Feb. 9, 1960 P. M. REILAND 2,924,256

VEGETABLE SLICER

Filed April 22, 1957 2 Sheets-Sheet 1

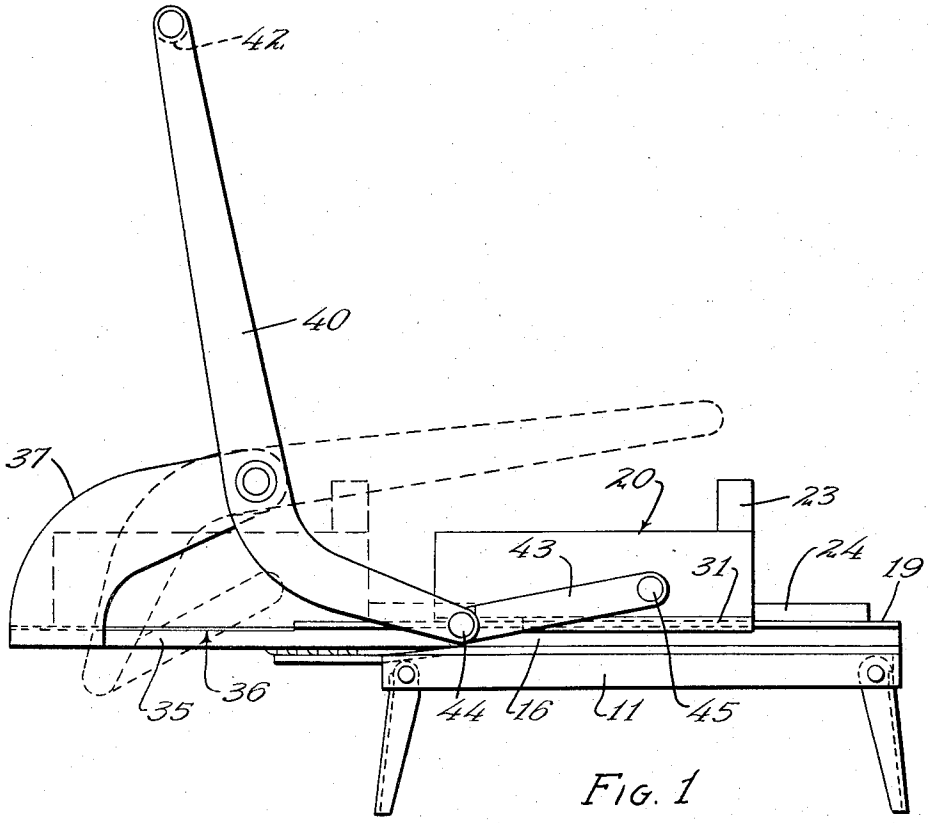


FIG. 1

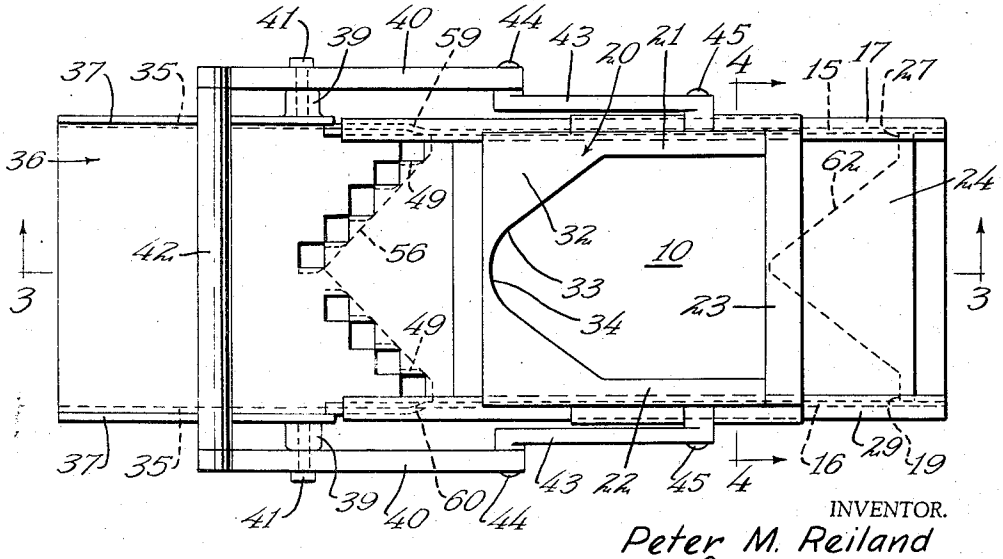


FIG. 2

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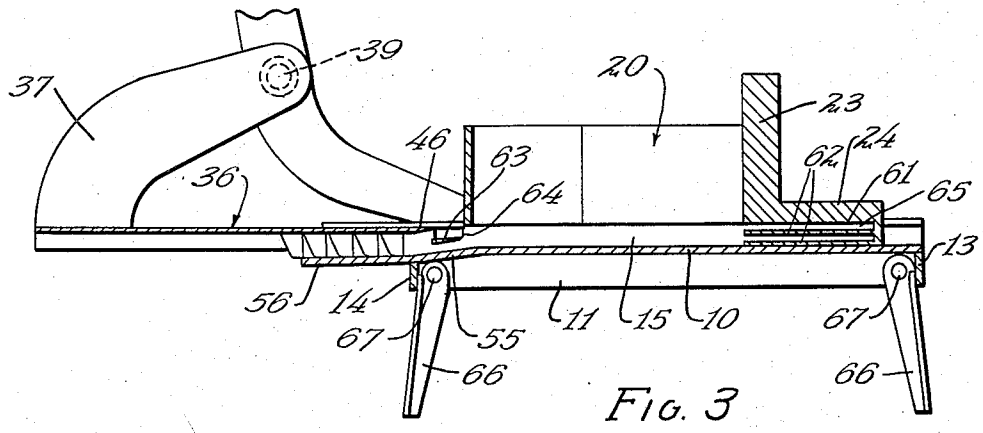


FIG. 3

