April 12, 1938. H. H. McKEE ET AL 2,113,851

SLICING MACHINE

Filed May 13, 1936 3 Sheets-Sheet 1

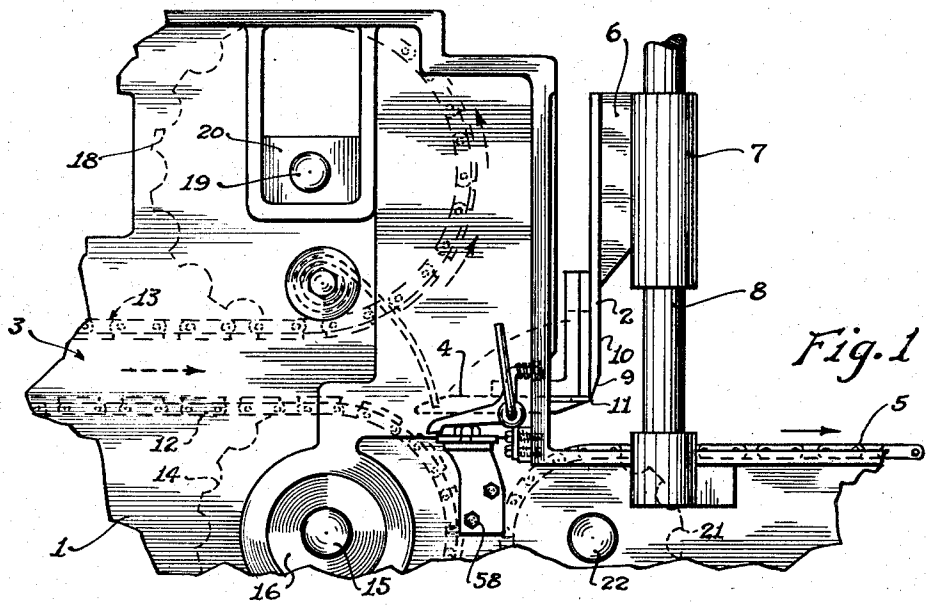


Fig. 1

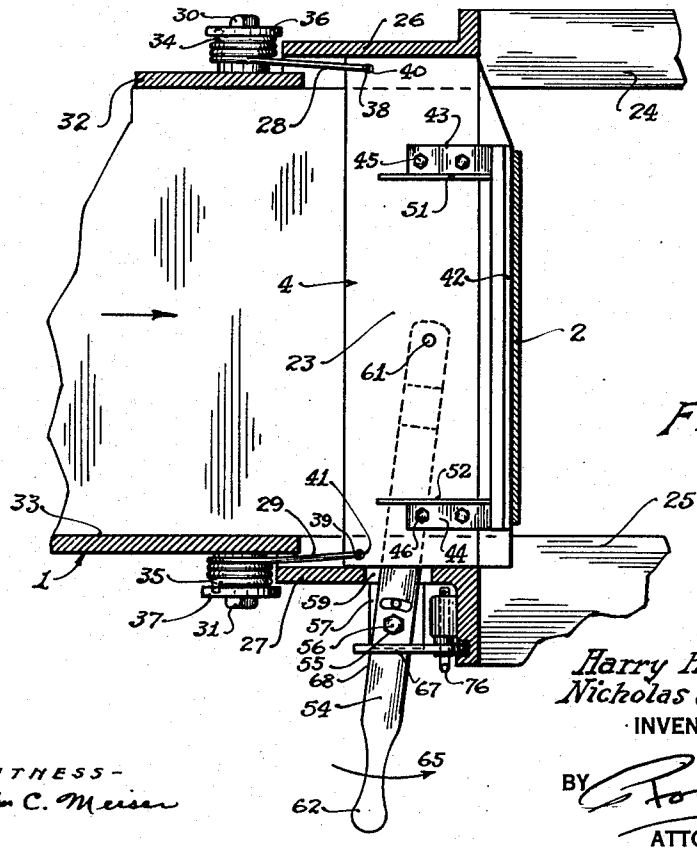


Fig. 2

WITNESS-
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SLICING MACHINE

Filed May 13, 1936 3 Sheets-Sheet 2

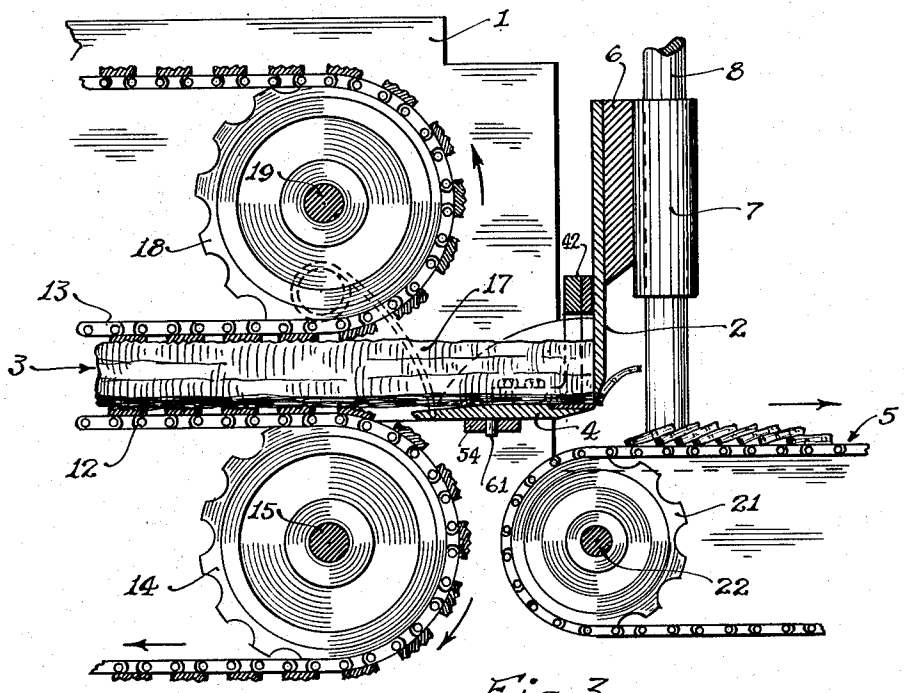


Fig. 3

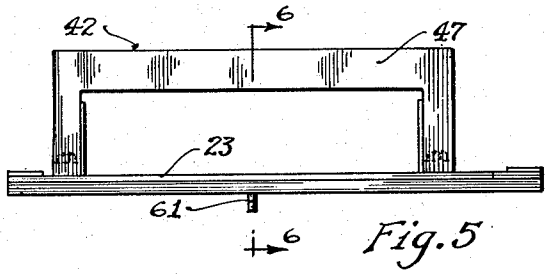


Fig. 5

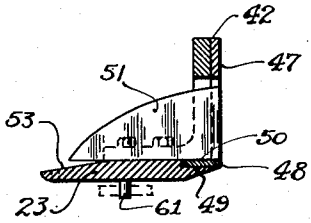


Fig. 6

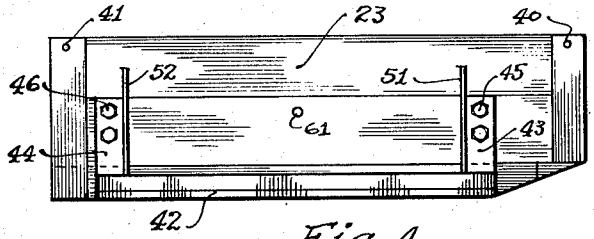


Fig. 4

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SLICING MACHINE

Filed May 13, 1936 3 Sheets-Sheet 3

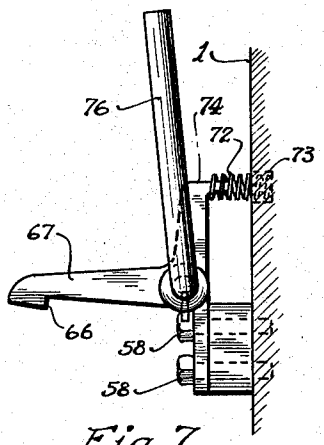


Fig. 7

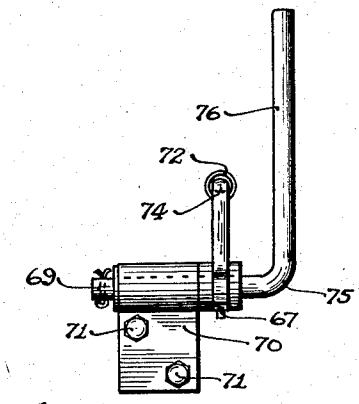


Fig. 8

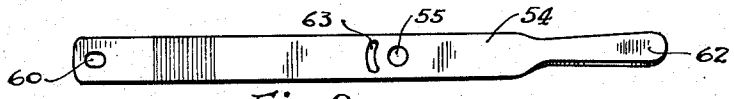


Fig. 9



Fig. 10

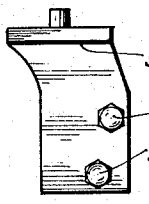


Fig. 12

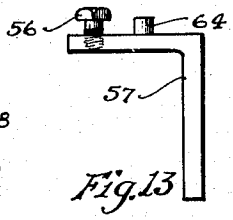


Fig. 13

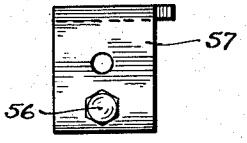


Fig. 11

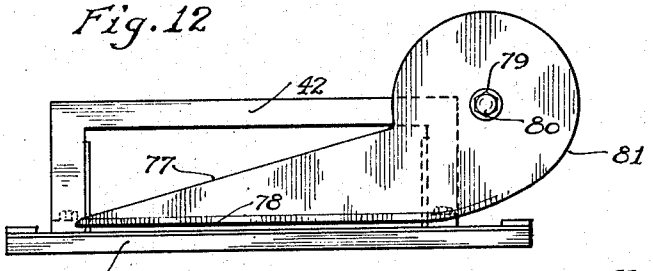


Fig. 14

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Patented Apr. 12, 1938 2,113,851

UNITED STATES PATENT OFFICE

2,113,851

SLICING MACHINE

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Application May 13, 1936, Serial No. 79,558

10 Claims. (Cl. 146—110)

This invention relates to an improved slicing machine. One of the objects of the present invention is to provide an improved slicing machine.

Another object of the invention is to provide an improved slicing machine embodying a movable shear means yieldably mounted relative to the cutter.

Another object of the invention is to provide an improved slicing machine embodying a movable spring-tensioned shear means yieldably mounted relative to and engageable with the cutter.

