

Oct. 15, 1940.

C. H. PETSKEYES

2,217,812

SLICING MACHINE

Filed Oct. 24, 1936

2 Sheets-Sheet 1

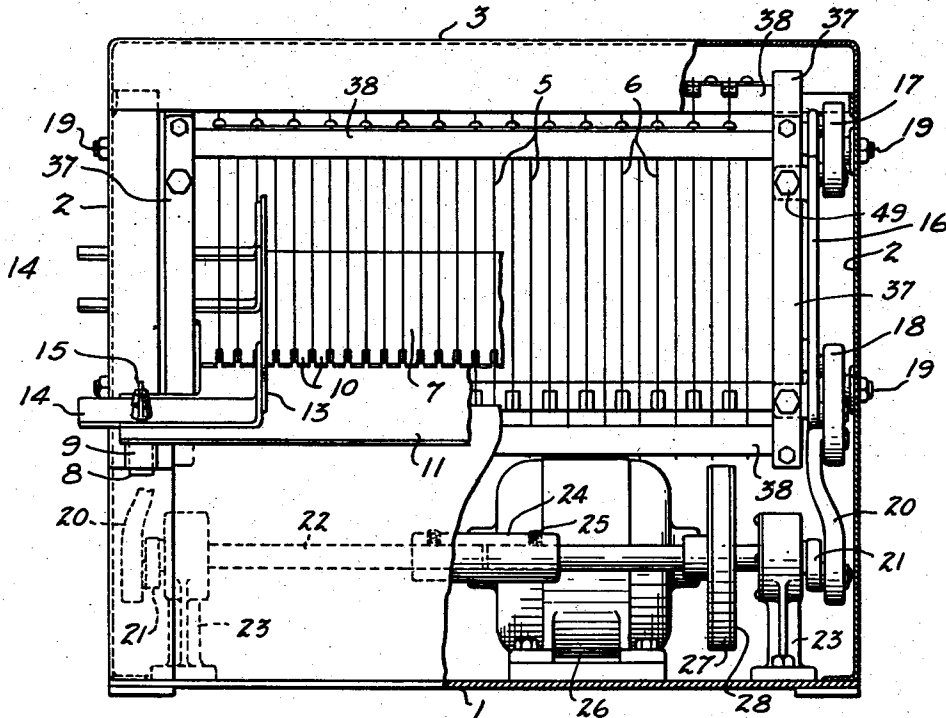


Fig. 1

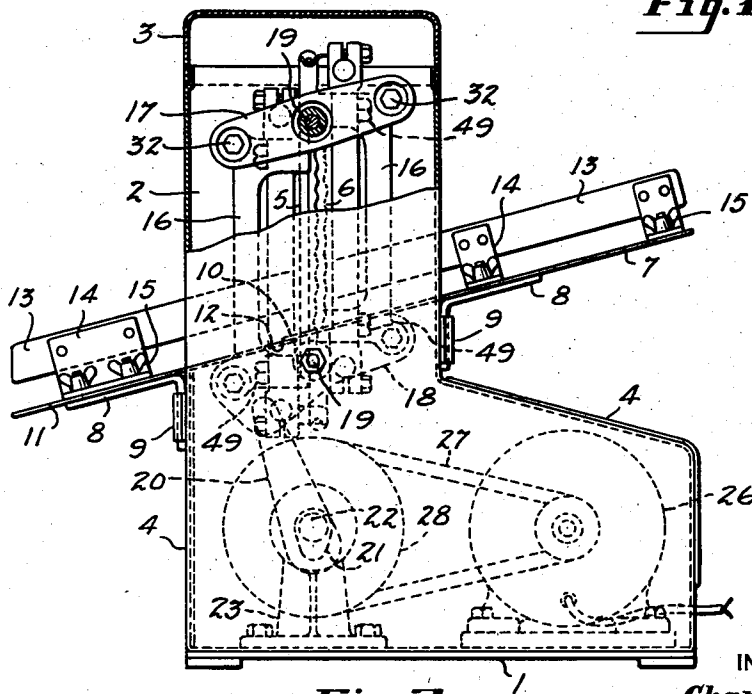


Fig. 2

INVENTOR
Charles H. Petskeyes
BY
Evans & Mc Coy
ATTORNEYS

Oct. 15, 1940.

