R. L. MERCHANT.

BEET HARVESTER.

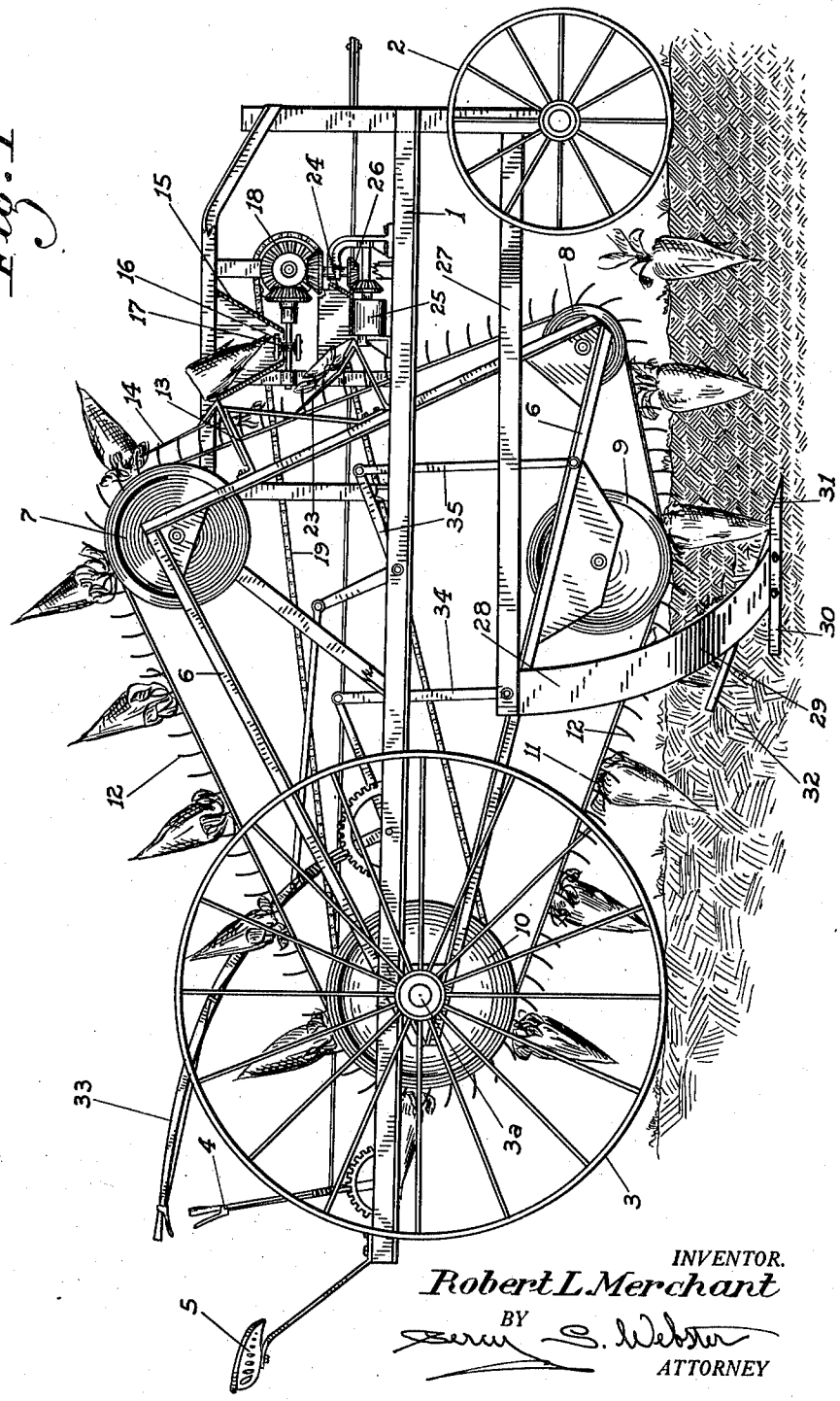
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1,315,381.

Patented Sept. 9, 1919.

2 SHEETS—SHEET 1.

Fig. 1.



INVENTOR.

Robert L. Merchant

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2 SHEETS—SHEET 2.

Fig. 3

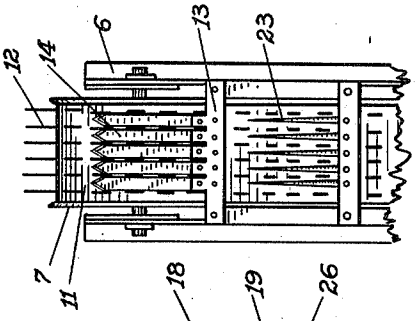


Fig. 2

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ROBERT L. MERCHANT, OF TRACY, CALIFORNIA.

BEET-HARVESTER.

1,315,381. Specification of Letters Patent. Patented Sept. 9, 1919.

Application filed October 25, 1918. Serial No. 259,604.

To all whom it may concern:

Be it known that I, ROBERT L. MERCHANT, a citizen of the United States, residing at Tracy, in the county of San Joaquin, State of California, have invented certain new and useful Improvements in Beet-Harvesters; and I do declare the following to be a clear, full, and exact description of the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this application.

This invention relates to improvements in beet harvesters, the principal object of the invention being to produce a machine which will pull the beets from the ground, top them, and deliver the topped beets to any suitable receiving device alongside the harvester.

Another object is to provide a machine which will be positive in its operation and will not bruise or otherwise spoil the beets while handling them, and which is adapted to be operated over ground which has not been plowed or dug to loosen the beets.

