

Nov. 29, 1932.

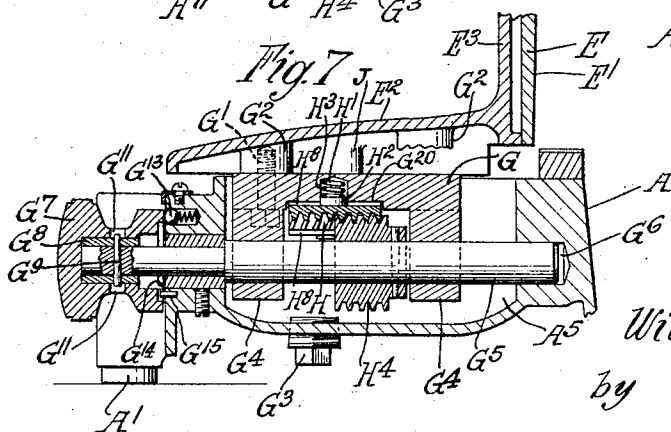
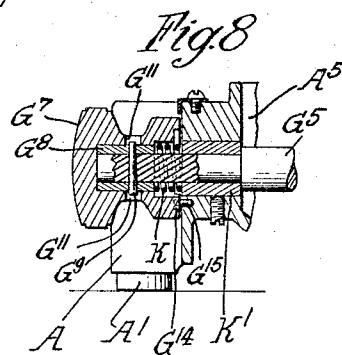
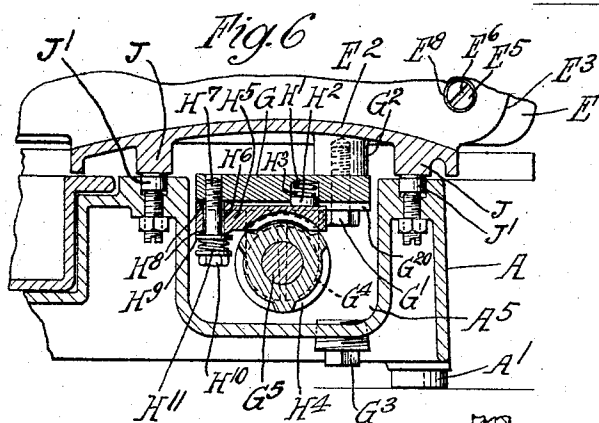
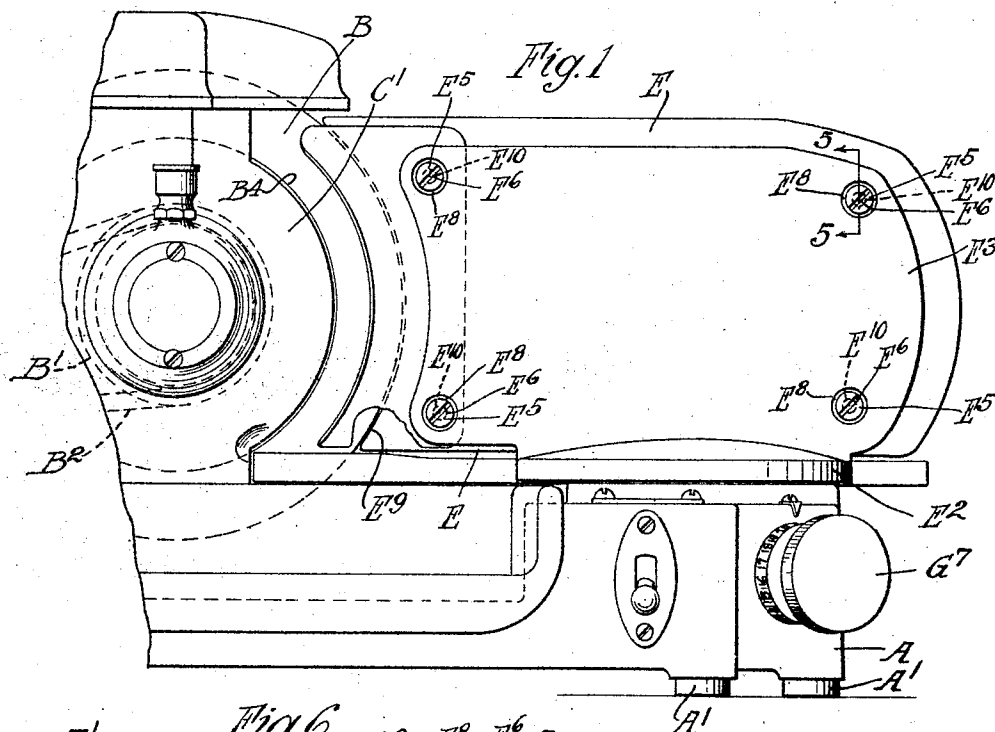
W. J. CAMPBELL

