W. J. ANDERSON.

MEAT GRINDER.

APPLICATION FILED JULY 2, 1920.

1,375,766.

Patented Apr. 26, 1921.

2 SHEETS—SHEET 1.

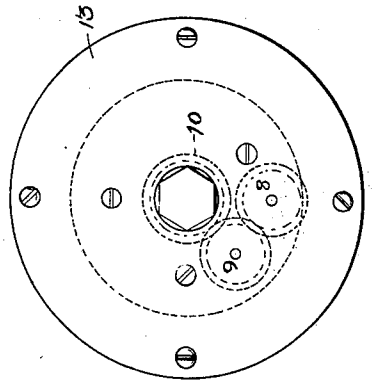


Fig. 2.

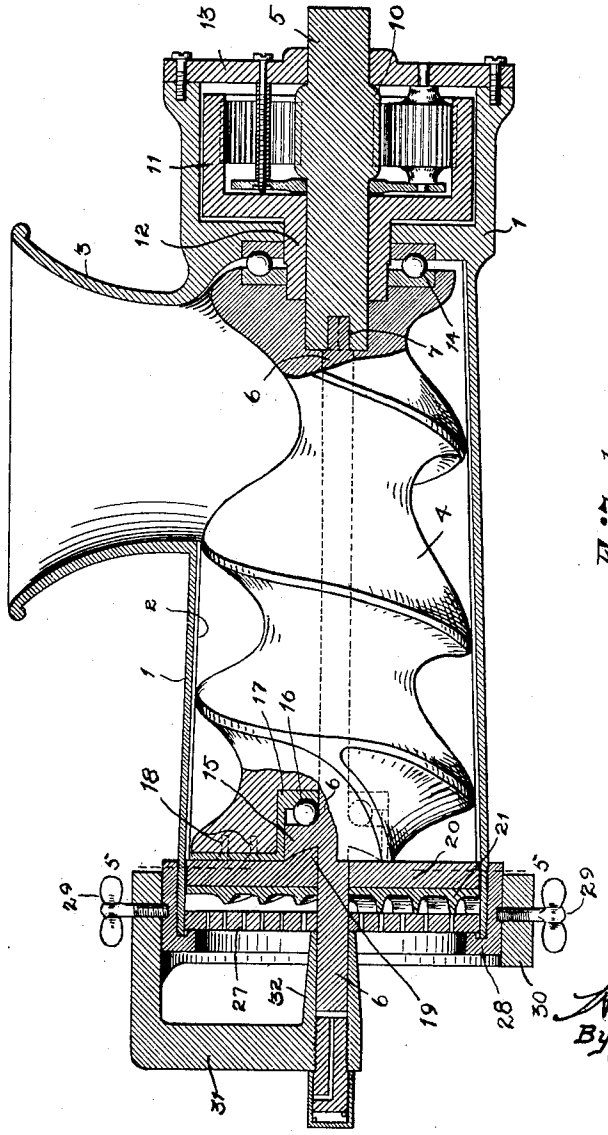


Fig. 1.

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Fig. 3.

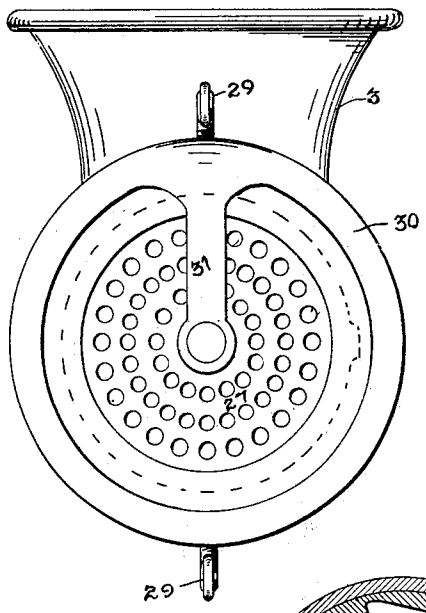
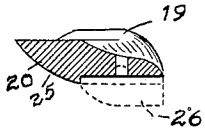


Fig. 4.



