March 27, 1934. W. J. CAMPBELL 1,952,838

SLICING MACHINE

Filed Oct. 28, 1929 2 Sheets-Sheet 1

Fig. 1

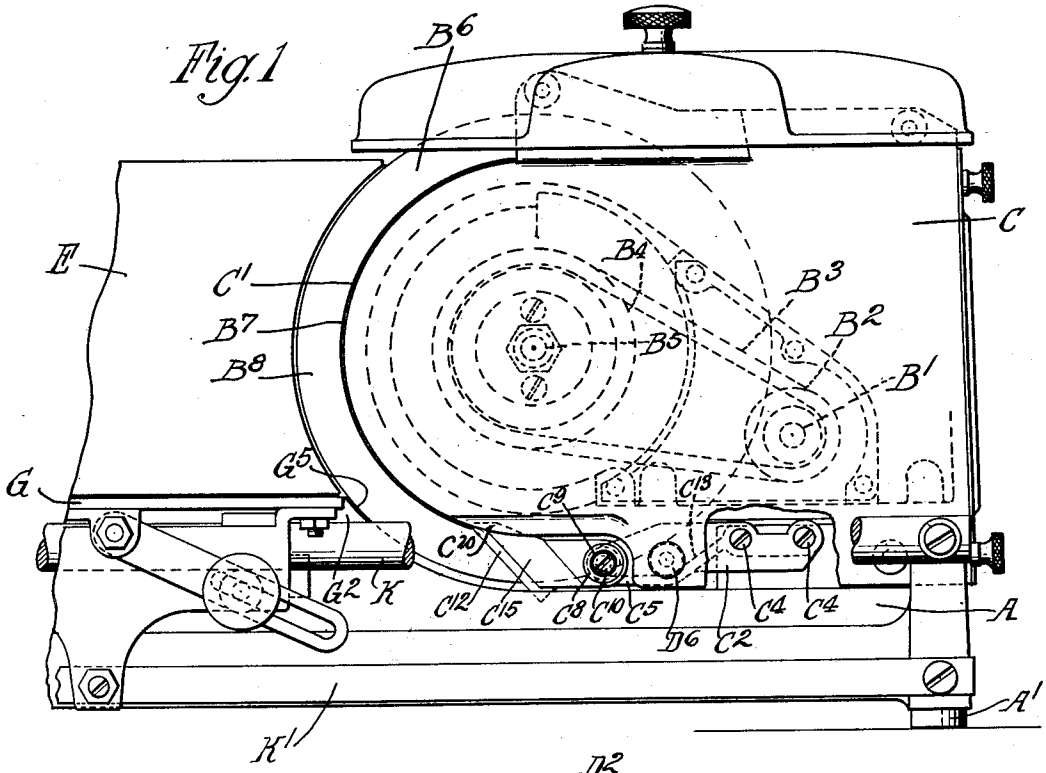


Fig. 2

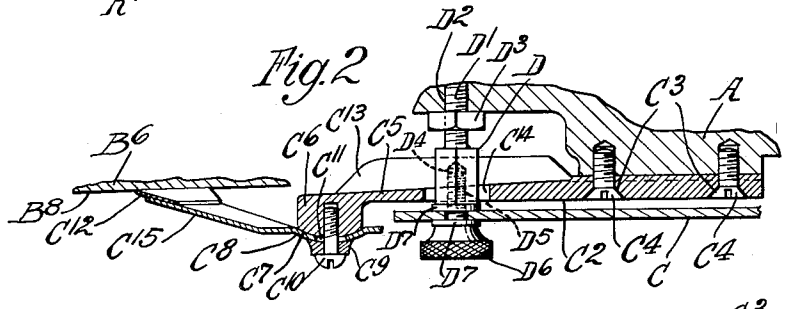


Fig. 3

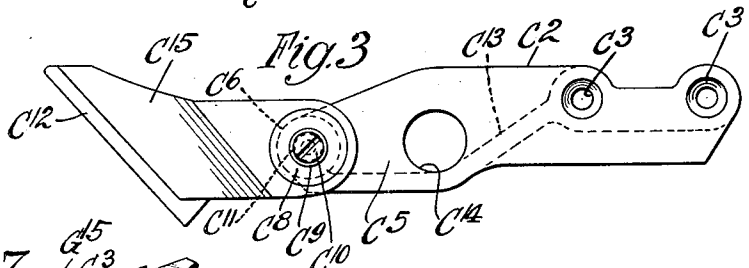
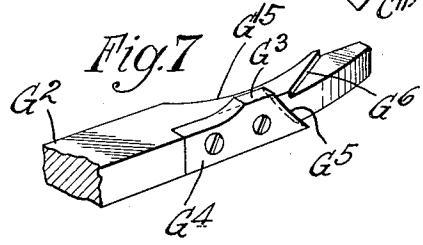


