw, pull, or raise the beets out of the ground by causing suitable means to grip the tops, and as one means for effecting this end I have shown the following mechanism: The separated points of the inclined guides are adapted to pass on opposite sides of the beets and gather in the overhanging leaves, which are gradually bunched as the machine proceeds, the stems of the leaves resting upon the curved edges of the guides and being straightened. As they approach the converging throat formed by the guides the stems are constricted until they are finally received within a conveyer arranged on an incline. This particular conveyer comprises a pair of toothed chains 25 25, the teeth on one chain adapted to be received between each two adjacent teeth on the opposite chain in such a manner that a clearance 26 is left between the ends of the teeth of one chain and the bottoms of the spaces between the teeth on the opposite chain. The conveyer-chains are provided with gear-teeth 27

on their rear surfaces, adapted to be engaged by the gear-wheels 28 28, suitably mounted in preferably depending bearings 29[A] 29[A], secured to the inner longitudinal bars 2 2 just behind the guides, the rear edges of which latter may be cut away, so that the throat formed by the guides lies between the wheels 28 28. The conveyer-chains pass around the wheels 28 28 and thence are received in a pair of channel-irons 29 29, arranged to face each other, the channels forming a gear-casing slotted at top and bottom to allow the beets to depend beneath the channel and the tops to project above the channel. These channel-irons are warped or torsionally twisted as they ascend toward the higher rear end of the machine until the registering slots between the channel-irons lie in an approximately horizontal instead of a vertical plane, the object being to turn the beet from the vertical position in which it is removed from the ground to a horizontal position, where it may be acted upon by the cutters to top the beet. Thus the chains after passing around the wheels 28 28 enter the adjacent channel-irons 29 29, the lower ends of which are located adjacent the wheels 28 28, the chains passing through the twisted or warped channel formed by the irons and being themselves twisted thereby until, instead of lying in a horizontal position relative to each other assumed as they pass into the lower end of the channel, one of said chains is superposed relative to the other, in which position they emerge from the upper end of the channel and pass across the elevated horizontal table 30 at the rear of the machine.

The rear end of the machine is supported on an axle 31, which is of greater length than the width of the machine, to impart stability and prevent the overturning of the machine, the axle of course being provided with traction-wheels 32 32. The wheels and axle turn together, and the axle carries a drive-gear 33, adapted to impart motion to a train of gears for actuating the moving parts of the machine, the drive-gear and train of gears being suitably proportioned in accordance with the requirements of the mechanism to be actuated.

Horizontal shafts 34 34 are suitably journaled in the rear framework of the machine above and below the table 30 and are provided with spur-gears 35 35[A], rotating in opposite directions and deriving motion from the train of gears. The conveyer-chains after passing across the table 30 separate, one of them passing upward around spur-gear 35[A], while the other passes downward around spur-gear 35. The chain passing around spur-gear 35[A] travels forwardly above the table to the upper end of a single torsionally twisted or warped channel-iron 36[A], inclined downwardly and terminating at or near the outer periphery of one of the gear-wheels 28. The other conveyer-chain after passing around the spur-gear 35 travels forwardly beneath the table 30 and enters a similar channel-iron 36, extending to the outer periphery of the opposite gear-wheel 28. The chains enter channels 36 36[A] in a vertical position and emerge therefrom in a horizontal position, owing to the warping of the channels.

