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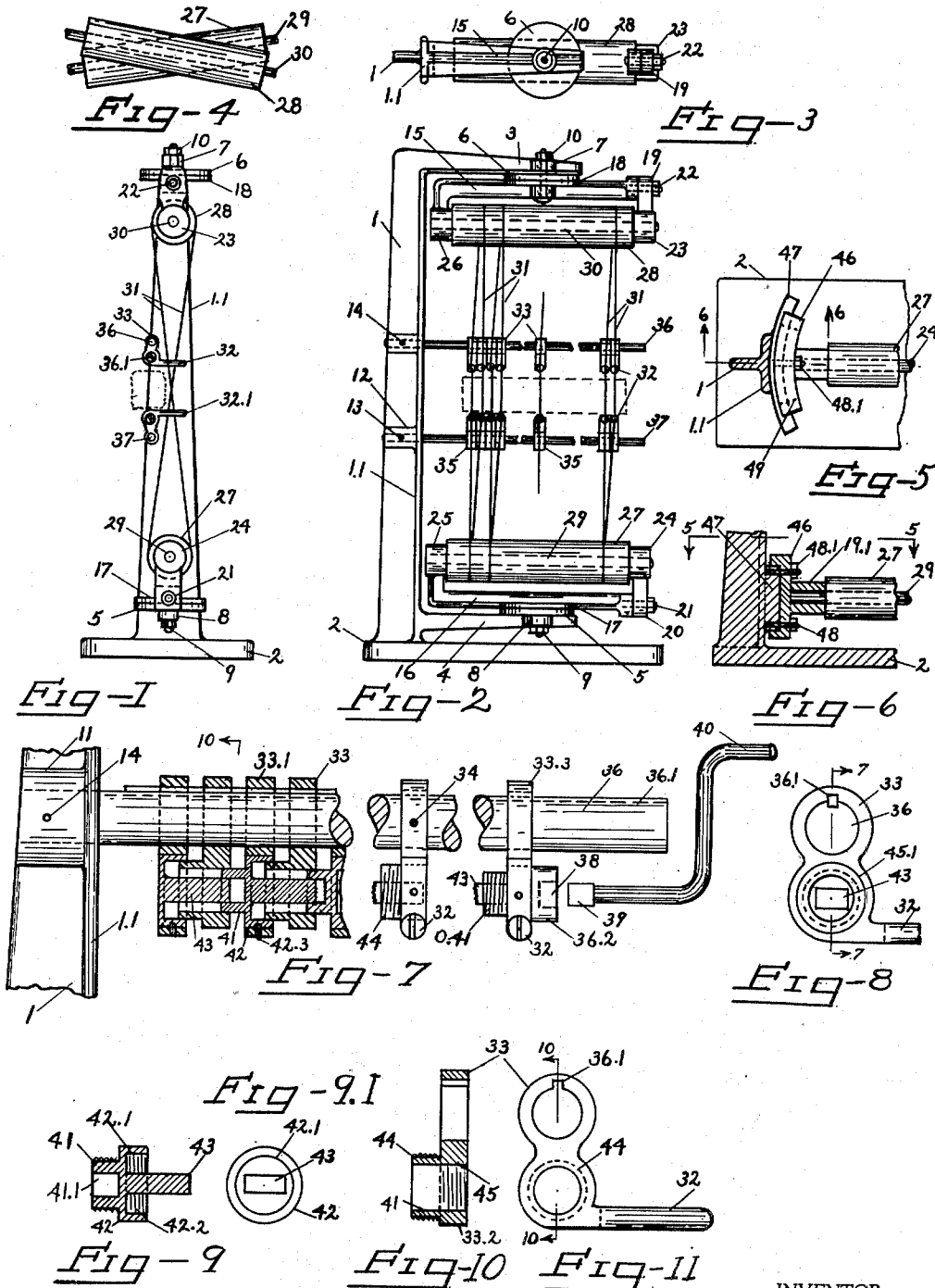
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2,524,310