Fig. 7



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Fig. 4

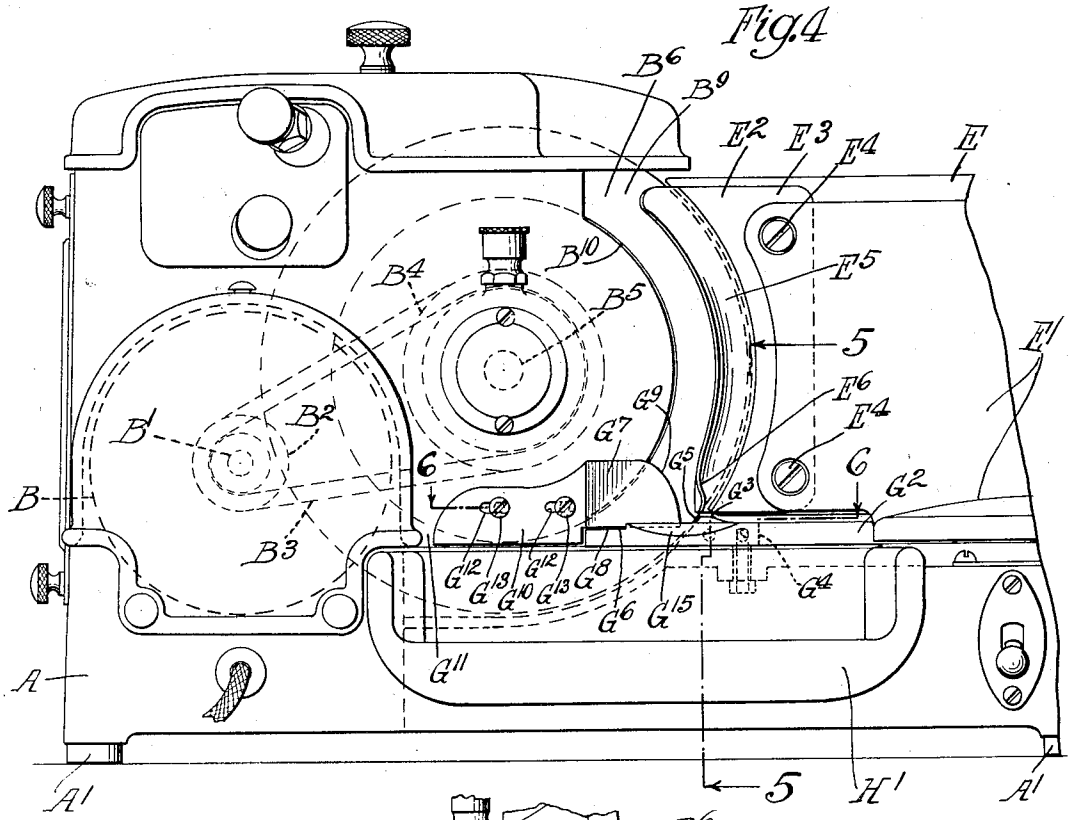


Fig. 5

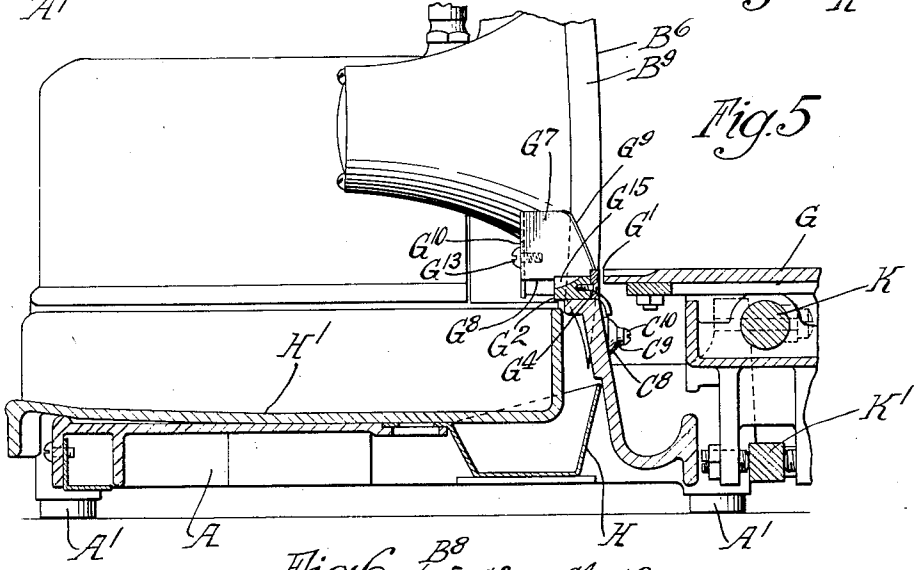
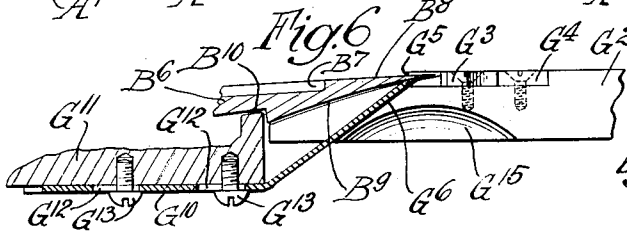


Fig. 6



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UNITED STATES PATENT OFFICE

1,952,838

SLICING MACHINE

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Application October 28, 1929, Serial No. 402,880

11 Claims. (Cl. 146—102)

My invention relates to a slicing machine and is particularly applicable to slicing machines of the type in which a circular knife is rotated by a power source, for example, an electric motor. One object of my invention is the provision of effective scraping means for scraping lard, grease, juices and particles from the face of the knife. Another object is the provision of scraping means effective for the rear of the knife. Another object is the provision of improved guard means for the rear of the knife. Another object is the provision of an improved slice support for supporting the work and the slice adjacent the actual cutting zone. 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 front elevation;

Figure 2 is a partial horizontal section;

Figure 3 is a side elevation of part of the structure shown in Figure 2;

Figure 4 is a rear elevation;

Figure 5 is a section on the line 5—5 of Figure 4;

Figure 6 is a section on the line 6—6 of Figure 4; and

Figure 7 is a perspective view of the slice or work supporting element.

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

Referring to the drawings, A generally indicates any suitable base, mounted for example upon the pads A^1.

Mounted upon said base is any suitable motor B with the motor shaft B^1 and the pulley B^2 driving the belt B^3 which passes about the pulley B^4, the knife shaft B^5 and thereby rotates the circular knife B^6.

