June 7, 1938. E. G. STRECKFUSS 2,120,164

SLICING MACHINE

Filed Jan. 15, 1934 2 Sheets-Sheet 1

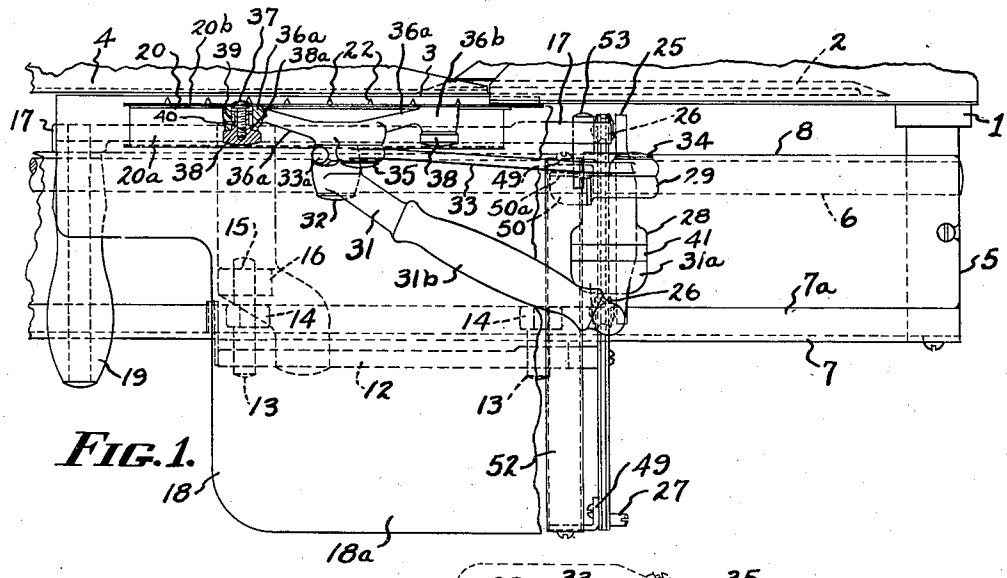


FIG. 1.

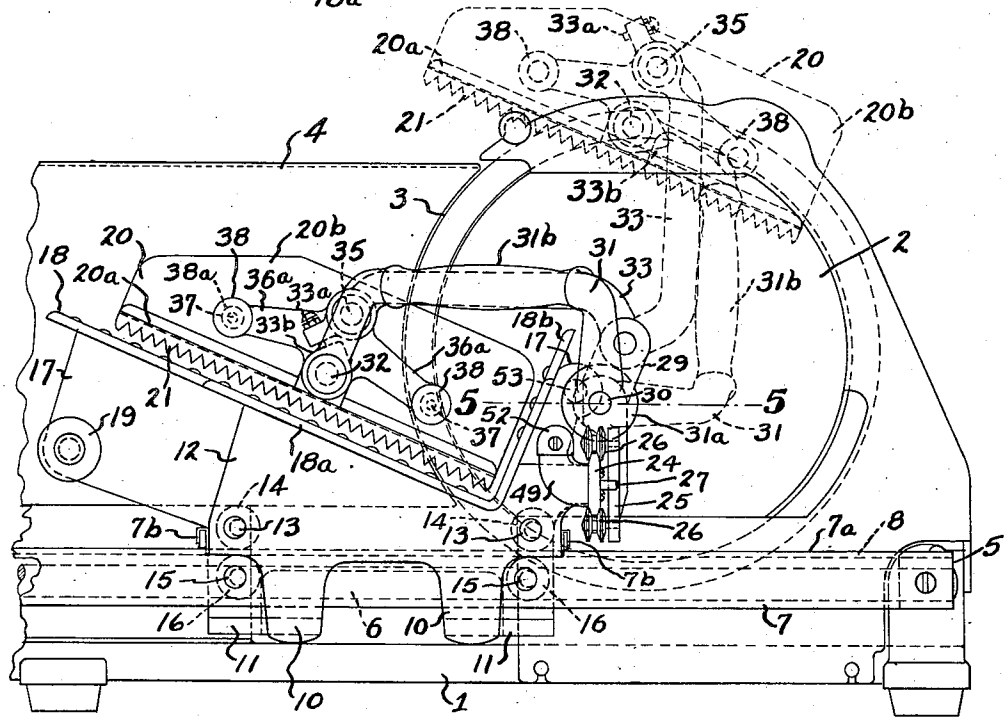


FIG. 2.

