

[54] MACHINE FOR TRIMMING AND SLICING BACON SLABS

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[75] Inventor: James P. Smithers, Glen Ellyn, Ill.

Primary Examiner—Willie G. Abercrombie
Attorney, Agent, or Firm—Frank T. Barber; Carl C. Batz

[73] Assignee: Armour and Company, Phoenix, Ariz.

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[57] ABSTRACT

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A machine for trimming and slicing bacon slabs wherein the bacon slab is passed along a bed of the machine toward the slicing blade and including a trimming device having a circular trimming blade positioned to cut from the side edge of the slab as it passes along the bed a narrow portion which is called backstrap. The machine has a channel which receives the backstrap and guides it away from the main body of the slab and toward the side of the machine so that it does not contact the slicing blade. The trimming device has means of adjustment which permits the relocating of the trimmer blade to accommodate bacon slabs of different widths.

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[51] Int. Cl.² B26D 7/06

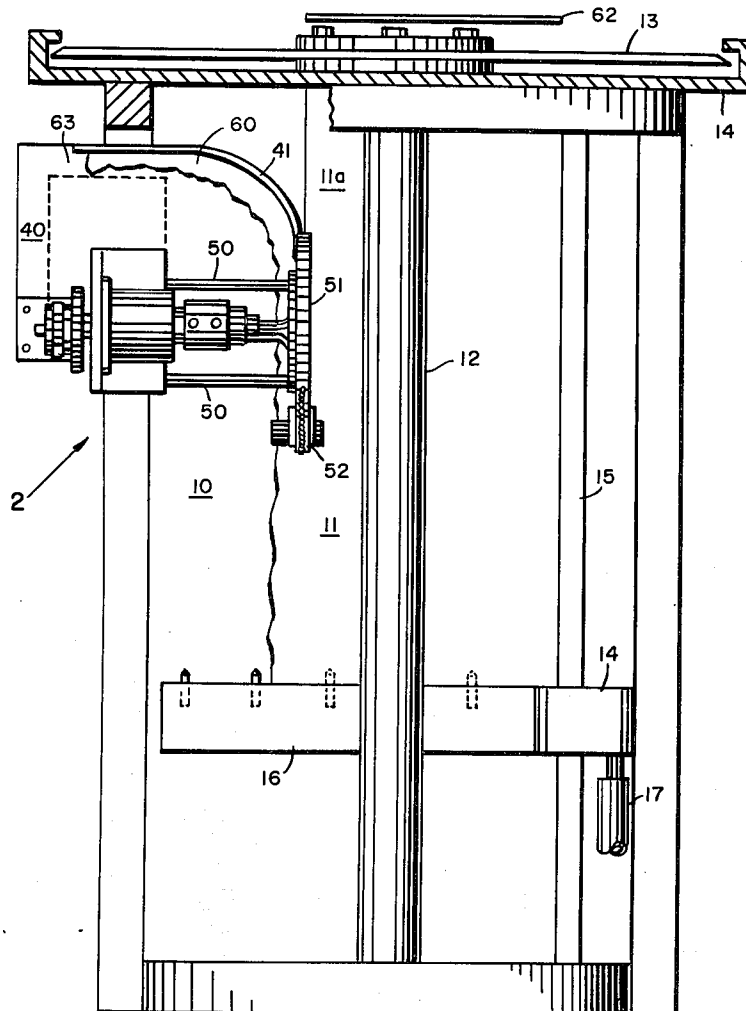
[58] Field of Search 83/407, 408, 419, 425.1, 83/433, 732, 163, 88, 84, 477.1, 477

