C. NELSON AND L. A. COFFEEN.

BEET HARVESTER.

APPLICATION FILED DEC. 28, 1918.

1,336,313.

Patented Apr. 6, 1920.

3 SHEETS—SHEET 1.

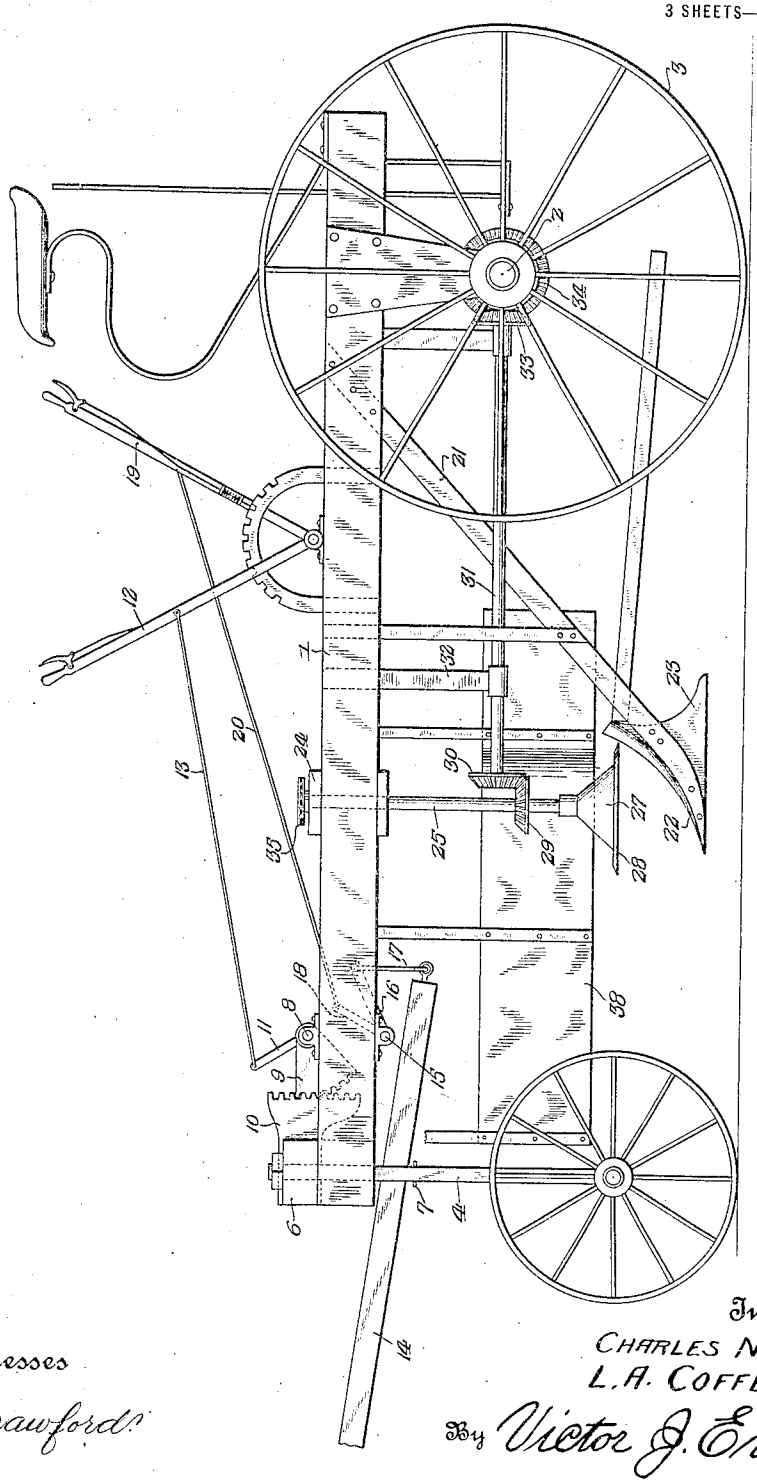


Fig. 1.

Witnesses

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3 SHEETS—SHEET 2.

