W. A. VAN BERKEL.

SLICING MACHINE.

APPLICATION FILED APR. 28, 1913.

1,267,607.

Patented May 28, 1918.

4 SHEETS—SHEET 1.

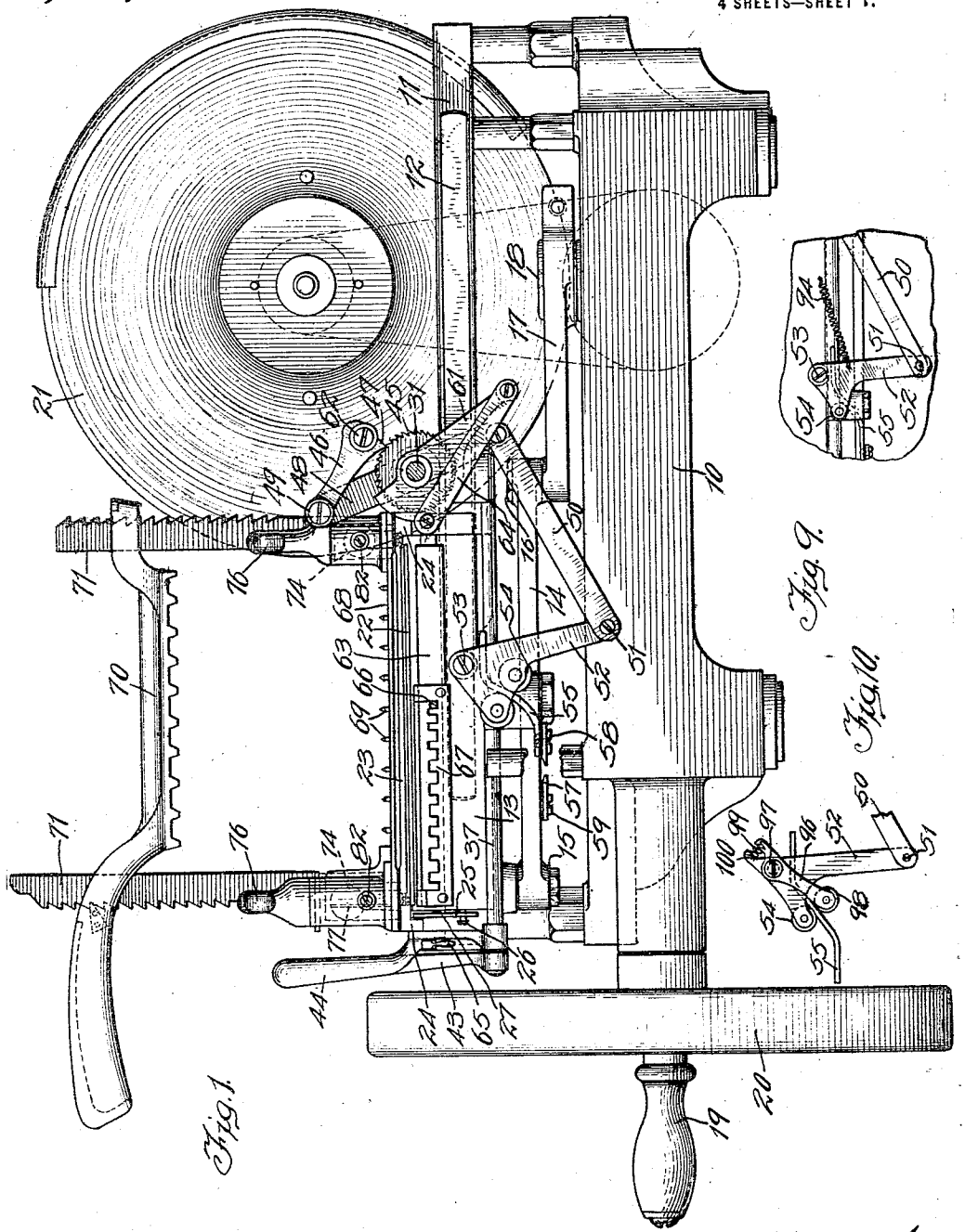

Fig. 1.

Fig. 9.

Fig. 10.