Another object of the invention is to provide an improved slicing machine embodying a spring-tensioned shear plate movable from and toward the cutter and having guide means engageable with the cutter by which movement of the shear plate toward the cutter is limited.

Other objects of the invention will be apparent from the description and claims which follow.

The shear means forming the present invention is movably mounted within the framework of the slicing machine for movement from and toward the cutter and is continuously yieldably urged in a forwardly direction toward the cutter. The shearing edge of the shear plate is held substantially in vertical alignment with the cutting edge of the cutter by suitable guide means in engagement with the cutter. This relationship eliminates the clearance which otherwise occurs between the shear plate and the cutter by which there is provided safer operation of the slicing machine and keen accurate cutting of the product adjacent the shearing edge.

The shear means of the present invention may be employed in all classes of slicing machines, whether the cutter utilized in the machine be of the reciprocating, rotary or oscillating type.

Referring to the drawings in which like characters of reference are used to indicate similar elements:

Figure 1 is a fragmentary side view of a slicing machine utilizing the shear means of the present invention.

Figure 2 is a plan view of the shear means mounted within the frame of the slicing machine.

Figure 3 is a side view, partly in section, of the slicing machine illustrated in Figure 1.

Figure 4 is a plan view of the shear plate and guide means.

Figure 5 is a front view of Figure 4.

Figure 6 is a sectional view taken on line 6—6 of Figure 5.

Figure 7 is a side view of the latch mechanism for holding the shear means out of engagement with the cutter.

Figure 8 is an end view of Figure 7.

Figure 9 is a plan view of the lever for moving the shear means out of engagement with the cutter.

Figure 10 is a side view of Figure 9.

Figure 11 is a plan view of the lever bracket.

Figure 12 is a side view of Figure 11.

Figure 13 is an end view of Figure 12.

Figure 14 is a front view of the shear means of the present invention illustrating its use with a cutter of the oscillating type.

The slicing machine, illustrated in the drawings, comprehends a frame 1, a cutter 2, a feed means 3, a shear means 4, and a slice receiving means 5.

Referring to Figures 1, 2 and 3 of the drawings, cutter 2 of the reciprocating type, is mounted upon cross head 6 provided with hubs 7 slidable upon vertical guide posts 8 suitably secured to the frame 1. Cutter 2 is beveled on face 10 as at 9 to provide cutting edge 11 adjacent shear means 4. Cutter 2 may be power driven in any suitable manner, not shown.

Feed means 3 comprises conveyors 12 and 13 of the endless type. Conveyor 12 passes over sprockets 14 pinioned to shafts 15 journaled within bearings 16 mounted in the framework 1. Conveyor 13 is spaced above conveyor 12 and serves to press the product, such as slabs of bacon 17, into feeding engagement with conveyor 12. Conveyor 13 passes over sprockets 18 pinioned to shafts 19 journaled within bearings 20 mounted in framework 1.

