A. A. UNRUH.

SLICING MACHINE.

APPLICATION FILED MAY 1, 1916.

1,292,160.

Patented Jan. 21, 1919.

2 SHEETS—SHEET 1.

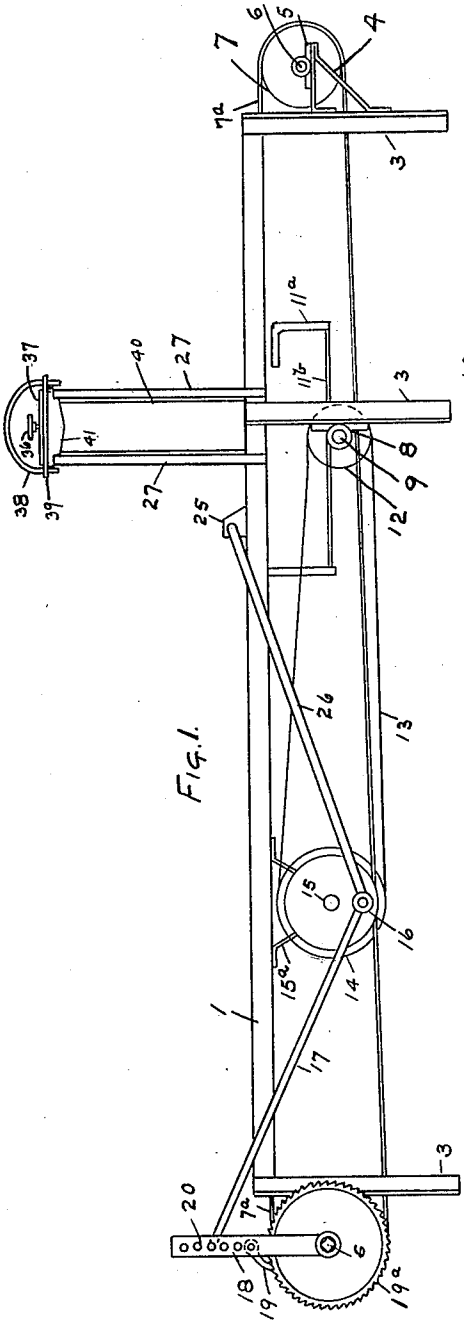


Fig. 1.