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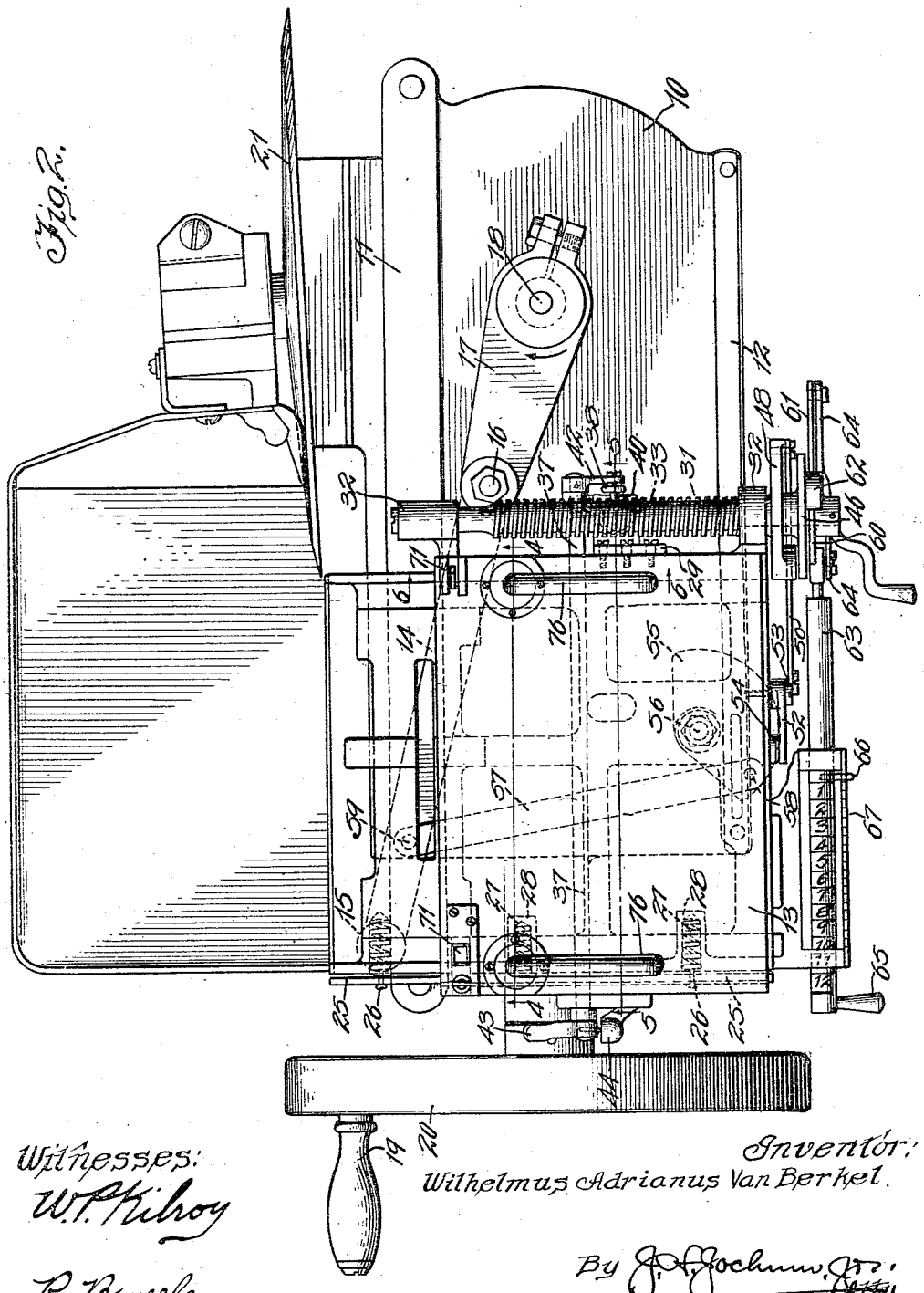
Fig. 2.



