Jan. 28, 1930. R. L. POWELL 1,744,795

CUTTING MACHINE

Filed Nov. 9, 1928 4 Sheets-Sheet 1

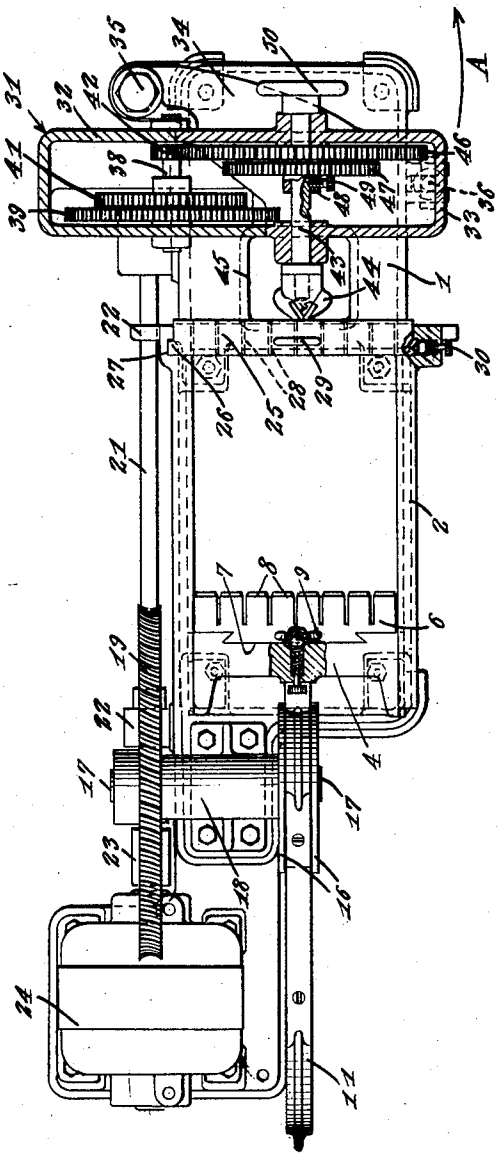


Fig. 1.

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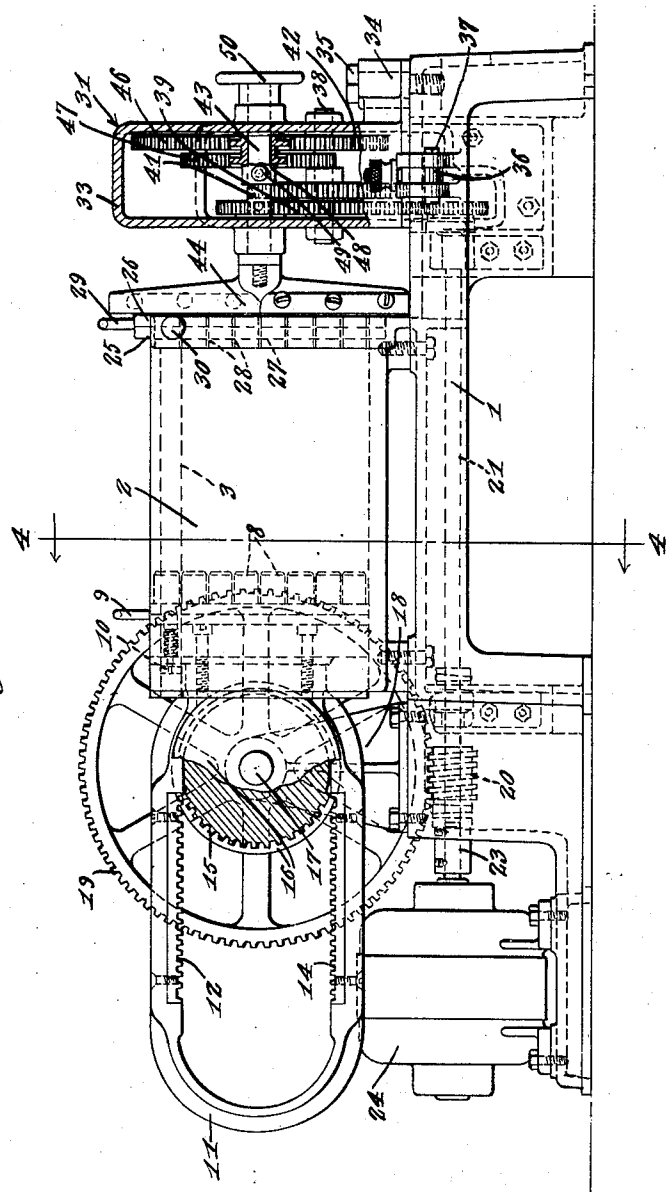


