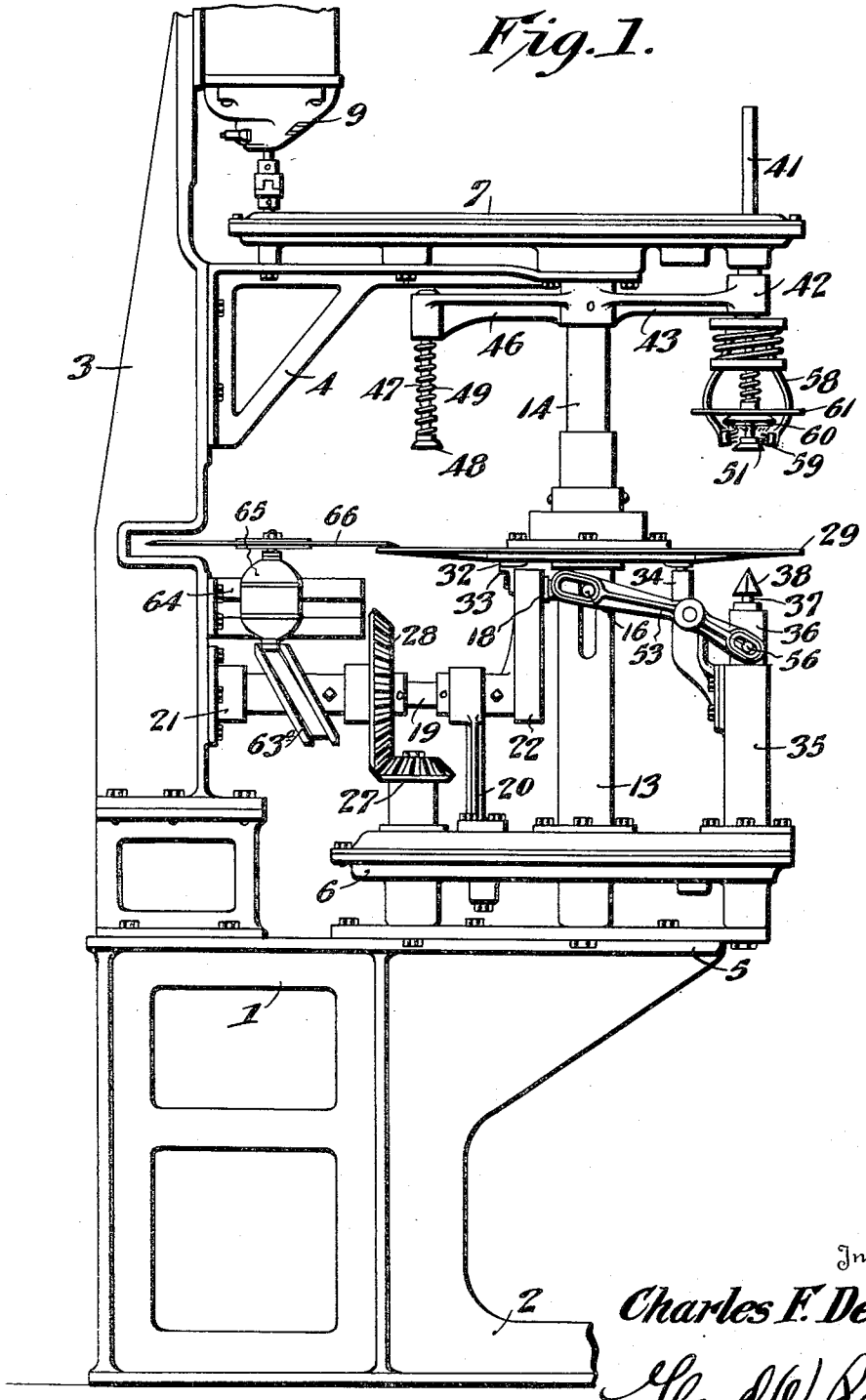
April 6, 1937. C. F. DEITZ 2,076,496

TOMATO CORING AND PEELING MACHINE

Filed Aug. 18, 1933 4 Sheets-Sheet 1

Fig. 1.



