UNITED STATES PATENT OFFICE.

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BEET PULLING AND TOPPING MACHINE.

1,148,492.


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To all whom it may concern:

Be it known that I, VICTOR ANTHENILL, a subject of the King of Italy, residing at Springfield, in the county of Sangamon and State of Illinois, have invented new and useful Improvements in Beet Pulling and Topping Machines, of which the following is a specification.

My invention relates to agricultural apparatus and consists of new and useful improvements in beet pulling and topping machines.

An object of my invention is to provide a puller for beets whereby the beets may be removed from the ground by being pulled in a practically vertical direction and whereby the machine will not be injured in the process; and which machine will have combined therewith and cooperating with the pulling element a device for automatically topping the beets and separating the tops from the beets in an orderly and effective manner.

With the above and other objects in view my invention consists of the novel construction hereinafter to be described and pointed out in and by the appended claims.

In the accompanying drawings, wherein is illustrated the preferred embodiment of my invention, Figure 1 designates a plan view of the beet pulling and topping machine of my invention. Fig. 2 illustrates a side elevation of the device of my invention. Fig. 3 is a side elevation of the beet top guide members, showing the arched runners thereon. Fig. 4 is a front elevation of the beet top guide member. Fig. 5 is a detail view of the drive sprocket and clutch therefrom. Fig. 6 is a sectional view of one of the beet pulling elements, taken on line 3—3 of Fig. 8. Fig. 7 is a sectional view of the beet pulling element taken on line 2—2 of Fig. 6. Fig. 8 is a fragmentary detail view of a portion of one of the beet puller arms. Fig. 9 is a fragmentary detail view of the beet top knife. Fig. 10 is a detail perspective view of the beet puller separating device and the beet top chute.

Similar reference numerals denote like or corresponding parts throughout the following specification and in the accompanying drawings.

Referring to the drawings, numeral 1 designates in general the truck upon which my beet pulling and topping device is mounted, 2 designating a front axle and 3 a rear axle therefor. The front axle is provided with traction wheels 5 and the rear axle with traction wheels 4. Positioned between axles 2 and 3 is a third axle 6 upon which are mounted two beet pulling elements designated in general by numeral 7. The beet pulling elements are slidable keyed to shaft 6 which shaft is actuated by means of gears 8 mounted on the outer ends thereof, which gears are rotated through the medium of sprocket chains 9 by gears 10 mounted on clutch 28 which is slidably mounted on the rear axle 3 and adapted to make connection with traction wheels 4.

The beet pulling element comprises a series of arms such as 11, pivoted at their inner ends to a hub 12 by pins 13, parallel lugs 14 being formed on the hub member to form bearings for the pivoting pins 13. The outer ends of arms 11 are pivoted by pins 15 to a series of ring retainers designated as 16. Each of the puller elements comprises two series of arms pivoted to the hub 12 and each half of the puller element comprises a circular ring, preferably formed of rubber, or similar suitable material, and designated as 17. Puller rings 17 are carried by the several ring retainers 16 and the two rings of each of the puller elements are adapted to normally press together, which action is due to the resiliency of the material of which the rings are formed. It will be seen by reference to Fig. 7 that the hub members 12 are vertically split in the center and that the two halves of the beet pulling element are united by means of bolts such as 18 passing through the hub parallel to the shaft 6 upon which the beet pulling element is slidably keyed.

In operation the beet pulling and topping machine of my invention is adapted to be propelled along two parallel rows of beets and the beet pulling elements are adapted to pass just above the rows.

In order that some variation may be made in the driving of my machine I have provided a beet top guide element which is illustrated in Fig. 4 and which comprises a pair of guide members 19 which may be hung in any suitable manner just in front of the beet pulling elements. The guide members 19 are adapted to be actuated sidewise by the beet tops and the motion is transmitted through the hanging device of the guide members, which consists of a forward hanger 49 and rear runner members 50, to the puller member so that the puller member may be...
actuated slightly sidewise on the axle 6, allowing some variation in the steering of the entire machine. It will be seen that the runner members 50 are arched at the rear ends and pass over pulley members 51 carried on opposite sides of the puller element. The bee tops will thus be fed directly on to the circular beet pulling element which is held sufficiently apart to receive the bee tops by a spreader device shown in detail in Fig. 10. This device comprises two parallel rollers 20 mounted on a substantially L-shaped arm 21 attached to the main truck of my device at one end and at the other end to bearing 27 carried about hub 12 of the puller element. Roller members 20 are carried by arm 21 in a position whereby the inside faces of the puller rings will pass over the outside of the roller, which position is at a sufficient distance from the ground to hold the resilient rings of the puller element apart a sufficient distance to allow the bee tops to be guided between the two puller rings 17 thereof. The resiliency of the puller rings will draw the rings together where they are not directly affected by the spreading rollers 20 and the bee tops will thus be caught between the puller rings 17 and held firmly in place while they are drawn upward with the rotation of the puller element, the bee being thus pulled from the ground. When the beets thus up-rooted have traveled with the puller element around the circumference thereof to a position adjacent the top of the puller, a knife 22, which is provided with a V-shaped blade and which is carried in a position substantially tangent to the top of the puller element, will dismember the beets, the tops remaining in the clutch of the puller member while the beets will follow the inclined chute connecting with the V-shaped knife 22, which chute is designated as 23 and which leads downward into a second inclined chute designated as 24. Chute 24 leads to the hopper 46 into which the topped beets will find their way by gravity. The tops will be carried a short distance past and under the blade of the knife 22 by the puller rings, or until the puller rings become affected by the spreading rollers 20, when the tops will be released. The tops will then fall downward inside of the puller rings where they will be caught by downward inclined chute 25 and carried outward from between the puller rings and dumped upon the ground. Chute 25 is supported at the upper end by bearing 27 carried by hub 12 of the puller element, and at the lower end by arm 21.

