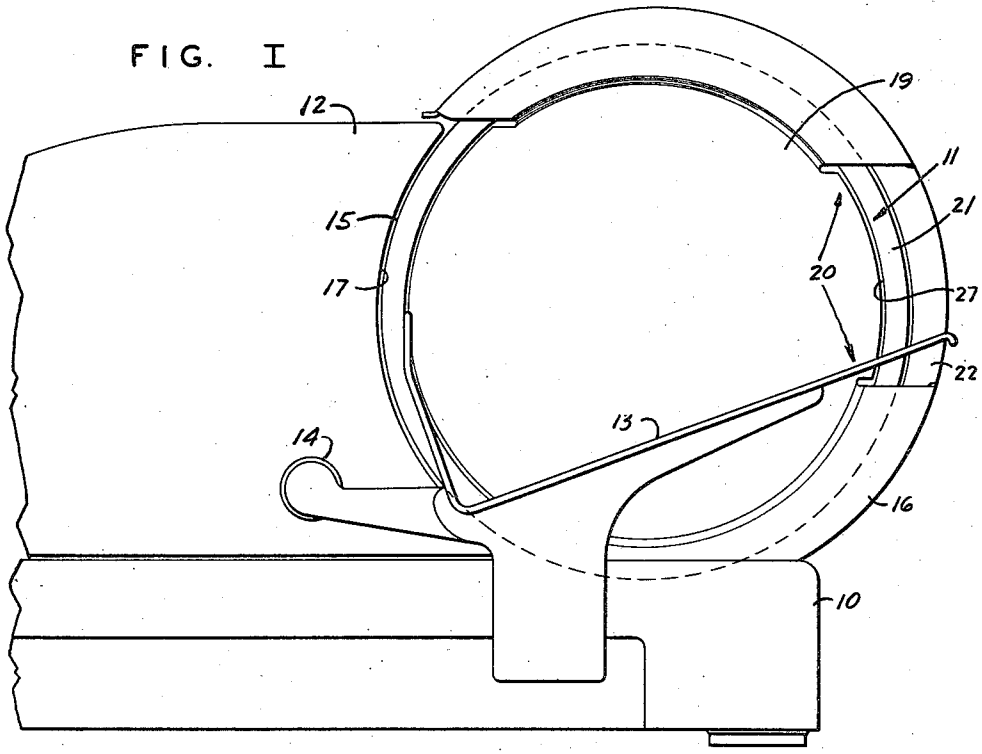
June 18, 1946. G. R. WOOD 2,402,520

FOOD HANDLING APPARATUS

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FIG. I



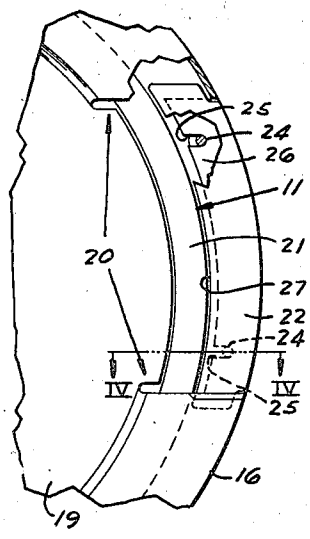


FIG. II

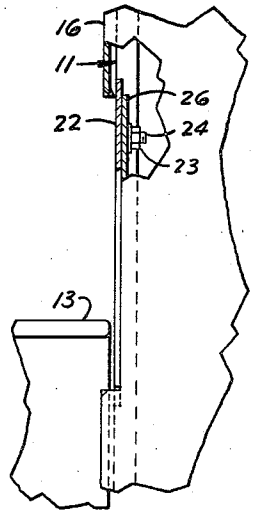


FIG. III

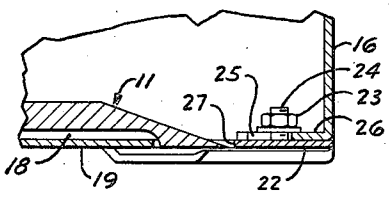


FIG. IV

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FOOD HANDLING APPARATUS

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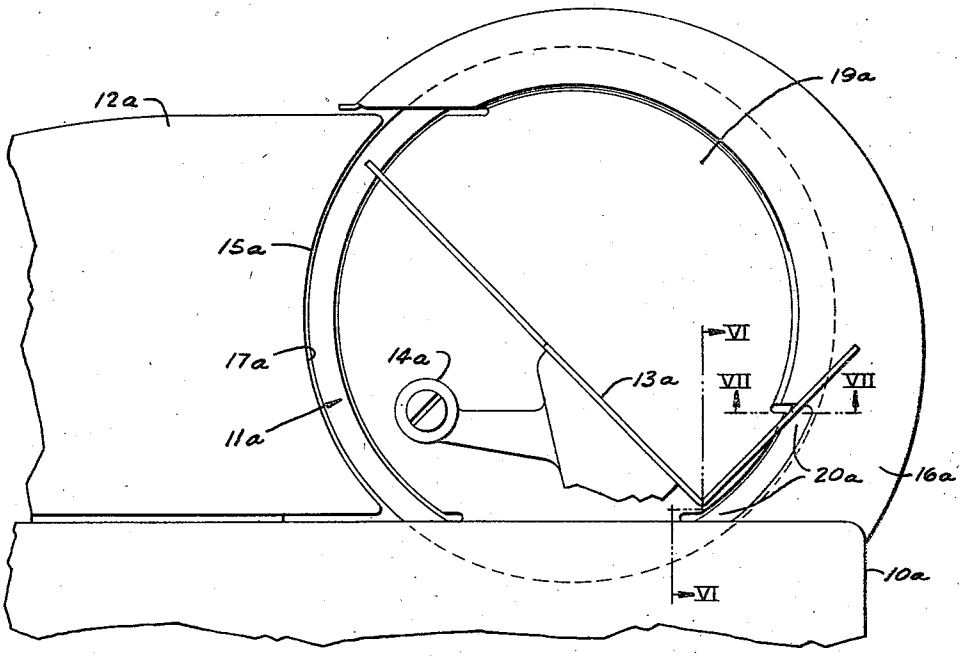


FIG. V

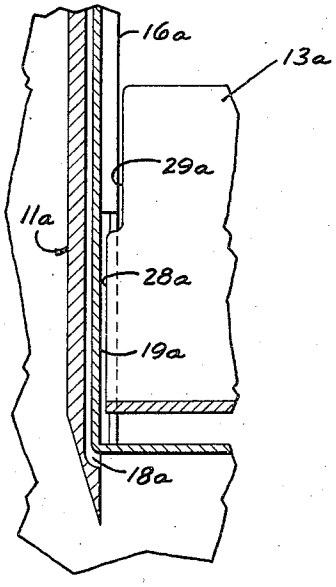


FIG. VI

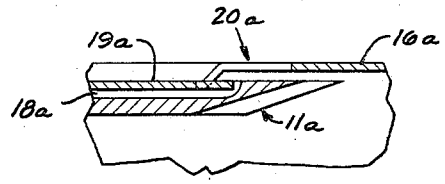


FIG. VII

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Patented June 18, 1946 2,402,520

UNITED STATES PATENT OFFICE

2,402,520

FOOD HANDLING APPARATUS

George R. Wood, Montreal, Quebec, Canada, assignor to Toledo Scale Company, Toledo, Ohio, a corporation of New Jersey

Application April 12, 1943, Serial No. 482,769

4 Claims. (Cl. 146—102)

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This invention relates to food handling apparatus of the type in which a commodity to be sliced is reciprocated past the edge of a rotating circular knife, a slice being severed therefrom during each stroke.

A slicing machine of the type described is equipped with a rotary knife, a portion of the edge of which is exposed and the remaining part of which is covered by means of a knife guard to prevent accidental injury to the operator. The diameter of the knife of a slicing machine is determined by a practical compromise between a knife large enough to permit large commodities such as slabs of bacon, meat loaves, loaves of bread, etc., to be moved past its exposed edge, and a size small enough so that the slicing machine is not impracticably bulky.

Commodities to be sliced on such a machine are usualy carried in a trough-shaped commodity tray which is reciprocable past the exposed cutting edge of the knife. Such a commodity tray must be large enough adequately to support large pieces such as those enumerated above. If a portion of the commodity were allowed to overhang the rear edge of the tray, the slices severed therefrom would be uneven. The end of the commodity tray on the side toward the plane of the edge of the knife must be closely adjacent such plane so that commodities do not sag between the end of the tray and the plane of the edge of the knife, since such sagging would also cause the slices to be uneven. The necessary size of the commodity tray thus is a third factor which must be taken into consideration when the size of the circular knife is being determined, because the knife must be large enough to permit the tray to be moved past its cutting edge without any interference between the rear edge of the tray and the knife guarding mechanism.

It is an object of this invention to provide a knife guard which will completely guard the unused portions of a circular knife and yet permit a commodity tray of substantial size to be moved past the cutting edge of the knife without interference between the end of the commodity tray and the knife guard.

