Dec. 31, 1929. E. COULSON 1,742,060

FEED MECHANISM FOR USE WITH SLICING MACHINES

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Fig. 2.

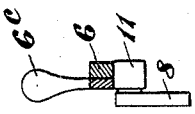


Fig. 1.

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FEED MECHANISM FOR USE WITH SLICING MACHINES

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This invention has reference to improvements in or relating to feed mechanisms for use with slicing machines and relates more particularly to feed mechanisms for use with slicing machines of the rotary disc knife and reciprocating carriage type.

The present invention has for its object the provision in slicing machines of the aforesaid type of an improved feed mechanism together with means for determining the thickness of the slices to be cut at each slicing operation.

The invention consists of an improved feed mechanism for use with slicing machines of the type hereinbefore referred to, characterized by the connection of a slice thickness setting device to a cam member which co-operates with a one-way detent for determining the degree of movement to be imparted to a feed screw at each feeding operation, the requisite motion of the said detent being engendered by means actuated by the reciprocatory movement of the carriage.

The invention will now be described with particular reference to the accompanying sheet of drawings, wherein:—

Figure 1 is a side elevation of the slice feeding mechanism and sufficient of the adjacent portions of the slicing machine as is necessary to an understanding of the invention.

Figure 2 is a detail view partly in section of a portion of the feed mechanism seen in Figure 1.

The carriage 3 is provided on one side thereof with an outwardly projecting lug on which is rotatably mounted a boss formed integral with a downwardly depending crank 4, the lower end whereof has a pivotal connection to one end of a rod 5 the other end of which is pivotally connected to an ear 6^a formed on the outer periphery of an annular member 6 rotatably mounted on a support projecting from the side of the carriage 3 adjacent the rearward end thereof said annular member 6 being concentrically disposed relative to the feed screw of the slicing platform and provided on the inner periphery thereof with a cam surface 6^b. The boss carrying the crank 4 has formed on the outer end thereof a wheel-like knob 4^a for permitting of the rotation of the said crank. Also fixed relatively to the aforesaid boss but projecting upwardly therefrom is a quadrantal or segmental portion 4^b having a graduated periphery said graduations co-operating with an index 3^a fixed to the side of the carriage 3.

Keyed on the outer end of the feed screw is a ratchet wheel 7 the teeth whereof co-operate with a detent 8^a formed at the end of one arm of a lever 8 which is fulcrumed on a pin 9 supported in jaws constituting the upper section of one arm of a bell crank lever 10 said lever being freely mounted relatively to the feed screw. The other arm of the detent lever 8 serves to support a roller 11 which co-operates with the cam surface 6^b formed on the inner periphery of the annular member 6. The nose of the detent 8^a is anchored to one end of a coil spring 12 the other end whereof is attached to the arm of the aforesaid detent carrying lever 10 whereby the nose of the detent normally tends to remain in engagement with the teeth of the ratchet wheel 7. The other arm of the bell crank lever 10 has pivotal connection to the upper end of a link 13 the lower end whereof has pivotal connection to the upper arm of a second bell crank lever 14 which is fulcrumed on a spindle 15 carried by the lug 3^b depending from one side of the carriage. The other arm of the second mentioned crank lever carries at its lower end a rotatably mounted roller 16 adapted to be traversed in a slot 17^a formed in a guide 17 secured to the base 18 of the slicing machine. The aforesaid guide slot incorporates a relatively short vertically disposed section located at the forward end of the slot said vertical section merging into a horizontally disposed section.

Secured to the outer periphery of the annular member at the upper portion thereof is a handle 6^c said handle being diametrically opposed relatively to an arm 6^d which projects from the lower portion of the outer periphery of the annular member. This arm co-operates with a stop 19 mounted on and located in the path of the projecting arm upon the forward traverse of the carriage.

It will be appreciated that by reason of the

mechanical connection between the slice thickness setting device and the annular member 6 the relative positions of the cam surface 6^b on the inner periphery of the said member and the roller 11 on the detent lever vary with the setting of the slice thickness adjusting device.

It will be understood that the amount of motion to be given to the feed screw at each feeding operation will depend upon the degree of rotation imparted to the ratchet wheel 7 through the detent.

When the cam surface 6^b formed on the inner periphery of the annular member 6 is in contact with the roller 11 carried by the one arm of the detent lever 8 the nose of the detent 8^a carried by the other arm of the said lever is free from engagement with the teeth of the ratchet wheel 7 whereby when in this position no actuation of the feed screw can obtain.