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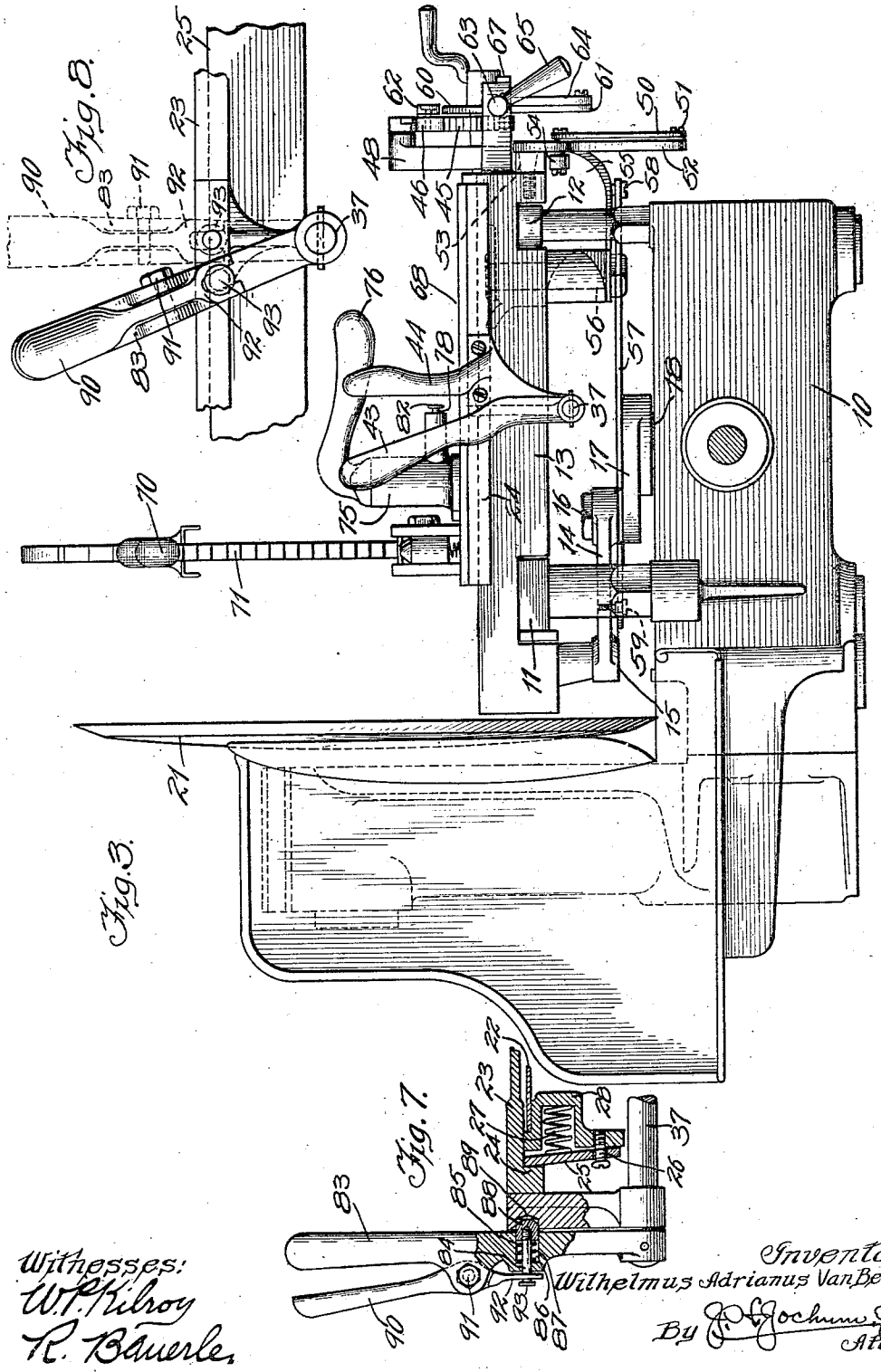

Fig. 8.

Fig. 3.

Fig. 7.

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4 SHEETS—SHEET 4.

Fig. 4.

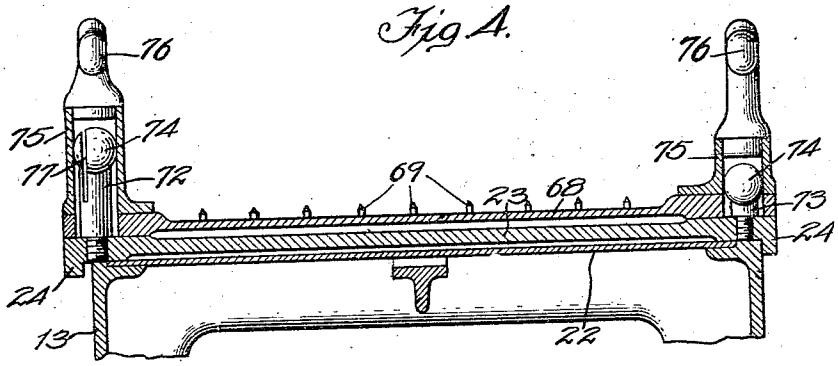


Fig. 5.