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8 Claims, 5 Drawing Figures



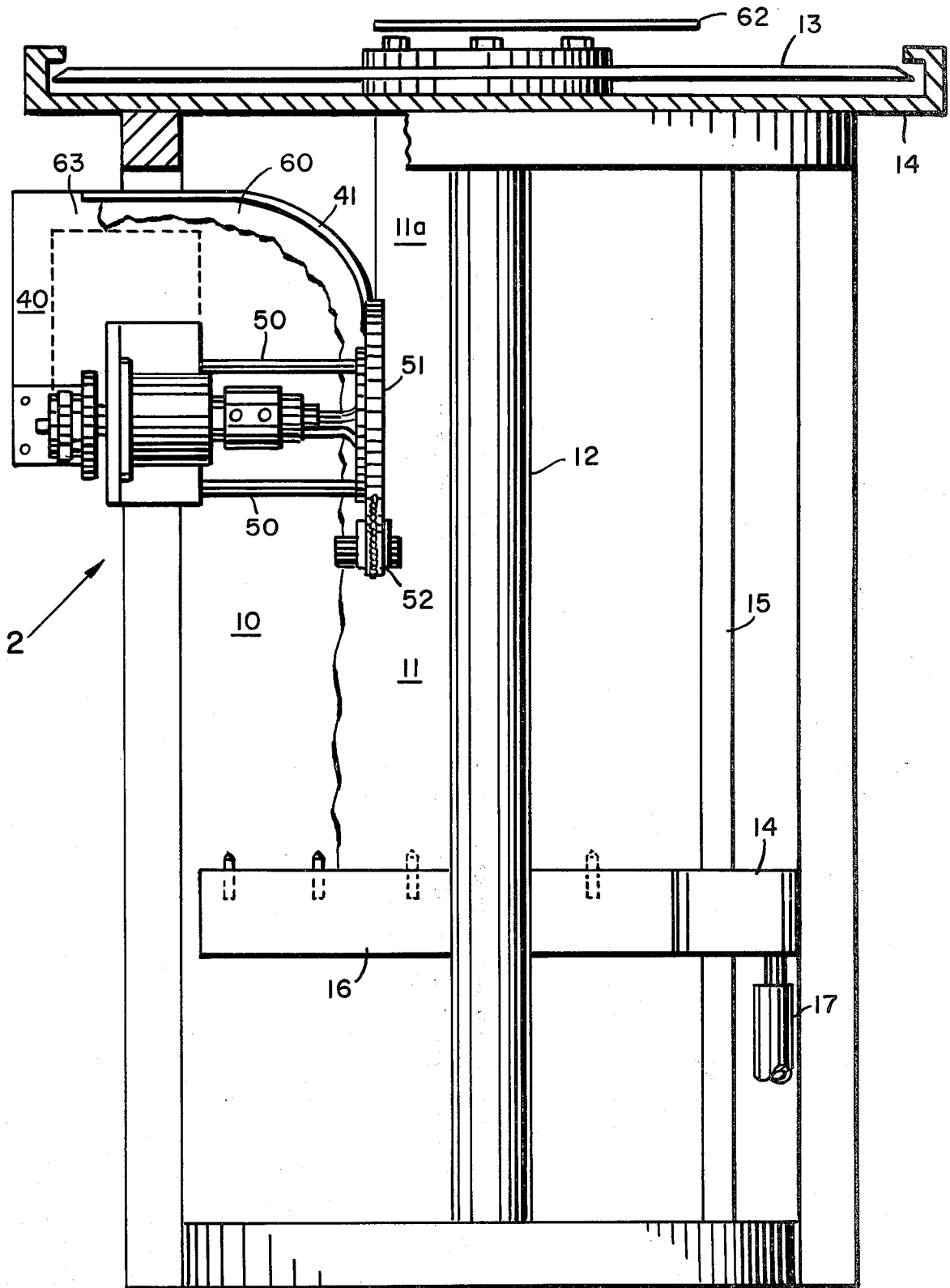


Fig. 1

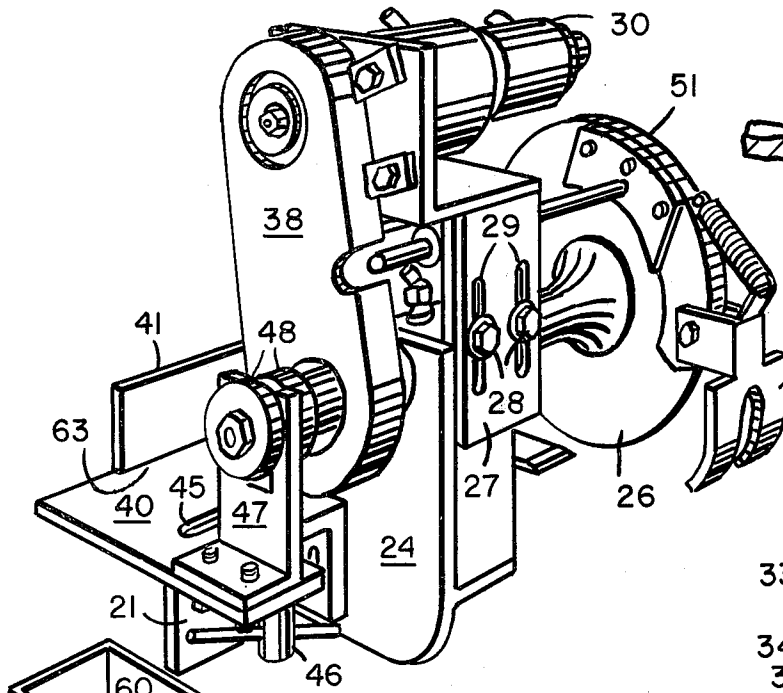


Fig. 2

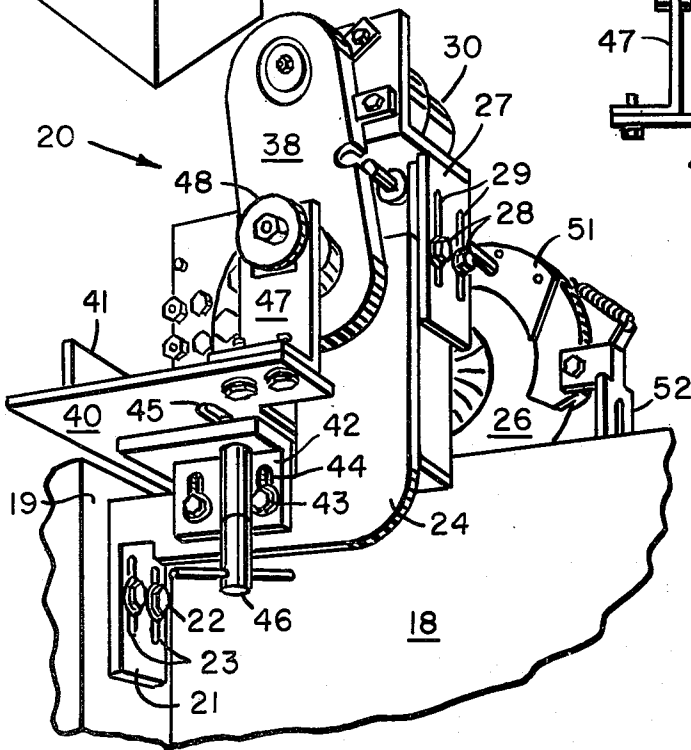


Fig. 3

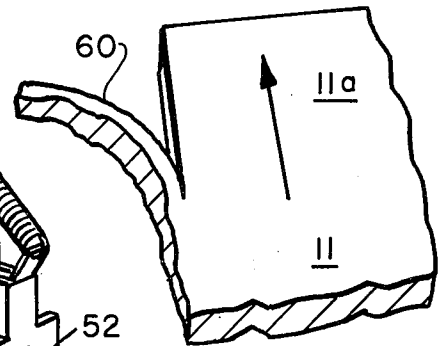


Fig. 5

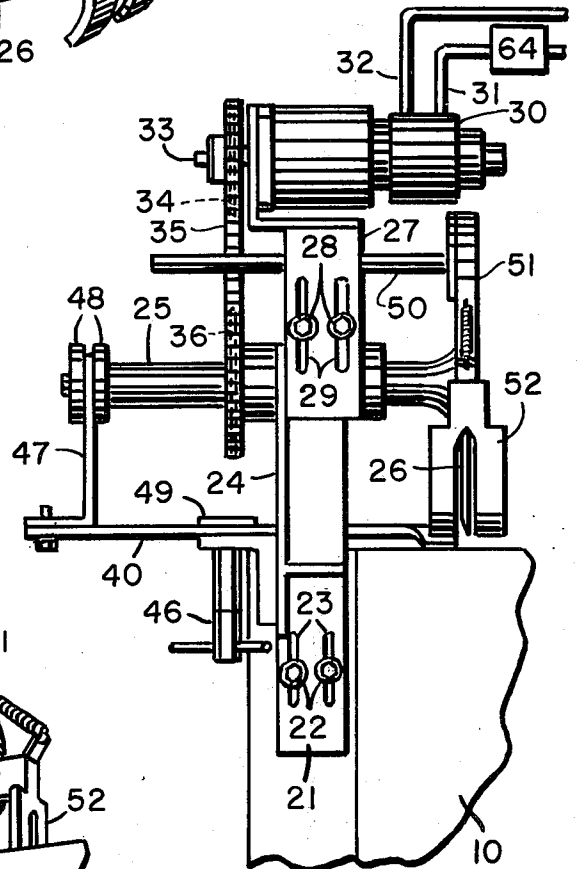


Fig. 4

MACHINE FOR TRIMMING AND SLICING BACON SLABS

This invention relates to a machine for trimming and slicing bacon slabs and more particularly to such a machine which will trim the edge of the bacon slab as it is moving forwardly to be sliced.

BACKGROUND

In the preparation of bacon for market it is common to pass a bacon slab along the bed of a mechanical slicer to a rotating slicing blade which cuts the bacon slab transversely into slices. Bacon slabs are substantially rectangular being of the order of from about 24 to 30 inches in length and from about 7.5 to 12.5 inches in width, and something like 1 to 3 inches in thickness. The side edges of the slab are not perfectly uniform and straight and the ragged edge results in bacon slices which are not square and which vary in length.