INVENTOR.
Elmer G. Streckfuss
BY
Allen & Allen
ATTORNEYS.

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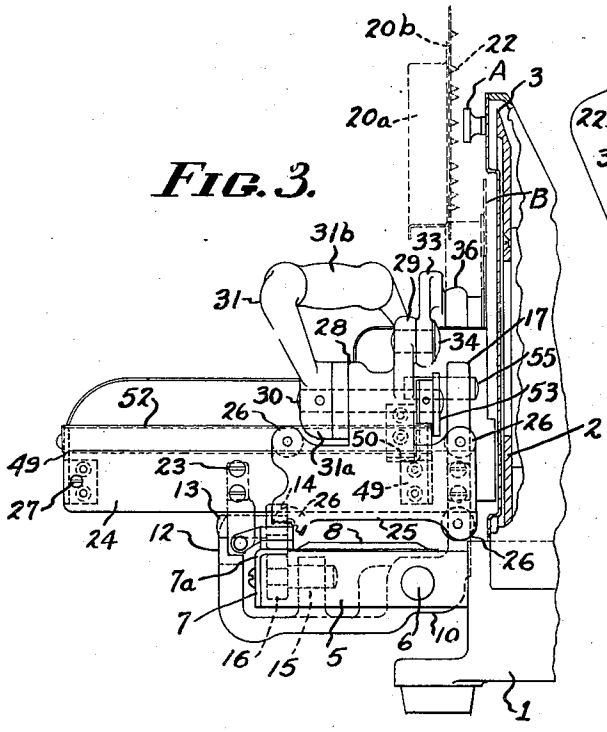


FIG. 3.

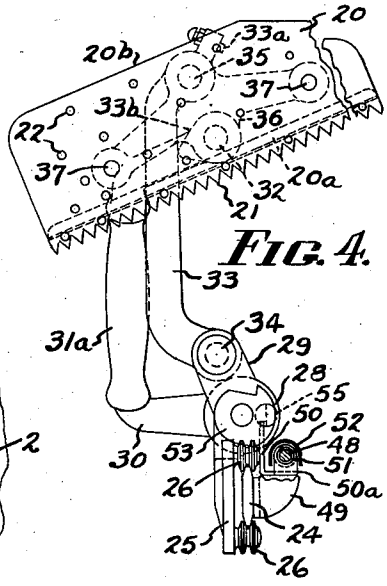


FIG. 4.

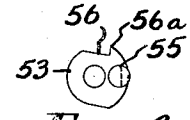


FIG. 6.

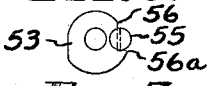


FIG. 7.



FIG. 8.

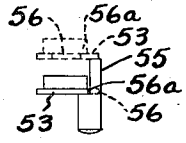


FIG. 9.

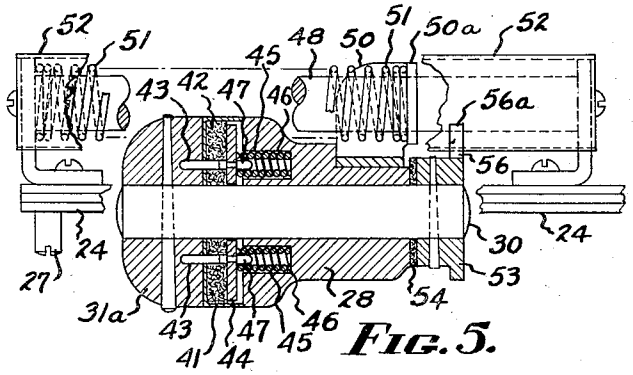


FIG. 5.

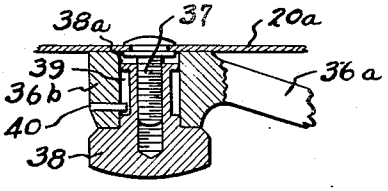


FIG. 10.

INVENTOR.
Elmer G. Streckfuss

BY

Allen & Allen

ATTORNEYS.

