Oct. 16, 1934. W. A. VAN BERKEL 1,977,462

CLAMP FOR SLICING MACHINES

Filed Jan. 29, 1930

Fig. 1

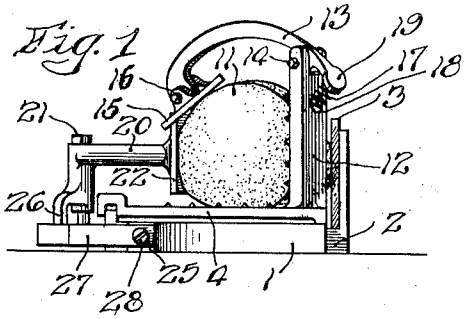
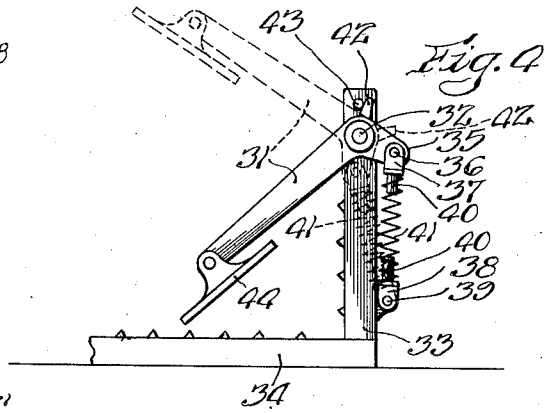


Fig. 4



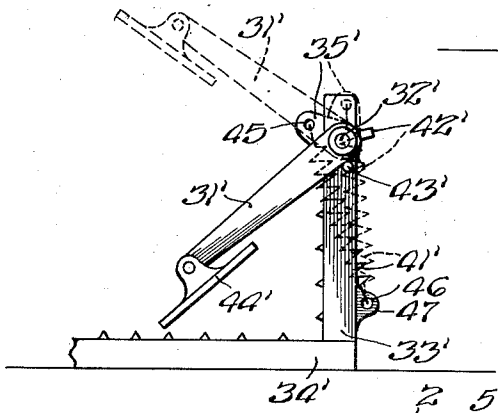
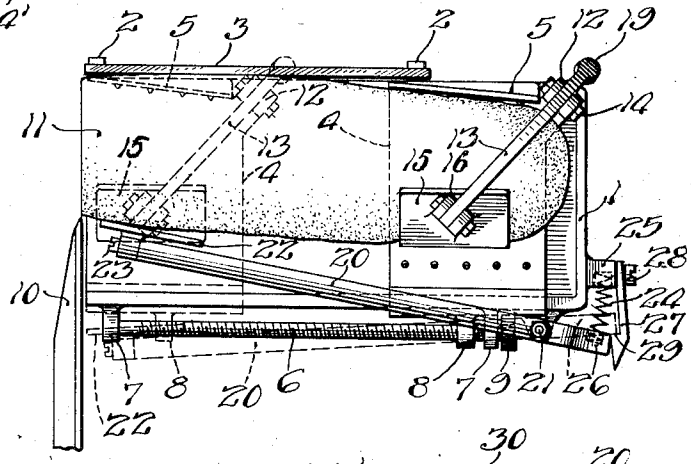


Fig. 5

Fig. 2



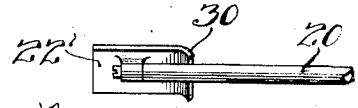


Fig. 6

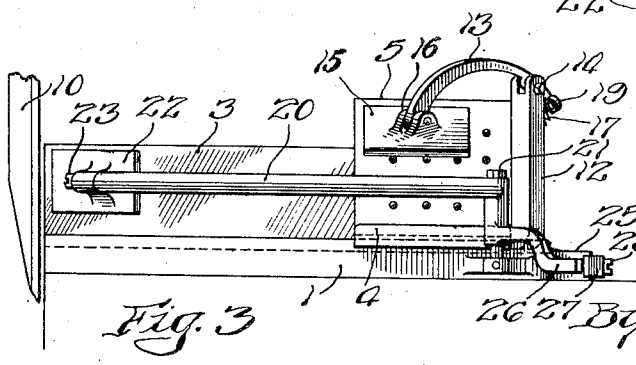


Fig. 3

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CLAMP FOR SLICING MACHINES

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16 Claims. (Cl. 146—217)