With the methods in vogue at the present time, either the topping and pulling is done by hand, or it takes two or more machines to do the job, one to top the beets and the other to harvest them. With my improved harvester, the cost and waste of time thus involved is done away with and the beets are pulled, topped and delivered without being touched by human hands at any stage of the process.

A still further object of the invention is to produce a simple and easily operated device and yet one which will be extremely efficient for the purpose for which it is designed.

These objects, I accomplish by means of such structure and relative arrangement of the parts as will fully appear by a perusal of the following specification and claim.

On the drawings, similar characters of reference indicate corresponding parts in the several views.

Figure 1 is a side elevation of my improved harvester, showing the same in operation, with the beet elevating chute and holding frame removed.

Fig. 2 is a front elevation of the same.

Fig. 3 is a fragmentary view showing the topping knives and the beet-removing fingers.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 designates the main frame which is suitably mounted between front wheels 2 and rear wheels 3, the front wheels being adapted to be steered by suitably arranged mechanism operable by a lever 4 positioned near the driver's seat 5.

Pivotally mounted on the rear axle 3^a are frames 6, substantially triangular in form. I have shown two sets of these frames and their coacting parts, but as each one is alike and entirely independent of the other, I will only describe the parts and working of one of them for the sake of simplicity. Each set has a pair of such frames, between the upper corners of which is turnably mounted a flanged roller 7 and at the lower corners a smaller flanged roller 8. These lower rollers are spaced somewhat from the ground, but to the rear of the roller 8 is another similar roller 9 whose lower surface is normally adjacent the ground. The axle 3^a has a friction roller 10 keyed thereto, and over all the rollers passes an endless flexible belt 11 provided at short intervals with a plurality of short spikes or prongs 12 projecting outwardly therefrom.

Just below and forward of the upper roller 7 is a bracket 13 secured to the pivoted frames 6, on which bracket are secured a plurality of knives 14 positioned between the prongs and being substantially parallel to the belt 11 at that point. These knives top the beets held by the prongs and the cut beets then are diverted into a trough 15 secured to the frame 1, having a slatted endless conveyer chain 16 passing therethrough, the sprocket 17 of the chain being suitably connected by gearing 18 and chain 19 with the rear axle 3^a. This trough extends from one side of the machine to the other, and at one end delivers to a similar trough or chute 20 having a similar driven chain conveyer 21, this latter chute being pivotally mounted at one end as at 22, and adapted to have vertical adjustment in order that it may deliver the beets thereon to wagons of different heights being drawn alongside.

Below said knives 14 and trough 15 are fingers 23, likewise secured to the bracket 13 and being spaced between the prongs 12. These fingers slant toward the belt at their free ends so as to just clear the same, so that the beet tops being held by the prongs will be forced off the prongs and onto the fingers with the downward motion of the belt 11.

These fingers are positioned to deliver into a trough 24 under the trough 15 through which runs a conveyer belt 25 actuated through gearing 26 operatively connected with the same means used to run the chain conveyer 16 of the trough above. This trough terminates a suitable distance beyond one side of the machine, the beet tops being merely deposited on the ground.

Pivotally mounted adjacent the front axle of the machine is a double frame 27 extending rearwardly on each side of the frames 6, from which frame 27 depends a pair of flat members 28 which curve toward each other at their lower ends, as at 29, so as to be spaced apart a distance less than the normal diameter of a beet, and normally extend under ground for a distance equal to the depth of a beet. To such lower ends are secured flat bars 30 which are parallel with the surface of the ground, and whose front ends are chisel shaped as at 31.

Likewise secured to the members 28 are bars 32 which slant upwardly therefrom to the rear thereof, and are parallel to the belt 11 at that point. The bars 30 are secured outside the members 28 and the bars 32 inside the same.

A lever 33, pivotally mounted to the frame 1, is connected by suitable link mechanism 34 to the rear or free end of the frame 27 in order that the same may be raised to remove the plow or beet raiser mechanism from the ground.

A link mechanism 35 is similarly connected to the frame and to the forward end of the frames 6, and to the lever 33 in order that the belt 11 on the frame may be raised from contact with the ground when desired to transport the machine from place to place.

As before stated, I have shown two sets of frames and belts adapted to harvest two rows of beets at the same time, but of course it is obvious that as many sets as may be desired or is practicable may be included in the one machine.

In the operation of the device, which may be horse drawn or motor driven, the prongs 12 impale the tops of the beets while they are still in the firm earth ahead of the plow, thus making it certain that the prongs will have a firm hold on the beets. At the same time that such firm hold is obtained, the plow follows along, and owing to its peculiar construction and to the upwardly slanting bars 32, the beets are not cut out of the ground or pulled out by the prongs, but are rather slid out vertically by the wedging action of the members 32 which bear against the sides of the beets. From this point on to the delivery of the beets to the chutes, the operation has been described.

Thus, from the foregoing description it will readily be seen that I have produced such a device as substantially fulfils the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice, such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:—

In a beet harvester the combination with a flexible belt having prongs thereon adapted to impale the beets while still fast in the ground, and sloping gradually upwardy to the rear of the point of impaling; of a plow normally positioned under ground the depth of the beets, such plow including horizontal bars adapted to cut the earth under the beets just behind the point of impaling of the prongs therewith, there being bars extending rearwardly and upwardly from the forward end of the horizontal bars, such bars being spaced apart a distance equal to the diameter of the beets near their lower ends, and having a slant parallel to that of the beet, whereby when the harvester is moving forward and the beets are impaled the beets will then be forced out of the ground by the wedging action of the slanting bars, and the prongs will not be subjected to the strain of pulling the beets out of the ground.

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

ROBERT L. MERCHANT.

Witnesses:
BERNARD PRIVAT,
FRANK H. CARTER.