Patented June 7, 1938

2,120,164

UNITED STATES PATENT OFFICE

2,120,164

SLICING MACHINE

Elmer G. Streckfuss, Cincinnati, Ohio, assignor to The Cincinnati Time Recorder Company, Cincinnati, Ohio, a corporation of Ohio

Application January 15, 1934, Serial No. 706,677

5 Claims. (Cl. 146—217)

My invention relates to machines for slicing meat and the like, and more particularly to machines of the type in which the material to be sliced is placed on a carriage against a slice gauge plate and then carried on the carriage to a rotating cutting disc. My invention is particularly concerned with the construction of the carriage and the means for holding the material on the carriage, having a movement to admit the material and to adjust to pieces of material of various sizes.

One object of my invention is to provide a movement for the material engaging member whereby it will always be presented in the same relation to the supporting surface of the carriage on which the material rests, preferably with an extended material gripping surface parallel to said supporting surface.

A further object is to provide such a construction and operation of the gripping member and its supporting and operating parts as will firmly support the gripping member in all positions to which it is adjusted or raised, and which is simple and substantial and not liable to derangement from ill usage or wear over a long period of use.

A further object is to provide improved mounting means having the advantages in use as just noted, by which the gripping member has a movement, preferably automatic, crosswise of the direction of cutting movement of the carriage, to feed the material in succession to the cutting of each slice.

A further object is to provide for manual operation of the gripping means, both in raising and lowering and adjusting it, and in feeding and return, or, if automatic, in the return only, in the cross feed just mentioned, by means of a handle advantageously positioned for convenient gripping and facility in applying the manual effort to these operations.

A further object, dictated by the general construction to attain the objects just mentioned, is to prevent the raising of the gripping device when in such position that it may thus strike other parts of the machine.

A further object is to provide the gripping member with a face plate adapted to engage the rear end of a piece of material the front end of which is presented to the gauging and slicing mechanism, and to provide for ready removal of this face plate for ready and thorough cleaning of the plate and the other parts of the gripping member and its mounting mechanism, and to use screw and nut means for the detachable connection of the plate to the other gripper structure, yet guard against droppage or loss of the nuts, which are completely detached from the screws when the detachment is effected.

Other objects will appear in the course of the following description, illustrated by the accompanying drawings, in which—

Figure 1 is a partial plan view of a slicing machine embodying my invention.

Figure 2 is a partial front elevation of the same, with the raised gripping device shown by dotted lines.

Figure 3 is a partial end elevation of the same, looking to the left in Figure 1 or Figure 2, with dotted lines partly showing the gripper in its raised position.

Figure 4 is a side elevation, looking to the left in Figure 3, showing the gripping member and its mounting structure, and with the gripper in its raised position, the cross feeding device and its casing being in cross section.

Figure 5 is a partial horizontal cross section on the line 5—5 of Figure 2, on an enlarged scale, showing the details of construction of the friction clutch of the gripping member support device.

Figures 6, 7 and 8 are detail views in side elevation, showing different positions of the safety cam device.

Figure 9 is a detail plan view of the safety cam device, showing one of its positions in solid lines and another in dotted lines.

Figure 10 is an enlarged sectional view of the gripper detachable connection, corresponding to that of Figure 2.

The machine selected for purpose of illustration of my invention comprises a base 1 supporting the rotatable cutting disc 2 and, for adjustment at various distances from the plane of the cutting edge 3 of the disc, the slice gauge plate 4. The means for support of these members is not shown; but as machines of this type are well known in the art, it will be understood that they, as well as the driving means for the cutting disc 2, are in the part of the machine omitted at the top of Figure 1.

Extending from the front of the base 1 near its opposite ends, are brackets 5, only one of which is shown. A round guide bar 6 has its end parts fixed in these brackets, near the front of the base; and a second guide bar 7, of inverted L-shaped cross section, is screwed to the outer ends of these brackets, extending parallel with the round guide bar 6. A cover plate 8 is screwed to the tops of these brackets 5, over the round bar 6 and the space between the bars 6 and 7.

The carriage is made up of a base 9 with widened

parts 10 slidably embracing the round guide bar 6 and spaced therealong. From the lower front corners of these parts 10 arms 11 extend forward under the L-shaped bar 7, with a front upward extension or wall 12 supporting rearwardly extending studs 13 above the bar 7, on which are journaled rollers 14 to run on the top of the horizontal member 7a of this bar 7. In back of this bar 7 these arms 11 have upstanding portions 15 supporting forwardly extending studs on which are journaled rollers 16 to run on the bottom of the member 7a. Scrapers or wipers 7b on the ends of the base 9 keep the top of the member 7a clean.