Referring for example to Figures 1, 2 and 3 a guard plate C is positioned forwardly of the knife B^6 and is provided with an arcuate edge portion C^1 penetrating the front aperture B^7 of the knife. It will be understood that the knife axis lies in a horizontal plane, but is somewhat tilted, in order to bring the cutting arc of the knife into or forwardly of the plane of the guard plate C. Exposed exteriorly of the arcuate edge C^1 of the plate C is the forward and generally flat front face B^8 of the knife. Mounted upon the base or frame A is a scraper support generally indicated as C^2. One end thereof is apertured as at C^3 C^3 to receive the securing screws C^4 C^4, whereby the support is secured to the base or frame. Associated therewith is the lateral extension C^5 which terminates in a boss C^6 having the convex ball surface C^7. Opposed to this ball surface is the concave ball portion C^8 of the scraper element C^{15}. C^9 is a clamping washer and C^{10} a screw adapted to secure the washer against the scraper C^{15} and to clamp the assembly together. It will be seen, as in Figure 2, that the member C^8 is provided with a central aperture C^{11} of substantially greater diameter than the diameter of the screw C^{10}, whereby universal adjustment of the scraper C^{15} in relation to the boss C^6 is permitted, within the limits of the relative sizes of the screw and aperture. C^{12} indicates the scraper blade preferably more flexible, or of lighter gauge than the scraper member C^{15}. It is the element C^{12} which actually engages the face B^8 of the knife, and its great flexibility and its narrow width permit it to conform accurately and quickly to the vibrations of the knife and to the irregularities of the knife surface. C^{13} indicates a strengthening rib of the member C^2 and C^{14} an aperture.

The guard plate C is adjustably mounted on the base or frame A of the slicing machine in the following manner. Adjustable abutments D, with its screwthreaded stems D^1, are screwthreaded into the frame as at D^2. D^3 indicates any suitable lock nut, whereby the member D may be set at any desired adjustment. The member D is screwthreaded as at D^4 to receive the screw stem D^5, controlled by the knurled thumb handle D^6, whereby the guard plate C is held against the abutment D. D^7 D^7 indicate any suitable washers which may be of flexible or resilient material. Note that one of the abutments D is in line with and passes through the aperture C^{14} of the member C^2.

E indicates a gauge plate mounted upon the supporting structure E^1. It will be understood that any suitable means may be employed for moving the gauge plate and supporting structure toward and away from the cutting plane of the knife. Interposed between the gauge plate E and its support E^1 is the knife edge guard generally indicated as E^2 which includes the plane portion E^3, through which may pass the securing screws E^4. Projecting rearwardly from the cutting plane and inwardly toward the knife axis is the guard portion proper generally indicated as E^5 and provided with the bent or rolled back lower corner E^6.

G generally indicates a work supporting carriage traveling on the tracks K K^1 which guide it along a path past the cutting edge and across

the face of the guard plate C. Its inner edge G^1 is somewhat spaced away from the gauge plate, as shown in Figure 5 and in order to bridge the gap between it and the gauge plate, which is increased as the gauge plate is rearwardly withdrawn from the cutting plane, I provide a work and slice support G^2, which underlies the lower edge of the gauge plate. I find it desirable to form an elevation above the normal level of the support G^2, adjacent the actual cutting edge of the knife. I indicate this member, for example in Figure 7, as at G^3. The portion G^3 is in that figure indicated as forming part of a separate block or piece G^4, the forward edge as at G^5, conforming to the cutting arc of the knife. It will be understood, however, that I do not wish to be limited to any specific form or means of assembly of such device. To the rear of the hump or projection G^3 the member G^2 is milled down or recessed or concaved as at G^{15}, this milled-out portion providing a downwardly and rearwardly more or less rounded surface or clearance zone for the lower edges of the slices as they are severed from the work by the knife and discharged, over the member G^2, to the rear of the knife. The member G^2 is further recessed, as at G^6 in order to receive the lower edge G^8 of the scraper G^7 which conforms generally to the rear face of the knife. It will be seen, as in Figure 4 that the forward or actual scraping edge G^9 of the member G^7 contacts the top of the support G^2 at a point within the periphery of the knife. In the form of knife herein shown the exposed rear face is concave, the edge G^9 being more or less arcuately formed in order to conform to it. This concavity of the knife is shown in Figure 6 as at B^9. The member G^7 is indicated as adjustable, it being provided with a portion G^{10} opposed to the upward extension G^{11} of the frame A. The portion G^{10} is provided with slots or apertures G^{12} to receive the screws G^{13}. The apertures are of greater diameter than the stems of the screws, to permit adjustment. The upward projection G^{11} from the frame is indicated as extending into the rear cavity B^{10} of the knife, as shown in Figure 6.

