March 30, 1937. E. A. REUSSENZEHN 2,075,545

SLICING MACHINE

Filed April 20, 1933 3 Sheets-Sheet 1

FIG. 2.

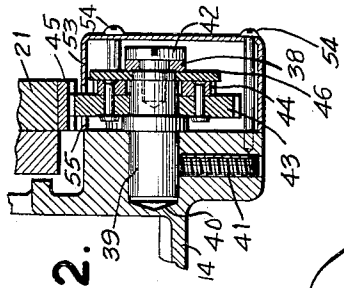


FIG. 1.

INVENTOR

Ernest A. Reussenzehn

BY

ATTORNEY

March 30, 1937. E. A. REUSSENZEHN 2,075,545

SLICING MACHINE

Filed April 20, 1933 3 Sheets-Sheet 2

FIG.3.

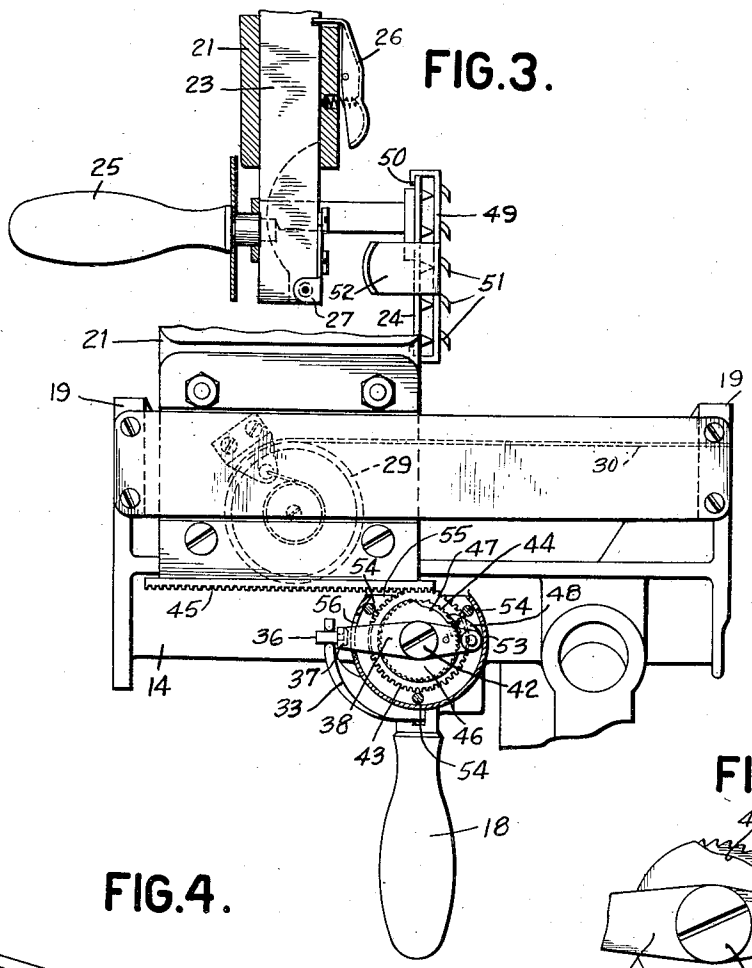


FIG.3a.

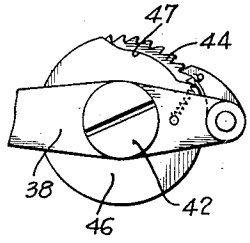
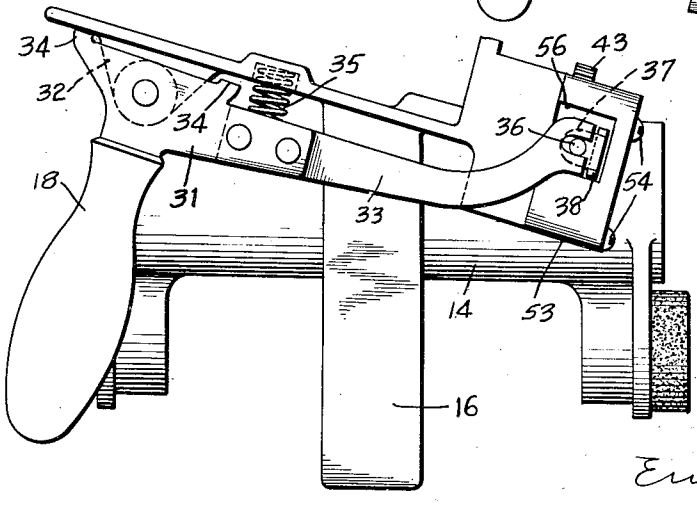


FIG.4.



