July 5, 1949. T. M. KANE, SR 2,475,142

TOMATO CORING MECHANISM

Filed April 12, 1948 2 Sheets-Sheet 1

FIG. 1.

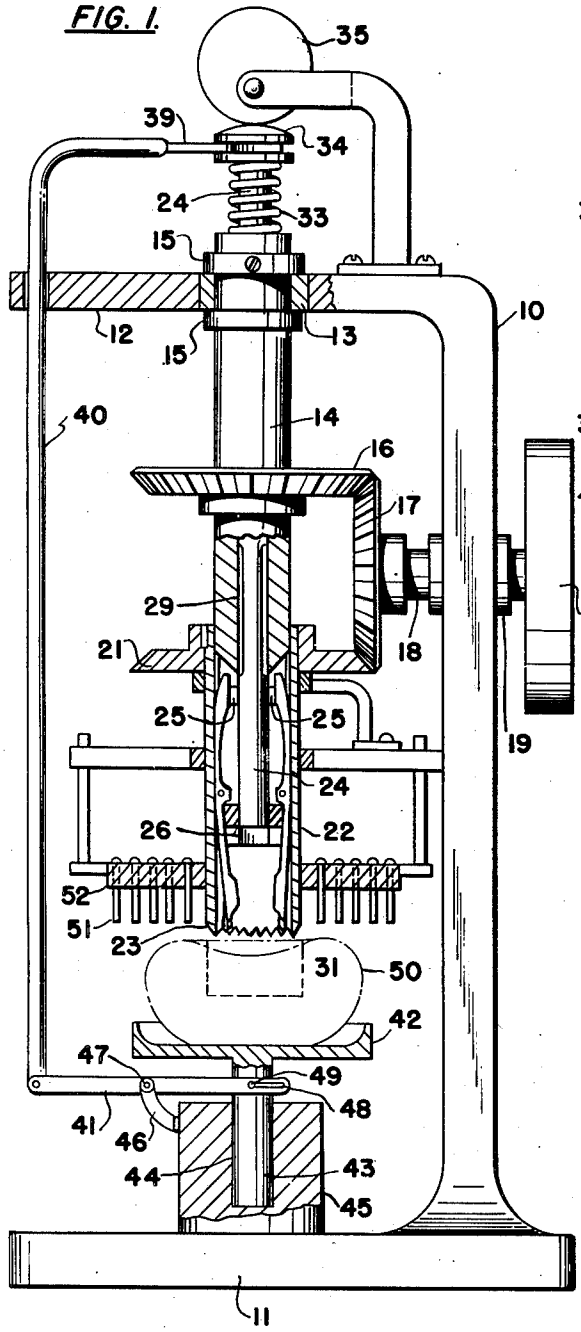
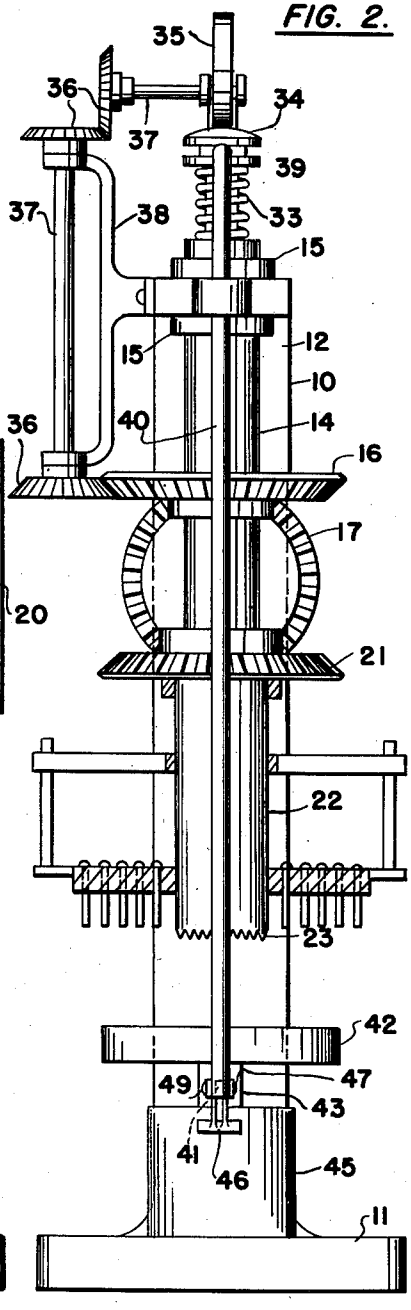


FIG. 2.



