May 3, 1932. H. STUKART 1,856,855

FEEDING MECHANISM FOR SLICING MACHINES

Filed July 6, 1926 3 Sheets-Sheet 1

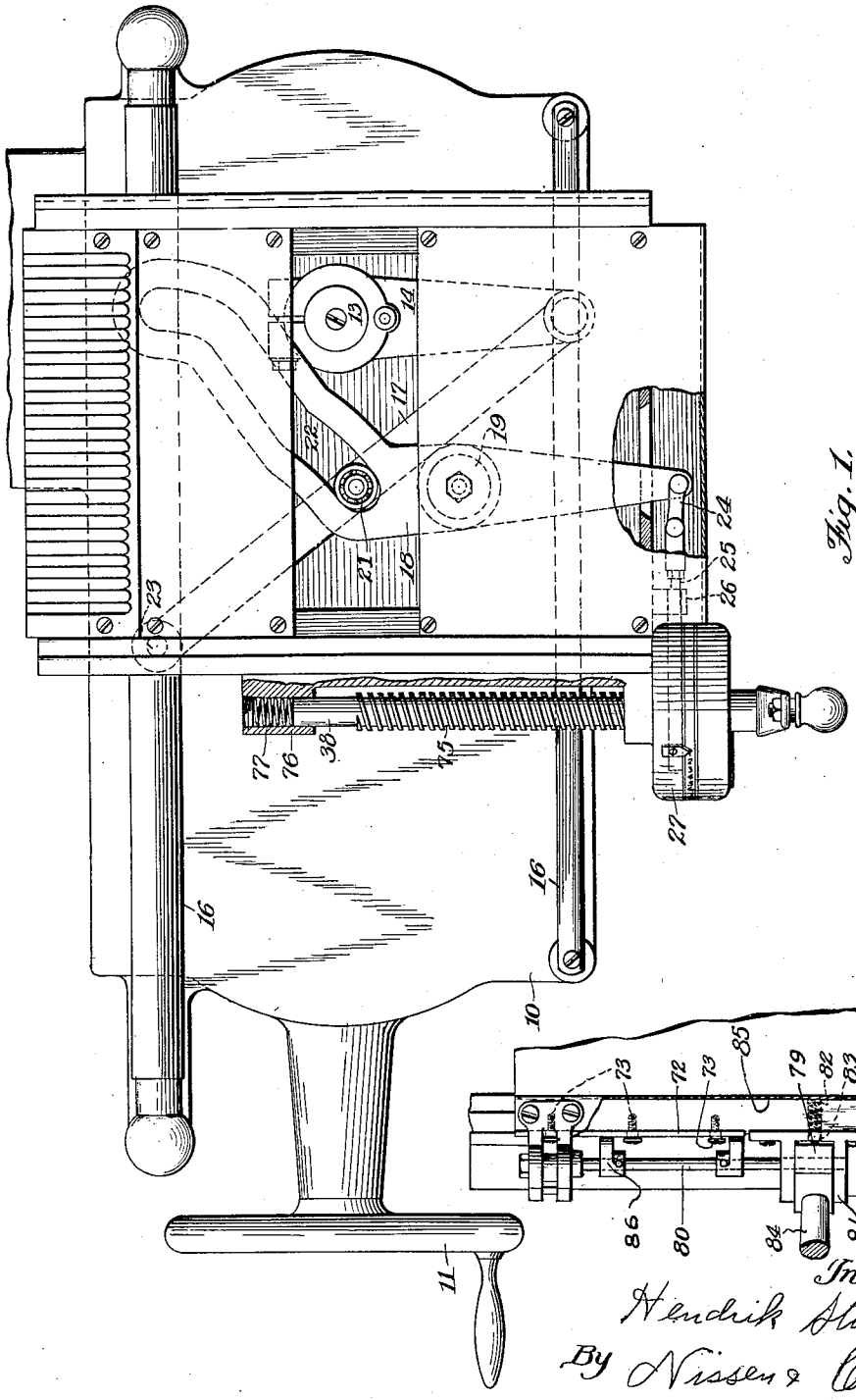

Fig. 1.

Fig. 7.