The operation of the mechanism is as follows:—

The knob 4^a on the slice setting device is actuated until the pointer 3^a indicates on the quadrantal chart the thickness of the slice it is desired to cut. The setting of the knob 4^a through the crank 4 and rod 5 imparts a corresponding motion to the annular member 6 and thereby effects a definite setting of the cam surface 6^b relatively to the roller 11 carried on one of the arms of the detent lever 8 in which setting the cam surface 6^b is in contact with the roller 11 whereby the nose of the detent 8^a is freed from engagement with the teeth of the ratchet wheel 7. On the commencement of the traverse of the carriage 3 the roller 16 carried on the end of the bell crank lever 14 which is fulcrumed on the base of the machine is traversed on the guide slot 17^a and effects an oscillation of the said bell crank lever 14 about its fulcrum 15 which motion is transmitted through the link 13 connected to the other arm thereof to the lower arm of the bell crank lever 10 supporting the detent lever. On the forward traverse of the carriage the movement thereby imparted to the detent bell crank lever 10 takes place in a clockwise direction so that the detent 8^a merely rides over the teeth of the ratchet wheel 7 without effecting any rotation of the feed screw. Upon the rearward traverse of the carriage 3 the motion given to the bell crank lever 14 results in the detent carrying lever 8 being moved in an anti-clockwise direction with the tendency at the same time to force the nose of the detent 8^a into engagement with the teeth of the ratchet wheel 7 but this engagement is not permitted until the bell crank lever 10 carrying the detent has been moved a sufficient distance to remove the roller 11 carried thereby from contact with the cam surface 6^b of the annular member 6. When the bell crank lever 8 has been moved a sufficient amount to allow of the disengagement of the roller 11 from the cam surface 6^b the nose of the detent 8^a engages with the teeth of the ratchet wheel 7 and upon the further downward movement of the nose of the detent in an anti-clockwise direction effects a corresponding movement of the ratchet wheel 7 thereby turning the feed screw the desired amount and effecting a traverse of the slicing table to the extent necessary to give the desired thickness of slice at the next operation of the machine.

If it is desired at any time to prevent any feeding operation the handle 6^c on the upper portion of the outer periphery of the annular member 6 is rotated in an anti-clockwise direction a sufficient amount to ensure that any movement which may be imparted to the detent carrying lever 8 will not be sufficient to free the roller 11 carried by the said lever from contact with the cam surface 6^b whereby the nose of the detent 8^a will be maintained out of engagement with the teeth of the ratchet wheel 7 under all conditions. When it is desired to bring the feed mechanism into operation subsequently this may be done automatically by commencing to traverse the carriage in a forward direction when the stop 19 on the base 18 of the slicing machine comes into contact with the projecting arm 6^d on the outer periphery of the annular member 6 and rotates the said member in a clockwise direction thereby bringing the feed mechanism into operation.

Claims:—

1. A feed mechanism for slicing machines of the rotary disc knife and reciprocatory carriage type comprising a feed screw, a ratchet wheel fixed on said feed screw, a detent adapted to engage with said ratchet wheel, means for imparting a feeding movement to the said detent upon the reciprocation of the carriage, a rotatable annular member, a cam surface formed on the inner periphery of the said member and adapted to maintain the detent out of engagement with the ratchet wheel during a portion of the feeding movement thereof, a thickness setting device carried by the carriage, means for connecting the thickness setting device to the annular cam member whereby the setting of the cam surface relatively to the detent is determined by the position of the thickness setting device, means for maintaining the detent temporarily out of engagement with the ratchet wheel and means for automatically bringing the detent into operation upon the commencement of the reciprocation of the carriage.

2. A feed mechanism for slicing machines of the rotary disc knife and reciprocatory carriage type comprising a feed screw, a ratchet wheel mounted on the feed screw, a bell crank lever rotatably mounted relatively to said feed screw, a lever of the first order pivotally mounted in one arm of said bell crank lever,

a detent carried at one end of said lever the nose of said detent being adapted to engage with the teeth of the ratchet wheel, a slitted cam track fixed to the base of the machine, a lever pivotally mounted relatively to the said carriage, a member carried by said lever and adapted to engage within the cam track and to impart an oscillatory movement to the said lever upon the reciprocation of the carriage, a link connecting the said lever to the bell crank lever whereby the oscillatory movement of the lever is transmitted to the detent carrying lever, a rotatable annular member, a cam surface formed on the inner periphery of said member and adapted to bear on the other arm of the detent carrying lever and to maintain the detent out of engagement with the ratchet wheel during a portion of the feeding movement of the detent, a thickness setting device carried by the carriage and means for connecting the thickness setting device to the annular cam member whereby the setting of the cam surface for determining the feeding movement to be imparted by the detent at each feeding operation is controlled by the position of the thickness setting device.

In testimony whereof I have hereunto set my hand.

EDWIN COULSON.