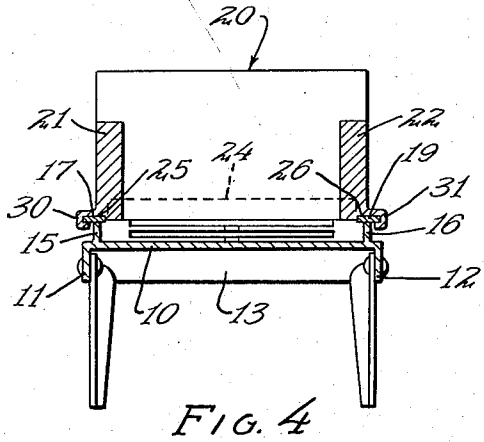


FIG. 4

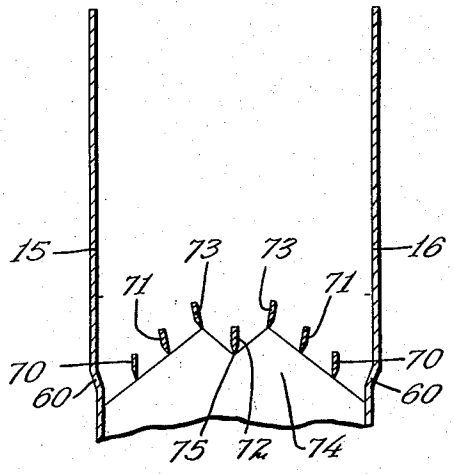


FIG. 6

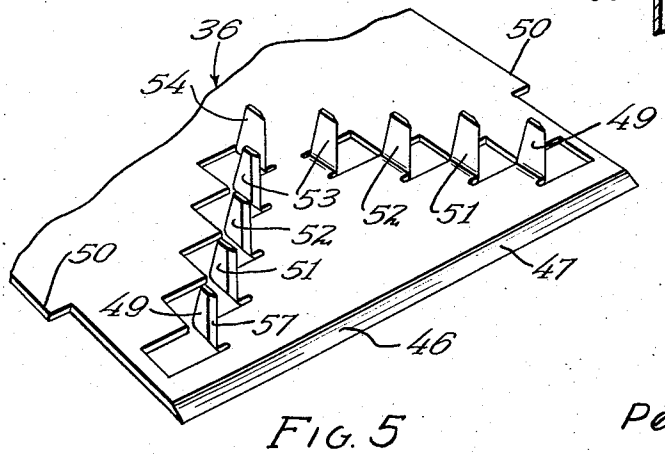


FIG. 5

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VEGETABLE SLICER

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2 Claims. (Cl. 146—78)