INVENTOR.
THOMAS M. KANE, SR.
BY Howard J. Whelan.
ATTORNEY

July 5, 1949. T. M. KANE, SR 2,475,142

TOMATO CORING MECHANISM

Filed April 12, 1948 2 Sheets-Sheet 2

FIG. 3.

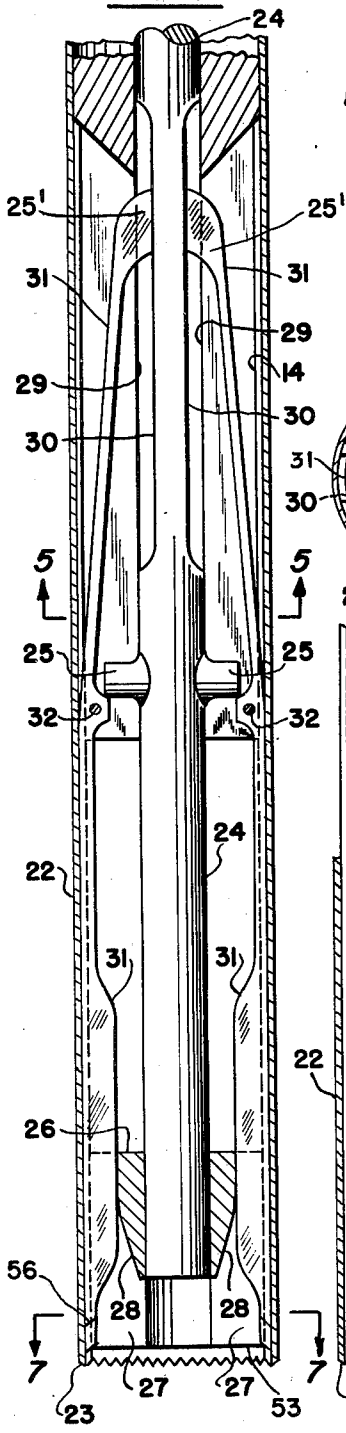


FIG. 4.

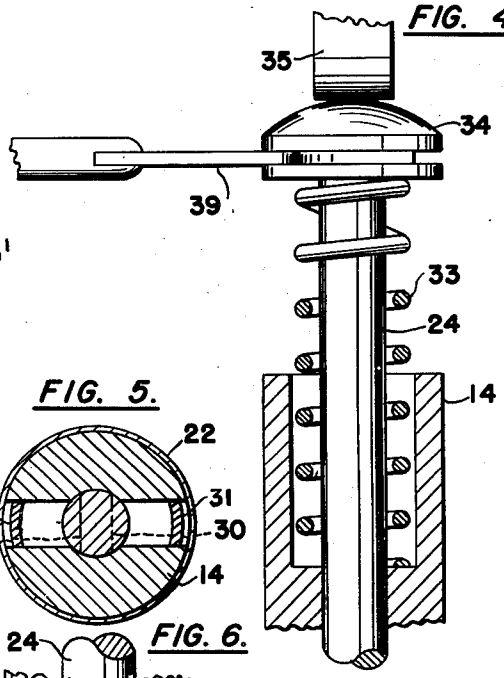


FIG. 5.

FIG. 6.

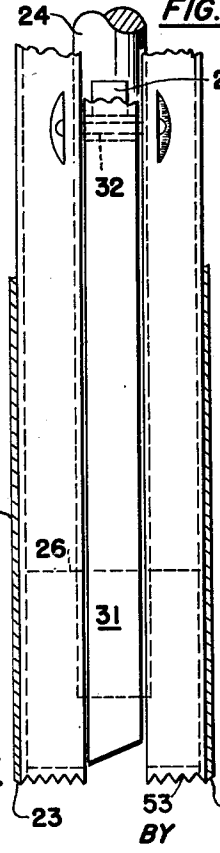


FIG. 7.

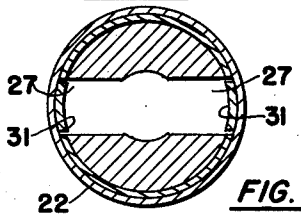
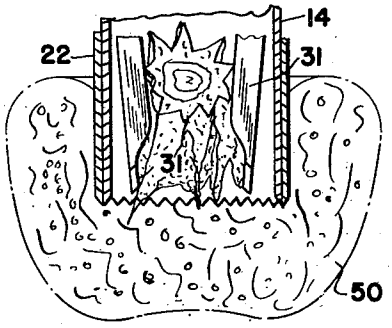


FIG. 8.