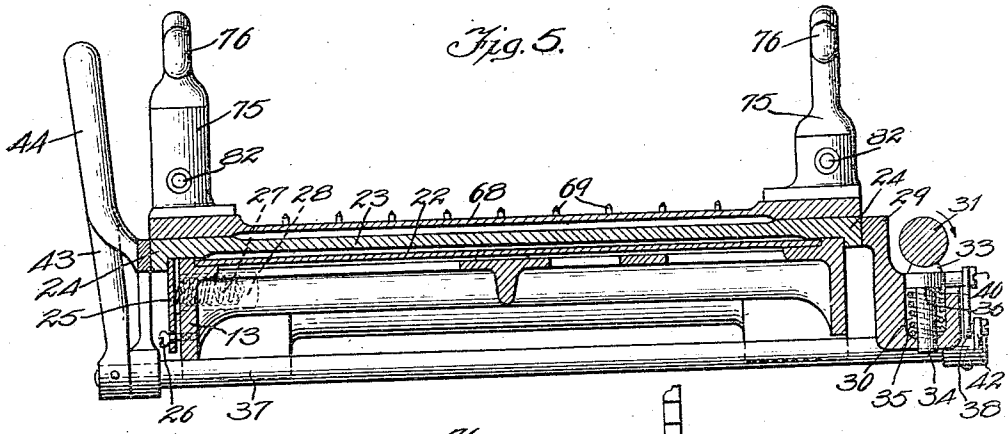
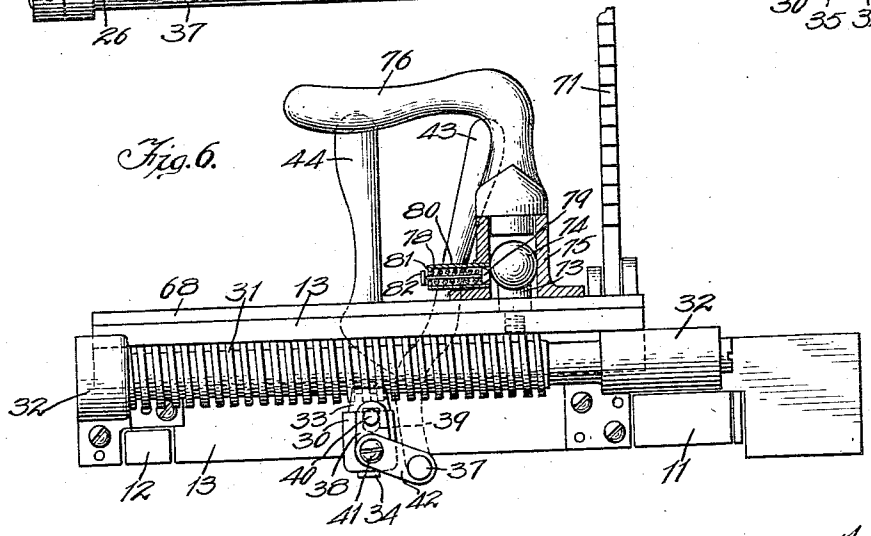


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILHELMUS ADRIANUS VAN BERKEL, OF ROTTERDAM, NETHERLANDS, ASSIGNOR TO U. S. SLICING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SLICING-MACHINE.

1,267,607. Specification of Letters Patent. **Patented May 28, 1918.**

Application filed April 28, 1913. Serial No. 764,216.

To all whom it may concern:

Be it known that I, WILHELMUS ADRIANUS VAN BERKEL, a subject of the Ruler of the Netherlands, and residing in Rotterdam, Netherlands, have invented certain new and useful Improvements in Slicing-Machines, of which the following is a specification.

This invention relates to slicing machines, but more particularly to intermittent feeding mechanism therefor and by means of which feeding mechanism the article to be sliced is automatically fed to the cutter, and one of the objects of the present invention is to provide improved feeding mechanism for advancing the article to the cutter.

A further object of the invention is to provide an improved machine of this class which will be 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 drawings illustrating the invention, and in which,

Figure 1 is a side elevation of an improved machine of this class constructed in accordance with the principles of this invention, and with parts broken away for the sake of clearness.

Fig. 2 is a top plan view of the structure shown in Fig. 1 with parts omitted.

Fig. 3 is an end elevation of Fig. 1.

Fig. 4 is a sectional view taken on line 4—4, Fig. 2.

Fig. 5 is a sectional view taken on line 5—5, Fig. 2.

