Aug. 12, 1930. W. J. CAMPBELL 1,772,706

KNIFE FOR SLICING MACHINES

Filed July 12, 1929 2 Sheets-Sheet 1

Fig. 1

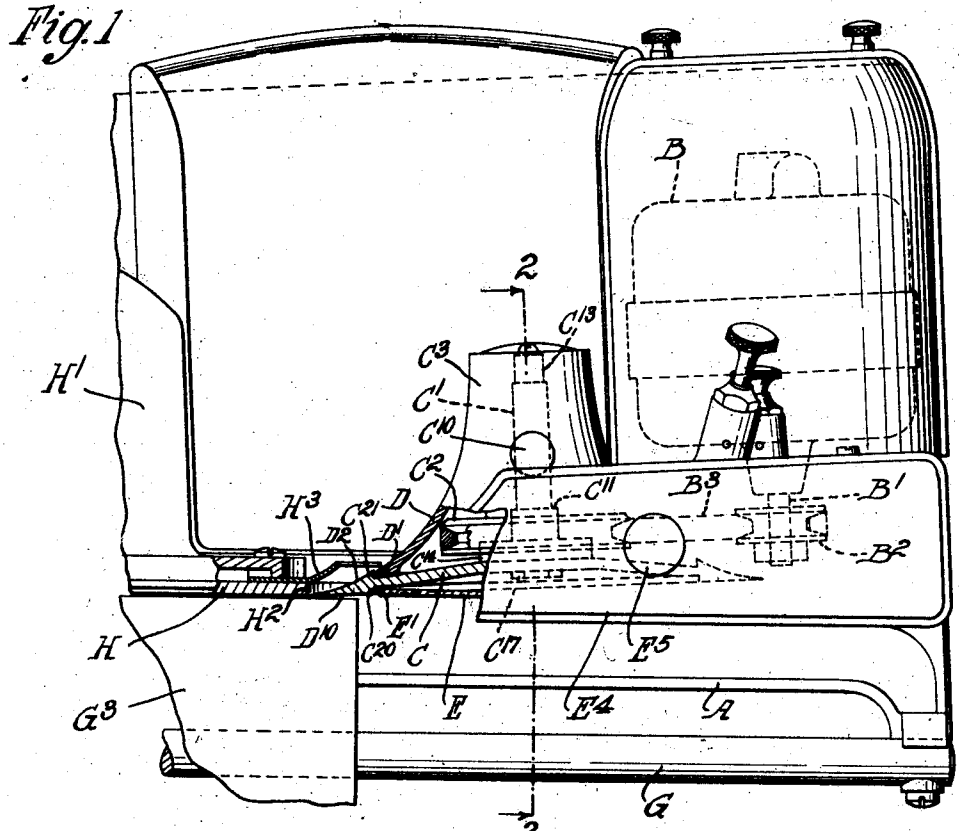
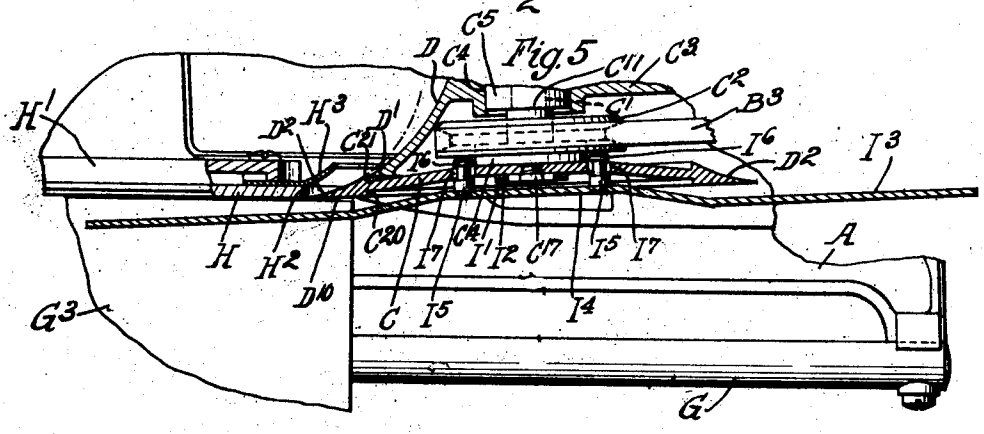


Fig. 5



Inventor
William J. Campbell
by Parker & Carter
Attorneys.

