May 12, 1925.

1,537,717

C. F. M. VAN BERKEL

RATCHET MECHANISM

Filed March 8, 1919

Fig. 1

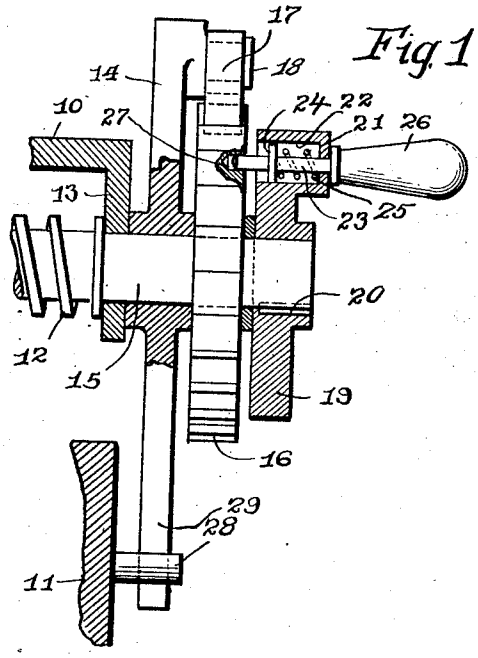


Fig. 2

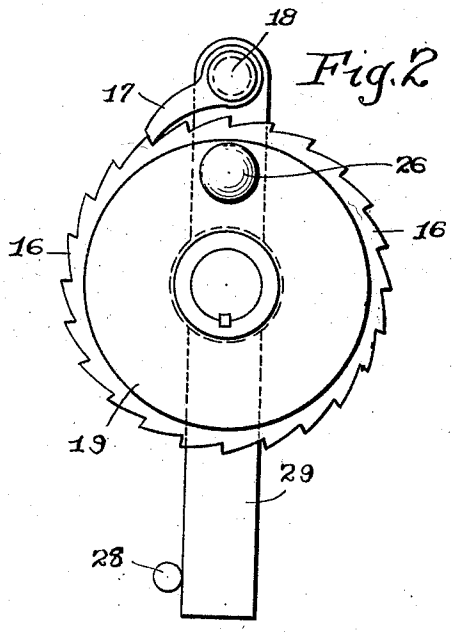


Fig. 3

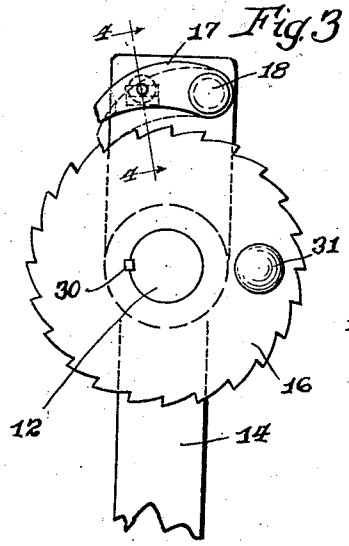


Fig. 4

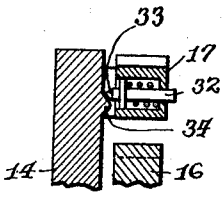
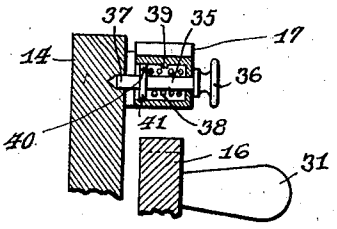


Fig. 5



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Att'y-s.

Patented May 12, 1925. 1,537,717

UNITED STATES PATENT OFFICE.

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

RATCHET MECHANISM.

Application filed March 8, 1919. Serial No. 281,338.

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 Rotterdam, Netherlands, have invented certain new and useful Improvements in Ratchet Mechanism, of which the following is a specification.

This invention relates to ratchet mechanism applicable to many kinds of machinery, and especially useful in connection with slicing machines, and has for its object the provision of mechanism of the character named which shall be of improved construction and operation.

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—

Fig. 1 is a fragmentary elevation partly in section of one embodiment of the present invention.

