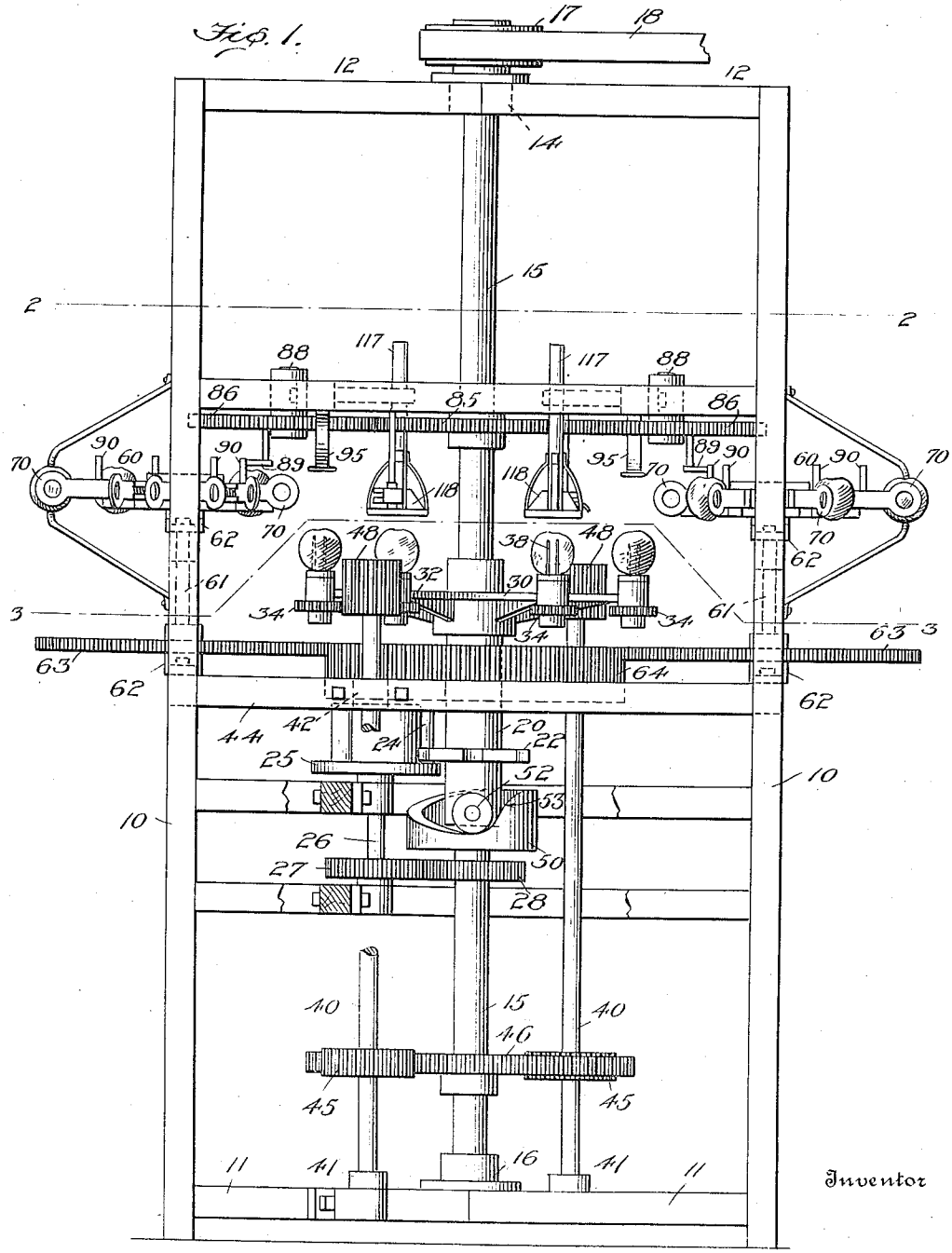
Apr. 10, 1923. 1,451,571

E. E. GAY

APPLE PREPARING MACHINE

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Fig. 1.



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Fig. 2.

