

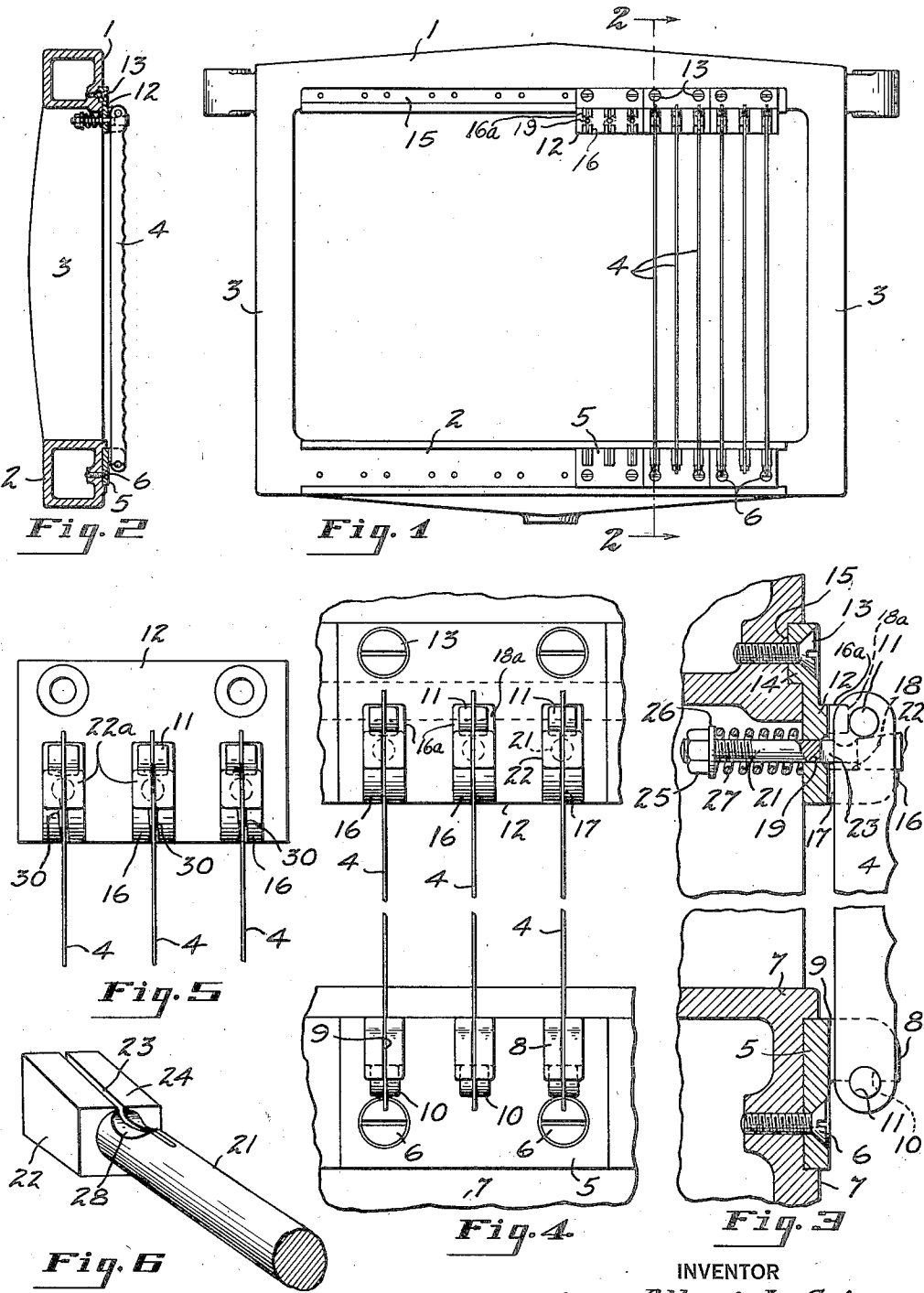
March 10, 1936.

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2,033,700

BLADE FRAME ASSEMBLY

Filed April 5, 1934



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2,033,700

BLADE FRAME ASSEMBLY

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Application April 5, 1934, Serial No. 719,128

19 Claims. (Cl. 146—153)

This invention relates to a multiple blade and blade frame assembly for slicing machines and more particularly to such assemblies for use in bread slicing machines.