INVENTOR.
THOMAS M. KANE, SR.
BY Howard J. Whelan.
ATTORNEY

Patented July 5, 1949 2,475,142

UNITED STATES PATENT OFFICE

2,475,142

TOMATO CORING MECHANISM

Thomas M. Kane, Sr., Baltimore, Md.

Application April 12, 1948, Serial No. 20,560

3 Claims. (Cl. 146—52)

1

This invention refers to devices intended for the cutting out and removal of the stalk remnants and cores of tomatoes, and is an improvement on my Patent No. 2,433,125, dated December 23, 1947.

While there have been various forms of core removing devices developed and employed, such are ordinarily designed to bore entirely through the fruit or vegetable chosen, and in a particular form used for gouging out the core of a tomato, the core is removed by the use of a bent loop in the coring mechanism. This loop tends to dig into the core, and facilitate its removal but in doing so tears parts of the insides of the tomato with it. This had a tendency to spoil the appearance of the tomato and render it less useful and valuable.

In this invention the core is not dug out, but the removal is provided for, more effectively by having two tubes with teeth on their lower ends which are positioned, one in the other, and rotated in opposite directions to cleanly cut the core vertically and having plural jaws to cut the core transversely as they move one towards the other. This transverse movement of the plural jaws to grip the loose core as the mechanism is raised out of the tomato, or the tomato lowered from the mechanism, whichever may be desired. These jaws operate, as the transverse cutters of the device and in rotating, exerts a gradual increasing pressure on the loose core that facilitates its removal in a clean and effective manner. This is done automatically and with a minimum amount of manual handling.

For a better understanding of the invention, and the objects and principles thereof, reference is made to the appended drawings. These drawings together with the following description outline a particular form of the invention, that illustrate the invention by way of example. Also in connection with the description are claims that particularly emphasize the scope of the invention.

In the drawings:

Figure 1 is a side elevation, partly in section, of a tomato corer embodying this invention;

Figure 2 is a front elevation of the corer shown in Figure 1;

Figure 3 is an enlarged view of the cutter head shown in section to show its inner construction;

Figure 4 is an enlarged view with parts broken away to show its inner construction;

Figure 5 is a sectional view taken along line 5—5 of Figure 3;

Figure 6 shows the casing with its jaws supported thereon;

2

Figure 7 is a sectional view taken along line 7—7 of Figure 3, and

Figure 8 is a typical view of the cutting end of the device inserted in a tomato with the core portion cut loose and being raised out of the tomato by the jaws.

Similar reference characters relate to the same parts throughout the drawings.

In the drawings, a tomato coring machine has a vertical stand 10 with a flat base 11 designed suitably for placement on a horizontal surface, such as a table or bench. The stand has an upper bracket 12 extending horizontally from it and supporting a bearing 13 in which a tubular casing 14 revolves vertically. The casing 14 is held in position by means of the collars 15 mounted thereon. The casing 14 is rigidly connected to a bevel gear 16, which in turn is meshed at right angles with a second or driving bevel gear 17. The casing 14, has teeth 53 on its lower end. The gear 17 is mounted on a shaft 18 that passes through a bearing 19 in the stand 10 to be driven by a pulley 20 or other transmission means. Another under bevel gear 21 is rotated by the gear 17 at right angles to it and is used for rotating a cutter tubing 22 to which it is rigidly attached. The lower end of the tubing 22 is provided with teeth 23 that are made to cut into a tomato and make a cylindrical cut into it. This tubing 22 rotates outside the casing 14. The teeth 23 and 53 rotate in opposite directions, and are aligned one within the other. An inner vertical shaft 24 is reciprocable in the casing 14 and carries upper peripheral lugs 25 and a cylindrical bushing 26 at its end. The bushing 26 has two grooves 27 on opposite sides aligned with the lugs 25 and cut, with their bottom surfaces 28 on a slant. The cutter tubing 22 is vertically disposed and normally held in that position, but subject to rotation by the gear 21. It is placed loosely over the casing 14 and is guided thereby and kept in line. The casing 14 has a central longitudinal passage 29 in which the shaft 24 reciprocates. The spaces 30 are grooves in the peripheral wall of the shaft 24 and keep it aligned with the lugs 25 and the casing 14 during the strokes and travel of the latter. The shaft 24 in its stroke brings its lugs 25 and the bushing 26 into contact with a pair of lever jaws 31 and moves them in and out, on their middle pivot points 32. These jaws have end portions 25' slidably guided along the grooves 30 on shaft 24. The pivots 32 are set in the wall of the casing 14 and hold the jaws 31 in a stationary position aligned with the teeth 23. These jaws can open outwardly and close inwardly as the lugs