Slice receiving conveyor 5 is a continuously operating endless conveyor and may be of any suitable type, such as is provided by multiple chains or cords. Conveyor 5 passes over sprockets 21 pinioned to shafts 22 journaled within suitable bearings mounted within framework 1. If desired, conveyor 5 may be constructed to include slow moving conveying elements and fast moving conveying elements and transfer mechanism for separating the cut slices into groups of a predetermined number, such as is more fully described in our U. S. Patent No. 1,976,855, dated October 16, 1934 entitled Spacing conveyor.

Shear means 4 comprises shear plate 23 slidably mounted upon horizontal cross pieces 24 and 25 and between vertical side pieces 26 and 27 of the frame 1. If desired, vertical sides 26 and 27 may be flanged on their inner faces in a manner to cooperate with cross pieces 24 and 25 so as to provide channel grooves for securely mounting

the plate 23 against upward movement from cross pieces 24 and 25. In practice, however, this has not been found necessary, the plate 23 due to its weight being securely maintained in its horizontal position by gravity.

Plate 23 is continuously urged in a forwardly direction toward cutter 2 by springs 28 and 29. Springs 28 and 29 are respectively coiled around bolts 30 and 31 in a manner to provide tensioning of the plate 23 in a forwardly direction toward the cutter 2. Bolts 30 and 31 may be threaded within side members 32 and 33 of the frame 1. Springs 28 and 29 are secured at their ends 34 and 35 to flanges 36 and 37 rigidly secured to bolts 30 and 31 and at their ends 38 and 39 within openings 40 and 41 of the plate 23.

Forward movement of plate 23 relative to the cutter 2 is limited by means of guide strip 42 rigidly secured to angle brackets 43 and 44, which brackets are secured to plate 23 by bolts 45 and 46. Guide strip 42 is so mounted such that face 47 adjacent cutter 2 will be substantially in vertical alignment with shearing edge 48 of plate 23. Guide strip 42 preferably consists of a high-grade tempered tool steel and is machined on its face 47 to reduce wear and friction against cutter 2 to a minimum. Guide strip 42 is mounted in a plane above the upper limit of movement of cutter 2 such that it will at all times be in engagement with the cutter 2.

Shear plate 23 may be cut away as at 49 for the reception of shear strip 50 of a material similar to guide strip 42. A shear strip of this material is found desirable to provide uniform wear between guide strip 42 and the shearing edge of plate 23.

Guide plates 51 and 52 are secured against the inner edges of brackets 43 and 44 by which the slabs of bacon 17 are restrained against sidesway during the cutting operation. Plate 23 may be beveled at its rearward edge as at 53 to guide the forwardly sagging ends of the bacon slabs 17 coming from feeding means 3.

When it is desired, for any reason, to remount or replace the cutter 2, shearing means 4 may be removed from cutter 2 and temporarily held in locked position therefrom. This is accomplished through the medium of lever 54 pivotally mounted as at 55 by bolt member 56 to angle bracket 57 rigidly secured to the side of frame 1 as by bolts 58. Lever 54 passes through opening 59 in side member 27 of frame 1 and is pivoted to plate 23 by means of pivot pin 61 in registry with opening 60. Lever 54 is manually operated from handle 62. Pin 64, integral with bracket 57, is in registry with slot 63 in lever 54 and serves to limit pivotal movements of the lever 54.

The shear means is removed from engagement with the cutter 2 by movement of lever 54 in a forwardly direction as indicated by the arrow 65 and the shear means may be temporarily locked in withdrawn position by jaw 66 of spring-tensioned latch 67. Jaw 66 normally rides upon the upper surface of lever 54 and serves to clear and engage lever 54 at its side edge 68. Latch 67 is pinioned or keyed to shaft 69 journaled in bearing bracket 70 secured to framework 1 as by bolts 71. Latch 67 is continuously urged into locking position by means of coiled spring 72 compressed between bore 73 in frame 1 and member 74 integral with latch 67. Shaft 69 is bent at right angle as at 75 to provide arm 76 which serves to operate latch 67 when it is desired to release lever 54 to return shear means 4 to its forwardly position toward the cutter 2.

The shear means of the present invention may be employed in slicing machines utilizing a cutter of the oscillating or rotary type as well as a cutter of the reciprocating type. As shown in Figure 14, a cutter 77 of the oscillating type having a substantially straight cutting edge 78, is pivotally mounted as at 79 upon drive shaft 80 arranged to one side of guide bracket 43. The cutter 77 is provided with a circular portion 81 of substantially constant radii from the shaft 80, which circular portion 81 extends within the path of guide strip 42 and serves to provide a continuous thrust surface for the guide strip 42 whereby forward movement of shear plate 23 relative to the cutter 77 is at all times limited.