Aug. 12, 1930. W. J. CAMPBELL 1,772,706

KNIFE FOR SLICING MACHINES

Filed July 12, 1929 2 Sheets-Sheet 2

Fig.2

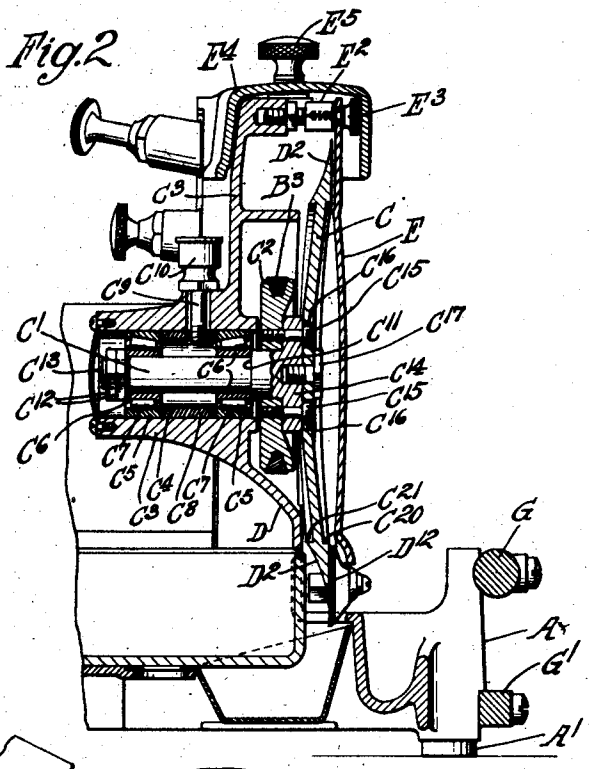


Fig.4

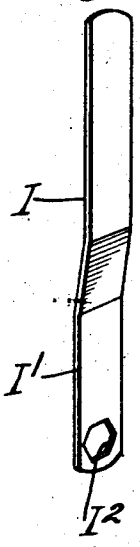
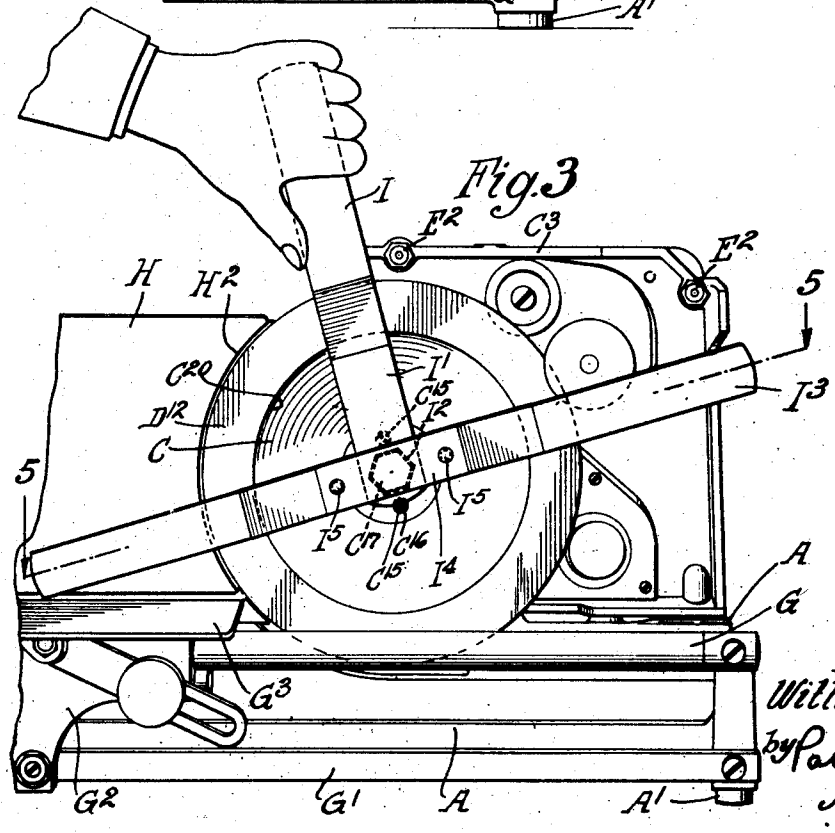


Fig.3



Inventor
William J. Campbell
by Parker & Carter
Attorneys.