BREAD SLICING MACHINE HAVING ENDLESS BAND KNIVES

Filed July 28, 1945

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

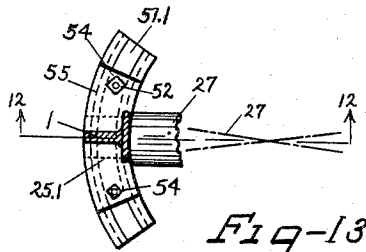


Fig-13

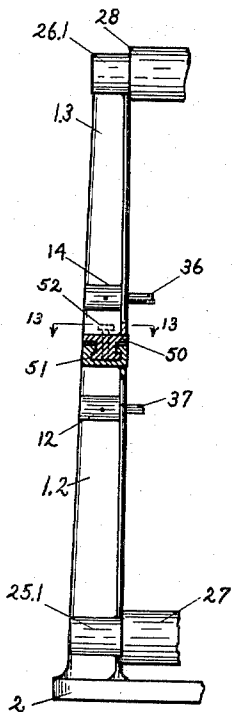


Fig-12

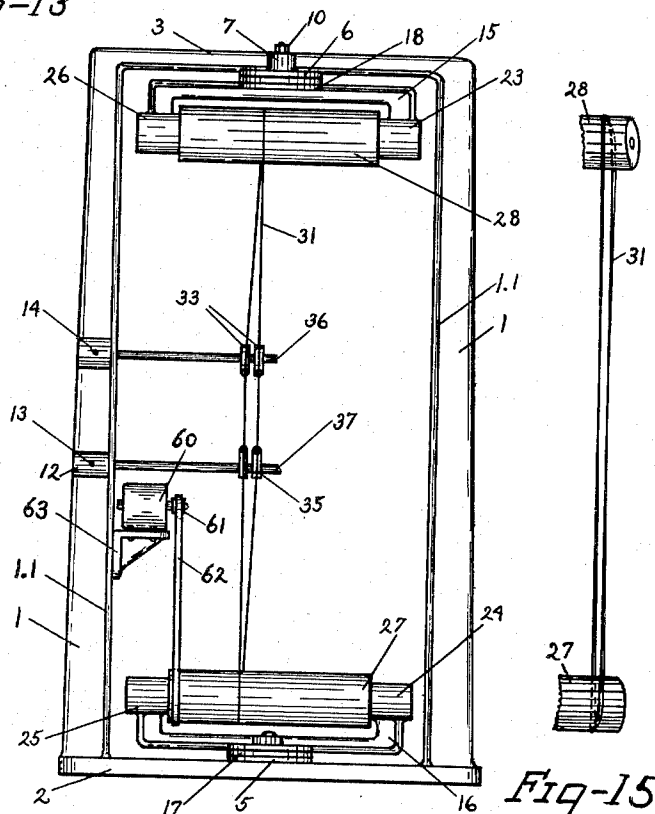


Fig-14

Fig-15

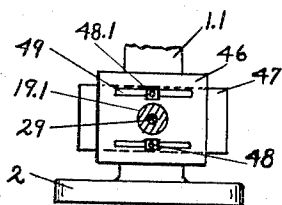


Fig-16

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UNITED STATES PATENT OFFICE

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BREAD SLICING MACHINE HAVING ENDLESS
BAND KNIVESHarry J. Criner, Davenport, Iowa, assignor of
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6 Claims. (Cl. 146—88)

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My invention relates to an improvement in bread slicing machines of the multiple band-blade type in which a pair of spaced multiple blade drums are mounted in parallel planes and are capable of relative angular adjustment.

The objects of my invention are to provide improved means by which either or both of such drums may be adjusted in various angular relations to each other; to provide means by which the drums can be carried or suspended at both ends of the drums, such means being pivotally mounted upon central pivots so as to permit adjustment of the relative angular adjusted position upon a common middle line; to provide improved positively acting means for uniformly adjusting the blade guides of a band-blade slicing machine.

I accomplish these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my machine from the right of Figure 2;

Figure 2 is a front elevation of my machine, omitting the bread-feeding and supporting means and showing only a part of the blades and blade guides;

Figure 3 is a top or plan view of the form shown in Figure 1;

Figure 4 is a detail top view showing only the blade drums and their angular relation;

Figure 5 is a sectional detail of an alternate form of support of the lower drum on the line 5—5 of Figure 6;

Figure 6 is a sectional detail on the line 6—6 of Figure 5;

Figure 7 is an enlarged vertical detail of the spacing mechanism partly in section on the middle line;

Figure 8 is a side elevation of a single spacing unit;

Figures 9, 9.1, 10 and 11 are enlarged details of spacing units;

Figure 12 shows an alternate form of frame and drum adjusting means in section on the line 12—12 of Figure 13;

Figure 13 is a detail of the adjusting means shown in Figure 12 in section on the line 13—13 of Figure 12;

Figure 14 shows a frame with a pair of supporting columns instead of a single supporting column;

Figure 15 is a fragmentary detail of a blade and drums to show the way it accommodates itself to the angle of the drums, and

Figure 16 is a detail elevation of heads 46 and 47.

