H. S. RUSSELL.

MACHINE FOR TOPPING BEETS.

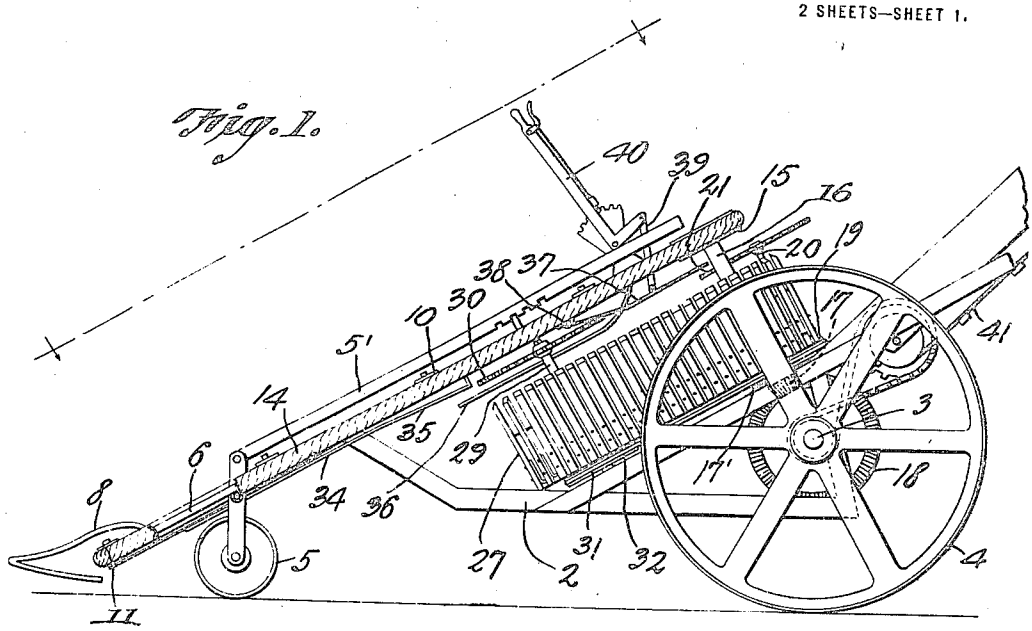
APPLICATION FILED MAR. 13, 1915.

1,166,083.