At the present time it is customary in clamping substances on the supporting table of a slicing machine to provide a single clamp for holding the substance thereon. Generally this clamp is arranged to clamp the forward end of the substance being sliced. For short substances such an arrangement has been fairly satisfactory but when clamping substances of considerable length such an arrangement of the clamping means is very unsatisfactory since it permits that end of the substance which is not clamped to move about on the support therefor. When the substance is permitted to move about on the support, irregular slices are apt to be cut from the substance due to the canting of the substance relative to the plane of the knife, the knife tending to cant the substances as it moves into the substance to cut a slice therefrom.

One object of this invention therefore is to produce a clamping means which is simple and yet overcomes the disadvantages of previous types of clamping mechanisms.

Another object of this invention is the provision of a plurality of clamping devices for the substance being clamped. With this arrangement, the substance can be clamped at a plurality of points intermediate its ends to thereby more firmly hold the substance on the support and prevent movement of the substance relatively to the support.

Another object of this invention is the provision of suitable clamping or gripping devices for substances of considerable length.

A still further object of this invention is the provision of suitable pivoted clamping members which co-operate with a vertically disposed plate on the substance support for clamping the substance firmly on the support while permitting longitudinal movement thereof along said support.

Other objects of the invention will appear hereinafter the novel features and combination being set forth in the appended claims.

In the drawing—

Fig. 1 represents an end elevational view of a substance supporting table embodying my invention.

Fig. 2 represents a plan view of the device shown in Fig. 1.

Fig. 3 is a side elevational view of the device illustrated in Figs. 1 and 2, this view being a view looking from the left in Fig. 1.

Figs. 4 and 5 show modified arrangements for supporting one of the clamping members illustrated in Figs. 1, 2 and 3; and

Fig. 6 illustrates a modified form for the clamping plate of the other of the clamping members illustrated in Figs. 1 to 3, inclusive.

In the drawing I have only shown the supporting table for the substance being sliced, it being understood that the substance supporting table may be embodied in any type of a slicing machine in which the slicing knife is moved relatively to the table in order to cut slices from the substance supported thereon. The substance supporting table comprises a base member 1 having brackets 2 extending upwardly along one side thereof, a plate 3 being secured thereto by any suitable means. Preferably the plate 3 is made of glass or other material which can easily be kept in a neat condition and which causes very little friction between the merchandise being sliced and the plate. The plate 3 may be provided with ribs extending in the direction of movement of the substance being sliced if desired, these ribs acting as a means for guiding the substance in a fixed path as well as forming a means for reducing the resistance of the plate to the movement of the substance thereover. The feed plate 4 having an upstanding portion 5, is adapted to slide longitudinally of the table 1 in a direction from left to right and right to left as viewed in Figs. 2 and 3.

A feed screw 6 is journaled in the bearings 7 arranged along one side of the table 1 and the feed plate 4 is provided with a nut 8 along one side thereof adapted to engage the threads on the feed screw 6. A ratchet wheel 9 is rigidly mounted on one end of the feed screw and is adapted to be actuated by means of a pawl (not shown) in a well known manner, the feed screw being given a step by step movement for imparting a similar movement to the feed plate. This movement of the feed plate advances the substance towards the slicing knife 10 so that successive slices are cut from the substance as the table 1 is moved relatively to the knife.

The substance 11 is placed on the supporting surfaces of the table 1 and the feed plate 4 and abutting against the plate 3. At one corner of the feed plate 4 I provide an upstanding bracket 12 having the arm 13 pivoted thereto as at 14. This arm carries clamping plate 15 pivoted thereto at 16. A spring 17 is arranged within a suitable recess 18 in the bracket 12 and in a corresponding recess in the extension 19 of the arm 13. The spring tends to rotate the arm 13 in such a direction as to move the clamping plate 15 against the substance 11. In other words the spring 17 is normally compressed. It will be noted from an

inspection of Fig. 1 that the clamping plate 15 has a tendency to move the substance being sliced in a direction towards the supporting surface of the clamping plate and also against the vertical upstanding portion 5 thereof.