1,889,539

SLICING MACHINE

Filed July 5, 1929

2 Sheets-Sheet 1



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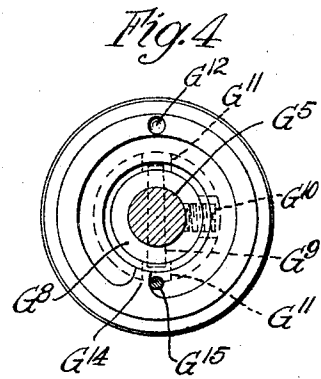
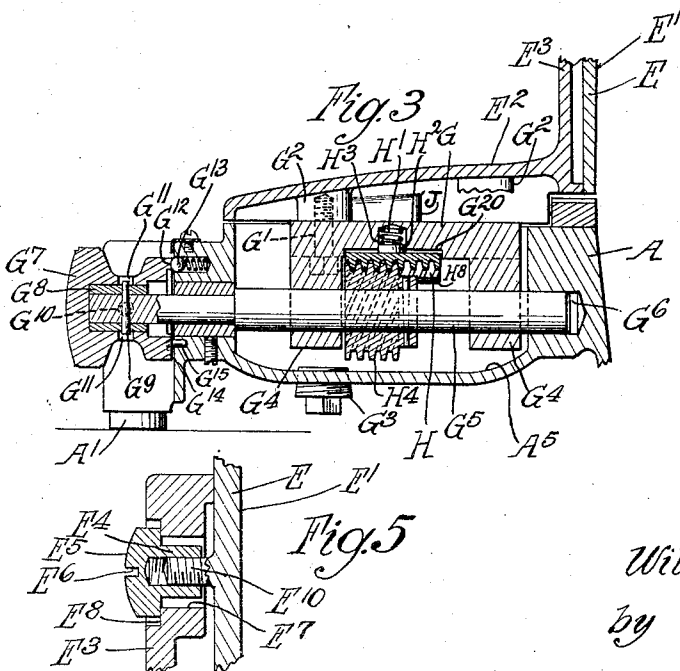
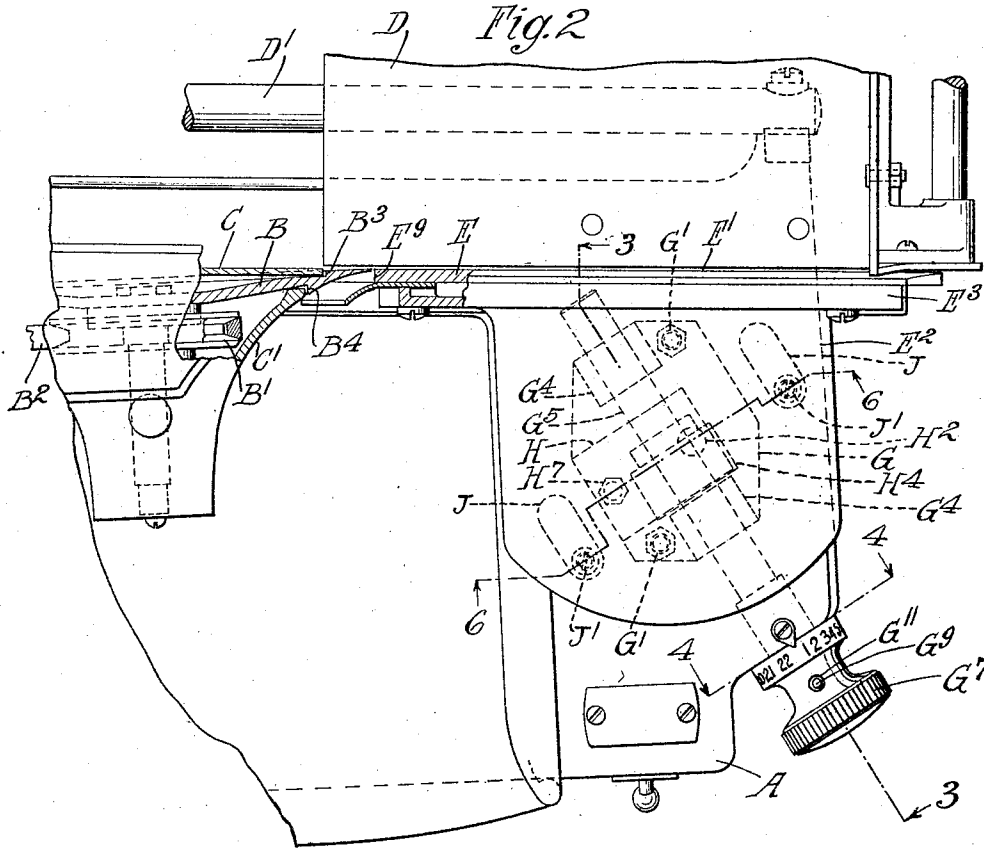
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SLICING MACHINE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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SLICING MACHINE.