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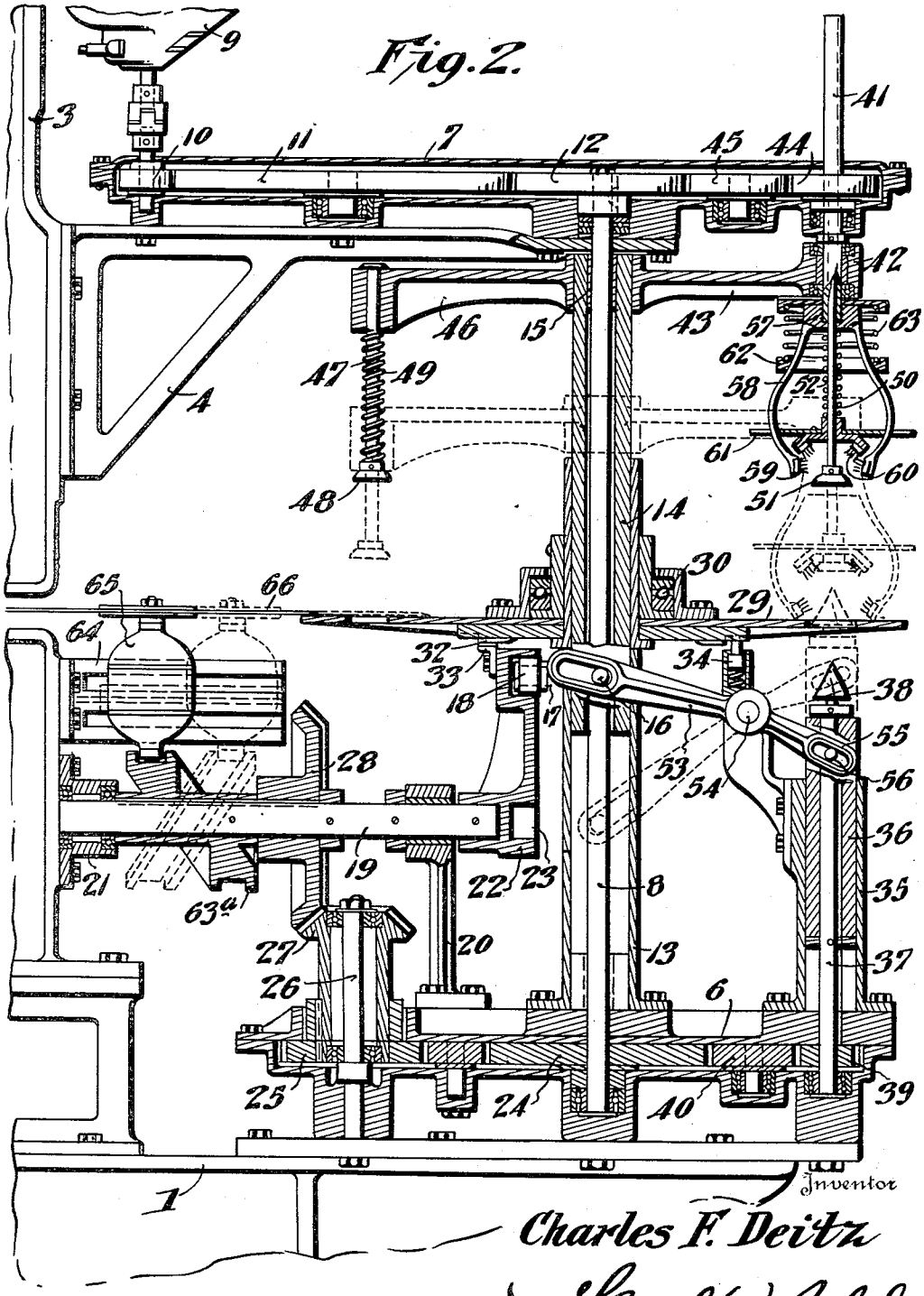
Attorney

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TOMATO CORING AND PEELING MACHINE

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Fig. 2.