Extending up from the rear upper corners of the parts 10 of the carriage base is a wall 17, corresponding in the shape of its top to the front upward extension or wall 12, the tops of both of these members 12 and 17 having a downward slant in the direction of cutting travel of the carriage, terminated by an upward slant at right angles to the downward slant, but the rear wall 17 extending much farther at the trailing end of the carriage than does the front upward extension 12. These tops support the trough 18 that supports and guides the material crosswise for successive slicing, the said trough being formed of a plate shaped with the wide slanting bottom part 18a and the narrow upstanding inclined part 18b. A handle 19 extends forward from the rear wall 17 near its extended trailing end, to be grasped by the operator for moving the carriage in either direction along the guide bars 6 and 7.

The gripper member 20 is designed to move crosswise of the machine along this trough 18, and to engage down against the material with its bottom part 20a, which is provided with teeth 21 to enter the material, or it may engage the rear end of the material with its upstanding inner end 20b, which has sharp pins 22 to enter the material. The latter method is used when the piece of material has become too short to be readily controlled by the downward engagement.

It is necessary to move this gripper member 20 out of the trough 18 when a full piece of material is to be mounted for slicing, and then to move the gripper down onto the piece, where it is held by the other hand of the operator. Also, it must have provision for guiding it accurately crosswise of the machine. Were this member provided with a swinging motion on an axis to which it connected by a mere rigid extension, it would meet the material at a different angle at each different elevation it attains as a result of the height of the piece of material. It is in the mounting of this gripper 20 to avoid this result that I have introduced certain improvements which form an important part of my invention.

Extending across the advanced end of the carriage base 9, with its rear end part fixed to the adjacent end of the wall 17, and with an attachment 23 to the front upward extension 12, is a track bar 24 with beveled top and bottom edges. A yoke 25 lies at the advanced side of this track bar, and has at its four corners the double-flanged rollers 26, rolling on the bar 24, two on its top and two on its bottom edge. This yoke 25 thus may travel forwardly and rearwardly along the track bar 24. A pin 27 fixed in the front end part of the track bar 24 stops the yoke 25 at the front end of its travel.

Extending up from the top of the yoke 25 are a hub portion 28 and an ear portion 29 at the rear end of and extending above the top of the hub portion 28. A short shaft 30 is journaled horizontally in and extends out of the front and rear ends of the hub portion 29. A handle member 31 of wide inverted U-shape has a terminal hub portion 31a pinned on the front extension of the shaft 30 and extends at a slant rearwardly, with its opposite terminal portion connected by a pivot 32 to the inner upstanding end part 20b of the gripper 20. The intermediate part of this member 31 is shaped to form a handle 31b. A link 33, U-shaped similarly to the handle member 31, has one end part connected by a pivot 34 to the yoke ear portion 29, and has its opposite end part connected by a pivot 35 to the gripper inner end part 20b.

The distance between the shaft 30 and pivot 34, and the distance between the two pivots 32 and 35 are equal; and the two pairs of pivots are located along parallel lines, preferably, as shown, at right angles to the plane of the main bottom part 18a of the carriage trough 18 and to the plane of the bottom of the gripper part 20a, which is thus held parallel with the trough bottom 18a. The result is that, whatever the elevation of the gripper 20, its posture and its just described relation to the trough 18 are maintained. The gripper 20 is prevented from striking the bottom of the trough 18 by a stop screw 33a on the link 33 striking a surface 33b on the handle member 31. The screw 33a may be adjusted to vary the point of stoppage.

The inner upstanding end part 20b preferably is detachable from the bottom part 20a of the gripper 20. This is provided for, as herein shown, by a bracket 36 fixed to and upstanding from the inner end part of the gripper bottom part 20a, having hubs receiving the pivots 32 and 35 that connect the gripper to the handle member and link as above described, and also having lateral extensions 36a for connection of the upstanding gripper part 20b. This part 20b, which is in the form of a thin plate as herein shown, has screw studs 37 fixed in it to extend forward through eyes 36b formed on the ends of the lateral extensions 36a, these eyes having considerable thickness axially of the screw studs. Nuts, each with a head 38 and a smaller cylindrical body part 38a, screw onto the respective screw studs 37 until their heads engage the eyes 36b, rigidly clamping the gripper part 20a to the bracket 36. As it is necessary, for removal of the part 20b, to entirely unscrew these nuts from the studs 37, so that they might be dropped or lost, the body part 38a of each nut has an annular groove 39, and each eye 36b has a pin 40 projecting into the groove. The grooves are wide enough, axially of the nuts, to permit complete unscrewing of the nuts from the studs 37; yet the pins will not allow the nuts to leave the eyes 36b.

