A. E. EKOLA.

VEGETABLE GRATER.

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1,324,389.

Patented Dec. 9, 1919.

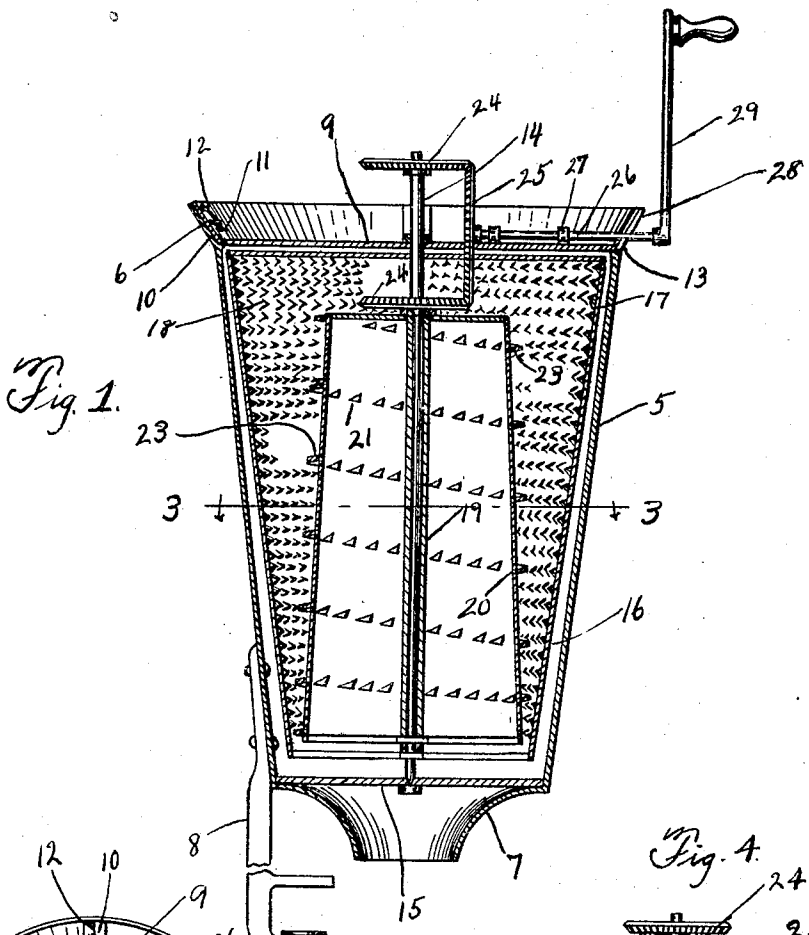


Fig. 1.

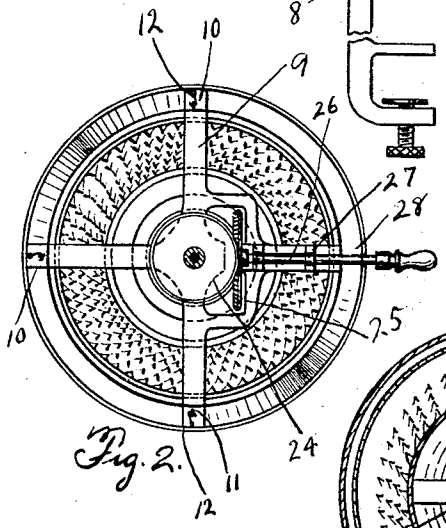


Fig. 2.

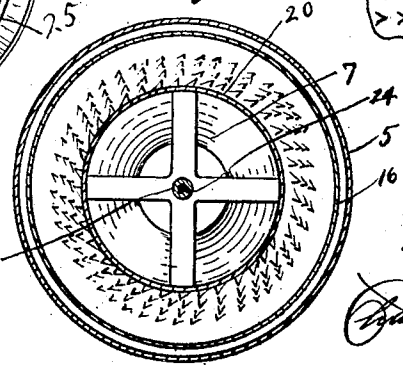


Fig. 3.

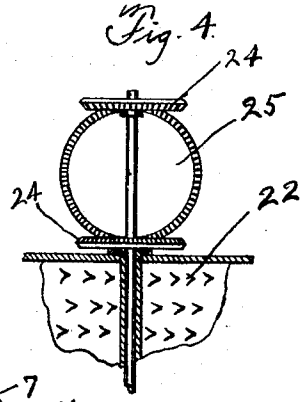


Fig. 4.

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VEGETABLE-GRATER.

1,324,389. Specification of Letters Patent. Patented Dec. 9, 1919.

Application filed September 6, 1918. Serial No. 252,949.

To all whom it may concern:

Be it known that I, ARTHUR E. EKOLA, a citizen of the United States, residing at Oskar, in the county of Houghton, State of Michigan, have invented certain new and useful Improvements in Vegetable-Graters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a grating machine, and more particularly to the class of vegetable graters or mashers.

The primary object of the invention is the provision of a machine of this character, wherein vegetables or the like when placed therein will be subjected to reversely movable grating surfaces so as to mash and reduce to a pulp such vegetables or the like with despatch.

Another object of the invention is the provision of a machine of this character, wherein the operating parts can be readily removed from the body of the machine so as to enable the cleaning of the latter to render the same sanitary and such parts can be firmly fastened in place for the successful operation of the machine.

