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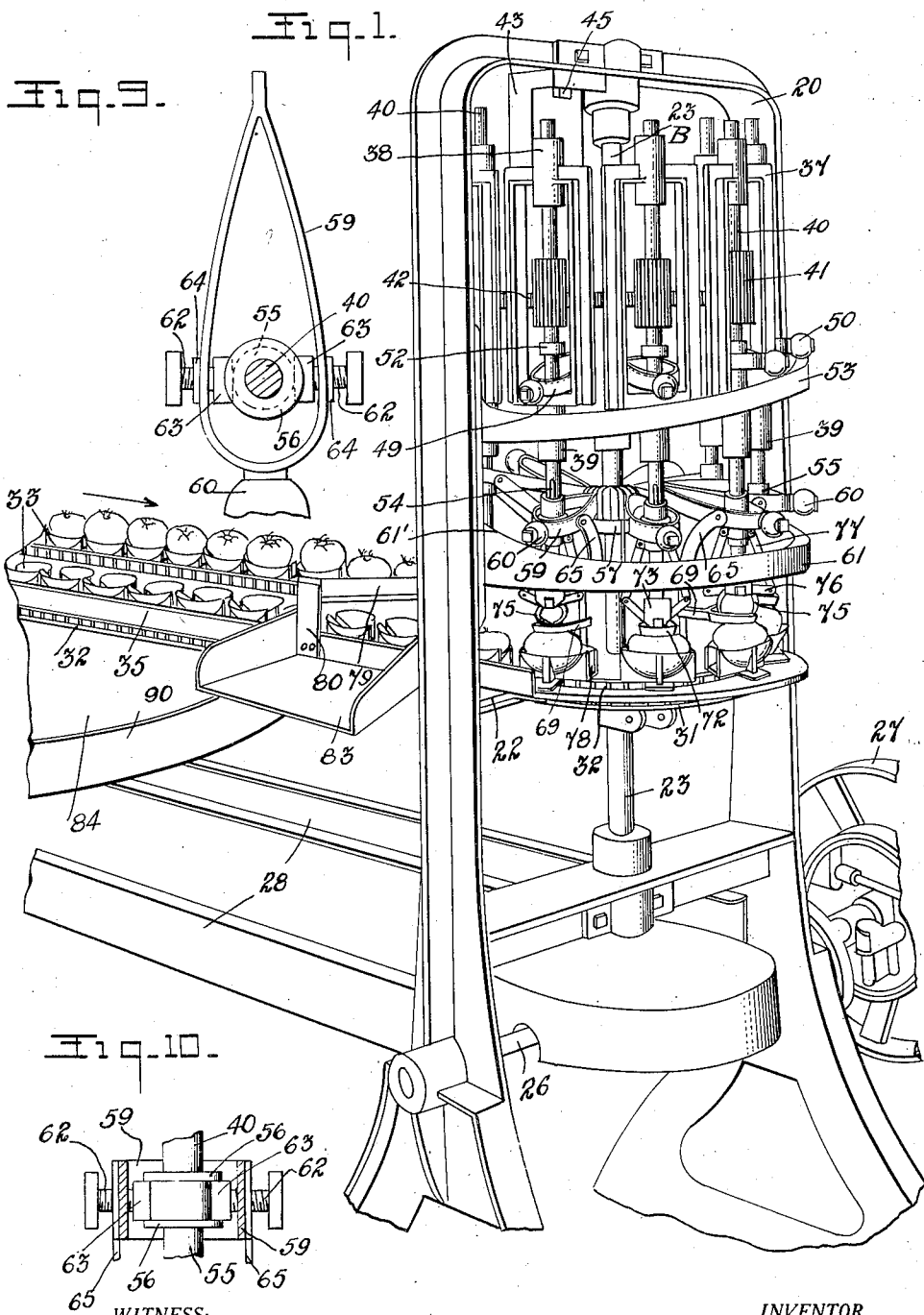
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TOMATO CORING MACHINE