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TOMATO CORING AND PEELING MACHINE

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Fig. 3.

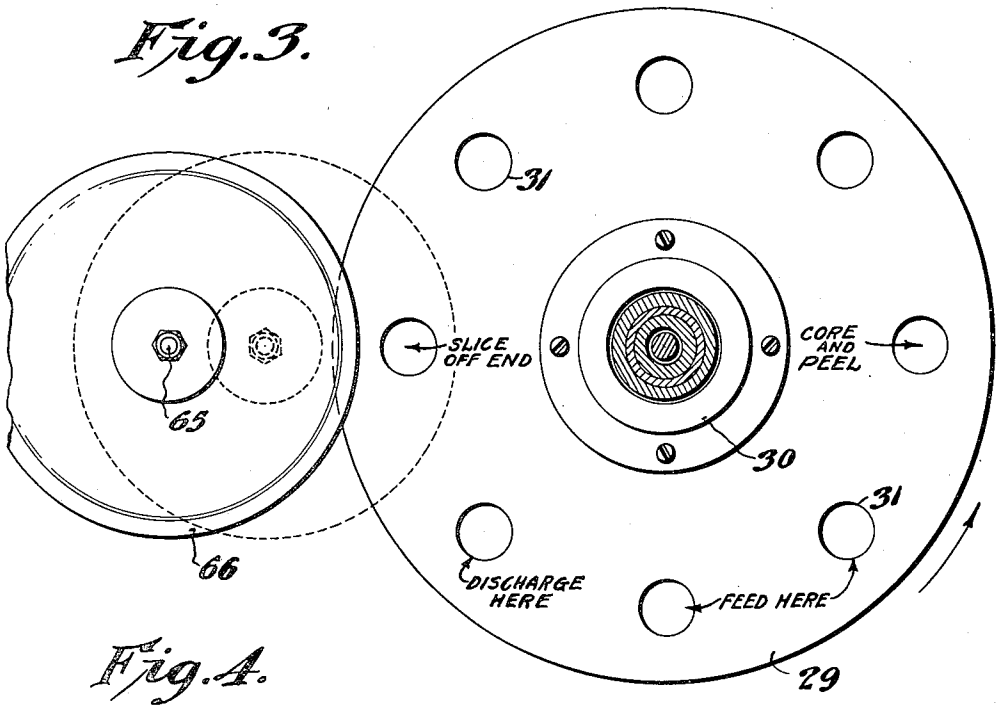


Fig. 4.

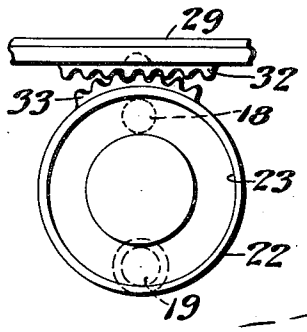
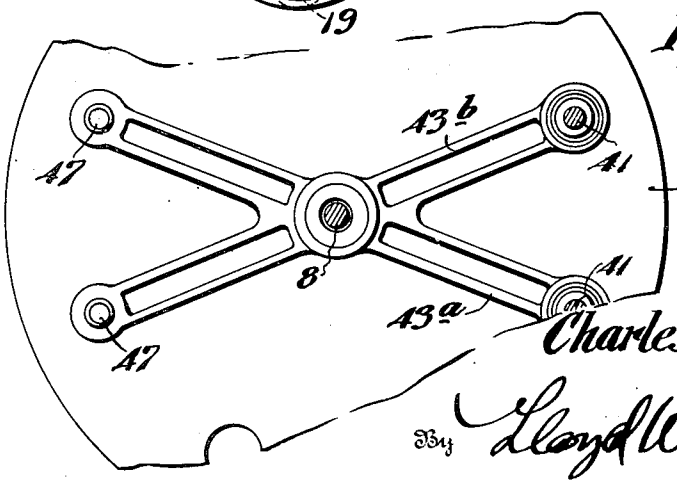


Fig. 7.



