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W. A. VAN BERKEL

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SUBSTANCE SLICER

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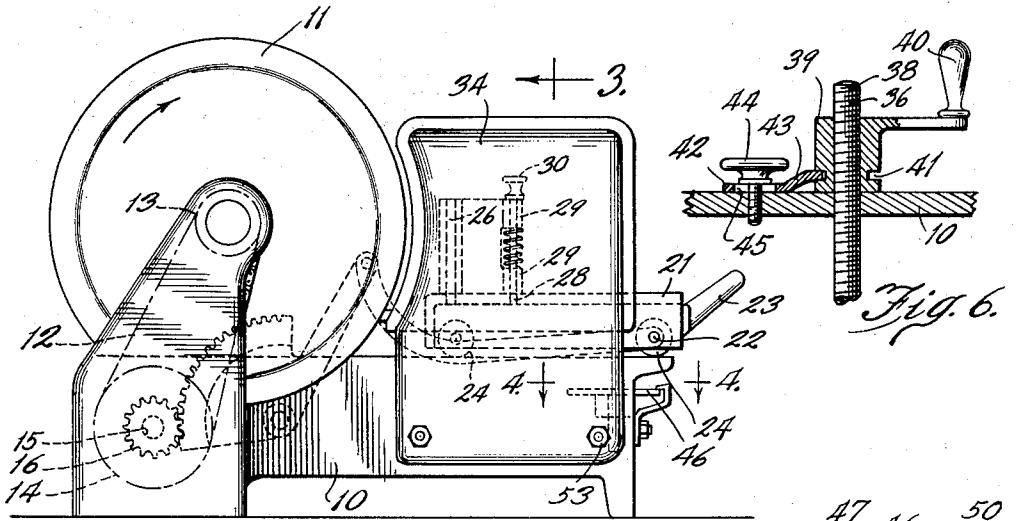


Fig. 1.

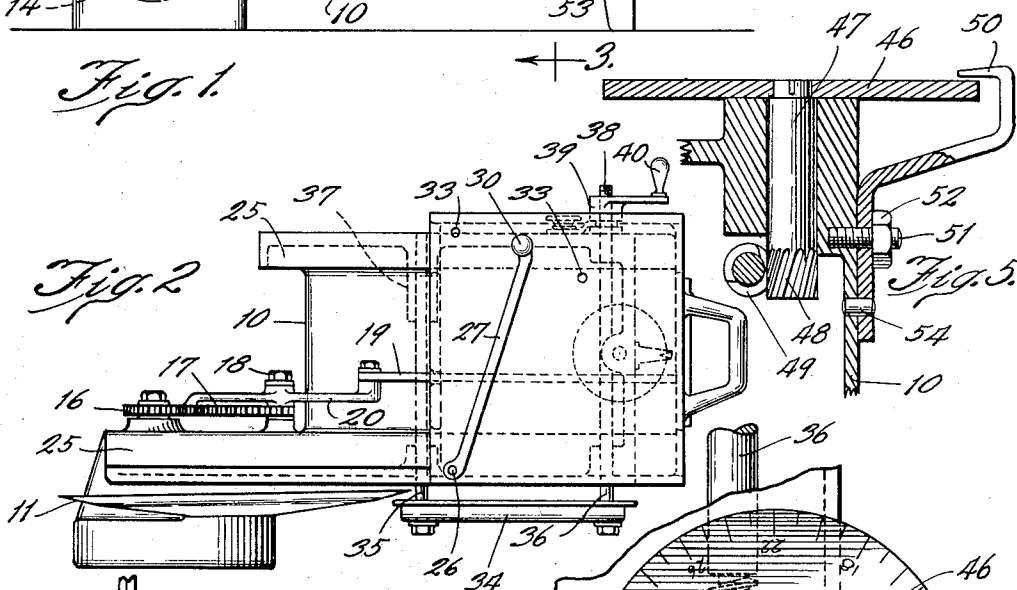


Fig. 2.

Fig. 5.

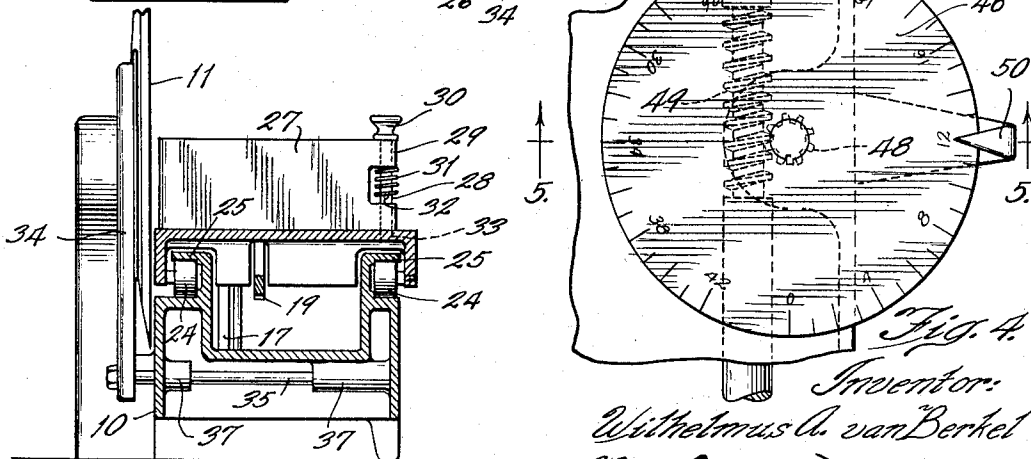


Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE

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SUBSTANCE SLICER

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2 Claims. (Cl. 146—102)

