

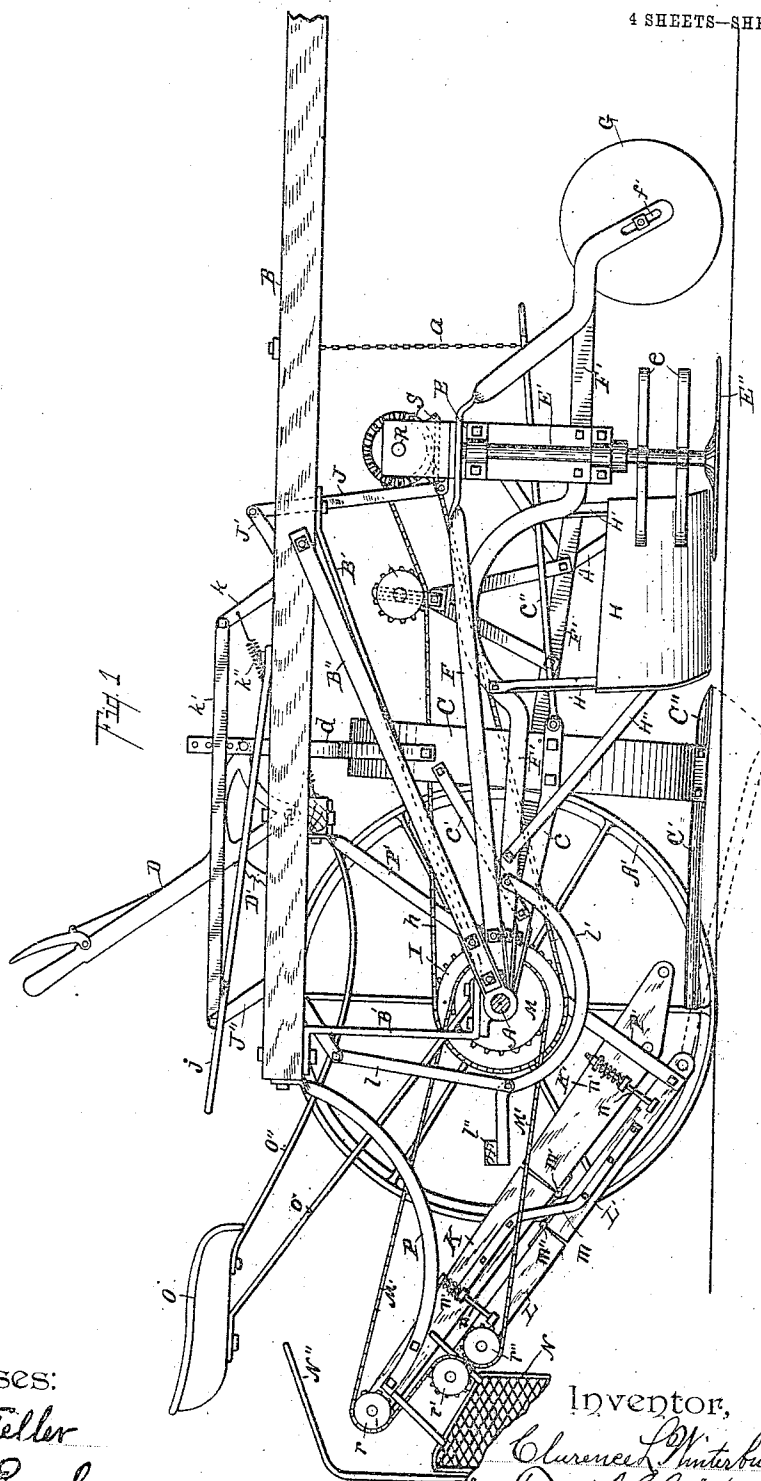
No. 816,633.

PATENTED APR. 3, 1906.

C. L. WINTERBURN.  
BEET HARVESTING MACHINE.

APPLICATION FILED JAN. 12, 1903.