INVENTOR

Ernest A. Reussenzehn

BY

ATTORNEY

March 30, 1937. E. A. REUSSENZEHN 2,075,545

SLICING MACHINE

Filed April 20, 1933 3 Sheets-Sheet 3

FIG.5.

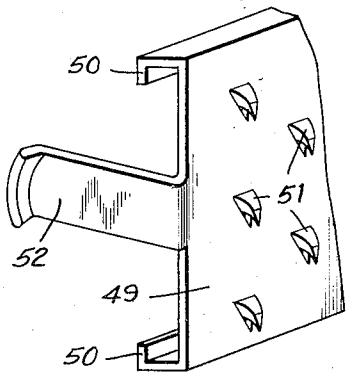


FIG.6.

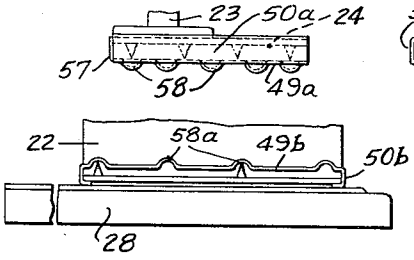


FIG.7.

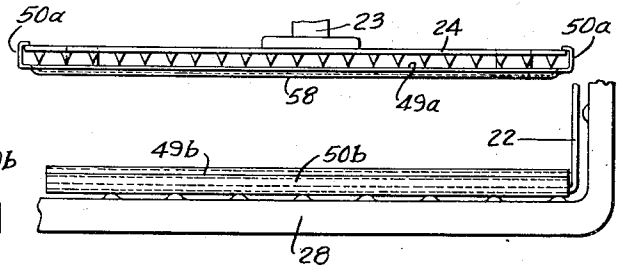


FIG.8.

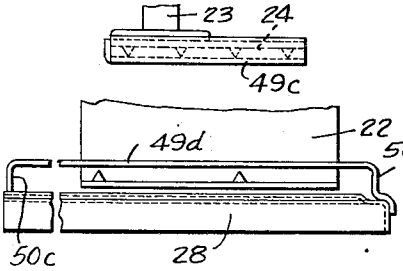
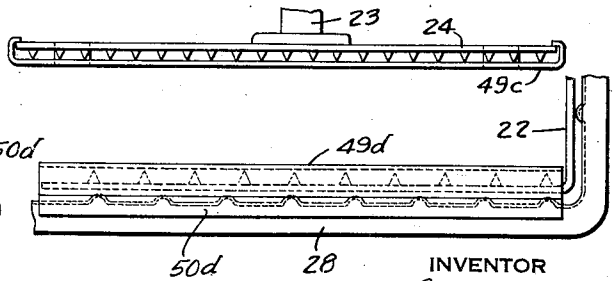


FIG.9.



INVENTOR

Ernest A. Reussenzehn

BY

ATTORNEY

Patented Mar. 30, 1937

2,075,545

UNITED STATES PATENT OFFICE

2,075,545

SLICING MACHINE

Ernest A. Reussenzehn, Dayton, Ohio, assignor, by mesne assignments, to The Hobart Manufacturing Company, Troy, Ohio, a corporation of Ohio

Application April 20, 1933, Serial No. 666,965

8 Claims. (Cl. 146—102)

This invention relates to slicing machines in general.

The primary objects of the invention are to improve the operation of slicing machines by making them easier to operate, secure greater quality of work, and promote more sanitary conditions both in the machine itself and the immediate surroundings.