A second arm 20 pivoted at 21 to the table 1 carries a clamping plate 22 rotatable on the pivot 23 about an axis substantially parallel with the axis of the arm 20. A spring 24 having the opposite ends thereof arranged within a recess in the extension 25 on the table 1 and a recess on the extension 26 of the arm 20 normally tends to rotate the arm 20 in a clockwise direction about its pivot as viewed in Fig. 2. The extension 25 also supports the latch 27 by means of the pin 28 and this latch is permitted to have a slight amount of movement in a direction towards and away from the end of the extension 26 on the arm 20. The latch 27 has a shoulder 29 thereon adapted to engage the outer surface of the extension 26 when the arm 20 is in the dotted line position shown in Fig. 2. By this arrangement the latch 27 will hold the arm and clamping plate in the dotted line or inoperative position.

When the latch is released, the clamping plate 22 comes into engagement with the side of the substance to be sliced and forces the substance in a direction towards the plate 3. With a substance of considerable length the feed plate 4 is moved to the extreme right hand position shown in Fig. 2, and the substance is placed thereon, the clamping plate 15 engaging the right hand portion of the substance. The plate 22 is brought into engagement with the side of the substance and adjacent the left end thereof thus providing support against lateral movement for substantially the entire substance and providing a clamping means which is sufficiently effective to hold the substance securely on the supporting table and feed plate as the slices are being cut therefrom.

As successive slices are cut from the substance the feed plate moves towards the dotted line position shown therefor in Fig. 2. The clamping plate 22 is so arranged that when the clamping plate 15 comes into proximity therewith the forward edge of the clamping plate 15 will engage the underside of the clamping plate 22 and move the clamping plate 22 away from the substance against the action of the spring 24. While the clamping plate 22 is out of engagement with the substance it will be noted that the clamping pressure of this clamping plate is exerted on the clamping plate 15, and therefore there is no loss of clamping pressure due to the fact that the clamping plate 22 is moved out of engagement with the substance being sliced.

In Fig. 6 I have shown a modified arrangement for the clamping plate which is to be supported on the arm 20. This clamping plate 22′ is pivoted to the arm 20 in the same manner as the plate 22 but has an extension 30 curved away from the substance being clamped thereon at the end thereof adjacent the clamping plate 15 so as to cause the plate 22′ to ride over the plate 15 when they come into engagement with each other, to thus avoid the possibility of having the adjacent ends of the plates 15 and 22 abutting against each other and thereby injuring the operativeness of the device, even though under normal conditions the plate 22 will be caused to ride over the plate 15 when they come into engagement with each other.

In Fig. 4 I have shown a modified arrangement for supporting the clamping plate for the feed plate. This comprises arm 31 pivoted at 32 to an upstanding bracket 33 on the feed plate 34, the latter corresponding to the feed plate 4 shown in Figs. 1 to 3, inclusive. The arm 31 is in the form of a bell crank and the extension 35 of this bell crank has a member 37 pivoted thereto at 36. A member 38 similar to the member 37 is pivoted at 39 to the upstanding bracket 33. Each of the members 37 and 38 carry pins 40 over which the opposite ends of the compression spring 41 are arranged. The bell crank is also provided with a lug 42 adapted to engage a stop 43 on the bracket 33. The pivot 36 is so arranged with respect to the pivots 32 and 39 as to lie on opposite sides of a line drawn between the pivots 32 and 39 when the arm 31 is in its extreme positions shown in full and dotted lines in Fig. 4. When the arm 31 is in its dotted line position the pivot 36 is arranged to the left of the line between the pivots 32 and 39 and therefore urges the arm 31 in a clockwise direction and against the stop 43. Thus the arm 31 is held in inoperative position. When the arm 31 is in the full line position the pivot 36 is on the right of the line through the pivots 32 and 39 and therefore forces the arm 31 in a counter-clockwise direction about its pivot 32, the lug 42 coming into engagement with the pin 43 to limit the counter-clockwise movement of the arm 31. By this arrangement when the pivot 36 is arranged on the right of a line through the pivots 32 and 39 the arm 31 will act to urge the clamping plate 44 pivoted thereto, in a direction towards the substance being clamped.