5 One of the objects of the present invention is to provide a multiple blade and frame assembly for slicing machines with new and improved means for placing the cutter blades under substantially uniform tension.

10 Another object is to provide such assemblies with means for placing the cutter blades under substantially uniform and continuous tension.

Another object is to provide a blade frame having a plurality of spaced cutter blades 15 mounted thereon with compression springs for placing the individual blades under tension, all of the springs having substantially the same characteristics.

A further object is to provide a blade frame 20 having a plurality of cutting blades mounted thereon with new and improved means for mounting the blades which will permit easy assembly of the blades to and disassembly from the blade frame.

25 With the above and other objects in view, which will be apparent from the following detailed description, the present invention consists in certain features of construction and combination of parts which will be readily understood 30 by those skilled in the art to which the invention appertains.

Reference should be had to the accompanying drawing, which illustrates a suitable embodiment of the invention, in which:

35 Figure 1 is a front elevation of a blade frame showing a plurality of cutter blades mounted thereon, a number of the blades being removed;

Fig. 2 is a vertical section taken approximately on the line 2—2 of Fig. 1;

40 Fig. 3 is an enlarged fragmentary section taken through the blade frame showing the mounting of the cutting blades in greater detail;

Fig. 4 is a fragmentary front elevation of the construction shown in Fig. 3;

45 Fig. 5 is a view similar to Fig. 4 showing a modified mounting means for the cutter blades; and

Fig. 6 is a fragmentary perspective view of one of the bolts employed for placing the cutter 50 blades under tension.

In slicing machines of the construction used for commercially slicing baked bread and other baked products, it is common practice to employ two series of cutter blades so arranged that 55 while one series is moving in one direction the

other series is moving in the opposite direction, and furthermore so that each blade in one series is positioned between a pair of blades in the other series in order that the blades of both series will substantially simultaneously engage 5 the article to be sliced.

In order to arrange the cutter blades in this manner two blade frames are employed to simultaneously reciprocate in opposite directions, 10 each of the blade frames having a series of spaced cutters. The present invention, however, is directed to a new and improved means for mounting the cutter blades on the blade frame in such manner that the proper tensioning of the blades is obtained. 15

Referring to the accompanying drawing, in which like numerals refer to like parts throughout the several views, the blade frame preferably comprises a single piece casting of suitable metal which is provided with upper and lower head 20 pieces 1 and 2, respectively, and side pieces 3 integrally interconnecting the head pieces 1 and 2.

The head pieces 1 and 2 preferably gradually increase the depth from the side pieces 3 toward the center of the frame in order to give 25 adequate strength thereto. The increase in thickness of metal occurs outwardly of the planes of the ends of the side pieces so that the metal of the head pieces will have a tendency to be placed under compression when the cutter 30 blades 4 are properly mounted on the head pieces. By providing head pieces of gradually increasing depth, material deflection of the head pieces is prevented.

Cutter blades 4 extend between the head pieces 35 1 and 2 in spaced relation parallel to the direction of reciprocation of the blade frame and are placed under the correct tension in a manner to be now described.

The mounting means for anchoring the blades 40 4 to the lower head piece 2 comprises a number of anchoring plates 5 secured by suitable screws 6 to the head piece 2, spaced flanges 7 preferably being provided on this head piece to insure the proper positioning and alignment of the mount- 45 ing plates 5. The mounting means, however, may comprise a single member. Each plate 5 carries a number of outwardly projecting lugs 8 spaced according to the blade spacing and each lug is formed with a slot 9 of sufficient width to 50 receive the end of the blade 4. The lower sides of the lugs 8 at each side of the slot 9 are formed with recesses 10 which receive the buttons 11 provided at the lower ends of the blades as shown in Figs. 3 and 4. 55

The mounting means for anchoring the upper ends of the blades 4 to the top head piece 1 also comprises either a single or a number of mounting plates 12 secured by suitable screws 13 to the head piece 1. These plates are preferably formed with a rib 14 which seats within a recess or groove 15 extending longitudinally of the head piece to insure the proper positioning and alignment of the mounting plates 12.

