S. J. WILSON.

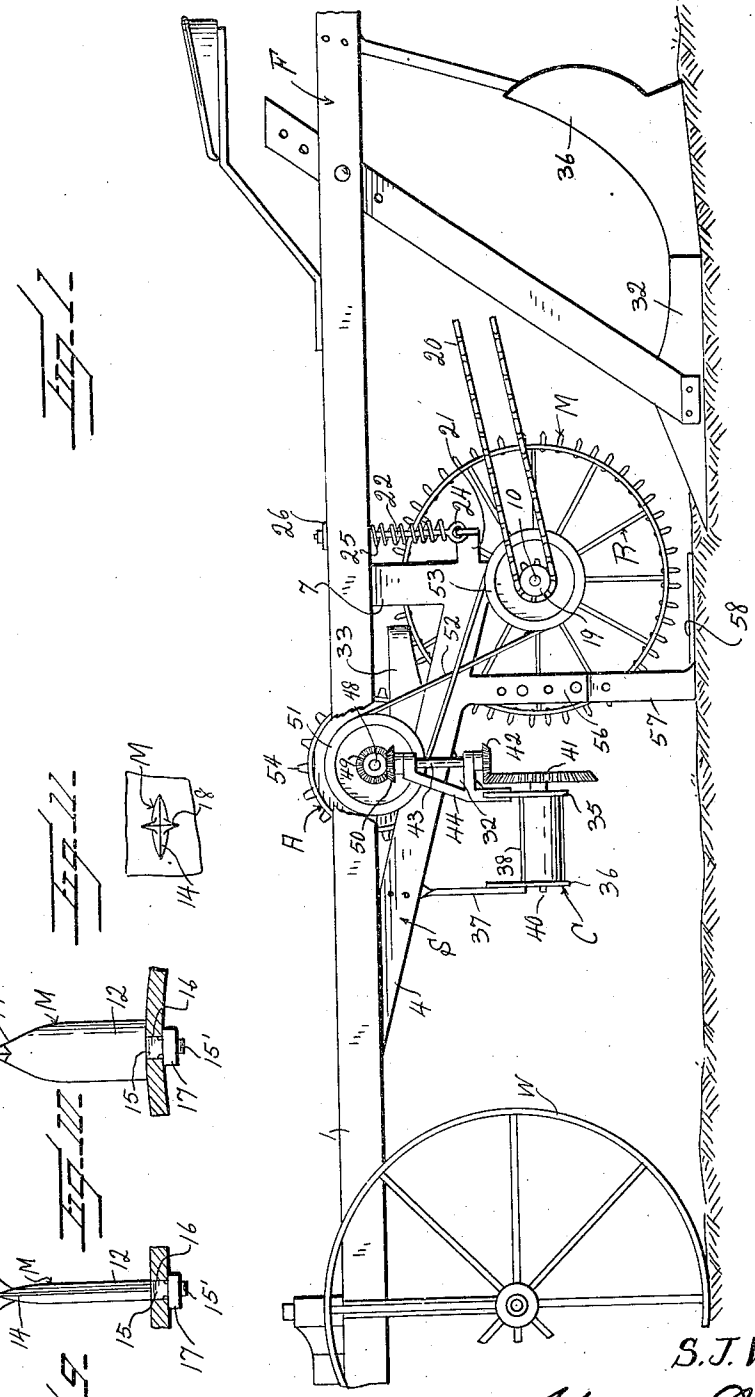
BEET TOPPING APPARATUS.

APPLICATION FILED JAN. 11, 1919.

1,369,721.

Patented Feb. 22, 1921.

4 SHEETS—SHEET 1.



Inventor

S. J. Wilson

By Watson E. Coleman

Attorney

S. J. WILSON.

BEET TOPPING APPARATUS.

APPLICATION FILED JAN. 11, 1919.

1,369,721.

Patented Feb. 22, 1921.