In Fig. 5 I have shown a modification of the invention illustrated in Fig. 4 in which a tension spring is used to actuate the arm carrying the clamping plate instead of using a compression spring as used in the modification shown in Fig. 4. In this form of the device the feed plate 34′ carries a bracket 33′ and has an arm 31′ pivoted thereto at 32′, the arm 31′ having an extension 35′. The spring 41′ has the opposite ends thereof extending through openings 45 and 46 in the extension 35′ and extension 47 on the bracket 33′. The spring 41′ is a tension spring and as before when the center line of the spring lies to the right of the line through the centers 32′ and 46 the arm 31′ is urged in a clockwise direction about its pivot, whereas when the said center line is arranged to the left of the line through the centers 32′ and 46, the arm 31′ is urged in a counter-clockwise direction about its pivot and into clamping engagement with the substance, the same as with the modification shown in Fig. 4. A stop 42′ on the arm 31′ is adapted to limit the clockwise movement of the arm 31′ by its engagement with the pin 43′ on the bracket 33′. The arm 31′ is adapted to engage the stop 43′ as it moves in a counter-clockwise direction to limit the movement of this arm in this direction.

Obviously those skilled in the art to which this invention pertains may make various changes in the details and arrangement of parts illustrated in the drawing and described in the specification without departing from the spirit and scope of the invention as defined by the claims hereto appended. I therefore do not wish to be limited to the precise construction herein disclosed.

Having thus fully described several embodiments of my invention what I desire to secure by Letters Patent of the United States is:

1. A clamping and supporting means for slicing machines comprising a table having one edge thereof arranged adjacent the cutting plane of the slicing knife of said slicing machine, a feed plate adapted to slide on said table in a direction

towards and from said cutting plane, a clamping member pivoted to said feed plate for clamping a substance firmly thereon, and a second clamping means having the operative substance engaging portion thereof arranged adjacent that end of the table which is adjacent to said cutting plane for securely holding the substance against lateral shifting movement on said table in opposite direction transversely to the direction of feeding movement, said last mentioned clamping means being constructed so as to permit sliding movement of said substance relative thereto toward and from the cutting plane of said knife.

2. A substance support and clamping means for slicing machine comprising a support having one edge thereof arranged adjacent the cutting plane of the slicing knife of said slicing machine, an arm pivoted to said support adjacent one edge thereof and at a point remote from said cutting plane, a clamping plate pivotally mounted on said arm, an abutment arranged along the opposite edge of said support, a feed table slidably mounted on said support, means for moving said feed table along said support, a second arm pivoted to said feed table, a clamping plate carried thereby, each of said clamping plates being adapted to hold the substance being sliced, said second clamping plate being adapted to move in a path which intersects said second clamping plate, said second clamping plate being arranged to engage the outer surface of said first clamping plate to cause said second clamping plate to ride over said first clamping plate and so that the substance is clamped by means of a combined clamping effect of said clamping plates at substantially the same place along said substance.

3. A substance supporting and clamping means for slicing machine comprising a support having one edge thereof arranged adjacent the cutting plane of the slicing knife of said slicing machine, an arm pivoted to said support adjacent one edge thereof and at a point remote from said cutting plane, a clamping plate pivotally mounted on said arm, an abutment arranged along the opposite edge of said support, a feed table slidably mounted on said support, means for moving said feed table along said support, a second arm pivoted to said feed table, a clamping plate carried thereby, each of said clamping plates being adapted to hold the substance being sliced, said second clamping plate being adapted to move in a path which intersects said second clamping plate, said second clamping plate being arranged to engage the outer surface of said first clamping plate to cause said second clamping plate to ride over said first clamping plate and so that the substance is clamped by means of a combined clamping effect of said clamping plates at substantially the same place along said substance, said second clamping plate having the edge thereof adjacent said first clamping plate curved away from the substance being sliced to insure that the second clamping plate will ride over said first mentioned clamping plate.