Application filed July 5, 1929. Serial No. 375,961.

My invention relates to a slicing machine and particularly to a slicing machine of the type in which a rotary and preferably motor driven knife is employed. One object of my invention is the provision of an improved mounting for the gauge plate of such a slicing machine. Another object is the provision of means for adjusting the position of the gauge plate in relation to the carrier or member upon which it is mounted. Another object is the provision of means for tiltably adjusting the gauge plate and carrier. Another object is the provision of improved driving or actuating means for such a gauge plate. Another object is the provision of improved braking means for such a gauge plate and its support, the braking means being adapted to prevent unintended or accidental changes in adjustment of the gauge plate. Another object is the provision of means for locking the gauge plate in position at the end of its adjusting excursion. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a rear elevation of the device;

Figure 2 is a plan view with parts in section;

Figure 3 is a section on the lines 3—3 of Figure 2;

Figure 4 is a section on the line 4—4 of Figure 2;

Figure 5 is a section on the line 5—5 of Figure 1;

Figure 6 is a section on the line 6—6 of Figure 2;

Figure 7 is a section similar to Figure 3 with parts in different position; and

Figure 8 is a section through a modified form.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the drawings A generally indicates any suitable base or supporting frame for the slicing machine, which may rest on the ground engaging members A¹.

B generally indicates the rotary knife with

its pulley B¹ driven by the belt B², from any suitable power source not herein shown.

C indicates a guard plate for the front of the knife the edge of the guard plate seating within the recess B³ in the front face of the knife. C¹ indicates a guard portion of the frame the edge of which penetrates the rear recess B⁴ of the knife.

D generally indicates any suitable work supporting carriage mounted for slidable movement, for example on the track D¹, past the cutting edge of the knife and across the face of the guard plate C.

E generally indicates a gauge plate which may be more or less bowed in vertical section, as indicated for example at E¹ in Figure 3. This bowing is preferable or necessary, owing to the bowed contour of the cutting arc of the knife, which is caused by the inclination of the axis of the knife, as shown for example in Figure 2, in order to bring the cutting arc forwardly of the plane of the guard plate C. Referring to the mounting of the gauge plate I illustrate a supporting structure generally indicated as E² with the upward projection E³ adapted to receive and support the gauge plate E. The details of the connection or support are shown for example in Figure 5. The gauge plate E is provided with screwthreaded pins E¹⁰ projecting from its rear face. These pins receive the nuts E⁴ with their securing heads E⁵. The heads may be channeled as at E⁶ to receive a screw driver or the like. The members E⁴ penetrate the apertures E⁷ in the structure E³ and the heads E⁵ abut against the shoulders E⁸ associated with said apertures. It will be seen in Figure 5 that the clearances may be such as to permit adjustment of the gauge plate up or down or tiltably, in relation to the supporting structure. A prime purpose of this adjustment is to permit the gauge plate to be adjusted to conform closely to the cutting edge of the knife. As shown in Figure 1 the arcuate edge E⁹ of the gauge plate E should conform very closely to the cutting edge of the knife and the clearance between the apertures E⁷ and the nuts E⁴ is sufficient to permit the necessary adjustment.