Inventor
Hendrik Stukart
By Nissen & Asare
Attys

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FEEDING MECHANISM FOR SLICING MACHINES

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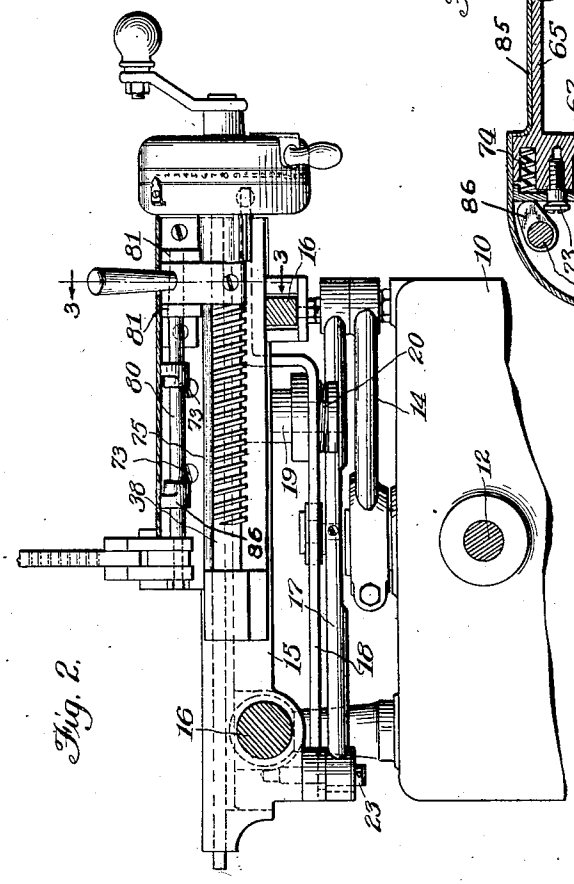

Fig. 2.

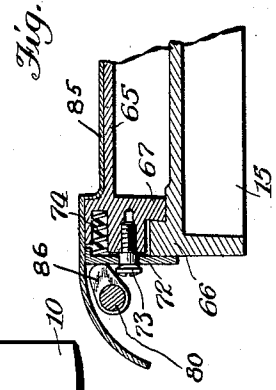

Fig. 4.

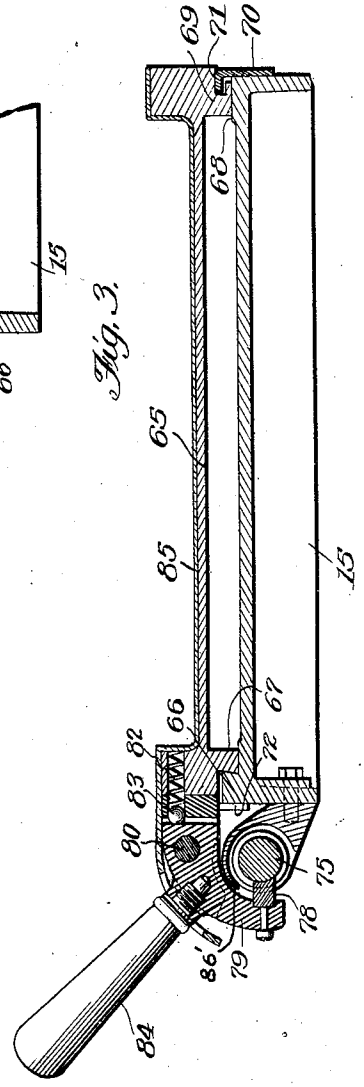

Fig. 3.

Inventor
Hendrik Stukart
By Nissen & Crane
Attys.