4 SHEETS—SHEET 1.



Witnesses:  
*Ethel A. Teller*  
*Otto A. Carl*

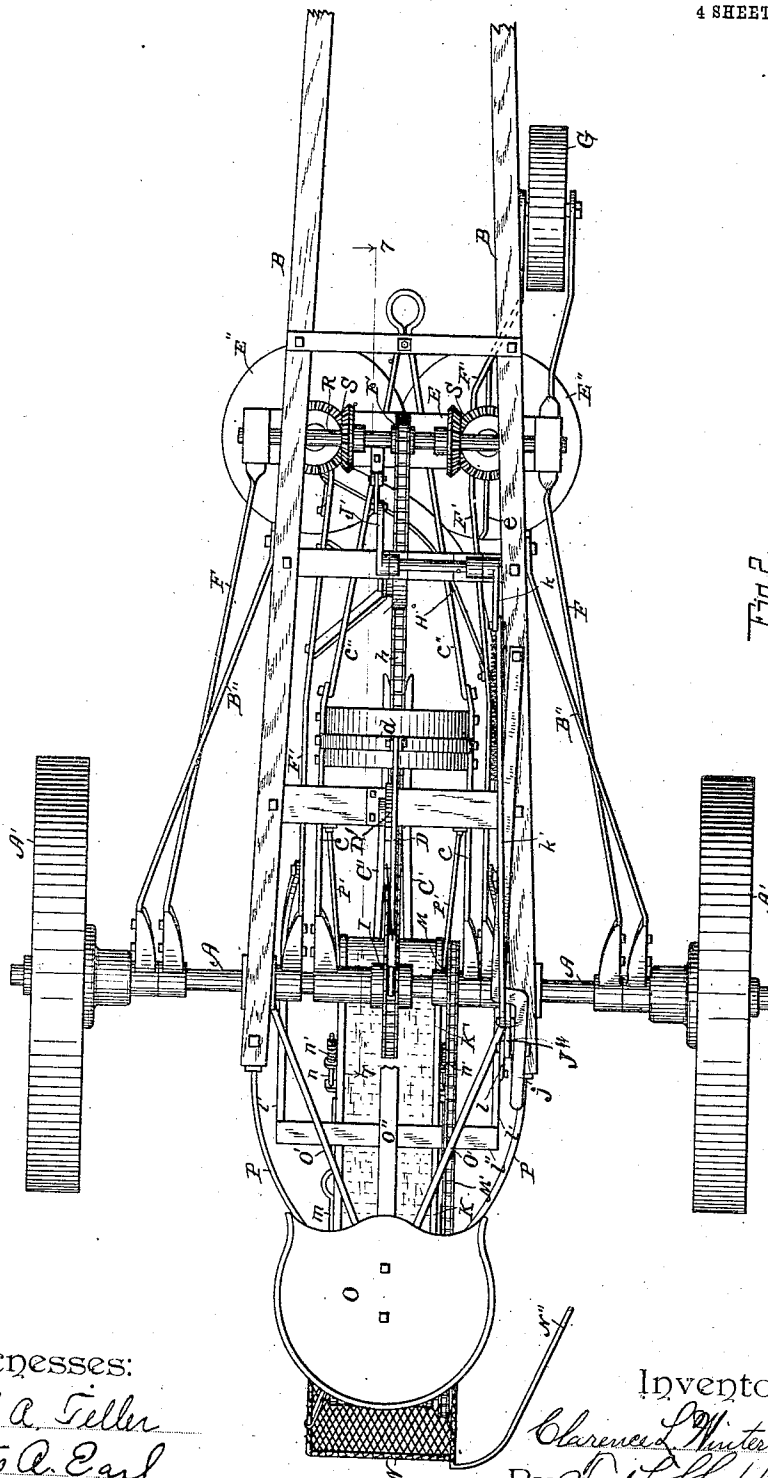
Inventor,  
*Clarence L. Winterburn*  
By *Fred L. Chappell*  
Att'y.

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4 SHEETS—SHEET 2.



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*Otto A. Earl*

Inventor,

*Clarence L. Winterburn*  
By *Frederick L. Chappell*  
Att'y.