This invention relates to an improvement in vegetable slicer and deals particularly with an apparatus useful in the cutting of potatoes and other vegetables into strips.

During recent years the use of French fried potatoes and shoe string potatoes has become extremely widespread. The use of other vegetables cut into strips has also increased. Numerous devices have been produced for cutting vegetables of this type. However, in many instances care has not been taken to prevent compression of the strips as they are cut. As a result, considerable force is required to move the vegetables past the cutters and the effectiveness of the cutting operation is decreased.

An object of the present invention resides in the provision of a vegetable slicer which includes a hollow receptacle designed to accommodate the vegetable being sliced and a platform over which this receptacle may slide. A series of cutters are provided in the path of movement of the vegetable, the cutters being designed to first cut the vegetable horizontally into one or more relatively thin slices, and then to slice the vegetable longitudinally of the movement of the receptacle to cut the strips into elongated sections.

A feature of the present invention resides in the provision of lever means operable for moving the receptacle longitudinally of its supporting table. Lever arms are provided which are pivotally supported by opposed pivots to the frame of the apparatus. Links are provided which connect one end of each lever to the receptacle. Thus, upon pivotal movement of the lever about the axis thereof, each lever operates in unison to move the receptacle longitudinally of the supporting table to effect the cutting operation.

A feature of the present invention resides in the specific shape of the lever operating means which move the receptacle longitudinally of the supporting table. The levers are so shaped that as the vegetable to be sliced approaches slicing position, the handle levers swing beyond vertical position and start their swinging movement rearwardly and downwardly toward the table. Thus, the force upon the lever arms which acts to move the vegetable through the cutter blades includes a rearward and downward force which tends to hold the table firmly upon its support. The arrangement is such that as the cutting continues, the inclination of the levers toward horizontal position increases. Thus, the apparatus may be actuated without the necessity of mounting the slicer in fixed position upon a support and may be merely placed upon a counter or similar support.

A feature of the present invention resides in the particular arrangement of cutting blades which are employed. After the vegetable has been sliced horizontally into one or more thin slices or wafers, these wafers are urged against a series of substantially vertically extending knife blades which cut the wafers into strips. The blades are arranged in spaced pairs, two blades simultaneously engaging the wafer to slice the same. Each blade is provided with an inner surface which extends generally parallel to the direction of movement of the carrier receptacle. The forward outer edge of these blades is tapered or wedge shaped in form. Thus, as each strip is cut, the strip being cut is directed away from the remainder or uncut portion of the slices by the beveled edges of the blades so that the uncut portions of the vegetable may proceed without difficulty. The first pair of cutter blades are widely spaced and engage the slices of vegetable near the outer surfaces thereof. The next pair of blades are sequentially inwardly from the first pair of blades and longitudinally positioned beyond the first pair of blades. The next pair of blades are beyond the second pair of blades in the path of movement of the vegetable and are spaced inwardly of the second pair of blades. Thus, each pair of blades lies inwardly of the other pairs thereof until the final remaining strip is centrally cut by a central single blade which is beyond all of the other blades in the path of movement of the vegetable being cut.

A further feature of the present invention resides in the provision of a movable receptacle or carriage having a rounded forward end which acts to move the vegetable along the table and over the cutters during the return stroke of the carriage. The centrally rounded end of the vegetable engaging portion of the receptacle tends to center the vegetable with respect to the table for the next cutting operation.

