

F. B. FOLEY.
 UPPER CUT APPLE SLICING MACHINE.
 APPLICATION FILED APR. 3, 1914.

1,193,003.

Patented Aug. 1, 1916.

2 SHEETS—SHEET 1.

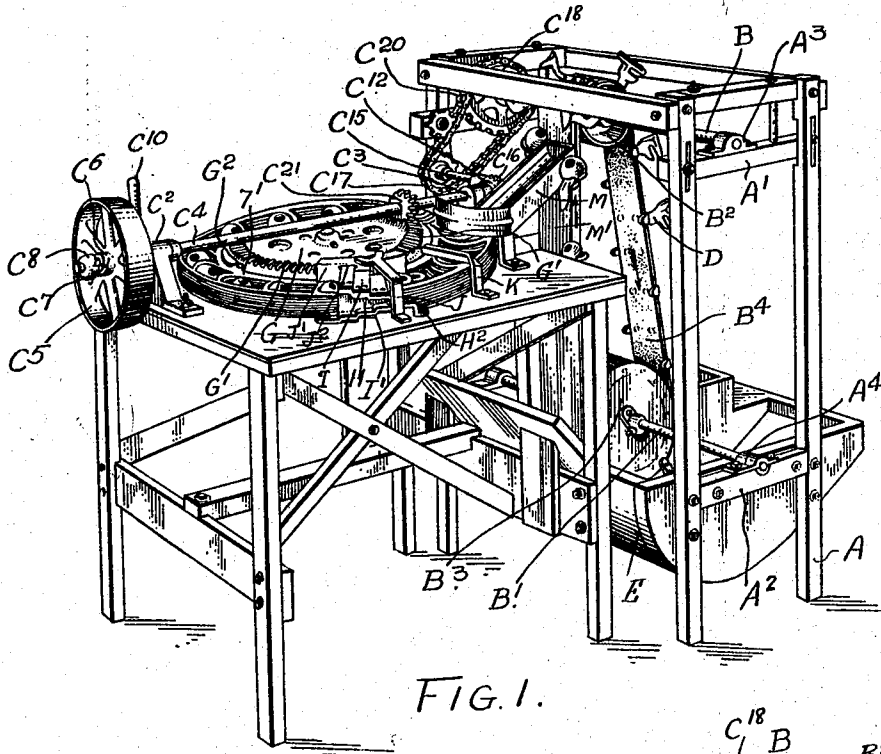


FIG. 1.

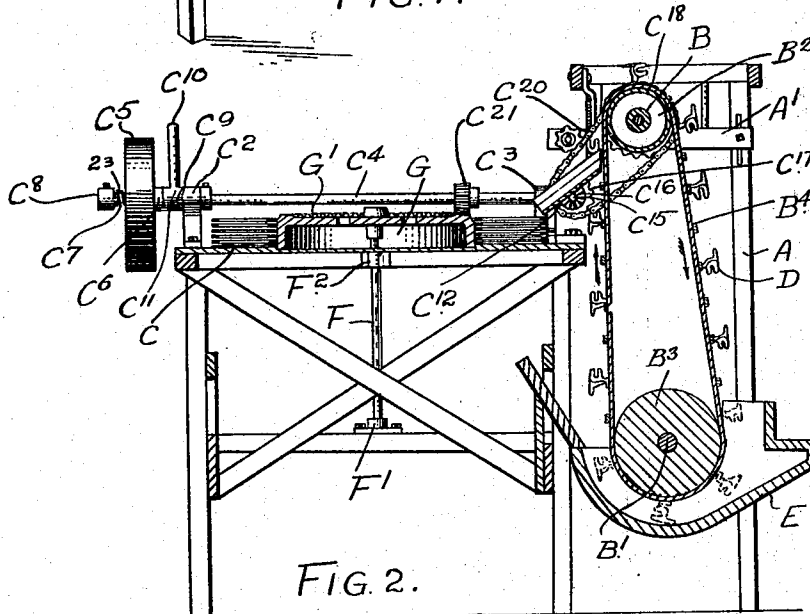


FIG. 2.