Patented Dec. 28, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



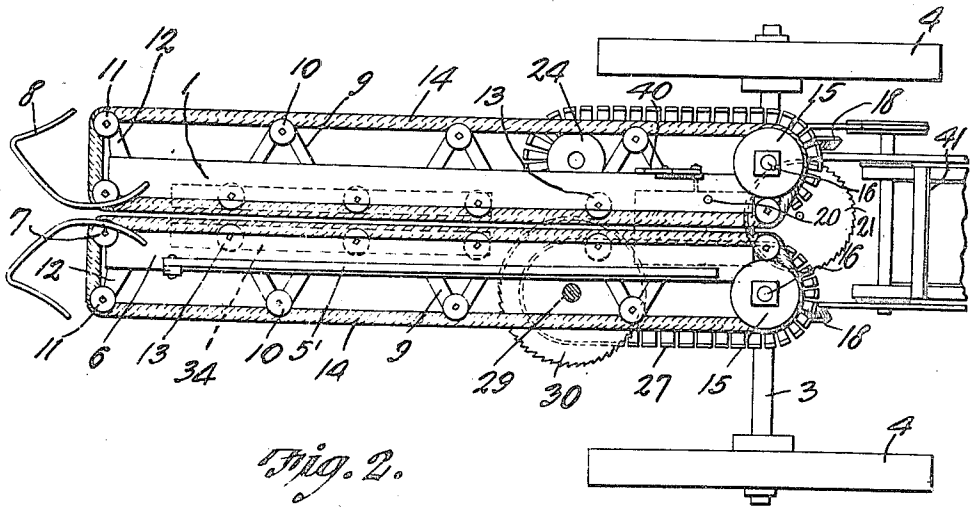


Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

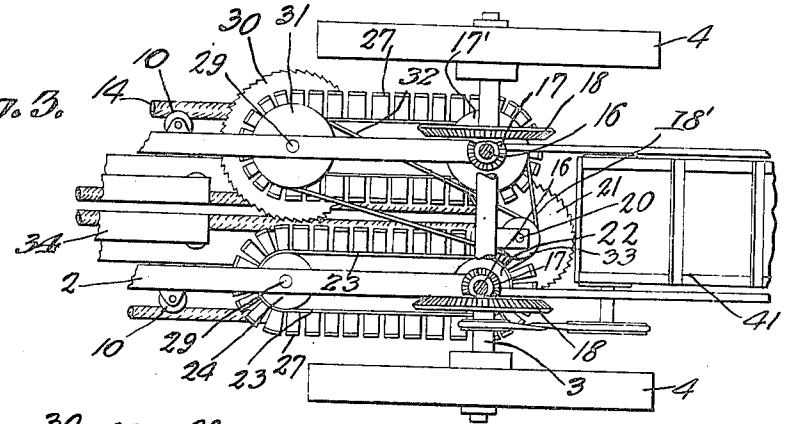
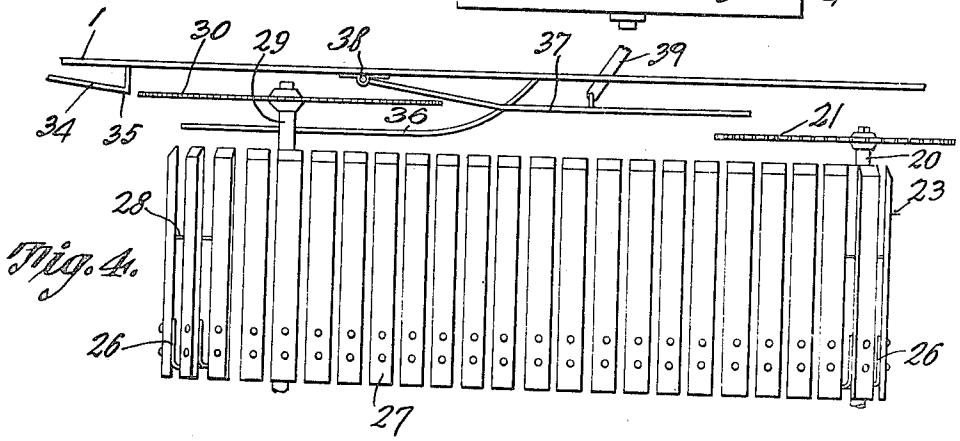


Fig. 4.



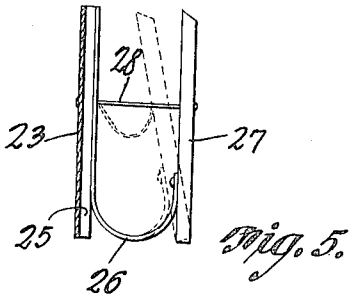


Fig. 5.

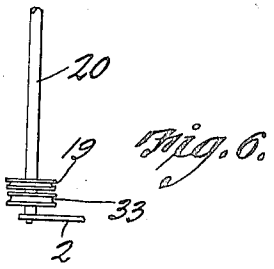


Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

HIRAM S. RUSSELL, OF PROVO, UTAH.

MACHINE FOR TOPPING BEETS.

1,166,083. Specification of Letters Patent. Patented Dec. 28, 1915.

Application filed March 13, 1915. Serial No. 14,136.

To all whom it may concern:

Be it known that I, HIRAM S. RUSSELL, a citizen of the United States, residing at Provo, in the county of Utah and State of Utah, have invented a new and useful Machine for Topping Beets, of which the following is a specification.

This invention relates to machines for removing the tops from beets, one of the objects of the invention being to provide novel means for engaging the tops of the beets thereby to hold the beets suspended while being elevated to cutting means.

A further object is to provide means whereby should the beets be held too high, while approaching the cutting means, they will be depressed automatically thus to remove the top or crown portion of the beets from the path of the cutter so that only the tops will be severed.

Another object is to provide supplemental means for gripping the beets independently of the tops so as to hold them after the tops have been removed, whereby the top or crown portion of each beet can be cut off, there being a novel form of gage for regulating the size of the severed portion so that waste of the beets will be reduced to the minimum.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a side elevation of the machine. Fig. 2 is a plan view taken in the direction of the arrows in Fig. 1. Fig. 3 is a bottom plan view of the rear portion of the machine, the elevator being broken away. Fig. 4 is an enlarged side elevation of the beet gripping means, the cutters and the gages. Fig. 5 is a transverse section through one flight of one of the beet gripping aprons. Fig. 6 is a detail view of the shaft of the rear cutting element.