It is another object of this invention to provide a knife guard so constructed that a commodity tray of substantial size may be employed with a knife of a diameter less than the length of the commodity tray from front to rear.

A further object of this invention is to provide a knife guard and commodity tray which cooperate to permit a commodity tray having

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greater overall dimensions than the knife with which it is employed to be moved entirely past the cutting edge of such knife and yet to permit the end of the commodity tray to be closely adjacent the plane of rotation of the knife.

More specific objects and advantages are apparent from the description, in which reference is had to the accompanying drawings illustrating preferred embodiments of the invention.

In the drawings:

Fig. I is a fragmentary view, in elevation, of a slicing machine embodying the invention.

Fig. II is an enlarged fragmentary view, in elevation, parts being broken away, of a portion of a knife guard embodying the invention.

Fig. III is a fragmentary view, in elevation, taken from the right side of Fig. I, of the mechanism shown in Fig. II.

Fig. IV is an enlarged fragmentary sectional view, taken substantially on the line IV—IV of Fig. II.

Fig. V is a view similar to Fig. I but of a modification of the invention.

Fig. VI is an enlarged fragmentary vertical sectional view, taken substantially on the line VI—VI of Fig. V.

Fig. VII is a fragmentary sectional view, taken substantially on the line VII—VII of Fig. V.

These specific drawings and the specific description that follows merely disclose and illustrate the invention and are not intended to impose limitations upon the claims.

The slicing machine illustrated in Fig. I comprises a base 10 upon which is erected mechanism (not shown) for driving a rotary circular knife 11. A gauge plate 12 is mounted on the base 10 with its face parallel to the plane of rotation of the knife 11 and is adjustable in a direction perpendicular to such plane. A commodity tray 13, which has a handle 14, is mounted on the base 10 for reciprocation past an exposed portion 15 of the knife 11, so that commodities carried by the tray 13 and slid across the face of the gauge plate 12 are sliced by the knife 11. A knife guard 16 is also mounted on the base 10 and extends around substantially all of the knife 11, with the exception of the exposed cutting edge 15, which is closely adjacent a curved edge 17 of the gauge plate 12.

As can be seen in Fig. III, the end of the commodity tray 13 is closely adjacent the plane of the edge of the knife 11 so that commodities cannot project over the end of the tray 13 far enough to sag so as to be unevenly sliced. The knife 11 (Fig. IV) has a dished-in face 18 and

the knife guard 16 has a flat center portion 19 which lies within such face of the knife 11, so that the cutting section of the knife is in the form of an annulus. Thus after a commodity has been slid past the cutting edge 15 of the knife it is no longer in contact with a rotating surface, and consequently grease and fat are not smeared over the entire surface of the knife 11. The center portion 19 of the knife guard, since it is stationary, does not become smeared with grease as much as would an exposed center portion of the rotating knife 11.

Those portions of the knife guard 16 which cover the annular cutting edge of the knife 11 extend laterally from the plane of the cutting edge of the knife 11 (as can be seen in Figs. III and IV), so that the knife can be covered. Thus if the commodity tray 13 were of larger size than the knife 11 the rear of the end of the commodity tray ordinarily would strike the rear portion of the knife guard 16, and the commodity tray would not be movable entirely past the cutting edge 15 of the knife 11 for completely severing slices from a commodity supported thereby.

This problem is solved, through the present invention, by providing the knife guard 16 with a cutout portion 20 at its rear edge through which the rear portion of the edge of the tray 13 adjacent the plane of rotation of the knife 11 passes. The commodity tray 13 thus may be of sufficient size to accommodate large pieces, and the knife 11 may be of a diameter smaller than the overall size of the tray 13.

Cutting out a portion 20 of the knfe guard 16 exposes a short segment 21 of the knife 11 which also must be guarded in order to prevent injury to the fingers of an operator. There is provided, therefore, an adjustable edge guard 22 which is secured, by means of nuts 23 threaded on studs 24 welded to the rear of the edge guard 22, in two horizontal slots 25 cut in a turned-over flange 26 of the knife guard 16. The edge guard 22 has its inner edge 27 shaped to conform to the edge of the knife 11 and lies closely adjacent thereto. The face of the edge guard 22 lies in the same plane as the face of the center portion 19 of the knife guard 16, and the edge 27 of the knife 11. Since the knife 11 is circular, and since the inner edge 27 of the edge guard 22 is concentric therewith, these two elements may be kept closely adjacent so that it is impossible for anyone's fingers to be injured by being inserted between the edge guard 22 and the knife 11.