WITNESSES

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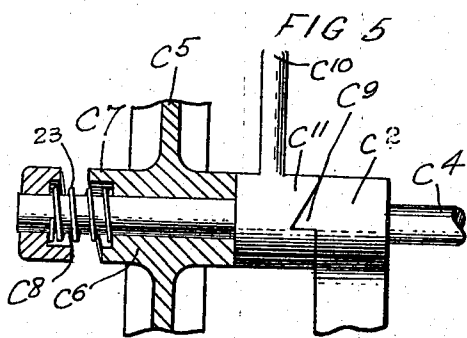
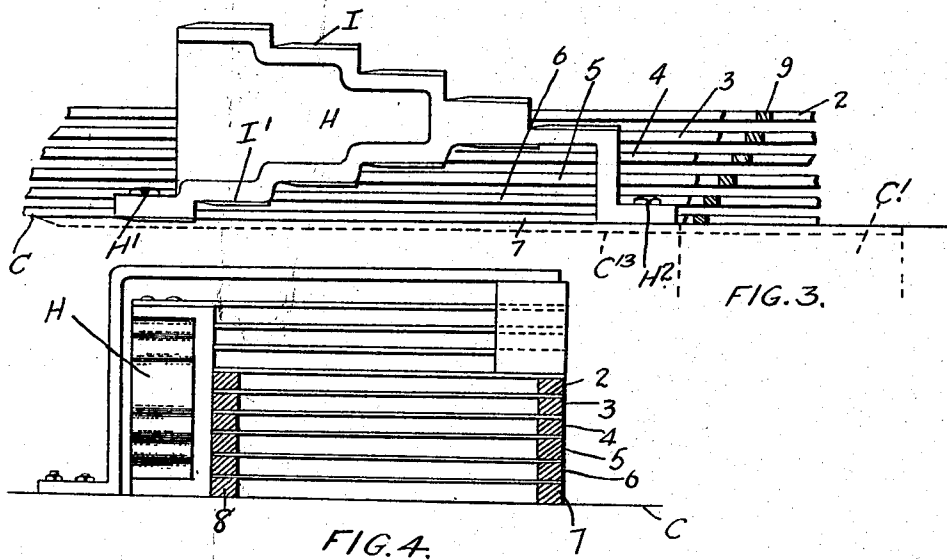
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UNITED STATES PATENT OFFICE.

FRANK BERNARD FOLEY, OF INGERSOLL, ONTARIO, CANADA.

UPPER-CUT APPLE-SLICING MACHINE.

1,193,003.

Specification of Letters Patent.

Patented Aug. 1, 1916.

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To all whom it may concern:

Be it known that I, FRANK BERNARD FOLEY, of the town of Ingersoll, in the county of Oxford, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Upper-Cut Apple-Slicing Machines, of which the following is the specification.

My invention relates to improvements in upper cut apple slicing machines and the object of the invention is to devise a machine having an increased capacity, by which a higher percentage of the best grade apple-slices are produced, by which such slices will be free from discoloration, in which the space between the drum head and sweep rings is obviated and in which any chipping or breaking of the apple slices is obviated, and it consists essentially of a main frame, a feed hopper carried thereby, a table having a discharge orifice therein and a depressed portion leading to such discharge orifice, a rotary member carried in the center of the table and fitting a central orifice therein, a series of sweep rings carried by the rotary member, sweep arms carried by the sweep rings and arranged in a rearwardly inclined direction in relation to the direction of rotation of the rotary member and forming with the surface of the table an angular apple receiving pocket into which the apples are fed and a series of slicing knives secured to the table and extending transversely of the sweep rings, such knives being arranged in V-form and against which the apples are carried, the apex of the V extending in the direction of rotation as hereinafter more particularly explained by the following specification.

Figure 1, is a general perspective view of my device. Fig. 2, is a vertical section through Fig. 1. Fig. 3, is an enlarged detail elevation of the slicing knives and a portion of the sweep rings and showing the position of the apple discharge orifice in dotted lines. Fig. 4, is a cross sectional view through Fig. 3. Fig. 5, is a perspective detail of a portion of the rotary member and sweep rings showing the means for connecting the sweep rings to the rotary member. Fig. 6, is a detail of a clutch for throwing the machine in and out of gear with the main drive.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the main frame provided with an upper and lower cross member A' and A².

B and B' are shafts journaled in suitable bearing brackets carried by the cross members A' and A².

B² and B³ are drums mounted upon the shafts B and B'.

B⁴ is a belt mounted upon the drums B² and B³.

C is a table provided with a discharge orifice C' (see dotted lines in Fig. 3).

C² and C³ are standards mounted upon the table C.

C⁴ is a shaft journaled in the standards C² and C³.

C⁵ is a pulley mounted upon the shaft C⁴, the hub C⁶ of which is provided with a ratchet cam face C⁷.

