June 22, 1948. D. A. PASSARELLI 2,443,928

HAND SLICER

Filed Sept. 23, 1944 2 Sheets-Sheet 1

Fig. 1.

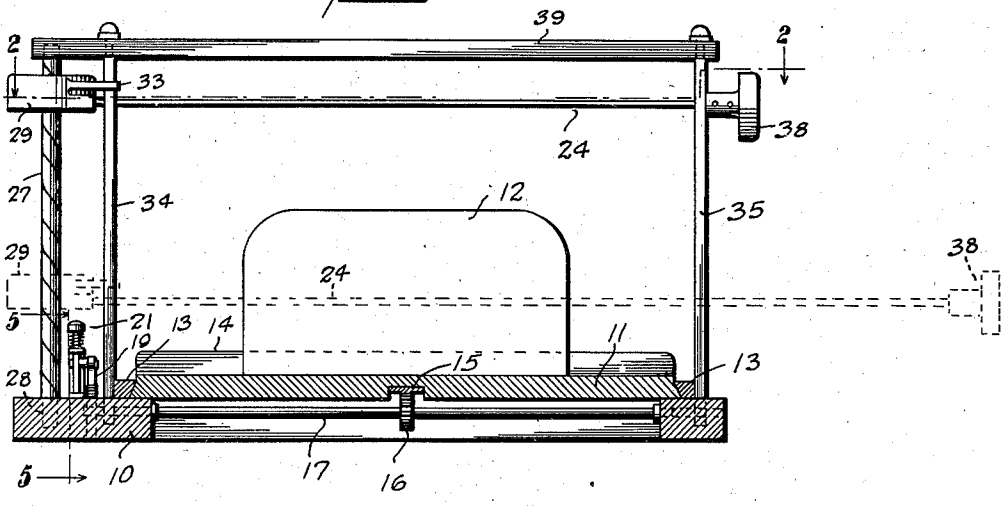


Fig. 2.

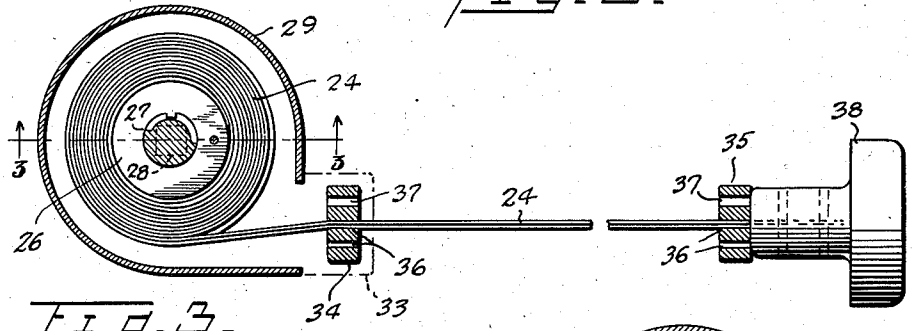


Fig. 3.

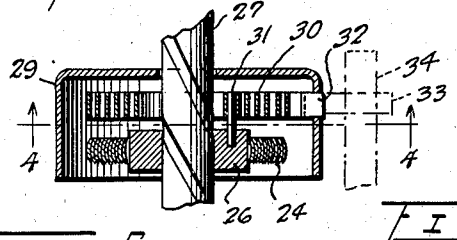


Fig. 5.

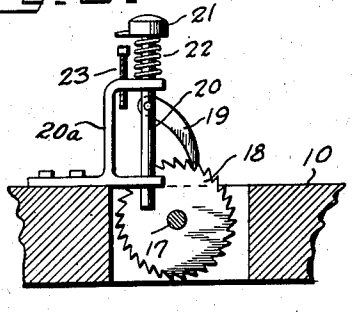


Fig. 6.

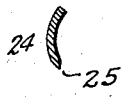
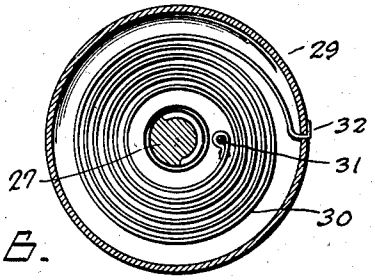


Fig. 4.