Clutch means is provided between the adjacent ends of the yoke hub portion 28 and the terminal hub portion 31a of the handle member, to act, by friction, to hold the gripper 20 in any position to which it is raised. This avoids care of the operator to raise the gripper to its full height at which it would remain raised, when inserting material, and avoids falling of the gripper at any time, should the operator lose grasp of it. It also holds the gripper 20 to the material. As shown herein, this clutch means comprises a shallow cup 41 containing a disc 42 of friction material such as fiber, leather or rubber, both of these parts being fixed against turning on the face of the handle member hub portion by pins 43, and a disc 44, which may be of metal,

pressed against the friction disc **42** by helical springs **45** in recesses **46** in the end of the yoke hub portion **28**, with studs **47** extending from the latter disc **44** inside the springs, holding this disc from turning relatively to the yoke hub portion **28**.

The machine as herein shown is provided with an automatic feeding device which feeds the gripper **20** crosswise along the carriage trough **18**, for successive slicing, controlled by the slice gauge **4**. The operator withdraws the gripper **20** forwardly when engaging it with the material, and then allows the feeding device to act crosswise, using the handle **31***b* merely for raising and lowering the gripper. Preferably, this feeding device comprises a guide rod **48** extending horizontally between the track bar **24** and the trough part **18***b* from front to rear, with its ends fixed to brackets **49** which are fixed on the adjacent side of the track bar **24**; and a bracket **50** fixed to and depending from the adjacent side of the yoke **25**, of L-shape with its lower member having an ear **50***a* extending up and embracing the rod **48**. A helical spring **51** surrounds the rod **48** and is compressed between the ear **50***a* and the front rod supporting bracket **49**, so as to urge the yoke **25**, and hence the entire gripping device connected thereto, inward toward the slice gauge **4** and cutting disc **2**. A cover **52** of inverted U-shaped cross section is secured on the brackets **49** over the operating parts.

It will be seen that, without restriction, this spring feeding device will, without material in the carriage, force the gripping device **20** entirely in against the slice gauge and disc and adjacent supporting parts, or, if the feeding were manual, the same result would often occur. These parts, for reasons of construction and operation which need not here be explained, have forwardly projecting elements, such, for instance, as the thumbscrew A on the guard at the top of the cutting disc **2**. If the gripping device were swung upward when it is in close to these parts, it would strike such projecting elements, with damage to the machine, and possible injury of the operator if such accident confused him.

To guard against such occurrences, I provide a stop means which will limit the inward travel of the gripping device if it is raised, yet which permits the full inward travel for slicing the last remaining portion of the material. As here shown, this stop means comprises a cam-shaped member **53**, pinned on the extension of the shaft **30** at the inner end of the yoke hub portion **28**, before mentioned. This member **53** acts as a collar to hold the shaft **30** axially for effecting the pressure of the clutching means before described; and preferably it has between it and the adjacent end of the hub portion **28**, a washer **54** of friction material, providing clutching effect additional to that of the clutching device at the other end of the hub portion **28**.

The releasable stop function of this cam member **53** is afforded by a pin **55** fixed in the upper part of the inner wall **17** and projecting outward in half cylindrical shape in the path of any portion of the cam member **53** that is of full radius, as indicated in Figure 6. The cam member **53** has a peripheral notch **56** deep enough to allow the cam member to pass along the pin **55** if the cam member is turned with this notch **56** in line with the pin.

The cam member **53** has this notch **56** so located with relation to the extension of the gripper supporting handle member **31**, and the notch is so limited in extent around the cam member, that such passage can occur only if the gripper device **20** is down far enough to avoid hitting the projecting elements as above mentioned. Otherwise, the cam member **53** engages the end of the pin **55** as indicated by the dotted lines in Figure 9. Preferably, this elevation is not permitted substantially above the lowest position of the gripper device, at which it must be used with the part **20***b* engaging the rear end of the material, which method is the only one practicable when the piece of material has become so short as to make it necessary to bring the gripper device to a position wherein its upward swing would result in its hitting the projecting elements, at which position no considerable elevation is necessary. If the gripper device has traveled so far inward that considerable elevation of it would cause it to strike the projecting elements, the end of the notch **56**, at **56***a*, will engage the pin **55**, preventing such considerable elevation, as indicated in Figure 7 and by the full lines in Figure 9. This may be such that a partial elevation is possible, as indicated at B in Figure 3, the relation of the parts when the gripping device is entirely down in the carriage being indicated in Figure 8.