C^{20} indicates an outward extension or offset at the bottom of the plate C which extends outwardly above or overlies the scraper C^{15}.

Underlying the knife and the two scrapers is any suitable drip pan, shown for example in Figure 5, and indicated as H. This pan is removable and is shown as masked by the slice receiving element H^1. In the form herein shown, the slice receiving element H^1 may be removed to give access to the member H, which may then be lifted upwardly out of the base of the slicing machine. It will be understood that the frame is cut away above it to permit material scraped off by the scraping edges G^9 or C^{12} to drop downwardly therein.

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 drawings to be taken as in a broad sense illustrative and diagrammatic rather than as limiting me to my specific showing.

The use and operation of my invention are as follows:

One of the major problems of a slicing machine of the type herein shown, is to clear from the cutting edge the fragments of material, grease, lard, juices and the like, which tend to gather on the knife as it is rotated rapidly through the work being sliced. For example, in slicing ham or bacon, the frictional heat tends to cause larding or trying out of the grease. If this lard is permitted to adhere to the knife it will be carried with the knife into the interior housing of the slicing machine and may be there discharged centrifugally. The result, apart from damage to the transmission, is the gathering of material which rapidly causes an unsanitary condition unless removed. This creates a constant and difficult cleaning problem, if the material is permitted to pass into the interior of the housing.

In order to clear the material from the front of the knife I provide the scraper illustrated in detail in Figures 2 and 3. The universal or ball and socket adjustment therein shown, including the boss C^6, permits the adjustment of the scraper edge C^{12} toward and away from the knife and also permits it to be adjusted up and down in the general plane of the knife. I find it advantageous to support this scraper independently of the guard plate C for several reasons. In the first place, if it were placed on the guard plate C, it would be likely to be damaged when the guard plate is removed, or would add to the danger of handling the guard plate. In the second place, every time the guard plate were removed the adjustment of the scraper would be likely to be disturbed. I therefore mount the scraper upon the scraper support C^2 which, in turn, may be directly screwed to the base or frame of the slicing machine.

I have apertured the member C^2, as at C^{14}, in such fashion that it does not interfere with the supporting means for the plate C. Whatever lard or refuse is scraped from the front portion B^8 of the knife drops into the pan H. The guard plate C itself protects a great body of the knife from contact with the work and, since it seats in the front recess of the knife, there is very little tendency of the material to travel inwardly within the periphery of the arcuate edge C^1 of the plate.

The offset portion C^{10} serves as a species of overhang or protection for the knife or scraper C^{15}.

In clearing material from the rear of the knife I employ the scraper generally indicated as G^7, the arcuate edge G^9 of which engages the hollow round rear face B^9 of the knife. It also discharges the material which it scrapes into the receiver H. Its lower edge enters the recess G^6 of the member G^2 and the member G^2 is itself so closely approached to the knife face, as shown in Figure 6, as to serve as an additional or supplemental scraping means.

The projection G^3, by raising up the edge of the work, and by supporting the slice at the point of severance, reduces the tendency of the work to be dragged with the knife edge and face. This reduces the heat generated as a result of frictional contact, and therefore reduces the tendency for fat meats, like ham or bacon, to deposit lard or grease on the kife. The milled-away portion G^{15} makes the escape of the slice over the edge of the member G^2 easier and quicker.

The rear guard E^5, which overlies the cutting edge from the rear, is outwardly bent as at E^6, to provide ample clearance for the slices as they pass rearwardly to the receiving element H^1.

I claim:

1. In a slicing machine having a rotary knife and means for rotating it, a work carriage and means for guiding said carriage across the face and past the cutting arc of the knife, a guard plate positioned forwardly of said knife lying in a plane generally parallel with the path of movement of said carriage, and a scraper opposed to the edge portion of the knife, said scraper being mounted independently of said guard plate, the guard plate being provided with an offset portion extending outwardly above said scraper.

