N. K. SMYTHE.

MACHINE FOR SLICING FRUIT.

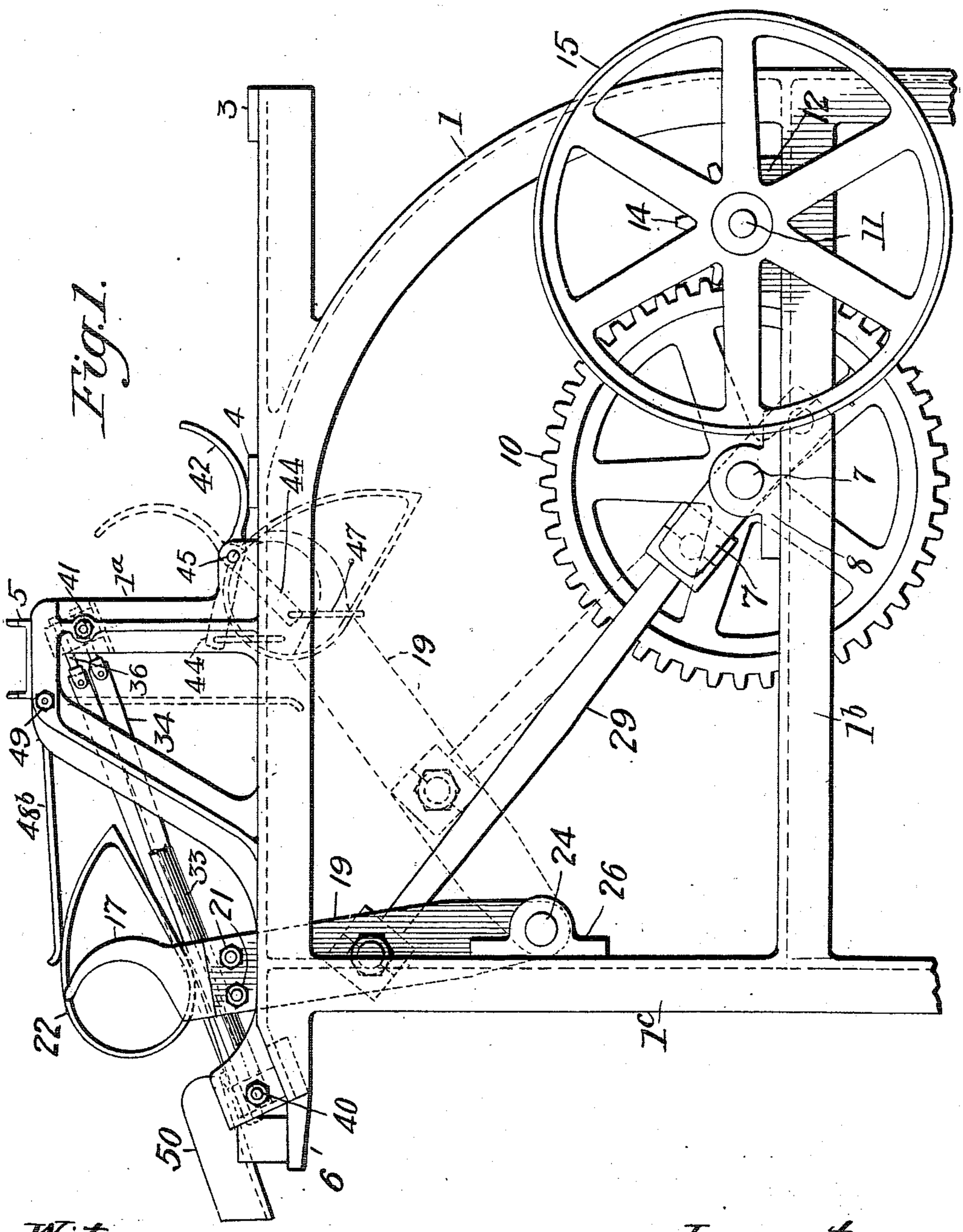
APPLICATION FILED MAR. 25, 1910.

995,491.