Fig. 2 is a view looking from the right in Fig. 1.

Fig. 3 is a view similar to Fig. 1, but showing a slightly modified form of the invention.

Fig. 4 is a section on line 4—4 of Fig. 3; and

Fig. 5 is a sectional detail of still another modification.

In slicing machines, and other mechanism, it is common to impart a slight periodic rotary movement to parts of the machine by means of a pawl and ratchet device, and it is frequently desirable to re-set the part of the machine so rotated. The present invention provides mechanism for accomplishing this purpose. The form illustrated shows the construction as applied to a slicing machine of ordinary design in which the numeral 10 designates a meat carriage, which is usually mounted to slide on a fixed support represented fragmentarily at 11. The meat table 10 by its reciprocation presents the material which it carries to a slicing knife each time a slice is to be severed, and the table is provided with a slicing meat plate which is fed across the table 10 at right angles to the direction of reciprocation of the table by means of a feed screw 12. The feed screw 12 is journaled for rotation in a downwardly extending flange 13 of the meat table, and has a lever arm 14 loosely mounted on the projecting portion 15 of the feed screw. Carried by the portion 15 of the feed screw, just outside of the bearing of the lever arm 14, is a ratchet wheel 16, which is engaged by a pawl 17 pivotally mounted at 18 on the lever arm 14. The pawl 17 may be held in engagement with the teeth of the ratchet wheel 16 either by gravity, or by means of a spring in the usual manner. Adjacent the outer face of the ratchet wheel 16 is a crank disc 19, which is rigidly secured to the end of the screw 12 by a key 20. The crank disc 19 carries near its periphery a raised boss 21, which is bored to form an opening 22, through which a pin 23 extends. The pin 23 is provided with a flange 24, against which one end of a coil spring 25 bears. The other end of the coil spring 25 bears against the end wall of the opening 22, so that the end of the pin 23 is normally projected through the open end of the recess 22 into engagement with the face of the ratchet wheel 16. A handle 26 is rigidly secured to the end of the pin 23 opposite the ratchet so that the end of the handle bears against the face of the boss 21 and limits the movement of the pin 23 under the influence of the coil spring 25. An opening 27 is provided in the face of the ratchet 16 for receiving the end of the pin 23 to cause the ratchet 16 and the disc 19 to rotate in unison with one another. In this way the screw 12 may be made rigid with the ratchet 16, so that the screw may be rotated by the pawl which engages the teeth of the ratchet. The support 11 for the table 10 carries a pin 28 disposed in the path of movement of a downwardly projecting arm 29 of the lever 14. When the table 10 approaches the limit of its reciprocation, the arm 29 strikes the stop 28, thus rotating the lever 14 and causing the pawl 17 to impart a slight rotation to the ratchet 16. Since the ratchet is normally connected with the feed screw 12 through the disc 19 and the pin 23, this rotation of the ratchet will

move the feed screw for the purpose of advancing the meat plate controlled by the screw into position for a second slice. If at any time it is desirable to adjust the feed screw 12 independently of the ratchet 16, it is only necessary for the operator to grasp the handle 26 and draw it outwardly a sufficient distance to free the end of the pin 23 from the opening 27. While the handle 26 is held in this position, the disc may be rotated in either direction independently of the ratchet 16, and thus the screw 12 may be turned to effect any adjustment of the parts controlled thereby which may be desired.