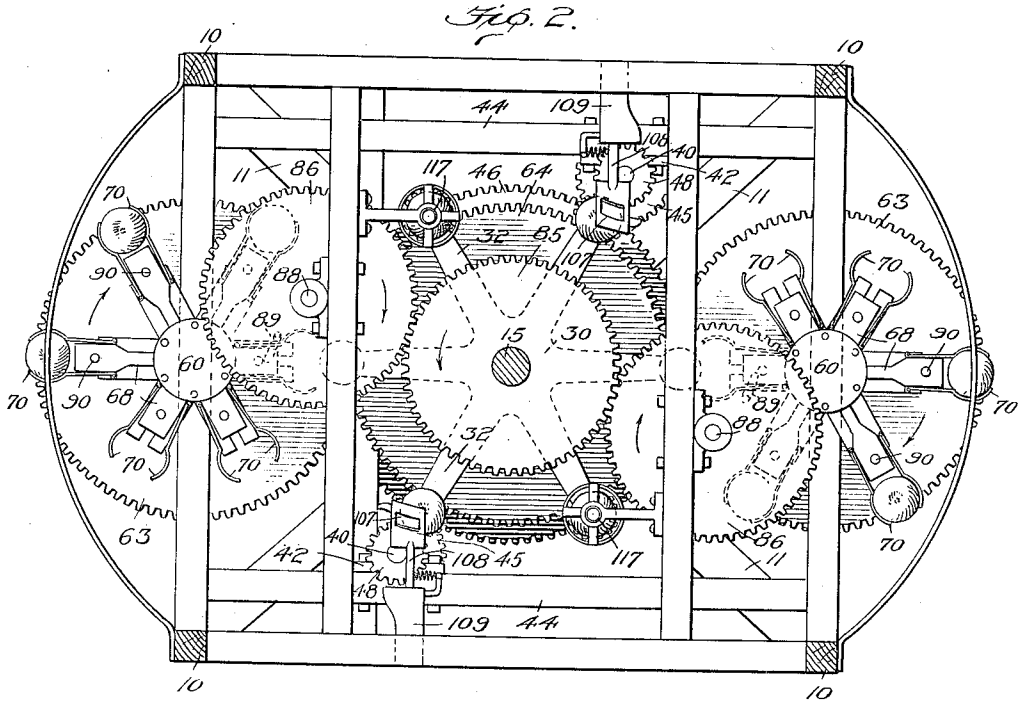
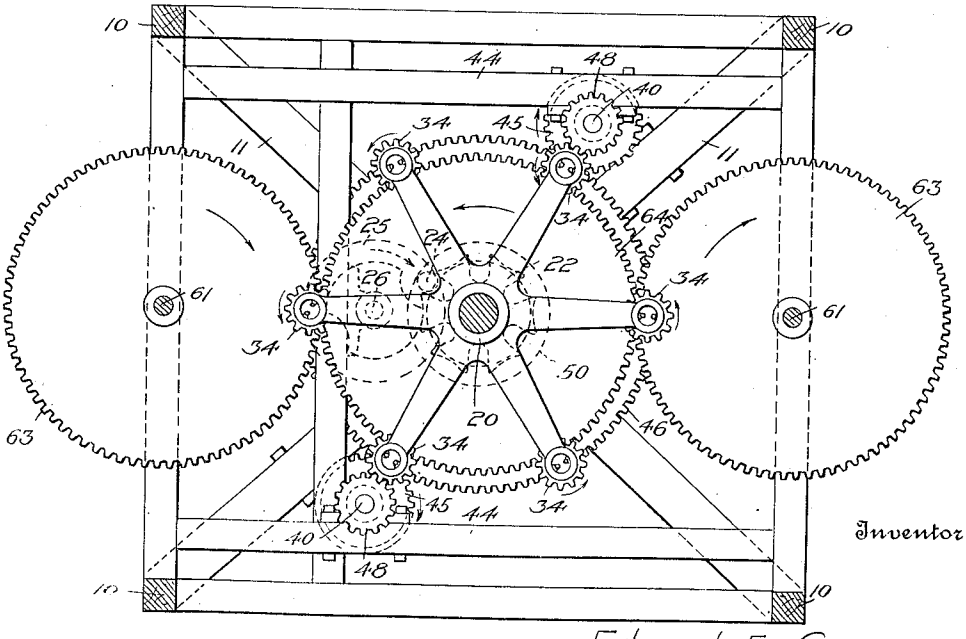


Fig. 3.



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Fig. 4.