A further object of the invention is the provision of a machine of this character, wherein the construction thereof is novel in form to assure simplicity, durability, efficient in the operation and also one that is inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter fully described, illustrated in the accompanying drawing and pointed out in the claims hereunto appended.

In the accompanying drawing:

Figure 1, is a vertical sectional view through the machine constructed in accordance with the invention.

Fig. 2, is a top plan view thereof.

Fig. 3, is a sectional view on the line 3—3 of Fig. 1.

Fig. 4, is a fragmentary detailed vertical sectional view through the operating gears and the driven reversely rotatable shafts for the inner and outer graters of the machine.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing in detail, the machine comprises a body 5, preferably made from metal and of inverted substantially frusto-conical shape or cup shape, having its upper open end formed with a flared mouth edge or flange 6, constituting a funnel, while the opposite lower or bottom end is formed with a contracted discharge spout 7, the body 5 being supported upon a table clamp or bracket 8 for the fastening of the same to a table or other support in vertical elevated position so that a receiver can be placed beneath the spout 7 to receive the contents of the body, delivered therethrough.

Removably supported in the mouth of the body is a spider 9 preferably having four legs, three of which are formed with angular ends 10 to rest against the flange 6 which is provided with staples or eyes 11 adapted to be engaged in suitable openings in the ends 10 which carry swinging hooks 12 to engage the staples or eyes 11, and thereby detachably fasten the spider 9 in place. At this time the spider rests upon an internal shoulder 13 formed on the body 5 of the machine.

Journaled centrally in the spider 9 is a vertical rotatable shaft 14 which is removably journaled in a step bearing at the center of a lower stationary spider 15, formed in the body 5 at the bottom thereof, and fixed to this shaft 14 is an inverted frusto-conical shaped shell constituting an outer grater 16 having the usual slits and teeth 17 and 18, respectively, forming the interior grating surface thereof.

Surrounding the shaft 14 is a reversely rotatable tubular or hollow shaft 19 supporting a slightly conical shell or cylinder 20 which constitutes an inner grater the same being formed with the usual slits and teeth 21 and 22, respectively, constituting the outer grating surface thereof, while mounted on the cylinder 20 externally thereof is a spiral rib forming a worm 23 for feeding the vegetables or the like downwardly between the inner and outer graters.

Secured to the shafts 14 and 19, are driven gears 24 with which meshes a master or driving gear 25 fixed to the operating shaft 26 which is journaled in bearings 27 on one of the legs of the spider 9. The operating shaft 26 stands at right angles to the driven shafts and extends outwardly beyond the side of the body 5 through a suitable cut out portion 28 in the funnels 6 and carries

at its outer end a crank handle 29 for the manual rotation of the operating shaft in the working of the machine.

In the operation of the machine the parts are assembled as seen in Fig. 1 of the drawing, and the vegetables or the like are introduced through the open mouth of the body 5 to fall between the inner and outer graters which are reversely rotated on operating the shaft 26 and these graters reduce the vegetables or the like to a pulp which is discharged through the spout 7 of the machine at the lower end of the body 5, as will be clearly obvious.

The operating part of the machine can be readily removed to permit cleaning thereof for rendering the machine sanitary. The material such as vegetables, fruits or the like, will be properly grated or mashed and delivered from this stationary frame or machine.

From the foregoing it is thought that the manner of construction and use of the device will be clearly understood, and therefore a more extended explanation has been omitted.

What is claimed is:

1. In a machine of the class described, the combination with a hollow body having at its upper end a flaring flange, and a fixed spider at the lower end of the body having a central step bearing; of an upper spider having angular ends fitting within said flange, means for removably attaching them thereto, a shaft journaled through the upper spider and resting in said step bearing, a tubular shaft surrounding said first shaft, outer and inner grinding shells carried respectively by said shafts, and a driving shaft mounted in bearings on the removable spider and connected with said other shafts for turning them simultaneously and oppositely.

2. In a machine of the class described, the combination with a hollow body having at its upper end a flaring flange notched at one side and an internal shoulder at the base of said flange, and a spider at the lower end of the body having a bearing; of an upper spider resting movably on said shoulder and having angular ends fitting within said flange, concentric shafts journaled through said spiders, outer and inner grinding shells carried respectively by said shafts, driven gears on the latter, bearings on that arm of the upper spider leading to said notch, a shaft journaled in said bearings and extending through the notch, operating means on its outer end, and a driving gear on its inner end engaging said gears.

3. In a grater of the class described, the combination with a body having a flaring flange at its open upper end, and the grinding mechanism proper including an upright shaft; of a spider removably mounted in the upper end of the body and having angular ends fitting within said flange and slotted, said shaft being journaled through this spider, staples within the flange passing through said slots, hooks pivoted to the ends for engaging said staples, and driving mechanism carried by and removable with the spider.

4. In a vegetable grater, the combination with a body open at both ends, spiders mounted within it, and driving mechanism carried by one spider; of concentric shafts journaled in the spiders, an outer grinder carried by one shaft and having internal teeth, an inner grinder carried by the other shaft and having external teeth, the walls of said grinders converging downward, connections between the driving mechanism and shafts for rotating the latter simultaneously and oppositely, and a worm on the exterior of the inner grinder for forcing the material downward.

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

ARTHUR E. EKOLA.

Witnesses:
O. A. LIEDER,
JACOB OLGRES.