Patented June 20, 1911.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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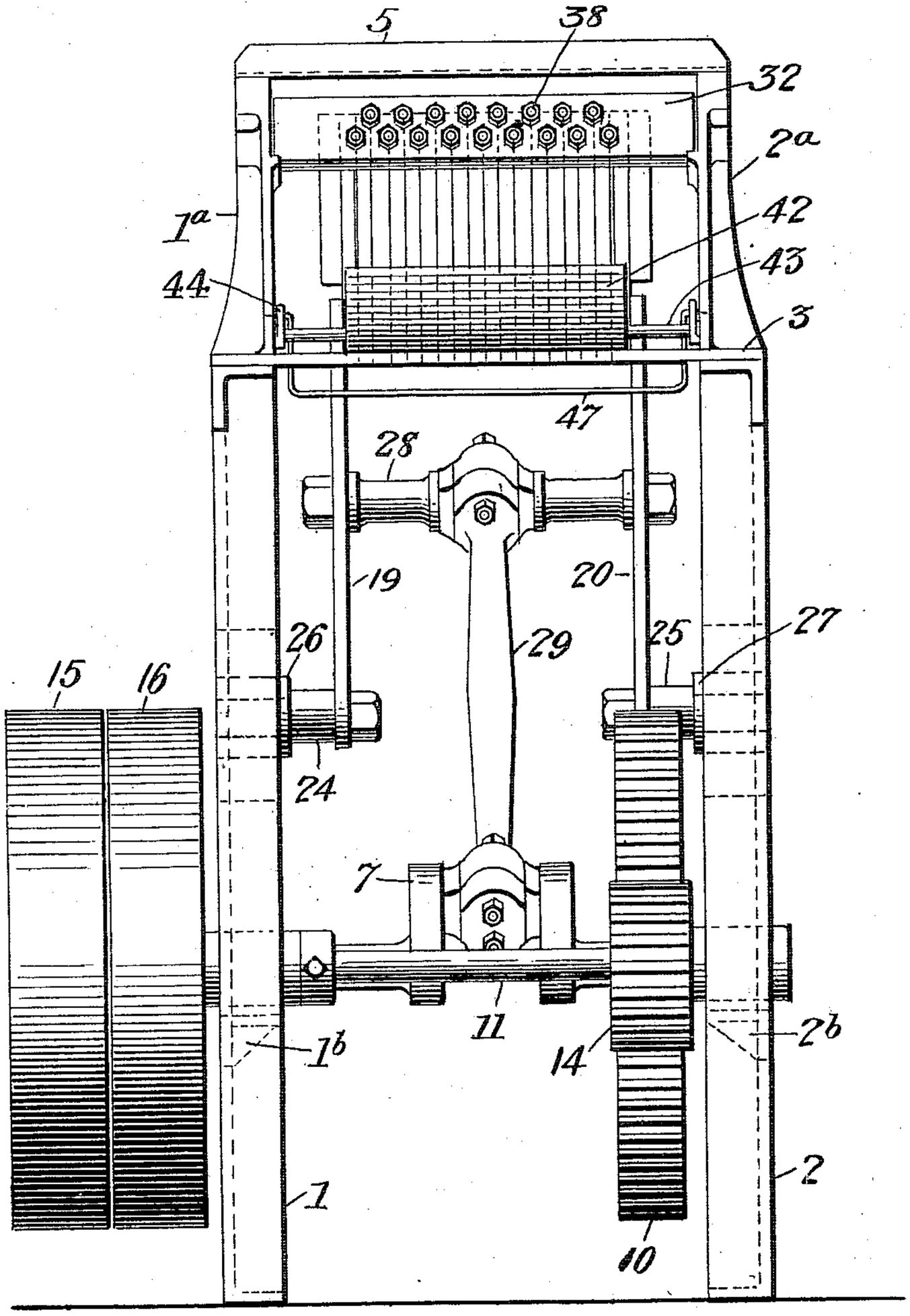
4 SHEETS—SHEET 2.

Fig. 2.



Witnesses.