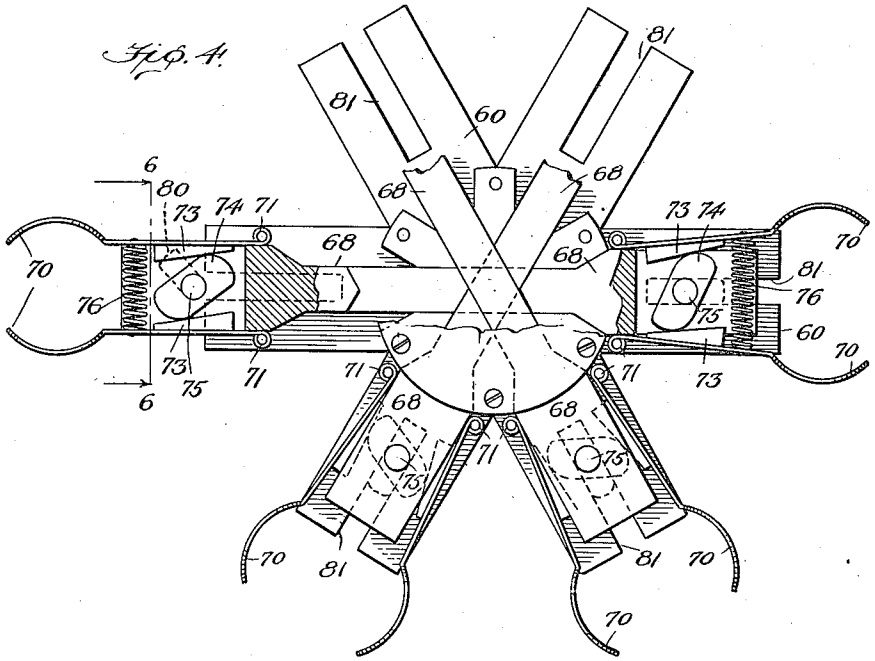


Fig. 5.

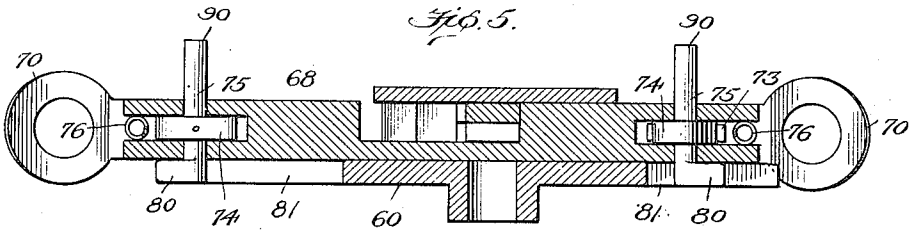
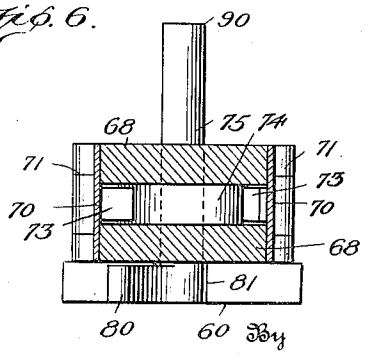


Fig. 6.



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Fig. 7.

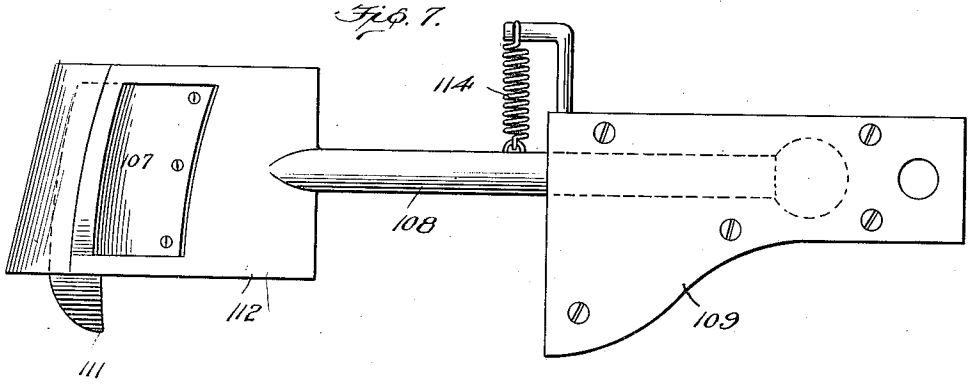


Fig. 8.