As the beets are elevated by the conveyer traveling upward in the adjacent channel-irons 29 29 they are turned from a vertical to a horizontal position, and hence it becomes necessary to support the beets proper in alinement with their tops. As one means for accomplishing this end I have devised a belt 37, one face of which is provided with a series of pivoted curved fingers 38 38, spaced apart from each other and adapted to engage the beets as they are elevated by the conveyer. The fingers may conveniently be angular in cross-section, and pivotally mounted at their angles on bails secured to and carried by the belt. The tails 39 of the fingers are apertured to receive rivets 40, also carried by the belts and affording the tails a slight amount of play when the fingers are moving around the rollers, there being a clearance formed between the heads of the rivets and the tails, as shown. The belt or moving support passes around an inclined roll 41, located intermediate the ends of the double channel 29 29 and at about the point where the twist first commences. The roller is provided with a circular series of teeth 42, adapted to take into a series of links 43, located on the rear face of the belt, whereby positive movement is imparted to the belt and slipping is prevented. The belt is secured to the links 43 by means of outcurved wings 43[A], carried by the links, the wings being riveted to the outer depending ends of the links. This roller 41 extends at approximately right angles to the double channel. Similar toothed rolls 44 and 45 are located upon the rear superstructure, the rolls 44 and 45 being horizontally disposed, the roll 44 being located at the forward end of the table in proximity to the upper end of the double channel, the roll 45 being located near the rear end of the table. Situated beneath the roll 44 is an idle toothed roll 46, inclined in a plane between the horizontal and the inclined roll 41. The ascending ply of the belt 37 after leaving the inclined roll 41 travels upward and over the horizontal roll 44, and by reason of the different planes occupied by the rolls 41 and 44 the belt between those rolls is twisted to conform to the warp of the double channel, so that the beet-roots always rest on and are supported by the belt first in an inclined plane and thence in a horizontal position, the belt approaching the conveyer as it nears the table. From the roll 44 the belt extends horizontally to the roll 45,

around which it passes, and thence over the inclined idler-roll 46 to the roll 41. The idler may also serve as a belt-tightener.

The beets when they reach the table 30 occupy a horizontal position, in which they move across the table, their tops still gripped by the conveyer and supported on the table, while the roots are supported on the belt, it being understood that the mechanism is so arranged that the conveyer and belt travel together, moving the same distance at the same time. The tops having served their purpose—namely, that of a handle by means of which the beets are pulled and elevated—it becomes necessary to remove them, and while this may be accomplished in many ways, as is true of the results hereinbefore set forth, I have shown in the present instance a rotary knife 47, mounted on a horizontal shaft 48, supported above the table and driven by a gear 49, forming one of the train of gears, the knife being rotated at a high speed. The vertically-disposed rotary knife or cutter is located at a point intermediate the front and rear ends of the table and may project beneath the edge of the table between the conveyer and the belt. As the beets pass beneath the shaft the cutter severs the tops from the roots, and the tops still gripped by the conveyer pass on to the rear end of the table, where they are released by reason of the separation of the conveyer-chains and may be disposed of in any suitable manner. Meanwhile the beets themselves are carried on the belt to the rear end of the table, where they are discharged into a cleaning mechanism, presently to be described.

It may sometimes happen, owing to a variation in the sizes of the beets or other vegetables being harvested or owing to the manner in which the tops are engaged by the conveyer or for any other reason, that an adjustment of the cutter is desirable, and as one of the many means for effecting such adjustment I have preferably mounted the shaft 48 so that it will slide or may be moved longitudinally in its bearings, the shaft having a collar 50 keyed thereon and engaged by a fork 51, secured to one end of a link 52, the opposite end of which link is pivotally connected to a lever 53 intermediate its ends, the lever being pivotally mounted on the rear superstructure in any suitable manner adjacent the seat of the operator. Thus by swinging the lever 53 in one direction or the other the cutter is adjusted to the desired position, the gear 49 sliding with the shaft and being of a width sufficient to prevent its disengagement with the train of gears. It is also desirable to place the beets under pressure during the topping thereof, and while many constructions might be devised for attaining this purpose I have illustrated a convenient mechanism comprising a bracket 55, suitably supported at one end and extending transversely over the belt at a point intermediate the roll 44 and the cutter. The bracket is adapted to support a pair of resilient fingers 56 56, under which the beets pass and by which the beets are engaged and held from rolling during the topping operation. Leaf-springs 57 57 may be secured to the bracket to overlie and bear upon the fingers, affording a firmer pressure thereof on the beets.