The portion E² of the support extends outwardly above the frame A and the frame is recessed therebeneath as at A⁵, to provide a housing for the transmission means through which the gauge plate and its support are actuated. The housing A⁵ is opened at the top to receive a plate G which may be screwed or secured, as by the screws G¹, to the bosses G² depending from the bottom of the member E². These screws are made accessible through apertures closed by the screwthreaded pipe plugs G³, axially aligned with the screws G¹. Secured to or forming part of the plate G are the bearing lugs G⁴ through which passes the stem G⁵ the inner end of which is rotatably mounted in the frame as at G⁶. Secured to the outer end thereof is the knob G⁷, which may be made of any suitable material. I indicate it as made for example of bakelite with the inner metal sleeve G⁸, the structure being pinned upon the shaft G⁵ as by the pin G⁹. It will be understood that the sleeve G⁸ may be secured in relation to the knob G⁷ in any suitable manner, as for example by a press fit. In the initial assembly the knob may be held in position on the shaft G⁵ as by the set screw G¹⁰. The knob is apertured as at G¹¹ G¹², and when the desired adjustment is obtained an aperture to receive the pin G⁹ may be drilled through sleeve and shaft and the pin inserted. The inner face of the knob G⁷ is indented as at G¹² to receive the spring pressed ball G¹³ mounted on the frame. It will be understood that when the gauge plate is in neutral position, the ball G¹³ seats in the indentation or recess G¹², and serves as a locking means. This locking action can of course be easily overcome by manual rotation of the knob, but it is sufficient to prevent accidental and undesired rotation of the knob. I also provide a limit member or projection G¹⁴ on the knob opposed to a limit pin G¹⁵ on the frame. The proportion of parts is such that the entire range of adjustment of the gauge plate is effected by a single substantially complete rotation of the knob G⁷, and the member G¹⁴ serves as a limit at each end of the rotation of the knob.

Mounted and guided in a recess G²⁰ in the plate G is a segment nut H which is yieldingly downwardly thrust as by the spring H¹. It may be guided as by the guide lug H² penetrating the aperture H³ in the plate G. H⁴ indicates a worm held against rotation in relation to the shaft G⁵ and in mesh with the segmental nut H. The nut H is provided with a lateral projection H⁵ apertured as at H⁶ to receive the securing screw H⁷. This screw has for one function to prevent the transverse or lateral movement of the segmental nut. In order to prevent binding, play or back lash, it is important that any substantial transverse movement of the nut across the axis of the worm and shaft

be prevented. It will be seen in Figure 6 that the opposite faces of the projection H⁵ are rounded off as at H⁸, for rolling contact with the bottom of the plate G and with the securing washer H⁹ respectively. Between the washer H⁹ and the head H¹⁰ of the screw H⁷ is pressed a spring H¹¹.

The supporting structure E² is provided with elongated bosses J opposed to the adjustable abutment members J¹ mounted in the top of the frame.

It will be realized that whereas I have described and shown a practical and operative device, nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and showing to be taken as in a broad sense illustrative and diagrammatic rather than as limiting me to my specific showing.

For example I illustrate in Figure 8 a variant form of knob in which I employ a spring K compressed between the bearing sleeve K¹ of the shaft G⁵, and the knob. This spring exerts a constant braking function to prevent unintended rotation of the shaft at any setting.

The use and operation of my invention are as follows:

I find it desirable to effect an adjustment of the gauge plate, and particularly of the arcuate edge thereof, in relation to the knife B. I may effect this adjustment either by the means shown in Figure 5, namely the nut E⁴ with the oversize apertures E⁷. I may also obtain a certain tilting of the entire supporting structure, as by adjustment of the members J¹.

In order to prevent unintended movement of the knob, I may employ yielding working means. In the form of Figure 6 the segmental nut H is yieldingly thrust against the worm H⁴. This yielding thrust not only has a braking action on the knob, but also serves to compensate for wear of nut and worm. As shown in Figure 3 I may provide a supplemental locking action for the neutral setting of the gauge plate, namely the engagement of the ball G¹³ with the recess G¹². In the form of Figure 8 the spring K exerts at all times a braking action and may be used either alone or in combination with the segmental nut H to give the necessary braking action and take-up of wear.

I claim:

1. In a slicing machine which includes a rotary knife and means for rotating it and a work support and means for guiding said work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife, including a shaft and means for rotating it, a worm

on said shaft and a segmental nut, movably mounted on the gauge plate support for floating movement about transverse axes, yielding means for thrusting said nut into operative engagement with the worm, and means for preventing transverse movement of said nut in relation to said worm and shaft.

