

No. 738,616.

PATENTED SEPT. 8, 1903.

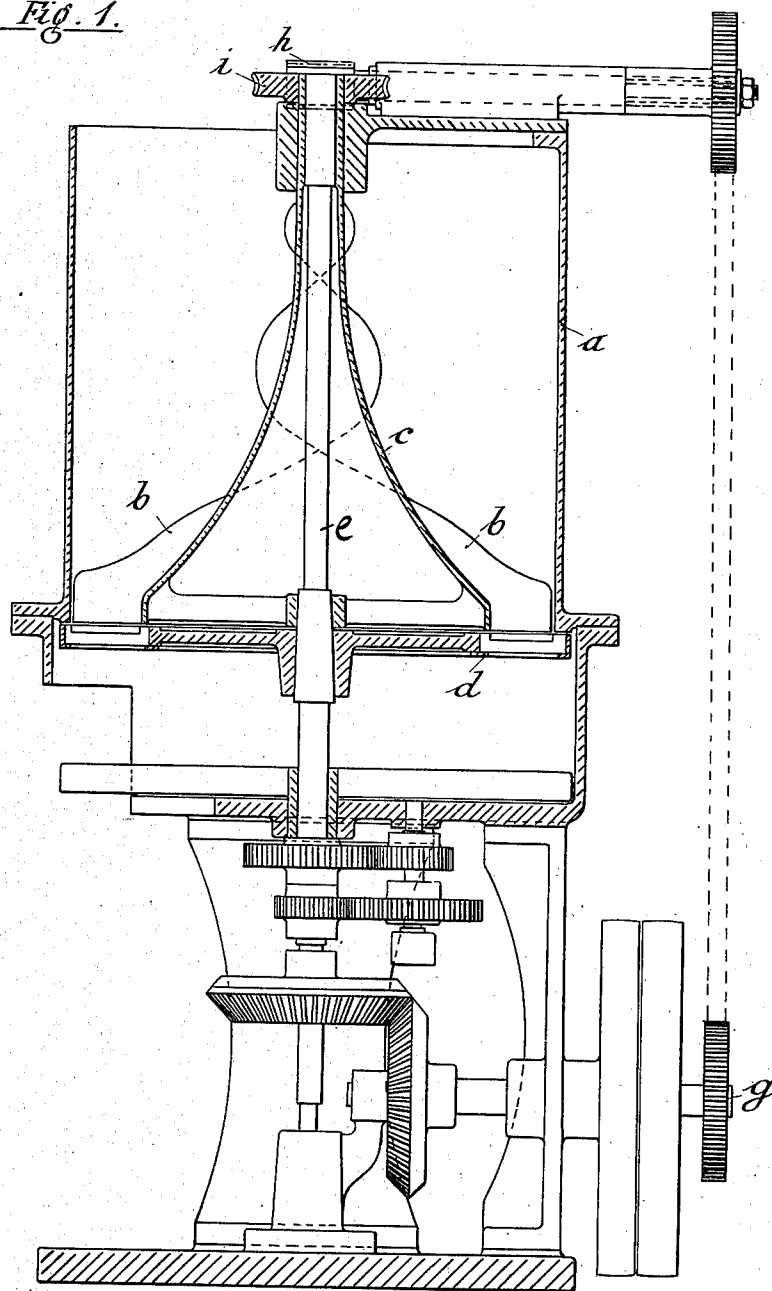
W. KÖLLMANN.
BEET SLICER.

APPLICATION FILED JULY 9, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Ohl König
Schmitt

Inventor:

Wilhelm Köllmann

No. 738,616.