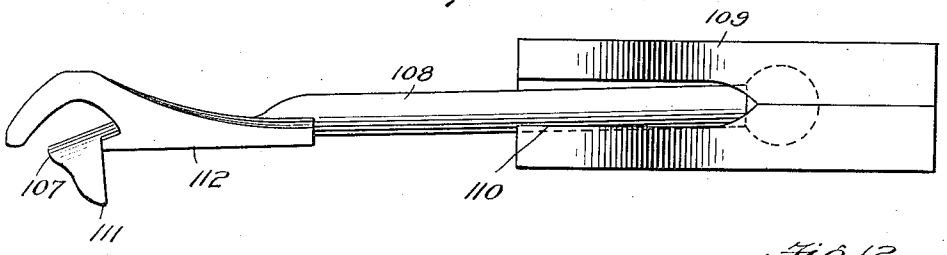


Fig. 9.

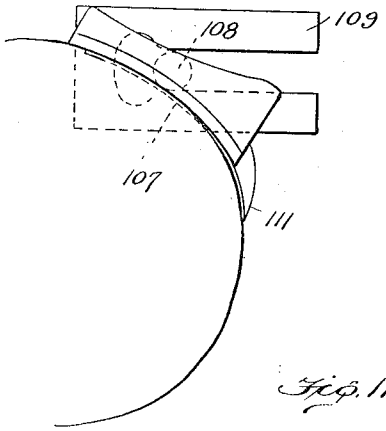


Fig. 10.

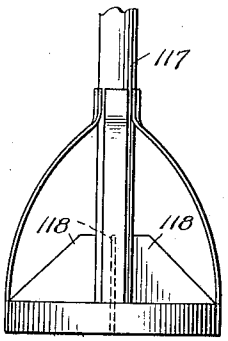


Fig. 12.

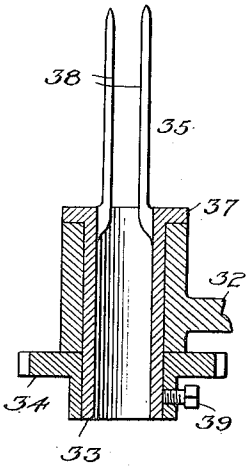
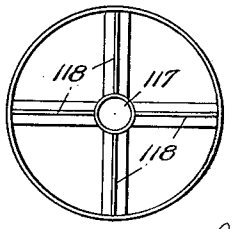


Fig. 11.



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His Attorneys

Patented Apr. 10, 1923. 1,451,571

UNITED STATES PATENT OFFICE.

EDWARD E. GAY, OF SPRINGDALE, ARKANSAS.

APPLE-PREPARING MACHINE.

Application filed February 13, 1922. Serial No. 536,267.

To all whom it may concern:

Be it known that I, EDWARD E. GAY, a citizen of the United States, residing at Springdale, in the county of Washington and State of Arkansas, have invented certain new and useful Improvements in Apple-Preparing Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to machines for preparing apples for canning or drying, and has for its object the provision of an improved apple peeler, corer, and slicer, requiring a minimum of labor.

In the drawings,—

Figure 1 is a vertical section of a preferred embodiment of my invention.

Figs. 2 and 3 are horizontal sections on lines 2 and 3 respectively of Fig. 1.

Figs. 4 and 5 are a plan view and a central vertical cross section through one of the outer spiders.

Fig. 6 is a section on line 6—6 of Fig. 4.

Figs. 7, 8 and 9 are a plan, side elevation and end elevation of the paring device.

Figs. 10 and 11 are a side elevation, and bottom plan view of the quarterer and corer.

Fig. 12 is a central vertical view of the fork mechanism.

The framework of the machine consists in the vertical beams 10 joined at their bottom by the diagonals 11 and by similar diagonals 12 at the top, these upper beams being provided with a bearing 14 for the main drive shaft 15 which has a thrust bearing 16 at the junction of the lower beams 11. The main shaft 15 derives its power from any convenient motor by means of the clutch pulley 17 and belt 18.

A sleeve 20 loosely mounted on the drive shaft 15 carries a Geneva wheel 22 driven by means of a pin 24 on disk 25, the latter being mounted on a short shaft 26 which carries at its lower end the gear 27 driven by the gear 28 on the main shaft 15.

