Oct. 18, 1932. H. J. BALLEM 1,882,732

SLICING MACHINE

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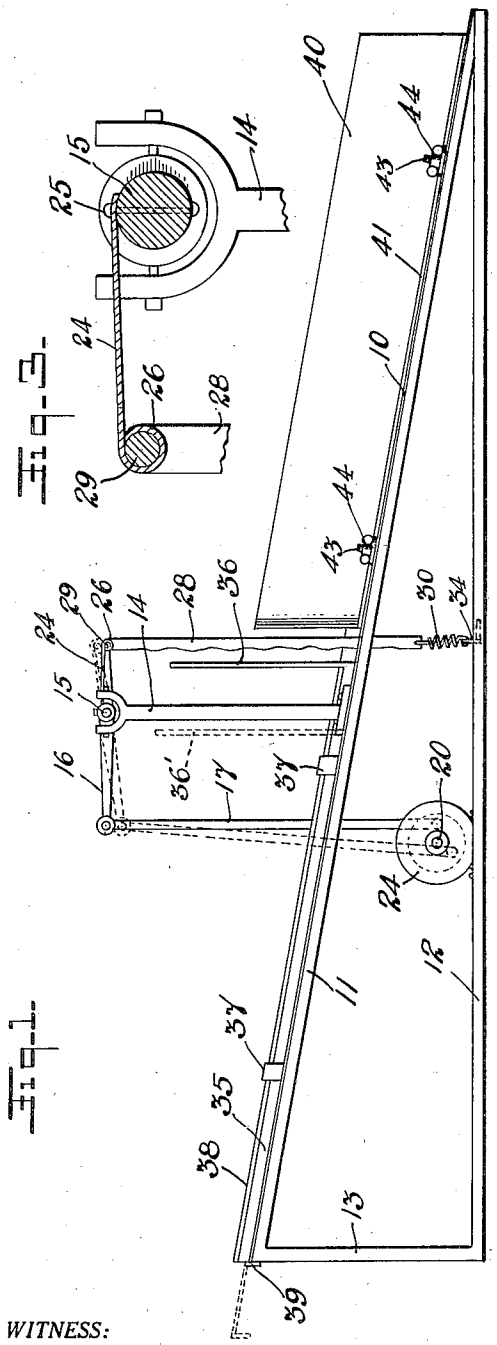


Fig. 1.

Fig. 3.

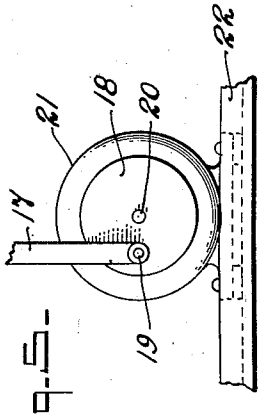


Fig. 5.

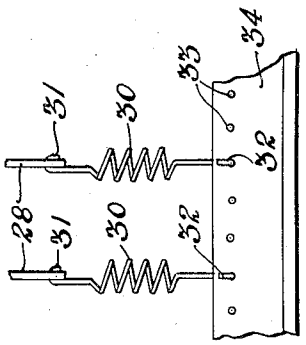


Fig. 4.