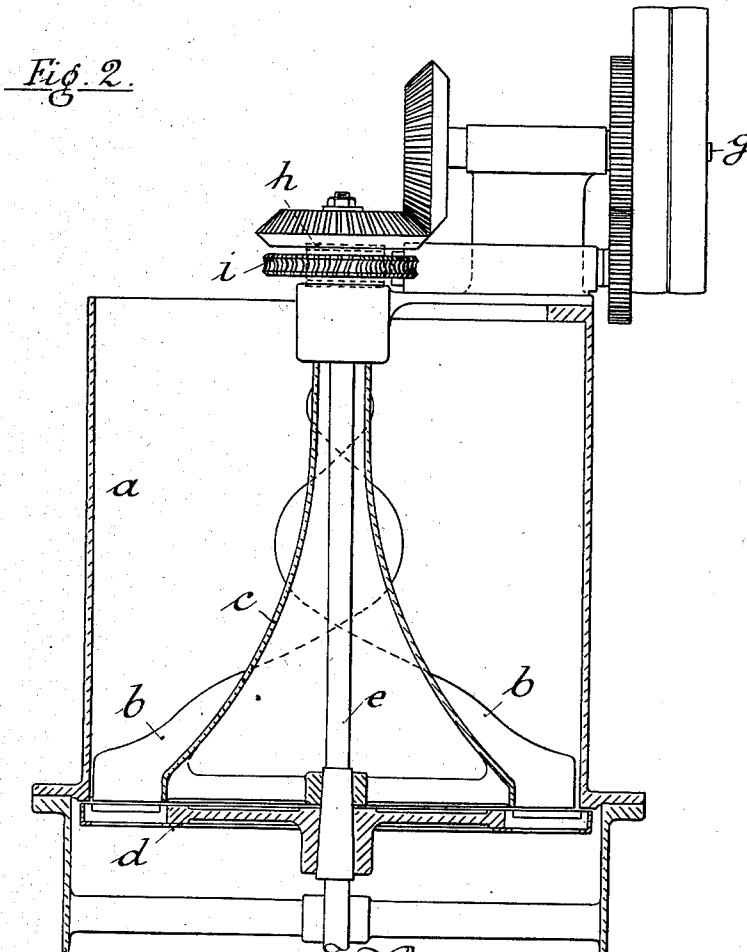
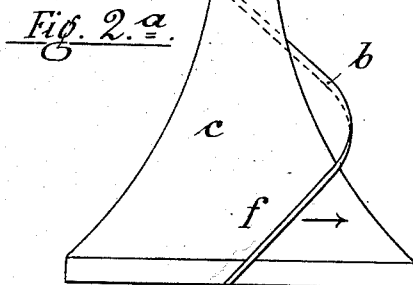
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3 SHEETS—SHEET 2.



Witnesses:

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3 SHEETS—SHEET 3.

Fig. 3.

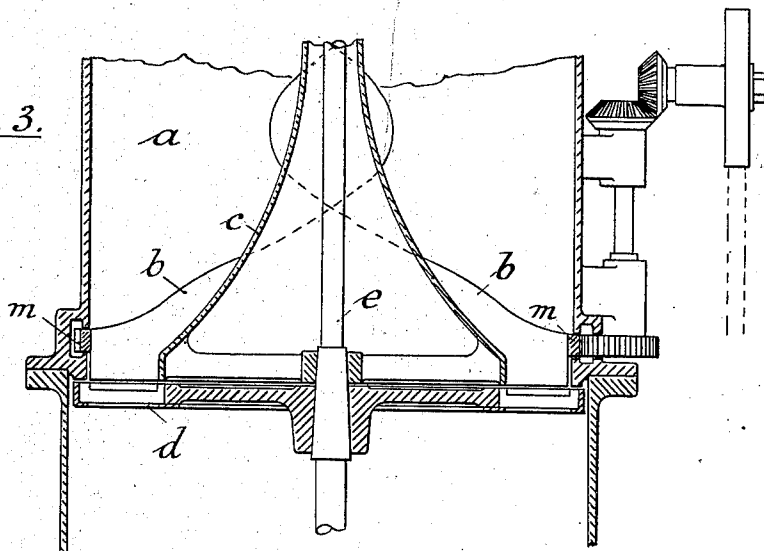
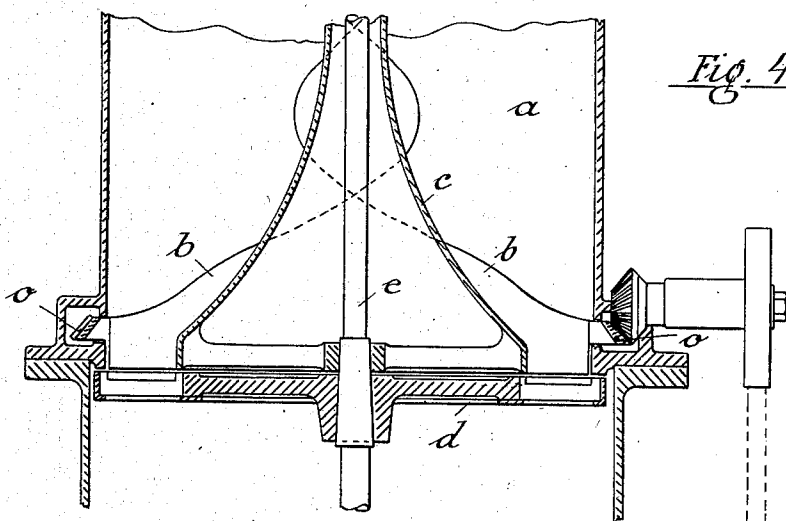


Fig. 4.



Witnesses:

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Johannes Schmid

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UNITED STATES PATENT OFFICE.

WILHELM KÖLLMANN, OF BARMEN, GERMANY.

BEET-SLICER.

SPECIFICATION forming part of Letters Patent No. 738,616, dated September 8, 1903.

Application filed July 9, 1902. Serial No. 114,953. (No model.)