Near the upper portion of the sleeve 20 is mounted an inner spider 30 having six arms 32, each rotatably carrying at its extremity a hollow shaft 33 having a bearing flange 37 at the upper edge thereof. A small pinion 34 is secured on said shaft at one end and receiving at its other or upper end a fork 35, the latter having a pair of tines 38 adapted to pierce an apple from its either end. Rotation of the pinion 34 with respect to the hollow shaft 33 is prevented in any preferred manner as by set screws 39.

At diametrically opposite sides of the main shaft 15 are mounted auxiliary shafts 40 supported in thrust bearings 41 at the bottom and at their central portions in bearings 42 on the cross piece 44. These two shafts 40 are each driven from the main shaft 15 by means of a pinion 45, both meshing with a gear 46 on the main shaft. Each shaft 40 at its upper end carries a wide gear 48 adapted to mesh with one of the two pinions 34 when the inner spider 30 is at rest in any one of its six positions.

Up and down movement of the sleeve 20 on the shaft 15 is accomplished by means of a cylinder cam 50 keyed to the shaft 15 and driving a small anti-friction wheel 52 on the bottom of the sleeve 20 so as to cause the sleeve 20 to rise slowly for about eight-ninths of a revolution of the cam and then to lower rapidly on the portion 53 of the cam, this up and down movement of the sleeve being possible due to the width of the gears 48 on the shafts 40. The mechanism so far described provides for the constant rotation of the gears 27 and 48 with an intermittent motion of the inner spider and the rapid revolving of two of the forks 35 during each dwell of the inner spider at which time the spider will be going from its lowest to its highest position, the apple speared on the tines of the fork at such time being in contact with certain mechanism hereinafter to be described, particular attention being invited to the fact that but two of the apples are revolved at each dwell of the inner spider, the other four apples being still, due to the absence of contact of the respective pinions 34 with any driving mechanism.

Each of the two outer spiders 60 is mounted on a shaft 61 mounted in bearings 62 and carrying a relatively large gear 63 meshing with a wide gear 64 on the sleeve 20 so that the outer spiders are rotated intermittently at the same time the inner spider is rotated.

In each of the two spiders 60 are mounted three slides 68 each of the three reciprocating in turn in the spider. Each end of each slide is similar, that is, there are six similar ends, each of which carries a pair of apple grippers 70 pivoted as at 71 and having secured to them wedges 73 which may

be engaged by the cam 74 on the stud 75 so as to open the grippers against the tension of the spring 76 which normally holds the grippers closed. At its lower end the stud 75 carries a vane 80 which is free when the slide is at the end of its travel, but is constrained by a slot 81 in the arm of the spider so as to hold the cam 74 in operative position, that is, in contact with each of the two wedges 73 so that when the vane is within the slot the grippers are opened against the power of the spring 76, the grippers being closed when the vane 80 is free.

A gear 85, mounted on the main shaft 15 somewhat above the sleeve 20, drives a pair of gears 86 each carried on a short shaft 88 having a crank 89 at its lower end and adapted to engage a lug 90 on one of the slides carried by the outer spider 60 so as to move the slide outwardly from its innermost position after an apple held between the grippers has been impaled on the fork by reason of the rise of the sleeve 20 and the inner spider mounted thereon. A steady rest 95 is resiliently carried by the frame so as to be immediately above the apple at the time it is impaled and to prevent the fork from pushing the apple upwardly from between the grippers. After the apple has thus been impaled the crank arm 89 engages the lug 90 and pushes the slide to the opposite limit of its travel the innermost vane 80 entering its slot 81 and opening the inner gripper while the outer gripper is closed on the apple as soon as the vane 80 is free of the slot 81, the free position of the vane being at an angle to the slide and being held in such position by means of the spring 76 and the wedges 73.

Upon movement of the inner spider 30 one step forward, i. e., one-sixth of the revolution of the spider, each fork with its impaled apple comes to rest at the second station where the pinion 34 engages the wide gear 48 which is continuously driven. The impaled apple is thus revolved and is peeled by coming into contact with a cutter blade 107 mounted on a shaft 108 having a ball and socket connection with the holder 109 so that the arm 108 may move in the slot 110 in the holder 109 as well as revolve about its ball engagement.