4 SHEETS—SHEET 2.

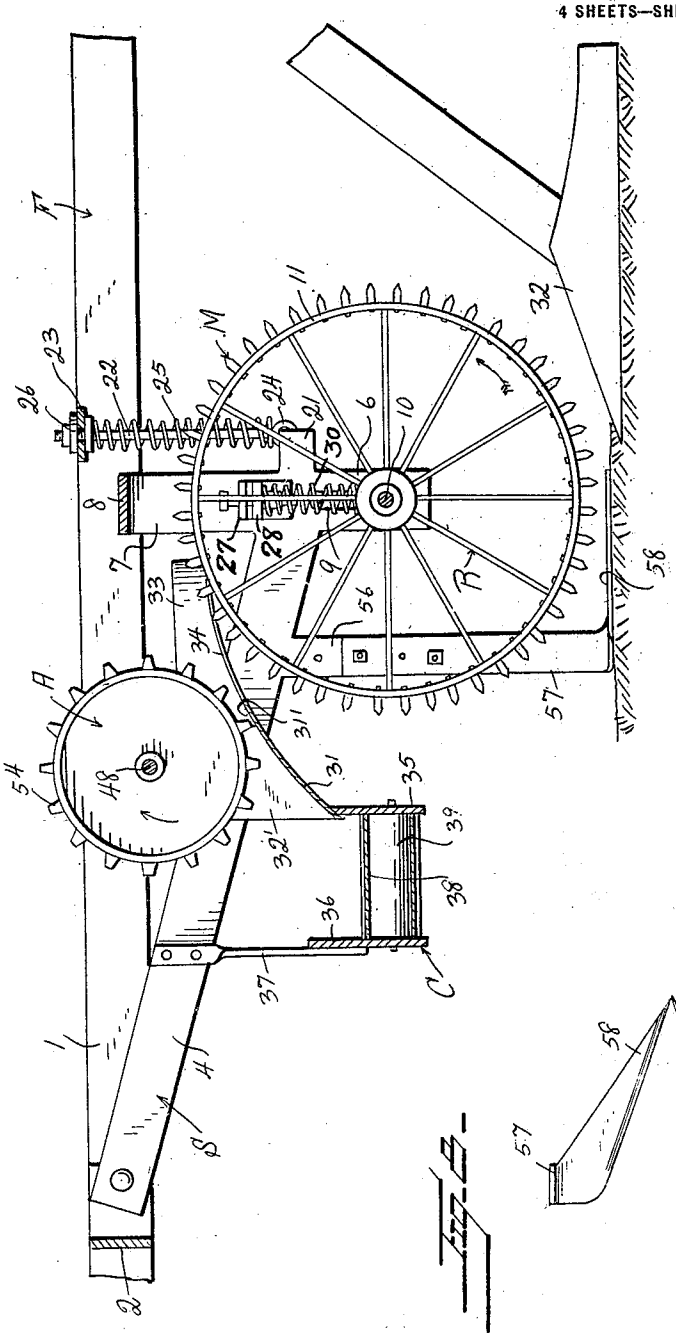


Fig. 2.

Fig. 3.

Inventor

S. J. Wilson

By Watson E. Coleman

Attorney

S. J. WILSON.

BEET TOPPING APPARATUS.

APPLICATION FILED JAN. 11, 1919.

1,369,721.

Patented Feb. 22, 1921.