It would be very desirable to have bacon slices which are uniform in length and square at their ends, and in the past attempts have been made to square the slabs by manually trimming them in advance of the slicing operation using a straight knife which packing house workers have come to use very skillfully. The portion thus trimmed off the side of the bacon slab has come to be known as "backstrap."

It would be desirable to have a machine which would trip the side edge of the bacon slab as it proceeds through the slicing machine, and I have set about to provide such a machine.

A further object of the invention is to provide such a machine which may be adjusted to accommodate slabs of different thicknesses.

Another object is to provide such a machine which will gather the backstrap which is trimmed from the slab and guide this material to one side so that it will not move into the slicing blade.

Yet another object is to provide such a machine having a circular trimming blade which rotates in a direction such that its periphery where it contacts the bacon moves in the same direction as the bacon is moving toward the slicer blade.

A still further object is to provide such a machine wherein the circular trimming blade is powered to drive the blade when the bacon slab contacts the forwardly moving bacon but which will stall when the forward movement of the bacon is stopped.

Other specific objects and advantages of the invention will become apparent as this specification proceeds.

DETAILED DESCRIPTION

One embodiment of the invention is illustrated by the accompanying drawings in which

FIG. 1 is a plan view of the improved machine;

FIG. 2 is a perspective view of the trimmer device taken in the direction of arrow 2 in FIG. 1;

FIG. 3 is a perspective view like FIG. 2 except that the perspective is taken from a lower point of view;

FIG. 4 is a view in front elevation of the trimmer device; and

FIG. 5 is a detailed perspective view illustrating the severing of the trim of the backstrap from a bacon slab.