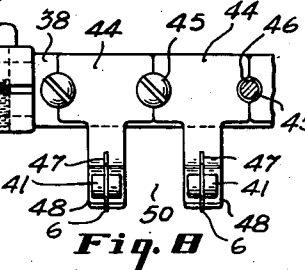
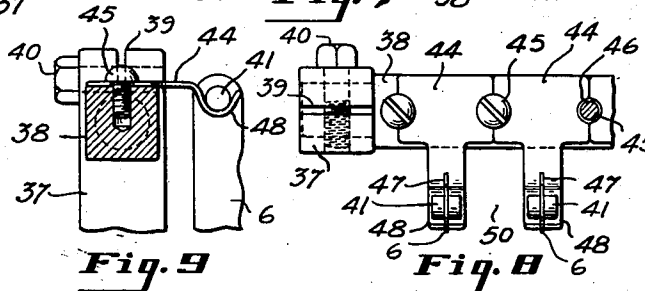
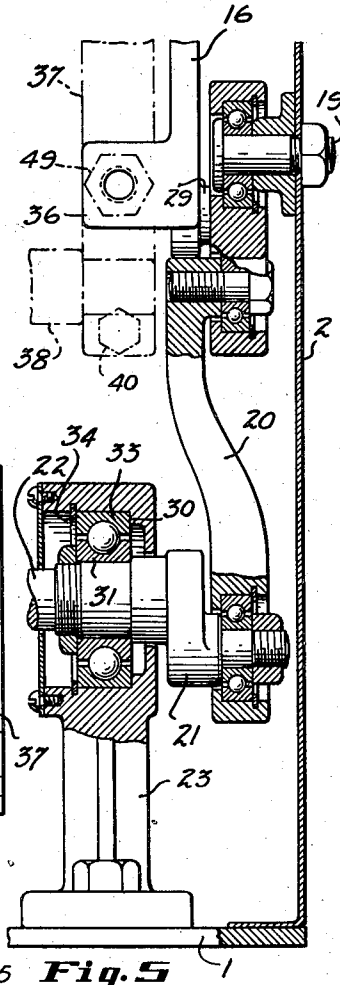
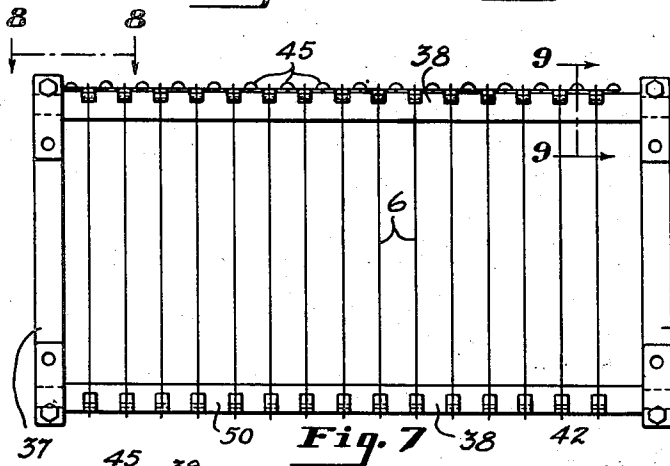
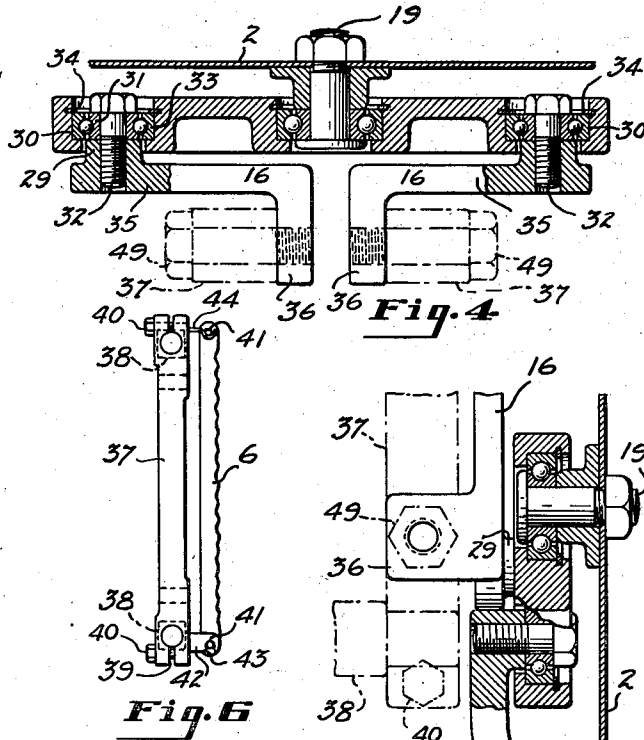
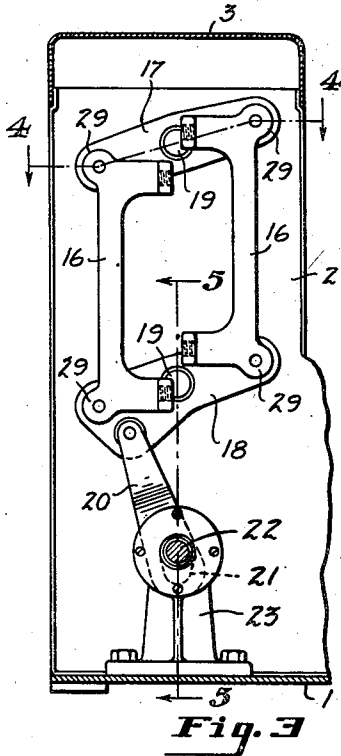
C. H. PETSKEYES