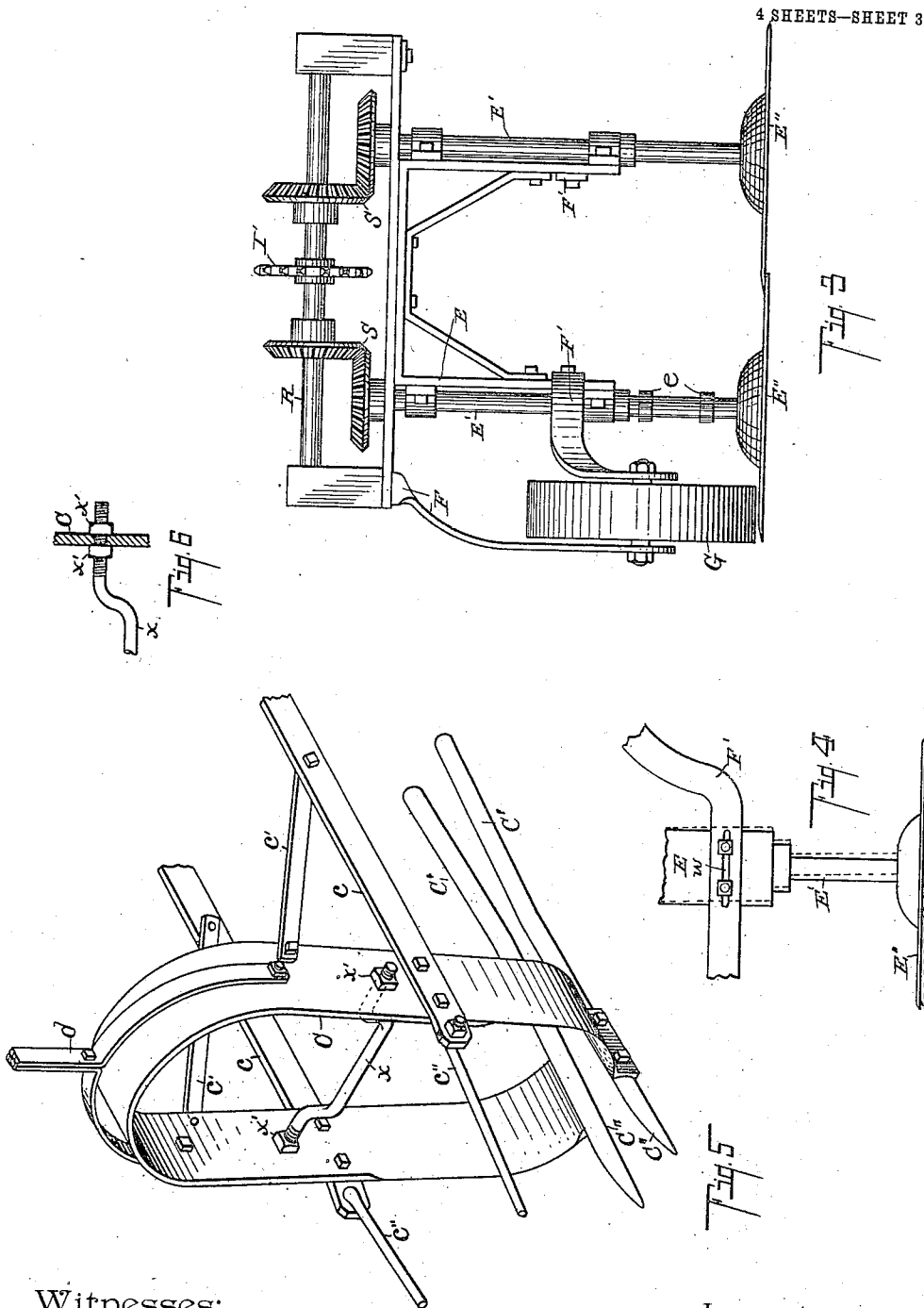
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