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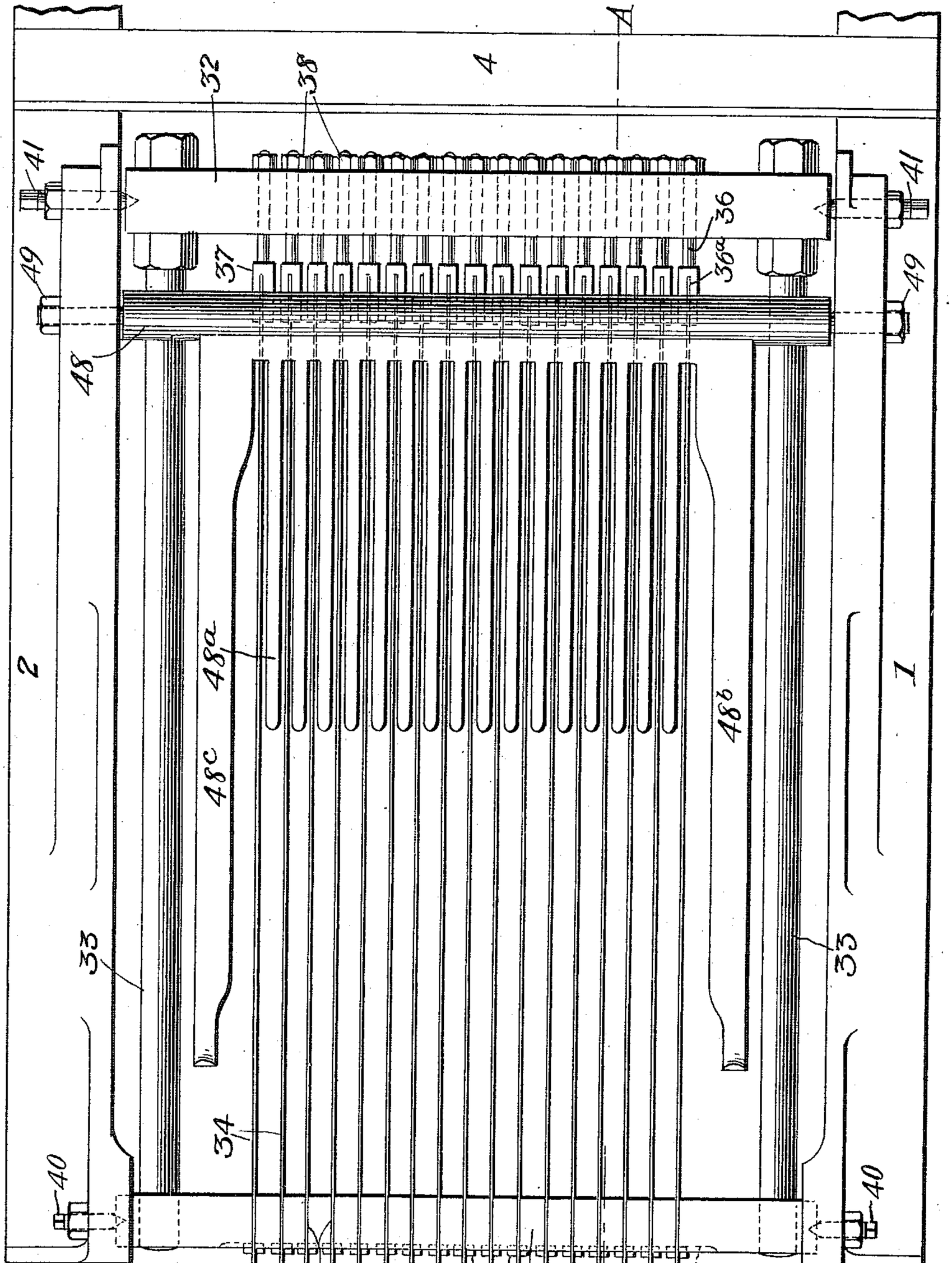

Fig. 3.

Witnesses.

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4 SHEETS—SHEET 4.

Fig. 6.