Patented Aug. 12, 1930 1,772,706

UNITED STATES PATENT OFFICE

WILLIAM J. CAMPBELL, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO AMERICAN SLICING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW YORK

KNIFE FOR SLICING MACHINES

Application filed July 12, 1929. Serial No. 377,843.

My invention relates to a slicing machine of the type in which a rotary knife is employed in association with a work supporting carriage which is guided across the face of and past the cutting edge of the knife. One object of my invention is to provide an improved form of knife and particularly a form of knife which is adapted to deliver the slice free from and out of contact with the adjacent portions of the guarding and housing structure. 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 plan view with parts in section;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a perspective view with parts removed;

Figure 4 is a perspective view of a removing tool;

Figure 5 is a section on the line 5—5 of Figure 3;

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

Referring to the drawings, A generally indicates the base or frame of the device which may be supported for example upon the supporting or ground engaging studs A^1.

B generally indicates a motor with the motor shaft B^1 and the drive pulley B^2 about which passes the belt B^3.

C indicates a knife mounted upon the knife shaft C^1. C^2 indicates a pulley associated with knife and knife shaft adapted to be driven from the motor through the belt B^3. C^3 generally indicates a guard or housing element which is formed with the internal cylindrical aperture C^4. Within the cylindrical cavity so formed are positioned the outer races C^5 C^5 with the corresponding inner races C^6 C^6 associated with the knife shaft C^1. C^7 are any suitable anti-frictional members, herein shown as tapered rollers. C^8 is a spacing sleeve which may be held in position as by engagement with the hollow pin C^9 which forms the double function of positioning the above described bearing structure and of conducting a lubricant thereto. C^{10} is any suitable oiling cup associated with the upper end thereof. The bearing assembly so described may be drawn up against the ledge C^{11} as by the nuts C^{12} on the reduced screw threaded portion C^{13} of the shaft C^1. The pulley C^2 is held in position against the expanded end or head C^{14} of the knife shaft, as by the screws C^{15} the heads of which penetrate apertures C^{16} in the knife and prevent rotation of the knife in relation to the shaft. C^{17} is any suitable screw whereby the knife may be held against axial movement away from the end of the shaft. The knife is recessed at the front as at C^{20} and at the rear as at C^{21}, the recesses being of like radius.

Associated with the portion C^3 of the frame is a guard or skirt D one portion of which penetrates as at D^1 the rear recess C^{21} of the knife. It will be seen, as in Figure 1, that this portion D^1 is generally arcuate in cross-section. The rear face of the knife between the depression C^{21} and the cutting edge, is arcuately formed as at D^2, the arc or curve being preferably of such contour as to tend to throw or deliver the slices out of contact with the guard portion D. This result may be obtained by having D^2 arcuate in cross-section but of an arc of lesser radius than the arc of the portion D. However, I do not wish to be limited to any particular arc or contour.

The front face of the knife is protected as by the guard plate E one edge of which enters as at E^1 the forward recess C^{20} of the knife. As is illustrated in Figures 1 and 5 the axis of the knife is tilted to bring the cutting edge of the knife forwardly into the plane of the guard plate E. The guard plate is removable, as shown in Figure 2, and may for example be mounted against adjusting abutments E^2 against which it is held for example by securing screws E^3. The removable housing cover E^4 extends over the hub portion of knife and guard plate, being held in position for example by the headed securing screw E^5.

G, G^1 indicate tracks, mounted upon the

base or frame, upon which is slidably mounted any suitable work support G^2 the details of which do not of themselves form part of the present invention. The support includes an angularly adjustable work engaging table G^3.

H indicates a gauge plate which is mounted upon any suitable supporting structure H^1, for movement toward and away from the cutting plane, whereby the thickness of the slices may be regulated. Associated with the arcuate edge H^2 of the gauge plate is the guard H^3 which protects the rear of the knife. Preferably the guard H^3 substantially overlaps the rear face of the knife and may be arcuate in cross-section. As shown in Figures 1 and 5, although it does overlap the rear face of the knife it is varied more or less outwardly therefrom to increase the clearance between the rear face of the knife and the guard progressively inwardly from the cutting edge toward the center of the knife.