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TOMATO CORING AND PEELING MACHINE

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Fig. 5.

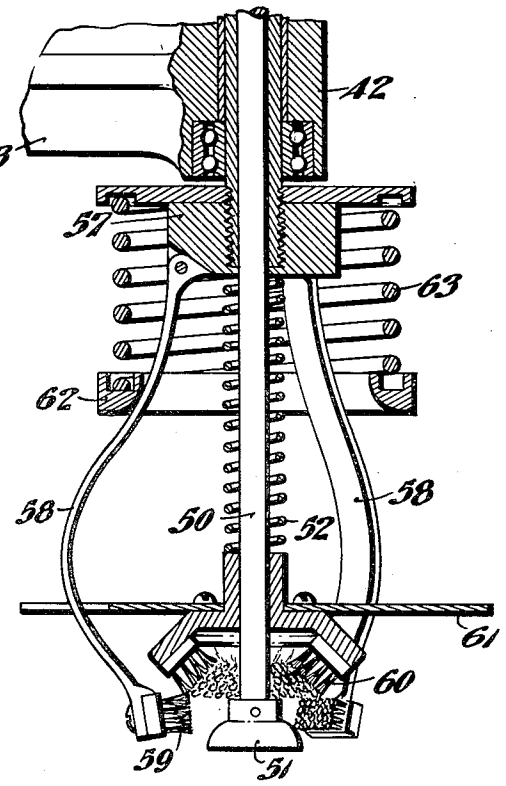
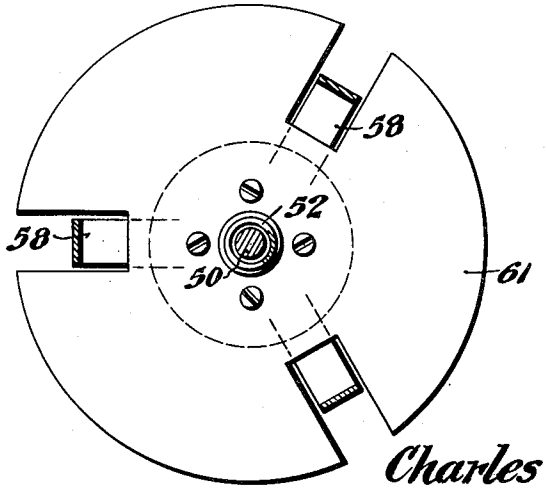


Fig. 6.



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Patented Apr. 6, 1937 2,076,496

UNITED STATES PATENT OFFICE

2,076,496

TOMATO CORING AND PEELING MACHINE

Charles F. Deitz, Miami, Fla., assignor to Victor N. Adams, Miami, Fla.

Application August 18, 1933, Serial No. 685,778

7 Claims. (Cl. 146—38)

My invention relates to tomato coring and peeling machines and particularly to a machine of this character intended and adapted for use in a cannery between the scalding apparatus and the canning machine, or in other connections and places, to core and peel tomatoes and to slice off the often found hard part around the stem end of the tomato, this being an extension of the invention disclosed in my Patent No. 1,923,712, issued August 22, 1933.

An object of this invention is to provide a rotary machine operating continuously, with a step-by-step movement, to take a continuous feed of tomatoes and to discharge a continuous line of tomatoes cored, peeled and trimmed ready for packing in cans or other containers.

Another object is to so construct, mount and operate the parts that these operations will be accomplished most efficiently and economically, and the tomatoes will be handled without mutilating, mashing, tearing or otherwise injuring the pulp, so that the tomatoes will be in firm condition when arriving at the canning machine, or other point of delivery.

A further object is to provide a machine of this character that is a simple compact unit operating with maximum efficiency and with minimum power and labor costs, and which will not likely be subject to damage or breakage while in use.

With the above and other objects in view, which will be apparent to those skilled in the art, my present invention includes certain novel features of construction and combinations of parts which will be set forth in connection with the drawings and then pointed out in the claims.