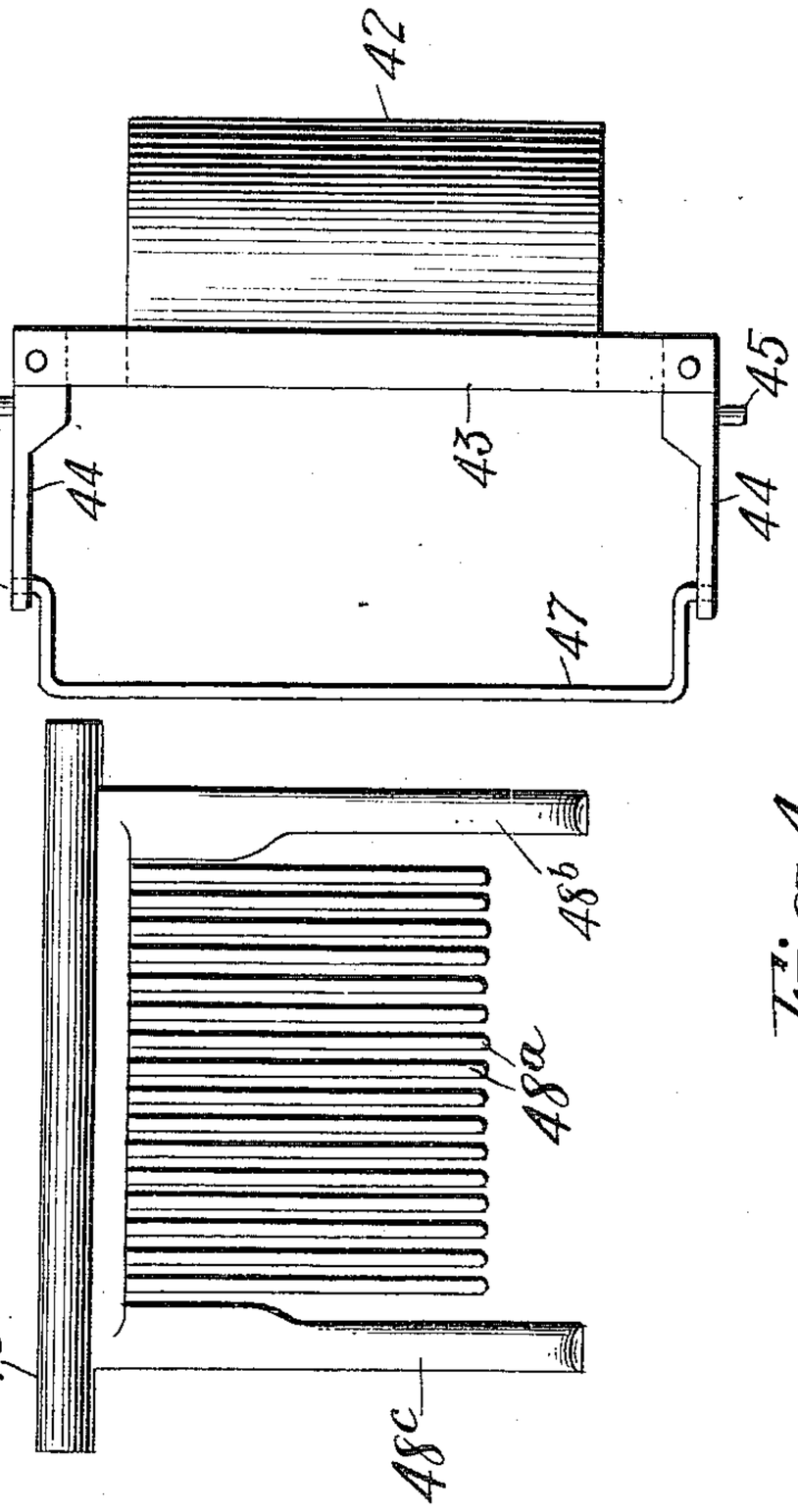
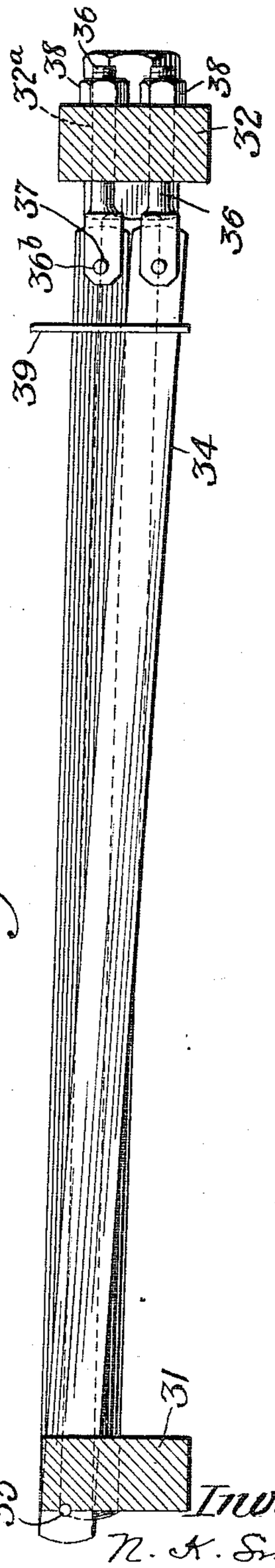