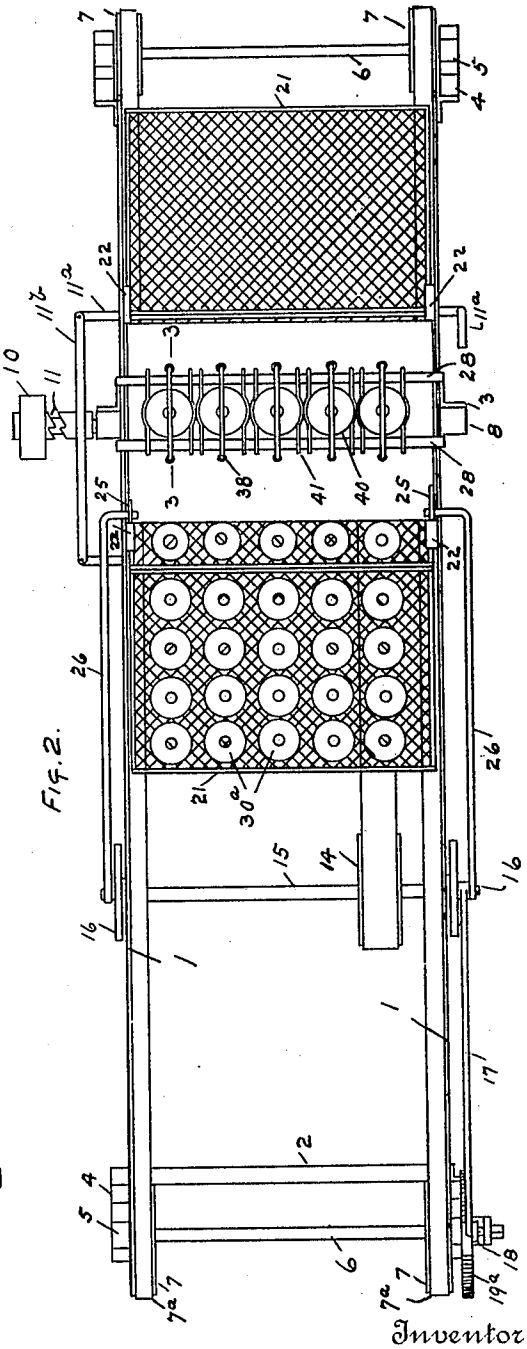


Fig. 2.

Inventor

Albert A. Unruh

By

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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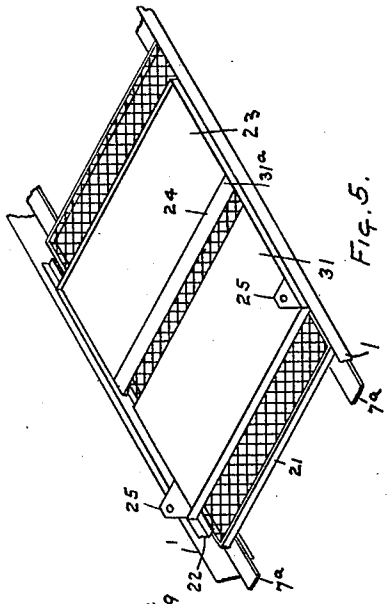


Fig. 5.

Fig. 3.

Fig. 4

Inventor

Albert A. Unruh

By

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALBERT ATWOOD UNRUH, OF PORTLAND, OREGON, ASSIGNOR TO PACIFIC EVAPORATOR COMPANY, OF PORTLAND, OREGON, A CORPORATION OF OREGON.

SLICING-MACHINE.

1,292,160. Specification of Letters Patent. Patented Jan. 21, 1919.

Application filed May 1, 1916. Serial No. 94,595.

To all whom it may concern:

Be it known that I, ALBERT ATWOOD UNRUH, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Slicing-Machines, of which the following is a specification.

This invention relates to slicing machines and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

More particularly the invention is designed for slicing fruit preparatory to drying the same. The invention is designed to slice fruit and deposit it on drying trays in position to be dried. Fruits having openings therethrough, such as cored apples, are preferably sliced across the opening and the invention is designed to accomplish this purpose. The details of the invention and the objects accomplished will appear from the specification and claims.

The invention is illustrated in the accompanying drawings as follows:—

Figure 1 shows a side elevation of the machine.

Fig. 2 a plan view of the machine.

Fig. 3 an enlarged longitudinal and vertical section of a portion of the machine immediately adjacent to the knife, on the line 3—3 in Fig. 2.

Fig. 4 a plan view of one of the holders.

Fig. 5 a perspective view of the slicing knife and parts immediately adjacent thereto.

The frame is made up of the side pieces 1 and the cross pieces 2. Legs 3 are provided at intervals for carrying the frame.

Brackets 4 extend from the end legs and bearings 5 are arranged on these brackets. The shafts 6 are journaled in the bearings 5 extending across the machine. Conveyer belt pulleys 7 are fixed on the shafts 6 and the conveyer belts 7^a extend the full length of the machine, one near each side piece 1.

Bearings 8 are mounted on the center posts 3 and the shaft 9 is journaled in these bearings. A drive pulley 10 is loosely mounted on the end of the shaft 9 and the detent clutch 11 is adapted to throw the pulley 10 into and out of driving relation with the shaft 9. In order that the clutch may be readily operated from both sides of the machine, a link 11^b is secured to the moving member of the clutch and the rod 11^a extends across the machine. By moving the rod 11^a the clutch may be thrown into and out of engagement.