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Similar numerals refer to similar parts throughout the several views.

Various forms of feeding and discharging means to carry the bread to and from the cutting blades are in common use and any of them can be utilized in connection with my machine. I make no claim to any special form of feeding or discharging apparatus and these are therefore omitted from my drawings.

In its preferred form my machine comprises a supporting frame or column 1 which may be formed integral with or suitably secured to a base 2. Arms 3 and 4 are united to the column 1 and extend laterally therefrom at the top and bottom of the frame respectively. A center plate 5 is preferably cast integral with the arm 4 and a corresponding plate 17 is cast integral with the crossbar 16. The center plate 17 is mounted upon the center plate 5 and pivotally united thereto by a bolt 9 so that it may be secured in various positions of rotation thereon.

The crossbar has a hub 25 formed integral therewith at one end and a hub 24 may be formed integral with the other end of the bar 16 as shown in Figure 14 or the hub 24 may be united to an arm 20 secured upon the outer end of the arm 16 by a bolt 21 or other suitable means. A shaft 29 has its end journaled in the hubs 24 and 25 and carries the lower blade drum 27 secured upon said shaft.

The upper arm 3 is formed with a center plate 6 cast integral therewith and a center plate 18 is formed integral with a crossbar 15 by which the crossbar may be secured in place upon the arm 3 by a pivot bolt 10.

The crossbar 15 has a hub 26 united to one end thereof and formed integral therewith and carries or supports another hub 23 at the opposite end which may be formed integral with the crossbar 15 or may be united thereto by an arm 19 secured to the crossbar 15 by a bolt 22 or other suitable means.

A shaft 30 is journaled in the hubs 26 and 23 and has secured thereon the upper blade drum 28. A plurality of band-blades 31 are mounted upon the drums 28 and 27 in Figure 8 form and cross approximately midway between the drums.

The drums have their axes extending in parallel horizontal planes and they may be secured with their axes in a single vertical plane as in Figure 1 or either one of them may be adjusted at an angle to the other drum as shown in Figure 4.

When adjusted at an angle as shown in Figure 4, the blades are so mounted that the angle of the

drums will cause the opposite cutting courses of a given blade to stand approximately half an inch apart midway between the drums and the cutting courses all run at approximately right angles to the courses passing around the drums. In this way very little, if any, lateral pressure needs to be exerted upon the cutting courses of the blades to hold them in parallel and the spacing of the cutting courses may be varied by varying the relative angle of the drums to each other.

In Figures 5, 6 and 16, I have shown an alternate form of securing the shaft 29 to the lower part of the frame and in this form adjustability is secured by providing a curved bar or head 47 formed integral with the column 1 and its flanges 1.1 and mounting thereon a yoke or head 46 which may be secured to the bar 47 by bolts 48 and 48.1, and which carries a hub 19.1 in which the shaft 29 has one end rigidly secured, the drum 27 being revolvably mounted upon the shaft 29.

The same form of construction may be utilized to secure the upper drum 23 upon the upper part of the frame 1.

In this alternate form, the bar 47 is curved to correspond to an arc drawn from the center point of the drum 27 and the yoke 46 is formed on a corresponding arc. The yoke 46 is provided with longitudinal slots 42 through which the bolts 48 and 48.1 extend so as to permit the yoke 46 to be moved in either direction and secured in its adjusted position by the bolts 48 and 48.1.

In Figures 12 and 13 I have shown an alternate form of supporting column in which the column is divided into a lower section 1.2 and upper section 1.3. In this case the lower section is formed with a transverse arcuate head 51 formed integral therewith and the upper section 1.3 is formed with an arcuate foot 50 formed integral therewith. The head 51 is provided with a groove 51.1 in which the flanged section of the foot 50 extends and is slidably mounted. Bolts 52 may be secured in the foot 50 and extend downwardly through the bottom of the head 51.