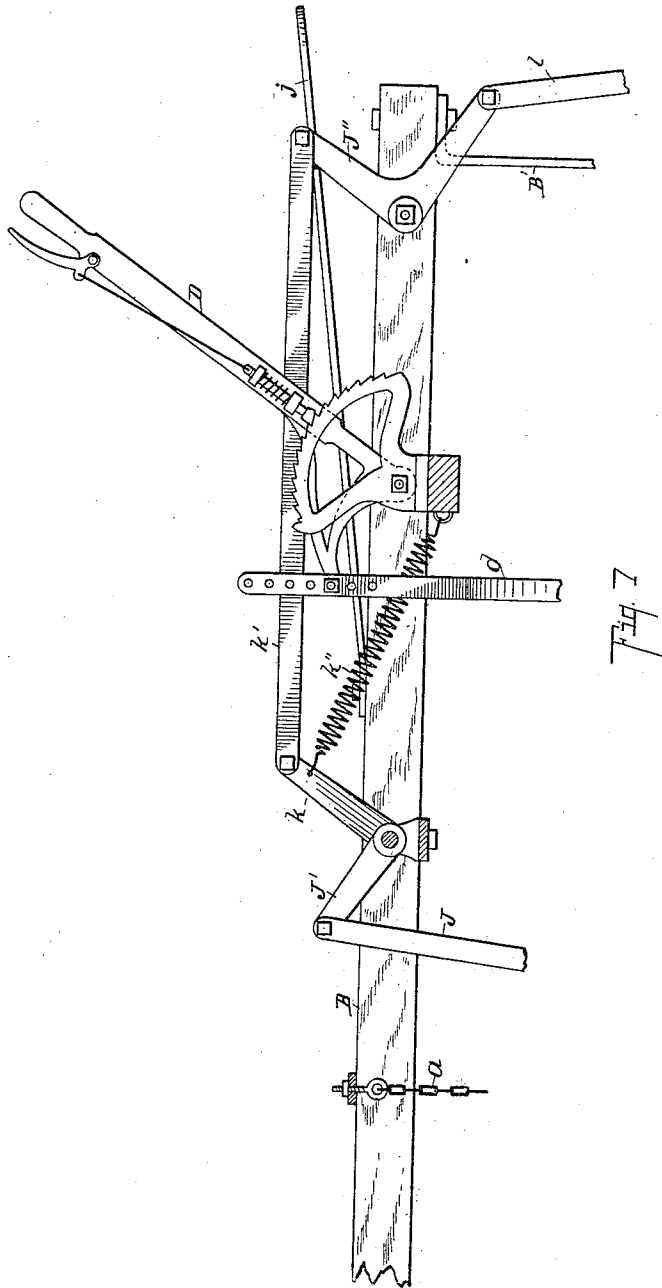
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4 SHEETS—SHEET 4.