2,217,812

SLICING MACHINE

Filed Oct. 24, 1936

2 Sheets-Sheet 2



INVENTOR
Charles H. Petskeyes
BY
Evans & McCoy
ATTORNEYS

UNITED STATES PATENT OFFICE

2,217,812

SLICING MACHINE

Charles H. Petskeyes, Davenport, Iowa, assignor
to Micro-Westco, Inc., Bettendorf, Iowa, a corporation of Delaware

Application October 24, 1936, Serial No. 107,352

8 Claims. (Cl. 146—153)

This invention relates to improvements in slicing machines and more particularly to slicing mechanism of the reciprocating blade type for such machines.

It is an object of the invention to provide a novel and improved method of mounting and actuating the blades of a slicing machine whereby a rapid and efficient slicing operation may be performed.

Another object is to provide a method of mounting the blades so that they may be readily removed and inserted in sets so that the substitution of one set for another is facilitated.

Another object is to provide an improved blade frame for carrying the blades whereby the insertion or removal of blades from the frame is facilitated and the blades may be held in tension in proper slicing position.

A further object is to provide an improved actuating mechanism for reciprocating slicing machine blades which enables the blades to be removed and installed in the machine in a lateral direction, and in which the several parts of the mechanism retain their relative positions with the blade frames removed.

A still further object is to provide a new and improved slicing machine which is simple in design and inexpensive to manufacture.

Further objects and advantages will become apparent from the following detailed description made with reference to the accompanying drawings, in which:

Figure 1 represents an end elevation partly in section and with parts broken away of a slicing machine embodying the present invention;

Fig. 2 is a side elevation partly in section and with parts broken away of the slicing mechanism illustrated in Fig. 1;

Fig. 3 is a fragmentary detail of the actuating mechanism;

Fig. 4 is an enlarged detail in section on the line 4—4 of Fig. 3;

Fig. 5 is an enlarged detail in section on the line 5—5 of Fig. 3;

Fig. 6 is a side view of a blade frame constructed according to the present invention;

Fig. 7 is a front elevation of the blade frame shown in Fig. 6;

Fig. 8 is an enlarged fragmentary detail of one corner of a blade frame taken on the line 8—8 of Fig. 7; and

Fig. 9 is an enlarged fragmentary detail of a blade frame taken on the line 9—9 of Fig. 7.

According to the present invention the slicing mechanism is carried in a housing comprising a

base 1 and a pair of upstanding side frames 2. Extending between the tops of the side frames is a cover 3; suitable aprons 4 enclose lower portions of the mechanism.

