Dec. 12, 1950 C. KLINGENS 2,534,172

SLICING MACHINE WITH SWINGING KNIFE WITH STACKING DEVICE

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FIG. 1

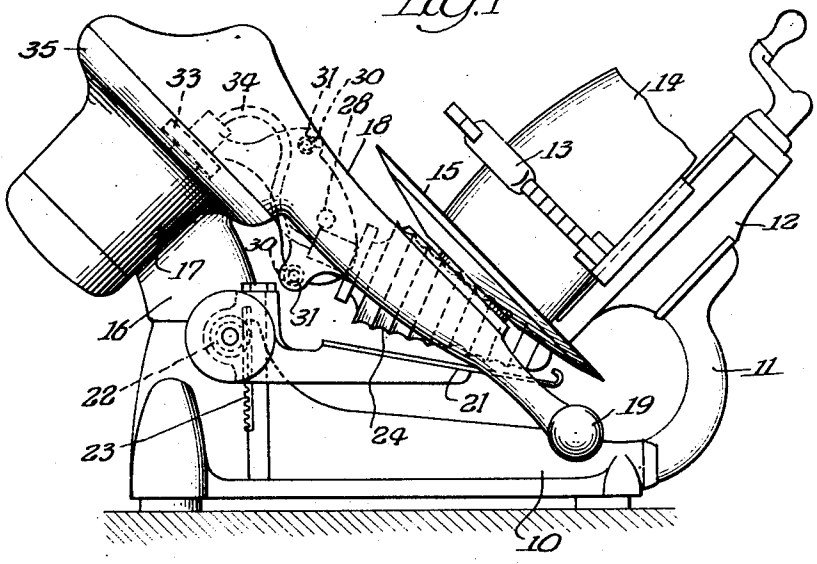
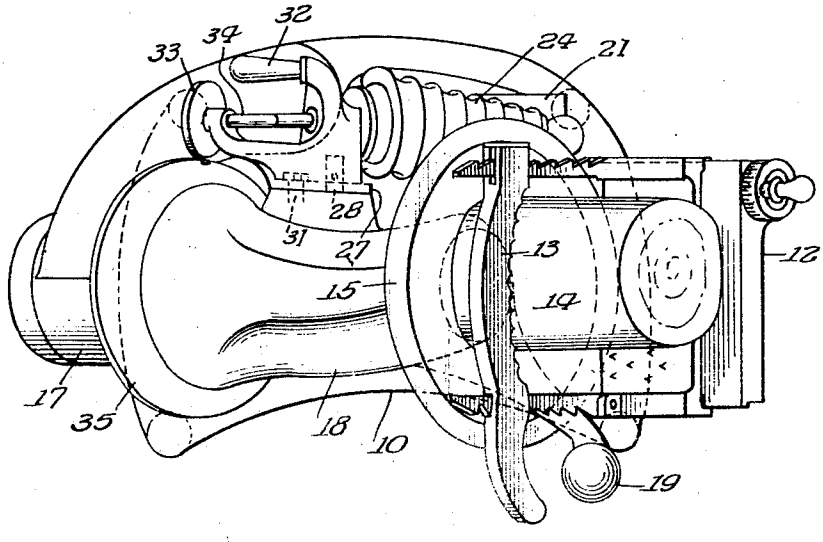