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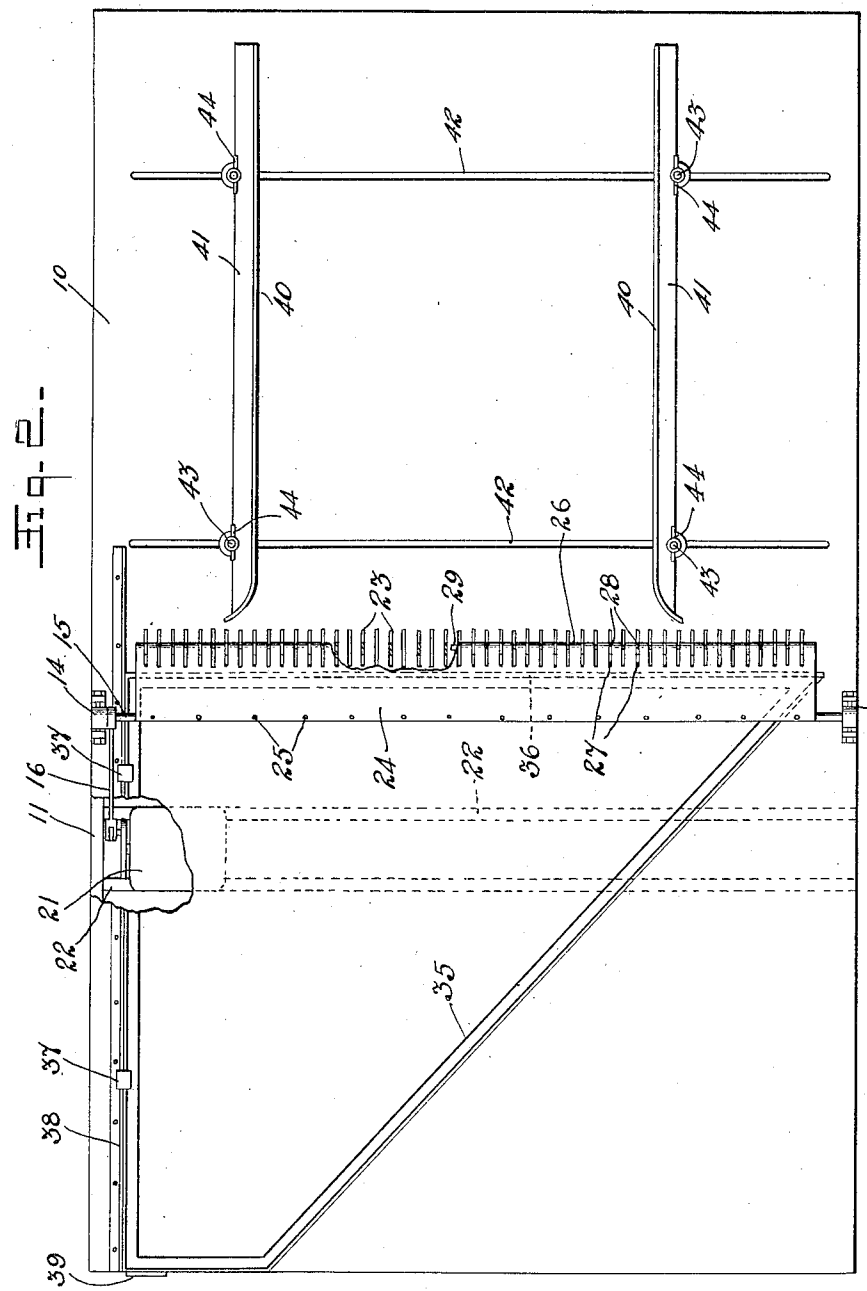
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Fig. 2.



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UNITED STATES PATENT OFFICE

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SLICING MACHINE

Application filed February 25, 1931. Serial No. 518,212.

This invention relates to slicing machines, and has for an object to provide an improved type of machine for the purpose, having improved means for operating the slicing elements, and with improved means for varying the intervals between the slicing elements as utility may dictate.

A further object of the invention is to provide a slicing machine having an inclined deck and with a plurality of knives reciprocating vertically through the deck with improved means above and below the deck for actuating the knives.

A further object of the invention is to provide a slicing machine having an inclined deck with a plurality of knives spaced apart, reciprocating vertically through the deck, with motive means for reciprocating the knives in unison, and improved means beneath the deck for tensioning the knives.

The invention, therefore, comprises a substantially plain deck which is maintained at an inclination by some type of framework, with a motor, preferably located beneath the deck, and with knives operated by an oscillating member, said knives extending through the deck with connection from the motor to oscillate the oscillating member to reciprocate the knives, and improved means for controlling the feeding and withdrawing of material from the knives.