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FEEDING MECHANISM FOR SLICING MACHINES

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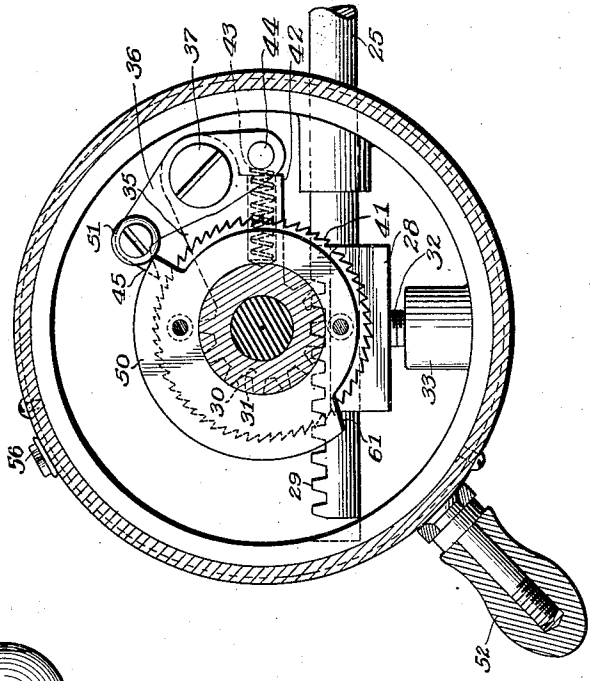

Fig. 6.

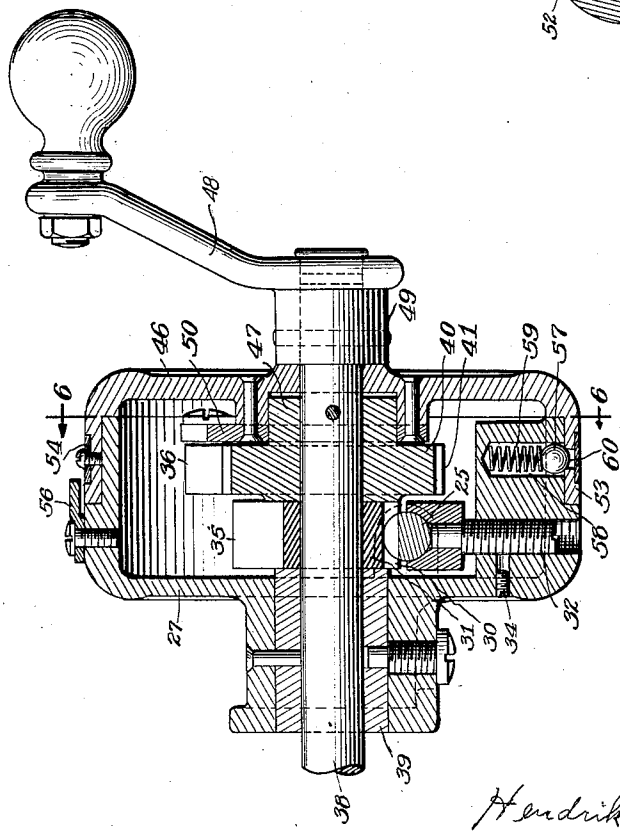

Fig. 5.

Inventor
Hendrik Stukart
By Nissen & Crane
Attys.

Patented May 3, 1932 1,856,855

UNITED STATES PATENT OFFICE

HENDRIK STUKART, OF LA PORTE, INDIANA, ASSIGNOR TO U. S. SLICING MACHINE COMPANY, OF LA PORTE, INDIANA, A CORPORATION OF INDIANA

FEEDING MECHANISM FOR SLICING MACHINES

Application filed July 6, 1926. Serial No. 120,635.

This invention relates to machines for slicing meat and other commodities in which a reciprocating table is provided for feeding the material to a rotary slicing knife.

The invention has for its object the provision of feeding mechanism for such slicing machines in which the guiding mechanism for the feed table permits of a relatively short table and a consequent longer range of feed and in which improved mechanism is provided for feeding the table along its guiding mechanism.

Other objects and advantages will appear in the following description.

The invention is exemplified in the combination and arrangement of parts shown in the accompanying drawings and described in the following specification, and it is more particularly pointed out in the appended claims.

In the drawings—

Fig. 1 is a top plan view of the feeding mechanism of a slicing machine embodying the present invention;

Fig. 2 is an elevation of the mechanism shown in Fig. 1;

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

Fig. 4 is a fragmentary section showing the spring plate construction;

Fig. 5 is a vertical section through the ratchet feed mechanism;

Fig. 6 is a section on line 6—6 of Fig. 5; and

Fig. 7 is a fragmentary top plan of a portion of the feed table.