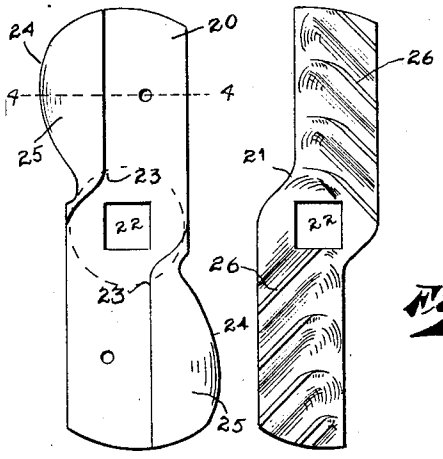


Fig. 6.

Fig. 7.

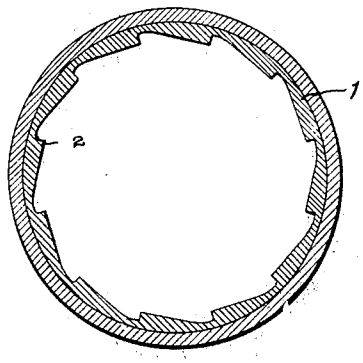


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM JOHN ANDERSON, OF DULUTH, MINNESOTA.

MEAT-GRINDER.

1,375,766. Specification of Letters Patent. Patented Apr. 26, 1921.

Application filed July 2, 1920. Serial No. 393,643.

To all whom it may concern:

Be it known that I, WILLIAM JOHN ANDERSON, a subject of the King of Sweden, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Meat-Grinders, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to grinding or meat chopping machines and particularly to that class of meat chopper in which the cutting knife operates at a different speed to that of the feeding screw or worm.

The principal object is to produce an improved form of cutting and chopping knife for such a machine.

Another object is to produce a novel form of worm adjacent the knife for efficient cooperative action with the novel form of knife.

Still other objects and advantages of the device will appear in the further description thereof.

In the accompanying drawings forming part of this application and in which like reference characters indicate like parts:

Figure 1 is a vertical central longitudinal section, partly in elevation, of the assembled parts directly associated with the worm of such a machine,

Fig. 2 is an elevation of the end of the machine in which the driving gear is housed,

Fig. 3 is an elevation of the opposite end of the machine,

Fig. 4 is a transverse sectional view on the line 4—4 Fig. 6,

Fig. 5 is a transverse sectional view on the line 5—5, Fig. 1,

Fig. 6 is a plan view of one half of the chopping or cutting knife, and

Fig. 7 is a similar view of the other half of the knife.

1 represents the cylindrical body portion of the machine which is of the usual construction, having internal longitudinally disposed ribs 2 therein and the usual feeding hopper 3 formed integral therewith. Within the body portion 1 is mounted the graduated feeding worm 4, it being carried upon a sectional axial shaft comprising the coöperative parts 5 and 6, the former being journaled within the driving or head end of the housing 1, and the latter being journaled within the opposite or tail end thereof, and the two telescopically connected as at 7, such telescopic connection being rectangular in cross section so that the part 6 is driven by the part 5 as is common in similar machines.

A planetary gear arrangement is housed within the head end of the body portion 1 and is so arranged that the axial shaft upon which the worm 4 is mounted is rotated at a greater speed than the worm, which is common in such machines and forms no part of my present invention, therefore necessitating no detailed description thereof, other than to say that the axial shaft is driven directly by power being applied thereto, either manually or mechanically, and the worm is driven through the medium of the intermediate spur gears 8 and 9 meshing with the enlarged toothed portion 10 of said axial shaft and the enlarged internally toothed portion 11 of the sleeve 12, which is coöperatively connected with the worm 4 and in which sleeve the section 5 of the axial shaft is journaled, the outer end of the said section 5 being journaled in the cover plate 13. Any suitable form of ball bearing, as illustrated at 14, may be employed as a thrust bearing for the worm at the head end thereof, and, upon the section 6 of the axial shaft, I have shown an annular enlargement as at 15, adjacent the tail end of the worm 4, which acts as one portion of a suitable ball bearing illustrated at 16, the opposite race-way being shown at 17 and removable from the tail end of the worm in which it is recessed when the shaft is operated. The member 17 is carried rigidly fixed to the end of the worm as by suitable screws indicated at 18. The opposite face of the annular enlargement 15, on the section 6, to that against which the balls of the bearing are engaged, is made concaved in shape to receive the convexed portion 19 of the sectional chopping knife, which is composed of the two parts 20 and 21. That portion of the shaft 6, directly adjacent the concaved face of the enlargement 15, is square in cross-section, and the hole of the two part cutter or knife is also square to snugly fit over same, said hole being distinctly shown at 22 in Figs. 6 and 7 of the drawings. The section 20 of the knife may be termed the carrying section, as the outer face of same is stepped as at 23 for the reception of the flat back of the section 21, said stepped portion being of the same shape in outline for the proper registration of the section 21 when applied thereto. Two of