An object is to provide mechanism which prevents excessive friction, undesirable cutting and scarring of the material being sliced and the scattering broadcast of scraps and grease, all of which have been found to be caused by the drag of the knife on said material during the idle or non-cutting stroke of the carriage holding the material to be sliced.

Another object is to provide a novel means for use with the usual clamps to permit more securely holding the material to be sliced or prevent marking or perforating such material.

A more specific object is to provide simple and reliable mechanism to withdraw the material to be sliced from contact with the knife during the idle or non-cutting stroke of the carriage relative to the knife.

Various other objects, features, or advantages of the invention will be pointed out hereinafter in the description and claims or will be apparent after a study of said specification, the claims, and/or the accompanying drawings.

In the drawings:

Fig. 1 is an elevation of the right-hand side of the machine, some parts being shown in vertical section.

Fig. 2 is an enlarged vertical section of certain parts appearing in Fig. 1.

Fig. 3 is a rear view of the carriage with parts broken away and in section.

Fig. 3*a* is a large scale detail view of certain parts appearing in Fig. 3.

Fig. 4 is an elevation of the right hand side of the carriage as it appears when detached from the machine.

Fig. 5 is a fragmentary perspective view of the clamp adapter shown in Fig. 3.

Figs. 6 and 7 are front and side elevations, respectively, of a clamp provided with modified adapting means for use in slicing soft, easily marked materials such as cheese, the clamp being partly broken away to save space.

Figs. 8 and 9 are views similar to Figs. 6 and 7 and illustrate another modification of the adapting means.

As a matter of convenience the invention will be illustrated and described as embodied in a well known form of slicing machine commonly known in the art as the "Dayton". Since the general details of construction and operation of the machines are now well known to those skilled in the art, only a few of the most important parts and their operation will be mentioned herein.

The base is designated **10** in Fig. 1 and supports the usual rotary knife **11**, the driving motor (not shown), the adjustable gauge plate **12**, and the rail **13** on which is slidably mounted the frame **14** which comprises the carriage, the rail **13** being spaced above the base **10** by pillars **15** mounted on said base. The frame **14** has a lug **16** integral therewith which extends downwardly (Fig. 1) into cooperative relation with a guide bar **17**, the guide bar being operative in the well known "Dayton" slicing machine to hold the frame **14** erect on the rail **13**, this being necessary since the rail is usually a round bar wholly supporting the carriage. By means of a suitable handle **18**, the frame **14** can be reciprocated manually in a direction substantially parallel with the gauge plate **12** and the knife **11**.

The frame **14** as usual has a pair of upstanding lugs or projections **19** (Fig. 3) rigidly supporting a bar or rail **20** upon which is slidably mounted the clamp carrier **21**. The clamp carrier rigidly supports the lower clamp member **22** and also carries the vertically movable clamp support **23** to which is pivoted the upper clamp member **24**. The latter is adapted to be locked in either of two positions, one being shown in Fig. 1 where the clamp members **22, 24** face each other and the other being shown in Fig. 3 with the member **24** facing the gauge plate **12**. The clamp support **23** may be moved vertically with respect to the carrier **21** by means of a handle **25** and locked in raised position by a spring operated catch **26** in a well known manner. A suitable catch **27** (Fig. 3) is also provided to lock the upper clamp member **24** in either of its alternate positions. These catches **26, 27** form no part of the invention and need not be described in detail herein. They may be of any form desired. The usual pan **28** is provided for supporting the material to be sliced and rests on the frame **14** beneath the lower clamp member **22**.

The material to be sliced is fed toward the gauge plate **12** and the knife **11** by means of a spring operated tape drum **29** mounted on the front side (the left side in Fig. 1) of the clamp carrier **21** and connected by a tape **30** to a fixed part of frame **14** such as the projection **19** nearest the gauge plate **12** (see Fig. 3), the effect of the tape drum **29** being to draw the clamp

structure 21 and the clamp members 22, 24 toward the knife and gauge plate during slicing of material held by the clamp members.

