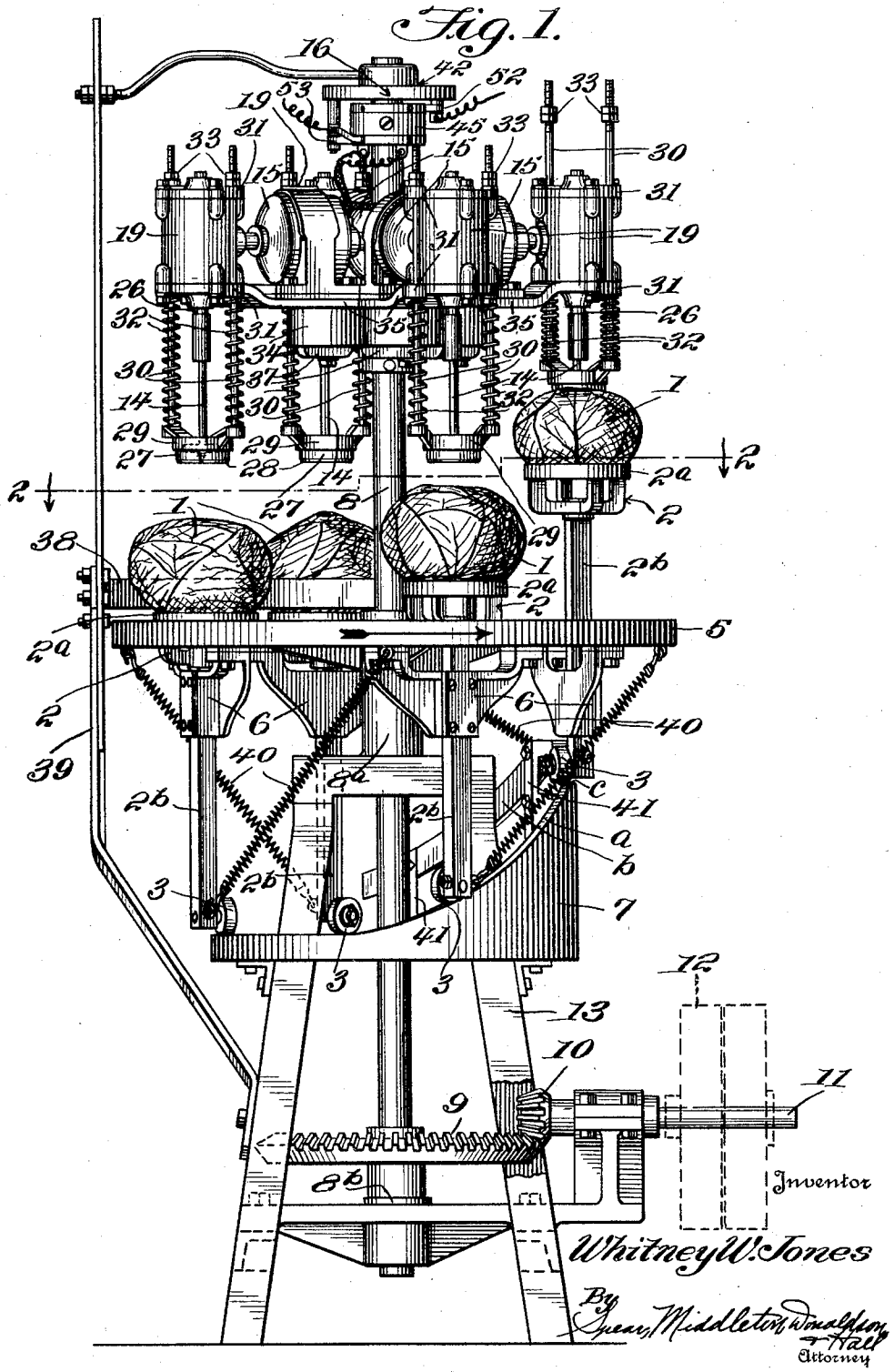
June 24, 1930. W. W. JONES 1,766,824

VEGETABLE CUTTING APPARATUS

Original Filed Jan. 10, 1928 4 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