A further feature of the present invention resides in the provision of a pushing element movable with the carriage and which is shaped to fit the arrangement of the vertical cutting blades so that the forward edge of this pushing element may simultaneously move into substantial contact with the cutting edges of all of the vertical blades.

These and other objects and novel features of the present invention will be more fully and clearly set forth in the following specification and claims.

In the drawings forming a part of the specification:

Figure 1 is a side elevational view of a vegetable slicing apparatus, showing in general the arrangement thereof.

Figure 2 is a top plan view of the apparatus illustrated in Figure 1.

Figure 3 is a vertical sectional view through the center of the apparatus, the position of the section being indicated by the line 3—3 of Figure 2.

Figure 4 is a transverse sectional view through the apparatus, the position of the section being indicated by the line 4—4 of Figure 2.

Figure 5 is a perspective view of the bottom or underside of the cutter plate showing the horizontal knife and the various vertically arranged knives.

Figure 6 is a sectional view of a slightly different form of cutter plate.

Certain details of the specific construction illustrated may be changed in further commercial production of the device to somewhat simplify the arrangement illustrated. However, in general, the structure is shown as it has been made as it has been found to operate effectively in this form.

In general, the apparatus includes a generally rectangular frame including a supporting table **10** having downwardly extending side flanges **11** and **12** and a downwardly extending end flange **13**. A transverse reinforcing member **14** connects the forward ends of the side flanges **11** and **12** and forms a reinforcement for the cutting portion of the apparatus.

A pair of vertical side members **15** and **16** extend upwardly from the bottom panel **10** near opposite longitudinal edges thereof. The sides **15** and **16** may be T-shaped in cross section including horizontal flanges **17** and **19** at their upper extremities which extend both inwardly and outwardly of the sides **15**. These flanges **17** and **19** are designed to form guide rails for slidably supporting

the vegetable receptacle or carriage 20 which moves the vegetables relative to the cutting knives.

The carriage 20 includes a pair of side walls 21 and 22 and a rear pushing wall 23 which connects the rear ends of the sde walls 21 and 22 and holds them in proper relation. A guide block 24 extends rearwardly from the rear wall 23 which forms an additional support for the rear end of the carriage. The side walls may be notched as indicated at 25 and 26 to fit over a portion of the rail flanges 17 and 19 and a portion of the guide block 24 may extend beneath the flanges 17 and 19 as is indicated at 27 and 29 to hold the rear portion of the table from moving vertically. Channels 30 and 31 are supported by the sides 21 and 22 to extend over the outwardly extending edges of the flanges 17 and 19 so as to guide the carriage in its longitudinal movement.

As is indicated in Figure 2 of the drawings, a transverse connecting member 32 connects the forward ends of the side walls 21 and 22 and this connecting member 32 may be formed integrally with the side walls in the event the carriage is of cast construction. The connecting member 32 includes a forwardly directed generally V-shaped notch 33 terminating centrally in a rounded portion 34, this arrangement being provided to center the vegetable in the carriage as the carriage moves in a rearward direction. The sides 15 and 16 and the rails 30 and 31 supported thereby extend throughout a major portion of the length of the apparatus and the sides project as indicated at 35 to form a support for the cutter plate 36 and also to provide a support for upwardly and rearwardly directed bracket arms 37. These bracket arms 37 form supports for a pair of oppositely disposed aligned bosses 39 which are best illustrated in Figure 2 of the drawings and which are located above the level of the carriage 20 and on opposite sides thereof. A pair of bell crank levers 40 are hingedly connected to the opposed bosses 39 by pivot bolts 41 or by other suitable pivot means. A handle member 42 acts to connect an end of one lever 40 with a corresponding end of the other lever so that both levers are secured for movement in unison. Links 43 are pivotally connected at their forward ends by pivot bolts 44 to the lower ends of the levers 40. The rear ends of the links 43 are connected along aligned pivots by pivot bolts such as 45 to opposite sides of the carriage 20.