When a given material is to be sliced it is placed between the clamp members 22, 24 or else impaled on the clamp member 24 and the required number of slices obtained by manually moving the frame 14 comprising the carriage to and fro by means of handle 18. It has been found in practice that the drag of the knife 11 over the material on the carriage during the return or leftward stroke of the carriage (Fig. 1) has certain undesirable effects. Aside from the friction which results in retarding the carriage, making it slow and hard to operate, there also is produced scarring of the material or knife marks and scattering of small loose particles rubbed off by the knife. When the material being sliced rides off the knife, there is further and more distinctive cutting of the material resulting in uneven slices and ragged edges in the slices. When very soft greasy foods are being sliced, grease is scattered about freely producing a general untidy condition in the immediate neighborhood of the slicing machine, and in the machine itself. It will be seen that elimination of the drag of the knife on the return stroke will result in generally improved operating conditions, greater neatness, more uniform slices and less waste of the materials sliced. The present invention secures the last named benefits by providing means for withdrawing the material to be sliced from contact with the knife on the return or idle stroke of the carriage. The means for causing such operation will now be described in detail.

The handle 18 is not fixed to the frame 14 but is secured to one arm of a bell-crank 31 pivotally mounted on a lug 32 integral with said frame (see Fig. 4), the bell-crank having an extension 33 riveted or otherwise fastened thereto which extends rearwardly of the frame 14 (Fig. 3), or to the right in Figs. 1 and 4, into cooperative relation with certain parts mounted on the rear side of the frame 14. A pair of lugs 34, integral with the bell-crank 31 and on opposite sides of the pivot point of the bell-crank to the lug 32, serve to limit rocking movement of the bell-crank on its pivot. A coil spring 35, interposed between the bell-crank and the portion of the frame 14 above said bell-crank, normally holds the latter in the positions of Figs. 1 and 4 with the left hand lug 34 bearing against the frame 14. The coil spring 35 is of sufficient strength to overcome the force exerted by the spring which operates the tape drum 29 for a purpose which will be made clear presently.

The rear end of the extension 33 is slotted to embrace a stud 36 (Figs. 3 and 4) extending from a lug 37 extending at right angles to one end of a lever 38. The latter is mounted on a stud 39 which is received by a hole 40 bored in the rear side of the frame 14 (see Fig. 2), the stud being held in place in said hole by a set screw 41. A shouldered screw stud 42 serves to pivotally mount the lever 38 on the stud 39 and also prevents other parts carried by the stud 39 from slipping off said stud. Loosely mounted on the stud 39 adjacent the frame 14 is a gear 43 to which is riveted or otherwise fastened a ratchet wheel 44. The gear 43 constantly meshes with a rack 45 secured to the clamp structure 21 so that both the gear 43 and ratchet 44 will be rotated whenever the clamp structure and clamp members move along the bar 20 under the influence of the tape drum 29 as described.

A cam 46 is keyed to the stud 39 on a shoulder formed in the end of said stud and is between the lever 38 and the ratchet wheel 44. The cam has a dwell 47 (see Fig. 3) adapted to control the action of a spring-pressed pawl 48 mounted on the end of lever 38 opposite the lug 37. The pawl 48 is adapted to engage the teeth of ratchet 44 at certain times and is wide enough to ride on the periphery of the cam 46.

Normally the superior force of the coil spring 35 holds the parts in the positions of Figs. 3 and 4 in which position the free end of pawl 48 is in the dwell 47 and also engages one of the teeth in ratchet wheel 44 thereby preventing the clamp carrier 21 from moving to the right (Fig. 3) toward the gauge plate and knife in response to the pull of the tape 30. In other words, normally the clamp structure is under the influence of the spring 35 but does not actually move in either direction due to the left hand lug 34 (Figs. 1 and 4) which cooperates with the frame 14 to limit clockwise movement (Fig. 4) of the lever 31.