The knife 107 as will be seen from the drawing is curved to a considerable degree, its point 111 coming into contact with the stem end of the apple (if the fork has penetrated the blossom end of the apple as is customary) and owing to its sharp taper it is able to remove practically all the skin from this end of the apple. As the impaled apple moves upwardly against the knife blade and its supporting plate by reason of the slow raising of the sleeve 20, the plate 112 is moved about the axis of the shaft 108 against the power of the spring 114. The continued upward moving of the apple causes the shaft 108 to move in the slot 110 against the power of the spring 114 until the knife 107 is again horizontal at which time the apple will have been entirely peeled. Upon release of the cutting mechanism the spring 114 will return the parts to normal position.

Particular attention is called to the fact that with a knife of the type illustrated it is possible to completely remove the peeling of the apple except for a tiny portion near the stem and the blossom, these two portions being removed with the core so that it may be said the apple is entirely peeled by the machine requiring no hand work, this elimination of handling being particularly advantageous in that it preserves the color of the apples by avoiding the turning dark of the fruit while waiting for the hand trimming. At the next movement of the inner spider 30 the pared apple is brought beneath the corer and slicer which has a central circular knife 117 and a plurality of radial knives 118 preferably four or six in number. This corer and slicer is stationary with respect to the frame and the apple moves upwardly against the cutter and is cored and divided into slices the core passing through the hollow knife 117 and being driven out at the top by engagement with the next successive apple or the cores may pass down through the hollow shaft if desired. The tines 38 of the fork are of such size as to readily pass inside of the cylindrical cutter 117.

What I claim is:

1. In a machine of the character described, an intermittently rotatable carrier, an independently rotatable member carried thereby, an apple holder movable with said member, a paring knife, and means for reciprocating said carrier while said holder is revolving to bring the apple into contact with said paring knife.

2. In a machine of the character described, a drive shaft, a carrier movable thereon, an apple holder rotatably mounted in said carrier, means for operatively connecting said drive shaft and said carrier to rotate said carrier, and additional means for reciprocating said carrier on said shaft.

3. In a machine of the character described, a drive shaft, a sleeve on said drive shaft, a plurality of auxiliary shafts driven from said drive shaft, a drive pinion on each of said auxiliary shafts, an apple holder rotatably carried by said sleeve, and means for revolving said sleeve about said drive shaft to bring said apple holders in operative connection with said pinions.

4. In a machine of the character described, a rotatable carrier, means for moving said carrier in an axial direction, apple holding means rotatably mounted in said carrier, a

plurality of transfer mechanisms rotatably mounted on axes parallel to the axis of the carrier, and means for moving said carrier to remove an apple from each of said transfer mechanisms simultaneously, and additional means for simultaneously revolving other apple holders.

5. In a machine of the character described, a frame, a resilient apple receiving means carried by said frame, a plurality of transfer mechanisms rotatably carried by said frame and adapted to remove an apple from said flexible means, a central carrier, a plurality of apple holders on said carrier, means for rotating said carrier to bring one of said apple holding means beneath one of said transfer mechanisms, and independent means for raising said carrier and said apple holder to seize an apple held by said transfer mechanism.

6. In a machine of the character described, a frame, a corer carried thereby, means for holding a plurality of apples, and means for bringing said apples one by one beneath said corer and for raising said holder when an apple is beneath said corer.

7. In a device of the character described, a frame, a slicing cutter rigidly carried by said frame, a rotatable carrier, means on said carrier for holding a plurality of apples, means to rotate said carrier to bring said apples one by one beneath said slicing mechanism and for raising said carrier when an apple on said carrier is vertically below said slicer.

8. In a device of the character described, a plate, a cutter blade mounted thereon, a holder and a ball and socket connection between said holder and said plate.

9. In a device of the character described, a plate, a cutter blade mounted thereon, a holder for said plate, a ball and socket connection between said holder and said plate, a spring for holding said cutter in fixed relation to said holder and for returning said cutter to such position after an apple has moved the plate and cutter from such normal position.

10. In a device of the character described, a frame, a plurality of resilient means for receiving apples, an intermittently operated rotatable carrier, a plurality of means for transferring apples from said resilient means to said carrier, a peeling cutter, a corer and slicer for rotating said carrier step by step to bring an apple beneath said corer and another apple beneath said peeling cutter at each step, and means for raising said carrier at each step.

EDWARD E. GAY.