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HAND SLICER

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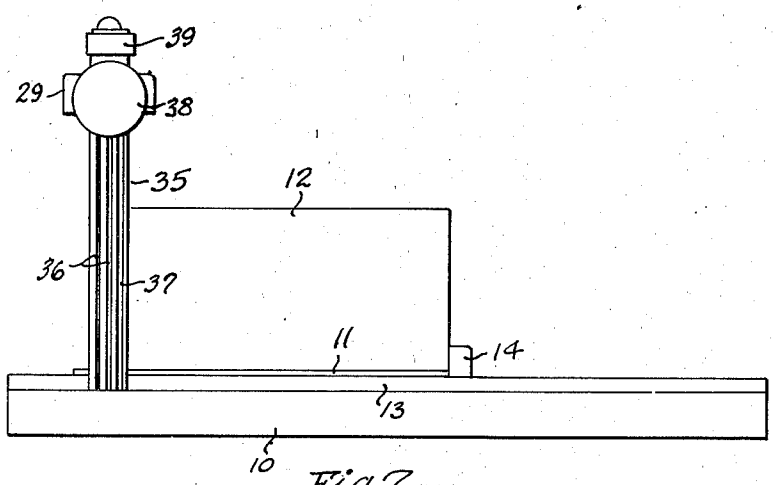

Fig. 7.

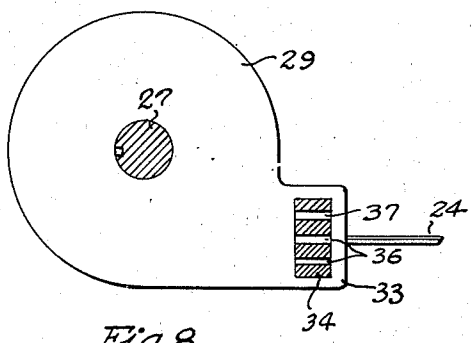

Fig. 8.

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HAND SLICER

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Application September 23, 1944, Serial No. 555,530

8 Claims. (Cl. 31—20)

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This invention relates to a device for slicing soft materials, such for example as cheese, butter and the like, although it is not limited to slicing such materials but may be used for slicing various other materials such as bread, meat and the like.

It has for an object to provide an improved slicing device which will make clean slices in slicing such soft material as cheeses and the like and in such a way as to prevent the material clinging to the knife.

Another object is to provide a simple and effective arrangement whereby the cutter or knife is a thin, flexible blade mounted so that in the slicing operation it is drawn longitudinally through the material to be sliced and at the same time is moved laterally or at right angles to this movement through the material.

With the foregoing and other objects in view I have devised the construction illustrated in the accompanying drawing forming a part of this specification, the showing being somewhat diagrammatical. It is, however, to be understood the invention is not limited to the specific construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In these drawings:

Fig. 1 is a vertical transverse section through the device;

Fig. 2 is a detailed section substantially on the line 2—2 of Fig. 1, but on a larger scale;

Fig. 3 is a section substantially on the line 3—3 of Fig. 2;

Fig. 4 is a section substantially on the line 4—4 of Fig. 3;

Fig. 5 is a detailed section substantially on the line 5—5 of Fig. 1,

Fig. 6 is a transverse section through one form of blade which may be used, the shape of the blade being, however, exaggerated,

Fig. 7 is a side view of the device looking from the right of Fig. 1, and

Fig. 8 is a plan view of the casing enclosing the blade wind-up means, the guide for the casing and the threaded rod being shown in section.

In slicing various articles, such for example as soft cheeses and the like, it is very difficult to make clean slices and to prevent the material clinging to the knife or cutter. Even the fine wire cutters now generally employed are not satisfactory. In the present device I have greatly reduced these difficulties by using a thin, narrow, flexible blade or cutter and mounting it so that it will simultaneously have two different movements through the material, one being a movement transversely of the material and longitudinally of the blade, and the other a movement laterally through the material in the plane of the blade and at substantially right angles to the first movement. These combined simultaneous movements have been found to give a much cleaner cut with less liability of the material clinging to the blade, and make it possible to secure clean, thin slices even of soft material such as cheese and the like.