In Figs. 1 and 2 of the drawings, the numeral 10 designates the supporting base or frame of a slicing machine having a hand crank 11 secured to a shaft 12 and geared to an upright spindle 13 which rotates the main drive crank 14 in the usual manner. A reciprocating under table 15 is guided on ways 16 on the base 10 and is connected to the crank 14 by a connecting rod 17. A feed lever 18 is pivotally mounted on a post 19 extending downwardly from the under table and provided with a spring friction device 20 to prevent noise and lost motion. A roller 21 is carried by the connecting rod 17 and travels in a cam groove 22 in the feed lever 18. It is apparent that the connecting rod 17 will have an oscillating movement about its pivotal connection 23 with the under table 15 due to the rotation of the crank arm 14. The oscillation of the connecting rod 17 about its pivotal point 23 will move the roller 21 in the cam groove 22 and this groove is provided with a portion at each end arranged concentric with the pivot 23 when the roller 21 is in the end portions and is also provided with an eccentric portion between the ends which will impart pivotal movement of the lever about its support 19. The groove is so shaped that the pivotal movement of the lever 18 will take place at the ends of the reciprocating travel of the under table. The end of the lever 18 opposite the cam groove 22 is connected by a link 24 with a rack bar 25 which slides in a guide 26 on the under table. The bar 25, as shown in Figs. 5 and 6, extends into a ratchet housing 27 also fixed to the under table adjacent the operator's side. Within the housing 27 is a guide block 28 which engages the under face of the rack bar 25 and holds the teeth 29 of the rack bar in mesh with the teeth 30 of a gear segment 31. An adjustment screw 32 is threaded in a boss 33 formed on the case 27 by means of which the slide block 28 which may be adjusted upwardly to take up any play or lost motion between the gear teeth 29 and 30. A set screw 34 may be provided to lock the adjusting screw 32 in its adjusted positions.

The link 24 is adjustably connected to the rack 25 by means of a connecting yoke and lock nut, shown in Fig. 1. If the rack, pinion, or pawl and ratchet mechanism becomes worn so that the slices do not conform in thickness to the adjustment of the indicator as determined by the detent fall 57, the error can be remedied by adjustment of the rack 25 relative to the link 24.

The gear segment 31 is provided with an arm 35 having a pawl 36 pivoted at 37 thereon. The gear segment 31 is loose on a shaft 38 journaled in a bearing 39 carried by the housing 27. A ratchet wheel 40 is fixed to the shaft 38 and provided with teeth 41 in position to be engaged by the pawl 36. The arm 35 is provided with a recessed lug 42

which contains a spring 43 arranged to engage a pin 44 on the tail of the pawl 36 to urge the nose 45 of the pawl into engagement with the ratchet teeth 41. The housing 27 is provided with a cover plate 46 which is journaled on a projection 47 formed on the ratchet wheel 40. The cover plate 46 is held in place by a hand crank 48 removably secured to the shaft 38 by a pin 49. The cover plate 46 is provided on its inner side with a cam or shroud 50 arranged to engage a roller 51 secured to the pawl 36. The cam 50 when engaged by the roller 51 holds the nose 45 out of engagement with the teeth 41. The position of the cam 50 may be adjusted by rotating the cover plate 46 about the supporting bearing 47. The cover plate 46 is provided with a handle 52 for rotating the cover plate to adjust the cam 50 and the cover plate is provided with a portion 53 which overlaps the side wall of the casing 27. An index plate 54 is secured to the overlapping portion 53 of the cover plate and is provided with graduations, shown in Fig. 2, which cooperate with a pointer 56 to indicate the position of the shroud 50.