The plates 12 extend below the head piece 1 as indicated in Figs. 1 and 3 and are also provided with outwardly extending lugs 16 which are aligned with the lower lugs 8. The lugs 16 are preferably provided with slots 17, aligned with the slots 9 of the lower lugs, and which receive the upper ends of the blades 4.

Bolt openings 19 are provided through each plate 12 above the upper horizontal faces 18 of the lugs 16, and the upper ends of the blades are supported upon bolts 21 which extend through the openings 19, the outer ends of the bolts being formed with enlarged rectangular head portions 22 which are supported on the horizontal lug faces 18. These enlarged head portions 22 are provided with slots 23 which also receive the blades 4.

The upper surfaces of the head portions are tapered at 24, the taper being inclined from the outer end of the head portion toward the bolt axis for engagement with the projecting buttons 11 at the upper ends of the blades.

Also, preferably disposed above the lugs 16 are slotted shorter lugs 16a having vertical abutment faces 16a which are engaged by the buttons 11 carried at the upper ends of the blades 4.

The inner end of each bolt 21 which extends through the plate 12 is provided with a nut 25 and washer 25, a coiled spring 27 being carried by the bolt and disposed between the plate 12 and washer 26 to continuously tend to draw the bolt through the plate opening 19. This tendency, because of the inclined portion 24 of the head 22, exerts a continuous pressure upwardly against the blade buttons 11, thus placing the blade 4 under tension, the buttons 11 also abutting against the vertical faces 18a of the lugs 16a which are in alignment with the buttons to serve as abutments. In other words, the head portion 22 of the bolt 21 acts as a wedge which, by reason of the continuous tendency of the bolt to be drawn through the mounting plate 12 acts directly against the blade buttons 11 and places the blade under a continuous tension. The angle of inclination of the inclined face 12 of the head portion is such that the bolt will have a full freedom of movement through the bolt opening regardless of the force exerted against it by the blade buttons 11 so as to avoid binding action or sticking of the bolt.

All of the blades 4 are mounted in the same manner and it is desirable that all of the springs 27 have the same characteristics so that all blades will be subject to a continuously acting tension.

In order to provide for an easy removal or assembly of the blades to the blade frame, each of the bolts 21 is formed with a recess 28 adjacent the head portion 22 so that when the nut 25 is loosened or removed or when the spring is compressed and the recess 28 is disposed outwardly of the vertical faces 18a, the buttons 11 at the upper end of the head will drop into the recess 28 so that the buttons 11 at the lower end of the blade will clear the lugs 8. In other words, whenever the bolt 21 is in such position that the

buttons 11 at the upper end of the blade 4 drop into the groove 28, the blade can be easily removed by merely swinging the lower end of the blade outwardly from within the slot 9 of the lower lugs 8 and then bodily lifted from the supporting bolt 21.

In the construction shown in Fig. 5 the mounting is identical with that just described with the exception that the blade slots 30 formed in the lugs 16 are inclined from the vertical with respect to the slots in the bolt heads 22a so that the blades 4 will be engaged by opposed corners of the blade slots 30. The slots in the lower lugs which receive the lower ends of the blades 4 may be similarly inclined if desired. The inclined slots will assist in reducing vibrations of the blades and also minimize the tendency of the ends of the blades to move sidewise or to twist.

Furthermore, should the blades stretch in their operation the springs have sufficient compression characteristics to always maintain the blades under tension, thereby tending toward the elimination of blade breakage which frequently occurs from improperly tensioned blades.

Although a certain type of blade frame and plate supporting means is shown and described, it is to be understood that the present invention is applicable to other types of blade frames and blade supporting means.

Furthermore, it is to be understood that the particular form of apparatus shown and described, and the particular procedure set forth, are presented for purposes of explanation and illustration and that various modifications of said apparatus and procedure can be made without departing from my invention as defined in the appended claims.

What I claim is:

1. A cutter blade assembly for slicing machines, comprising a reciprocable blade carrying frame including spaced head pieces, a cutter blade spanning the space between said head pieces, and means for securing the opposite ends of said blade to said head pieces, at least one of said means automatically taking up slack in said blade and automatically producing and unyieldingly maintaining tension within said blade during reciprocation of said blade in both directions.