4 SHEETS—SHEET 3.

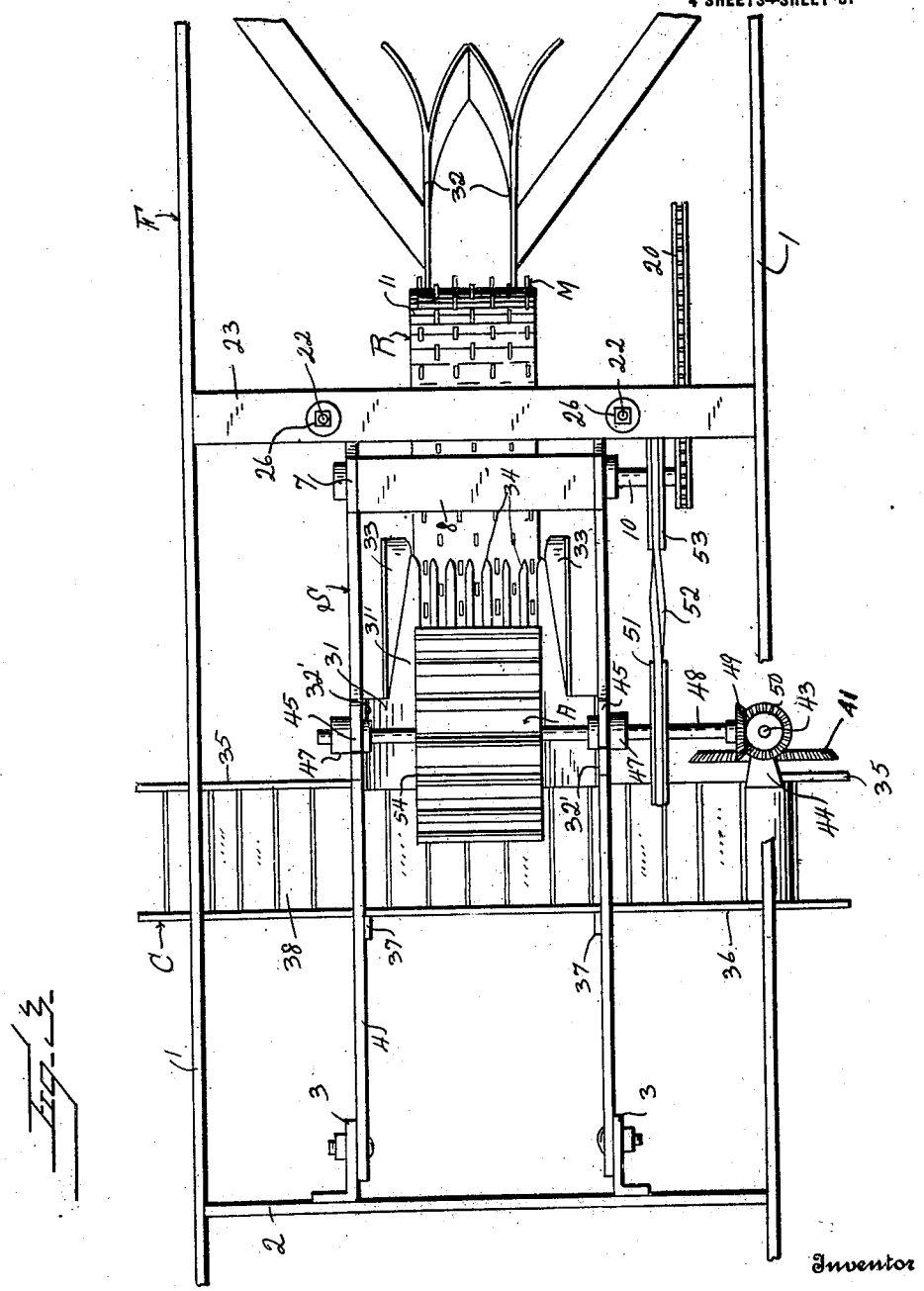


Fig. 3.

Inventor

S. J. Wilson

By Watson E. Coleman

Attorney

S. J. WILSON.

BEET TOPPING APPARATUS.

APPLICATION FILED JAN. 11, 1919.

1,369,721.

Patented Feb. 22, 1921.

4 SHEETS—SHEET 4.

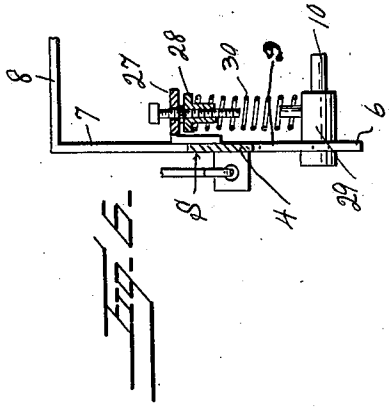


Fig. 5.

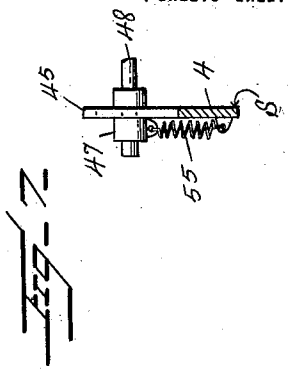


Fig. 7.

