(No Model.)

D. MAXWELL.

ROOT CUTTER.

No. 483,743. Patented Oct. 4, 1892.

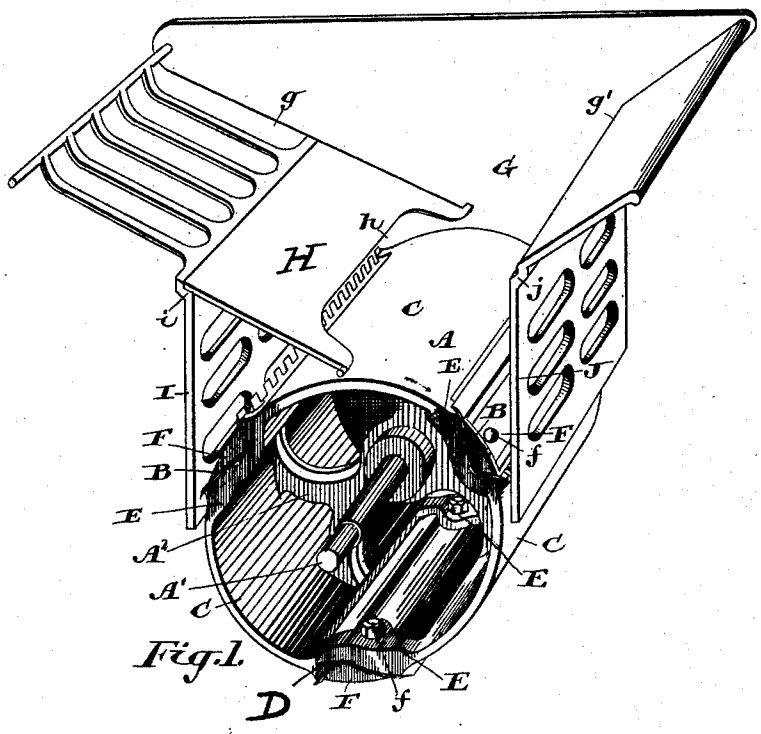

Fig. 1.

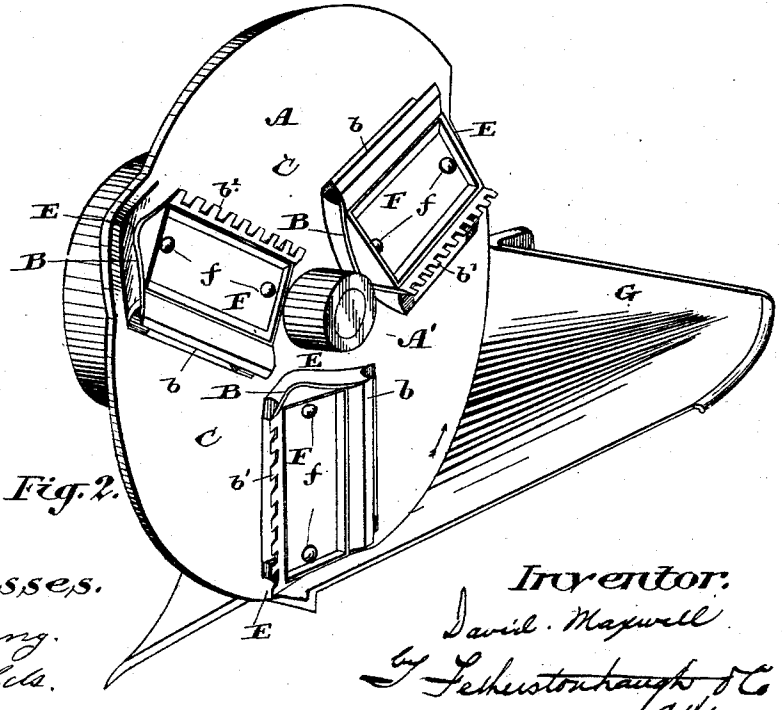

Fig. 2.

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UNITED STATES PATENT OFFICE.

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ROOT-CUTTER.

SPECIFICATION forming part of Letters Patent No. 483,743, dated October 4, 1892.

Application filed May 5, 1892. Serial No. 431,909. (No model.)

To all whom it may concern:

Be it known that I, DAVID MAXWELL, manufacturer, residing at the town of St. Marys, in the county of Perth, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Root-Cutters, of which the following is the specification.

My invention relates to improvements in machines for slicing and pulping roots; and the object of the invention is to design a machine of this class which will by merely changing the direction of rotation either pulp or slice roots quickly and perfectly.

The invention consists in the construction hereinafter described, and particularly pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view with the side of the machine removed, showing the knives arranged in the periphery of a drum. Fig. 2 is a view of a modified form, showing my combined slicing and pulping knives arranged on the face of the wheel.

In the drawings like letters of reference indicate corresponding parts in both figures.

A is the cylinder or the wheel upon which the knives are secured. The cylinder or wheel A is mounted on the shaft A′ in the frame of the machine and has central webs or arms A^2, the hubs of which are secured to the shaft A′. Said arms extend to and form a support for the cylinder.

L shows three knives B, with the intermediate spaces C.