Fig. 2.

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CUTTING MACHINE

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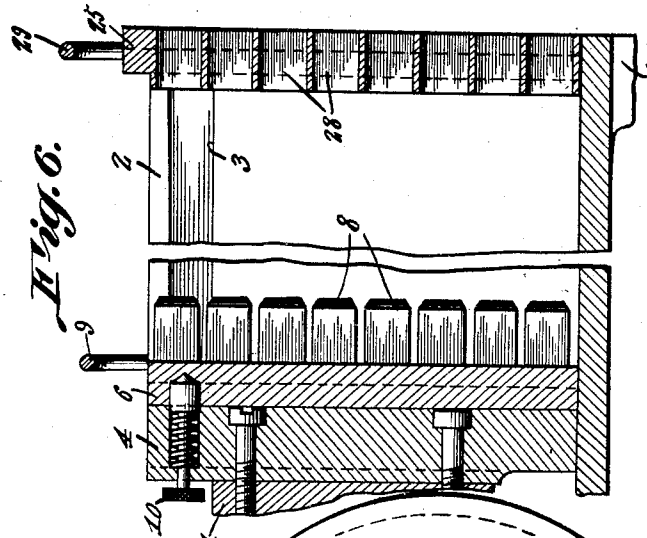


Fig. 6.

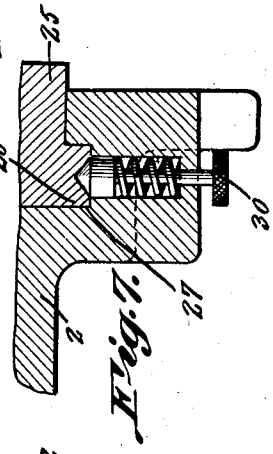


Fig. 7.