A ball detent 57 is mounted in an opening 58 in the case 27 and is pressed outwardly by a spring 59 to engage spaced openings 60 in the overlapping flange 53 of the plate 46. The openings 60 are spaced to correspond to graduations on the plate 54 so as to releasably hold the plate 46 in its different positions of adjustment corresponding to the graduations. In Fig. 6 of the drawings, the handle 52 is in its lowermost position in which the roller 51 travels on the cam 50 throughout the entire range of movement of the pawl 36. In this position the pointer 56 indicates zero on the graduated plate 54. As the handle 56 is raised the cam 50 will be termed in a clockwise direction, as viewed in Fig. 6, so that when the pawl 36 moves in a counter-clockwise direction the roller 51 will pass from the shoulder 61 and permit the pawl to engage the ratchet teeth 41 and rotate the shaft 38. This will impart a feeding movement to the meat support, as will be explained later. The amount of movement imparted will depend upon the position of adjustment of the handle 52 and the cam 50, thus producing different thicknesses of slices. The thickness of the slice produced will be indicated by the graduations on the plate 54. The movement of the rack 25 to the right, as viewed in Fig. 6, to produce a feeding operation of the meat table will occur at the time when the reciprocating table is at the end of the supporting ways adjacent the operating wheel 11. At this time the table will be free of the rotating knife so that the meat may be fed past the edge of the knife into position to be sliced. The rack will remain stationary during the movement of the table past the edge of the knife and will be returned at the end of the movement of the table opposite the operator's position.

The meat plate or table 65 slides upon the under table 15 in a direction transverse to the direction of reciprocation of the under table. As shown in Fig. 3, the under table is provided with a narrow guide or rib 66 at the edge thereof adjacent the operator's position and the meat table 65 is provided with a co-operating guide rib 67. The contact faces of the ribs 66 and 67 are preferably inclined, as shown in Fig. 3, to hold the meat table against upward movement. The edge of the under table 15 opposite the rib 66 is provided with a flat bearing face 68 on which a downwardly projecting rib 69 of the meat table slides. A retainer plate 70 is secured to the edge of the under table and carries a flange 71 which fits loosely into the groove of the rib 69. The flange 71 is merely for the purpose of preventing displacement of the meat table upwardly and does not act as a guide for the table, but travels loosely in the groove formed in the rib 69. As shown in Fig. 4, the meat table 65 is guided entirely by the narrow rib 66 which is engaged at one side by the rib 67 and at the opposite side by a spring plate 72 secured to the side of the meat table 65 by screws 73, the heads of which have rounded inner faces to permit the screws to serve as fulcrums about which the plate 72 is tilted by springs 74 disposed in recesses in the table 65. It will thus be seen that the meat table 65 is guided by a narrow guide rib held between spring-pressed walls. With a narrow rib of this kind on the under table the guides on the heat table may be made much shorter without danger of binding than can be done where the guides are disposed at opposite sides of the meat table. The spring plate 72 serves to draw the inclined edges of the ribs 66 and 67 together to hold the meat table against upward displacement and at the same time furnishes a frictional resistance to prevent overthrow of the meat table when operated by the feed screw.

The feed screw 75, as shown in Figs. 1 and 3, is formed on the shaft 38 which is journaled in the ratchet housing 27 and a bearing 76 secured to the under table. A spring 77 is arranged in the bearing 76 to exert pressure on the end of the feed screw in the direction of the length thereof to maintain the feed screw in its rearmost position, thus preventing any lost motion in the movement of the meat table due to longitudinal movement of the feed screw. The meat table 65 is releasably connected with the feed screw 75 by means of a segmental nut or toothed block 78 carried in a bracket 79 fixed to a shaft 80 journaled in ears 81 secured to the meat table 65. The bracket 79 is resiliently held downwardly to force the segmental

nut 78 into engagement with the screw 75 by means of a spring 82 disposed in a recess in the side of the meat table 65 and arranged to press a ball 83 against the bracket 79, as shown in Fig. 3. The bracket 79 is provided with a handle 84 by means of which it may be lifted to disengage the segmental nut 78 from the screw 75. By lifting the handle 84 a sufficient amount to free the nut 78 the table may be shifted by hand along the feed screw 75. The shaft 80 carries cams 86 which bear against the spring plate 72, as shown in Fig. 4, in position to compress the spring 74 and release the spring plate when the handle 84 is raised, thus freeing the table of frictional resistance to movement along the guide rib 66. This will also permit the table to move to the right, as viewed in Fig. 2, a sufficient distance to clear the overhanging contact faces of the ribs 66 and 67 to permit the table to be lifted from its support, if desired. The meat table 65 is covered by a plate 85 of non-corrosive sheet metal, such as Monel metal. This plate, as shown in Fig. 4, overlaps the top edge of the spring plate 72 preventing the accumulation of foreign material behind the spring plate in such a way as to interfere with its operation. The plate may also extend over the feed screw, as shown, to form a protective cover for the screw.