D are elongated openings formed in the periphery of the drum or face of the disk, the intermediate spaces being connected together by the bridges E, to which the ends of the knives are secured. It will be noticed that the knives B are broad and V-shaped in cross-section and are provided with slicing-edges *b* and pulping-edges *b′*, which are composed of series of sharp teeth, as shown. The knives B are provided with strengthening or stiffening backs F and are secured to the end bridges E by the bolts *f*, which pass through the backs F and bridges E, as shown.

G is the hopper into which the roots are placed. It will be noticed in Fig. 1 that the inclined sides *g g′* of the hopper G have pivoted midway between their ends the guiding-bridge H, which is pivoted at the bottom and is cut away, as shown at *h*. The guiding-plate H is designed to be swung from one to the other of the sides *g* and *g′*, as desired, and when so swung rests on ledges *i* and *j*, respectively, made to the top of the perpendicular sides I and J of the hopper. It will be noticed that the sides I and J and the inclined side *g* are in the form of gratings, as shown, so that the dirt may escape through the grate-bars when the roots are being put into the hopper and during the period that the roots are being sliced or pulped against the sides I and J, respectively.

On reference to Fig. 1 it will be seen that when the cylinder is caused to revolve in the direction indicated by the arrow the swinging bridge H rests upon the ledge *i*, so as to form a guide for depositing the roots upon the cylinder, in order that the pulping-edges of the knives in coming around may act upon the roots in proximity to the side J, so as to pulp them, the pulp being forced through between the pulping-edges *b′* into and through the opening D, from which it escapes from either side of the central web into the receptacle provided to receive it. When the cylinder is caused to revolve in the opposite direction to that indicated by arrow, the guiding-bridge H is swung on its pivot so as to bring the free end against the ledge *j* on the top of the side J, the slicing-edges *b* of the knives being then designed to operate against the edge *i*, so as to slice the roots. When the roots are sliced, they are forced beneath the edge and into and through the opening beneath the knives into the center of the cylinder, from which the roots sliced are discharged from the end of the cylinder into the receptacle.

In Fig. 2 it will be seen that the knives are arranged on the face of a disk or wheel and are supported on bridges before the openings in a similar manner to that shown in Fig. 1. The roots fed into the hopper G are operated upon by the edges *b* to slice them when the wheel is revolved in the direction indicated by arrow and by the edge *b′* when the wheel is revolved in the opposite direction to that indicated by arrow in order to pulp the roots, which in

both instances pass through the wheel and are delivered into a receptacle provided for the purpose.

I am aware that it is old to provide a slicing-knife to operate upon the roots when the wheel is revolved in one direction and a pulping-knife to operate upon the roots when the wheel is revolved in the opposite direction; but heretofore the slicing-knife and pulping-knife have been made separate and placed alternately in position on the wheel. In this method of construction the roots when placed in the hopper rest upon the knife, thereby holding the roots away from the surface of the wheel and out of the circuit of the knife, so that the knives, being so close together, are prevented from effectually operating upon the roots to slice or pulp them. By, however, providing the space between the knives and forming them as hereinbefore described the roots when deposited in the hopper are brought down to the surface of the wheel.

I find in practice, on account of the distance between the knives and the roots being brought directly against the surface of the wheel, that the knives act with much better results than in any machine for a similar purpose of which I am aware.

What I claim as my invention is—

1. In a combined root pulper and slicer, a wheel provided with a series of knives, each of which is provided with a slicing and a pulping edge, the knives being supported over elongated openings made in the working surface of the wheel and the slicing and pulping edges being contiguous and slightly above the side edges of the openings, as and for the purpose specified.

2. The wheel A, having a series of knives B, V-shaped in cross-section, each of which is provided with a slicing-edge *b* and a toothed pulping-edge *b'* and is supported over openings D by the end bridges E, to which the knife is secured by the bolts *f*, as and for the purpose specified.

3. The wheel A, having a series of knives B, V-shaped in cross-section, each of which is provided with a slicing-edge *b* and a toothed pulping-edge *b'*, supported over opening D by the end bridges E, to which the knife is secured by the bolts *f*, and is provided with a stiffening-back F, as and for the purpose specified.

4. The combination, with the wheel A, having a series of knives V-shaped in cross-section, each of which is provided with a slicing and a pulping edge *b* and *b'*, supported on bridges E over the openings D, of the hopper G and grated sides I and J, as and for the purpose specified.

5. The combination, with the wheel A, having a series of knives V-shaped in cross-section, each of which is provided with a slicing and a pulping edge *b* and *b'*, supported on bridges E over an opening D, of the hopper G, grated sides I and J, and the guiding-plate H, arranged as and for the purpose specified.

6. The combination, with a wheel A, having a series of knives V-shaped in cross-section, each of which is provided with a slicing and a pulping edge *b* and *b'*, supported on bridges E over an opening D, of the hopper G, grated sides I and J, and the guiding-plate H, cut away at *h*, as and for the purpose specified.

7. The combination, with the wheel A, having a series of knives V-shaped in cross-section, with slicing and pulping edges *b* and *b'*, supported on bridges E over the openings D, of the central web or arms A, secured to the shaft A' and having an outer end of the arms extending behind the portion C of the wheel, as and for the purpose specified.

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