25 and bushing 26 engage their levers during the movement of the shaft 24. The grooves 30 allow for wider opening of the jaws. A coil spring 33 under the shaft head 34 keeps a tension on the shaft 24 tending to keep it upward and the jaws 31 closed. A cam 35 engages the head 34 and tends to push the shaft 24 down as it rotates due to the engagement of jaws 31 with the grooves 30, against the action of the spring 33. A series of gears 36, shaft 37 suitably supported on a bracket 38, serve as the mechanism to operate the cam 35 from the gear 16. In addition an arm 40 through its yoke 39 is raised and lowered by the cam 35 when it contacts the head 34. The lower end of arm 40 is pivotally connected to a lever 41 and raises or lowers a dished out table 42 mounted on a stem 43. This table 42 is used for supporting a tomato 50 to be processed and lifting it to be cored by the teeth 23 and 53 and jaws 31. The stem 43 reciprocates in passage 44 in a holder 45 placed axially in line with the teeth of the cutter tubing 22 and casing 14. A bracket 46 supports the lever 41 by its pivot 47. The lever 41 has a slot 48 arranged to prevent the binding of the pin 49 in it as the stem 43 is raised and lowered. The jaws 31 are preferably made as indicated in the drawings and with their lower edges 56 sharpened.

In the operation of the machine the gears 17 and gear 16 rotate the casing 14 in one direction and the cam mechanism starts turning the cam 35 until it pushes down on the head and clutch and operates the levers 40 and 41 to raise the table 42 and bring the tomato against the teeth 23 and 53. The cutter tubing 22 is oppositely rotated by the gears 17 and 21 at the same time. This causes the teeth to cut into the tomato and cut a cylindrical section, the jaws 31 being turned also, but not causing any particular effect in the first position. During the cutting, the jaws 31 are expanded or open, but when the cam 35 reaches the position where the cam is being raised off the head and the table 42 being lowered, the jaws come together and cut the bottom of the core and holds it after it has been cut out; this pulls the core out of the tomato and leaves it in the jaws ready for removal. The device is run again without a tomato on the table 42, so that when the jaws are opened again they will drop the core, so it may be removed.

The tomato 50 is kept from turning during the rotation of the tubing 22 and casing 14 and jaws 31, by means of a series of loose vertical pins 51 mounted on a plate 52, as they make engagement with the tomato when the latter is raised. This is a conventional operation and already on record in Patent No. 2,433,125 by this inventor and therefore does not require further explanation.

By means of this mechanism the core is cut-out to a suitable depth without unnecessarily tearing the tomato material outside of it. It is

done expeditiously and works automatically, the only work required of the operator being that necessary to remove the core from the table 50 and to place and remove the tomatoes, as may be required.

While but one general form of the invention is shown in the drawings and described in the specifications, it is not desired to limit this application for patent to this particular form or in any other way otherwise than limited by the scope thereof, as it is appreciated that other forms of construction could be made that would use the same principles and come within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. A coring machine comprising a stand, a casing carried by said stand, means for rotating said casing in one direction, a cutting tubing co-axial with and surrounding said casing, means for rotating said tubing in a direction opposite to that of said casing, teeth at the end portions of said casing and tubing and aligned with each other for coring a tomato, a shaft within said casing and rotatable therewith, means for reciprocating said shaft, a plurality of jaws pivoted to said casing and extending within said tubing and terminating in line with said aforementioned teeth, means on said shaft for engaging said jaws to open and close said jaws, and a movable table for supporting the tomato in position to be cored by said teeth and jaws.

2. A coring machine as set forth in claim 1, means connecting said shaft and table to coordinate the operations of said table with said teeth and jaws.

3. A coring machine as set forth in claim 1, wherein the means for reciprocating said shaft include an extension on said shaft, a cam cooperating with said extension, means for driving said cam, and a connection between said extension and said table to synchronize movement of said table with said teeth and jaws.

THOMAS M. KANE, SR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,066,233	Steelman	July 1, 1913
1,282,402	Fenn	Oct. 22, 1918
1,448,532	Harding	Mar. 13, 1923
2,359,881	Serr	Oct. 10, 1944
2,433,125	Kane	Dec. 23, 1947

FOREIGN PATENTS

Number	Country	Date
347,776	Great Britain	May 7, 1931