

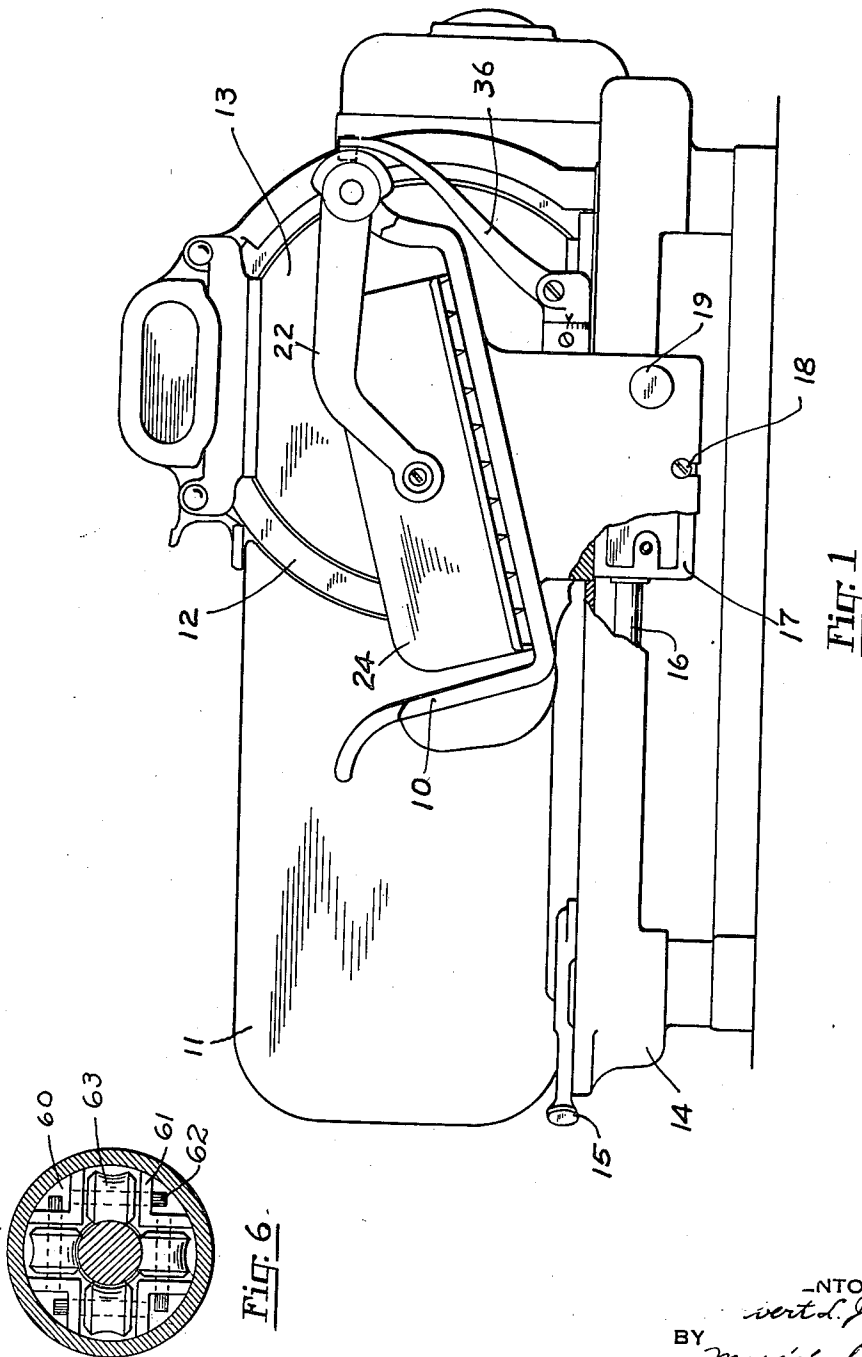
March 2, 1937.