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It will be understood the device may comprise various constructions and arrangements, the showing in the drawing being somewhat diagrammatical, and the device is not limited to the specific construction and arrangement shown. The device illustrated comprises a frame or base 10 in which is a slidable support or platform 11 to carry a loaf or block 12 of cheese, butter, bread or any material which is to be sliced, the platform 11 being guided for sliding feeding movements in suitable guides 13, and it preferably has an upstanding flange 14 at one end to hold the material 12 in place. Means is provided for giving a feeding movement between the material 12 and the cutting knife. In the device illustrated the platform 11 and the material 12 is fed forwardly in a step-by-step movement to permit cutting of successive slices from the material 12 and at the proper thickness. Various feeding mechanism may be used. That shown comprises a rack 15 secured to the platform 11 meshing with a small pinion 16 on a transverse shaft 17. Mounted on this shaft is a ratchet 18 which may be given partial successive rotation by means of a pawl 19 pivoted on a reciprocating rod 20 mounted in a suitable bracket 20a. It may be operated by a push button 21 with a spring 22 tending to return the push button and the pawl to their normal position. An adjustable stop 23 may be provided to determine the downward movement of the push rod and the pawl and thus adjust the feeding movement of the platform 11 and determine the thickness of the slices cut from the block or loaf 12.

For cheese and similar materials, the cutter preferred comprises a flexible, thin, narrow blade 24. This may be flat, but for these soft materials it may be slightly curved transversely so as to be concavo-convex, as shown in Fig. 6. It is preferably similar to a steel hairspring, with a razor edge 25 on its lower or cutting edge, or if preferred, for certain materials it could be a toothed edge. It may be of different widths depending on the material to be cut, but for cheese and similar material it is preferably of the order of about

1/16 inch wide and very thin. This thin flexible blade is connected at one end to a member 26 which is mounted so as to rotate to wind and unwind the flexible blade on and from it, and at the same time to move laterally, in the present case vertically up and down, so that the flexible blade has two simultaneous movements. In the present arrangement the member 26 is a sort of nut or drum on which the blade 24 may be wound, as shown, and it also has threaded engagement with an upright threaded rod or screw 27. This rod has threads of a relatively long pitch so that as the member 26 rotates it will move longitudinally up and down. The threads may be of the type used in the well known Yankee drills in which a rod provided with a long pitch spiral groove and carrying the drill chuck is driven by reciprocating a nut threaded on the rod. This rod has a noncircular or square lower end 28 mounted in a similarly shaped recess in the base 10 so that the rod 27 is held against turning movement.

The nut or member 26 is mounted in a casing 29 with a coil spring 30 connected at one end to the member 26, as shown at 31, and at the other end 32 to the casing. The connection to the member 26 is preferably a detachable connection so that members 26 carrying different sizes or widths of cutters may be used, the connection shown being that of a stud or pin 31 seating in a recess in the member 26. The casing 29 is slidable along the rod 27 but is held against turning movements on this rod by means of a lateral extension 33 embracing an upright guide 34 also mounted on the base 10. Mounted on the base 10 at the opposite side of the platform 11 is a similar guide rod 35, and both of these rods have one or more guide slots 36 and 37 extending transversely therethrough and throughout the lengths of the rod forming a guide for the blade or flexible cutter 24, as shown in Fig. 2. The slots may be of different widths to correspond with different thicknesses of cutters or blades 24, the blades being closely guided by these guide slots, although having free movement therein, so that the blade is held straight and is prevented from moving out of its proper plane during the slicing operation, and thus permitting the cutting of thin clean slices. The free end of the cutter or blade 24 is connected to a knob or handle 38 at the outer side of the guide 35 which constitutes the means for operating the cutter during the slicing operation. Preferably the upper ends of the rods 27, 34 and 35 are connected by a horizontal rod 39 to help maintain them in the proper relation.

The operation is as follows:

The spring 30 is always tensioned and tends to rotate the member 26 so as to wind the flexible blade or cutter 24 thereon, the winding movement, however, being limited by the handle 38 engaging the guide 35. In this position the member 26 and the casing 29 are in their upper position adjacent the top of the threaded rod 27 and the guide rods 34 and 35. In making the cut the operator grasps the handle 38 and pulls it laterally to the right, as indicated in dotted lines Fig. 1. This action draws the blade or cutter 24 longitudinally across the material 12 to be cut. At the same time it unwinds this flexible blade from the member or nut 26, thus rotating this member, and as it is threaded on the threaded rod 27 this rotation will cause the member 26 and the casing 29 to move downwardly, as also indicated in dotted lines, to at the same time carry the cutter

or blade 24 downwardly through the material 12 in a direction laterally or at substantially right angles to its longitudinal movement and in the plane of the blade. Rotation of the member 26 at the same time winds up or still further tensions the spring 30 as it is connected at its inner end to the member 26 and at its outer end to the casing 29, which is held against turning by the guide lug 33. Therefore, as the pull is against the spring the flexible blade is always held straight and taut. Also when pull on the handle 38 is released this spring rotates the member 26 in the opposite direction to again wind or coil the flexible blade on it, and as this rotates the member 26 in the opposite direction its threaded connection with the rod 27 will shift it and the blade together with the casing upwardly to its normal or full line position in Fig. 1, ready to take another cut. The operator then by depressing the push rod 21 and the pawl 19 will feed the table 11 and the material 12 forwardly the proper distance for the next cut. During the cutting operation the flexible knife or blade 24 is guided and kept straight by the guides 34 and 35 and by the pull against the spring 30, so as to prevent its buckling and to keep it in the proper plane during the cutting operation.