the diagonally opposite edges of the carrying section 20 of the cutter are both, in plan view and in transverse sectional view, arcuate in shape, as illustrated at 24 and 25 respectively, the curvature 25, upon each half of the section, continuing from the edge of the stepped portion 23 outwardly toward and merging into the arcuate edge 24 of the section 20.

The gathering and cutting ribs 26 are formed upon the section 21 of the cutter, there being 4 of such upon either side of the center, and formed diagonally across the blade in opposite directions on either side of the center thereof. The forward or leading end of each rib is turned at an angle to the body portion thereof in order to produe a "gathering in" effect of each rib as the blade rotates, thus effectually assisting the discharge of the meat from the end of the worm, and, in fact, resulting in completely discharging all of the contents of the meat chopper at the conclusion of an individual operation of the machine. The outer edge of each rib 26 is straight and flat for approximately one-half its length and which flat portion bears firmly against the inner face of the grid or perforated cutting disk 27, the latter being similar in one respect to those commonly used in such devices and is held in place by the internally screw threaded annular ring 28, which is adjustably carried upon the end of the body portion 1, and, removably held upon the circumferential edge of the ring 28 by suitable thumbscrews 29, is the ring 30, having formed integrally therewith the radial arm 31, which is turned inwardly at its extreme end, as at 32, toward the grid 27, where it forms a journal bearing for the end of the shaft section 6, the latter being round in form in that portion which extends through the grid and into the sleeve 32. This form of radially disposed support for the end of the shaft is very much more satisfactory in operation than where said support is made to extend entirely across the end of the support as it is evident that with this construction the meat coming through the grid is entirely free to fall from the support.

By having the chopping knife or blade made in two sections, as previously described, it becomes possible to use the receiving section independently of the section 21, and that without the grid. When thus used, the meat passing through the worm will be cut into chunks by the blades 24 of the cutter, which is desirable in some instances for coarsely chopped meat.

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

1. The combination with a meat chopping machine of the character described including a cylindrical body portion, a feeding worm therein and a perforated grid, of a propeller-like knife adjacent the discharge end of the worm and a grid engaging knife intermediate the propeller-like knife and the grid.

2. A grinding knife for meat chopping machines of the character described comprising a plurality of substantially arcuately shaped spaced cutting and forcing ribs upon either side of the center thereof.

3. A grinding knife for meat chopping machines of the character described comprising a plurality of substantially arcuately shaped spaced cutting and forcing ribs upon either side of the center thereof, the ribs on one side being diagonally disposed in the opposite direction to those upon the other side.

4. A separable two part knife for meat chopping and grinding machines of the character described, one of said parts comprising a hub portion and a propeller like blade portion upon either side of the hub; the other part comprising a hub portion and upon either side thereof a plurality of ribs; the two parts being coöperatively engageable as and for the purpose described.

5. A grinding knife for meat chopping machines of the character described comprising a hub portion, arms extending in opposite directions from said hub portion, and a plurality of spaced cutting and forcing ribs upon said arms for the purpose described.

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

WILLIAM JOHN ANDERSON.

Witnesses:
S. C. Bronson,
R. L. Cowen.