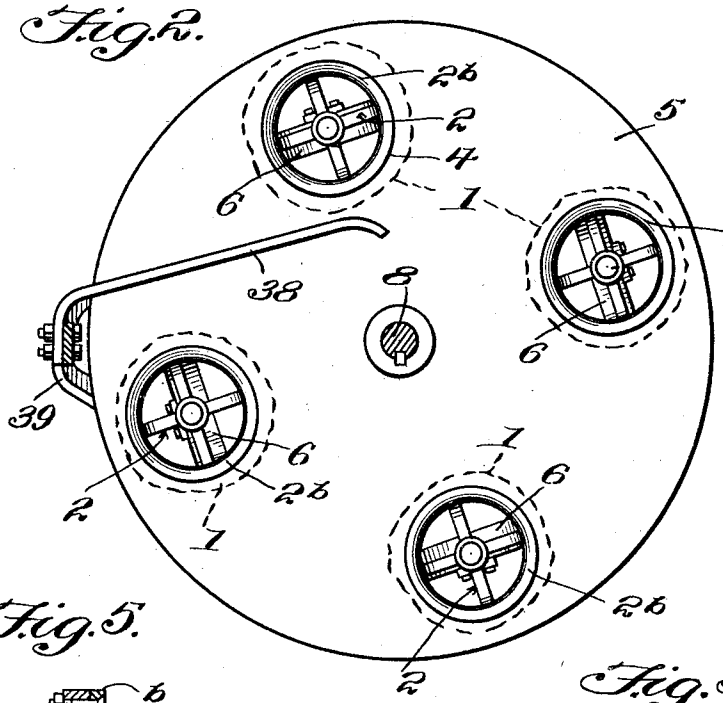


Fig. 5.

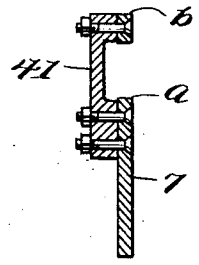


Fig. 3.

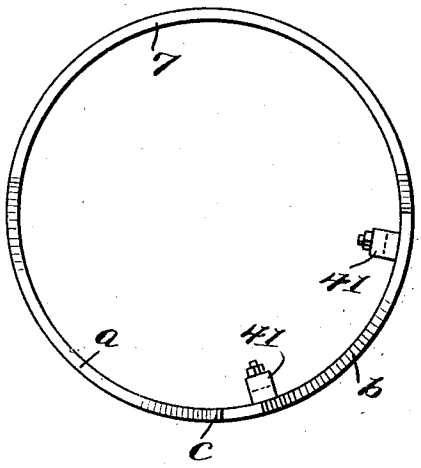
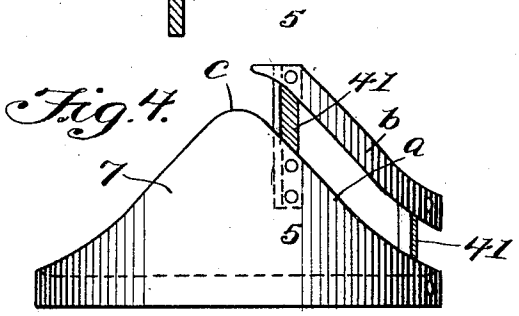


Fig. 4.



Incline of Cam Relative to Pitch of Core Shredder.

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June 24, 1930. W. W. JONES 1,766,824

VEGETABLE CUTTING APPARATUS

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Fig. 9.

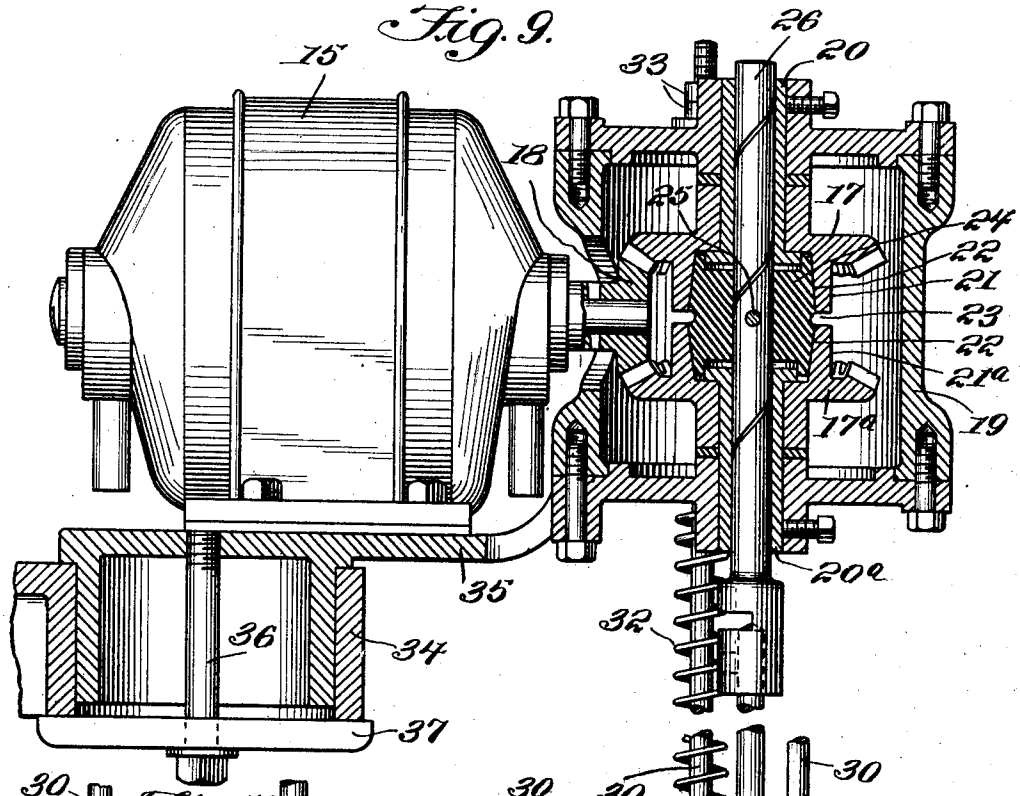


Fig. 10.