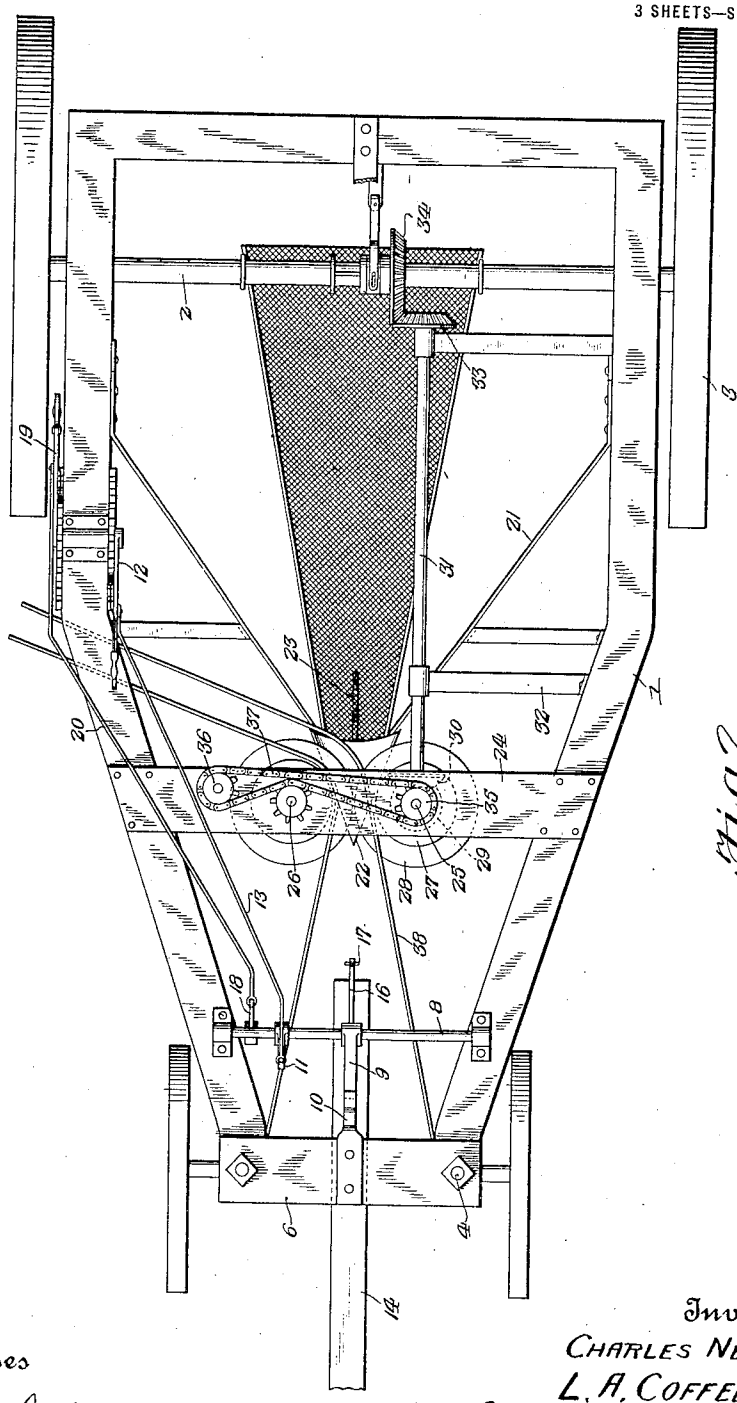


Fig. 2.

Witnesses

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3 SHEETS—SHEET 3.

Fig. 4.

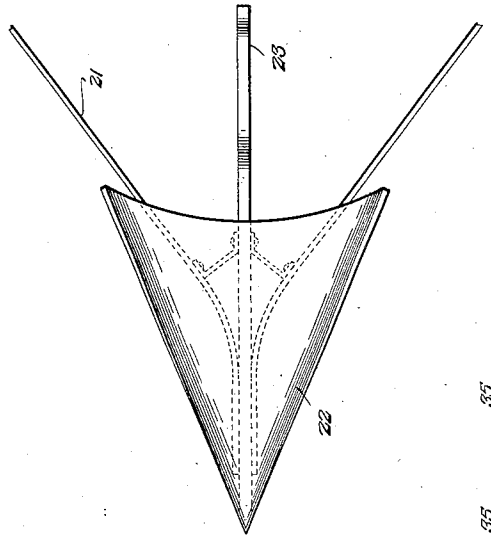


Fig. 5.