I form the knife in order to permit its easy removal which may be effected for example with the tools herein shown. The knife being forwardly cupped as shown in Figures 1, 2 and 5 I provide a tool I, as shown in Figure 4, with the offset end portion I^1 apertured as at I^2 to receive the head of the screw C^{17}. The offset portion I^1 permits easy access of the tool to the screw C^{17}. In order to grasp the knife and prevent its rotation when the tool I is being rotated I provide an additional tool generally indicated as I^3 and a central offset portion generally indicated as I^4. Mounted on this central portion are the knife engaging and penetrating studs I^5 I^5, headed as at I^6, which penetrate apertures I^7 in the face of the knife.

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:

I illustrate a form of knife which is not only particularly efficient in use but which is easy to remove. The knife is recessed at front and rear, to receive the adjacent guard members, including the rear bell shaped member D and the forward guard plate E. Thus the access of food or grease and the like to the interior of the device is substantially completely prevented.

I find it desirable to so form the rear face of the knife that the slices are thrown or delivered clear of the supporting structure. As shown in Figure 1, the curved or arcuate surface D^2 of the knife C is formed to direct the slices out of contact with the guard portion D of the frame or housing. The forward face of the knife as shown for example at D^{10} may be flat or relatively flat, and may be opposed by any suitable scraping means, for example the scraper D^{12}, which further hinders the ingress of grease, bits of meat and the like into the interior of the housing.

When it is desired to remove the knife from the knife shaft the cover E^4 and the guard plate E are removed, exposing the face of the knife. The operator then takes the tool I and places it in the position in which it is shown in Figure 3, the aperture I^2 receiving the head of the screw C^{17}. In order to make easy the application of force to rotate and withdraw the screw C^{17} the operator may employ the tool I^3, the members I^5 of which penetrate the apertures I^7. If the operator holds the tool I^3 against rotation, and rotates the tool I, the knife and knife shaft will be held stationary, while the screw C^{17} is being unscrewed. The heads of the screws C^{15} prevent relative rotation of the knife and knife shaft, but do not interfere with the axial withdrawal of the knife when the screw C^{17} has been removed. When the screw is finally removed the knife may be lifted by means of the tool I^3, the heads I^6 keeping it from slipping off. The bearing and lubricating means for the knife are shown in Figure 2, the roller bearings for each end of the knife shaft being mounted directly within the aperture C^4 in the housing or frame and being spaced or separated by the sleeve C^8. The position of the sleeve is controlled by the hollow lubricating pin C^9.

Note that the recesses C^{20} and C^{21} are of like radius, as shown in Figures 1 and 3. I find it desirable to form them of like radius because by so doing, by advancing the recess C^{21} to the same radius as the recess C^{20}, I provide room for a pulley of maximum size. In a typical exemplification of my device the motor runs at 1750 R. P. M. and there must be a satisfactory reduction in speed between the motor and the knife. In order to reduce tendency of slippage the pulley should have a diameter in excess, for example, of three inches. It is further desirable to sharpen the bevel D^2 of the knife. The surface D^2 is arcuate in cross-section and is made of smaller radius than the surface D of the guard. This being the case it is preferable to make the bevel D^2 short in radial width, to avoid thickening of the knife.

I claim:

1. In a slicing machine, a rotary knife and means for rotating it, a guard plate positioned on the forward side of said knife and a guard member positioned to the rear of said knife, both faces of said knife being recessed to receive edges of said guard plate and member respectively, the recesses in the opposite

faces of the knife being concentric and of like radius.

2. In a slicing machine, a rotary knife and means for rotating it, a guard plate positioned on the forward side of said knife and a guard member positioned to the rear of said knife, both faces of said knife being recessed to receive edges of said guard plate and member respectively, the recesses in the opposite faces of the knife being concentric and of like radius, the forward face of the knife, exterior to said recess being substantially flat, the rear face being continuously curved in cross-section.

3. The structure of claim 2 in combination with a scraper opposed to the said flat forward face of the knife.

Signed at Indianapolis, county of Marion and State of Indiana, this 21st day of June, 1929.

WILLIAM J. CAMPBELL.