I have provided clutches which may be of the form shown in Fig. 5 and designated as 28, which clutches are sidable upon axle 3 and which clutches are adapted to make connection with the traction wheels 4, in any suitable manner, as by pins 52 engaging with holes 53 in the wheel hubs. A simple method of controlling the clutches is also shown in Fig. 5 whereby bell cranks such as 29 pivoted by pin 30 to the frame truck 1 are incorporated. One end of the bell crank makes connection with an actuating rod 31 by means of pin 32 while the other end of the bell crank is attached to the clutch pin 33 by means of slot 34. Actuating rods 31 are controlled through the medium of shaft 54 at the forward end of the machine by a lever 35 adapted to be actuated from the seat 47 carried on the forward end of the truck frame.

From the foregoing description, it will be readily seen that I have provided an efficient beet pulling machine whereby the beets may be removed from the ground by being pulled in a practically vertical direction without injury to the beets; and that I have combined therewith a cooperating device for automatically toping the beets, whereby the beets may be separated from the tops and collected in an orderly and effective manner.

While I have herein described the preferred embodiment of my invention, I do not wish to be limited thereto, except for such limitations as the claims may import, as it is obvious that the details of construction and arrangement of the several details may be varied in many ways.

Having thus described my invention, what I claim is:

1. In a beet pulling and topping machine, the combination with a wheeled truck, of a revolving puller element comprising two coacting resilient rings having their inside faces normally pressed together by their own resiliency and flexibly supported by inwardly inclined pivoted arms about a driven shaft, parallel spreading rollers positioned between the inside faces of said resilient rings at a predetermined point in the circumference of the rings whereby the rings may travel apart for a portion of their circumference during each revolution, means for guiding beet tops in the spread-apart space between said rings whereby the beet tops may be caught between the rings and drawn out of the ground, a beet topping knife mounted in a position substantially tangent to the revolving puller element, inclined chutes connecting with said beet topping knife and leading to a beet hopper, a beet top chute extending out of said spread-apart portions of the puller element, and means for actuating said puller element, substantially as described.

2. In a beet pulling and topping machine, the combination on to a wheeled truck, of beet top guide members suspended by a pivoted forward hanger to the wheel truck and extending on each side of a row of beets, a runner member extending from each of said...
beet top guide members upward and backward to flanged runways carried on each side of a beet puller element, arches on said runners adapted to ride in said runways, said guide members adapted to be actuated sidewise by the position of the beet tops, revolving beet puller elements slidably keyed to a drive shaft, and means for revolving said puller elements, substantially as described.

3. In a beet pulling and topping machine, the combination with a wheeled truck, of a drive shaft mounted thereon, puller elements comprising coacting resilient rings supported by pivoted arms mounted on the drive shaft, sprocket wheels on said drive shaft, sprocket wheels removably mounted on the truck wheels, and sprocket chains connecting the sprocket wheels on the truck wheels with the sprocket wheels on the drive shaft.

4. In a beet pulling and topping machine, the combination with a wheeled truck, of puller elements mounted to rotate with a driven shaft, said puller elements comprising coacting resilient rings supported by pivoted arms upon hub members, said hub members slidably keyed to said driven shaft, and means for revolving said driven shaft, substantially as described.

5. In a beet pulling and topping machine, a revolving puller element comprising coacting resilient rings supported by pivoted arms upon hub members, the inner faces of said rings being normally pressed together by the resiliency of the rings, a spreading device carried by said machine and having spreading means placed between the inside faces of the coacting rings at a predetermined point in the circumference thereof whereby the normally pressed-together inside faces of the coacting rings may travel over said spreading means and out of pressed-together relation a portion of their circumference, a topping knife carried above said puller element and coacting therewith, and means for revolving said puller element, substantially as described.

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