As illustrated, and referring particularly to FIG. 1 of the drawings, the machine includes a bed 10 on which the bacon slab 11 may be placed. A horizontal drive

shaft 12 is disposed above bed 10 and mounted for rotation in the frame of the machine. At its far end is the slicer blade 13 which is partially encased by the guard casing 14. Shaft 12 is driven by any suitable means and operates to rotate the slicer blade 13 in a continuous manner.

At the right hand side of the bed along which the bacon slabs move to the slicer blade is a backboard 15 which extends longitudinally of the slicer machine and provides a vertical wall for contacting and guiding the bacon slab as it is moved on the bed toward the slicing blade.

A pusher bar 16 extends transversely of the bed and over backboard 15. Means including the bar 17 are provided for driving the pusher bar 16 forwardly in synchronism with the rotation of the slicing blade so that as the pusher bar pushes the bacon slab forwardly into the slicer blade the bacon will be sliced into slices of selected uniform thickness. The specific structure by which the bacon is sliced into slices of desired thickness is known to the art and need not be described in detail herein.

Referring to FIG. 3 the structure providing the bed 10 includes a side wall 18 and a forward wall 19, walls 18 and 19 each being solidly secured with the slicer bed. The trimming device 20 includes a bracket 21 which is made secure with the slicer bed by bolts 22 extending through slots 23 in the bracket and into wall 19. Bracket 21 has the members 24 extending rearwardly to form a frame for the device.

The shaft 25 is rotatably carried in the frame of the trimmer device and extends transversely of the direction of the path in which the bacon is moved along bed 10 and transversely of the axis of shaft 12. The circular trimming blade 26 which is secured on the end of shaft 25 lies in a plane which is parallel with the backboard 15 and spaced from this backboard a distance equal to the width of the bacon slab when it is trimmed.

A motor mounting piece 27 is secured to the trimmer frame by means of bolts 28 which extend through slots 29 into the frame. Secured to and carried by piece 27 is the motor 30 which is preferably of the type driven by a fluid, the fluid being introduced under pressure through line 31 and passed out through line 32.

Motor 30, drives shaft 33 which drives pulley 34 and flexible belt 35. Belt 35 drives pulley 36 which engages shaft 25 through a splined arrangement which provides a drive relationship which is effective to rotate the shaft 25 but permits longitudinal movement of the shaft with respect to the pulley. A casing 38 is provided to guard the belt and the pulley structure.

A plate 40 is slidably carried by the frame of the trimmer device and extends on each side on the back of the device at approximately the level of the top of the bed 10. Referring to FIG. 1, there is a curved guide member 41 providing a back guide for the backstrap as it issues from the trimming blade and moves laterally to the side of the machine. The guide member 41 and the plate 40 provide a channel in which the backstrap moves to the side of the machine.

Supporting the plate 40 at the side of the device is a bracket 42 secured to the trimmer frame by means of bolts 43 extending through slots 44 in bracket 42 and into the trimmer frame. Plate 40 has a slot 45 and a turn-bolt 46 extending through bracket 42, through slot 45 and into the piece 49, so that when the turn-bolt 46 is tightened the plate is fixedly secured with the frame,

but when this turn-bolt is loosened the bolt may slide in the slot to permit the plate to be moved laterally.

The yoke bracket 47 is secured at its base on plate 40 and has its yoke-shaped top engaging shaft 25 between the stops 48. Thus when the plate 40 is moved laterally the bracket 47 causes the shaft to be shifted longitudinally by a corresponding amount.

Rods 50 are slidably carried in the frame of the trimmer device and are attached at their ends to the guard device 51 which has a casing partially surrounding the trimming blade. A guard piece 52 is pivotally mounted on guard device 51 and is normally spring-pressed in its guard position, but yet it is yieldable to move about its pivot to allow a bacon slab to move into the lower portion of the trimming blade.