2. A cutter blade assembly for slicing machines, comprising a reciprocable blade carrying frame including spaced head pieces, a cutter blade spanning the space between said head pieces, and unyielding means for securing the opposite ends of said blade to said head pieces, at least one of said means automatically taking up slack in said blade and automatically producing and unyieldingly maintaining tension within said blade during reciprocation of said blade in both directions.

3. A cutter blade assembly for slicing machines comprising a reciprocable blade carrying frame including spaced head pieces, a cutter blade spanning the space between said head pieces, and means for detachably securing the opposite ends of said blade to said head pieces, at least one of said means automatically taking up slack in said blade and automatically producing and unyieldingly maintaining tension within said blade during reciprocation of said blade in both directions.

4. A cutter blade assembly for slicing machines comprising a reciprocable blade carrying frame including spaced head pieces, a cutter blade spanning the space between said head

lease of said wedging engagement to facilitate the removal of said blade from the blade carrying frame.

15. A cutter blade and frame assembly for slicing machines, comprising a blade carrying frame including spaced head pieces, a plurality of spaced cutter blades spanning the space between said head pieces, and means for securing the opposite ends of said blades to said head pieces, one of said means for each blade and one of said head pieces including a blade projection carried at the end of the blade, a wedge-like member supported from the last mentioned head piece, and resilient means urging said wedge-like member into wedging engagement with said projection to produce and maintain tension within said blade.

16. A cutter blade and frame assembly for slicing machines, comprising a blade carrying frame including spaced head pieces, a plurality of spaced cutter blades spanning the space between said head pieces, and means for securing the opposite ends of said blades to said head pieces, one of said means for each blade and one of said head pieces including a blade projection carried at the end of the blade, a projecting abutment carried by the last mentioned head piece for engaging said projection, a wedge-like member supported from the last mentioned head piece, and resilient means urging said wedge-like member into wedging engagement with said projection to produce and maintain tension within said blade.

17. A cutter blade and frame assembly for slicing machines, comprising a blade carrying frame including spaced head pieces, a plurality of spaced cutter blades spanning the space between said head pieces, and means for securing the opposite ends of said blades to said head pieces, one of said means for each blade and one of said head pieces including a blade projection carried at the end of the blade, a wedge-like member supported from the last mentioned head piece, and resilient means urging said wedge-like member into wedging engagement with said projection to produce and maintain tension within said blade, said wedge-like member having a depression therein for receiving said projection upon release of said wedging engagement

to facilitate the removal of the blade from the blade carrying frame.

18. A blade and frame assembly for slicing machines, comprising a blade frame including a pair of spaced head pieces, a plurality of spaced cutter blades extending between said head pieces, means for connecting one end of each blade with one of said head pieces, and other means for connecting the opposite end of each blade with the second of said head pieces, said last mentioned means including a projecting lug on said second head piece, a rod-like member extending transversely through the second head piece and having a wedge-like head supported on said lug, said head and lug being slotted to receive the blade, projecting portions on the blade seating on said head, and resilient means urging said head into wedging engagement with said projecting portions to produce and maintain tension within the blade.

19. A blade and frame assembly for slicing machines, comprising a pair of head pieces, spaced side pieces interconnecting said head pieces, a plurality of spaced cutter blades extending between said head pieces, means for connecting one end of each blade with one of said head pieces, and other means for connecting the opposite end of each blade with the second of said head pieces, said last mentioned means including projections on the blade near the last mentioned end thereof, a portion carried by and projecting beyond said second head piece toward the other head piece, a bolt extending through said portion substantially at right angles to the axis of the blade, said bolt having a head provided with a slot for receiving said blade and with a wedging surface supporting said projections, said surface being inclined from the end of the head inwardly toward the axis of the bolt, a nut carried by the extending portion of the bolt and a coil spring surrounding said bolt and extending between said nut and projecting portion, whereby to continuously but resiliently urge said wedging surface into wedging engagement with said projections of the blade, said projecting portion having parts thereon disposed at opposite sides of the blade in relatively close relation.

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