In the drawings:

Figure 1 is a view in side elevation of a machine constructed in accordance with my invention.

Fig. 2 is a vertical sectional view through the main working portions of the mechanism.

Fig. 3 is a transverse sectional view to better show the tomato carrying table and trimming knife.

Fig. 4 is a view partly in elevation and partly in section to better show the cam arrangement by which the coring and peeling parts are shifted to the operative positions.

Fig. 5 is an enlarged view to better show the peeling structure.

Fig. 6 is a sectional view on line 6—6 of Fig. 5.

Fig. 7 is a view similar to Fig. 3 showing a modified construction.

A supporting frame structure 1 carried by base 2, or otherwise suitably mounted, has a supporting standard 3 rising therefrom at one side and provided with a lateral supporting bracket 4, disposed above and spaced from the table bracket or main supporting portion 5 of the supporting frame member 1. A gear case 6 is bolted or otherwise secured upon the table bracket portion 5, and a gear case 7 is suitably bolted, or otherwise mounted and held, upon the lateral supporting bracket 4. A shaft 8 is mounted in suitable bearings to extend vertically and substantially centrally through the gear cases 6 and 7, and it is preferable that this shaft be provided with ball bearing or other friction reducing mountings to thus reduce the power requirements and friction losses.

A motor 9, or other suitable power unit, drives a pinion 10 in the gear case 7, which pinion in turn meshes with a reducing gear 11. This reducing gear 11 is enmeshed with a gear 12 mounted on and rotating shaft 8.

A bearing sleeve 13 extends upwardly from the gear case 6 around shaft 8, and a tubular sleeve 14 is mounted for endwise sliding and reciprocatory movement in this bearing sleeve 13. The tubular sleeve 14 is loosely received around shaft 8 and is not in any way influenced by rotation thereof, a bearing 15, however, being preferably provided at the upper end of the tubular sleeve 14 to slide upon the shaft 8 and insure properly aligned reciprocatory and sliding movement of this tubular sleeve 14.

A bearing pin 16 extends laterally from the tubular sleeve 14 through a slot provided in bearing sleeve 13, and a pin 17 extends through another suitable slot in the bearing sleeve 13, preferably substantially at right angles to the pin 16. Pin 17 has thereon a friction roll 18. A shaft 19 journalled in suitable bearings 20 and 21 extends substantially horizontally and radially in the bearing seeve 13, and this shaft has fixed on its end a cam member 22 provided with a cam slot 23 in which roll 18 is received. With this arrangement, as shaft 19 is rotated and cam 22 is consequently revolved, the pin 17 will be carried or slid up and down within its slot, in consequence of which the tubular sleeve member 14 will be raised and lowered with reciprocatory movement, sliding upwardly and downwardly, within the bearing sleeve 13 and along the shaft 8.

Rotary movement of shaft 19 is accomplished through drive gear 24 mounted on shaft 8 within gear case 6 and meshing with a driven gear 25 on stub shaft 26 extending from this gear case. A miter gear 27 on this stub shaft 26 meshes with

miter gear 28 on the shaft 19, and consequently this shaft 19 will be rotated from the motor 9.

A circular table 29, the form of which is best shown in Fig. 3, is mounted for turning movement on bearing sleeve 13, ball bearings 30 being preferably provided to reduce friction. This table 29 is entirely free from any connection with shaft 8, and is provided with a plurality of openings 31 made of sufficient size to receive the stem ends of tomatoes to be peeled, and to expose the entire core at the stem end. Through suitable rack formations 32 on the table 29 and a projection or rack formation 33 on cam 22, the table 29 will be given step-by-step movement during rotation of shaft 19, a spring held detent 34 being provided to stop movement so that each step of the movement of the table advances one of the openings 31 to a predetermined point.