Fig. 6 is a sectional view taken on line 6—6, Fig. 2.

Fig. 7 is a detail view partly in elevation, and partly in section of the means for adjusting the feed nut.

Fig. 8 is a front elevation of the parts shown in Fig. 7.

Fig. 9 is a modified form of the actuating elements, of the feeding mechanism.

Fig. 10 is a view of another form of actuating elements for the feeding mechanism.

Referring more particularly to the drawings, the numeral 10 designates the supporting base upon which the tracks 11, 12 are mounted and spaced therefrom. A reciprocating carriage 13 is mounted to slide on the tracks 11, 12 by means of a link 14, which is pivotally connected by one end as at 15 with the carriage, while the other end is pivotally connected as at 16 with an arm 17 secured to a shaft 18. The shaft 18 is arranged uprightly and is rotated by means of a suitable connection between the drive shaft, not shown, which shaft is rotated, in the present form of the invention, by means of a handle 19 connected with a fly wheel 20, which latter is in turn connected with the drive shaft. These features, however, together with the rotary cutter 21, which is operated by means of a suitable connection with the drive shaft, are all well known in this art.

The reciprocating carriage 13 is provided with a cover plate 22 and mounted to slide upon the cover plate is a feed plate 23. This plate 23 is of a size to extend beyond the edges of the carriage 13 and is provided with flanges 24 overhanging the adjacent side edges of the carriage. In order to prevent the feed plate or table 23 from jumping, with respect to the carriage 13 and to hold the same in position against accidental displacement, a plate or member 25 is provided and is connected in any desired or suitable manner with one of the side edges of the carriage 13, such as by means of fastening devices 26 in the form of screws which pass loosely through the plate and engage the carriage. The heads of the fastening devices are arranged on the outside of the plate to limit its outward movement and the plate extends into the space provided for it and which space is arranged between the face of the carriage and adjacent face of the overhanging flange 24. Elastic members 27 such as coil springs are provided which engage one face of the plate 25 and project into suitable seats 28 arranged on the carriage. These springs act to force the plate 25 away from the face of the carriage and into engagement with the face of the flange 24.

Connected with the plate 23 is a support 29 in the form of a bracket which may be constructed separately and secured to the plate or may be formed integral therewith. This support depends below the plate 23 and

is shaped to form a socket 30. The plate 23 is advanced with respect to the carriage 13 by means of a feed screw 31 which is disposed entirely below the plane of the face of the plate 23 and is supported by means of suitable journals 32 mounted upon or carried by the carriage 13. The feed nut 33 which coöperates with the feed screw 31 is disposed beneath the latter and is preferably provided with a stem 34 that is adapted to pass through a suitable opening in the bottom of the socket 30. An elastic member 35, preferably in the form of a coil spring is arranged within the socket 30 and surrounds the stem 34 of the feed nut 33. This elastic member rests upon the bottom of the socket and also engages the shoulder 36 of the feed nut and tends normally to move the nut 33 in a direction to engage the feed screw. With this construction it will be seen that the feed screw and nut are not only arranged below the plane of the face of the plate 23 but are compactly arranged and are out of the way.

The nut 33 is adapted to be moved out of engagement with the feed screw 31 so as to permit the plate 23 to be adjusted or moved upon the carriage 13, in any suitable manner, but preferably by means of a rock shaft 37 extending beneath the cover plate 22 of the carriage and journaled in suitable bearings. One end of this shaft 37 terminates adjacent the nut 33 and is connected to the nut by means of a link 38, one end of which is provided with a slot 39 through which a pin or fastening device 40 passes and which fastening device has engagement with the nut. The other end of the link 38 is pivotally connected as at 41 with an arm 42 carried by the shaft 37 so that when the shaft 37 is rocked in the proper direction, the arm 42 will draw upon the link 38 and this in turn will move the nut 33 away from or out of operative engagement with the feed screw 31 and against the tension of the elastic member 35. When the shaft 37 is released the tension which has thus been created upon the elastic member 35 will operate to move the nut 33 back into operative relation with the screw. The slot 39 in the link 38 is provided so that in the event that the plate 23 is not in a position to cause the nut to properly engage the threads on the screw when the shaft 37 is released, the nut will be permitted to yield.

The shaft 37 is rocked by means of a handle 43 secured thereto and in a convenient position for the operator and another handle 44 is connected with the plate 23 and is fixed with relation thereto in a position adjacent the handle 43 so that the operator by grasping both handles may draw the handle 43 toward the handle 44 to rock the shaft 37.