Sugar-beets grow best in clayey soil, and it frequently happens that the beets or other vegetables are harvested while the ground is moist, as after a rain, so that considerable soil clings to the beet, and it is desirable to clean the vegetables prior to disposing of them. To this end I provide a cleaner operated by the movement of the machine, and, as one of a number of convenient constructions, I have shown an inclined hollow drum 58, the upper open end of which is disposed beneath the roll 45 in such position that as the beets are discharged from the belt they are received by the drum. The drum is preferably supported in a rear extension 59 of the superstructure on the main frame, such rear extension being provided with two oppositely-located grooved arms 60 60, in which is received the annular rib 61, secured to the drum at a point intermediate its ends. Near the opposite ends of the drum are secured annular toothed racks 62 62, for imparting strength to the drum and affording means for rotating the cutter. A horizontal shaft 63 is journaled in the bearings in the frame, it being provided with a gear 64, meshing with an intermediate gear 65, carried by a link 66, connected rigidly to a stub-shaft 67, which shaft is controlled by a lever 68, adapted to move the intermediate gear into or out of mesh with the gear 64 on the shaft. The intermediate gear meshes with a gear 69, carried by the axle. A second shaft 70 is suitably journaled beneath the drum and extending parallel therewith, the shaft 70 having a bevel-gear 71 secured thereto intermediate its ends and adapted to mesh with a similar gear 72 on the shaft 63. The periphery of the bevel-gear 71 is smooth and engages the smooth annular rib 61 to assist in supporting the drum and afford an antifriction-bearing therefor. The ends of the inclined countershaft 70 are equipped with spur-gears 62^a 62^a, whereby to rotate the drum. Within the drum are located abrading or brushing means, which form no part of my present invention and which may be of any approved form, for cleaning the beets, which are brought into contact therewith as the drum rotates, the beets gradually working down to the lower end of the drum, from which they may be conveniently discharged into an inclined hopper 73, the lower end of which hopper or receptacle is preferably pro-

vided with a trap-door 74, which may be opened from time to time to discharge the beets in windrows on the ground, or in any other manner desired.

From the foregoing the operation of my invention may be easily understood; but, to briefly recapitulate, the machine is so arranged that as the traction-wheels move forward twenty feet, for instance, the conveyer and belts will move the same distance. As the machine proceeds along the row of beets, which row is straddled by the machine, the plows pass on opposite sides of the row and loosen or break up the ground around the beets, but leaving the latter in the ground in their normal position. The guides next pass on opposite sides of the beet close to but not under the surface of the ground, and gather within their embrace the leaves and stems of the beet, which leaves and stems are gradually bunched and straightened as the machine proceeds until constricted into the smallest possible area, at which time the bunched stems are grasped by the conveyer at a point preferably about five inches above the ground. The conveyer now commences its ascent of the central channel, and thus pulls the beet out of the loosened soil, the beet after having been finally pulled engaging the belt-support. Now, as the beet continues its ascent it is gradually turned from a vertical to a horizontal position, owing to the warped channel and the twisted belt, in which latter position it is presented to the cutter, which severs the top and permits the beet to be discharged into the cleaning-drum, through which it passes and from whence it is discharged into the hopper, where the beets are collected and finally delivered through the trap-door. The tops on being severed from the beets are carried by the conveyer to the rear of the machine, whence they may be disposed of in any suitable manner.

If desired, I may provide an auxiliary frame B, the rear ends of the longitudinal side bars 75 75 of which are pivotally secured to the rear axle. The forward ends of the longitudinal bars terminate in arched converging ribs 76 76, the ribs meeting at their outer ends and apertured to receive the kingbolt 77 of a truck 78, to which the draft-animals are attached. Furthermore, the shaft 11, on which the plow-stocks are secured, may be extended and provided with a gear-wheel 79, loosely mounted on the shaft and adapted to mesh in a rack 80, carried by one of the longitudinal bars 75 75, the rack being inclosed in a slotted box 81, through the slot 82 of which projects the free end of the shaft 11. This construction admits of the swinging of one frame relative to the other.

Having thus fully disclosed my invention, what I claim as new is—

1. A vegetable-harvester comprising means for loosening the earth around the vegetables to be harvested, means for pulling and conveying the vegetables from the ground, and means located between the loosening means and the pulling means for collecting and bunching the tops of the vegetables and guiding them to the pulling means.

2. A vegetable-harvester comprising means for loosening the soil around the vegetables, means for bunching the tops of the vegetables, means for grasping the tops and pulling the vegetables out of the ground, and means for supporting the vegetables, the last-named means coöperating with the pulling means to convey the vegetables.

3. A vegetable-harvester comprising means for loosening the soil around the vegetables, means for seizing the tops to raise the vegetables from their beds, means for supporting the vegetables subsequent to the engagement of the tops by the raising means and a cutter to which the vegetables are conveyed and by which they are topped.