At the predetermined point where one of the openings of the table will be disposed as the table stops on its step-by-step rotary movement, I provide below and beneath the table, and preferably supported by gear case 6, a sleeve bearing 35. A tubular bearing member 36 is mounted for reciprocatory movement within the bearing sleeve 35, and a shaft 37 journalled in this reciprocatory member 36 has a coring knife or head 38 carried at its upper end. The shaft 37 is suitably splined or otherwise associated with a gear 39, which in turn meshes with gear 40 meshing with drive gear 24.

A peeling shaft 41 is carried and rotatably mounted in substantially vertical relation at the end of arm 42 of a cross head 43 carried at the upper end of tubular sleeve 14, and this shaft 41 is substantially axially centered over and in line with the coring shaft 37. Shaft 41 is splined or keyed through gear 44 in gear case 7, and this gear 44, and consequently the shaft 41, will be rotated in gear 45 meshing with gear 12.

An opposite arm 46, of the cross head 43, has a stem 47 slidably mounted therethrough to be substantially centered over one of the openings, and a tomato engaging cap or cup 48 is carried at the lower end of this slidable rod 47, spring 49 being provided to normally urge the rod 47 downwardly to lower the cap or cup 48 to its lowermost extent. A rod 50, similar to rod 47, is slidably mounted within an opening formed centrally in peeling shaft 41, and is provided with a tomato receiving and holding cup or cap 51, spring 52 being provided to permit yielding movement of the stem or rod 50 with respect to shaft 41.

A cross lever 53 suitably mounted for swinging movement in its middle portion, as at 54, has one end slotted to receive the pin 16, and the other end of this cross lever 53 is provided with a slot 55 to receive a pin 56 associated with the mounting for coring shaft 37 so that as roll 18 travels in the cam track 23, the lever 53 will be rocked substantially as indicated by the dotted lines of Fig. 2, in consequence of which the cross head 43 will be raised and lowered, and the coring knife or cutter 38 will be raised into operative relation and will be subsequently lowered.

As tomatoes are placed in the openings 31 with their stem ends downwardly, after being preferably first scalded or otherwise treated to loosen the skins, the machine is placed in operation and the table 29 advances with step-by-step movement, each tomato being successively brought into position over the coring knife 38. When this position is reached, the cam 22 rocks cross lever 53 so that the cross head 43 is lowered to bring the caps or cups 48 and 51 down upon the upper sides of tomatoes received in certain of the openings 31 of the table 29. The movement of the cross head 43 is continued in consequence of which the rods 47 and 50 will be forced back against the pressure of springs 49 and 52, and the tomatoes will then be firmly held in place, but without the exercise of sufficient pressure to mash or otherwise injure the tomato. A head 57 is fixed on the lower end of peeling shaft 41, and has depending therefrom two or more spring fingers or arms 58. In the present instance I have shown three such arms, as it has been found that better results can be obtained; however, it will be understood that any number of spring arms can be used. At the end of each spring arm a brush or set of bristles 59 is carried, and during the downward movement of the cross head 43, these spring fingers 58 will separate to permit the bristle portions 59 to pass down over the sides of the tomato, and as the head 57, and consequently the spring arm and the bristle portions 59 are rotated, these bristles will wipe or scrub the peeling from the tomato and due to their rotation will throw this peeling off from the pulp or body of the tomato. To remove the peeling from the top or upper portion of the tomato, it is preferable that bristle portions 60 be provided to wipe or scrub against the tomato around the cup or cap 51, and as these bristle portions 60 are also rotated, the peeling will be substantially all removed from the tomato. It is perhaps preferable that a guide plate 61 be provided to hold the spring arms or fingers 58 in proper disposition, and a collar 62 may well be slidably mounted upon the upper portions of these spring arms or fingers 58 to be urged downwardly by a spring 63 to hold the bristles 59 carried by arms 58 always in proper brushing or scrubbing contact with the tomatoes.

As cam 22 continues to revolve the cross lever 53 will be rocked in the opposite direction, in consequence of which the core cutter 38 will be withdrawn from the opening, and the cross head 43 will be raised so that the bristle portions, as well as the cups or caps 48 and 51 will be raised above the tomatoes.