Filed March 29, 1932

5 Sheets-Sheet 1



WITNESS:
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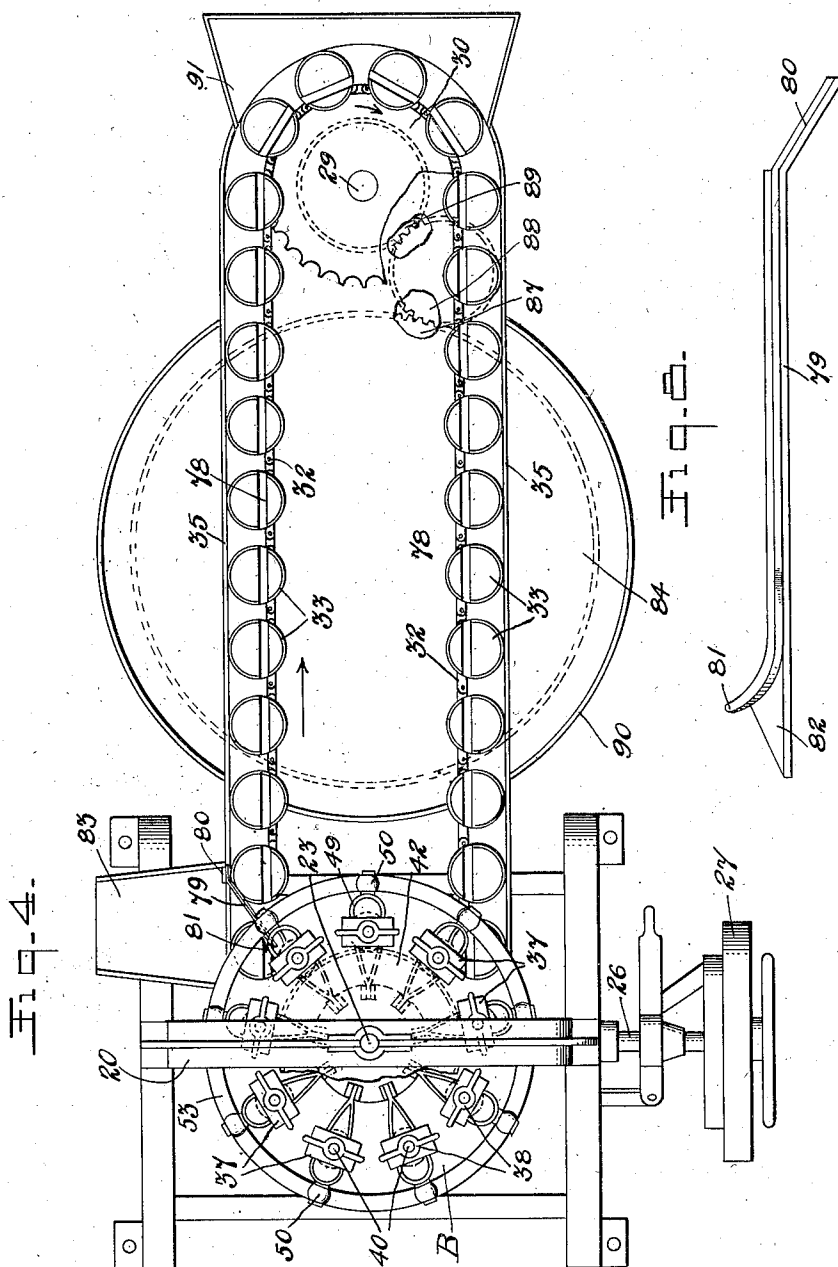
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5 Sheets-Sheet 4



WITNESS:

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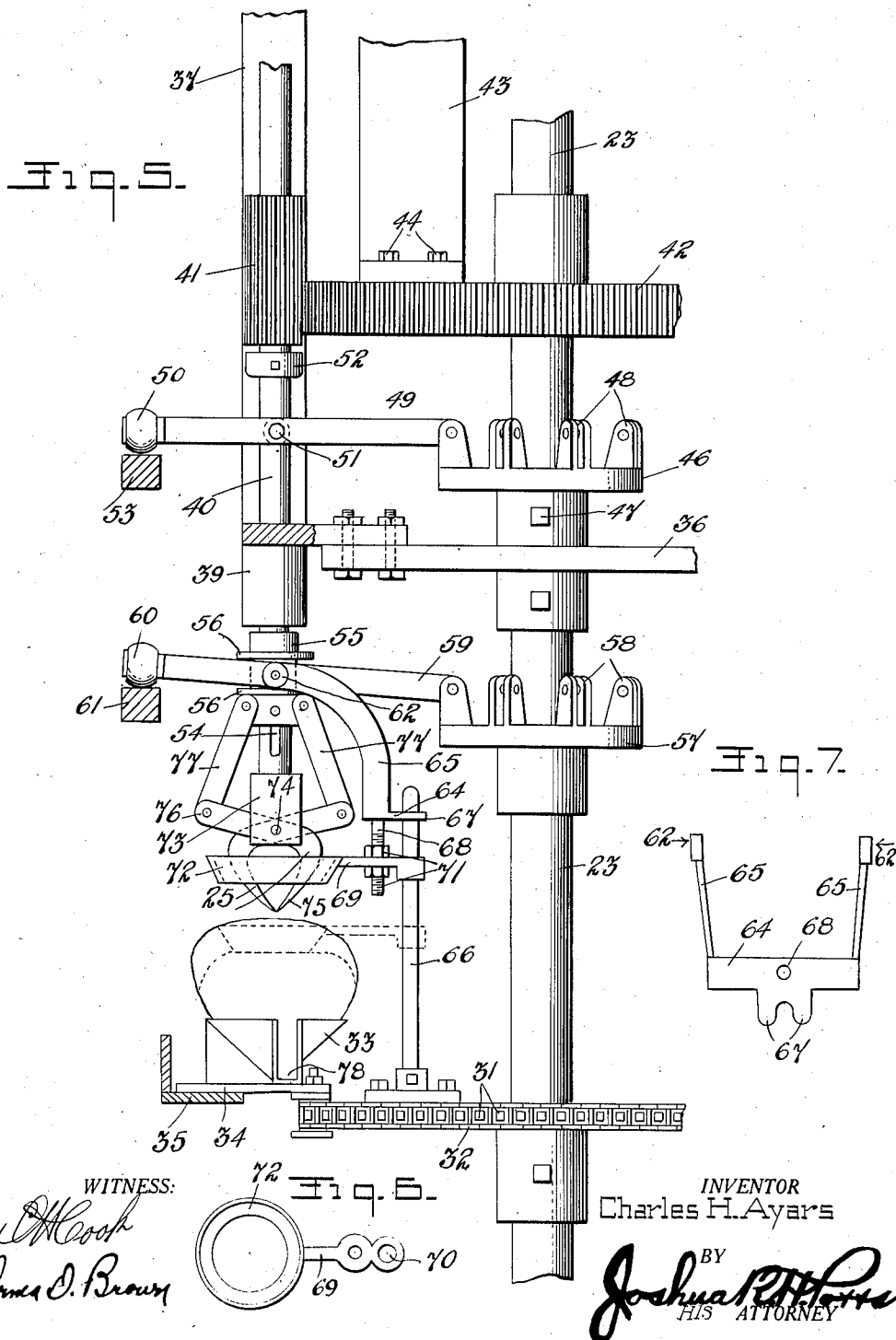
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UNITED STATES PATENT OFFICE

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TOMATO CORING MACHINE

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Application March 29, 1932, Serial No. 601,808

7 Claims. (Cl. 146—52)

This invention relates to a coring machine, and particularly to a machine for removing the stem and core from tomatoes and the like.

The mechanisms which go to make up the machine hereinafter described and claimed, provide improvements over the tomato coring machine shown and described in my Patent No. 1,717,827, dated June 18, 1929.

One of the objects of the present invention is to provide a tomato coring machine for coring tomatoes in an improved and more facile manner.

A further object of the invention is to provide new and improved means for carrying the tomatoes into position to be cored.

A further object is to provide new and facile means whereby after coring the tomatoes are carried to a desired position and discharged.

A further object of the invention is to provide means whereby the core taken from the tomato is successfully disposed of.

A still further object of the invention is the presentation of the tomatoes to be cored to the operatives charged with placing the tomatoes in position for coring.

A still further object of the invention is to provide improved tomato holding means.

According to the invention the machine comprises a rotating turret, coring units carried by said turret and adapted to be rotated, a conveyor for presenting tomatoes beneath a portion of said turret and each tomato centered beneath one of said coring units, means for moving said tomatoes in unison with said coring units, a pair of cam tracks, a shaft for each coring unit, cutters on the end of each shaft, means cooperating with the shaft and one of said cam tracks for lowering the cutters to the top of a tomato to be cored, a stop member for resting on the top of the tomato, said stop member adapted to cooperate with toggle means to close said cutters and core said tomato upon the continued downward movement of said shaft, means cooperating with said last named cam track to raise said shaft, and means cooperating with said other cam track to open said cutters to discharge said core.

The machine is also provided with automatic means for discharging the cored tomatoes therefrom.