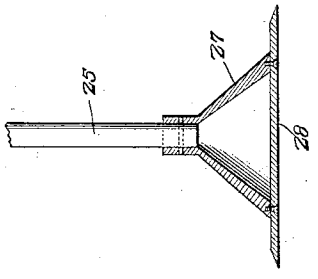
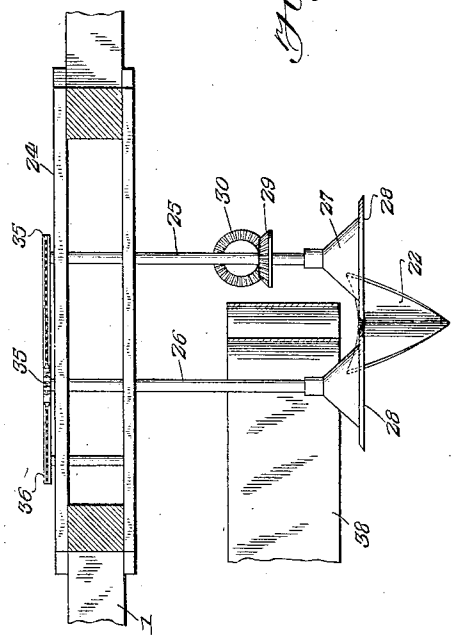


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES NELSON AND LEWIS A. COFFEEN, OF DENVER, COLORADO.

BEET-HARVESTER.

1,336,313. Specification of Letters Patent. Patented Apr. 6, 1920.

Application filed December 28, 1918. Serial No. 268,615.

To all whom it may concern:

Be it known that we, CHARLES NELSON and LEWIS A. COFFEEN, residing at Denver, in the county of Denver and State of Colorado, have invented new and useful Improvements in Beet-Harvesters, of which the following is a specification.

This invention relates to beet harvesters and it consists in the novel features hereinafter described and claimed.

An object of the invention is to provide a harvester of the character stated which is of simple and durable structure and which will effectually operate to lift the beets from the soil and remove the tops from the beets substantially at the same time as the lifting operation takes place.

A further object of the invention is to provide in a machine of the character stated means for permitting particles of soil to gravitate from the beets as the beets are cast rearwardly and means for transferring the tops to one side of the machine.

In the accompanying drawing:—

Figure 1 is a side elevation of the beet harvester.

Fig. 2 is a top plan view of the same.

Fig. 3 is an enlarged detail view of the cutting means.

Fig. 4 is a detail plan view of the plow.

Fig. 5 is a sectional view through one of the cone shaped members and cutting disks.

The beet harvester comprises a frame 1 which is preferably formed from strips of metal suitably secured together. The rear portion of the frame 1 is mounted upon an axle 2 and wheels 3 are mounted upon the end portions of the said axle. Standards 4 are slidably received in the forward portion of the frame 1 and wheels 5 are journaled at the lower portions of the said standards. The standards 4 are connected together by a cross bar 6 which lies above the frame 1 and the standards 4 carry at points below the frame 1 pins 7 which are adapted to limit the sliding movement of the standards with relation to the frame. A shaft 8 is journaled upon the frame 1 and is provided with a dentate segment 9 the teeth of which mesh with the teeth of a rack member 10 attached to the intermediate portion of the bar 6. An arm 11 is fixed to the shaft 9. A lever 12 is pivoted upon the frame 1 and the said lever is operatively connected with the arm 11 by means of a rod 13.

It is apparent that by swinging the lever 12 the rod 13 is moved longitudinally whereby the arm 11 is swung about the axis of the shaft 8 and the shaft is turned. As the said shaft is turned the segment 9 moves the member 10 and bar 6 vertically consequently the standards 4 and wheels 5 are adjusted vertically with relation to the frame 1.

A tongue 14 is pivotally connected at a point between its ends with the forward portion of the frame 1. A shaft 15 is journaled upon the frame 1 and carries an arm 16. A link 17 is pivotally connected at one end with the end portion of the arm 16 and pivotally connected at its other end with the rear end of the tongue 14. The shaft 15 further carries an arm 18. A lever 19 is fulcrumed upon the frame 1 and a rod 20 is pivotally connected at one end with the lever 19 and pivotally connected at its other end with the arm 18.