4. A vegetable-harvester comprising means for loosening the soil around the vegetables, means for seizing the tops of the vegetables to raise them from their beds, means for supporting the vegetables subsequent to their leaving the soil, a receptacle for the vegetables, the raising and supporting means coöperating to convey the vegetables to the receptacle, and being so arranged as to turn the vegetable during its progress from a vertical to a horizontal position, and a cutter for topping the vegetables while in a horizontal position.

5. A vegetable-harvester comprising means for loosening the soil around the vegetables, bunching-guides for collecting the tops, a conveyer for grasping the tops of the vegetables to raise them from their beds, traveling means for supporting the vegetables after they have been raised and a cutter for topping the vegetables.

6. A vegetable-harvester comprising soil-loosening means, pulling and conveying means and bunching mechanism located between the soil-loosening means and the vegetable pulling and conveying means.

7. A vegetable-harvester comprising soil-loosening means, bunching means, a conveyer for grasping the tops of the vegetables to pull the vegetables out of the ground, means for presenting the tops to the conveyer, a warped channel up which the conveyer passes, a cutter and a twisted supporting-belt traveling synchronously with the conveyer for supporting the vegetable sand presenting them to the cutter in a horizontal position.

8. A vegetable-harvester comprising a frame, soil-loosening means, bunching means, a set of oppositely-located horizontally-disposed wheels, a second set of oppositely-located vertically-disposed wheels situated on a plane above the first-named set of wheels,

means for imparting motion to one set of wheels, a warped double channel leading from a point intermediate the peripheries of the horizontal set of wheels to a point in approximate alinement with the inner peripheries of the vertically-disposed wheels, a plurality of toothed chains passing around and connecting the respective wheels of the sets, a cutter and a twisted supporting-belt traveling synchronously with the chains for supporting the vegetables and presenting them to the cutter in a horizontal position.

9. A vegetable-harvester comprising soil-loosening means, bunching means, a pair of endless toothed chains, adapted to grasp the tops of the vegetables when bunched, a pair of horizontally-disposed gears around which the chains pass just prior to engaging the tops, a pair of gears located rearwardly of and on a higher plane than the first-named pair, the chains passing in opposite directions around the last-named pair of gears to release the tops, means for imparting a twist to the chains as they travel from the first-named to the last-named pair of gears, a cutter and a twisted supporting-belt traveling synchronously with the chains for supporting the vegetables and presenting them to the cutter in a horizontal position.

10. A vegetable-harvester comprising soil-loosening means, bunching means, a pair of toothed chains adapted to grasp the vegetable-tops, after bunching, gears around which the chains pass, the chains arranged on an incline, and means for twisting the chains intermediate the gears, a cutter and a twisted supporting-belt traveling synchronously with the chains for supporting the vegetables and presenting them to the cutter in a horizontal position.

11. A harvester comprising soil-loosening means, bunching means, a conveyer for pulling the vegetables, a traveling support moving with the conveyer, the support comprising a belt on which the vegetables rest after they are raised out of the ground, and a cutter to which the vegetables are presented.

12. A harvester comprising soil-loosening means, bunching-guides, a conveyer for pulling the vegetables, a traveling support, the support comprising a belt on which the vegetables rest after they are raised out of the ground, curved fingers carried by the belt to engage the vegetables to hold them in position, the belt moving with the conveyer and a cutter to which the vegetables are presented.

13. A harvester comprising soil-loosening means, bunching means, a conveyer for grasping the bunched tops of the vegetables, and pulling the vegetables, a belt traveling with the conveyer on which belt the vegetables rest after they are raised out of the ground, curved fingers secured to the belt and adapted to engage and hold the vegetables, and a cutter for severing the tops from the vegetables.

14. A vegetable-harvester comprising straddle-row plows for loosening the soil, bunching-guides for collecting and bunching the tops, a conveyer for grasping the tops and pulling the vegetables, a flexible traveling belt for supporting the vegetables, means for imparting a twist to the belt, and to the conveyer, and a cutter for severing the tops from the vegetables.

15. A vegetable-harvester, comprising straddle-row plows for loosening the soil, bunching-guides for collecting and presenting the tops, an inclined traveling conveyer adapted to grasp the tops as presented and pull the vegetables out of the ground, the conveyer being twisted to turn the tops from a vertical to a horizontal position, a flexible traveling belt for supporting the vegetables, the belt located adjacent the conveyer and being twisted in conformity therewith, and a cutter for severing the tops from the vegetables.