The machine also has a rotating circular receptacle beneath and extending from both sides of the conveyor for presenting tomatoes for manual transfer to cups on the conveyor.

The drawings illustrate an embodiment of the invention and the views therein are as follows:

Figure 1 is a perspective view of the machine viewed from left front,

Figure 2 is a perspective view of the machine viewed from right front,

Figure 3 is a rear view of the turret, parts of the carrier being broken away,

Figure 4 is a top plan view of the machine,

Figure 5 is an enlarged detail view of one of the cutter units,

Figure 6 is a top plan view of one of the cam rings,

Figure 7 is a top plan view of one of the ring supports,

Figure 8 is a top plan view of the tomato discharging member,

Figure 9 is a top plan of one of the yokes, and

Figure 10 is a detail view, partly in section of the connection of a yoke with one of the planetary shafts.

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

The improved tomato coring machine, which forms the subject-matter of this application, comprises an arched frame 20, supported in any approved manner, as by the legs 21. The frame 20 is provided with a cross bar 22 in which and in the top section of the frame, a shaft 23 is journaled, and said shaft is rotated by means of a gear 24 meshing with a pinion 25 with a shaft 26, which receives power from any convenient source and applied in any approved manner as by the pulley 27.

Extending also from the frame 20 is a horizontal frame 28 forming a substantially horizontal runway at the rear of the machine. Mounted at the rear end of this frame 28 is a vertical shaft 29 carrying a sprocket 30. (See Figure 4.) A sprocket 31 is also mounted upon the shaft 23 (see Figures 1 and 2), and a sprocket chain 32 passes about said sprockets 30 and 31 and extends substantially parallel with and above the sides 28.

The sprocket chains 32 are provided with a plurality of cups 33 rigidly secured to spaced links in said chain, and having extensions 34 riding upon the guideways 35.

Rigidly mounted on the vertical shaft 23 is a turret B comprising a disk 36 to which are secured a plurality of arched frames 37. The arched frames 37 have at their upper and lower limits aligned bearings 38 and 39 respectively, in which are journaled shafts 40. These shafts 40 are provided with elongated pinions 41 rigidly secured thereto, which said pinions engage a gear 42, mounted upon the shaft 23 but held against ro-

tation by means of a brace 43 extending downwardly from the arched frame 20 and secured by bolts 44 and 45 as shown, or otherwise.

These several shafts 40 are, by reason of the engagement of the pinion 41 with the stationary gear 42, given a planetary movement about and with the shaft 23. Upon the shaft 23 a disk 46 is rigidly secured, as indicated by the set screw 47 in Figure 5, and provided with a plurality of upstanding ears 48. Each pair of the ears 48 is provided with a loop-shaped lever 49, each of which embraces one of the shafts 40 and extends to form a bearing for a cam roller 50. The lever 49 is provided with rollers 51 diametrically disposed upon opposite sides of the shaft 40, and positioned to engage under a collar 52 rigidly secured to the shaft so that as the cam roller 50 is raised or lowered to a sufficient extent by the cam track 53, the shaft 40 is also raised and lowered.

At times, the lever 49 does not act upon the collar 52, one of such inactive positions being shown at Figure 5.

Each of the shafts 40 is provided with a slot 54 and slidably mounted upon the shaft is a sleeve 55. The sleeve 55 is provided with spaced flanges 56 (see Figures 9 and 10), and has a pin through the slot 54.

Mounted also upon the shaft 23 is a disk 57, having upstanding therefrom, a plurality of ears 58 between pairs of which are pivoted loop-shaped levers 59, embracing the shafts 40 and provided at their outer extremities with rollers 60 travelling upon the cam track 61. Each of these loop-shaped levers 59 is provided with threaded pintles 62 which carry blocks 63 fitting between the flanges 56 of the collar 55, and slidable relative to the axis of the shaft 40 to compensate for the angular movement of such loop-shaped levers.

These loop-shaped levers 59 also have connected therewith, at the pintle 62, a member 64 by means of spaced arms 65 (see Figure 7).

Mounted upon the sprocket 31 are a plurality of uprights 66 which are slidably engaged by the slot in the member 64 formed by the fingers 67. The member 64 also carries a screw 68 (see Figure 5) and attached thereto, is an arm 69. The arm 69 is provided with a perforation 70 which slides upon the upright 66 and the interval between the member 64, and the arm 69 is adjusted by means of nuts 71. The arm 69 carries a ring or stop member 72 which is concentric with each of the shafts 40.