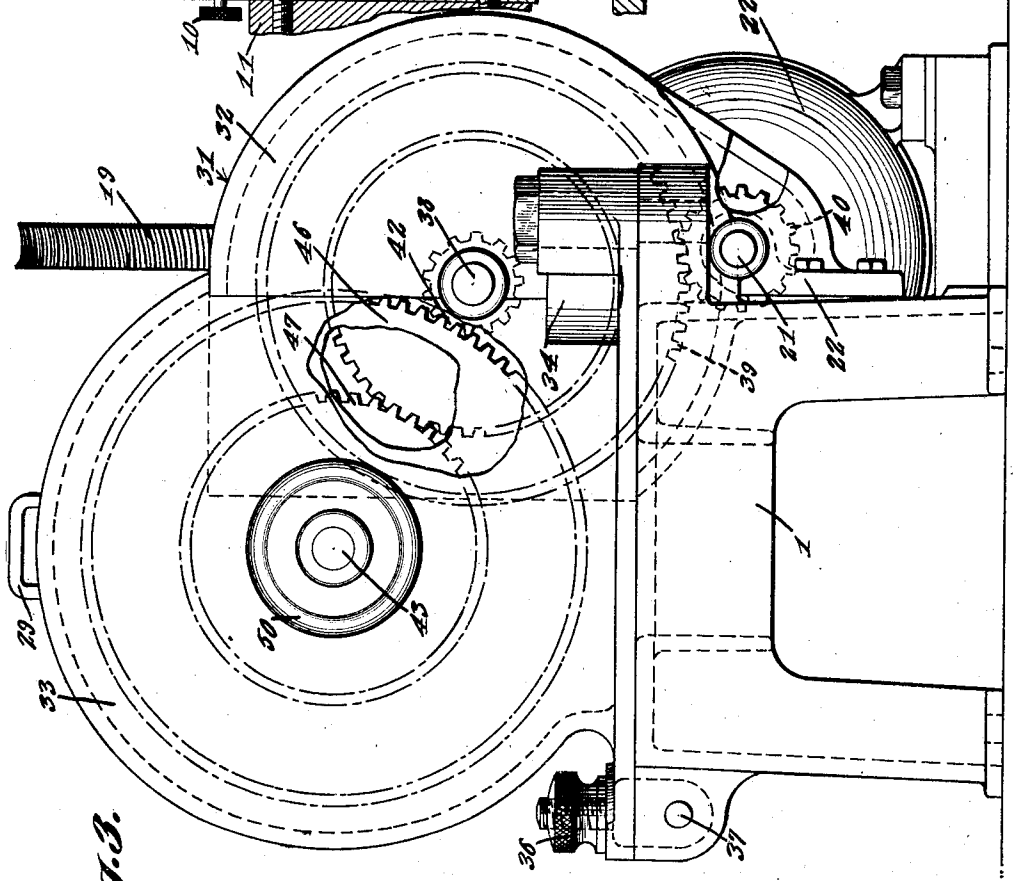


Fig. 3.

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CUTTING MACHINE

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Fig. 5.

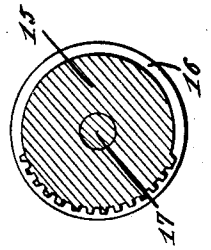
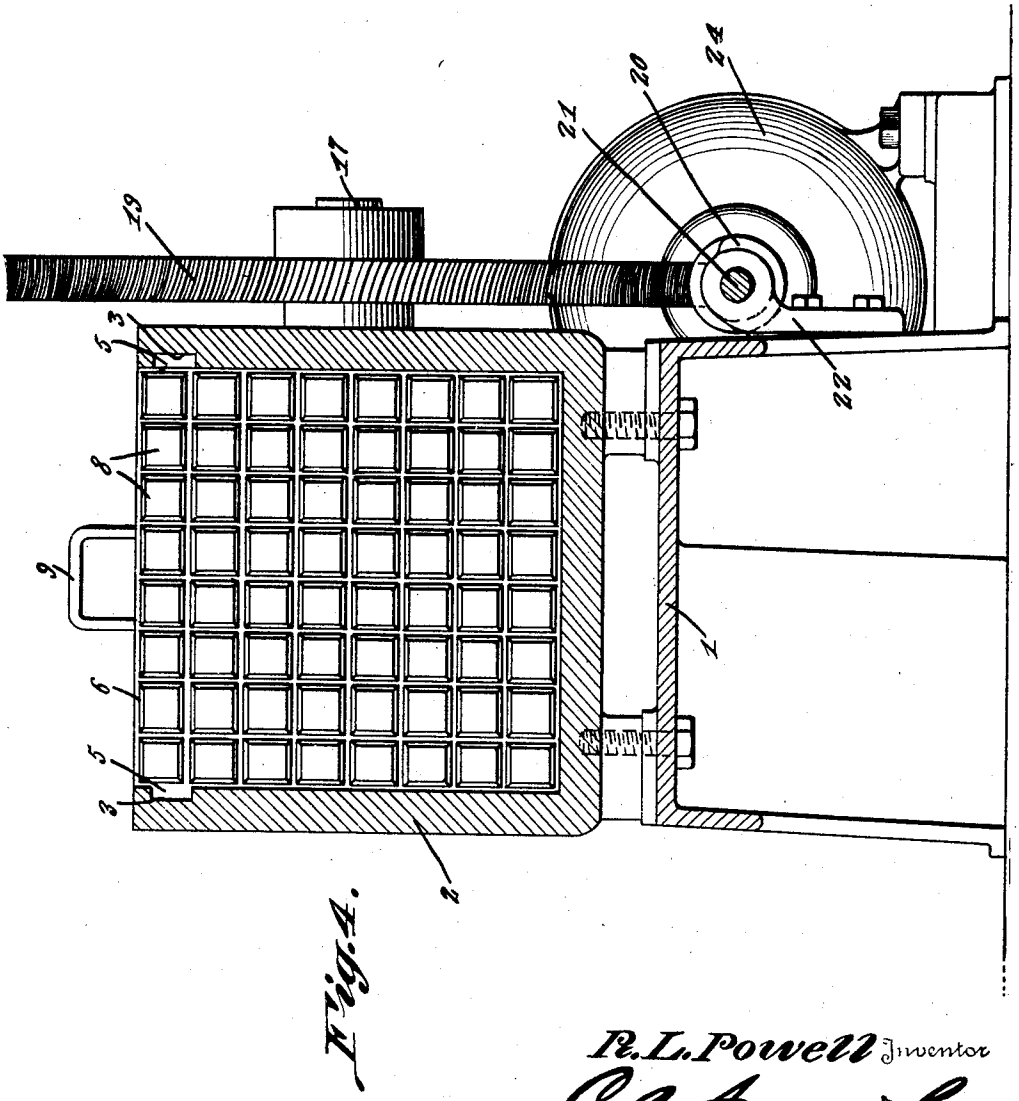