Due to the peculiar formation and manner of growth of the tomato, ordinarily the portion around the stem is more or less hard and perhaps not fully ripened, and it is desirable that this portion be sliced or cut away. With this in mind, I provide at one side adjacent to the position in which the cap or cup 48 becomes effective to hold a tomato in place, a slide bracket 64. This bracket 64 mounts a motor 65, or other suitable power unit, with its shaft substantially vertically disposed, and the motor shaft has thereon a rotary disk 66, or other suitable form of cutting knife. This motor or power unit 65 is so mounted in the slide bracket 64 that it can be moved over or inwardly toward shaft 8 so that the knife 66 will cut entirely across the openings 31, or can be withdrawn so that the knife entirely clears these openings. To accomplish sliding movement of the motor, and consequent cutting movement of the rotary disk knife 66, synchronized with operation of other parts of the machine, I provide on shaft 19 an oblique cam 67 which will move or reciprocate motor 65 back and forth substantially within the limits as indicated in Fig. 2, the cutting blade 66 being meanwhile rotated by the motor 65.

With the parts constructed, arranged and operating in the manner set forth, the tomatoes will be fed on to the table 29 by being individually

placed with their stem ends in the openings 31, in consequence of which the core portions are exposed through the lower side through the openings. The power to motors 8 and 65 is turned on, and the various operating parts will cause movement of the working portions in the manner as set forth above. Briefly recapitulating, as shaft 8 is rotated, power is transmitted to rotate shaft 19, and the coring shaft 37 and the peeling shaft 41, with their associated parts, are revolved. Motor 65 causes rotation of knife 66. The tomatoes will be placed in the openings 31 in advance of the travel to the position between the shafts 37 and 41, and as this point is reached through step-by-step movement of the table, the detent 34 will cause the table to pause and continued movement of cam 22 will lower the tomato holding and peeling parts associated with peeling shaft 41. The coring knife 38 will be advanced to penetrate and remove the core end of the tomato as soon as cup 51 advances sufficiently to hold the tomato in place, and the revolving bristle portions 59 and 60 scrubbing around and over the surface of the tomato will loosen and remove the peel therefrom. Assuming that the machine has been in operation and carried several tomatoes through the peeling operation, a tomato will be presented in the opening 31 immediately beneath the cup or cap 48, and as this cup or cap is lowered the tomato is positively held within the opening 31 and the portion around the stem end is pressed into the opening. Cam 67 then causes knife 66 to be advanced and to slice through and trim off the tomato at the stem end, thus removing the often found hard portion at the stem end.

The operation might be reversed so that the stem end will be first sliced off before the coring and peeling operations are carried-out; and, under some circumstances it may be found desirable to provide some pneumatic or other means, for removing the tomato skins, such an arrangement being shown in my co-pending application above identified. Special drip pans or other receptacles can be placed beneath the operating parts to catch and carry off juice, and any other arrangement can be made for receiving the skins as loosened and removed by the operation of the bristles upon the tomatoes.

In Fig. 7 I have illustrated a modified construction in which two tomatoes will be operated upon in each step-by-step movement of the machine, and as here shown two cross heads 43*a* and 43*b* are provided, it of course being understood that the cross head and peeling and coring, as well as the stem end trimming means will be duplicated. With this arrangement, each step of travel of the table 29 would carry over two of the openings 31. It will be appreciated that further duplication of the parts might be resorted to so that three or more tomatoes can be operated upon at one time.

While I have herein shown and described only certain specific embodiments of my invention and have suggested only certain possible modifications, it will be appreciated that many changes and variations can be made in the form, construction, arrangement, assembly, mounting and operation of the various elements, to suit different conditions and requirements of use and operation, without departing from the spirit and scope of my invention.

I claim:

1. A machine for coring and peeling tomatoes comprising, a supporting structure, a table rotatable on said supporting structure and having openings therein to receive the stem ends of tomatoes, means to rotate said table with step-by-step movement, means to positively hold a tomato in the opening at one position as the table is rotated, coring means movable into the opening to core a tomato thus held, leaf spring arms rotatable around the tomato as thus held, and friction means carried by the resilient ends of said spring arms to remove the skin from the tomato thus held.