Witnesses:

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*Otis A. Earl*

Inventor,

*Charles L. Winterburn*  
By *Fred L. Chappell*  
Att'y.

# UNITED STATES PATENT OFFICE.

CLARENCE L. WINTERBURN, OF KALAMAZOO, MICHIGAN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO WILLIAM H. ENGEL, OF KALAMAZOO, MICHIGAN, AND WILLIE H. DEAL, OF OSH- TEMO, MICHIGAN.

## BEET-HARVESTING MACHINE.

No. 816,633.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed January 12, 1903. Serial No. 138,680.

*To all whom it may concern:*

Be it known that I, CLARENCE L. WINTERBURN, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Beet-Harvesting Machines; of which the following is a specification.

This invention relates to improvements in beet-harvesting machines.

The objects of this invention are, first, to provide an improved topping-machine with means for cutting off and removing the tops from the rows of beets; second, to provide in a beet-harvesting machine efficient means for pulling the beets from the ground and removing the soil therefrom without injury thereto; third, to provide an efficient structure wherein the topping and pulling means are under efficient independent control; fourth, to provide in a beet-harvesting machine a combination of parts which are to a considerable extent automatic to facilitate their proper control.

Further objects will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of my invention is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail side elevation view of my improved beet-harvesting machine, the tongue or pole and a portion of the carrier being broken away, the axle being in section and the right-hand wheel being removed. Fig. 2 is a plan view of my improved machine, showing the details and arrangement of the parts. Fig. 3 is a front elevation view of the structure as it appears in Fig. 2. Fig. 4 is a detail view showing the method of adjusting the cutter-disks in their relation to the guide-wheel to secure the best results. Fig. 5 is an enlarged detail perspective view of the pulling part with its connections. Fig. 6 is a detail sectional view showing the means for adjusting the puller-points in their relation to each other. Fig. 7 is a detail sectional eleva-

tion view taken on line 7 7 of Fig. 2, showing the details of the supporting and adjusting parts.

In the drawings the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, an axle A is carried by the driving-wheels A' and A'', which also serve as the carrying-wheels. Sprocket-wheels are provided on the axle for driving the various moving parts.

The frame of the machine is made up of side pieces B B, which extend forwardly to form the tongue of the machine. These are secured together at intervals by suitable cross-pieces. The frame is secured to the axle by supports B' and braces B''. These supports and braces are connected to the axle by brackets, which are provided with suitable boxings. Suitable arms O' O'' extend from the axle and frame rearwardly to support a seat O for the operator, who from this position has control of the various parts of the machine, as will fully appear from the description following.

The parts will be described beginning at the front of the machine, as that will logically describe the order in which the various parts are brought into use in operation.

Extending forwardly from the axle A are pairs of arms F F', to which the frame E, which supports the topping mechanism, is secured. Upright shafts E'' E'', carrying the topping-disks E''' E''', are carried by this frame E. These arms F F' are pivoted on the axle A to permit the free raising and lowering of this topping means. The arms F F' at one side are extended forwardly beyond the frame E to support a guide-wheel G. The axle of this guide-wheel is adjustable up and down in the slots f', provided for that purpose in the arms. This guide-wheel G is supported to one side of the center of the machine, so that it travels on comparatively level ground by the side of the row of beets.

The frame E is adjustable to and from the vertical position by means of bolts in the slots w in the arms f, as clearly appears in Fig. 4, and by this means the relative posi-

tion of the cutters to the guide-wheel G is controlled, so that the same will properly engage and retain their position at the proper elevation on the beets in the row.

5 The cutters E' E'' are circular blades secured by suitable flanges to the bottom of the shafts E' E''. These shafts are connected by suitable beveled gears S to the shaft R, which is provided with a sprocket-wheel I'. The sprocket-wheel I' is connected by the sprocket-chain h to a large driving-sprocket I on the main axle of the machine.

The frame E is supported and adjusted up and down by a link J, which is connected to an arm J' on a suitable rock-shaft. This rock-shaft is provided with an arm k, which is connected by a link k' to a bell-crank J''. The bell-crank J'' is connected by a link l to a pivoted frame l', having a cross-bar l'' to the rear of the machine in position to form a foot-rest for the operator on the seat O. A lever j is provided for locking the cutting means in an elevated position when it is desired to transport the machine. A spring k'' is secured to the arm k to counterbalance the weight, so that it may be readily and easily manipulated, whereby the operator can raise or lower the topping mechanism with his foot. The guide-wheel G assists in preventing the cutters descending too deep into the ground if momentary control of the machine is lost. Secured to the said arms F', back of the frame E, by depending arms H' is a mold-board-like deflector H for the severed tops. This deflector is provided with a horizontal portion extending over the blades E' E''. Suitable braces H'' are provided, so that this deflecting device is rigidly supported. Short arms e e, which may be either straight or slightly curved, as shown, are secured to one of the shafts E' to strike the severed tops from the beets backward against the mold-board, so that they will be deflected and carried off to one side of the machine to free the delivery means for acting upon the beets in the row, whereby they will be readily separated from the tops. Supported to the rear of this topping mechanism by the arms c is the pulling device. The pulling device consists of a vertical yoke-like frame C, made, preferably, of a single piece of steel, bowed into an oblong form, with its open ends at the bottom. Secured to the arms of this yoke are the pulling-points. These are preferably formed of rods C', having points C''. The rods C' are arranged and shaped to extend forwardly and downwardly, the points being somewhat divergent. The beets are loosened by the points and lifted gradually and carried upwardly by the rearwardly-extending portions of the rods, so that they are raised entirely above the ground and gradually withdrawn from the earth, so that the danger of breaking is reduced to a minimum and the dirt will break away from the roots. The

roots are delivered by these rearwardly-extending points to the elevating mechanism, which will be described later.