2. In a slicing machine which includes a rotary knife and means for rotating it and a work support and means for guiding said work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife, including a shaft and means for rotating it, a worm on said shaft and a segmental nut, movably mounted on the gauge plate support for floating movement about axes disposed longitudinally of and transversely of the axis of the worm, means for guiding the movement of said nut toward and away from the axis of the worm, and for preventing any substantial transverse movement of said nut across said shaft and axis.

3. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it, a segmental nut movably and loosely mounted on the gauge plate support, said nut being freely tiltable within predetermined limits about axes extending longitudinally and transversely of the axis of rotation of the worm, and means to maintain the nut in operative engagement with the worm.

4. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it, a segmental nut movably and loosely mounted on the gauge plate support, a guide upon which said nut is slidably mounted said nut having material tilting movement with respect thereto, said guide being spaced laterally from the axis of rotation of the worm and limiting means for preventing any material degree of rotation of the nut about said guide and also for preventing any appreciable degree of axial movement of the nut along the worm.

5. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and

a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it, a segmental nut movably and loosely mounted on the gauge plate support, and confining members, associated with said nut and adapted to prevent movement of said nut along the axis of rotation of the worm; said nut being free within predetermined limits to tilt in its axially confined position about an axis substantially parallel to the axis of rotation of the worm.

6. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it and a segmental nut movably and loosely mounted on the gauge plate support, and a universal tilting connection between said nut and the gauge plate support.

7. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it and a segmental nut movably and loosely mounted on the gauge plate support, an arm carried by said nut, and a universal tilting connection between the arm of said nut and the gauge plate support at a point disposed laterally of the axis of said worm, and means for preventing movement of the nut along the axis of rotation of the worm.

8. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it and a segmental nut movably and loosely mounted on the gauge plate support, and a ball and socket connection between the nut and the support.

9. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it, a segmental nut having a laterally extending arm by which the nut

is movably and loosely mounted on the gauge plate support, and a ball and socket connection between the arm of the nut and the support at a point disposed laterally of the axis of rotation of the worm, and yielding means tending normally to thrust the nut into contact with the support.

10. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it and a segmental nut movably and loosely mounted on the gauge plate support, and a ball and socket connection between the nut and the support, and yielding means tending normally to thrust the nut into contact with the support, and additional yielding means tending to thrust the nut into contact with the worm.

11. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it and a segmental nut movably and loosely mounted on the gauge plate support for tilting movement about transverse axes, and abutments associated with the support, said abutments being adapted to permit movement of the nut to and from the axes of rotation of the worm and to prevent movement of the nut along the worm, the nut being tiltably mounted between said abutments.

12. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it, a segmental nut, an arm carried by the nut and extending laterally of the axis of rotation of the worm and by which the nut is movably and loosely mounted on the gauge plate support for tilting movement about axes extending longitudinally of and transversely of the axis of rotation of the worm, and abutments associated with the support, said abutments being adapted to permit movement of the nut to and from the axis of rotation of the worm and to prevent movement of the nut along the worm, the nut being tiltably mounted between said abutments, and yielding means tending normally to urge said nut against said worm.

13. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it, a segmental nut movably and loosely mounted on the gauge plate support, said nut being tiltable about axes extending longitudinally of and transversely of the axis of rotation of the worm, means for maintaining the nut in operative engagement with the worm, and stop means associated with said nut and gauge plate support for limiting the range of tilting movement of the nut about both of said axes.

14. In a slicing machine which includes a rotary knife and means for rotating it, and a work support and means for guiding the work support across the face and past the cutting edge of the knife, a gauge plate and a support therefor, means for moving said gauge plate and support toward and away from the cutting plane of the knife including a worm and means for rotating it, a segmental nut movably and loosely mounted on the gauge plate support, a guide upon which the nut is slidably mounted, said nut having material tilting movement with respect thereto, said guide being spaced laterally from the axis of rotation of the worm and limiting means for preventing any material degree of rotation of the nut about said guide and also for preventing any appreciable degree of axial movement of the nut along the worm, means for urging the nut yieldingly into operative engagement with the worm, and resilient means associated with the guide for yieldingly urging the nut into engagement with said support.

Signed this 28th day of June, 1929.

WILLIAM J. CAMPBELL.