C⁸ is a collar secured to the shaft C⁴ and provided with an opposing ratchet face designed to engage with the ratchet face C⁷ of the hub C⁶. The collar C⁸ and hub C⁶ are provided with opposing recesses in which is located a suitable compression spring 23. The standard C² is also provided with a ratchet portion C⁹. C¹⁰ is a clutch lever provided with a corresponding ratchet portion C¹¹ fitting the ratchet portion C⁹. The opposite face of the clutch lever bears against the hub C⁶ of the pulley C⁵. By throwing the clutch arm C¹⁰ downwardly the ratchet portions C¹¹ and C⁹ co-act in cam fashion against the compression of the spring 23 to force the pulley C⁵ longitudinally on the shaft C⁴ whereby the clutch portion C⁷ of the hub C⁶ is carried into engagement with the ratchet portion of the collar C⁸ thereby forming a driving connection between the pulley and the shaft. C¹² is a beveled gear secured to the opposite end of the shaft C⁴.

C¹⁵ is a counter shaft mounted on suitable bearings and provided at one end with a bevel gear C¹⁶ engaging with the bevel gear C¹². C¹⁷ is a sprocket wheel mounted upon the opposite end of the shaft C¹⁵.

C¹⁸ is a sprocket wheel mounted upon the shaft B.

C²⁰ is a sprocket chain for transmitting motion from sprocket wheel C¹⁷ to the sprocket wheel C¹⁸. By this means the belt B⁴ is driven from the main driving pulley C⁵.

E is the main hopper for containing the apples and from which the apples are lifted individually by buckets D to deposit them in the apple slicing mechanism.

F is a vertical shaft supported in step bearings F' and the bearing F² carried by the supporting frame of the table C. The upper end of the shaft F extends centrally through the central orifice in the top of the table C.

G is a rotary member carried by the shaft F and provided with an annular gear G'.

C²¹ is a gear wheel carried by the shaft C⁴ so as to mesh with the gear G'. By this means the rotary member G is driven from the driving pulley C⁵. The periphery of the rotary member G is provided with a series of notches G² set in an inclined direction as shown particularly in Fig. 5 of the drawings.

2, 3, 4, 5, 6 and 7 (see Figs. 3 and 4) are a series of annular sweep members each comprising the inner ring member 7', outer ring member 8 and cross connecting semi-circular arms 9. Each inner ring 7' (see Fig. 5) is provided with a series of inwardly extending lugs 10 through which the bolt 11 extends to connect the sweep members together. Each lug is increased in thickness to properly space the rings apart.

H is a slicing knife supporting bracket secured by bolts H' and H² to the upper face of the table C in proximity to the sweep members 2, 3, 4, 5, 6 and 7. The bracket member H is substantially in the shape of a horizontal set V having stepped side arms.

I and I' are two sets of slicing knives, the set I' being secured to the horizontal face of the stepped portion of the lower V-arm, the lowermost knife being near the level of the table surface. The upper set I is secured to the horizontal portion of the stepped portion of the other arm of the V bracket. The knives I' extend transversely between each pair of sweep rings, the opposite ends of such knives resting upon the upper face of each sweep ring as shown particularly in Fig. 4, there being as many sweep rings as there are knives I'. The knives I' extend transversely of the discharge orifice C'.

J is a supplemental knife supporting bracket which extends transversely of the sweep rings. The inner end of the bracket J is provided with the depending slotted member J', the slots J² of which are arranged horizontally in stepped relation one to the other so as to receive the opposite ends of the knives I to support their free ends in place.

K is a supplemental arm bracket extending across the sweep rings to keep the upper ring clear of any slices which might be carried around thereby.

M is an inclined chute supported on vertically set boards M' extending from the table C. The upper end of the inclined chute is in close proximity to the revolving

belt B⁴ and into said chute the apples are delivered from the buckets carried by the belt B⁴.

Having described the principal parts involved in my invention I will briefly describe the operation of the same.