The feed screw 31 is adapted to be rotated in the direction indicated by the arrow in Fig. 5 in any suitable manner preferably by means of a ratchet element 45 connected with the feed screw or shaft 31 for rotation therewith, and a pawl 46 having a tooth 47 coöperates with the ratchet element. This pawl 46 is supported by and pivotally connected to an arm 48 as at 49 and the arm is pivotally supported intermediate its ends in any suitable manner preferably by means of the feed screw or shaft 31. To the other end of the arm is connected one extremity of a link 50, the other extremity of the link being pivotally connected as at 51 to a swinging arm or lever 52. This swinging arm or lever is connected with the carriage 13 to move therewith and is pivotally supported as at 53. Journaled to the arm 53 are spaced anti-friction rollers 54 between which a cam device or quadrant 55 passes and this cam device is supported by and for movement with the carriage 13 and also for movement about an upright pivot 56, and the pivot 56 is so arranged with respect to the cam that when the cam is rocked about its pivot it will impart a rocking movement to the arm 52 and this movement of the arm about its pivot 53, through the medium of the link 50 will oscillate the arm 48 and advance or retract the pawl 46 to operate the feed screw or shaft 31 when the pawl is moved in one direction, and to cause the pawl to assume a position for a new feeding movement of the screw when the arm 52 is moved in the opposite direction.

The cam 55 is rocked about its pivot from the carriage reciprocating mechanism and in order to accomplish this there is provided a link 57 one end of which is pivotally connected as at 58 to the cam 55 and the other extremity is pivotally connected as at 59 to the link 14.

Thus it will be manifest that all of the feeding mechanism, including the pawl operating mechanism is supported for movement with the carriage 13 and plate 23, while the operation of this feeding mechanism is effected from the carriage reciprocating mechanism through the medium of the connecting link 57.

In order to control the extent of feeding movement imparted to the feed screw or shaft 31 by the pawl 46, there is provided a cam 60 which is provided with an arm 61 and this cam is supported for pivotal movement to be moved with respect to the ratchet element 45 to vary the time of the engagement of the tooth 47 of the pawl 46 with the ratchet element 45, with respect to the movement of the carriage. An anti-friction roller 62 is provided on the pawl which engages the cam 60 and the two coöperate to move and hold the tooth of the pawl out of engagement. By varying the position of the cam with respect to the ratchet element it will

be manifest that the extent of movement imparted to the feed screw by the pawl may be varied.

The adjustment of the cam 60 is effected by means of a sliding rod 63 which is connected by means of a link 64 with the arm 61, and a handle 65 is connected with the rod for adjusting it. The rod is provided with the pin 66 which coöperates with a notched plate 67 for indicating the extent of the adjustment of the cam 60 and for holding it in its adjusted position.

Mounted upon the feed plate 23 is a meat plate 68 and these two plates 23, 68 together with the carriage 13 constitute the meat support. The plate 68 is provided with the usual teeth or projections 69 for holding the meat in position and the latter is clamped to the support by the usual clamping bar 70 adjustably supported by the uprights 71.

The plate 68 is secured to the plate 23 but is separable therefrom so that the plate 68 may be readily detached and removed when desired. A suitable and efficient means for securing these plates 23, 68 together for simultaneous movement, comprises uprights 72, 73, which are connected with the plate 23 and extend for a short distance above the top thereof. These uprights 72, 73 are provided with enlarged extremities 74 preferably in the form of heads in the shape of balls, and the plate 68 is provided with tubular portions 75 shaped to form sockets for receiving the respective uprights 72, 73 and the heads 74 thereof. Handles 76 may be connected with the upright tubular portions 75 of the plate 68 by means of which the plate 68 may be transported and placed into and removed out of position. If desired the uprights 72, 73 may be split as at 77, see Fig. 4, so that the split portion will act in the nature of a spring to hold the parts against vibration with respect to each other.

The heads 74 of the uprights 72, 73 are preferably in the shape of balls or rounding so as to facilitate the removing and replacing of the plate 68. Fastening devices, preferably in the form of pins 78 having rounded heads 79 are provided for locking the plates together. These pins 78 are arranged to project through the side of the socket 75 so that the heads 79 thereof will coöperate with the heads 74 of the respective uprights 72, 73, to lock the parts together, and an elastic member 80 in the form of a coil spring is arranged in the housing 81 and tends normally to force the extremity 79 of the pins toward the respective uprights 72, 73. The pins 78 may be provided with the heads 82 for holding them against displacement.