It is apparent that by swinging the lever 19 the rod 20 is moved longitudinally whereby the arms 18 and 16 are swung about the axis of the shaft 15 and the link 17 is moved longitudinally. Therefore the tongue 14 is swung with relation to the frame 1. When the forward end of the tongue 14 is swung in a downward direction the weight of the forward portion of the machine is borne by the draft animals to which the forward end of the tongue is hitched. When the tongue 14 is swung in an upward direction the weight is removed from the necks of the draft animals and the forward portion of the frame 1 is supported upon the wheels 5. To accomplish minor adjustment of the forward portion of the frame 1 the lever 12 is manipulated as hereinbefore indicated.

Standards 21 are attached to the intermediate portion of the frame 1 and extend forwardly and downwardly. The standards 21 carry at their lower forward portions a longitudinally and transversely curved share 22. The share 22 is pointed at its lower forward end. The share 22 is provided at its underside with a longitudinally disposed runner 23 adapted to travel upon the bottom of the furrow which is opened by the share. A cross bar 24 is carried at the intermediate portion of the frame 1 and vertically disposed shafts 25 and 26 are journaled in the cross bar 24. The shafts 25 and 26 carry at their lower ends cone shaped heads 27 to which are attached circular disks 28.

A beveled gear wheel 29 is mounted upon the shaft 25 and meshes with a beveled gear

wheel 30 which is mounted upon a shaft 31. The shaft 31 is journaled in brackets 32 which are attached to the frame 1. A beveled gear wheel 33 is fixed to the rear end of the shaft 31. A beveled gear wheel 34 is mounted upon the axle 2 and may slide thereon. The wheel 34 is constrained to rotate in unison with the axle. Therefore when the wheel 34 is moved into engagement with the wheel 33 the shaft 31 is rotated and through the intermeshing gear wheels 29 and 30 the shaft 25 is rotated.

Sprocket wheels 35 are mounted at the upper ends of the shafts 25 and 26. A sprocket wheel 36 is adjustably mounted upon the cross bar 24. A sprocket chain 37 is trained around the sprocket wheel 35 at the upper end of the shaft 25 and around the sprocket wheel 36 and the sprocket wheel which is carried at the upper end of the shaft 26 bears against one of the runs of the chain 37.

By adjusting the sprocket wheel 36 the chain 37 may be maintained at proper tension. As the shaft 25 rotates the chain 37 is moved whereby the disks which are carried at the lower ends of the shafts 25 and 26 rotate in opposite directions. Guides 38 are attached at their forward ends to the forward portion of the frame 1 and converge toward each other and extend between the shafts 25 and 26 and above the disks 28. The said guides 38 then extend to one side of the frame 1.

The operation of the harvester is as follows:—As the share 22 passes under the soil and the beets the soil and beets are lifted and at the same time the tops of the beets come in contact with the disks 28 and the top portions of the beets are severed from the body portions thereof while the body portions still remain in the soil. The tops thus severed from the beets are carried by the guides 38 to one side of the frame and may fall upon the surface of the ground or may be deposited in a suitable receptacle provided for their reception.

The beets and soil pass over the upper edge of the share and the beets fall upon a sifter which is connected at one end with the intermediate portions of the standards 21 and supported at its rear end upon the axle 2. The said sifter is rearwardly and downwardly inclined therefore the beets may roll or gravitate along the sifter and any soil which may have followed the beets to the sifter may fall from the beets through the openings provided in the bottom of the sifter as the beets move to the rear or delivery end of the sifter. From the delivery end of the sifter the beets may fall upon the surface of the soil or may be received in a receptacle provided at the rear portion of the frame for their reception.

From the foregoing description taken in conjunction with the accompanying drawing it will be seen that a beet harvester of simple and durable structure is provided and that the same may be economically used for removing beets from the soil and for separating the tops from the bottom portions of the beets.

Having described the invention what is claimed is:—

A beet harvester comprising a wheel supported frame, a plow carried by the frame, shafts journaled upon the frame and arranged at opposite sides of the plow, guides attached to the frame and extending between the shafts, and extending to one side of the frame, disks carried by the shafts and means for rotating the disks in opposite directions.

In testimony whereof we affix our signatures.

CHARLES NELSON.
LEWIS A. COFFEEN.