The invention is directed to other objects and possesses other features of novelty and advantage, some of which, together with the foregoing, will be hereinafter more fully set forth.

In the drawings:

Figure 1 is a view of the device in side elevation,

Figure 2 is a top plan view with sections broken away,

Figure 3 is an enlarged detailed sectional view of the oscillating member and knife,

Figure 4 is an enlarged detailed view in elevation of the manner of connecting the tensioning members, and

Figure 5 is a detailed elevation of the motor drive.

Like characters of reference indicate corresponding parts throughout the several views.

The improved slicing machine which forms the subject-matter of this application comprises a deck 10, preferably composed of substantially plain sheet material and maintained at an inclination by any type of supporting frame, as the inclined bar 11, base 12 and upright 13.

As shown at Figure 1, the inclined bar 11 converges with the base bar 12 at the end opposite the upright 13 and by this means the deck 10 is held at an inclination with its apex substantially in plane with the lowest part of the supporting structure.

Erected upon the side bars 11 are bearings 14 and upon, or at, or adjacent to the upper end of said bearings, a shaft 15 is journaled.

The shaft 15 is provided with an arm 16 to which is connected a link 17, operating as a pitman in conjunction with the wheel 18 and wrist pin 19 upon the arbor 20 of a motor 21.

Preferably, this motor 21 is mounted upon cross-bars 22 and beneath the deck 10, although the present invention is broad enough in its scope to provide for the mounting of the motor in any relation to the deck.

The deck 10 is slitted at intervals, forming a transverse row of slits 23 extending substantially across the deck. Upon the shaft 15 a plate 24 is secured in any approved manner. As shown in the drawings, rivets 25 are suggested, but any means of attachment is within the scope of the present invention.

This plate 24 extends preferably opposite the arm 16 and has its outer edge rolled, as shown at 26. The rolled edge is also slitted, as shown at 27, the number of slits and spacing corresponding to the number and spacing of the slits 23 and being positioned directly over the said slits.

Knives 28 are provided and in use may occupy as many of the slits 27 and 23 as the work requires. In other words, the knives may be omitted from some of the slits to space the knives farther apart for producing thicker slices.

The knives 28 are connected pivotally with the plate 24 by means of a wire or rod 29,

which slips through the roll 26 and through perforations formed in or adjacent to the upper extremities of the knives 28.

As shown at Figure 1, these knives are scalloped along their cutting edges, but this is only one of the types which may be employed upon the device, and the structure is in no way limited to such formation.

The lower ends of the knives are each attached to a spring 30 by any usual and ordinary means. As shown in the drawings, hooks 31 are formed upon said springs with other hooks 32 at the opposite ends, said last mentioned hooks engaging in perforations 33 in the cross-bar 34 which extends preferably entirely across the structure and between the base bars 12.

The perforations 33 will correspond in spacing and number to the slits 27 and 23, and will be located directly thereunder, so that the tensions applied by said springs to the knives 28 will tend to hold said knives free of engagement with the walls of the slits in the deck.

For the purpose of feeding bodies to be sliced, a frame 35 is provided having an upstanding wall 36. Guides 37, or equivalent means, are provided for properly holding the frame and wall 36 in proper relation. When so employed, a guide 38 is rigidly attached to the deck which will be slidably engaged by the guides 37. To limit the movement of this structure so that the wall 36 will at no time engage the knives 28 a stop 39 is provided.

Upon the side of the bank of knives opposite this wall 36 and frame 35, adjustable guides 40 are provided. These guides 40 are carried by flanges 41 and slots 42 are provided in the deck so that screws 43 may pass through said slots and through the flanges 41 and be provided with any type of fastening means, as the winged nuts 44.

The device is intended primarily for the slicing of bakery products such as cakes, bread or the like, but is, of course, not limited in the scope or utility to such bakery products.