A motor 60 may be mounted upon a suitable bracket 63 secured to the supporting column 1 and provided with a drive pulley 61 carrying a belt 62 which may pass around and drive the lower pulley 27 or any other suitable form of prime mover may be utilized for that purpose.

To hold the cutting courses of the blades in parallel, I provide upper and lower series of blade guides or adjusters mounted upon and laterally movable along transverse bars 36 and 37. Each adjuster has a slotted finger 32 united thereto and extending longitudinally of the machine and the fingers are arranged to straddle and guide the cutting courses of the blades through the loaves as they are being cut.

The adjusters are arranged in pairs, each pair comprising one member 33.1 the extension of which has a large transverse bore 45.1 formed therein, in which an adjusting member 42 is mounted and secured in place by a pin 42.3.

Each adjusting member 42 has a side plate or wall having a circular flange 41 formed integral therewith on one side and a larger annular flange 42.2 formed integral therewith on the other side, the flange 42.2 being arranged to fit and rotate in the bore 45.1. It is also provided with a rectangular arm or shaft 43 projecting from the side wall opposite the circular flange 41.

The circular flange 41 is externally threaded as shown in Figure 9 and has a rectangular opening

41.1 adapted to receive and actuate the arm 43 of the next succeeding rotator.

Various modifications may be made in the form, proportions and arrangement of the parts of my apparatus without departing from the spirit of my invention and I do not limit my claims to the precise forms shown in the drawings which are intended as illustrative and not as limitations.

I claim:

1. A bread slicing machine including an upright supporting column, spaced upper and lower arms united thereto and extending laterally at a right angle therefrom, angularly adjustable crossbars pivotally united to the arms respectively at the middle thereof and movable upon their pivots in planes parallel to the crossbars, each crossbar supporting a hub at each end thereof, upper and lower drums or multiple-blade pulleys journaled in the upper and lower pairs of hubs respectively, a plurality of band-blades mounted on said pulleys in Figure 8 form, means to secure each of the pulleys in fixed angular position relative to the other pulley, and means to drive one of the pulleys and the pivots between the arms and crossbars being arranged in spaced axial alignment.

2. In a bread slicing machine, the combination with an upright supporting frame having alined upper and lower transverse members extending laterally of the frame and at a right angle thereto, of upper and lower crossbars adjustably and coaxially pivoted to said transverse members respectively at the middle thereof, upper and lower multiple-blade pulleys journaled in the crossbars respectively, a plurality of band-blades secured around the pulleys in Figure 8 form, means for securing the pulleys in various positions of angular adjustment relative to each other, and means to drive one of the pulleys.

3. In a bread slicing machine, the combination set out in claim 2, said means for securing the pulleys in various adjusted positions comprising adjacent friction plates united to the middle of the upper and lower transverse members respectively, the pivots uniting the crossbars to the transverse members being threaded at their ends and provided with nuts whereby the friction plates may be drawn into fixed contact.

4. In a bread slicing machine, the combination set out in claim 2, said means for securing the pulleys in various adjusted positions comprising adjacent friction plates united to the middle of the upper and lower transverse members respectively, the pivots uniting the crossbars to the transverse members being threaded at their ends and provided with nuts whereby the friction plates may be drawn into fixed contact, and the pivots of the crossbars being arranged in a line parallel to the frame of the machine.

5. In a bread slicing machine, the combination with an upright supporting frame having spaced upper and lower transverse members united thereto in parallel planes, of upper and lower crossbars pivotally united to the transverse frame members respectively, spaced multiple drum pulleys revolvably mounted on the crossbars in parallel planes with the middle point of their axes in vertical alignment, a plurality of band-blades mounted upon the pulleys in Figure 8 form, means for adjusting both of said pulleys to various relative angular positions without changing the relative position of their alined middle points, and means for driving the pulleys and the pivots between the arms and crossbars being arranged in spaced axial alignment.

6. In a bread slicing machine, the combination described in claim 5, the means for adjusting the pulleys including pivot bolts arranged approximately at the middle of the crossbars to secure the crossbars and their corresponding transverse frame members in fixed adjusted positions and the pivots between the arms and crossbars being arranged in spaced axial alinement.

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