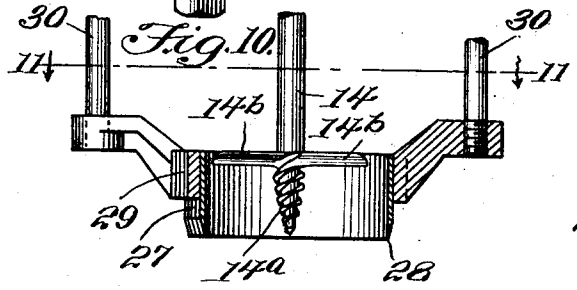


Fig. 11.

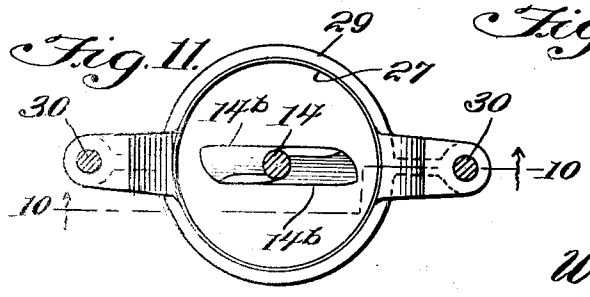
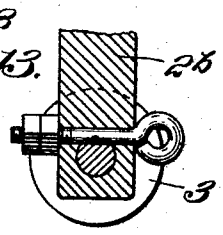


Fig. 13.



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June 24, 1930. W. W. JONES 1,766,824

VEGETABLE CUTTING APPARATUS

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Fig. 6.

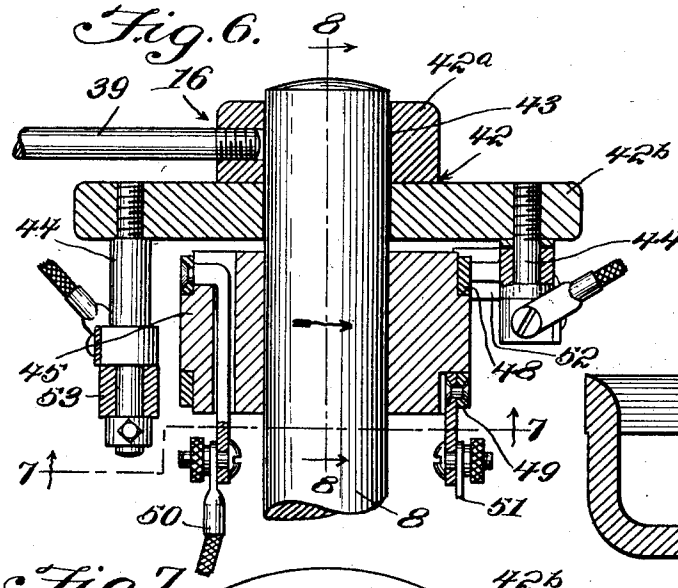


Fig. 12.

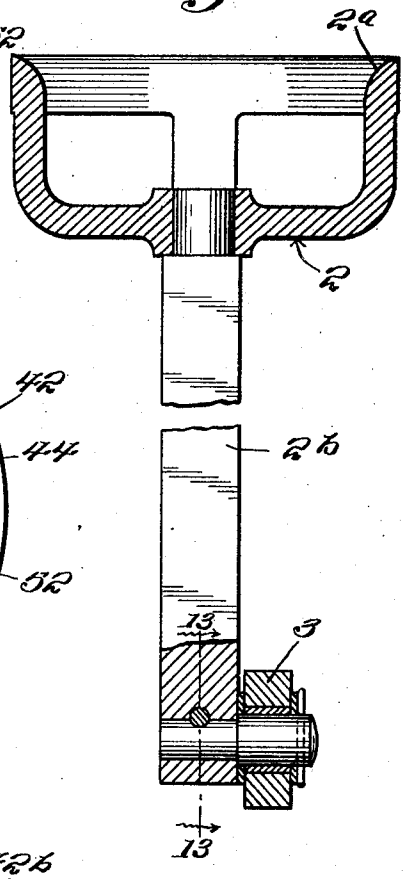


Fig. 7.