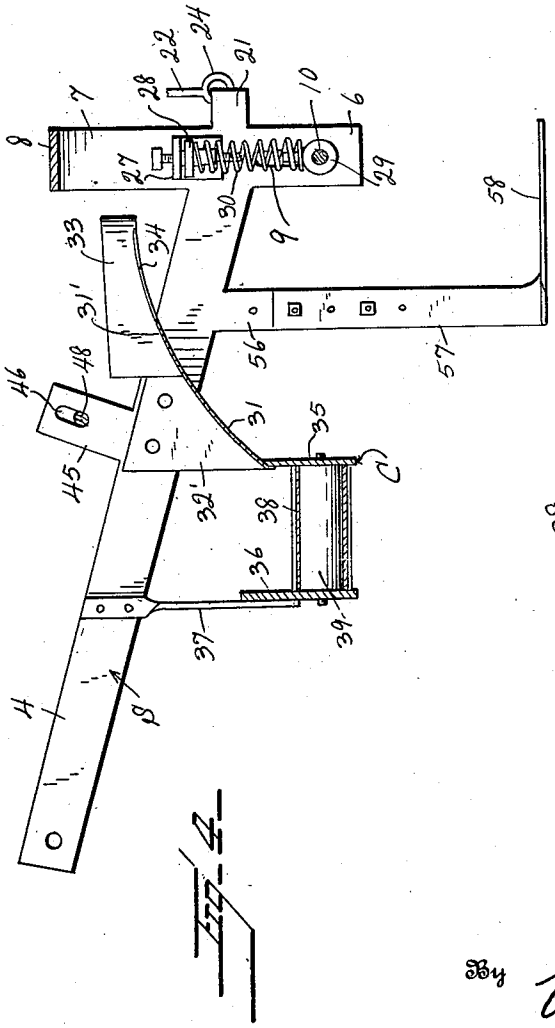


Fig. 4.

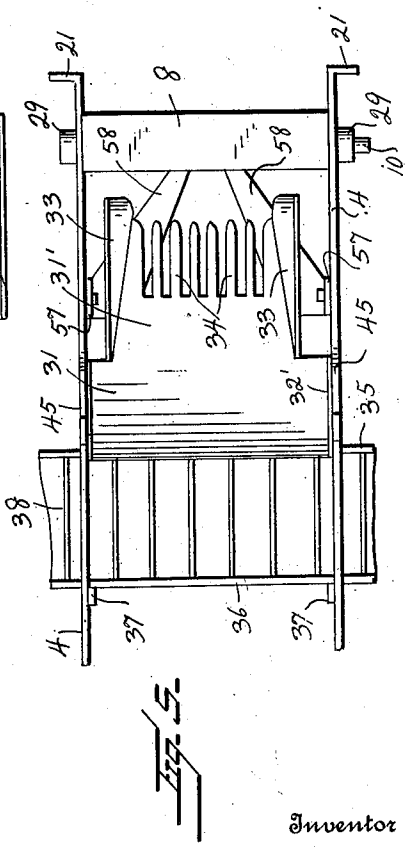


Fig. 6.

Inventor

S. J. Wilson

By Watson E. Coleman

Attorney

UNITED STATES PATENT OFFICE.

SAMUEL J. WILSON, OF GREAT FALLS, MONTANA, ASSIGNOR OF ONE-HALF TO PERRY BASINGER, OF CLYDE, IDAHO.

BEET-TOPPING APPARATUS.

1,369,721. Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed January 11, 1919. Serial No. 270,691.

To all whom it may concern:

Be it known that I, SAMUEL J. WILSON, a citizen of the United States, residing at Great Falls, in the county of Cascade and State of Montana, have invented certain new and useful Improvements in Beet-Topping Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a beet topping apparatus, and it is an object of the invention to provide a novel and improved apparatus of this general character wherein the tops of the beets are removed before the beets have been lifted from the ground.

Another object of the invention is to provide a novel and improved beet topping apparatus adapted to be employed in connection with a beet harvesting machine, and which apparatus is positioned in advance of the beet lifting mechanism so that the tops together with the crowns of the beets will be removed before the beets are taken from the ground.

An additional object of the invention is to provide a novel and improved apparatus of this type including a cutting means adapted to sever the crowns of the beets, together with a revolving lifting member engaging the severed crowns and rotating about the substantially horizontal axis.