FIG. 2



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Fig. 4

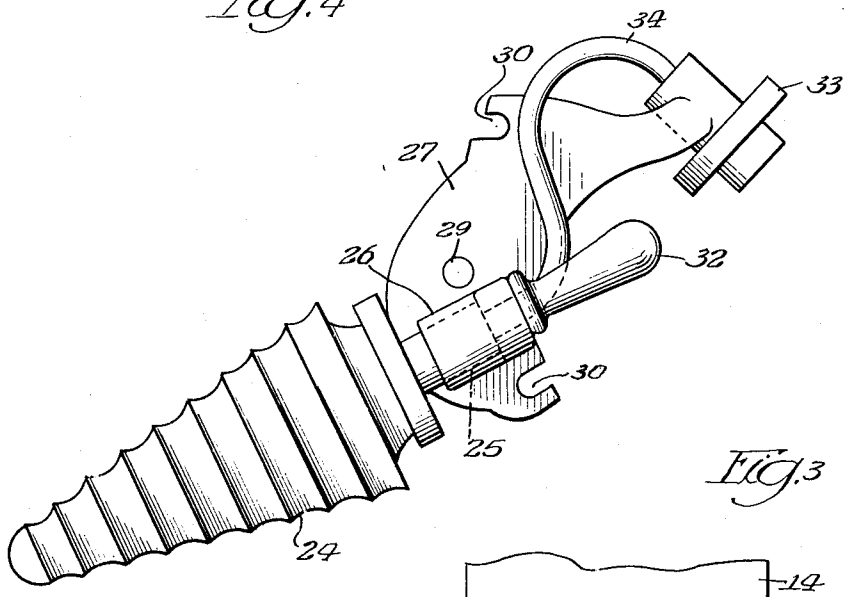


Fig. 3

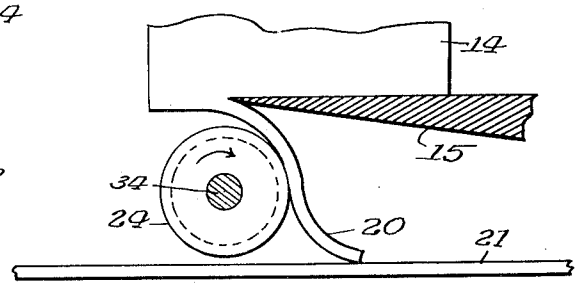


Fig. 5

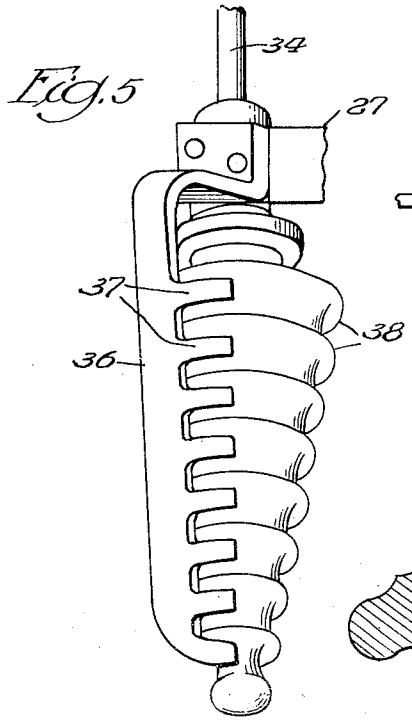
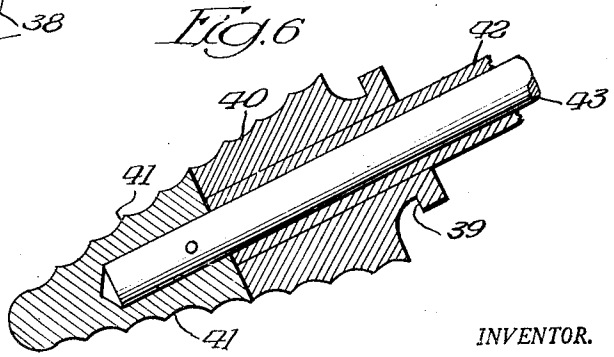


Fig. 6



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Patented Dec. 12, 1950 2,534,172

UNITED STATES PATENT OFFICE

2,534,172

SLICING MACHINE WITH SWINGING KNIFE WITH STACKING DEVICE

Cornelis Klingens, La Porte, Ind., assignor to U. S. Slicing Machine Company, Inc., a corporation of Indiana

Application November 13, 1946, Serial No. 709,613
In the Netherlands January 27, 1944

Section 1, Public Law 690, August 8, 1946
Patent expires January 27, 1964

9 Claims. (Cl. 146—94)

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This invention relates to improvements in slicing machines, of the type in which the slicing knife is supported and carried by a swinging arm, and one of the objects of the invention is to provide improved means for stacking the slices as they are cut, without damage to the slices, and while maintaining them against folding.

Another object is to provide a swinging arm type of machine of this character, in which stacking means is carried by the arm for movement therewith and with respect thereto.

A further object is to provide an improved rotatable stacking device that is carried by the arm, the rotary movement of the stacking device with respect to the arm, being responsive to the swinging movement of the arm.

A still further object is to provide an improved stacking device which is readily attachable to, and detachable from, the swinging knife-carrying arm.

Still another object is to provide an improved stacking device of this character, which is simple, durable, cheap and compact in construction, and effective and efficient in operation.

To the attainment of these ends, and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts, hereinafter more fully described and claimed, and shown in the accompanying drawing illustrating this invention, in which

Fig. 1 is a side elevation of a slicing machine of this character, having a stacking device constructed in accordance with the principles of this invention, attached thereto.

Fig. 2 is a top plan view of Fig. 1.

Fig. 3 is a diagrammatic view illustrating the manner in which the stacking device co-operates with the slicing knife to receive and stack the slices as they are cut.

Fig. 4 is a detail elevational view of the stacking device, detached from the knife-carrying arm.

Fig. 5 is an isometric view of a modified form of stacking device or guide member.

Fig. 6 is a sectional view taken substantially centrally through another form of stacking device or guide member.