The present invention relates to slicing machines, and particularly to that type of slicing machine destined for home use or for small stores. For this purpose the substance to be sliced is held by the hand of the operator on a reciprocating table which is moved periodically past the slicing knife for the purpose of cutting successive slices of predetermined thickness therefrom. The thickness of the slices is regulated by a gauge plate in a well known manner.

One object of this invention is to provide a pair of guiding plates for guiding the substance as it is carried past the knife and held by the hand of the operator.

Another object of the invention resides in providing a gauge plate which acts as a guide for one end of the substance, and an abutment plate which is mounted upon the carriage and against which the substance is held by the hand of the operator, the operator at the same time moving the substance in a direction toward the cutting plane and the gauge plate.

More particularly, the invention contemplates the use of a pivoted abutment plate on the carriage, against which the substance may be held by the operator as it is being moved toward the cutting blade of the knife, the abutment plate being pivotally mounted to various positions of adjustment to permit slices to be cut at different angles.

Another object of this invention resides in a novel form of gauge plate adjusting means, which is of simple and durable construction, easily applied, and quickly removed for repairs.

Referring to the drawings—

Figure 1 represents a side elevation view of a slicing machine embodying my invention;

Figure 2 is a plan view of the same;

Figure 3 is a section taken on the line 3—3 of Figure 1;

Figure 4 is a section taken on the line 4—4 of Figure 1;

Figure 5 is a section taken on the line 5—5 of Figure 4; and

Figure 6 is a horizontal cross section through the gauge plate feeding mechanism.

In the drawing, reference numeral 10 indicates the base of a slicing machine provided with a rotating slicing knife 11 driven by means of a chain 12 trained over a free-wheel 13 and a sprocket 14, the latter being mounted on a shaft 15, which also carries the spur gear 16, which, in turn, meshes with a segmental gear 17 pivoted on a shaft 18 and rocked by means of a connecting link 19 pivoted to the arm 20 formed integral with the gear segment 17 at one end, and to the slicing machine carriage 21 at 22.

The slicing machine carriage 21 is provided with a handle 23 which is used to reciprocate the carriage along a rectilinear path to and past the cut-

ting knife. The carriage is provided with anti-friction rollers 24 guided in any suitable manner against vertical and lateral movement in U-shaped guides 25, such as those illustrated quite clearly in Figures 2 and 3. The reciprocation of the carriage 21 causes the segmental gear 17 to rock about its pivot due to the connecting link 19, and this, in turn, imparts a rotative movement to the knife 11 in a clockwise direction, as viewed in Figure 1, the free-wheel 13 permitting the carriage 21 to be moved away from the knife without in any way affecting the rotation of the knife. The drive to the knife is only operative during the movement of the carriage toward the knife as the free-wheel renders the same inoperative during the return movement of the carriage to the position shown in Figure 1. The inertia of the knife keeps the knife in motion until the next movement of the carriage toward the cutting plane of the knife where the carriage is being continuously reciprocated.

The carriage 21 is provided with a vertically extending pivot 26, to which there is pivoted an abutment plate 27, which has a latch member 28 slidably mounted in the bearing members 29 formed on the end of the abutment plate 27 remote from the pivot 26. The latch 28 is provided with an operating knob 30 and is normally urged downwardly by a spring 31, which abuts against the upper bearing member 29 and a pin 32 extending through the latch 30. The upper surface of the supporting table is provided with a plurality of openings 33 arranged an equal distance from the pivot 26, and these openings 33 are adapted to receive the latch 30 and hold the abutment plate in adjusted angular position to the pivot 26, so that the substance may be held by the plate at various desired angles.

I also provide a gauge plate 34 secured to guide rods 35 and 36, which are slidable in suitable bearings 37 formed on the base 10 of the machine. The guide rod 36 is provided at the end remote from the gauge plate 34 with screw threads 38 and a nut 39 threadedly engages the screw threads 38, and this nut is provided with a handle 40 for rotating the same. As is best illustrated in Figure 6, the nut 39 is provided with a peripheral groove 41 and a retaining member 42 having a tongue 43 thereon arranged within the groove 41 is held in place by a thumb screw 44 extending through the slot 45 in the member 42 and into a tapped opening in the base 10. By merely loosening the thumb screw 44, the tongue 43 may be withdrawn from the groove 41 and the nut can be unthreaded from the guide member 36 and the gauge plate entirely removed from the machine. Movement of the tongue 43 into and out of the groove is permitted due to the longitudinal slot 45 provided for this purpose.