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FOOD HANDLING APPARATUS

2,072,677

Filed Feb. 23, 1934

2 Sheets-Sheet 1



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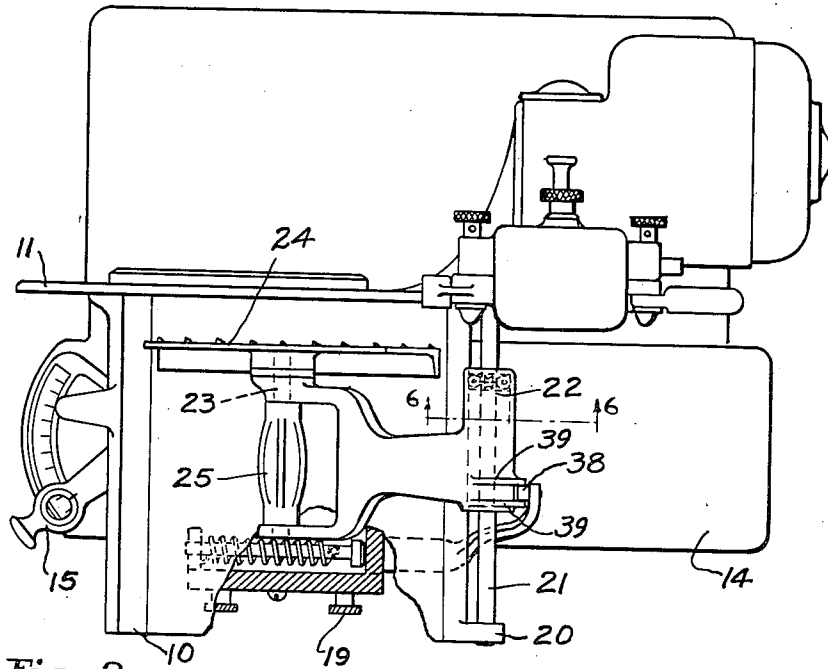


Fig. 2

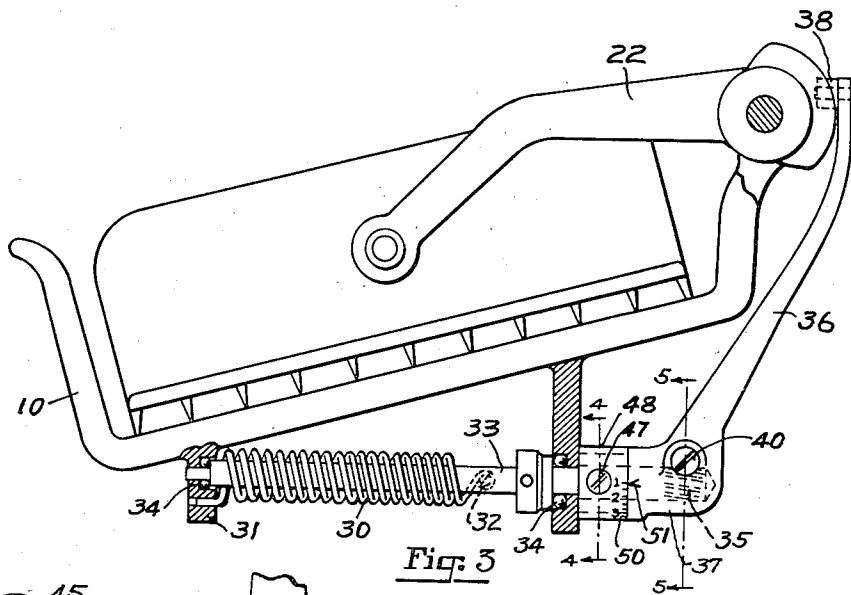


Fig. 3

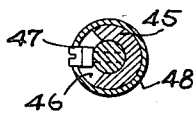


Fig. 4

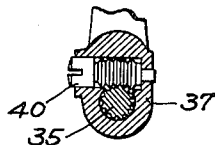


Fig. 5

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2,072,677

FOOD HANDLING APPARATUS

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Application February 23, 1934, Serial No. 712,581

8 Claims. (Cl. 146—102)

This invention relates to food handling apparatus and more particularly to slicing machines.