The advantages of the several structures included in my invention have been explained in connection with the explanation of their construction; and it will be seen that they meet the objects of my invention as first generally stated. It will be understood that, although examples of the constructions for attaining these objects have been specifically set forth, modifications having like purposes may occur in practice, and that I am not limited to such precise disclosure; but what I claim as new and desire to secure by Letters Patent, is:—

1. In a slicing machine comprising cutting means and a carriage movable across the cutting means to carry material whereby it may be sliced by said cutting means, a feeding device to feed the material toward the cutting means, comprising a support member movable on the carriage toward the cutting means, an engaging member to engage the material, connecting elements each having a pivotal connection to the movable support and a pivotal connection to the engaging member, the pairs of pivotal connections on the respective members being equally spaced along parallel lines, whereby said elements support said engaging member for swinging to different engaging positions and maintain the posture of the engaging member in all of said positions, and clutch means active upon at least one of said connecting elements to hold the engaging member in any one of said positions.

2. In a slicing machine comprising cutting means and a carriage movable across the cutting means to carry material whereby it may be sliced by said cutting means, a feeding device to feed the material toward the cutting means, comprising a support member movable on the carriage toward the cutting means, an engaging member to engage the material, connecting elements each having a pivotal connection to the movable support and a pivotal connection to the engaging member, the pairs of pivotal connections on the respective members being equally spaced along parallel lines, whereby said elements support said engaging member for swinging to different engaging positions and maintain the posture of the engaging member in all of said positions, said engaging member comprising a part to engage a piece of material on a side thereof lateral to the line of feeding and another part to engage a

piece of material on a side thereof trailing in feeding direction, and a bracket attached to the first mentioned part of the engaging member and having the pivotal connections of the engaging member to the connecting elements, said second mentioned part of the engaging member being detachably connected to said bracket.

3. In a slicing machine comprising cutting means and a carriage movable along the cutting means to carry the material whereby it may be sliced by said cutting means, a feeding device comprising a material-engaging member, a support member mounted for movement toward the cutting means crosswise of the direction of carriage travel, and connecting elements each having a pivotal connection to the support member and a pivotal connection to the engaging member, the pairs of pivotal connections on the respective members being equally spaced along parallel lines, the connections on the engaging member being close together, measured in the crosswise direction, and the connections on the support member being relatively widely spaced in said direction, but one of these connections being close to alignment with the engaging member connections, taken in the direction of carriage travel, whereby one of the connecting elements lies close to parallelism with said direction but the other connecting element extends at a slant to said direction, this other connecting element serving as a handle for manipulating the engaging member in its movements permitted by the pivotal connections and the aforesaid movement of the support member.

4. In a slicing machine in which a carriage travels and a slice gauge and a cutting means are arranged in succession along the line of the carriage travel, and in which there is a material-engaging means having a feeding movement across said line of travel and a movement upward along a plane of the line of carriage travel, a pair of connecting elements supporting said engaging means on said carriage for said upward movement, having pairs of pivotal connections to the carriage and to said engaging means, said elements having respective parts adjacent one pair of connections, mutually engaging to limit downward movement of said engaging means, one of which parts is adjustable to vary the limitation of said movement.

5. In a slicing machine in which a carriage travels and a slice gauge and a cutting means are arranged in succession along the line of the carriage travel, and in which there is a material-engaging means having a feeding movement across said line of travel and a movement upward along a plane of the line of carriage travel, a pair of connecting elements supporting said engaging means on said carriage for said upward movement, having pairs of pivotal connections to the carriage and to said engaging means, said elements having respective parts adjacent one pair of connections, mutually engaging to limit downward movement of said engaging means, one of which parts is adjustable to vary the limitation of said movement, and one of said elements having clutch means at its other pivotal connection, acting to hold said engaging means at any position to which it is raised or lowered.

ELMER G. STRECKFUSS.