It will be seen from the above that the thin, narrow, flexible blade during the cutting operation has combined longitudinal and downward sliding movement, and this prevents material sticking to it and gives a clean smooth cut, even with soft material. The slight lateral curvature indicated in Fig. 6 also helps to prevent sticking of the material to the blade as it reduces the amount of surface actually in contact with the material being cut. It is of course, however, to be understood the device is not limited to use for cutting such materials, but it is also very successful for cutting other materials such as meat, bread and the like.

Having thus set forth the nature of my invention, what I claim is:

1. In a device of the character described, a support for a block of material to be sliced, a thin flexible blade, a support on which the blade is wound, means for drawing the blade longitudinally across the block to cut it, and means cooperating with the blade support to at the same time bodily shift this support in a direction laterally to the support for the block to move the blade laterally through the block.

2. In a slicer of the character described, a base, a support for a block of material to be sliced, a thin flexible blade, a member on which the blade is wound, a spring tending to wind the blade on said member, an upright support for said member, means for drawing the blade from said member and across the block, cooperating means on the upright support and the member to at the same time move the member and blade downwardly relative to the support for the block, and means for causing a step by step relative feeding movement between the blade and the support for the block.

3. In a slicer of the character described, a support for a block of material to be sliced, a thin flexible blade, a member on which the blade may be wound, a spring tending to wind the blade on said member, means for drawing the blade longitudinally across the block to cut it, and means for at the same time shifting the member transversely in the plane of the blade to carry the blade laterally through the block.

4. In a slicer of the character described, a sup-

port for the material to be sliced, a threaded rod, a member threaded on the rod, a thin flexible blade wound on said member, a grip secured to the blade for unwinding it from the member and drawing it across the material and rotating said member so that the threaded connection with the rod shifts it and the blade in a direction longitudinally of the rod, and means tending to rotate the member in the opposite direction.

5. In a slicer of the character described, a support for the material to be sliced, an upright threaded rod, a member threaded on the rod, a thin flexible blade wound on said member, means tending to turn said member to wind the blade thereon, upright spaced guides on opposite sides of said support having transverse guide slots for the blade, a grip on the blade for drawing it through said guides and to unwind it from said member, and means for causing a step by step relative feeding movement between the blade and the support for said material.

6. In a slicer of the character described, a base, a support for material to be sliced mounted for sliding movement on the base, an upright threaded rod at one side of said support, a thin flexible blade, a mount for the blade having threaded connection with the rod, a spring tending to turn said blade mount in one direction to wind the blade thereon and shift the blade and said mount upwardly on the rod, upright guides for the blade on opposite sides of the material support, a grip on the blade for drawing it through said guides across the material and unwind it from said mount to turn the mount and shift the blade downwardly, and means for feeding the support transversely of the blade with a step by step movement.

7. In a slicer of the character described, a support for material to be sliced, an upright threaded rod, a rotatable member having threaded engagement with the rod, a thin flexible blade connected to said member, means tending to rotate said member in one direction to wind the blade

thereon and to shift said member and blade upwardly on the rod, and means for pulling the blade to unwind it from the member and draw it across the material to be sliced, said unwinding operation also rotating the member in the opposite direction to shift the member and blade downwardly.

8. In a slicer of the character described, a support for the material to be sliced, a threaded upright rod, a rotatable member threaded on the rod, a thin flexible blade connected to said member, a casing enclosing said member, a spring in the casing connected to the casing and said member and tending to rotate the member in a direction to wind the blade thereon and shift the casing and blade upwardly on the rod, upright guides for the blade on opposite sides of said material support, means slidably connecting the casing with one of said guides to prevent turning of the casing, and means for drawing the blade through the guides across the material to be sliced and to unwind the blade from said member and at the same time rotate said member in the opposite direction to shift the blade downwardly.

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