The slicing machine consists essentially of a supporting base 10, of any desired or suitable size and construction, and connected thereto is an arm or bracket 11, which carries an article or food holder or support 12, upon which is slidably and adjustably mounted, a clamping device

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13, all of a well-known construction, and which is adapted to be advanced with respect to the support in any suitable manner, to position the food or article 14 that is to be cut, into the cutting plane of a rotatable slicing knife 15.

Mounted upon a suitable bracket 16 carried by the base 10, is a motor housing 17, and supported by the motor housing and mounted to swing on an inclined axis, is an arm 18, which carries the rotary slicing knife. Suitable mechanism (not shown) is provided to form a driving connection between the motor and the knife 15, to rotate the latter in the proper direction. A handle 19 is provided, by means of which the arm 18 may be swung about its pivot, while the knife is being rotated, to cut slices from the stock or article 14. The article 14 is intermittently advanced as the slices are cut therefrom, in any suitable manner.

As the slices 20 (Fig. 3) are cut, they are delivered to a receiving table or support 21, which is intermittently lowered as the slices are piled thereupon, in any suitable manner well known in this art, and diagrammatically illustrated at 22, 23. In order to stack the slices upon the receiving table or support as they are cut, and to prevent them from folding, there is provided a receiving and guide member 24, which is preferably conical in shape, and the periphery of which may be either smooth or undulated. This member 24 is provided with a shaft 25, which is journaled in a bearing 26, on a plate or member 27, which in turn is mounted upon a stud 28 carried by the arm 18. The plate 27 is provided with an aperture 29 (Fig. 4), to receive the stud.

The plate 27 is also provided with two oppositely opening slots 30, which are adapted to receive studs 31, on the arm, when the plate is rotated about the stud 28 in the proper direction. The studs 31 may be in the form of screws, whereby they may be tightened to clamp or securely hold the plate 27 locked to the arm 18. A handle 32 may be provided to facilitate the handling and shifting of the plate and the mechanism carried thereby, when the plate is manipulated.

Rotatably supported by the plate 27, is a roller 33, which is in driving connection with the guide member 24, in any suitable manner, such as by means of a flexible shaft or connection 34, whereby when the roller 33 is rotated, the guide member 24 will also be rotated with respect to the arm 18. When the plate 27 is attached to the arm 18, the carrier or guide member 24 will be in a position that the apex end thereof will be

lowermost, and the carrier will be disposed in proximity to the cutting plane of the knife, but will be spaced a sufficient distance from the knife so that as and when the slice is cut, it will fall upon the guide member (Fig. 3), and as the guide member is being rotated, the slice will be delivered to the receiving table or support 21.

The motor housing 17 is provided with an enlarged circular portion 35, encompassing the pivot of the arm 18, and is frictionally and tractionally engaged by the roller 33, carried by the plate 27, so that as the arm 18 is swung about its pivot by the operator grasping the handle 19, the roller 33 will be rotated with respect to the stationary plate 27, which will in turn, through the medium of the driving connection 34, rotates the guide member 24 about its longitudinal axis. The slices, as they are cut by the knife, will be delivered to, or will fall upon the guide member 24, and will be delivered to the slice receiving support 21 in a flat condition, to be piled thereupon, and they will be prevented from folding or breaking.

When it is desired to remove the guide member 24 for cleaning or for any other purpose, this may be readily accomplished by grasping the handle 32, and rotating the plate 27 about the stud 28 on the arm 18, in a direction to cause the recessed portions 30 of the plate to disengage the studs 31, whereupon the plate 27, the guide member 24, and the driving roller 33 may be disengaged, as a unit, from the arm 18.

If desired, and if the surface of the guide member 24 is grooved or undulated, a scraper device 36 (Fig. 5), having fingers 37, may be provided and mounted upon the plate 27, so that the fingers will extend into the grooves 38 and, by a camming action on the slices issuing from the knife 15, transfer them to the receiving support 21.

If desired, the rotatable guide member 39 may be of a sectional construction, that is, divided into a plurality of rotatable sections 40 and 41 (Fig. 6). The section 41 is mounted on and adapted to be driven by a shaft 43 while the section 40 is mounted on and adapted to be driven by a sleeve shaft 42 surrounding the shaft 43. The shafts 42 and 43 may be driven in any suitable manner (not shown). It will be noted that because the two sections 40 and 41 are driven at different rates of rotation, there is little tendency for the slices to adhere to the guide member as a whole.

It will therefore be manifest that the guiding or stacking device may be readily applied to, and detached from, the arm 18, and the machine may be effectively operated either with or without the attachment of the stacking device. When used, the stacking device may be readily and quickly detached for cleaning purposes, and may be as readily attached for use.