It will be assumed that the operator has placed the material to be sliced between the clamp members 22, 24, or has impaled said material on the member 24 with the latter turned to face the gauge plate and knife, and he is ready to commence slicing operations. The handle 18 is grasped and pushed toward the rear of the machine (to the right, Fig. 1) thereby rocking the bell crank 31 in a counterclockwise direction the slight amount permitted by the right-hand lug 34. This action will cause the extension 33 to be raised thereby rocking the lever 38 in a clockwise direction (Fig. 3) and the end of pawl 48 will be forced out of engagement with the teeth of ratchet 44 by moving out of the dwell 47 thereby releasing the ratchet wheel 44.

Since the clamp structure 21 is by the foregoing operation placed completely under the influence of the spring operated tape drum 29, the latter will cause the clamp carrier 21 to move toward the gauge plate 12, thus forcing the material to be sliced firmly against said gauge plate.

Continued pressure on the handle 18 after these preliminary operations have taken place causes the frame 14 to move toward the rear of the machine (to the right, Fig. 1) for the cutting stroke. At the end of the cutting stroke the operator will find it necessary to exert a pull on the handle 18 to return the frame 14 to its initial position preparatory to cutting another slice and the combined action of spring 35 and such pull will cause the handle 18 to move forwardly (to the left, Fig. 1) a slight amount until the left-hand lug 34 again strikes the frame 14. This movement of the handle 18 causes the extension 33 to be depressed (Fig. 4), rocking the lever 38 counterclockwise (Fig. 3) and, as a result, the pawl 48 will move back to its initial position in the bottom of dwell 47 and during such movement the pawl will engage a tooth in ratchet wheel 44 and rotate the latter in a counterclockwise direction a slight extent (Fig. 3). It is plain that the foregoing movement of the ratchet wheel 44 will cause the clamp carrier 21 to move also, and such movement of the clamp carrier will be just sufficient to move the material on the frame 14 away from the knife in which position such material will remain throughout the return or idle stroke of the carriage back to its initial position.

It is clear that as a result of the mechanisms and operations described above, the material to be sliced will not be dragged over the rotating knife 11 during idle strokes of the carriage but will be

allowed to engage the gauge plate and knife only during the active or cutting stroke of the carriage. Thus, scarring of the material, ragged and uneven slices, and throwing of scraps and grease will be positively prevented and a more tidy condition of the slicing machine and its surroundings will be secured.

It has been found in practice that the spiked clamp member **24**, which usually takes the form of a flat plate provided with sharp conical spikes, does not always hold material impaled thereon with sufficient security to permit such material to be drawn away from the knife. Especially is this true of materials which are so inelastic as to have little grip on the spikes.

The present invention has for one of its objects to provide a very simple means for holding materials more securely to permit them to be pulled away from the knife and such means conveniently takes the form of a one-piece adapter which may be slipped over the straight spikes on the clamp member **24** and is provided with hook-like curved spikes adapted to hook into and securely grip the material to be sliced.

Preferably the adapter comprises a single piece of stiff sheet metal **49** (Fig. 3) having flanges or lugs **50** formed therein which cooperate with opposite edges of the plate comprising clamp member **24** to hold the adapter securely against the spikes on said member. The adapter **49** is pierced in the process of forming it out of sheet metal to produce hook-like lugs or tongues **51** (Fig. 5) of which the ends are sharp and extend substantially parallel with the surface of the plate forming said adapter.

The adapter **49** has sufficient resiliency to permit it to be securely held on the face of the clamp member **24** when slipped on the latter in a direction parallel with the flanged edges of said adapter. It should be remarked that the spikes in the member **24** engage the adapter at points between the holes produced in forming the lugs **51** and space said adapter from said member **24**. It is obvious that the shape of the tongues or lugs is such as to securely grip anything impaled therein and will be effective to hold the material to be sliced securely on the clamp member **24** when the latter is pulled away from the knife in the manner described.

In the process of forming the adapter **49** from a single piece of sheet metal, it is provided with a finger piece **52** produced by bending a portion of the sheet metal at an angle to the part which has the lugs **51**. The finger piece **52** makes the adapter easier to attach to or remove from the member **24**.