An examination of Figure 1 of the drawings will indicate that the levers 40 may be actuated to move the carriage 20 from the position shown in full lines in Figure 1 of the drawings to the position shown in dotted outline therein. During this time, the carriage is held in a horizontal position by engagement of the channel shaped members 30 and 31 with the horizontal flanges 17 and 19 of the side members 15 and 16. During the movement of the carriage 20 to the left from the position illustrated in Figure 1, the vegetable which is placed in the carriage 20 to rest upon the table member 10 is carried past the cutting blades which will be later described. It will be seen that as the vegetable is carried by the cutter knives, the handle 42 is being pulled rearwardly and downwardly, the force used to move the carriage tending to hold the slicer firmly upon its support.

The cutting plate 36 is shown in inverted position in Figure 5 of the drawings, a portion of the forward part of the plate being cut away to simplify the showing. It will be noted that the rear edge 46 which first engages the vegetable upon forward movement of the carriage is sharpened, the undersurface of the edge being beveled as indicated at 47. Spaced from the edge 46 of the cutter plate a pair of blades 49 are bent upwardly in the inverted position of the blade to extend at right angles to the plane of the plate 36. These blades 49 are struck from the body of the plate and are spaced a substantially equal distance from opposite side edges 50 of the cutter plate. A second set of blades 51 are bent into right angular relation to the plate 36, the blades 51 being spaced a greater distance from the edge 46 than are the blades 49. The blades 51 are also spaced inwardly an equal distance from the adjoining blades 49. A third set of blades 52 are struck from the plate 36 to extend at right angles thereto, the blades 52 being at a greater distance from the edge 46 than the blades 51. A fourth set of teeth 53 are struck from the plate 36 at even a greater distance from the plate edge 46. A final central blade 54 is struck from the body of the plate 36 midway between the blades 53 and at a point greater spaced from the edge 46 than the blades 53.

It will be seen that the various blades are arranged in pairs, and each pair of blades is in staggered relation with the next adjoining pairs of blades, the distance between the blades of each pair gradually diminishing until the strip cut by the blades 53 is centrally cut by the blade 54. The blades of one pair are staggered an equal distance from the blades of the adjoining pairs so that strips of equal width are produced.

As is indicated in Figure 3 of the drawings, the forward end of the base panel 10 is inclined downwardly as indicated at 55, this incline extending from a point somewhat forwardly of the cutting edge 46 to a point beneath the plate 36 forwardly of the cutting edge. A generally triangular projection 56 is provided upon the base plate 10, this projection 56 extending into close proximity with the cutting edges of the various blades as is indicated in Figure 2 of the drawings.

The edges of the various blades 49, 51, 52, 53 and 54 are sharpened, the sharp edges being directed to the right as indicated in the drawings. As is indicated in Figure 5 of the drawings, the edges are sharpened by beveling the outermost surfaces thereof as indicated at 57. As a result of this agreement, as a slice of vegetable is forced through the various teeth, the various knives tend to form a pair of parallel cuts in the center portion of the vegetable or along the sides of the central portion of the vegetable. The wedge shaped form of the cutting edges tends to guide the portions of the vegetable outwardly of the blades being engaged in a slightly lateral direction. Thus, the strips being cut from the center portion of the vegetable are in effect guided slightly away from the remainder of the vegetable by the shape of the knives.

With reference now to Figure 2 of the drawings, it will be noted that the vertical sides 15 and 16 are outwardly offset at 59 and 60 just outwardly of the outermost blades 49. The purpose of the offsets 59 and 60 is to prevent crowding of the vegetable as the outer slices are removed. As was previously stated, the shape of the blades is such as to tend to guide the strips being sliced outwardly toward the lateral sides of the apparatus, and the offsets 59 and 60 permit this action to take place.

It is believed that the operation of the slicer will be understood from the foregoing description. With the carriage in the position shown in full lines in Figures 1, 2 and 3 of the drawings, a vegetable to be sliced is placed in the carriage. Movement of the handle 42 in a clockwise direction advances the vegetable along the table 10 until the vegetable engages the cutting edge 46. This cutting edge cuts a horizontal slice through the material and the material continues to advance with the carriage.