It will be noted from Fig. 3 that the segmental nut 78 engages the outer side of the screw 75 and presses inwardly against the screw so that the spring pressure of the nut supplements the pressure of the plate 72 in holding the inclined faces of the guide ribs 66 and 67 in close contact with each other.

The support for the bearing 76 extends along the inside of the screw 75, as shown in Fig. 1, and is preferably provided with a curved flange 86′ shown in Fig. 3 covering the screw 75.

I claim:—

1. In a meat slicing machine, an under table having a narrow guide rib at one edge thereof and a flat bearing surface at the opposite edge thereof, a meat table having a guide face engaging one side of said guide rib and having a support engaging said bearing surface, a spring plate secured to said meat table and engaging the side of the narrow guide rib on said under table opposite that engaged by the guide on said meat table, said guide rib and spring plate being disposed at the side of the under table adjacent the operator's side of the machine, and means on the operator's side of the machine for moving the meat table.

2. In a slicing machine, an under table, a feed table mounted to slide on said under table, a narrow guide rib at one edge of said under table having an overhanging guide face at one side thereof, said feed table having a guide face inclined to fit the overhanging guide face on said narrow rib, and a spring plate secured to said feed table resiliently engaging the face of said guide rib opposite said inclined guide face, the edge of said feed table opposite said guide rib being free to slide on said under table both in the direction of feed of said feed table and in a direction transverse thereto except as restrained by said guide rib, and means on the side of said table adjacent said guide rib for moving said table.

3. In a slicing machine, an under table having a narrow guide rib at the edge thereof adjacent the operator's side of the machine and a flat bearing face at the opposite edge thereof, the inner surface of said guide rib being inclined to provide an overhanging portion, a feed table mounted on said under table and provided with a rib at one side thereof having an inclined face to fit the inclined face of the guide rib on said under table, the side of said feed table opposite said guide ribs being arranged to slide on said under table, means for holding said opposite edge from vertical displacement from said under table while permitting lateral and longitudinal movement thereof, and a spring plate secured to said feed table in position to engage the outer face of the guide rib on said under table.

4. In a slicing machine, an under table having a narrow guide rib thereon adjacent the operator's side of the machine, a feed table mounted on said under table and having an inclined guide face arranged to engage an inclined guide face on the rib on said under table, a spring plate secured to said feed table and projecting downwardly to engage the face of said guide rib opposite the inclined face thereof, and means for covering the space between said spring plate and said feed table at the upper edge of said spring plate.

5. In a slicing machine, an under table having a narrow guide rib at the edge thereof adjacent the operator's side of the machine provided with an inner overhanging guide face and an outer vertical guide face, a feed table mounted on said under table and having an inclined guide face arranged to engage the inclined guide face of the rib on said under table and having a spring plate arranged to engage the vertical guide plate on the rib of said under table, means for preventing vertical displacement of the edge of said feed table opposite said guide ribs while permitting lateral and longitudinal movement thereof, and a handle secured to said feed table at the same side thereof as said guide rib to facilitate lateral pressure on said feed table against the tension of said spring plate to free said inclined guide faces and permit removal of said feed table from said under table.

6. In a slicing machine, an under table

having a narrow guide rib at the edge thereof adjacent the operator's side of the machine, a feed screw mounted on said under table adjacent said narrow guide rib and parallel therewith, a feed table mounted on said under table and having a guide surface engaging one side of said guide rib and a spring plate engaging the opposite side of said guide rib, a segmental nut arranged to engage said feed screw at one side thereof, a pivoted bracket for supporting said nut on said feed table, and a spring for exerting pressure on said nut to hold said nut in engagement with said feed screw and to supplement the action of said spring plate in drawing the guide face on said feed table against the guide face of the rib on said under table.