The slicing mechanism comprises two sets of reciprocable cutting blades, the blades of one set positioned alternately between the blades of the other set 6, and the sets arranged to be simultaneously reciprocated in opposite directions, by mechanism to be hereinafter described. A succession of articles to be sliced, such as baked loaves, may be introduced to the slicing mechanism over an infeed table 7 carried on angle elements 8 arranged to slide into sockets 9 carried by the side frames 2. A plurality of fingers 10 are provided on the table 7 and arranged to extend between the slicing blades to support the article being sliced during a slicing operation. An outfeed table 11 is supported by the angle elements 8 and sockets 9 in a similar manner to the infeed table 7 on the opposite side of the slicing mechanism. The fingers 10 on the infeed table 7 are arranged to overlap and rest upon the leading edge 12 of the outfeed table so that a continuous support is provided for articles being sliced as they pass into and out of the slicing machine.

Suitable guides 13 for centering and guiding loaves as they pass through the slicing machine are adjustably carried on the tables 7 and 11 by means of angle supports 14 and bolts extending through the tables and slotted apertures in the angle supports 14. Wing nuts 15 on the bolts facilitate adjustment of the guides 13 for articles of different sizes.

The slicing blades are supported by suitable frames, to be later described, which are carried by spaced parallel reciprocating members 16. The members 16 extend between a pair of upper rockers 17 and a pair of lower rockers 18. The rockers 17 and 18 are in the form of walking beams centrally pivoted on stub shafts 19 carried in the side frames 2. Lower rockers 18 are actuated by suitable connecting rods 20 carried on cranks 21 on the ends of shaft 22 journaled in bearings carried on brackets 23 supported by the base 1. As shown in Fig. 1, the shaft 22 and cranks 21 may be integrally formed, in which event shaft 22 will be split and the parts suitably joined together, as by sleeve 24 having locking or set screws 25. A suitable electric motor 26 may be carried on the base 1 and arranged to drive the shaft 22 by means of belt 27 running in sheave 28 secured to the shaft 22.

The reciprocating members 16 are carried by means of pivots 29 on their extremities, and which

are journaled in the ends of the rockers 17 and 18. It is preferable that antifriction means be provided for these journals, such as the ball bearings 30 riding between inner races 31 carried on the pivots 29 by bolts 32 and outer races 33 carried in apertures in the extremities of the rockers 17 and 18 and held in place by locking rings 34. In a similar manner the other journals in the mechanism may be provided with antifriction means, the analogous parts of which have been numbered to correspond with the parts described in connection with the journals for the reciprocating members 16.

As best shown in Fig. 3, the reciprocating members 16 have an arm 35 on each end. These arms extend toward each other and their extremities are provided with angularly disposed flanges 36 which carry blade frames in a manner to be later described.

The blade frames comprise spaced parallel supporting members 37 and spaced parallel blade carriers 38. The extremities of the supporting members 37 are provided with split journals 39 which receive the ends of the blade carriers 38. Thus the blade carriers are rotatably supported and may be held in any desired adjusted position by means of bolts 40 which tighten the split journals 39.

The slicing blades are provided at their extremities with short pins 41. One of the blade carriers 38 in each blade frame is provided with a series of uniformly spaced split lugs 42 for receiving ends of one series of blades, and notches 43 adjacent the ends of the lugs 42 receive the pins 41 to secure the blades.

The other blade carrier of the blade frame is provided with a series of blade holders. Each blade holder comprises a thin flat resilient element 44 secured to the carrier 38 by means of large headed screws 45. As shown in Fig. 8, each element 44 is provided with a notch 46 at each side. The notches 46 of adjacent blade-holding elements provide apertures to receive the screws 45; thus, each screw assists in securing two elements and each element is secured by two screws. The blade-holding elements project outwardly from the blade carriers 38 and the extremities thereof are bifurcated to provide slits 47 to receive the opposite ends of the blades from the ends carried by the split lugs 42. Each element 44 adjacent the open end of the slit 47 is depressed to form a hook 48 which receives a pin 41 and secures the cutting blade in place.

By rotation of the blade carriers 38 in the split journals 39 of the supporting members 37 the distance between the notches 43, in the split lugs 42 of one blade carrier, and the hooks 48, in the blade-holding elements 44 of the other carrier, may be varied. In this manner the tension on the cutting blades 5 and 6 may be readily adjusted. Since the blade-holding elements 44 are preferably constructed of a resilient material, such as spring steel, the maintenance of proper tension on the cutting blades is facilitated and slight irregularities or differences in the length of cutting blades or the distance between the pins 41 on successive cutting blades are compensated. By slight rotation of the blade carrier 38 on which the blade-holding elements 44 are secured, such elements may be deflected so as to increase the tension in the blades held by the frame.