Referring to the figures by characters of of reference 1 designates inclined beams forming part of a frame 2 which is supported at its rear end by a revoluble axle 3, this axle in turn being secured to and supported by ground engaging wheels 4. The front portion of the frame may be supported by one or more wheels 5 adjustable angularly to raise and lower the frame, a bar 5′ being provided for this purpose. A continuous passage is formed between the beams 1 as shown particularly in Fig. 2. The frame 2 has forwardly extending arms 6 or the like the front end portions of which carry sheaves 7 while extending forwardly from these arms are forwardly diverging gathering fingers 8 of any preferred form. Brackets 9 are extended outwardly from the sides of the beams 1 and carry guide sheaves 10 and additional guide sheaves 11 are carried by brackets 12 outstanding from the arms 6. Additional sheaves are supported under the beams 1 close to the inner sides thereof at regular intervals, these sheaves being indicated at 13. The various sheaves 7, 10, 11 and 13 are engaged by endless belts 14 preferably made of heavy rope, the inner flights of the belts being parallel and close together so as to constitute yieldable top gripping means. The rearmost portions of the belts engage actuating sheaves 15 secured to the upper ends of shafts 16 which, in turn, are journaled in the frame 2 and are provided at their lower ends with bevel gears 17 meshing with gears 18 on the revoluble axle 3.

The shafts 16 are disposed at right angles to the plane of movement of the belts 14 and one of these shafts is provided, at its lower end, with a sheave 17′ designed to transmit motion through a belt 18′ to a smaller sheave 19 secured to an upstanding shaft 20 the upper end of which is located below the plane of movement of the belts 14 and is provided with a rotary cutter 21 preferably in the form of a saw. This saw is located under the rear end portion of the pass between the belts 14.

Each of the shafts 16 has a cylinder 22 mounted for rotation therewith and each of these cylinders is engaged by an endless belt 23 likewise mounted upon a cylinder 24 supported by the frame 2 in front of and parallel with the cylinder 22. Each of these endless belts is provided, upon its outer face, with slats 25 parallel to each other, each slat having a U-shaped spring 26 connected thereto and to a clamping strip 27, the

spring 26 serving to press the clamping strip 27 away from the slats 25 but such movement being limited by a flexible restraining element 28, as shown in Fig. 5. The inner flights of the two endless belts are substantially parallel and are supported in planes passing upwardly through the inner flights of the belts 14. The cylinders 24 are mounted to rotate loosely on their shafts 29 and one of these shafts has a cutting element in the form of a circular saw 30 or the like. This shaft to which the saw is attached is provided with a sheave 31 at its lower end, the said sheave receiving motion through an endless belt 32 from a sheave 33 corresponding with sheave 19 and which is likewise secured to the saw shaft 20. Thus it will be seen that when the apparatus is set in motion the saw shaft 20 will be driven through belt 18', while the saw shaft 29 will be driven from shaft 20 through the belt 32. It is to be understood that the shaft 20 is not to be located where it will in any way choke the passage between the inner flights of the endless aprons 23. For example, and as shown in Figs. 2 and 3, this shaft may be extended close to one of the cylinders 15 and between the flights of one of the endless aprons.

Arranged underneath and close to the inner sides of the beams 1 are longitudinally extending deflecting strips 34, the upper end portions of which are arranged at angles to the lower portions, as shown at 35, these angularly disposed portions being located close to the front cutter 30. Gripping rods 36 extend under the cutter 30 at the sides of the path along which the beets travel and arranged at the upper or rear ends of these gripping rods is a gage plate 37 hingedly mounted, as at 38, and connected as by means of a link 39, to an adjusting lever 40 which can be locked in any position desired. This gage plate extends at its free end close to the rear cutter 21.