4. A substance supporting and clamping means comprising a carriage, a feed plate mounted for sliding movement on said carriage, a clamping means for clamping the substance on said feed plate against lateral shifting movement thereon, a second clamping means mounted for movement transversely to the movement of said feed plate and at a substantial angle to a plane perpendicular to the supporting surface of said carriage in the direction of feed of said feed plate, having means for exerting a substantial clamping effect on the substance against lateral shifting movement of the substance on said carriage, one of said clamping means being adapted to ride over the outer surface of the other of said clamping means when the second of said clamping means is moved into engagement with the first of said clamping means thereby causing the both of said clamping means to exert their clamping effect on one portion of said substance being sliced.

5. Clamping apparatus for holding a substance while the same is being sliced comprising an under table, a member mounted adjustably on said under table and adapted to clamp the substance near the end of said substance from which slices are to be cut, a substance holder movably mounted on said under table, a member adjustably mounted on said substance holder for clamping the substance at a point normally away from said first member and remote from that end of the substance from which the slices are to be cut, and an upwardly extending abutment on the under table of the slicing machine toward which both clamping members are moved to exert their respective clamping pressures and against which the substance is held by both of said clamping members, said abutment being to one side of the path of movement of said substance.

6. A device as claimed in claim 5 in which the clamping member on the substance holder is arranged to move against the clamping member on the under table to lift the latter member out of its normal operative engagement with the substance while maintaining the clamping pressure thereof on the material through the intermediacy of said clamping member on said under table.

7. In a slicing machine, the combination with a slicing knife, of an under table for supporting a substance while the same is sliced by said knife and having a portion thereof adjacent the cutting plane of said knife, a member for clamping the substance on said under table at a point adjacent the cutting plane of said knife against any substantial lateral shifting movement, a feed table mounted on said under table movable toward the cutting plane of said knife and adapted to support a portion of the substance being sliced, a member mounted adjustably on said substance support for movement into and out of operative engagement with the portion of the substance supported thereon, an abutment on said under table at a substantial angle to the supporting surface of said under table, and against which the substance is moved by said clamping members, and means for automatically holding the clamping member on the under table in an inoperative or an operative position after manual movement thereof to either of said positions.

8. In a substance support for slicing machines, the combination with a main support, an auxiliary support movable relatively to said main support for feeding a substance along said main support, clamping means pivotally mounted on said auxiliary support, an abutment extending upwardly from said auxiliary support, said clamping means urging said substance against said abutment and said auxiliary support simultaneously, an abutment on said main support, a clamping means pivotally mounted on said main support and having an operative engaging surface thereof engaging the substance at a point opposite to the portion engaged by said abutment so that said second clamping means urges the substance against the abutment on said main support, springs for urging both of said clamping means into operative engagement with the

substance, and means for automatically locking each of said clamping means out of operative position.

9. In a substance support for slicing machines, the combination with a main support, an auxiliary support movable relatively to said main support for feeding a substance along said main support, clamping means pivotally mounted on said auxiliary support, an abutment extending upwardly from said auxiliary support, said clamping means urging said substance against said abutment and said auxiliary support simultaneously, an abutment on said main support, a clamping means pivotally mounted on said main support and having an operative engaging surface thereof engaging the substance at a point opposite to the portion engaged by said abutment so that said second clamping means urges the substance against the abutment on said main support, springs for urging both of said clamping means into operative engagement with the substance, and means for automatically locking each of said clamping means out of operative position, the locking means for locking the said first clamping means out of operative engagement comprising a spring adapted to occupy positions on opposite sides of the pivot for said first clamping means, when said clamping means is in operative and inoperative positions respectively and the locking means for said second mentioned clamping means comprising a member having a detent thereon for automatically restraining the movement of said clamping means in a direction toward the substance when said last mentioned clamping means is moved a predetermined distance toward inoperative position.

