

C. F. M. VAN BERKEL.  
FEED SCREW.  
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1,346,997.

Patented July 20, 1920.

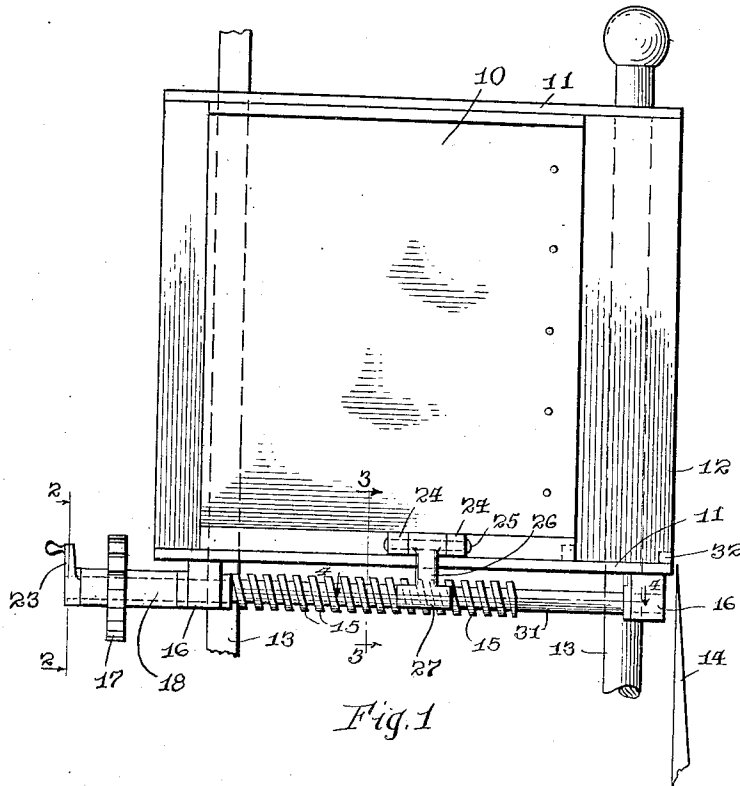


Fig. 1

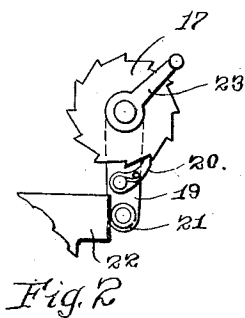


Fig. 2

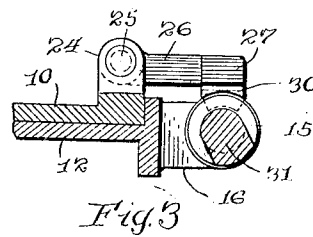


Fig. 3

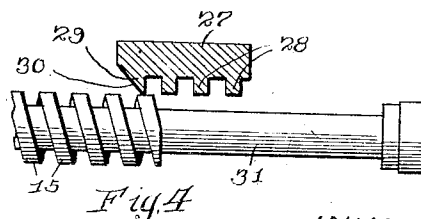


Fig. 4

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# UNITED STATES PATENT OFFICE.

CORNELIS F. M. VAN BERKEL, OF LAPORTE, INDIANA, ASSIGNOR TO U. S. SLICING MACHINE COMPANY, OF LAPORTE, INDIANA, A CORPORATION OF INDIANA.

## FEED-SCREW.

1,346,997.

Specification of Letters Patent.

Patented July 20, 1920.

Application filed November 19, 1917. Serial No. 202,684.

*To all whom it may concern:*

Be it known that I, CORNELIS F. M. VAN BERKEL, a subject of the Queen of the Netherlands, and a resident of Laporte, in the county of Laporte and State of Indiana, have invented certain new and useful Improvements in Feed-Screws, of which the following is a specification.

This invention relates to a screw feed designed particularly for use in connection with slicing machines, but capable of a wide variety of applications. The object of the invention is to provide a device of the character mentioned which shall be of improved construction and more efficient, economical and convenient in operation than similar devices previously known.

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

In the drawing—

Figure 1 is a top plan view of a portion of a slicing machine showing one embodiment of the present invention applied thereto;

Fig. 2 is a fragmentary elevational view of a portion of the mechanism shown in Fig. 1, looking from the left in that figure;

Fig. 3 is a fragmentary vertical sectional view on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary vertical sectional view on line 4—4 of Fig. 1.