Fig. 5.

Fig. 4.



Witnesses.

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Att'ys

UNITED STATES PATENT OFFICE.

NICKOLAS K. SMYTHE, OF HILO, TERRITORY OF HAWAII.

MACHINE FOR SLICING FRUIT.

995,491. Specification of Letters Patent. Patented June 20, 1911.

Application filed March 25, 1910. Serial No. 551,513.

To all whom it may concern:

Be it known that I, NICKOLAS K. SMYTHE, a citizen of the United States, residing at Hilo, county and Territory of Hawaii, have invented certain new and useful Improvements in Machines for Slicing Fruit; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for slicing fruit, such as pineapples and the like, and particularly to such machines in which the fruit is sliced by a plurality of stationary knives against which it is forced.

The object of my invention is to produce a machine of this type which will automatically slice the fruit in a rapid and efficient manner.

Another object is to provide for the quick replacement of the knives when they become dull.

A further object is to simplify and cheapen the construction of the machine as a whole.

The machines of this character heretofore employed usually smash or damage the fruit if run rapidly, entail a considerable loss of time for the renewal or sharpening of the knives when dull, and are of expensive construction. These objections are overcome by my improvements; the knives are mounted in a removable frame such that it may be easily replaced by another frame provided with a set of sharp knives; the cutting edge of each knife is arranged alternately higher or lower than its neighbors so that one set of alternate knives begins cutting before the remaining knives come into play; the fruit instead of being pushed in a straight line is swung in an arc against the knives set at an angle, thus giving more of a shearing cut; the construction of the machine is simple and inexpensive.

These and other features are hereinafter more fully described and claimed.

In the drawings, Figure 1 is a side elevation of a preferred form of a machine embodying my improvements. Fig. 2 is an elevation of the feed end of the same. Fig. 3 is a plan view of a complete knife frame. Fig. 4 is a sectional view on the line A—A of Fig. 3. Fig. 5 is a plan view of the swinging guard. Fig. 6 is a plan view of the tiltable feed plate and wire bail.

The body of the machine consists of two similar right and left hand side frames 1 and 2, preferably of cast iron, held vertically and parallel to each other by suitable braces, such as the braces 3 and 4 at the feed end, the channel brace 5 at the top 1^a, 2^a, the brace 6 at the discharge end, and by any suitable bracing of the legs (omitted in Figs. 1 and 2 for the sake of clearness).

A crank-shaft 7 is journaled in the boxes 8 attached to the lower horizontal portions 1^b and 2^b of the side frames 1 and 2 respectively. The gear 10 is keyed to the crank-shaft 7. A shaft 11 is journaled in the boxes 12, similarly attached to 1^b 2^b. A pinion 14, keyed to this shaft 11, meshes with the gear 10. The shaft 11 is provided with a suitable driving pulley 15, and also with a loose pulley 16 if desired.