It will thus be seen that while the plate 68 when in position upon the plate 22 will be locked thereto, all that is necessary to remove the plate 68 is to raise upon the handles 76 and the rounded extremities 74 of the uprights 72, 73 will cause the headed ends 79 of the pins 78 to be forced backwardly against the tension of the springs 80 and thereby permit the plate 68 to be readily removed.

To replace the plate 68 all that is necessary is to hold the plate in such a position that the extremity 74 of the uprights 72, 73 will each enter one of the sockets 75 on the plate 68 and by forcing the plate in the direction of the plate 23 the fastening devices will yield until the plate 68 has assumed its proper position when the fastening devices will then lock the plates together. Further it will be noted that the rounded head 79 of the fastening pins 78 coöperate with the rounded extremity 74 of the uprights 72, 73 and operate to overcome any vibration between the two plates 68, 23.

In Figs. 7 and 8 there is shown a modified arrangement of operating mechanism for moving the feed nut 33 into an inoperative relation with respect to the feed screw 31, and comprises a handle 83 which is connected with the shaft 37 to rotate the shaft.

This handle 83 is provided with a recess 86, through which a shank 84 projects which shank is of a size somewhat less than the recess. Secured to one end of the shank is a head 88 and surrounding the shank within the recess 86 is a coiled spring 87 one end of which rests against the bottom of the recess and the other end against the shoulder formed by the head 88. Arranged within the side of the support 25 are recesses 89 in which the head 88 projects under the influence of the elastic member 87. A lever 90 is pivotally supported intermediate its ends as at 91 upon the handle 83 with one end adjacent the shank 84, and this end of the lever is bifurcated as at 92, see Fig. 8, to stand astride of the shank 84 adjacent the other extremity thereof and this extremity of the shank is provided with a head 93 against which the bifurcated portion of the lever 90 abuts.

With this construction it will be manifest that when the handle 83 and lever 90 are grasped, the lever 90 will be rocked about its pivot 91 to cause the bifurcated extremity to engage the head 93 of the shank 84 to withdraw the head 88 from the recess 86, against the tension of the elastic member 87. When thus withdrawn, the handle 83 may be rocked to rock the shaft 37 and thereby remove the nut 33 out of operative relation with the screw 31, and the head 88 of the shank 84 will enter one or other of the recesses 89, when properly positioned with respect thereto to hold the nut in its adjusted position.

In the form of the invention shown in Fig. 1, the element 52 which coöperates with the cam device 55 is provided with two anti-friction rollers 54 which engage opposite faces of the cam device and this serves to maintain the anti-friction device which is adjacent the upper face of the cam device in contact with such face and insures a feed of the meat at the proper moment, that is, the feed takes place close to the end of the stroke nearest the fly wheel, thereby insuring a feed of the table during the moment that the meat is free from the cutter 21.

In Figs. 9 and 10 there are shown modified forms of this construction. In Fig. 9 the element 52 is provided with only one anti-friction device 54 and an elastic member 94 is connected with the element 52 and also to a fixed support in such a manner that it will act upon the element 52 and tends normally to hold the roller 54 in yielding engagement with the face of the cam device.

In Fig. 10 the anti-friction device 54 engages one face of the cam device 55 and an arm or lever 96 is pivotally connected intermediate its ends with the element 52, as at 97 and carries an anti-friction device 98 which engages the opposite face of the cam device 55 preferably adjacent the anti-friction device 54. The other end of the arm 96 terminates adjacent a projection 100 of the element 52 and disposed between this projection 100 and the adjacent end of the arm 96, is an elastic member 99, preferably in the form of a coil spring, which acts upon the arm 96 in such a manner that the anti-friction roller 98 will be held in engagement with the respective face of the cam device 55 and the anti-friction roller 54 will also be held in yielding engagement with its respective face of the cam device.

What is claimed as new is:—

1. In a slicing machine, a reciprocating member, a cam device supported for movement with and for pivotal movement with respect to the member, and a coöperating element supported for movement with and for pivotal movement with respect to the member, the pivots of the cam and element being arranged transversely with respect to each other, said cam and element being responsive one to the movement of the other, and means for causing an oscillation of the cam device about its pivot during the reciprocation of the member.