The means for indicating the position of the

gauge plate is perhaps best illustrated in Figures 4 and 5. This means comprises a disk 46, which disk is secured to the upper end of a shaft 47, which shaft has a threaded portion 48 at the lower end thereof, the threads being somewhat helical to engage the threaded portion 49 on the guide rod 36. This movement of the guide rod 36 longitudinally causes the shaft 47 to rotate due to the engagement of the threads 48 and 49. The upper side of the disk 46 is provided with peripheral graduations indicating the distance which the substance engaging portion of the gauge plate 34 is away from the cutting plane of the knife 11.

The disk 46 and shaft 47 could be quickly removed from the machine by a vertical movement, except for the fact that it is held against vertical movement by means of the indicating pointer 50, which is held in the position indicated in Figure 5 by a stud 51 threaded into the base 10 and a nut 52 which is threaded on the stud 51 and tightened against the base portion of the indicating pointer 50.

By rotating the crank 40, the guide rod 36 is moved longitudinally and the amount of longitudinal movement is indicated by the pointer 50 and cooperating graduated disk 46. It sometimes becomes necessary to adjust the position of the gauge plate with respect to the indicated distance that the same is away from the cutting plane of the knife. That is, sometimes the zero position on the disk 46 does not coincide with the zero position on the indicating pointer 50 when the gauge plate has the substance engaging surface thereof in the cutting plane of the knife, and therefore it may be desirable to change the arrangement of the parts in such a manner as to have the zero graduation and indicating pointer coincide. Usually in machines of this nature it is preferred to use a hollow knife. That is, the side of the knife on which the substance is arranged is concave and thus, when the knife wears down or is sharpened, the cutting edge thereof moves out of the original cutting plane of the knife, and it becomes necessary to adjust the indicating means to compensate for this movement. This can be done in the manner aforesaid due to the provision of the threads 49 which extend entirely around the rod 36. All that is necessary is to release the nut 44 which holds the guide rod 36 in operative unitary relation with the gauge plate 34, turn the rod 36 a sufficient amount to compensate for the variation between the new and old cutting planes and again tighten the nut 44 whereby the pointer 50 will again indicate the proper distance which the gauge plate is away from the cutting plane of the knife.

In order that the pointer 50 may be prevented from rotative movement about the stud 51, I provide a locating pin 54 which is firmly held within an opening in the base 10 as by press-fitting or the like and extends through an opening in the base portion of the pointer 50.

The operation of the device is as follows: The thickness of the slice to be cut is determined by rotating the crank 40 until the proper thickness of the slice is indicated by the pointer 50. The gauge plate is then the proper distance away from the cutting plane of the knife. The substance is placed upon the substance supporting carriage 21 and the abutment member 27 is adjusted to the proper angular relation about the

pivot 26. The operator by manual pressure forces the substance against the abutment member 27 and simultaneously in a direction toward the cutting plane 34 as he forces the carriage toward the cutting plane of the knife for the cutting stroke. The movement of the carriage actuates the knife in the manner previously described and a slice is cut from the substance having the thickness indicated by the indicating mechanism. The type of slice can be regulated by regulating the angular position of the abutment plate 27. For slicing bread it is probably preferred to have the abutment plate 27 extend perpendicular to the cutting plane of the knife, whereas for slicing Bologna sausage and the like, the abutment plate may be arranged as indicated in the drawing, or even at a greater angle if such is desired.

If desired, the contact plate 27 may be arranged on the operator's side of the carriage and the substance placed between that abutment plate and the knife instead of between the abutment plate and the operator's position as in the form of the invention illustrated.

Obviously those skilled in the art to which this invention pertains, may make various changes in the construction and arrangement of the parts without departing from the spirit of the invention or the scope of the appended claims, and therefore I do not wish to be limited to my invention, except as set forth hereinafter in the claims.

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

1. In a slicing machine, the combination with a slicing knife, of a carriage mounted for reciprocation relative to said knife, a gauge plate, a support slidably supporting said gauge plate, a feed screw extending in the general direction of movement of said gauge plate and secured thereto for bodily movement therewith, a bore in said support at a substantial angle to said feed screw, a dial having a shaft thereon extending through said bore with teeth formed thereon below the surface of said shaft to permit said shaft to be withdrawn from said bore, said teeth meshing with the teeth on said feed screw, means for moving said feed screw longitudinally to rotate said shaft, and an indicating means cooperating with said dial to indicate the position of said gauge plate.

2. In a slicing machine, the combination with a slicing knife, of a carriage mounted for reciprocation relative to said knife, a gauge plate, a support slidably supporting said gauge plate, a feed screw extending in the general direction of movement of said gauge plate and secured thereto for bodily movement therewith, a bore in said support at a substantial angle to said feed screw, a dial having a shaft thereon extending through said bore with teeth formed thereon below the surface of said shaft to permit said shaft to be withdrawn from said bore, said teeth meshing with the teeth on said feed screw, means for moving said feed screw longitudinally to rotate said shaft, and an indicating means cooperating with said dial to indicate the position of said gauge plate, comprising a releasable pointer overlying said dial to normally prevent withdrawal of said shaft from said bore.

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