The term "cutter" as used in the claims, will be understood, where appropriate, to include cutters of the reciprocating, rotary, and oscillating types.

We claim:

1. In a sliding machine including a frame and a cutter having a movable blade, a shear plate movably mounted within the frame for movement from and toward the blade, means including springs connected with the frame and shear plate for yieldably urging the shear plate toward the blade, guide means connected with the shear plate for limiting movement of the shear plate toward the blade whereby the blade will engage the shear plate adjacent the shearing edge during the cutting operation, the guide means including a bar having an outer face in substantially vertical alignment with the shearing edge of the shear plate and in slidable engagement with the blade.

2. In a slicing machine including a frame and a cutter having a movable blade, a shear plate movably mounted within the frame for movement from and toward the blade, means including springs for yieldably urging the shear plate in engagement with the blade during the cutting operation, and means for removably holding the shear plate against the action of the springs and from engagement with the blade during non-operation of the blade.

3. In a slicing machine including a frame and a cutter having a movable blade, a shear plate movably mounted within the frame for movement from and toward the blade, means including springs for yieldably urging the shear plate in engagement with the blade during the cutting operation, and means including a lever pivotally connected to the frame and shear plate for removing and holding the shear plate against the action of the springs and from engagement with the blade during non-operation of the blade.

4. In a slicing machine including a frame and a cutter having a movable blade, a shear plate movably mounted within the frame for movement from and toward the blade, means including springs for yieldably urging the shear plate in engagement with the blade during the cutting operation, means including a lever pivotally mounted to the frame and shear plate for removing and holding the shear plate against the action of the springs and out of engagement with the blade during non-operation of the blade, and means engageable with the lever for locking the shear plate in non-engaging position.

5. In a slicing machine including a frame and a cutter having a movable blade, a shear plate movably mounted within the frame for movement from and toward the blade, means including springs for yieldably urging the shear plate in engagement with the blade during the cutting operation, means including a lever pivotally mount-

ed to the frame and shear plate for removing and holding the shear plate against the action of the springs and out of engagement with the blade during non-operation of the blade, and means including a spring-tensioned latch connected with the frame and engageable with the lever for locking the shear plate in non-engaging position.

6. In a slicing machine including a frame and a cutter having a reciprocating blade, a shear plate movably mounted in the frame for movement from and toward the blade, means including springs connected with the frame and shear plate for yieldably urging the shear plate toward the blade, guide means connected with the shear plate for limiting movement of the shear plate toward the blade and for aligning the shearing edge of the shear plate against the blade during the cutting operation, the guide means including a bar having an outer face in substantially vertical alignment with the shearing edge of the shear plate and in slidable engagement with the blade.

7. In a slicing machine including a frame and a cutter having a movable blade, a shear plate movably mounted within the frame for movement from and toward the blade, means yieldably urging the shear plate toward the blade, and a guide means rigidly connected with the shear plate, the guide means being maintained in continuous engagement with the blade and adapted to effect alignment of the shear plate with the blade whereby the shearing edge of the shear plate is maintained in engagement with the cutting edge of the blade throughout the cutting operation.

8. In a slicing machine including a frame and a cutter having a reciprocating blade, a shear plate movably mounted within the frame for movement from and toward the blade, means yieldably urging the shear plate toward the blade, and a guide means rigidly connected with the shear plate, the guide means being maintained in continuous engagement with the blade and adapted to effect alignment of the shear plate with the blade whereby the shearing edge of the shear plate is maintained in engagement with the cutting edge of the blade throughout the cutting operation.

9. In a slicing machine including a frame and a cutter having a movable blade, a shear plate movably mounted within the frame for movement from and toward the blade, means yieldably urging the shearing edge of the shear plate in engagement with the cutting edge of the blade during the cutting operation, and means connected with the shear plate and in constant yieldable engagement with the blade maintaining the shearing edge of the shear plate in alignment with the cutting edge of the blade between cutting movements of the blade.

10. In a slicing machine including a frame and a cutter having a reciprocating blade, a shear plate movably mounted within the frame for movement from and toward the blade, means yieldably urging the shearing edge of the shear plate in engagement with the cutting edge of the blade during the cutting operation, and means connected with the shear plate and in constant yieldable engagement with the blade maintaining the shearing edge of the shear plate in alignment with the cutting edge of the blade between cutting movements of the blade.

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