OPERATION

To place the machine and operation the operator starts the motor which rotates shaft 12 in slicing blade 13, and also connects fluid under pressure to the fluid motor 30. The pressure of the fluid is sufficiently strong to cause rotation of shaft 25 and through belt 35 and pulleys 34 and 36 to rotate the shaft 25 and the circular trimming blade 26.

The operator may place a slab of bacon 11 on bed 10 of the machine and connect the drive for the slicing blade and the pusher bar 16 so that as the slicing blade rotates the pusher moves to push the slab forwardly on the bed.

When the bacon slab is advanced to the point where the trimming blade 26 engages the edge portion of the slab backstrap 60 is cut off from the main body of the bacon slab 11a (see FIGS. 1 and 5) and the main body of the slab proceeds in forward motion to the slicing blade where the slices are formed and dropped to a conveyor to be carried away (see slice 62 in FIG. 1). At the same time backstrap is being guided by curved member 41 within the channel 63 to the side of the machine where it falls from plate 40 into the container 61 at the floor of the room (see FIG. 2).

The fluid which is introduced to motor 30 may be air or other gas, or may be a liquid and the pressure may be controlled by a regulator (see FIG. 5) which is a device familiar to the art for controlling fluid pressure.

In the foregoing description of the operation it is assumed that the pressure applied to motor 30 is sufficient to keep the trimming blade in rotation throughout the operation. However, if there is difficulty because of splattering fat when the blade is in idle rotation or if there is any other difficulty by reason of the rotation of the blade, the operator may reduce the pressure of the fluid supplied to motor 30 to the point where the blade will be turned while the bacon slab is being pushed past the blade but will stall when the forward movement of the bacon slab stops so that such forward movement does not assist in the rotation of the blade. The result is that although the blade may remain in the bacon slab it will not continue to run and splatter the fat about.

It may also be desirable to restrict the fluid pressure applied to motor 30 to the point where it will not even run idly, but will run only when assisted by the bacon moving forwardly in contact with the peripheral edge portion of the blade. Whether or not the pressure of the fluid is restricted as just explained, it is preferable that the direction of rotation of the trimming blade be such that its peripheral portion in contact with the bacon move in the same forward direction as the bacon slab.

As shown in FIG. 4, the machine is set for a relatively wide slab of bacon. To set the machine for a more narrow bacon slab the operator may loosen turn-bolt 46 and slide the plate 40 to the right with the bolt 46 sliding in slot 45 in plate 40. Since this plate is connected with the trimmer shaft 25 by the yoke piece 47, this causes the shaft and the blade to move to the right while still retaining its drive engagement with pulley 36. Thus the blade 26 might be located just inward of the side edge of the more narrow bacon slab. Then the turn-bolt 46 may be tightened to secure the blade and the shaft in their new position. It may be noted that when the circular blade is so moved, the channel formed by plate 40 and the curved guide 41 is correspondingly moved so that backstrap delivered at the new position of the blade is conducted in the same way to the side of the machine and so kept from contact with the slicing blade 13. FIG. 1 shows the position of shaft 25 on blade 26 as the machine is set for a relatively narrow slab of bacon.

The vertical position of the blade is also adjustable so that the lower peripheral edge may come just to the level of the slicer bed. This is accomplished by loosening the bolt 22 and raising the trimmer frame with the bolts 22 sliding in slots 23. When the blade is in the desired vertical position the bolts 22 are again tightened.

In the embodiment illustrated a similar type of adjustment is provided in the form of bolt 28 and slot 29 for adjusting the height of the motor 30 to tighten belt 35, and in the form of bolts 43 in slots 44 for adjusting the level of the side portion of plate 40.

Although only one embodiment of the invention has been illustrated and described in detail, it is understood that the invention may take many different forms, and many changes may be made by those skilled in this art, all within the spirit of the invention, and embraced by the appended claims.