It is the principal object of the present invention to provide a slicing machine having simple and effective means tending to urge the work material toward the cutting knife.

It is a further object to provide a slicing machine in which the force with which the work is urged toward the cutting knife may be varied and predetermined as desired.

It is a further object to provide a slicing machine having means tending to urge the work material toward the knife, which means is located in a position protected against the access of foreign matter so that a highly sanitary condition is maintained.

In the drawings,—

Fig. 1 is an elevational view of a slicing machine constructed in accordance with the present invention;

Fig. 2 is a plan view of the same, certain parts being broken away to more clearly show the construction;

Fig. 3 is an elevational view, partially in section, of the work supporting carriage and associated parts;

Figs. 4 and 5 are sectional views on the lines 4—4 and 5—5 of Fig. 3 respectively; and

Fig. 6 is a vertical sectional view on the line 6—6 of Fig. 2 showing the detail construction of an anti-friction bearing member.

Referring to the drawings which illustrate a preferred embodiment of the invention, there is shown in Fig. 1 a work supporting carriage 10. For purposes of illustration, the invention will be illustrated and described with reference to the slicing machine construction disclosed in the application of David A. Meeker and John C. Slager, Serial No. 673,444, filed May 29, 1933 and assigned to the same assignee as this application, although the invention is equally applicable to other types of slicing machines. The machine comprises a gage plate 11, a rotary cutting knife 12, a guard plate 13, a main covered frame member 14 serving as a supporting base, and a gage plate adjusting member 15. Slide rods 16 are provided which are covered by the main frame member 14, and an overhanging mounting 17 is slidably mounted upon the rods. The mounting 17 provides for the ready positioning and removal of the work supporting carriage through the cooperation of the pin and slot construction 18, and the attaching bolts 19. The carriage can be readily mounted upon the supporting member by means of the pin and slot construction and the

bolts 19 then inserted and tightened so as to securely hold the work supporting carriage 10 for reciprocal movement past the cutting knife 12.

The carriage 10 is provided with spaced extending lugs 20 adjacent one end thereof within which is mounted a shaft 21. An arm 22 is rotatably and slidably journaled upon shaft 21 and provides a support for the shaft 23 to which is attached pusher plate 24. Handle 25 fastened to shaft 23 provides for easily manipulating the pusher plate 10 for swinging movement into or out of the carriage or for longitudinal movement toward and away from the rotary knife.

There is preferably provided an antifriction bearing means for supporting the pusher plate upon shaft 21. This may comprise a pair of bearing members mounted within and spaced at substantially the ends of arm 22, only one being shown for purposes of simplicity. The construction as shown in Fig. 6 comprises a disk-like plate 60 upon which are mounted a series of bracket members 61. These brackets serve as supports for spindles 62 upon which rollers 63 are mounted. The face of each roller is grooved to correspond substantially to the periphery of the shaft 21 so that the bearings provide the desired guiding and supporting means for movably mounting the pusher plate upon shaft 21. With the construction described binding of the pusher plate with respect to the shaft as a result of an unbalanced thrust is substantially prevented and the pusher plate is free to swing into and out of the carriage or to advance toward the rotary knife without objectionable friction upon its support.