The uncut apples are contained in the hopper E. In order to throw the machine into operation the clutch arm C¹⁰ is drawn downwardly carrying the hub portion C⁷ into engagement with the collar C⁸ against the spring 23. By this means a driving connection is formed between the pulley C⁵ and shaft C⁴. The belt B⁴ is driven from the shaft C³ through the gears C¹² and C¹⁶, sprocket chain C²⁰ and sprocket gears C¹⁷ and C¹⁸ which drive the shaft B and pulley B². As the belt B⁴ revolves the bucket D travels in the direction of the arrow and the apple is carried vertically upward resting in the bucket and bearing against the face of the vertical board M' which holds the apple within the bucket. As the apple is carried upward above the upper edge of the inclined chute M the apple is delivered thereinto. The apple then rolls down the chute and is guided into position between the inner and outer ring portions 7' and 8 of the sweep members and is caught by the sweep arms 9. Such sweep arms as heretofore described are arranged in an inclined direction so that the apple is pocketed and held down against the table. The sweep arms as they travel forwardly carry the apple into engagement with the slicing knives which slice the apple, each slice being separately cut and falling away successively through the discharge opening until the last knife I is reached. The table C is provided with a depressed portion C¹³ extending from the discharge orifice and in front of the foremost knife I'. This depression enables the foremost knife to cut a slice off from the bottom of the apple. Each knife I' it will be seen, has a beveled lower face and a flat horizontal upper face. This form of blade when the sweep arms pass over the same in contact with the upper face thereof provides for a clean shearing cut which will not chip off or break the apple slice. By the means of the depression C¹³ also it is assured that the top edge of the sweep arm pocket will bear against the apple above the center line of the crown of the apple. It will be understood that an apple when pared is left with a center core hole and flat face extending around the core hole at one side of the apple. If the top edge of the pocket were below the center in a larger apple it would tend to roll the apple off the flattened end and up at an angle with the knives which would not then cut at right angles to the center of the core of the apple and would therefore not produce a perfect slice.

By the means described above the apple

is carried to a lower level as it approaches the cutting knives and therefore insures that the top edges of the pockets bear against the apple above the center thereof in a greater percentage of apples thus raising the grade of the sliced apples produced. Also by cutting the slices successively and separately delivering them through the discharge orifice the surface of each slice is exposed for a brief period to the air. This is essential to prevent the discoloration of the fruit, for it is a well known fact that the apples are bleached with brimstone fumes before the slicing is done. When the apple is sliced after this bleaching process it is necessary for the air to strike the cut surface before the process of evaporation takes place in order to prevent circles of discoloration in the center of the pieces. It is therefore necessary to part the slices as above described so that the action of the air will prevent this discoloration. It will be also readily understood that a small percentage of the apple may be too large to be sliced by the knives I'. In order to slice the upper portion of the apples without the necessity of supplying more sweep arms which would only occasionally come into use and would increase the cost of manufacture considerably I have provided the knives I extending in an opposite angular direction and having upper beveled faces. If the apple is too large to be cut by the knives I' the upper portion of the apple is carried into contact with the knives I. As the apple travels toward the apex of the V knife supporting bracket the slices cut lie on top of the knives I exposed to the air until another large apple presents itself to be cut when the prior cut slices are then pushed forward off and over the edge of the lowermost knife through the discharge opening. Furthermore when the slices are cut by the knives I' the lower beveled face thereof turns the slice down as it is being cut thereby insuring its falling away as soon as it is cut free. The upper knives I being beveled upward cause the slices to be cut clean and in this

case the sweep arms pass beneath this cut portion and the beveled knives cause the slices to turn upward as they are being cut preventing clogging on the knives directly back of them.

What I claim as my invention is—

1. In an upper cut apple slicing machine, the combination with the table, of a circular rotary sweep arm supporting member supported above the table and having grooves extending across the periphery thereof, and a series of sweep arm rings supported by the table and superimposed one upon the other and having inwardly extending radial lugs fitting into the cross grooves of the rotary member.

2. In an upper cut apple slicing machine, the combination with the table, of a circular rotary sweep arm supporting member supported above the table and having grooves extending across the periphery thereof, a series of sweep arm rings having inwardly extending radial lugs fitting into the grooves, and a bolt extending through the lugs to connect the rings together.

3. In an upper cut apple slicing machine, the combination with the table, a rotary member carried thereby and the sweep arms carried by the rotary member, of a substantially V-shaped horizontally set bracket having stepped arms, slicing knives secured at their outer ends upon the steps of the lower arm and supported at their free end by extending between the sweep arms, slicing knives secured at their outer ends upon the steps of the upper arm and extending over the sweep arms above the level thereof, a bracket supported by the table outside of the sweep arms and extending over the sweep arms, and a slotted member carried by the inner end of the bracket into the slots of which the inner free ends of the upper knives extend.

FRANK BERNARD FOLEY.

Witnesses:

JOSEPH PATERSON,
MARY HOWE.

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