2. In a slicing machine having a rotary knife and means for rotating it, a work carriage and means for guiding said carriage across the face and past the cutting arc of the knife, a gauge plate lying in a plane generally parallel with the path of movement of the carriage, a slice support adjacent the edge of the carriage, the top of said slice support lying in a plane generally parallel with the top of the carriage and extending both forwardly and rearwardly of the cutting plane, an upward projection from said support adjacent the cutting edge of the knife and a scraper opposed to the peripheral portion of the rear face of said knife the bottom of said scraper extending to a level lower than, and being masked by said upward projection.

3. In a slicing machine having a rotary knife and means for rotating it, a work carriage, a gauge plate, a slice support adjacent the edge of the carriage, said slice support extending within the periphery of the knife, and a scraper opposed to the peripheral portion of the rear face of said knife, said scraper overlying said slice support.

4. In a slicing machine having a rotary knife and means for rotating it, a work carriage, a gauge plate, a slice support adjacent the edge of the carriage, said slice support extending within the periphery of the knife, and a scraper opposed to the peripheral portion of the rear face of said knife, said scraper overlying said slice support, the slice support being recessed to receive it.

5. In a slicing machine having a rotary knife and means for rotating it, a work carriage, a gauge plate, a slice support adjacent the edge of the carriage, said slice support extending within the periphery of the knife, and a scraper opposed to the peripheral portion of the rear face of said knife, said scraper overlying said slice support, a guard, associated with the gauge plate, extending outwardly and rearwardly from the edge of the gauge plate and being adapted to overlie the edge of the knife at all normal positions of the gauge plate.

6. In a slicing machine having a rotary knife and means for rotating it, a work carriage, a gauge plate, a slice support adjacent the edge of the carriage, said slice support extending within the periphery of the knife, and a scraper opposed to the peripheral portion of the rear face of said knife, said scraper overlying said slice support, a guard, associated with the gauge plate, extending outwardly and rearwardly from the edge of the gauge plate and being adapted to overlie the edge of the knife at all normal positions of the gauge plate, the portion of said guard adjacent said scraper being outwardly flared away from said scraper.

7. In a slicing machine having a rotary knife and means for rotating it, a work carriage, a gauge plate, a scraper opposed to the peripheral portion of the rear face of said knife, a guard, associated with the gauge plate, extending outwardly and rearwardly from the edge of the gauge plate, and being adapted to overlie the edge of the knife at all normal positions of the gauge plate, the portion of said guard adjacent said scraper being outwardly flared away from said scraper.

8. In a slicing machine having a rotary knife and means for rotating it, a work carriage, a slice support adjacent the edge of the carriage, said slice support extending within the periphery of the knife, and a scraper opposed to the peripheral portion of the rear face of said knife, said slice support being recessed to receive an edge of said scraper.

9. The structure of claim 8 characterized in that the intersection of the scraping edge of said scraper with said slice support is within the periphery of the knife.

10. In a slicing machine having a rotary knife and means for rotating it, a work carriage, a gauge plate, a guard, associated with the gauge plate, extending outwardly and rearwardly from the edge of the gauge plate, and being adapted to overlie the edge of the knife at all normal positions of the gauge plate, the lower portion of said guard, adjacent the lower edge of the gauge plate, being outwardly flared in excess of the flare of the rest of said guard.

11. In a slicing machine having a rotary knife and means for rotating it, a work carriage, and a slice support adjacent the edge of the carriage, extending within the periphery of the knife, said slice support having a generally horizontal upper surface and being formed, near its opposition to the cutting edge of the knife, with a hollow extending downwardly and rearwardly away from the cutting plane and below the normal plane of the top of said support, and a scraper opposed to the rear face of said knife, said scraper overlying the top of said slice support and engaging said slice support adjacent said hollow.

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