The machine constituting the present invention is adapted to straddle a row of beets and the fingers 8 will gather the tops of the beets so that they will enter between the inner flights of the rope belts 14 where they will be gripped with sufficient force to cause the beets to be pulled out of the ground from which they have been previously loosened in any preferred manner. The beets will hang suspended by their tops as they move upwardly between the inner flights of the belts 14 and the deflecting portions 35 of the strips 34 will operate to push downwardly on the beets so as to remove the crown portions of the beets from in front of the cutter 30. Consequently as the beets are carried upwardly the tops will be brought against the cutter 30 while the body of each beet will be received between the endless belts 23, any remaining tops on the beet being held between the rods 36. As the body portion of the beet passes between the belts 23, the strips 27 will yield inwardly so that the beet will be yieldingly held and thus carried rearwardly toward the rear cutter 21. Should the crown portion of the beet project upwardly too far above the belts 23, it would be pushed downwardly by the gage 37 so that a predetermined thickness of beet will be cut off of the top thereof by the cutter 21. After the tops and the crown portion have been removed from the beet, said beet is dropped onto an elevator indicated generally at 41 and which serves to convey it to any suitable point.

By means of the lever 40 the gage 37 can be adjusted upwardly or downwardly, thus to vary the thickness of the crown portion to be cut off.

What is claimed is:—

1. A machine for topping beets, including opposed endless flexible top gripping elements, endless flexible beet gripping elements thereunder and spaced to receive a beet therebetween, means extending between the top and beet gripping elements for severing the tops from the beet, and deflecting means in the path of the beet for directing the beet downwardly out of line with the cutting element.

2. A machine for topping beets, including spaced flexible top gripping elements in the form of endless belts, spaced flexible beet gripping elements in the form of endless belts, cutting elements interposed between the gripping elements at different distances from the top gripping elements, means for actuating the gripping elements in unison to convey the tops of a beet against the first cutting element and to convey the beet against the second cutting element to remove the crown portion thereof.

3. A machine for topping beets, including endless flexible top gripping elements, endless flexible beet gripping elements thereunder, said elements being arranged in pairs, means for actuating the elements simultaneously to convey a beet and its tops in one direction, a cutting element interposed between said pairs for removing the tops from the beet, a cutting element interposed between said pairs for removing the crown portion from the beet, means for deflecting beets downwardly below the first cutting element, and adjustable means for regulating the thickness of the crown portion removed by the second cutting element.

4. A machine for topping beets, including a pair of flexible endless top gripping elements, a pair of endless flexible beet gripping elements thereunder, said last named elements including belts, spring controlled strips movable with the belts for engaging the beets yieldingly, means for limiting the movements of the strips away from the belts.

and a cutting element interposed between the pairs of gripping elements for severing the tops from the beets.

5. A machine for topping beets, including a pair of flexible endless top gripping elements, a pair of endless flexible beet gripping elements thereunder, each of said last mentioned elements including a belt, springs upon the outer faces of the belt, beet engaging strips connected to the springs and normally pressed outwardly thereby, means for limiting the outward movement of the strips relative to the belt, and means for severing the tops held by the top gripping elements from the beet held by the beet gripping elements.

6. A machine for topping beets, including a pair of flexible endless top gripping elements, a pair of endless flexible beet gripping elements thereunder, each of said last mentioned elements including a belt, springs upon the outer face of the belt, beet engaging strips connected to the springs and normally pressed outwardly thereby, means for limiting the outward movement of the strips relative to the belt, and means for severing the tops held by the top gripping elements from the beet held by the beet gripping elements, said gripping elements being movable in unison to feed the beets against the severing elements.

7. A machine for topping beets, including a pair of flexible endless top gripping elements, a pair of endless flexible beet gripping elements thereunder, each of said last mentioned elements including a belt, springs upon the outer face of the belt, beet engaging strips connected to the springs and normally pressed outwardly thereby, means for limiting the outward movement of the strips relative to the belt, means for severing the tops held by the top gripping elements from the beet held by the beet gripping elements, said gripping elements being movable in unison to feed the beets against the severing elements, and a gage adjustably mounted adjacent the cutting element for deflecting the crown portion of each beet downwardly relative to the cutting element.

8. A machine for topping beets, including means for gripping the tops of a beet and conveying the beet upwardly and rearwardly, means for gripping the body of the suspended beet and conveying it upwardly and rearwardly with the tops, means for severing the tops from the body of the beet during such movement, and means for subsequently severing the crown portion of the beet from the body.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HIRAM S. RUSSELL.

Witnesses:
J. A. McIntosh,
W. A. McIntosh.