In the form of the invention shown in Figs. 3 and 4, the ratchet wheel 16 is secured directly to the feed screw 12 by means of a key 30, and the disc 19 of the form previously described, is entirely omitted. A handle 31 is rigidly mounted directly on the face of the ratchet wheel 16. The pawl 17 is carried by the lever arm 14 in position to mesh with the ratchet wheel 16 in the same way as in the previously described form, but the pawl is provided, as shown more clearly in Fig. 4, with a spring-pressed pin 32, the pointed end 33 of which is arranged to engage a V-shaped projection 34 extending from the face of the lever 14. When the pawl 17 is in the position shown in full lines in Figs. 3 and 4, the pin 32 will hold the pawl in this position out of engagement with the teeth of the ratchet. When the pawl is pressed downwardly, the spring-pressed pin 32 will move over the apex of the projection 34 and spring into engagement with the inclined face of the projection on the side adjacent the ratchet wheel 16. The parts are so related that the point 33 of the pin 32 will engage the lower face of the projection 34 during the upward movement of the pawl while passing over the points of the ratchet teeth. It will be seen that this engagement between the inclined face of the projection 34 and the point of the pin 32 will tend to press the pawl into engagement with the ratchet teeth, and the motion of the pawl is not sufficient to carry the point of the pin past the apex of the projection 34 at the time that the nose of the pawl passes over the point of a ratchet tooth. In this way the spring-pressed pin 32 cooperating with the projection 34 performs a double purpose of holding the pawl resiliently in engagement with the ratchet teeth, and also of holding the pawl out of engagement with the teeth when it has once been moved into its disengaged position. So long as the pawl remains in engagement with the teeth, reciprocation of the lever 14 will serve to rotate the ratchet wheel, and this rotation will be imparted to the feed screw. When it is desired to adjust the screw independently of the ratchet mechanism, the pawl 17 is lifted out of engagement with the ratchet teeth and automatically remains in this position until it is returned. While it is thus held, the ratchet 16 and the feed screw 12 may be rotated any desired amount in either direction by means of the handle 31.

In the form shown in Fig. 5, a spring-pressed pin 35 is provided with a knob, by means of which it may be withdrawn from engagement with an opening 37 in the lever 14. The pin is normally held in engagement with the opening by a spring 38, and it may be retained in its retracted position by a tooth 39 arranged to pass through a notch 40 in a flange 41 secured to the pin 35, and against which the end of the spring 38 bears. When the knob 36 is pulled backwardly until the flange 41 engages the tooth 39, the knob may be rotated to bring the notch 40 into registry with the tooth, after which the pin may be further withdrawn until the flange 41 has passed behind the tooth. A slight rotation of the knob 36 while in this position will bring the notch 40 and tooth 39 out of registry, and thus retain the pin in its retracted position. In operation the pin 35 is thus locked out of engagement with the lever 14 during the time that the ratchet wheel 16 is being driven by the pawl 17 and the lever. This will permit the pawl 17 to bear upon the periphery of the ratchet wheel 16 under the influence of gravity, or of a spring provided for the purpose, as the case may be. When it is desired to adjust the mechanism controlled by the screw 12, the pawl 17 may be raised out of engagement with the ratchet teeth and the pin 35 released to engage the opening 37, and thus lock the pawl in its inoperative position. While the pawl is thus held, the ratchet wheel 16 may be rotated by the handle 31 to adjust the feed screw.

I claim:—

1. In combination, a feed screw, a ratchet wheel loosely mounted on said screw, a pawl for rotating said ratchet wheel, a hand crank rigidly connected with said feed screw, said ratchet wheel being connectible with said feed screw to impart rotation to said feed screw, a handle for rotating said hand crank, and means operable by said handle for making and breaking the connection between said ratchet mechanism and said feed screw.

2. The combination with a rotary element, of a ratchet wheel revolubly mounted on said element, a hand-operated device fixed to said element for rotating the same, means for rotating said ratchet wheel, and spring-actuated means on said hand-operated device for connecting said ratchet wheel and hand-operated device to rotate said element from said ratchet wheel.

3. In combination, a revoluble element, a ratchet wheel rotatably mounted on said element, an oscillatory pawl for imparting pe-

riodic movement to said ratchet wheel, a hand crank fixed to said element for rotating the same, a spring-pressed pin on said hand crank arranged to engage said ratchet wheel to drive said element from said ratchet wheel through said hand crank, and a common handle connected with said pin and hand crank for withdrawing said pin from said ratchet wheel and for rotating said hand crank.

In testimony whereof I have signed my name to this specification, on this 21st day of December, A. D. 1918.

C. F. M. v. BERKEL.