As the knife 11 is sharpened from time to time its diameter decreases, but since the edge guard 22 is mounted in the slots 25 and, by loosening the nuts 23, can be moved horizontally, its edge 27 can be kept closely adjacent the edge of the knife 11 even though the diameter of the knife decreases.

The slicing machine illustrated in Fig. V comprises a base 10a upon which is mounted a rotary circular knife 11a and an adjustable gauge plate 12a. A commodity tray 13a, which in this case is reversed in comparison with the commodity tray illustrated in Fig. I, is mounted upon the base 10 for reciprocation by means of a handle 14a past an exposed portion 15a of the knife 11a. The knife 11a is guarded by means of a knife guard 16a, and its exposed cutting edge 15a is protected by means of an edge 17a of the gauge plate 12a closely adjacent thereto.

The commodity tray 13a in the embodiment of the invention shown in Fig. V is tipped at a greater angle to the horizontal than the commodity tray shown in Fig. I, and has its lowermost point at the rear (the right in Fig. V) rather than the front (the left in Fig. I). As has been explained with reference to the embodiment illustrated in Fig. I, the end of the commodity tray 13a is closely adjacent the plane of the cutting edge 15a of the knife 11a, which has a central dished portion 18a (Fig. VI) in which is located a central portion 19a of the knife guard 16a. In order that the commodity tray 13a may be moved entirely past the cutting edge 15a of the knife 11a and into the position shown in Fig. V, the knife guard 16a is provided with a cutout section 20a so located as to permit the end of the commodity tray 13a to be moved therethrough. However, a large piece, such as a slab of bacon, is usually relatively thin so that its major area is supported by the larger side of the commodity tray 13a and, since, in the embodiment of the invention shown in Figs. V, VI and VII, such larger side is at the front, the shorter side of the commodity tray 13a need not be located with its entire end closely adjacent the plane of the knife 11a. Therefore, the cutout section 20a in the knife guard 16a, which permits a portion 28a of the commodity tray 13a to pass, need not be large enough to permit the entire end of the commodity tray 13a to pass therethrough, and the commodity tray 13a may have in its end a cutaway section 29a that passes over the knife guard 16a. Thus the cutout section 20a in the knife guard 16a and the cutout section 29a in the commodity tray 13a cooperate to permit the rear portion of the commodity tray 13a to extend over the rear portion of the knife guard 16a, and to permit the commodity tray 13a to be moved entirely past the cutting edge 15a of the knife 11a for completely severing slices from the commodity supported thereon.

Because of the overlapping of the commodity tray and knife guard made possible by either embodiment of the invention herein disclosed, a knife guard having a diameter substantially smaller than the length of the commodity tray may be employed and, since the commodity tray size is substantially fixed by the size of commodities commonly sliced on such machines, the invention permits much smaller circular knives to be employed.

The embodiments of the invention that have been disclosed may be modified to meet various requirements.

Having described the invention, I claim:

1. A guard for a rotary knife of a slicing machine, said guard comprising a housing completely enclosing said knife except for an arcuate opening exposing the cutting edge of the knife and a cutout through which the leading edge of a commodity tray may pass, and an edge guard for said knife attached to and lying within said guard in the space exposed by said cutout.

2. A guard for a rotary knife of a slicing machine, said guard comprising a housing completely enclosing said knife except for an arcuate peripheral opening exposing the cutting edge of the knife and a cutout on the side through which the leading edge of a commodity tray may pass and a flat member mounted in said housing coplanar with and radially adjacent the knife in the space exposed by said cutout.

3. A guard for a rotary knife of a slicing machine comprising, in combination, a housing completely enclosing said rotary knife except for an arcuate peripheral opening exposing the cutting edge thereof and a cutout in the diametrically opposite rim adjacent the path of a commodity

carrier providing clearance for the carrier, and an edge guard adjustably secured in said housing in a position coplanar with and radially adjacent the knife in the space exposed by said cutout.

4. In a slicing machine, a guard for a rotary knife having a raised annular cutting edge, said guard comprising a housing completely enclosing said knife except for an arcuate peripheral opening exposing the cutting edge of the knife and a

cutout providing clearance for for the leading edge of a commodity carrier, said housing being formed to lie within the recess provided by the raised annular cutting edge of the knife to guide commodities past the knife, and an edge guard adjustably mounted in the housing to lie radially adjacent and coplanar with the knife in the space exposed by said cutout.

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