7. In a slicing machine, a reciprocating under table having a guide rib extending along the edge thereof adjacent the operator's position of said slicing machine, a feed screw journaled on said under table parallel with said guide rib and adjacent thereto on the side of the under table next to the operator's side of the slicing machine, a feed table mounted to slide on said under table and having a guide face arranged to engage one face of said guide rib and having a spring plate arranged to engage the opposite face of said guide rib, the engaging guide faces on said guide rib and feed table being inclined to resist upward movement of said feed table from said under table, a feed nut support mounted on said feed table and having a feed nut carried thereby and resiliently pressed against the side of said feed screw opposite said guide rib so that the pressure thereon supplements the pressure of said spring plate in drawing said inclined guide faces together, and a handle located at the side of the feed table next to the operator's side of the slicing machine and connected with said feed nut for freeing said nut from said feed screw by limited movement of said handle and for shifting said feed table laterally to free said inclined guide faces.

8. In a slicing machine, an under table, a feed table slidably mounted on said under table, a spring-pressed friction plate mounted on said feed table at the side thereof adjacent the operator's side of the slicing machine and engaging said under table to control the sliding movement of said feed table on said under table, a feed screw mounted on said under table at the side thereof adjacent said friction plate, a shaft journaled on said feed table, a bracket secured to said shaft, a segmental nut carried by said brackets for engaging said feed screw, a handle for rotating said shaft to disengage said nut from said feed screw, and means secured to said shaft for engaging said spring friction plate to release said plate simultaneously with the disengagement of said nut from said feed screw.

9. In a slicing machine, an under table having a narrow guide rib at the edge thereof adjacent the operator's side of the slicing machine provided with an overhanging inner guide face, a feed table slidably mounted on said under table and having a guide surface for engaging said guide face, a spring plate mounted on said feed table for engaging said guide rib at the side thereof opposite said inclined guide face, a feed screw journaled on said under table at the side thereof adjacent said guide rib, a bracket pivotally mounted on said feed table, a segmental nut carried by said bracket for engaging said feed screw, a handle for moving said bracket to release said nut from said feed screw, and means operated by said handle to release said spring plate, said feed table being movable away from the guide face on said guide rib by pressure on said handle in a direction to release said segmental nut from said feed screw.

10. In a slicing machine, an under table, a feed table slidably mounted on said under table, a feed screw mounted on said under table at the operator's side thereof, and a cover plate extending downwardly from said under table over said feed screw.

11. In a slicing machine having a reciprocatory undertable and a meat table movable transversely thereof, a feed screw, a housing within which one end of said feed screw is journalled, said housing being formed of a stationary section rigid with said undertable, and a section rotatably connected with said stationary section, a gear loosely mounted on said feed screw, a ratchet rigid with said feed screw, a pawl carried by said gear for engaging said ratchet, a ratchet shield on said rotatable housing section, said gear, ratchet, pawl and shield being enclosed in said housing, a rack meshing with said gear, and means associated with said slicing machine for imparting reciprocatory movement to said rack.

12. In a slicing machine having a reciprocatory undertable and a meat table movable transversely thereof, a feed screw, a housing within which one end of said feed screw is journalled, said housing being formed of a stationary section rigid with said undertable, and a section rotatably connected with said stationary section, feeding mechanism inclosed within said housing including a ratchet and a shield carried on said rotatable section, a handle secured to said rotatable section having a portion overlapping said stationary section, and screw means associated with said handle for clamping said portion on said stationary section.

13. In a slicing machine having a reciprocatory undertable and a meat table movable transversely thereof, a feed screw, a housing within which one end of said feed screw is journalled, said housing being formed of a

stationary section rigid with said undertable, and a section rotatably connected with said stationary section, a gear loosely mounted on said feed screw, a ratchet rigid with said feed screw, a pawl carried by said gear for engaging said ratchet, a ratchet shield on said rotatable housing section, said gear, ratchet, pawl and shield being enclosed in said housing, a rack meshing with said gear, a bearing in said housing on which said rack is slidable, means for adjusting said bearing to move said rack to and from said gear, and means associated with said slicing machine for imparting reciprocatory movement to said rack.

In testimony whereof I have signed my name to this specification on this 21st day of June, A. D. 1926.

HENDRIK STUKART.