A plurality of flat hook shaped plates 17, separated from one another at their lower ends by suitable means, are bolted together between two similar rocker arms 19, 20 by the bolts 21. The plates 17 in conjunction with the arms 19, 20 constitute a swinging or oscillating fruit carrying member. The thickness of the hook plates 17 depends upon the thickness of the slices into which it is desired to cut the fruit. The washers 18 are slightly thicker than the blades 34 hereafter mentioned. Cams 22, are secured to the two outer hook plates 17. The lower ends of the rocker arms 19, 20 are provided with the stud pins 24, 25 trunnioned in the boxes 26, 27 attached to the vertical legs 1^c, 2^c of the discharge end of the side frames 1, 2 respectively. A cross bar 28 is secured between and near the center of the arms 19, 20. A connecting rod 29 connects the cross bar 28 and the crank 7.

The bars 31, 32, held parallel and at a fixed distance apart by two stud bolts 33, form a removable frame for the knives 34, Fig. 3. The bar 31 is provided with a plurality of transverse saw-cuts or slots 31^a to admit the ends of the blades 34, and a groove 31^b is cut longitudinally to receive pins 35 in the ends of said blades, Fig. 4. The other end of each blade 34 is removably held in a slot 36^a, cut longitudinally in the head

of a bolt 36, by a pin 37 passing transversely through a hole 36[b]. Holes 32[a], preferably staggered, are provided in the bar 32 for the bolts 36. It will now be noted that by tightening a nut 38 on a bolt 36 a suitable tension on the blade 34 may be obtained.

A plate 39, provided with saw-cuts, may be placed over the ends of the blades 34 near the bolts 36 to prevent any possible turning or twisting of said blades, which might otherwise occur particularly when tightening the same. The knife frame is removably and adjustably held in an inclined position, the bar 31 being clamped between screws 40 in the discharge end of the side frames 1 and 2, and the bar 32 between the screws 41 in the tops 1[a], 2[a] of said frames. It will be understood, therefore, that the two series of screws 40 and 41 provide for the lateral adjustment of the knife frame in the machine. A curved feed plate 42 is secured at its lower edge to a bar 43, and a lever 44 is attached at right angles to each end of said bar. These levers 44 are provided with a pin 45 projecting outwardly, Fig. 6. The pins 45 enter holes in the side frame portions 1[a] and 2[a], such that normally the feed plate 42 rests upon the brace 4, Fig. 1. A wire bail 47 is suspended from holes 44[a] in the ends of the levers 44. The cams 22 when swung forward ride over and engage this bail 47 and tilt the feed plate 42 on the pins 45 as pivots, as shown in Fig. 1.

A comb shaped guard 48 is provided which is pivoted to swing between the screws 49 in the tops 1[a], 2[a] of the side frames 1, 2. The normal position of the guard 48 is therefore vertical, shown by dotted lines Fig. 1. The teeth 48[a] of the guard 48 pass between the blades 34 and clear same. The guard 48 is provided with fingers 48[b], 48[c], Fig. 5. The cams 22, engage these fingers 48[b], 48[c] respectively, thereby swinging the guard 48 on the screws 49 as pivots, into an approximately horizontal position when said cams are in their upper position as shown by full lines, Fig. 1. A discharge chute 50 is provided, shown above the cross brace 6 in Fig. 1.

In operation, when power is applied by a belt to the pulley 15, the rocker arms 19, 20, carrying the hook plates 17 and cams 22, are caused to swing through an arc, on the pins 24 25 as centers, between the positions shown by full and by dotted lines respectively, Fig. 1. The fruit to be sliced is successively deposited upon the feed plate 42 in any suitable manner. When swinging downward the cams 22 engage the bail 47 and thereby tilt the feed plate and cause the fruit thereon to drop upon the hook plates 17. At the same time the guard 48, hanging vertically, prevents the fruit from falling other than into said hooks. In swinging from the lower to near the upper position, this guard is just in advance of the fruit, being swung on the pivots 49 by means of the cams, and retains the fruit in the hook plates until cut by the knives, whereupon the guard continues upward and permits the slices to leave the hook plates and be discharged into the chute 50. A shearing cut is obtained by moving the fruit through an arc against the knives, and as only alternate knives begin cutting, the fruit is not damaged while being sliced, as formerly when the fruit was pushed against all the knives simultaneously. In swinging upward the cams soon become disengaged from the bail and allow the feed plate to return to its former position to receive the next fruit to be sliced. The guard is lowered when the cams swing downward. The operation as described is then repeated.