A pulley 12 is fixed on the shaft 9 and the belt 13 communicates the movement of the pulley 12 with a pulley 14. The pulley 14 is fixed on a shaft 15 extending across the frame and journaled in bearings carried by the brackets 15^a. Cranks 16 are mounted at the outer ends of the shaft 15.

In order to give to the conveyer belts 7^a an intermittent movement, the following mechanism is provided:—A pitman 17 extends from one of the cranks 16 to a rocker arm 18. The rocker arm 18 is journaled on the outer end of the shaft 6 and carries a pawl 19 adapted to engage a ratchet wheel 19^a fixed on the shaft 6. It will be readily seen that as the crank 16 rotates, the pitman 17 is given a reciprocating movement which imparts an oscillatory movement to the rocker arm 18. The pawl 19 picks up the ratchet wheel 19^a when moved in one direction, thus giving to the conveyer belts a forward movement. On the return movement of the rocker arm, the pawl 19 rides over the ratchet wheel 19^a without imparting movement in the ordinary manner. With different sizes of fruit or articles to be sliced, it is desirable to vary the motion given to the conveyer belts with each cycle of the machine. For this purpose, the rock arm 18 is provided with a series of openings 20. The pitman 17 may be hooked into any one of these openings thus varying the effective length of the rock arm 18 and the travel of the ratchet pawl 19. In this way the extent of movement of the belts may be regulated.

The drying trays 21 are placed on the conveyer belts 7^a and are carried forward with these belts.

Guides 22 are secured to the sides 1 and the knife frame 23 is arranged to slide in this guide. The knife 24 extends across the frame 23 and is provided with the concave cutting edge 24^a. The knife frame and particularly the knife is arranged so as to travel above the trays supported by the belts. Brackets 25 extend upwardly from the side rails of the frame 23 and connecting rods 26 extend from the cranks 16 to the brackets 25, the connecting rods having hooked ends extending into perforations in the brackets.

It will be readily seen from this construction that the knife is given a recipro-

cating movement as the cranks 16 are rotated and that the frequency of this reciprocating movement corresponds to the frequency of the step by step movement of the conveyer belts.

It is desirable that the fruit or articles being sliced be deposited in single layers upon the drying trays and also that they be distributed over the trays leaving a uniform interval between the different pieces. Such a distribution assures even drying and obviates a re-arrangement of the fruit on the trays by the operator. To accomplish this it is desirable that the fruit be arranged in rows and preferably in rows of columns so that as one article is sliced another one immediately takes its place. In this way the operation of the machine may be practically continuous. Where the articles to be sliced have an opening through them such as cored apples, it is preferable to have the slicing across the opening.

A fruit supporting frame is formed immediately over the knife. Posts 27 extend upwardly from the sides 1 and cross pieces 28 connect these posts. A holder tube 29 extends through the cores of the apples 30 and holds them in columns above the knife. The knife frame has a platform 31 which supports the column as the knife advances and is moved out from under the slice taken off by the knife as the knife advances. The platform 31^a is on the same plane as the knife and supports the column above the knife as the knife advances. An angle bar 32 extends across the machine at the point reached by the knife in its extreme forward travel. A leather abutment 32^a is secured to the bar 32 and prevents a side movement of the fruit as it is engaged by the knife.

The fruit holder is preferably, as shown, in the form of a tube 29. Fingers 33 extend from within the tube outwardly through the slots 34 arranged near the bottom of the tube. When these fingers 33 are in their outward position they prevent the removal of the fruit from the tube. A rod 35 extends through the tube and is connected with the fingers 33. A handle 36 is provided for the rod 35. The fingers 33 are curved as shown in Fig. 3 so that as the rod 35 is pulled upwardly, the cam action on the fingers retracts them, thus permitting the fruit to slide off the end of the tube and to be acted upon by the knife. A cross bar 37 is also secured to the rod 35 and is of sufficient length to engage the supporting bars 28. The operator in loading the holder, places the fruit on the tube 29 and then places the cross bar 37 on the bars 28. A downward pressure on the tube 29 forces the bar 37 upwardly and with it the rod 35 thus by the single act of positioning the holder, the fingers 33 are retracted. A bail 38 is provided for convenience in handling the holder. The bail is connected with the tube by the cross piece 39.