Fig. 4.



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Patented Jan. 28, 1930 1,744,795

UNITED STATES PATENT OFFICE

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CUTTING MACHINE

Application filed November 9, 1928. Serial No. 318,216.

The machine forming the subject matter of this application is adapted to be used at places where onions are cut up to be used as a relish on frankfurt sausages; although the machine can be employed for any purpose for which it is adapted. One object of the invention is to provide novel means whereby the ram which shoves the vegetables through the separating frame will be given a uniform right line travel, so that all of the chunks of vegetable will be of the same size when they are cut up by a rotary knife that swings crosswise of the line of reciprocation of the ram. Another object of the invention is to provide novel means for imparting motion to the rotary knife. A further object of the invention is to improve the driving connections and the mechanism whereby the ram is operated.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that, within the scope of what is claimed, changes in the precise embodiment of the invention shown can be made without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 is a plan;

Figure 2 is a side elevation;

Figure 3 is an end elevation, with parts broken away;

Figure 4 is a cross section on the line 4—4 of Figure 2;

Figure 5 is a section of the mutilated gear;

Figure 6 is a fragmental longitudinal section;

Figure 7 is a fragmental section taken through one of the latches.

The numeral 1 marks a support on which is secured a horizontal trough-shaped receptacle 2 provided in its sides with horizontal guide ways 3 in which are received ribs 5 on a ram 4 that slides in the receptacle 2 longitudinally of the receptacle. The numeral 6 designates a facing which is dove-tailed at 7 into the ram 4 so that the facing can be removed vertically. In order that the facing can be lifted out readily, it is provided on top with a handle 9. The working surface of the facing 6 is provided with a plurality of projections 8. The facing 6 is held on the ram 4, against vertical movement, by a spring actuated latch 10, mounted in the ram and adapted to engage the facing, as shown in Figure 6.

A loop-shaped frame 11 is secured to the ram 4 and it carries an upper rack 12 and a lower rack 14. The aforesaid racks are adapted to cooperate with a mutilated gear wheel 15 having flanges 16 between which the racks 12 and 14 move. The gear wheel 15 is secured to a horizontal shaft 17, journaled in a bearing 18 on the support 1. A worm wheel 19 is secured to the shaft 17 and meshes with a worm 20 on a horizontal shaft 21 that is journaled at 22 on the support 1. One end of the shaft 21 is coupled at 23 to the shaft of a motor 24 mounted on the support 1. The motor 24 may be an electric motor, if desired.