10. A device as claimed in claim 8 in which one of said clamping means rides over the other of said clamping means after a predetermined feeding movement of said auxiliary support relative to said main support so that there is a combined clamping effect on said substance at substantially the same point in the direction of the feeding movement thereof.

11. A substance supporting and holding means for slicing machines comprising a substance support having one end thereof arranged adjacent the cutting plane of the slicing knife of said slicing machine, a clamping member pivoted to said support along the one side thereof and remote from said cutting plane for pivotal movement substantially parallel to the supporting surface of said support, an upwardly extending abutment on said support to one side of the path of movement of the substance to be sliced, means for urging said clamping member about its pivot in a direction towards said abutment, means for holding said clamping member in an inoperative position, a feed table on said substance support, second clamping means on said feed table for clamping a substance against said feed table, and means for holding said second clamping member in an inoperative position.

12. A substance supporting and holding means for slicing machines comprising a substance support having one end thereof arranged adjacent the cutting plane of the slicing knife of said slicing machine, a clamping member pivoted to said support along the one side thereof and remote from said cutting plane for pivotal movement substantially parallel to the supporting surface of said support, an upwardly extending abutment on said support to one side of the path of movement of the substance to be sliced, means for urging said clamping member about its pivot in a direction towards said abutment, means for holding said clamping member in an inoperative position, a feed table on said substance support, second clamping member on said feed table for clamping a substance against said feed table, and means for holding said second clamping member in an inoperative position, said last mentioned means comprising a spring which normally moves said second clamping member away from the supporting surface of said feed table when said second clamping member is in inoperative position and an abutment against which said second mentioned clamping means is moved by said spring when said clamping means is at said inoperative position.

13. A substance supporting and holding means for slicing machines comprising a base member, a feed plate movable along said base member, an abutment extending upwardly along that side of said base member which is last presented to said knife during the slicing stroke, a pivoted clamping plate mounted on said feed plate and adapted to engage the substance to be sliced when the substance is placed on said feed plate, and a second pivoted clamping plate mounted on said base and movable in a direction toward and from said abutment to hold the substance to be sliced securely on said base member against shifting movement while the slices are being severed from the substance.

14. A substance supporting and holding means for slicing machines comprising a substance support having one end thereof arranged adjacent the cutting plane of the slicing knife of said slicing machine, a clamping member pivoted to said support along one side thereof and remote from said cutting plane, the clamping member extending into close proximity with said cutting plane and being pivoted to move in a plane substantially parallel with the supporting surface of said substance support, an upwardly extending abutment on said support to one side of the path of movement of the substance, means for urging said clamping member about its pivot in a direction toward said abutment, means for holding said clamping member in an inoperative position, a feed table on said substance support, a second clamping member on said feed table for clamping the substance against said feed table, means for holding said second clamping member in an inoperative position, said last mentioned means comprising a spring which normally moves said clamping member away from the supporting surface of said feed table after the clamp has been manually moved to an inoperative position, and an abutment against which said second mentioned clamping means is moved by said spring when the clamp is at said inoperative position.

15. A substance supporting holding means for slicing machines comprising a base member, a feed plate movable along said base member, an upstanding flange on said feed plate extending substantially in the direction of movement thereof, an abutment extending upwardly from said base member and substantially parallel to the path of movement of said feed plate, a clamping member mounted for movement in a direction toward said flange for holding the substance against said flange on said feed plate, and a clamping member mounted for movement in a direction toward said flange and having the operative surface thereof substantially adjacent that edge of the base member which is adapted to lie closest to the knife during a slicing operation

for holding said substance against said abutment.

16. A clamping and supporting means for slicing machines comprising a table having one edge thereof arranged adjacent the cutting plane of the slicing knife of said slicing machine, a feed plate adapted to slide on said table in a direction towards and from said cutting plane, a clamping member on the feed plate for clamping a substance firmly thereon, and a second clamping means having the operative substance engaging portion thereof arranged adjacent that end of the table which is adjacent to said cutting plane for securely holding the substance against lateral shifting movement on said table in opposite direction transversely to the direction of feeding movement, said last mentioned clamping means being constructed so as to permit sliding movement of said substance relative thereto toward and from the cutting plane of said knife.

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