Each of these shafts 40 carries a head 73 rigidly secured thereto, providing a fulcrum 74 for the cutters 75. Each of the cutters 75 has a lever 76, the extremities of which are connected by means of links 77 with the sleeve 55.

Each of the cups 33 is provided with a slot 78, such slots being so arranged that as the cups travel parallel with the tracks 35, the slots 78 are in alinement as shown more particularly at Figure 4. Cooperating with the slot in the cups is an ejector 79 rigidly secured to the track, or some other part of the structure, as indicated at 80. This ejector is provided with a finger 81 which extends downwardly into the slots 78, and with a deflector 82 which lifts and deflects the tomatoes from the cups 33 and deposits them in the chute 83.

Beneath the track members 35, a table 84 is mounted upon a vertical shaft 86. Beneath this table 84 a gear 87 is provided, interengaging with an idler gear 88 which in turn engages a gear 89, upon the shaft 29. The shaft 29 is driven by the sprocket chain 32 from the sprocket

31, so that as the sprocket 31 and turret carried thereby rotates, the sprocket 31 is rotated and through the medium of the idler 88 and the gear 87, the table 84 is rotated. A stationary limiting abutment 90 is erected about this table 84. A chute 91 is positioned to discharge upon the table 84 so that tomatoes may be delivered to the chute 91 and thereby conveyed to and discharged upon the table 84. The table 84 rotating, serves to bring the tomatoes thereon constantly into position to be taken by operators standing about the stationary abutment 90, and by the operators, lifted and placed into the cups 33.

The cam tracks 53 and 61 are made adjustable by means of being attached to slotted extensions 92 carried upon the inner sides of the arched frame 20 to which extensions the cam tracks are bolted as by the bolts 93.

In operation, the device is driven by power applied to the shaft 26 as by use of the pulley 27. The rotation of the shaft 26 rotates the shaft 23, and the sprocket 31 carries the sprocket chain 32, which passes about the sprocket 30 and carries the cups 33. This rotation moves the train of cups in the direction indicated by the arrows, and simultaneously rotates the table 84.

The turret, carried by the shafts 23, actuating the shafts 40 with the planetary movement imparted thereto by the engagement of the pinions 41 with the stationary gear 42, serves to rotate such shafts 40 and the cutters 75 carried thereby.

As the tomatoes carried by the cups come under the rotating turret, the cutter heads are lifted to their extreme limits by the upward curve 53' of the cam track 53. From this maximum elevation, the cam track 53 descends as shown more particularly at Figure 2. The descent of the cam track 53 through the medium of the rollers 50 and the levers 49, drop the shafts 40 gradually downward, carrying therewith the heads 73 and cutters 75. As this structure drops, the cam stop 72 engages upon the top of the tomato, located in the cup 33, directly therebeneath.

This limits the downward movement of the ring and the sleeve 55, but the weight of the shaft 40, acting upon the head 73, forces the cutters downwardly into the cam ring 72 to the position shown in Figure 5. Assuming that this cam ring is bearing upon the top of the tomato, the rotating cutters 75 will cut out a core including the stem. By reference to Figures 1 and 2, it will be seen that this lowering of the parts is gradual and controlled by the cam 53, and that the lowest limits of these parts are determined by the height of the tomato thereunder. The rotation of the cutters cuts this core, and as the rollers 60 successively strike the upward curve 61' of the cam track 61, the cutters, still with their points in engagement as shown at Figure 5, are lifted free from the tomato, and by sliding upwardly in the slot 54, lifting therewith the stop ring by which the cutters are still held in the position shown at Figure 5.

When the rollers 50 travel upwardly along the cam track 53 as shown at Figure 3, the shafts 40 are lifted, lifting therewith the head 73, permitting the sleeves 55 to slide downwardly along the slots 54, thereby raising the cutters from the ring 72 and opening them so that they will drop the severed core as indicated at X in Figure 3.

It will thus be apparent that as each tomato comes under one of the cutters, the cutter is by coaction of the cams 53 and 61, lowered and

constantly rotated, so that it properly cuts from the tomato a conical core, then lifts the core from the tomato and at the proper position at the rear of the machine, as indicated at Figure 3, drops the severed core.

The tomato, freed from the core and the knives thus lifted, passes about until the cup, carrying the particular tomato, comes in engagement with the ejector, whereupon, the finger 81 passing under the tomato in the cup, lifts the tomato, and the deflector 82 deflects the tomato into the chute 83.