Means are provided for urging the pusher plate toward the rotary knife. This means comprises a mechanism which is carried by and so is removable with the work supporting carriage when the latter is removed from its mounting 17. The mechanism is located in a protected position beneath the work supporting carriage and includes a resilient torsional spring member 30, one end of which is fastened into a fixed member 31 integral with and depending from the work supporting carriage, the other end being fastened to a shaft 33. The shaft 33 is rotatably supported by means of bearings 34 mounted within the fixed members 31 and extends beyond said members and terminates in a worm gear portion 35. An operating arm 36 having a hub 37 is bored to receive the end of shaft 33 and is positioned thereover, extending upward and terminating adjacent the pusher plate arm 22. The operating arm 36 is provided with a roller 38. The pusher plate arm 22 is provided with integral

spaced arcuate surfaces 39 which are adapted to engage opposite sides of roller 38 in an anti-friction manner. The surfaces 39 are of sufficient angular extent so that roller 38 will have engagement therewith throughout the extent of swinging movement of the pusher plate. This arm therefore is adapted upon rotation of shaft 33 to cause a movement of said pusher plate toward said rotary knife.

10 An adjusting worm 40 is rotatably mounted in hub 37 and engages with the worm gear 35. Upon rotation of the worm 40 the arm 36 is caused to change its angular position upon the shaft 33, and consequently the shaft is rotated relatively to the arm and the spring 30 is placed under more or less tension. Preferably the construction of the parts 35 and 40 is such that they remain in a predetermined set position through frictional engagement with each other.

20 The hub 37 is formed with a reduced portion 45 which extends axially of shaft 33. The portion 45 is further formed with a cut-away sector 46. A pin 47 fastened to shaft 33 extends radially therefrom and lies in the open sector 46. This permits free movement of the hub relative to the shaft, but contact of the pin with the end walls of the sector serves to confine the degree of adjustment to a predetermined range.

30 A sleeve 48 is positioned over the reduced portion 45 and is held in fixed position relative to shaft 33 by pin 47. This sleeve preferably is of the same outer diameter as hub portion 37 and serves to cover over the parts and to prevent access of foreign matter thereto. The sleeve 48 and the hub carry cooperating indexing means 50 and 51 respectively, which serve to indicate the relative position of the shaft and operating arm and consequently the degrees of force applied to the pusher plate.

40 The operation of the device will be apparent from the above. The carriage is adapted to be reciprocated past the rotary knife by manual operation. The work material which is positioned in the carriage is engaged by the pusher plate which, through the action of resilient member 30, shaft 33, operating arm 36 and roller 38 bearing against the surface 39 of the pusher plate assembly, tends to urge the work toward the rotary knife, advancing it after each slice is cut off. The degree of force applied to the pusher plate may be varied by turning worm wheel 40 to change the relative position of arm 36 and shaft 33, placing the resilient member 30 under more or less tension. The indexing means 50, 51 will at all times show the degree of tension and give an indication of the force applied to the pusher plate. This force may be varied over a considerable range and at all times is readily adjustable in accordance with the wishes of the operator and with the characteristics of the work material. The pusher plate is urged toward the rotary knife throughout its range of movement and no objectionable binding of the pusher plate upon its supporting means occurs in any position thereof.

70 While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

75 1. A slicing machine of the character described

comprising a rotary knife, a work supporting carriage, means for mounting said carriage for reciprocating movement with respect to said knife, a pusher plate, means for mounting said pusher plate for longitudinal movement with respect to said carriage up to a position in close juxtaposition to the plane of said knife and providing for swinging movement of the pusher plate into and out of the carriage over substantially the entire longitudinal movement thereof, a shaft 10 positioned beneath said carriage, a resilient torsional member having one end attached to said shaft and the opposite end fixed in said carriage, and connections continuously effective between said shaft and said pusher plate and passing 15 around said carriage for urging said pusher plate toward said rotary knife.

2. A slicing machine of the character described comprising a rotary knife, a work supporting carriage, means for mounting said carriage for reciprocating movement with respect to said knife, a pusher plate, means for mounting said pusher plate for longitudinal movement with respect to said carriage up to a position in close juxtaposition to the plane of said knife and providing for swinging movement of the pusher plate into and out of the carriage over substantially the entire longitudinal movement thereof, a shaft positioned beneath said carriage, a resilient member mounted on said shaft having one end attached thereto and the other end fastened to said carriage, continuously effective means for connecting said shaft with said pusher plate to urge said pusher plate toward said rotary knife, and means for varying the position of said connecting means with respect to said shaft for adjusting the force with which said pusher plate is urged toward said rotary knife.