To all whom it may concern:

Be it known that I, WILHELM KÖLLMANN, a subject of the Emperor of Germany, residing at Barmen, in the Province of Rhenish Prussia, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Beet-Slicers, of which the following is a specification.

Hitherto in the manufacture of sugar from beets it has been the practice to slice the roots for further treatment in machines in which above a knife-disk rotating at the bottom of the hopper or beet-receptacle a number of stationary check-pieces are arranged, so as to obstruct the path of the beets carried around by the rotary motion of the knife-disk in order that the roots may be seized and sliced by the knives. This arrangement, however, is very defective, since only a fractional part of the beets which come before the knife is cut, the larger part rising at the check-pieces and being given a vertical or whirling motion. This inconvenience increases the smaller the number of beets in the hopper. Thus when the latter is nearly empty it takes a long time before the last roots are sliced.

A further defect is that the beets are apt to choke in the hopper and fail to fall upon the knife-disk, above which empty spaces are accordingly formed, at which of course no slicing goes on until finally some root becomes displaced and allows the remainder to fall.

Machines have been constructed with distributors (*e. g.* that described in German patent specification, No. 24,963) rotating in the receptacle in a contrary direction to the slicing-disk. This arrangement, however, only really hinders the formation of hollow spaces above the check-pieces and not in the compartments of the hopper above the knife-disk. Furthermore, the rigid check-pieces prevent full utilization of the cutting-surface of the knife-disk, inasmuch as the knives are inoperative each time they pass the checks. All these inconveniences are overcome by the slicer forming the subject of my invention and illustrated in the annexed drawings. In my machine the beets are set in rotation by the aid of check-pieces having a retrograde motion—*i. e.*, rotating in a direction contrary

to that of the knife-disk. Further, the roots are pressed against the knife-disk owing to the checks having a spiral form.

Spiral ribs in the receptacle of machines having annularly-disposed knives are already known, (*e. g.*, through German patent specification, No. 21,748;) but such are not employed as checks to stop the motion of the roots, but for the purpose of throwing the latter against the knives in consequence of the centrifugal force.

In the appended drawings, Figure 1 is a vertical section of my slicer. Fig. 2 is a vertical section of the upper portion of a modified form of construction, the shaft of the knife-disk being rotated by gearing located above the receptacle. Fig. 2^a is a detail view showing the spiral form of the check-pieces. Fig. 3 is a part vertical section of a modified construction of the machine where the check-pieces are provided with spur-teeth. Fig. 4 is a similar part vertical section of a further modification of the machine, bevel-teeth being provided on the check-pieces.

a is the receptacle into which the beets are fed, *e* being the driving-shaft of the knife-disk *d*. On the shaft *e* there is loosely mounted a body *c*, preferably tapering upward, leaving a certain annular space free above the knives, and provided with wing-shaped ribs *b*, running upward in spiral form and constituting the checks.

By any suitable means—for example, in the manner shown in Fig. 1 or in Fig. 2 by the main driving-shaft *g*, located above or below the member *c*, with the aid of a worm *h* and worm-wheel *i*—the body *c* is set in rotation in a direction opposite to that of the knife-disk *d*, the speed being preferably about one-tenth of the velocity of the knife-disk.

The check-pieces or ribs *b* spread at the bottom over the entire cutting breadth of the knife-disk and in consequence of the spiral form take the position shown at *f* in Fig. 2^a, whereby on rotation the beets lying before the ribs are pressed against the knife-disk. The ribs toward the top may be lower in height and gradually diminish to the level of the body *c*.

The novel effect produced by the rotary mo-

tion of the checks or wings is that choking of the receptacle through wedging together of the beets, with the consequent formation of hollow spaces, is prevented. By reason of the
5 said rotary motion, moreover, the cutting-surface of the knife-disk is better utilized. In consequence of the spiral arrangement of the checks the beets, owing to the pressure acting above the knife-disk, are prevented
10 from ascending and from being whirled upward. On the contrary, they will always be uniformly conducted to the knives, so that the efficiency of the machine is greatly superior to that of prior apparatus.

15 Figs. 3 and 4 show other arrangements which may be adopted for effecting retrograde rotation of the body *c*, the check-pieces being provided with spur-teeth *m*, Fig. 3, or with bevel-teeth *o*, Fig. 4, with which meshes
20 toothed gearing located externally of the receptacle.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

In a vegetable-cutter, the combination with 25 a vertical cylindrical hopper, of a bell-shaped shell rotatably arranged in the hopper and provided with circumferentially spiral blades, said blades gradually decreasing in size from the bottom upward, an annular knife-disk 30 arranged below the bottom of said shell and extending beyond the periphery of the latter, and means for rotating the shell and knife-disk simultaneously in opposite directions and at unequal speeds, substantially as and 35 for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILHELM KÖLLMANN.

Witnesses:

OTTO KÖNIG,

J. A. RITTERSHAUS.