2. In a slicing machine, a reciprocating member, a cam device supported for movement with and for pivotal movement with respect to the member, and a coöperating element supported for movement with and for pivotal movement with respect to the member, the pivots of the cam and element being arranged transversely with respect to each other, said cam and element being responsive one to the movement of the other, and means for reciprocating the member, said cam device being responsive in its pivotal movement to the action of the member reciprocating means.

3. In a slicing machine, a reciprocating member, a cam device supported for movement with and for pivotal movement with respect to the member, and a coöperating element supported for movement with and for pivotal movement with respect to the member, the pivots of the cam and element being arranged transversely with respect to each other, said cam and element being responsive one to the movement of the other, and means for reciprocating the member, said means embodying a link, and a connection between the link and cam device for oscillating the latter when the link is operated.

4. In a slicing machine, a reciprocating member, a rotatable element carried therewith, a cam device supported for movement with and for pivotal movement with respect to the member, and a coöperating element supported for movement with and for pivotal movement with respect to the member, and operatively connected with the said rotatable element, the pivots of the cam and said coöperating element being arranged transversely with respect to each other, said cam and coöperating element being responsive one to the movement of the other, means for oscillating one of the pivoted elements about its pivot, and means for varying the extent of movement of the said rotatable element by the operation of the recited parts.

5. In a slicing machine, a reciprocating member, a cam device, an element separate from and coöperating with the cam device, a rotatable element responsive in its movement to the movement of the first recited element, an anti-friction device carried by the first said element and movable over one face of the cam device, and means for maintaining the anti-friction device in contact with said face.

6. In a slicing machine, a reciprocating member, a cam device, an element separate from and coöperating with the cam device, a rotatable element responsive in its movement to the movement of the cam device, an anti-friction device carried by the first said element, and having engagement with and movable over one face of the cam device, and means disposed adjacent the opposite face of the cam device for maintaining the anti-friction device in contact with said face.

7. In a slicing machine, a reciprocating member, a pivotally mounted cam device, an element pivotally mounted separate from and coöperating with the cam device, a rotatable element responsive in its movement to the movement of the cam device, an anti-

friction device carried by the first recited element and having engagement with and movable over one face of the cam device, and means for maintaining the anti-friction device in contact with the said face.

8. In a slicing machine, a reciprocating member, a cam device, an element supported separately from and coöperating with the cam device, a rotatable element responsive in its movement to the movement of the cam device, an anti-friction device carried by the first recited element and having engagement with and movable over one face of the cam device, and yielding means for maintaining the anti-friction device in contact with the said face.

9. In a slicing machine, a reciprocating member, a pivotally mounted cam, an element coöperating with the cam mounted separately therefrom and for movement about a pivot disposed transversely with respect to the first said pivot, a rotatable element responsive in its movement to the movement of the cam device an anti-friction device carried by the first said element and engaging and movable over one face of the cam device, and yielding means operating to maintain the said anti-friction device in contact with the said face of the cam device.

10. In combination, a movable support, a pitman for reciprocating said support, a link connected with said pitman and arranged to be moved thereby relative to said support, feeding mechanism on said support, and means actuated by said link for periodically operating said feeding mechanism.

11. In combination, a supporting table, a pitman for reciprocating said table having pivotal connection therewith, a link connected with said pitman and arranged to be moved thereby relative to said table, a holder slidably mounted on said table, means carried by said table for feeding said holder relative to said table, and mechanism carried by said table and actuated by said link for operating said feeding means, said mechanism being arranged to move said feeding means during a portion of the cycle of movement of said link and to maintain said feeding means inactive during another portion of the movement of said link.

12. In combination, a movable supporting table, a crank and pitman for reciprocating said table, said pitman being pivotally connected with said table and arranged to oscillate upon its pivotal connection with said table during the reciprocation of said table, a link connected with said pitman and arranged to be moved thereby relative to said table, a holder slidably mounted on said table, means carried by said table for feeding said holder relative to said table, an oscillatory member carried by said table and connected with said link to be moved by said link, a cam on said oscillatory member, and means operated by said cam for imparting periodic movement to said feeding means, said cam being shaped to operate said feeding means during a part of the movement of said link and to permit said feeding means to remain inoperative during another part of the movement of said link.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this twelfth day of April A. D. 1913.

WILHELMUS ADRIANUS VAN BERKEL.

Witnesses:

PIETER C. AL GROOT,

JOHANNUS KLEINE.