A still further object of the invention is to provide a novel and improved apparatus of this kind embodying a cutting means and a revolving elevating means for the severed tops, together with means coacting with the revolving lifting member for disengaging the severed tops therefrom so that said severed tops may be delivered to a conveyer or the like for delivery at one side of the apparatus.

Furthermore, it is an object of the invention to provide a novel and improved apparatus for topping beets including a revolving lifting means for the severed tops, and which means is supported for yielding movement in a vertical plane to compensate for tops or crowns of varying sizes.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved beet topping apparatus whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a fragmentary view in side elevation with a portion broken away illustrating a beet topping apparatus constructed in accordance with an embodiment of my invention;

Fig. 2 is a fragmentary view in vertical section taken longitudinally of the device as illustrated in Fig. 1, but on an enlarged scale.

Fig. 3 is a view in top plan with portions broken away of the structure as particularly disclosed in Fig. 2;

Fig. 4 is a view partly in elevation and partly in vertical section taken through the vertically swinging support frame as included in my invention as herein disclosed, with certain of the parts carried thereby disclosed in section;

Fig. 5 is a view in top plan of the portions of the device as particularly illustrated in Fig. 4;

Fig. 6 is a fragmentary view partly in section and partly in elevation illustrating in detail a mounting for one end portion of of the shaft of the rotary elevating means;

Fig. 7 is a fragmentary view partly in section and partly in elevation illustrating a mounting for an end portion of the shaft of the rotary clearing member coacting with the rotary lifting member as herein disclosed;

Fig. 8 is a view in top plan of the cutting or severing member as herein employed, detached;

Fig. 9 is a view in front elevation of one of the penetrating members carried by the rotary lifting member, said rotary lifting member being fragmentarily indicated in section;

Fig. 10 is a view in side elevation of the penetrating member as disclosed in Fig. 9, the coacting portion of the rotary lifting member being also indicated in section; and

Fig. 11 is a fragmentary view illustrating in top plan the penetrating member as disclosed in Fig. 10.

As disclosed in the accompanying drawings, F denotes an elongated frame of sub-

stantially rectangular form adapted to be supported in a conventional manner at its opposite end portions for travel over the ground surface and preferably by wheels. One of the supporting wheels W is disclosed in Fig. 1 of the accompanying drawings. The rear portion of the frame F is also indicated to support a beet harvesting mechanism preferably of a type disclosed in my prior Patent No. 1,285,529, issued Nov. 19, 1918. As disclosed in Figs. 1, 2, and 3 of the accompanying drawings, 32 denotes the digging blades and 36 indicates a directing plow or shovel as comprised in the machine as embodied in the disclosure of that patent.

The forward end portions of the side members 1 of the frame F are connected by the transversely disposed member or beam 2. The member or beam 2 at its central portion is provided with a pair of inwardly directed spaced brackets 3, and pivotally engaged with said brackets are the forward end portions of the side members 4 of a vertically swinging frame S. The frame S is disposed downwardly and rearwardly in a direction longitudinally of the frame F and the lower or rear end portions of the side members 4 thereof are provided with substantially vertically disposed arms 6 depending from said side members 4 and with the upstanding arms 7 in alinement with the arms 6. The upper ends of the arms 7 are connected by the transversely disposed member or beam 8.

Each of the arms 6 is provided with a longitudinally disposed slot 9 in which is slidably engaged an end portion of a shaft 10. The shaft 10 is disposed in a direction transverse to the frame F and fixed to said shaft 10 in longitudinal alinement with the digging blades 32 is a rotary lifting member R. The member R is in close proximity to the blades 32 and also in close proximity to but free of contact with the ground level as is particularly illustrated in Figs. 1 and 2 of the accompanying drawings.

The member R is cylindrical in form and includes the annular rim 11 of a width to extend outwardly of the blades 32 and radiating from said rim 11 are the penetrating members M.