As the slice advances forwardly, it first engages the outermost knife blades 49 and these blades act to cut strips of material from opposite sides of the slice and to direct these strips outwardly to a slight degree, the offsets 59 and 60 permitting this action. It should also be noted that the downward offset 55 in the table permits the slice to be cut by the blade 46 without crowding the slice between the knife blade and the bottom of the table. As the carriage continues to move, additional slices are cut from the sides of the vegetable by the blades 51, the blades 52, the blades 53, and finally the portion of the slice passing between the blades 53 is divided centrally by the cutting blade 54.

As each pair of blades is situated beyond the position of the next adjoining blades, the strips being cut may be deflected outwardly by the various cutting blades so that no crowding of the vegetable between the blades is possible. Thus, the slicing operation may be accomplished with a minimum of effort.

As is indicated in Figure 3 of the drawings, the rear wall **23** and the bearing block **24** extending rearwardly therefrom are horizontally slotted as indicated at **61** so that the rear of the carriage may move beyond the cutting edge **46**. As may best be discerned from Figure 2 of the drawings, the under portion of the bearing block is partially cut away so as to be generally triangular in shape as indicated at **62**. As a result, the carriage may be advanced until the edge **62** is in engagement with the forward edges of the vertical knives, the triangular portion **62** conforming to the contour of these blades when viewed in plan.

As is best indicated in Figure 3 of the drawings, an auxiliary blade **63** may be supported in a horizontal position in notches **64** in the sides **15** and **16**. When in place, this blade **63** divides the vertical space between the table surface **10** and the blade **46** so that slices only one half the thickness of the previous slices may be produced. These slices are forced through the vertical cutting blades in superimposed relation as the carriage moves to its extreme position. A slot **65** is provided in the triangular portion **62** to permit the blade **63** to be located in the manner illustrated without interfering with the movement of the carriage.

The strips of vegetables which are cut by the horizontal and vertical blades are free to drop after passing through the vertical blades and may fall upon a plate or pan placed beneath the forward end of the apparatus. As a result, the frame is supported in an elevated position such as by legs **66** pivotally connected to the flanges **11** and **12** of the frame by means of pivots **67**. These pivots permit the legs to be folded upwardly so that the slicer may be more conveniently stored.

In Figure 6 of the drawings I disclose a slightly different form of cutter blade construction, it being understood that the cutting blades are bent downwardly from a plate into right angular relation thereto, as in the previous construction described. The cutter plate of Figure 6 discloses a pair of outermost cutter blades **70** which are generally parallel, and outwardly of the offsets **60** in the sides **15** and **16**. The next pair of blades **71** are located beyond the blades **70** in the direction of travel of the vegetable being cut, and diverge apart slightly, being closer together at their cutting edges than at their opposite or rear edges. This arrangement permits the center blade **72** to be positioned midway between the blades **71** without creating compression on the portion of the vegetable being sliced, due to the angle of the blades **71**. The bearing block **62** is modified in shape to accommodate the blade **72**.

The next pair of blades **73** may also diverge apart from their cutting edges as shown, to complete the cutting operation. The blades **73** are rearwardly from the blades **71** and **72**. During the cutting operation, the vegetable is supported by the table **74**, which is centrally notched, as indicated at **75**, to accommodate the lower extremity of the central blade **72**, which preferably projects below the level of the table **72**.

In accordance with the patent statutes, I have described the principles of construction and operation of my vegetable slicer and while I have endeavored to set forth the best embodiments thereof, I desire to have it understood that changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A vegetable slicer including an elongated table, a hollow carriage slidable longitudinally of said table, bracket means on said table out of the path of movement of said carriage, bell crank lever means pivotally connected intermediate its ends to said bracket means on a pivot transverse to the direction of travel of the carriage, link means connecting an end of said lever means to said carriage, knife means over which said carriage may pass, the other end of said lever means swinging in a direction opposite the direction of travel of said carriage and downwardly toward said table as said carriage moves over said knife means, and said carriage having a generally V-shaped wall engageable with a vegetable upon reverse movement of the carriage over the knives to center the same.

2. The structure of claim 1 and in which the carriage comprises a wide flat rear wall against which the vegetable may bear during forward movement of the carriage.

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