While the preferred forms of the invention have been herein shown and described, it is to be understood that various changes may be made in the details of construction, and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:

1. A slicing machine comprising an article holder, a swinging arm, a circular slicing knife rotatably mounted on said arm and movable bodily therewith, means for continuously rotating said knife, a guide member rotatably mounted on said arm and movable bodily therewith and having a surface positioned to progressively receive thereon slices of the articles severed by said knife to guide the slices from said knife as said arm is moved in a cutting direction, and tractional drive means operable upon swinging of said arm in a cutting direction for causing rotation of said guide member.

2. A slicing machine comprising an article holder, a swinging arm, a circular slicing knife rotatably mounted on said arm and movable bodily therewith in a cutting direction, a guide member having a conical surface rotatably mounted on said arm and movable bodily therewith and having slant lines thereof positioned to progressively receive thereon slices of the articles severed by said knife to guide them from said knife as said arm is moved in a cutting direction, and tractional drive means operable upon swinging of said arm in a cutting direction for causing rotation of said guide member.

3. A slicing machine embodying an article support, a swinging arm mounted to swing about an inclined pivot, a rotatably driven slicing knife carried by the arm and also rotating about an inclined axis, a rotatable guide member adjacent the cutting plane, a supporting member for the guide member, a driving element operatively connected with the guide member and also carried by said supporting member, means securing said supporting member to said arm for ready detachment therefrom with the guide member and the driving element, as a unitary structure, and means stationary with respect to the said arm and engaged by said driving element, whereby said driving element will be responsive, in its operation with respect to the arm, to the swinging movement of said arm.

4. A slicing machine embodying an article support, a swinging arm mounted to swing about an inclined pivot, a rotatably driven slicing knife carried by the arm and also rotating about an inclined axis, a rotatable guide member adjacent the cutting plane, a supporting member for the guide member, a driving element operatively connected with the guide member and also carried by said supporting member, means securing said supporting member to said arm for ready detachment therefrom with the guide member and the driving element, as a unitary structure, and means stationary with respect to the said arm and engaged by said driving element, whereby said driving element will be responsive, in its operation with respect to the arm, to the swinging movement of said arm, the last said means embodying a stationary surface separate from said arm, and said driving element embodying a rotatable element operatively connected with the guide member and engaging and rotatable by said surface.

5. A slicing machine comprising an article holder, a swinging arm, a circular slicing knife rotatably mounted on said arm and movable bodily therewith in a cutting direction, a guide member having a conical surface rotatably mounted on said arm and movable bodily therewith and having slant lines thereof positioned to progressively receive thereon slices of the articles severed by said knife to guide them from said knife as said arm is moved in a cutting direction, there being a series of annular grooves extending around the outer surface of said guide member, a series of fingers fixedly mounted with respect to said swinging arm extending into said grooves, and tractional drive means operable upon swinging of said arm in a cutting direction for causing rotation of said guide member.

6. A slicing machine embodying an article holder, a swinging arm, a rotatably driven knife supported by said arm, a supporting member, a guide member rotatably mounted upon said supporting member, a rotatable driving element for operating said guide member, also mounted upon said supporting member, means for securing said supporting member to said arm for detachment therefrom with said guide member and said driving element, as a unitary structure, means stationary with respect to the movement of said arm and engaged by said driving element, whereby the swinging movement of the arm will actuate the said driving element, and a handle connected with said supporting member for shifting the latter.

7. A slicing machine embodying a swinging arm, a rotatably driven knife carried by the arm, a mounting plate, a guide member rotatably carried by said plate, a driving element for said guide member, also carried by the plate, a stud carried by the arm, said stud projecting into an opening in the plate, means whereby upon rotation of the plate upon said stud, said plate and the mechanism supported thereby will be detachably secured to the arm, said guide member being disposed adjacent the knife cutting plane, and stationary means engaged by said driving element, whereby when said arm is swung about its pivot, the said guide member will be rotated with respect to the arm.

8. A slicing machine embodying a swinging arm, a rotatably driven knife carried by the arm, a mounting plate, a guide member rotatably carried by said plate, a rotatable driving element, a driving connection between said element and said guide member for rotating the latter, also carried by the plate, a stud carried by the arm, said stud projecting into an opening in the plate,

means whereby upon rotation of the plate upon said stud, said plate and the mechanism supported thereby will be detachably secured to the arm, said guide member being disposed adjacent the knife cutting plane, and stationary means engaged by said driving element, whereby when said arm is swung about its pivot, the said guide member will be rotated with respect to the arm.

9. In a slicing machine, an article holder, a swinging arm, a rotatably driven slicing knife carried by the arm, an elongated guide member supported by said arm and rotatable with respect thereto, for receiving and guiding the slice from the knife as it is cut, said guide member being of sectional construction, said sections being independently rotatable with respect to the arm and with respect to each other.

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