The members M comprise a plurality of series disposed transversely of the rim 11, said series of members being equidistantly spaced with the members M of one series staggered with relation to the members of the adjacent series. As illustrated in Figs. 9, 10, and 11, each of the members M comprises a blade 12 having its outer end portion 14 pointed and with its opposite faces convex so that the edges of the blade 12 are substantially sharp. The inner or base portion of the blade 12 at substantially its center is provided with a shank 15 preferably square in cross section, and which snugly fits within a correspondingly formed opening 16 produced in the rim 11 of the member R. The outer portion 15′ of the shank 15 is circular and has threaded thereon a clamping nut 17 which coacts with the inner or under face of the rim 11 to effectually maintain the member M in applied position. As is particularly illustrated in Figs. 10 and 11 the edges of the blade 12 are disposed in a direction substantially at right angles to the axis of the member R or more particularly the shaft 10. The outer or pointed extremity 14 of the blade 12 is provided with the outwardly and oppositely directed lips 18 each preferably substantially in the form of an inverted triangle with the free edges thereof sharpened. The lips 18 are also disposed in a direction longitudinally of the member R or in a direction transversely of the frame F.

An end portion of the shaft 10 has affixed thereto a sprocket wheel 19 around which is directed a chain 20 adapted to be driven in any desired manner by rotating part of the beet harvesting machine (not shown). It will also be understood that any means may be employed for rotating the shaft 10 which meets the requirements of practice. The rear or lower ends of the side members 4 of the swinging frame S are provided with the extensions 21, and engaged with each of said extensions 21 is the lower end portion of a vertically disposed rod 22 having its upper end portion loosely directed through the transversely disposed member or beam 23 connecting the side members of the frame F. As herein disclosed, the lower end portion of the rod 22 is provided with an enlarged eye 24 which is engaged with an extension 21 and interposed between said eye 24 and the transversely disposed member or beam 23 is an expansible member 25 herein disclosed as a coiled spring encircling said rod, and which serves to urge downwardly the rear portion of the frame S but permits a yielding upward swinging movement thereof.

Each of the rods 22 has engaged with the upper end portion thereof and above the member or beam 23 a stop 26 herein disclosed as a nut and coacting washer, and which stop serves to limit the downward movement of the rod 22 and consequently the downward swinging movement of the frame S. It will be self evident that the tension of each of the members 25 may be regulated by imparting longitudinal movement to the coacting rod 22 relative to the member or beam 23, and which adjustment may be accomplished by a requisite turning movement of the stop 26.

Each of the upstanding arms 7 is provided with an inwardly directed bracket 27 having adjustably engaged therewith and positioned therebeneath a plate 28. Interposed between the plate 28 and the adja-

cent bearing 29 for the shaft 10 is an expansible member 30 herein disclosed as a coiled spring, and which serves to constantly urge the shaft 10 or more particularly the bearing 29 toward the lower end of the slot 9 in the adjacent depending arm 6, whereby the rotary lifting member R is further supported for yielding vertical movement and independently of the swinging frame S.

31 denotes a downwardly and forwardly curved apron provided at its opposite ends with the upwardly directed flanges 32′ suitably anchored to the inner or opposed faces of the side members 4 of the swinging frame S whereby the apron 31 is held in desired position. The central portion of the apron 31 at its upper edge is provided with a rearwardly directed extension 31′ having its sides provided with the upstanding guard flanges 33, and the free or rear portion of the extension 31′ centrally thereof is provided with the resilient teeth or tines 34 which contact with the periphery of the rim 11 of the member R between the members M radiating from said member R for a purpose which will be hereinafter more particularly referred to.

The forward or lower end marginal portion of the apron 31 is engaged with a side board 35 of a transversely disposed conveyer frame C and affords a means for maintaining said conveyer frame C in applied position.

The second side board 36 of the frame C has engaged therewith the hangers 37 depending from the side members 4 of the swinging frame S, and which hangers afford additional means for maintaining the conveyer frame C in applied position.

The conveyer frame C is positioned below the side members 4 of the swinging frame S and is of a length to terminate beyond the opposite sides of the frame S. 38 denotes an endless carrying belt traveling between the side boards 35 and 36, and upon the upper stretch of which the apron 31 discharges. The belt 38 is directed around a drum 39 rotatably supported by the side boards 35 and 36 adjacent each end thereof, and the supporting shaft 40 for one of the drums 39 has affixed thereto a gear 41 meshing with a bevel gear 42 arranged at the lower end portion of a vertically disposed shaft 43 supported by an upstanding bracket 44 carried by the inner side board 35 so that upon requisite rotation of the shaft 43 proper travel will be imparted to the carrying belt 38.