Each of the blade frames is carried between a pair of the reciprocating members 16 by means

of bolts 49 which pass through apertures in the supporting members 37 of the blade frames and threadedly engage the flanges 36 on the arms of the reciprocating members 16.

It is to be understood that the arms 35 are of such length that, with a blade frame carried on each pair of reciprocating members, the cutting blades 5 are arranged in alternate relation with the cutting blades 6 so that the cutting edges of both sets of blades lie substantially in the same plane and the article to be sliced is engaged by all of the cutting blades substantially simultaneously. In order that the cutting blades 5 and cutting blades 6 may thus be reciprocated between one another with their cutting edges lying in substantially the same plane, sufficient space 50 is provided between the split lugs 42 and blade holding elements 44 on each of the blade frames to permit the corresponding parts of the other blade frame to pass during the cutting operation.

It is to be noted that each of the blade frames may be readily removed from the machine. This may be accomplished by lifting the angle elements 8 out of the sockets 9 so as to remove the tables 7 and 11 and give free access to the slicing mechanism. By removing the bolts 49 which hold each of the blade frames, such frames may be removed for purposes such as replacing or resharpening the blades or installing blade frames with more or less space between the alternate blades in order to produce slices of different thickness. The blade frames are replaced in a similar manner by a reversal of the operations. In this connection, it is to be noted that with the blade frames removed the reciprocating members 16 remain in position, so that the replacing of the blade frames is readily accomplished. One blade frame may be removed from or replaced in the end of the machine having the infeed table 7 and the other blade frame removed from or replaced in the end having the discharge table 11, after removal of the respective tables; or both blade frames may be removed from or replaced in the machine from one end.

It is to be understood that, although I have shown and described a single embodiment of my invention, numerous modifications of design and substitution of parts are contemplated and intended to be included within the scope of the following claims.

What I claim is:

1. In a slicing machine, a blade frame having spaced, substantially parallel blade carriers and spaced substantially parallel supporting members extending between the carriers, resilient blade holding elements on one of the carriers, cutting blades mounted in the frame, means for regulating the resilient elements to adjust the tension in the blades, a first pair of spaced, substantially parallel rockers mounted for pivotal movement about a common axis, a second pair of spaced substantially parallel rockers mounted for pivotal movement about a common axis, a pair of spaced substantially parallel reciprocable members carried by the rockers, each reciprocable member being connected to a rocker of each pair and said reciprocable members arranged to maintain substantially synchronous motion between the rockers, means for detachably securing the supporting members of the blade frames to the reciprocable members carried by the rockers to mount the blades in the frame for longitudinal reciprocable movement, said se-

curing means including extensions on the reciprocable members for positioning the blades with their cutting edges normally substantially in the plane of the pivot axes of the rockers, rotating drive means, and means connecting said drive means to one of the rockers to indirectly impart oscillatory movement to the blade frame by means of the reciprocable members.

2. In a slicing machine, a pair of spaced, substantially parallel, reciprocable supporting members, a pair of spaced, substantially parallel blade carrying members extending between and supported by the supporting members, one of the blade carrying members being mounted for rotative movement with respect to the supporting members, a blade holding element secured to the rotatable blade carrying member for rotation therewith and extending laterally therefrom, a thin, flexible cutting blade extending between the blade carrying members and attached to the element secured on the rotatable blade carrier laterally of the axis of rotation thereof, whereby rotative movement of the rotatable blade carrier in one direction rotates the element away from the other carrier and tensions the blade and rotative movement in the reverse direction rotates the element toward the other carrier and releases the tension in the blade, means for locking the rotatable blade carrying member against rotation, and means mounting the supporting and blade carrying members for reciprocation as a unit.

3. In a slicing machine, a pair of spaced, substantially parallel, reciprocable supporting members, a pair of spaced, substantially parallel blade carrying members extending between and supported by the supporting members, one of the blade carrying members being mounted for rotative movement with respect to the supporting members, a blade holding element of resilient spring material removably secured to the rotatable blade carrier and extending laterally therefrom, a thin, flexible cutting blade connected to the end of the blade holding element and extending to the other blade carrying member, means for locking the rotatable blade carrying member against rotation with the spring blade holding element deflected and the blade under tension, and means mounting the supporting and blade carrying members for reciprocation as a unit.