2. A machine for coring and peeling tomatoes comprising, a supporting structure, a table rotatable on said supporting structure and having openings therein to receive the stem ends of tomatoes, means to rotate said table with step-by-step movement, means to positively hold a tomato in the opening at one position as the table is rotated, coring means movable into the opening to core a tomato thus held, spring arms rotatable around the tomato as thus held, friction means carried by said spring arms to remove the skin from the tomato thus held, said spring arms being resiliently impressed to follow the contour of the tomato down over the sides, and means to remove the skin from the upper portion of the tomato.

3. A machine for coring and peeling tomatoes comprising, a supporting structure, a table rotatable on said supporting structure and having openings therein to receive the stem ends of tomatoes, means to rotate said table with step-by-step movement, means to positively hold a tomato in the opening at one position as the table is rotated, coring means movable into the opening to core a tomato thus held, spring arms rotatable around the tomato as thus held, friction means carried by said spring arms to remove the skin from the tomato thus held, and knife means subsequently advanced over the surface of the table to slice the stem end from the tomato.

4. A machine for coring and peeling tomatoes comprising, a supporting structure, a table rotatably mounted on said supporting structure and provided with a plurality of openings adjacent its edge to receive and hold tomatoes with the stem end presented downwardly into the opening, means to move said table in step-by-step rotary movement, means to positively hold each tomato in place at one step during the travel of the table and against upward displacement, coring means movable upwardly through the opening to remove the core from the tomato thus held, and a plurality of grouped rotatable leaf spring members having bristles carried thereby at their resilient ends and positioned substantially at the point of stoppage for the coring operation to scrub against the surface of the tomato thus held and remove the skin therefrom.

5. A machine for coring and peeling tomatoes comprising, a supporting structure, a table rotatably mounted on said supporting structure and provided with a plurality of openings adjacent its edge to receive and hold tomatoes with the stem end presented downwardly into the opening, means to move said table in step-by-step rotary movement, means to positively hold each tomato in place at one step during the travel of the table and against upward displacement, coring means movable upwardly through the opening to remove the core from the tomato thus held, rotatable spring members having bristles carried thereby to scrub against the surface of the tomato thus held and remove the skin therefrom, means to yieldably urge said spring fingers

inwardly to follow the contour down over the sides of the tomato, and means to rotate and brush over the upper side of the tomato to loosen the skin therefrom.

6. A machine for coring and peeling tomatoes comprising, a supporting structure, a table rotatably mounted on said supporting structure and provided with a plurality of openings adjacent its edge to receive and hold tomatoes with the stem end presented downwardly into the opening, means to move said table in step-by-step rotary movement, means to positively hold each tomato in place at one step during the travel of the table and against upward displacement, coring means movable upwardly through the opening to remove the core from the tomato thus held, a rotatable shaft, a plurality of leaf springs carried by and rotated with the shaft and having their resilient ends extending, bristles carried by the resilient ends of the springs to scrub against the surface of the tomato thus held and remove the skin therefrom, and a rotary slicing knife to slice and trim the stem end from each tomato.

7. A machine for coring and peeling tomatoes comprising, a supporting structure, a table rotatably mounted on said supporting structure and provided with a plurality of openings adjacent its edge to receive and hold tomatoes with the stem end presented downwardly into the opening, means to move said table in step-by-step rotary movement, means to positively hold each tomato in place at one step during the travel of the table and against upward displacement, coring means movable upwardly through the opening to remove the core from the tomato thus held, rotatable spring members having bristles carried thereby to scrub against the surface of the tomato thus held and remove the skin therefrom, means to hold each cored tomato in the opening therefor on the table at another point during the travel of the table, a rotary slicing knife, and means to move the rotary slicing knife to cut through each cored tomato as thus held to trim the stem end therefrom.

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