Each of the side members 4 of the swinging frame S above the apron 31 is provided with an upstanding arm 45 provided with a longitudinally disposed slot 46 in which is slidably mounted a bearing 47 for an end portion of a shaft 48. The shaft 48 is disposed transversely of the frame S and an end portion of said shaft 48 has affixed thereto a gear 49 in mesh with a gear 50 carried by the upper end portion of the shaft 43. The shaft 48 has also affixed to an end portion thereof a pulley 51 around which is disposed a belt 52 which is also directed around a pulley 53 affixed to the shaft 10. As is particularly illustrated in Figs. 1 and 3, it is to be noted that the belt 52 is crossed so that the shafts 10 and 48 will be caused to rotate in unison but in reverse directions.

Affixed to the shaft 48 substantially midway between the side members 4 of the frame S is a clearing member A. The member A is cylindrical in form, and is of a length to extend beyond the opposite sides of the teeth or tines 34 and the periphery of said member is provided with a series of longitudinally disposed and equidistantly spaced calks 54 which come into close proximity to the apron 31 and its extension 31′ during the rotation of the member A.

Each of the bearings 47 of the shaft 48 has engaged therewith the upper extremity of a retractile member 55, and the opposite portion of said member is suitably anchored to a side member 4 of the frame S so that the shaft 48 is constantly urged downwardly yet is permitted to have upward yielding movement as the necessities of practice may require and for a purpose which will be hereinafter more particularly referred to. Depending from the side members 4 of the swinging frame S at a point between the arms 6 and the conveyer frame C, are the arms 56. Adjustably engaged with each of the arms 56 is the upper end portion of the vertically disposed shank 57 provided at its lower end portion with the rearwardly disposed and inwardly inclined cutting blade 58, and which blade is substantially horizontal.

The blades 58 are of a length to terminate rearwardly of the center of the member R with their extremities substantially in contact.

In practice the cutting blades 58 contact with the ground and are arranged at opposite sides of a row of beets, and as the device advances the blades 58 cut into the crowns of the beets from both sides, and about the time a crown is completely severed the same is penetrated by one or more members M of the member R at a point slightly in advance of the vertical center of the member. The severed crown is carried upwardly by the member R and after the crown has passed over the vertical center of the member R it is engaged by certain of the teeth or tines 34 and released from the member R. The released crown then travels over the apron 31 and is delivered upon the belt 38 and carried to one side of the device. The release of a crown from a member M is further facili-

tated by the clearing member A due to the direction of travel of said member A, and which operation is further facilitated by the calks 54. The member A further operates to facilitate and assure the delivery of a crown upon the belt 38. The guard flanges 33 particularly serve to assure delivery upon the extension 31′ of the apron 31 of straggling leaves which may be delivered from the member R. It is also to be noted at this time that the lips 18 of each of the members M assure an effective engagement of the member with a beet crown, so that the lifting of said crown together with its top is assured.

By having the cutting blades 58 disposed rearwardly in converging relation it will be at once self evident that the requisite cutting action is provided irrespective of the size of the beet. It is also to be stated that the larger the beet in diameter the greater the projection above the ground, and therefore upward movement of the swinging frame S and the similar movement of the member R is of advantage, as the member R will be permitted readily to rise in accordance with the occasions of practice. This is also of advantage because the greater the diameter of the beet the stronger a member M will contact with the crown before the complete severance thereof. It will therefore be at once self evident that with my improved device the diameter of the beet itself determines the amount of top cut off.

From the foregoing description, it is thought to be obvious that a beet topping apparatus constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A machine of the class described including a lifting member, an apron coacting with said lifting member and upon which the same discharges, a movable clearing member supported above the apron, and means for driving said clearing member, said clearing member having vertical movement independently of its driving means.

2. A machine of the class described including a frame supported for vertical movement, lifting means supported by the frame, a conveyer carried by the frame, an apron supported by the frame and discharging upon the conveyer, the lifting means discharging upon the apron, clearing means carried by the frame above the apron, means for driving the clearing means, and an operative connection between the clearing means and the conveyer whereby the conveyer is operated by the clearing means.

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

SAMUEL J. WILSON.

Witnesses:
J. J. Milch,
H. A. Prescott.