3. A slicing machine of the character described comprising a rotary knife, a work supporting carriage, means for mounting said carriage for reciprocating movement with respect to said knife, a pusher plate, means for mounting said pusher plate for swinging and for longitudinal movement with respect to said carriage, a shaft positioned beneath said carriage, a resilient member tending to cause rotation of said shaft, connections between said shaft and said pusher plate including an operating arm for urging said pusher plate toward said rotary knife and means for adjusting the angular position of said arm with respect to said shaft to thereby vary the degree of force applied to said pusher plate.

4. A slicing machine of the character described comprising a rotary knife, a work supporting carriage, means for mounting said carriage for reciprocating movement with respect to said knife, a pusher plate, means for mounting said pusher plate for swinging and for longitudinal movement with respect to said carriage, a rotatable shaft positioned beneath said carriage, resilient means tending to cause rotation of said shaft, connections between said shaft and said pusher plate including an operating arm supported on and adapted to be rotated with said shaft for urging said pusher plate toward said rotary knife, means for adjusting the angular position of and maintaining said arm in a predetermined relationship with respect to said shaft, and means fixed respectively to said shaft and to said arm and cooperating with each other to indicate the adjusted position of said parts.

5. A slicing machine of the character described comprising a rotary knife, a work supporting carriage, means for mounting said carriage for

reciprocating movement with respect to said knife, a pusher plate, means for mounting said pusher plate for swinging and for longitudinal movement with respect to said carriage, a shaft
 5 positioned beneath said carriage, resilient means tending to cause rotation of said shaft, connections between said shaft and said pusher plate including an operating arm for urging said pusher
 10 plate toward said knife in response to rotation of said shaft, means for varying the angular position of said arm with respect to said shaft to thereby vary the degree of force applied to said pusher
 15 plate, and means for limiting the range of adjustment of such angular position.

6. A slicing machine of the character described comprising a rotary knife, a work supporting carriage, means for mounting said carriage for reciprocating movement with respect to said knife, a pusher plate, means for mounting said pusher
 20 plate for swinging movement and for longitudinal movement with respect to said carriage, a shaft positioned beneath said carriage having a worm gear portion, means tending to cause rotation of said shaft, an operating arm mounted on said
 25 shaft having engagement with said pusher plate, and a worm rotatably mounted in said arm and engaging with said worm gear to provide for adjusting said shaft and said operating arm in predetermined angular position to thereby vary the
 30 degree of force applied to said pusher plate.

7. A slicing machine of the character described

comprising a rotary knife, a work supporting carriage, means for mounting said carriage for reciprocating movement with respect to said knife, a pusher plate, means for mounting said pusher
 5 plate for swinging movement and for longitudinal movement with respect to said carriage, a shaft positioned beneath said carriage, means tending to cause rotation of said shaft, an operating arm in operative engagement with said pusher plate
 10 and having a hub portion mounted on said shaft, said hub having a cut-away sector, and means associated with said shaft and adapted to abut against the end walls of said sector to confine the range of adjustment of said operating arm on
 15 said shaft to predetermined limits.

8. A slicing machine of the character described comprising a rotary knife, a work supporting carriage, means for mounting said carriage for reciprocating movement with respect to said knife, a
 20 pusher plate, means for mounting said pusher plate for swinging movement and for longitudinal movement with respect to said carriage, a shaft positioned beneath said carriage, means tending to cause rotation of said shaft, an operating arm
 25 in operative engagement with said pusher plate and having a hub portion mounted on said shaft, said hub having an extended portion of reduced diameter, a sleeve overlying said extended hub portion, and means for holding said sleeve in fixed
 30 position relative to said shaft.

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