In order to prevent dust, scraps, and grease from getting in or between the parts carried by the stud **39** or adjacent thereto, there is provided a cover **53** enclosing the gear **43**, ratchet **44**, and lever **38**, which cover is secured to the frame **14** by means of screws **54**. An opening **55** is provided to permit the gear **43** to mesh with rack **45** and another is provided at **56** where the left end of lever **38** is connected to the extension **33**.

It has been found by experience that the spikes on the clamp members **22**, **24**, while necessary to enable certain materials to be securely gripped, are not so desirable in slicing materials, such as cheese, which are very soft and easily marred by the spikes.

The latter make the cheese unsightly and unattractive to customers of retail stores as, after a section of a cheese has been placed in the slicing machine a few times, the cheese becomes badly perforated by the spikes and unattractive in appearance.

In Figs. 6 and 7, there is illustrated a modification of the adapting means of Fig. 3 which modification permits slicing cheese and similar materials without perforating or otherwise marring them.

As will be clear from Fig. 1, the lower clamp member **22** moves over the surface of the pan **28** and is slightly spaced therefrom. This slight spacing permits an adapter to be attached to the lower clamp member **22** in a manner similar to the attachment of the adapter **49** to member **24**. The upper clamp member **24** in this case is provided with an adapter **49***a* (Figs. 6 and 7) having opposite edges thereof provided with flanges **50***a* which coact with the shorter edges of the upper clamp member **24** to hold the adapter on the spiked side of said member. One of the long edges of the adapter **49***a* has a straight flange **57** (Fig. 6) which engages the edge of said member **24** nearest the knife and gauge plate (the left edge, Fig. 6) and prevents the adapter from being slid off the member **24** during feeding movements of the clamp. The adapter **49***a* also has a number of ribs or ridges **58** formed in the sheet metal comprising said adapter which ribs extend parallel with the longitudinal axis of the adapter, that is, parallel with the flange **57**.

The lower clamp member **22** is similarly provided with an adapter **49***b* having flanges **50***b* along the longer edges of the adapter which flanges coact with the edges of the lower clamp member **22** which are parallel with the gauge plate to hold the adapter **49***b* on the spiked side of the latter. The adapter **49***b*, like the adapter **49***a*, is provided with ribs or ridges **58***a* parallel with the flanges **50***b* and the ribs **58** of adapter **49***a*. It is quite clear that any material placed between the clamp members **22**, **24** while the adapters **49***a*, **49***b* are in place will be securely gripped by the clamp but, since the spikes are protected by said adapters, no appreciable marking or marring of such material will take place. Thus the material may be repeatedly placed between and removed from the clamp members **22**, **24** without being so perforated by the spikes as to be rendered less attractive in appearance.

Figs. 8 and 9 illustrate a slightly modified arrangement which may be preferred in some cases, wherein the adapter **49***c* for the clamp member **24** is substantially the same as the adapter **49***b* except that no ribs are provided in the adapter **49***c* and the latter has a smooth surface. The lower clamp member **22** is rendered ineffective in this case by being covered with a plate **49***d* having a straight flange **50***c* at its left edge (Fig. 8) which straight flange merely rests on the edge nearest the gauge plate and is also provided with a flange **50***d* so shaped as to engage both the top and right edge of the pan **28**. The flange **50***d* prevents the plate **49***d* from sliding toward the gauge plate and knife when the upper and lower clamp members **22**, **24** are moved to the left to feed to the knife material resting on the plate **49** and frictionally fed on the surface of the plate **49***d* by the frictional engagement of member **49***c* with the material on plate **49***d*.

It will be seen that the present invention provides means which effectively prevent throwing of scraps and grease; scarring, perforating, or otherwise marring, of the materials sliced so as to render such materials unattractive; uneven slices; and excessive friction. Thus the quality

of work, operation, and cleanliness of the machine are greatly improved.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to the several modifications, it will be understood that various omissions and substitutions and changes in the form and details of the devices illustrated and in their operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. A slicing machine comprising a cutter, a gauge plate adjustable relative to the plane of the cutter to regulate the thickness of the slices, a carriage for the article to be sliced, said carriage being adapted to move to and fro relative to the cutter to first cut a slice and then return to an initial position, a clamp carrier mounted on the carriage for movement toward the gauge plate and cutter, a spring device for causing the last named movement, a manual operating member mounted in the carriage for effecting to and fro movement of the carriage relative to the cutter, and a ratchet and pawl device mounted in the carriage and having a connection to the clamp carrier to move the latter in a direction away from the knife and gauge plate, said device being operated by the manual member prior to the return of the carriage to its initial position.