4. In a slicing machine, a pair of spaced, substantially parallel, reciprocable supporting members, a pair of spaced, substantially parallel blade carrying members extending between and supported by the supporting members, one of the blade carrying members being mounted for rotative movement with respect to the supporting members, a plurality of blade holding elements of resilient spring material removably secured to the rotatable blade carrier and extending laterally therefrom, a plurality of thin, flexible cutting blades extending in substantially parallel relation between the blade holding elements and the other blade carrying member, the blades being individually connected at one end to extremities of separate blade holding elements, whereby rotative movement of the rotatable blade carrying member simultaneously deflects all of the blade carrying elements and simultaneously tensions all of the blades, means for locking the rotatable blade carrying member against rotation with all of the spring blade holding elements deflected and all of the blades under tension, and means mounting the sup-

porting and blade carrying members for reciprocation as a unit.

5. In a slicing machine, a pair of spaced, substantially parallel, reciprocable supporting members, a pair of spaced, substantially parallel blade carrying members extending between and supported by the supporting members, a blade holding element on each blade carrying member and extending laterally therefrom, a thin, flexible cutting blade extending between the ends of the blade holding elements, one of said elements being formed of resilient spring material and removably secured to the blade carrying member, and one of the blade carrying members being mounted for rotative movement with respect to the supporting members, whereby the resilient blade holding element can be deflected to tension the blade between the blade holding elements, means for locking the rotatable blade holding member against rotative movement with the element deflected and the blade under tension, and means mounting the supporting and blade carrying members for reciprocation as a unit while the rotatable blade carrying member is locked and while the blade is maintained under tension.

6. In a slicing machine, a pair of spaced, substantially parallel, blade carrying members, a multiplicity of relatively thin blade holding elements disposed flatwise against one of the members in side-by-side relation, said elements being formed of resilient spring material and having blade-receiving portions extending laterally from the blade carrying member, fastening means disposed between adjacent edges of successive elements for removably securing the elements to the carrying member, each element being engaged by a plurality of fasteners to resist twisting of the elements on the member, and a plurality of substantially parallel cutting blades tensioned between the holding elements and the other blade carrying member.

7. In a slicing machine, a pair of spaced rockers mounted for pivotal movement intermediate their ends, a pair of spaced reciprocable members extending between and connected to the ends of the rockers to effect synchronous movement of the rockers and simultaneous reciprocation of the members in opposite directions, lateral extensions on the members, a pair of blade frames, each comprising a pair of spaced, substantially parallel, supporting members and a pair of spaced, substantially parallel, blade carrying members extending between the supporting members, fastening means for removably attaching one of the blade frames to a lateral extension of one of the reciprocable members and the other blade frame to a lateral extension of the other reciprocable member, whereby the blade frames can be removed from the machine while retaining the synchronous relation between the rockers and reciprocable members, cutting blades extending in parallel relation between the blade carrying members of the frames, and means for oscillating the rockers on their pivots and reciprocating the blade frames.

8. In a slicing machine, a first pair of spaced rockers mounted for pivotal movement intermediate their ends, a second pair of spaced rockers removed from said first pair and mounted for pivotal movement intermediate their ends, a first pair of spaced reciprocable members extending between and connected to the ends of the first pair of rockers, a second pair of spaced reciprocable members extending between and connected

to the ends of the second pair of rockers, said reciprocable members being separated from one another and each member having lateral extensions thereon, the reciprocable members effect-
5 ing synchronous movement of the rockers of each pair, a pair of blade frames, each comprising a pair of spaced, substantially parallel supporting members, and a pair of spaced, substantially parallel blade carrying members extending between
10 the supporting members, fastening means for removably attaching the blade frames to the lateral extensions of the reciprocable members, each blade frame being attached separately to one of each pair of reciprocable members and arranged in confronting relation with respect to the other blade frame for simultaneous reciprocation therewith in opposite directions, a plurality of cutting blades extending in parallel relation between the blade carrying members of each frame, and drive means for actuating the rockers, reciprocable members and blade frames. 10

CHARLES H. PETSKEYES.