I claim:

1. In a fruit slicing machine, a flat open frame having a plurality of longitudinally extending knives, and a carrier which swings the fruit arcuately against and past the knives and through the frame and then reverses its movement and returns to the initial position.

2. In a fruit slicing machine, the combination with a flat open frame having a plurality of parallel knives arranged therein, of a pivoted fruit carrying member arranged to swing through said frame, and means to oscillate said swinging member.

3. In a fruit slicing machine, the combination with an open frame having a plurality of knives, of a swinging fruit carrying member having portions movable between the knives and through said frame, means to oscillate said member, and means controlled by said member to feed the fruit thereto.

4. The combination with a frame carrying a plurality of knives, of an oscillating fruit carrying member having portions movable in an arc between the knives, means to oscillate said member, and means to deliver fruit to said member automatically at a predetermined point in its movement.

5. The combination with a knife carrying frame, of a swinging pivoted member having portions movable to and fro in an arc between the knives, and a feed device for the fruit tilted automatically by direct engagement with said member at one end of its movement, to deliver the fruit to such member.

6. In a fruit slicing machine, the combination with an open frame inclined upwardly from the horizontal and having knives in vertical planes, of a swinging fruit carrying member pivoted below said frame and having portions movable upwardly in an arc between the knives, and means to oscillate said member.

7. In a fruit slicing machine, an open

frame inclined upward from the horizontal and having knives arranged in vertical planes, a swinging fruit-carrying member pivoted below said frame and having portions movable upward in an arc between and past the knives, and gearing for oscillating said member.

8. In a fruit slicing machine, a feed device, a discharge chute, a series of knives interposed between the same, a fruit carrying member mounted to swing from said feed device past the knives and into proximity to said discharge-chute, and means for oscillating said member.

9. In a fruit slicing machine, a feed device, a series of upwardly inclined knives, a vertically oscillating fruit carrying member movable to and fro between and past the knives in such a direction as to produce a shearing cut and which at one end of its movement assumes a fruit receiving position adjacent said feed device, and at the opposite end of its movement reaches a fruit discharging position, and gearing for oscillating said member.

10. In a fruit slicing machine, the combination with an open frame carrying a plurality of knives, of a fruit carrying member movable between the knives, a device to feed the fruit to said member, and a guard coacting with said device and operated by said member.

11. In a fruit slicing machine, a flat open frame having vertically disposed knives traversing the same, a fruit carrying member movable in a vertical plane to coact with said knives, and screws at the corners of said frame for adjusting the same laterally in the machine.

12. In a fruit slicing machine, an open frame, a plurality of parallel knives traversing said frame and arranged in alternate series or sets, the cutting edges of one set being located in one plane and those of the other set in a parallel plane, and means to push the fruit against and past the knives.

13. In a fruit slicing machine, the combination of a plurality of knives, a fruit carrying member movable between the knives, and a depending guard which hangs between the knives and the carrying member when the latter is in its fruit receiving position, and which is swung away from the knives by engagement with said member.

14. In a fruit slicing machine, the combination of a plurality of knives, a swinging fruit carrying member coacting therewith, a device to feed the fruit to said member when the latter is at one end of its movement, and a swinging guard which is interposed between the carrying member and said knives when the former is in its fruit receiving position, said feed device being operated by said member when the latter moves into that position, and the guard being swung from in front of the knives as said member moves in the opposite direction.

In testimony whereof I affix my signature, in presence of two witnesses.

NICKOLAS K. SMYTHE.

Witnesses:

J. R. MILLS,

ROBT. J. PRATT.