Fruit, such as apples, may be held by the holder so far described and a series of holders may be used putting the fruit as close together as the size of the fruit will permit. Such an arrangement of holders is shown in plan view in Fig. 2. I prefer to supplement the holders, however, with guide tubes 40. These tubes are provided with the hangers 41 (see Fig. 4) and the guide tubes by means of these hangers are hung on the bars 28. The fruit may be placed on the holders 29 if desired and these holders with their fruit inserted into the tubes. The holder may be left in the fruit in the guide tubes 40 but where these guide tubes are used but one holder may be used, loading each tube and then withdrawing the holder, thus utilizing the tube 40 for guiding the column of fruit placed in it by the holder. Even with fruit having openings therethrough a measure of success may be accomplished in slicing across the opening in this manner although the certainty of getting a direction of cut at right angles to the axis of the opening is not so sure as where the holders are employed in the cutting action.

The operator in operating the machine loads the holders or guide tubes successively so that the operation of the machine may be continuous. The trays are fed forward as the slices are deposited upon them. The concave cutting blade is more certain in depositing the slices than other forms of blade as it obviates the tendency of such slices to stick to the knife. The trays are deposited at one end of the conveyer belt and taken from the other as they are filled.

What I claim as new is:—

1. In a slicing machine, the combination of a slicing knife with a recessed slicing face adapted to readily release the slices as completed; means directly under the cutting face of the knife for receiving the material as it is sliced in a pre-determined spaced relation; and devices for presenting material to the knife.

2. In a slicing machine, the combination of a tray conveyer; means for imparting motion to the conveyer; a slicing knife arranged over the conveyer; devices for actuating the knife; means for holding the articles to be sliced in columns presenting the articles in each column successively to the knife; and means for varying the interval between the centers of each column.

3. In a slicing machine, the combination of a slicing knife; a holder for an article to be sliced having an opening therethrough extending through the opening; and means for positioning the holder relatively to the knife.

4. In a slicing machine, the combination

of a slicing knife; a holder for an article to be sliced having an opening therethrough extending through the opening; and means for positioning the holder relatively to the knife, said holder having retracting fingers extending therefrom for retaining the articles on the holder.

5. In a slicing machine, the combination of a slicing knife; a holder for articles having an opening therethrough extending through the articles, said holder being in the form of a tube and having retracting fingers extending therefrom; and means extending through the tube for retracting the fingers.

6. In a slicing machine, the combination of a slicing knife; a holder for articles having an opening therethrough extending through the articles, said holder being in the form of a tube and having retracting fingers extending therefrom; means extending through the tube for retracting the fingers; and mechanism acting on said means by the positioning of the holder.

7. In a slicing machine, the combination of a tubular holder adapted to extend through articles to be sliced having an opening therethrough; fingers adapted to be housed in the holder and to protrude therefrom; and devices extending through the holder for actuating the fingers.

8. In a slicing machine, the combination of a slicing knife; means for actuating the same; a series of holders adapted to extend through articles having openings therethrough and to present such articles to the knife; and a rack on which said holders may be hung to position them with relation to the knife.

9. In a slicing machine, the combination of a knife; means for actuating the knife; a series of guide tubes for positioning the articles to be sliced relatively to the knife; and a rack for supporting said tubes.

10. In a slicing machine, the combination of a knife; means for actuating the knife; a series of guide tubes for positioning the articles to be sliced relatively to the knife; a rack for supporting said tubes; and a series of holders arranged in said tubes.

In testimony whereof I have hereunto set my hand.

ALBERT ATWOOD UNRUH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."