16. A harvester comprising straddle-row plows for loosening the soil, bunching-guides for collecting and presenting the tops, an inclined conveyer adapted to grasp the tops as presented to pull the vegetables and turn them from a vertical to a horizontal position, and a flexible supporting-belt located adjacent the conveyer and traveling synchronously therewith, the support being twisted to sustain the vegetables in alinement with the tops, and a cutter for severing the tops from the vegetables.

17. A vegetable-harvester comprising straddle-row plows for loosening the soil, bunching-guides for collecting the tops, an inclined pulling and elevating conveyer adapted to grasp the tops as presented by the guides, a supporting-belt traveling adjacent the conveyer, rollers over which the belt passes, teeth on the rollers, links on the belt engaged by the teeth, and a cutter for severing the tops from the vegetables.

18. A vegetable-harvester comprising straddle-row plows, for loosening the soil, bunching-guides for collecting the tops, an inclined pulling and elevating conveyer, adapted to grasp the tops as presented by the guides, warped channels for twisting the conveyer, a supporting-belt traveling adjacent the conveyer, rolls lying in planes transverse to each other over which the belt passes and by which the belt is twisted in conformity with the conveyer and a cutter for severing the tops from the vegetables.

19. A vegetable-harvester comprising a main frame, a superstructure located rearwardly thereof, straddle-row plows for loosening the soil, bunching-guides for collecting the tops, a pulling and elevating conveyer for grasping the tops and delivering the vegetables to the superstructure in a horizontal po-

sition, a cutter for topping the vegetables and means for adjusting the cutter relative to the work.

20. A vegetable-harvester comprising soil-loosening means carried thereby, bunching-guides for collecting the tops, a cutter, means for adjusting the cutter and means for delivering the vegetables to the cutter in a horizontal position.

21. A vegetable-harvester comprising soil-loosening means, bunching-guides for collecting the tops, a pulling and elevating conveyer for grasping the tops as presented by the guides and pulling the vegetables, a belt supporting the vegetables, a cutter for topping the vegetables subsequent to the pulling and means for adjusting the cutter relative to the work.

22. A vegetable-harvester comprising soil-loosening means, bunching-guides for collecting the tops, a pulling and conveying member, adapted to grasp the tops as presented by the guides, a supporting-belt on which the vegetables are sustained, a cutter located between the conveyer and belt, fingers carried by the belt engaging the vegetables, and means located above the belt for frictionally bearing upon the vegetables during the cutting operation.

23. A vegetable-harvester comprising soil-loosening means, bunching-guides for collecting the tops, a pulling and conveying member adapted to grasp the tops as presented by the guides, a pocketed supporting-belt traveling adjacent thereto, a cutter located between the conveyer and belt, flexible fingers lying above the belt to engage the vegetables carried thereby and retain them in the pockets and resilient means bearing upon the fingers.

24. A vegetable-harvester comprising soil-loosening means, bunching-guides for collecting the tops, a pulling-conveyer, for grasping the tops as presented by the guides, a supporting-belt, a cutter for topping the vegetables subsequent to pulling, and a cleaner into which the topped vegetables are discharged.

25. A vegetable-harvester comprising soil-loosening means, bunching-guides for collecting the tops, a pulling conveyer for grasping the tops as presented by the guides, a supporting-belt, a cutter for topping the vegetables subsequent to pulling, and a rotary cleaner into which the topped vegetables are discharged.

26. A vegetable-harvester comprising a pair of plows adapted to straddle the rows and loosen the soil, bunching-guides for collecting, straightening and bunching the leaves of the vegetables, endless chains for grasping the tops of the vegetables to pull them from the loosened soil and convey them, a twisted belt for supporting the vegetables and a topper to which the vegetables are conveyed by the chains and presented by the belts.

27. A vegetable-harvester comprising a pair of plows adapted to straddle the rows and loosen the soil, bunching-guides for collecting, straightening and bunching the leaves of the vegetables, endless chains for grasping the tops of the vegetables to pull them from the loosened soil and convey them, a twisted belt for supporting the vegetables and a topper to which the vegetables are conveyed by the chains and presented by the belts, and means for raising the plows out of the ground and suspending them at the end of a row.

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

THEODOR M. E. SEIERUP.

Witnesses:

SAMUEL JOHNSON,

RALPH S. WARFIELD.