I claim:

1. A machine for trimming and slicing a bacon slab comprising a blade for cutting said bacon slab into slices, a bed for supporting said slab, means for pushing said slab along said bed in a forward direction toward said blade, and a device secured to said bed for trimming a side edge of said slab as it is pushed toward said blade, said device including a shaft which is transverse to said direction, a circular blade attached to said shaft, said circular blade being located inward of the outermost side edge portions of said slab, and means for rotating said shaft whereby said circular blade is effective to trim off a side edge portion of said slab as the slab is pushed forwardly toward said slicing blade, said means being effective to rotate said shaft in a direction such that its periphery where it contacts the slab moves in the same direction as said slab is being pushed whereby the movement of the slab toward the slicing blade tends to assist rather than resist the rotation of said circular blade, said means including a fluid driven motor and in which the pressure of the fluid is such as to rotate said shaft only when rotation is assisted by forward movement of said slab.

2. A machine for trimming and slicing a bacon slab comprising a blade for cutting said bacon slab into slices, a bed for supporting said slab, means for pushing said slab along said bed in a forward direction toward said blade, and a device secured to said bed for trimming a side edge of said slab as it is pushed toward said blade, said device including a shaft which is transverse

to said direction, a circular blade attached to said shaft, said circular blade being located inward of the outermost side edge portions of said slab, said shaft being movable longitudinally along its axis to permit location of said circular blade at different positions along the axis of said shaft to thereby accommodate slabs of different widths, and means for rotating said shaft whereby said circular blade is effective to trim off a side edge portion of said slab as the slab is pushed forwardly toward said slicing blade, said device including a channel structure having a curved back member for guiding the trimmings toward the side of the machine and means for connecting said circular blade with said guide means whereby adjustment to alter the position of said circular blade operates also to correspondingly change the position of said channel.

3. A machine for slicing a bacon slab and for trimming its side edge comprising a blade for cutting said bacon slab into slices, a stationary bed for supporting said slab, means for pushing said slab along said bed in a forward direction toward said blade, and a device for trimming a side edge of said slab as it is pushed toward said blade, said device including a frame secured to said bed, a shaft which is transverse with said direction, a trimming blade above said bed and fixedly secured to said shaft, said shaft being rotatably mounted in said frame, said shaft being longitudinally movable from one position to another position whereby to adjust said trimming blade with respect to the side edge of a bacon slab, and means engaging said shaft for rotating said shaft in either of said positions.

4. A machine as set forth in claim 3 which includes means for moving said shaft from said one position to said other position, said means including a yoke member engaged with said shaft.

5. A machine as set forth in claim 3 in which said shaft is equipped with splines and wherein said means

for rotating is in slidable engagement with said splines whereby to permit longitudinal movement of said shaft without disengagement of said means with said shaft.

6. A machine for slicing a bacon slab and for trimming a side edge thereof comprising a blade for cutting bacon slabs into slices, a stationary bed for supporting said slab, means for pushing said slab along said bed in a forward direction toward said blade, and a device for trimming a side edge of said slab as it is pushed toward said blade, said device including a frame secured to said bed, a shaft which is transverse with said direction, a trimming blade mounted on said shaft for trimming the side edges of said bacon slab as the slab is pushed forwardly to said slicing blade by said pushing means, and a guide channel between said trimming blade and said slicing blade and positioned to receive therein the trimmed edges of the bacon slab which are severed by said trimming blade, said channel being curved and extending forwardly of said device and to the side of said bed whereby said trimmed edges passing therealong are guided to a position off said bed before they reach said slicing blade.

7. A machine as set forth in claim 3 including a member which is slidable longitudinally of said shaft, a channel carried by said member and movable along with said member, said channel leading from said trimming blade to the side of said bed, and means connecting said member with said shaft whereby said channel remains in the same relationship to said trimming blade and effective to receive trimmings at different longitudinal positions of said shaft.

8. A machine as set forth in claim 3 wherein said last mentioned means includes a motor mounted on said frame and means for connecting said motor and said shaft in drive relation.

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