The numeral 25 designates a separator or strip cutter in the form of a frame, having ribs 26 that are received slidably in guide grooves 27, formed in the sides of the trough-shaped receptacle 2. The separator 25 has openings 28 corresponding in sizes and number to the projections 8 on the facing 6 of the ram 4. In order to facilitate the vertical removal of the separator 25, it is provided on top with a handle 29. The separator 25 is held in place by a spring actuated latch 30, shown in Figure 7, the latch being mounted in the support, one end being adapted to engage one of the ribs 26 of the separator 25. The separator 25 is so called, because when the vegetables are shoved through the holes 28 of the separator, by the operation of the ram 4, the vegetables are cut up into strips of a length determined by the size of the onions or other vegetables.

The projections 8 are adapted to enter the holes 28 in the separator 25. In the event that the operator wishes to cut up the vegetables in some way not provided for by the

ram facing 6 and the separator 25, he can take out the ram facing and the separator and put in another ram facing and separator which will accomplish the particular kind of cutting desired.

The numeral 31 designates, generally, a casing which is mounted on one end of the support 1. The casing 31 may also be referred to as a bearing, since several shafts to be alluded to hereinafter are journaled in it. The casing 31 embodies a fixed part 32 that is fastened to the support 1. The casing 31 includes a movable part 33 that cooperates with the fixed part 32. The movable part 33 of the casing 31 is provided with an arm 34 connected by a pivot element 35 to the support 1, the construction being such that the movable part 33 of the casing can be swung around horizontally in the direction of the arrow A in Figure 1, so as to open the casing 31. The part 33 of the casing 31 is held against the part 32 of the casing 31 by a nut-latch 36 (Figure 3) pivotally mounted at 37 on the support 1 and adapted to engage the movable part 33 of the casing.

A shaft 38 is journaled in the fixed part 32 of the casing 31. On the shaft 38 is fixed a gear wheel 39. The gear wheel 39 meshes with a pinion 40 on the shaft 21 which, it will be recalled, is rotated by the motor 24.

The shaft 38 carries a gear wheel 41 which is a little smaller in diameter than the gear wheel 39. The gear wheel 41 is part of a speed change mechanism which will be described hereinafter. A pinion 42 is secured to the shaft 38. This concludes the description of the gearing that is mounted in the fixed part 32 of the casing 31.

A shaft 43 is journaled in the movable part 43 of the casing 31 and is provided at its forward end with a cutter 44 which works close up to the separator frame 25 and above a hole 45 in the support 1. The numeral 46 marks a large gear wheel that meshes with the pinion 42 on the shaft 38. The numeral 47 designates a gear wheel that is somewhat smaller in diameter than the gear wheel 46. The gear wheels 46 and 47 are carried by a hub 48 held in adjusted position on the shaft 43 by a set screw 49. There is a hand wheel 50 on the shaft 43.

The motor 24 rotates the shaft 21 and the worm 20, motion being imparted to the worm wheel 19, the worm wheel 19 rotating the shaft 17. The shaft 17 turns the mutilated gear wheel 15 and the gear wheel 15 engages first with one of the racks 12—14, and then with the other of said racks. By this means, right line sliding movement is imparted to the frame 11 and to the ram 4. The ram 4 moves at a uniform rate of speed both forwardly and backwardly as it reciprocates. This is one of the important features of the present invention, because, if the ram 4 does not have a uniform speed as it moves backwardly and forwardly, the vegetables will be pushed through the separator 25 more rapidly at one part of the stroke of the ram than at another. The rotary cutter 44 turns at a uniform rate of speed, and unless the vegetables are forced through the separator 25 at a uniform rate of speed, the vegetables will not be cut up into pieces of uniform sizes like dice, but will be cut up in pieces that vary in shape from cubes to elongated blocks of rectangular cross section.