Secured to the forward end of the supporting-arm c of the pulling device are draft-rods c'', which extend forwardly to a position convenient for securing the draft device. The forward end of these draft-rods is supported by a chain a, depending from the frame. Braces c' c' are provided, so that the frame C is held very rigidly in relation to its supporting-arms. A link d, which is pivoted toward the top of the yoke and extends upwardly, is connected to the hand-lever D, which is adjustable along a suitable ratchet-segment D', as clearly appears in Fig. 1, so that the pulling device may be raised or lowered at the will of the operator. A bolt x, offset somewhat like a crank, extends between the sides of the frame C and serves to adjust the sides to and from each other to accommodate the varying conditions, such as the size of the beets to be pulled, soil, &c., under which it may be desirable to operate the machine. Suitable lock-nuts x' are provided for retaining this bolt in its adjusted position.

When in operation, the beet-pulling part is dropped down to about the position indicated by dotted lines in Fig. 1. This throws the upper rear ends of the bars C' backwardly into proximity with the elevator means. The elevator means is carried by supports P P', depending from the frame at the rear of the machine.

The elevator mechanism is not herein described in detail, as it forms no part of this invention.

The supporting-frames for the aprons being yieldingly supported in relation to each other prevents clogging of the elevator mechanism and also prevents injury to the beets.

The apron-rollers are provided with sprocket-wheels r r', which are connected by a suitable sprocket-chain M' to a sprocket-wheel M on the driving-axle.

At the rear of the elevator mechanism is a carrier N, which is preferably formed of netting secured to a suitable frame, so that the dust and dirt will pass freely through the same.

The advantages of my improved beet-harvesting machine will, it is believed, appear from the foregoing detailed description. I have illustrated and described the same in the form preferred by me on account of economy of manufacture and ease in operation. I am, however, aware that it is capable of very great variation in structural details without departing from my invention.

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

1. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-ex-

tending arms, pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; a driving-shaft; gear connections from said driving-shafts to said disk-shafts; sprocket-wheels on said axle and driving-shaft; a sprocket-chain therefor; a guide-wheel for said topping-frame; means for raising and lowering said topping-frame; a moldboard-like deflector carried by said arms, arranged at the rear of said cutting-disks; radially-projecting arms on one of said disk-shafts adapted to engage the severed tops of the beets; a pulling device arranged at the rear of said deflector; a support therefor pivotally supported on said axle; means for adjusting said pulling device; all coacting for the purpose specified.

2. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; a driving-shaft; gear connections from said driving-shafts to said disk-shafts; sprocket-wheels on said axle and driving-shaft; a sprocket-chain therefor; a guide-wheel for said topping-frame; means for raising and lowering said topping-frame; a moldboard-like deflector carried by said arms, arranged at the rear of said cutting-disks; a pulling device arranged at the rear of said deflector; a support therefor pivotally supported on said axle; means for adjusting said pulling device; all coacting for the purpose specified.

3. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; a driving-shaft; gear connections from said driving-shafts to said disk-shafts; sprocket-wheels on said axle and driving-shaft; a sprocket-chain therefor; a guide-wheel for said topping-frame; means for raising and lowering said topping-frame; radially-projecting arms on one of said disk-shafts adapted to engage the severed tops of the beets; a pulling device arranged at the rear of said deflector; a support therefor pivotally supported on said axle; means for adjusting said pulling device; all coacting for the purpose specified.

4. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said

axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; a driving-shaft; gear connections from said driving-shafts to said disk-shafts; sprocket-wheels on said axle and driving-shaft; a sprocket-chain therefor; a guide-wheel for said topping-frame; means for raising and lowering said topping-frame; a pulling device arranged at the rear of said deflector; a support therefor, pivotally supported on said axle; means for adjusting said pulling device; all coacting for the purpose specified.

5. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; a driving-shaft; gear connections from said driving-shafts to said disk-shafts; sprocket-wheels on said axle and driving-shaft; a sprocket-chain therefor; means for raising and lowering said topping-frame; a moldboard-like deflector carried by said arms, arranged at the rear of said cutting-disks; radially-projecting arms on one of said disk-shafts adapted to engage the severed tops of the beets; all coacting for the purpose specified.

6. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; a driving-shaft; gear connections from said driving-shafts to said disk-shafts; sprocket-wheels on said axle and driving-shaft; a sprocket-chain therefor; a guide-wheel for said topping-frame; means for raising and lowering said topping-frame; radially-projecting arms on one of said disk-shafts adapted to engage the severed tops of the beets, all coacting for the purpose specified.

7. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; a driving-shaft; gear connections from said driving-shafts to said disk-shafts; sprocket-wheels on said axle and driving-shaft; a sprocket-chain therefor; a guide-wheel for said topping-frame; means for raising and lowering said topping-frame; all coacting for the purpose specified.

8. In a beet-harvesting machine, the com-

combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; a driving-shaft; gear connections from said driving-shafts to said disk-shafts; sprocket-wheels on said axle and driving-shaft; a sprocket-chain therefor; means for raising and lowering said topping-frame; a moldboard-like deflector carried by said arms, arranged at the rear of said cutting-disks; and radially-projecting arms on one of said disk-shafts adapted to engage the severed tops of the beets; all coacting for the purpose specified.

9. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; driving connections from said axle to said shafts; means for raising and lowering said topping-frame; a moldboard-like deflector carried by said arms, arranged at the rear of said cutting-disks; radially-projecting arms on one of said disk-shafts adapted to engage the severed tops of the beets; a pulling device arranged at the rear of said deflector; a support therefor pivotally supported on said axle; and means for adjusting said pulling device, all coacting for the purpose specified.

10. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; driving connections from said axle to said shafts; means for raising and lowering said topping-frame; a moldboard-like deflector carried by said arms, arranged at the rear of said cutting-disks; a pulling device arranged at the rear of said deflector; a support therefor pivotally supported on said axle; and means for adjusting said pulling device, all coacting for the purpose specified.

11. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; driving connections from said axle to said shafts;

means for raising and lowering said topping-frame; radially-projecting arms on one of said disk-shafts adapted to engage the severed tops of the beets; a pulling device arranged at the rear of said deflector; a support therefor pivotally supported on said axle; and means for adjusting said pulling device, all coacting for the purpose specified.

12. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; driving connections from said axle to said shafts; means for raising and lowering said topping-frame; a pulling device arranged at the rear of said deflector; a support therefor pivotally supported on said axle; and means for adjusting said pulling device, all coacting for the purpose specified.

13. In a beet-harvesting machine, the combination of an axle; wheels for supporting and driving the same; a main frame having journal-boxes for said axle; forwardly-extending arms pivotally supported on said axle; a topper-frame carried by said arms; a pair of vertically-arranged shafts; cutting-disks on the lower ends of said shafts; and an adjustable guide-wheel for said topping-frame, all coacting for the purpose specified.

14. In a machine of the class described, the combination of a frame; carrying-wheels; an axle therefor; a topper device; forwardly-projecting arms pivotally secured to said axle by which said topper device is carried; means for raising and lowering said topper device; a pulling device arranged to the rear of said topper device; carrying-arms therefor pivotally secured to said axle; means for adjusting said pulling device; and a draft-rod connected to the carrying-arms of said pulling device, for the purpose specified.

15. In a machine of the class described, the combination of a frame; carrying-wheels; an axle therefor; a topper device; forwardly-projecting arms pivotally secured to said axle by which said topper device is carried; means for raising and lowering said topper device; a pulling device arranged to the rear of said topper device; carrying-arms therefor pivotally secured to said axle; and means for adjusting said pulling device, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

CLARENCE L. WINTERBURN. [L. S.]

Witnesses:

A. IRENE ADAMS,  
OTIS A. EARL.