2. A slicing machine of the character described which comprises a gauge plate, a knife, an article supporting the carriage reciprocably past the knife on a forward cutting stroke and a return non-cutting stroke, a handle attached to said carriage for manually reciprocating said carriage, said handle having movement relative to the carriage upon the manual reciprocation thereof, means on the carriage tending normally to feed an article thereon toward the knife, means controlled by said handle when the handle is operated to cause the return of the carriage on its non-cutting stroke to prevent operation of the feeding means, and providing for the release of said feeding means to feed the article into contact with the knife and gauge plate on the forward stroke of the carriage, and additional means associated with said handle for withdrawing the article from contact with the knife upon the return stroke of the carriage.

3. A slicing machine comprising an article carriage, a cutter, a gauge plate, means for feeding an article on the carriage against the gauge plate prior to each cutting operation, a ratchet and pawl device adapted to feed the carriage a predetermined amount counter to the feed effected by the feeding means, a manual operable element mounted on the carriage for moving the carriage relative to the cutter to effect a cutting operation, and means interconnecting said element with said ratchet and pawl device provided for operating the latter upon application of manual pressure to said operating element for the return of the carriage.

4. A slicing machine comprising an article carriage, a cutter, a gauge plate, means for feeding an article on the carriage against the gauge plate prior to each cutting operation, a ratchet and pawl device adapted to feed the carriage a predetermined amount counter to the feed effected by the feeding means, a manual operable element mounted on the carriage for moving the carriage relative to the cutter to effect a cutting operation, and spring actuated means interconnecting said operating element with said device provided for operating the latter upon release of said element.

5. A slicing machine of the character described comprising a knife, an article carrier reciprocable with respect to said knife and adapted to support an article in cutting relation with respect thereto, spring means for feeding the article to slicing position, a manually operable member for reciprocating said carriage and movably mounted thereon, pawl and ratchet means operable to oppose said feeding means to laterally space said article from said knife, and connections controlled by said member in its movement for operating said pawl and ratchet means.

6. A slicing machine of the character described comprising a knife, an article carrier reciprocable with respect to said knife and adapted to support an article in cutting relation with respect thereto, spring means for feeding the article to slicing position, a manually operable member for reciprocating said carriage and movably mounted thereon, pawl and ratchet means operable to oppose said feeding means to laterally space said article from said knife, connections controlled by said member in its movement for operating said pawl and ratchet means, and spring means for imparting said operating movement to said member.

7. A slicing machine of the character described comprising a knife, a gauge plate, an article carrier reciprocable with respect to said knife and adapted to support an article in cutting relation with said knife, means for normally urging the article transversely of the knife and plate prior to each active stroke of the carriage, manually operable means for reciprocating the carrier and mounted thereon for movement relative thereto, means operated by movement of the manually operable means relative to the carrier on the return stroke operation thereof for effecting lateral spacing between said article and said knife, and an adapter removably positioned on said urging means and having work engaging means for engaging the article to provide for withdrawal thereof away from the knife with the adapter.

8. A slicing machine of the character described comprising a knife, a gauge plate, an article carrier reciprocable with respect to said knife and adapted to support an article in cutting relation with said knife, means for normally urging the article transversely of the knife and plate prior to each active stroke of the carriage, manually operable means for reciprocating the carrier and mounted thereon for movement relative thereto, means operated by movement of the manually operable means relative to the carrier on the return stroke operation thereof for effecting lateral spacing between said article and said knife, and a vertical adapter plate removably positioned on said urging means and having work engaging means comprising a plurality of downturned spikes for engaging the article to provide for withdrawal thereof away from the knife with the adapter.

ERNEST A. REUSSENZEHN.