When operating upon bakery products produced in cool form, the motor is energized to oscillate the plate 24 and reciprocate the knives 28 which have been previously applied at such intervals as the contemplated work will require.

The knives being reciprocated, the wall 36 is drawn backwardly by the manipulation of the frame 35 and a loaf introduced between the wall and the knives. The loaf is now pushed against the reciprocating knives by manual stress upon the frame 35 applied through the wall 36. The guides 40 are properly spaced so that the slices emerging from their contact with the knives will maintain the original loaf form by the said guides engaging the end slices of the loaf and preventing separation thereof.

The wall 36, as will be noted, for the purpose of not dulling the knives, is arranged to reach its limit of movement slightly before it comes to the knives and the next loaf is therefore necessarily employed as the immediate means for forcing the first loaf completely through. Each loaf will follow the other in sequence and each will complete the slicing of the preceding loaf.

Of course the invention herein may be modified and changed in various ways without departing from the disclosures herein set forth and hereafter claimed.

The invention is hereby claimed as follows:

1. A slicing machine comprising a supported deck having a series of spaced slits, a plate mounted above the deck having a tubular edge provided with slits registering with the slits of the deck, knives pivoted in said last mentioned slits by means within the tube and extending downwardly through the slits of the deck, means beneath the deck to tension the knives, and means to oscillate the plate.

2. A slicing machine comprising an inclined deck having intermediate its upper and lower margins a transversely extending series of spaced slits, a shaft journaled above the deck substantially over said slits, a plate carried by the shaft and extending completely over said slits, said plate being slitted in registry with the slits of the deck, knives carried by said plate inserted within said slits and extending through the slits of the deck, and springs connected with the lower ends of the knives below the deck.

3. A slicing machine comprising an inclined deck having a series of spaced slits extending transversely across the deck intermediate its upper and lower edges, a shaft journaled above the deck, a plate carried by the shaft having its edge spaced from the shaft rolled to form a tube, said rolled edge being slitted, said slits registering with the slits of the deck, knives inserted in the slits of the plate, a rod inserted through said roll and through the inserted ends of the knives pivoting said knives in said plate, said knives extending through the slits of the deck, tensioning means beneath the deck connected with the knives, and motor means for oscillating the shaft.

4. A slicing machine comprising an inclined substantially plain deck having a plurality of slits formed as a series extending in spaced relation transversely across said deck, a motor mounted beneath the deck, a shaft journaled above the deck, a plate rigidly connected with the shaft and extending above the slits of the deck and having its edge rolled to form a tube, said tubular rolled edge being slitted in registry with the slits of the deck, knives inserted in said slits of the plate

and through the slits of the deck, a rod extending through the roll of the plate and through the knives and pivoting said knives to said plate, means beneath the deck for exerting tensional stress upon the lower ends of the knives, and mechanical means for locking the shaft and oscillating the plate.

5. A slicing machine comprising a perforate deck, a shaft journaled above the deck, a plate carried rigidly by the shaft and provided at its edge remote from the shaft with a roll, said roll being slitted, knives in some of said slits, a rod inserted into said roll and through perforations in the knives, said knives being extended downwardly through the perforations of the deck, means beneath the deck exerting tension upon said knives, an arm carried rigidly at one end of the shaft, and a power plant connected with the arm to oscillate the shaft and plate.

6. A slicing machine comprising a perforate deck, a shaft journaled above the deck, a plate carried rigidly by the shaft and provided at its edge remote from the shaft with a roll, said roll being slitted, knives in some of said slits, a rod inserted into said roll and through perforations in the knives, said knives being extended downwardly through perforations of the deck, means beneath the deck exerting tension upon said knives, an arm carried rigidly at one end of the shaft, a link pivotally connected with the arm, and a power plant connected with the link to oscillate the shaft and plate.

In testimony whereof I have signed my name to this specification.

HENRY J. BALLEM.