Slicing machines for meat and other material, as well as a large variety of other machines, are provided with parts which are moved through a limited path by feed screw mechanism, and after these parts have reached the limit of their movement, they are returned to their initial position and the operation is repeated. In the drawing, the numeral 10 designates the meat plate of a slicing machine, which is a part so operated. The meat plate 10 is mounted to slide between guideways 11 carried by a reciprocating table 12 which moves on ways 13 in a manner common to slicing machines. A knife 14 is positioned adjacent the path of movement of the table 12, and serves a slice from the material carried by the plate 10, for each reciprocation of the table 12. After the removal of each slice, the plate 10 is fed forwardly an amount equal to the thickness

of the slices being cut. To accomplish this feeding operation, a screw 15 is journaled in bearings 16 projecting from the side of the table 12 and is provided with a ratchet wheel 17 rigidly connected to the end of the screw. Between the ratchet 17 and the bearings 16 is a sleeve 18 which loosely surrounds the shaft of the screw 15, and carries an arm 19 projecting downwardly from the shaft. The arm 19 is provided with a spring pressed pawl 20 arranged to engage the teeth of the ratchet 17 and also carries a contact roller 21 which engages a fixed stop 22 secured to the frame of the slicing machine, the stop being so arranged that it causes a partial rotation of the ratchet wheel 17 and the screw 15 each time that the table 12 reaches the end of its reciprocation farthest from the slicing knife 14. A crank 23 is connected to the end of the screw 15 by which the screw may be rotated in either direction independently of the ratchet mechanism, the pawl 20 being held out of engagement with the ratchet when the screw is rotated in a reverse direction.

A pair of lugs 24 project upwardly from one edge of the plate 10 and support a pin 25 on which an arm 26 is mounted for pivotal movement vertically. A toothed member or half-nut 27 is carried at the end of the arm 26 and is provided with thread sections 28 arranged to mesh with the threads on the screw 15. The rearmost thread on the member 27 is designated by the numeral 29 and has its rear surface inclined, as shown at 30, while the front surface is shaped to conform to the threads of the screw 15. The threads of the screw 15 are omitted from a portion 31 of the screw, at the end thereof adjacent the knife 14, so that the forward movement of the threaded member 27 will cause the threads 28 to pass beyond the threaded portion of the screw, as shown in Fig. 4. A stop 32 is carried by the table 12 in the path of the meat plate 10, so that when the front edge of the plate strikes the stop, the plate will be prevented from further forward movement. The stop is so arranged that it will contact with the edge of the plate when the teeth 28 of the member 27 have passed out of mesh with the threads of the screw 15 but while the tooth 29 is still in mesh with the thread. When this occurs further rotation of the screw 15 will cause the threads of the screw to bear

upon the inclined surface 30, which pressure will raise the tooth 29 and the threaded member 27 into the position shown in Fig. 4, so that the tooth 29 is forced out of engagement with the thread. In this way the screw 15 may continue to rotate in a forward direction without producing any movement of the table 10, and without injury to any of the parts of the machine, since the inclined surface 30 is the only portion of the threaded member 27 which remains in operative engagement with the screw. In this way the meat plate 10 is automatically brought to a positive stop at the forward limit of its movement and the screw feed is automatically thrown out of operative connection so that all danger of injury to the machine by further operation of the screw is prevented. If it is now desired to return the meat plate to its initial position, this may be done by simply rotating the screw in a reverse direction, for as soon as the screw is rotated to a position in which the tooth 29 registers with the groove between the threads of the screw, the front surface of the tooth 29 will engage the thread and so feed the member 27 and the plate connected with the member backwardly to its rearmost position, or to any position which the operator may desire, and which he may determine by the amount of rotation imparted to the screw.

I claim:

1. In combination, a screw, and a toothed member for engaging the threads of said screw, said toothed member having an inclined face arranged to cooperate with the threads of said screw to force said member out of mesh with said threads and having other teeth for driving engagement with said screw.

2. In combination, a screw, and a threaded member arranged to cooperate with said screw and movable laterally into and out of mesh therewith, said threaded member having an inclined surface arranged to contact with the threads of said screw to move said member away from said screw when said screw is rotated in one direction and having other teeth for driving engagement with said screw when said screw is rotated in the same direction.

3. In combination, a feed screw, and a member arranged to be driven by said screw and having a tooth for engaging the threads of said screw, said tooth having an inclined surface on one side thereof for moving said member out of mesh with said screw, the other side of said tooth being shaped to fit the threads of said screw and to cooperate with said threads to cause said member to be driven thereby said driven member being provided with other teeth having both driving faces thereof squared.