Each of the shafts 40 and their associated parts, including the cutters, therefore, provides a complete cycle of operation, and when assembled in the exact manner shown in the drawings, nine cycles of operation are performed at each revolution of the shaft 23. It is to be understood that while nine of the cutter units have been shown, the same may be increased or decreased as circumstances may make necessary or desirable. The only requirement is that the cups in their orbital movement out and back across the charging table shall, when passing under the turret, present a cup properly centered beneath each one of the coring units.

Of course, the tomato coring machine, herein illustrated, may be modified and changed in various ways without departing from the invention herein set forth and hereinafter claimed. The invention is hereby claimed as follows:

1. In a tomato coring machine, a rotating unit, hinged cutters unitedly forming substantially a cone carried by the unit, means to impart continuous planetary motion to the cutters, a cam adapted to raise and lower the cutters, means to close the cutters while being lowered, a cam adapted to raise the cutters while closed, means to open the cutters as a step subsequent to the raising, and means to move tomatoes processionally into the orbit of movement of the cutters while being lowered and raised, said opening of the cutters transpiring after the tomatoes have left the orbit of the cutters.

2. A tomato coring machine comprising a frame, a rotating central shaft, a turret carried by the shaft, a gear concentric with the shaft, a plurality of spindles journaled in the turret, a pinion carried rigidly by each spindle so proportioned as to receive continuous planetary motion from and slide vertically relative to the gear, cutters carried by and rotating continuously with the spindles, a cam concentric with the shaft, means riding the cam adapted to raise and lower the spindles, pinions and cutters, a second cam concentric with the shaft, means riding said second cam adapted to close said cutters while being lowered, means to propel tomatoes along and coinciding with the path of travel of the cutters during the lowering and raising of the cutters, said second cam operating to open the cutters only subsequent to a complete raising.

3. In a tomato coring machine, a rotating unit, a gear within the unit, hinged cutters unitedly forming substantially a cone journaled upon the unit, means engaging the gear to impart con-

tinuous planetary motion to the cutters, a cam adapted to raise and lower the cutters, a gauge adapted to engage the top of a tomato when lowered and coaxing to close the cutters while being lowered, and a cam adapted to raise the cutters while closed, said first cam embodying means to open the cutters as a step subsequent to the raising.

4. In a tomato coring machine, a rotating unit, a gear within the unit, hinged cutters unitedly forming substantially a cone journaled upon the unit, means engaging the gear to impart continuous planetary motion to the cutters, a cam adapted to raise and lower the cutters, a gauge adapted to engage the tops of tomatoes and embodying a conically tapered interior cooperating to close the cutters while being lowered, a cam adapted to raise the cutters while closed, said first cam embodying means to open the cutters as a step subsequent to the raising, and means to move tomatoes orbitally, a part of the orbit coinciding with the path of the cutters provided by the rotating motion.

5. In a tomato coring machine, a rotating unit, a gear within the unit, hinged cutters unitedly forming substantially a cone journaled upon the unit, means engaging the gear to impart continuous planetary motion to the cutters, a cam adapted to raise and lower the cutters, means variable to the height of the tomatoes to close the cutters while being lowered, a cam adapted to raise the cutters while closed, said first cam embodying means to open the cutters as a step subsequent to the raising, and means to move tomatoes an orbit in part different from and in part coinciding with the path of the cutters provided by the rotating motion, said coincidence being during the raising and lowering of the cutters and diverging thereafter.

6. In a tomato coring machine, a rotating unit, a gear within the unit, hinged cutters unitedly forming substantially a cone journaled upon the shaft, means engaging the gear to impart continuous planetary motion to the cutters, a cam adapted to raise and lower the cutters, means to close the cutters while being lowered, a cam adapted to raise the cutters while closed, said first cam providing means to open the cutters as a step subsequent to the raising, and means to move tomatoes in an orbit in part different from and in part coinciding with the path of the cutters provided by the rotating motion, said coincidence being during the raising and lowering of the cutters, said subsequent opening being also subsequent to the coincidence.

7. In a tomato coring machine, a hinged cutter, means to impart continuous rotary motion to the cutter, means to raise and lower the cutter, means variable as the height of the tomato to close the cutter while being lowered, means to maintain the cutter in closed relation while being raised, means to relatively move the tomatoes and cutter out of vertical association, and means to open the cutter after being so relatively moved.

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