Up to the present point in the description, it has been set forth how the ram 4 shoves the vegetables through the separator 25 to divide the vegetables into strips. The operation of the means for cutting these strips up into cubes will now be set forth.

When the shaft 21 is rotated by the motor 24, the shaft 21 turns the pinion 40 (Figure 3). The pinion 40 meshes with the gear wheel 39, and rotation is imparted to the shaft 38. The shaft 38 turns the pinion 42. The pinion 42 meshes with the big gear wheel 46 on the shaft 43, and the shaft 43 is rotated, the cutter 44 participating in this rotation and turning rapidly in cross relation to the separator 25. As the strips of vegetable emerge from the separator 25 they are cut up into cubes by the action of the cutter 44, and the cubes drop down through the hole 45 in the support 1.

Some operators may wish merely to have the vegetables cut up into strips, the rotary cutter 44 being inoperative. This can be done by disengaging the nut-latch 36 from the movable part 33 of the casing 31, the part 33 being swung around on the pivot element 35 to carry the part 33 of the casing 31 away from the fixed part 32 in the direction of the arrow A of Figure 1, the cutter 44 being removed from operative relation to the separator 25. When the movable part 33 of the casing 31 is swung to open position, as aforesaid, the gear wheel 46 on the shaft 43 is moved out of engagement with the pinion 42 on the shaft 38, and the shaft 43 with the cutter 44, therefore, are not rotated.

There is another reason why the operator may want to open the casing 31, as aforesaid, namely, to make an arrangement which will change the speed of rotation of the shaft 43. In order to bring about this speed change, the casing 31 is opened, the set screw 49 of Figure 1 is backed off the shaft 43, and the hub 48, carrying the gear wheels 47 and 46, is slid to the left in Figure 1 into such a position that when the casing 31 is closed the gear wheel 46 will be out of mesh with the pinion 42, the gear wheel 47 meshing with the gear wheel 41 on the shaft 38. Then the drive train includes the pinion 40, the gear wheel 39, the gear wheel 41, the gear wheel 47, and the shaft 43. It may happen that when the movable part 33 of the casing 31 is swung into closed position, the gear wheel 46 may not

mesh properly with the pinion 42: or if the speed change has been effected, the gear wheel 47 will not mesh with the gear wheel 41. If this happens, the operator can turn the shaft 43 a little by means of the hand wheel 50 so as to bring the gear wheel 46 or the gear wheel 47 into proper meshing relation with respect to its fellow.

Having thus described the invention, what is claimed is:—

1. In a device of the class described, a receptacle, a separator in the receptacle, a ram movable in the receptacle toward and away from the separator and located on one side of the separator, mechanism for imparting right line reciprocation to the ram at a uniform speed, a bearing comprising fixed and movable parts, a first shaft carried by the fixed part of the bearing, a second shaft carried by the movable part of the bearing, a rotary cutter carried by the second shaft and located on the opposite side of the separator from the ram, and a speed change gearing under the control of an operator, and forming a driving connection between the first and second shafts, the movable part of the bearing being separable from the fixed part of the bearing to break the continuity of the speed change gearing.

2. In a device for cutting up vegetables, and like material, a receptacle, a strip cutter in the receptacle, a ram movable in the receptacle toward and away from the strip cutter and constituting means for forcing the material through the strip cutter, means for holding the strip cutter in a relatively fixed position, against movement with the ram, a rotary cutter cooperating with the strip cutter to sever the strips produced when the ram forces the material through the strip cutter, and uniformly operating mechanism for connecting the ram directly and positively to the rotary cutter.

3. A device for cutting up vegetables and like material, constructed as set forth in claim 2, and further characterized by the fact that said uniformly operating mechanism comprises oppositely disposed racks carried by the ram, a mutilated pinion cooperating with the racks successively, means for mounting the pinion for rotation, and means for rotating the pinion.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

RICHARD L. POWELL.