4. In combination, a feed screw, a mem-

ber arranged to be driven by said screw, a stop for limiting the movement of said member, and a tooth connected with said member and movable into and out of mesh with said screw, said tooth being inclined on one face thereof so that said threads will move said tooth out of mesh therewith when said member is held from movement by said stop.

5. In combination, a feed screw, and a toothed member for engaging the threads of said screw, a portion of the teeth of said member being shaped to conform to the threads of said screw to be driven thereby while one of the teeth of said member is provided with an inclined surface arranged to cooperate with said threads to force said toothed member out of mesh with said screw.

6. In combination, a feed screw having a blank space thereon, and a threaded member having a plurality of teeth arranged to mesh with the threads of said screw, a portion of the teeth of said member being arranged to conform to the threads of said screw to drive said member while one of said teeth is provided with an inclined surface arranged to cooperate with the threads of said screw to move said member laterally away from said screw when the first mentioned teeth have been brought to a position adjacent the blank space on said screw.

7. In combination, a feed screw, a toothed member arranged to engage said screw and movable into and out of mesh therewith, and means for limiting the movement of said toothed member relative to said screw so that the movement of said member will be caused to stop when a portion of the teeth thereof are out of engagement with the threads of said screw and a portion remains in engagement therewith, the portion of said teeth remaining in engagement being provided with an inclined face arranged to cooperate with the threads of said screw to move said member laterally away from said screw when said screw is rotated in one direction.

8. In combination, a feed screw, and a toothed member for engaging the threads of said screw, said screw being arranged to drive said toothed member into a position in which a portion of the teeth thereof are out of engagement with the threads of said screw while one of said teeth remains in engagement therewith, said tooth which remains in engagement being provided with a cam surface for forcing said member away from said screw when said screw is rotated in one direction but permitting driving engagement between said tooth and screw when said screw is rotated in an opposite direction.

9. In combination, a feed screw, a carriage to be driven by said screw, and a toothed member connected with said carriage and movable into and out of engagement with

said screw, said screw and toothed member being so arranged that a portion of the teeth on said member are moved beyond the threads of said screw when said carriage reaches one extremity of its movement while one of the teeth of said member remains in engagement with said threads, said last mentioned tooth having one of its surfaces inclined so that further feeding rotation of said screw will cause the threads of said screw to coöperate with said inclined surface to move said toothed member laterally away from said screw, the opposite surface of said tooth being arranged to conform to the threads of said screw and to move said threaded member and the carriage connected therewith rearwardly when the direction of rotation of said screw is reversed.

10. In combination, a feed screw, having square threads thereon, and a toothed member arranged to be driven by said screw and movable into and out of engagement therewith, a portion of the teeth on said member being shaped to conform to the threads on said screw while one of the teeth on said member is provided with an inclined surface for forcing said member away from said screw.

11. In combination, a feed screw having square threads thereon, and a toothed member arranged to be driven by said screw and having a portion of the teeth thereof shaped to conform to threads on said screw, said member being movable by said screw into a position to bring said teeth beyond the end of the threads on said screw while one of the teeth on said member remains in contact with said threads, said remaining tooth being provided with an inclined surface on the rear thereof for forcing said toothed member away from said screw when said screw is rotated in one direction while the other surface of said tooth is shaped to con-

form to the threads on said screw and to be driven by said threads when said screw is rotated in the opposite direction.

12. In combination, a feed screw, a carriage arranged to be driven by said screw, a toothed member connected with said carriage and movable into and out of engagement with said screw, a portion of the teeth on said member being shaped to conform to the threads on said screw and being arranged to be moved beyond the end of the threads on said screw while one of the teeth on said member remains in contact with said threads, said tooth having one face inclined so that pressure by said threads on said face will tend to force said toothed member out of mesh with said screw when said screw is rotated in one direction and the other face of said tooth being shaped to conform to the threads of said screw and to move said toothed member longitudinally along said screw when said screw is rotated in the opposite direction, means for rotating said screw in either direction, and a positive stop for limiting the movement of said carriage in one direction.

13. In combination, a feed screw having square threads, a member arranged to be driven by said screw, and a tooth carried by said member for engaging the threads of said screw, said tooth having one face thereof shaped to conform to the threads of said screw and having the opposite face thereof beveled to provide an inclined surface for contacting with said threads.

In testimony whereof I have signed my name to this specification, on this 14th day of November, A. D. 1917.

CORNELIS F. M. VAN BERKEL.

Witnesses:

R. B. HOSSACK,  
F. J. HOFFMANN.