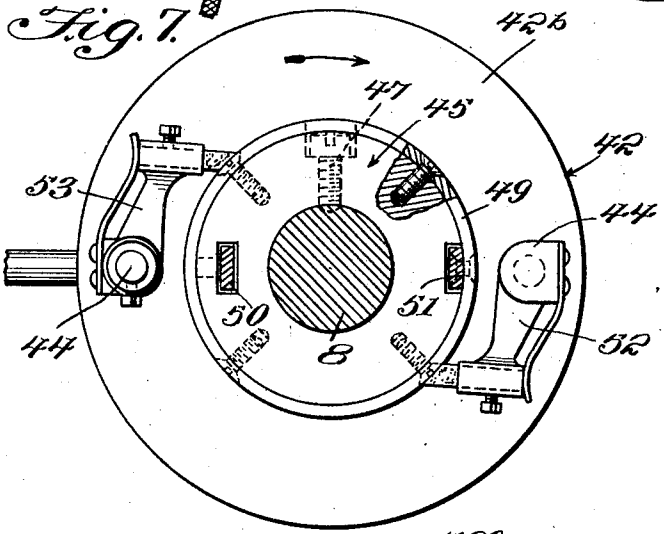
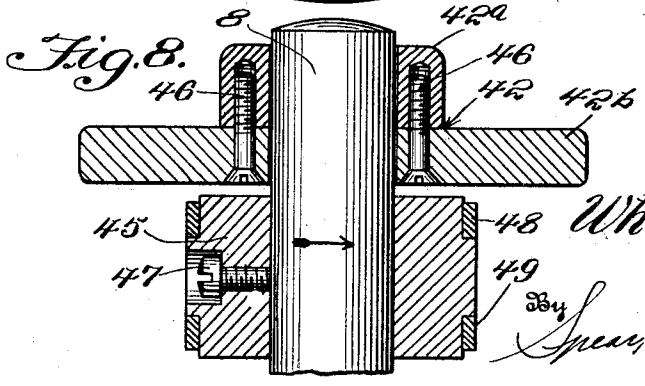


Fig. 8.



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UNITED STATES PATENT OFFICE

WHITNEY WALLACE JONES, OF BALTIMORE, MARYLAND

VEGETABLE-CUTTING APPARATUS

Application filed January 10, 1928, Serial No. 245,700. Renewed March 4, 1930.

My invention relates to improvements in apparatus for preparing cabbage or like vegetables or fruit for cutting into shreds.

An object of the invention is to provide novel means for ready removal of the outer leaves of the cabbage or like vegetable.

A further object is to provide means to cut the cabbage prior to slicing to cause the slicing to result in shreds or narrow strips instead of slabs.

Another object of the invention is to provide means to so cut or shred the cabbage core prior to slicing that the cabbage remains intact until sliced.

Another object is to provide means for moving the vegetable relative to the cutters during the cutting operation.

Other objects will appear from the accompanying description, claims and drawings.

The invention consists in the features and combination and arrangement of parts, hereinafter described and particularly pointed out in the claims.

In the accompanying drawings

Figure 1 is a front elevation of my machine.

Fig. 2 is a plan view of the revolving table with the vertically slidable cabbage supports or holders mounted therein.

Fig. 3 is a plan view of the stationary cam.

Fig. 4 is an elevation of Fig. 3 showing the upper and lower guides of the cam.

Fig. 5 is a section taken on line 5—5 of Fig. 4.

Fig. 6 is a detail sectional view of the means for transmitting electric current to the motors revolving about the shaft.

Fig. 7 is a bottom plan view taken on line 7—7 of Fig. 6.

Fig. 8 is a sectional view similar to Fig. 6 showing certain connections. The section is taken on line 8—8 of Fig. 6.

Fig. 9 is a partial sectional elevation of the clutch connections between the motor and the core shredder knife.

Fig. 10 is a detail sectional view of a part of Fig. 9 showing the relation of the shredder knife and trimmer knife. The section is taken on line 10—10 of Fig. 11.

Fig. 11 is a sectional view taken on line 11—11 of Fig. 10.

Fig. 12 is a view of the cabbage support or holder with its roller.

Fig. 13 is a sectional detail of the roller connection to the cabbage holder taken on line 13—13 of Fig. 12.

Referring to the drawings, the numeral 1 designates the cabbages mounted on vertically slidable supports or holders 2. The supports 2 comprise a holder portion 2^a and a square stem 2^b, having a roller 3 mounted at the lower end of the stem (see Figs. 12 and 13). The vertically slidable supports are guided in apertures 4 in a rotary table 5 by guides 6 secured beneath the table. A stationary cam 7 is provided with which the rollers 3 cooperate to support the slidable holders 2 and to cause the holders to reciprocate vertically as the table 5 rotates.

The table 5 is provided with a shaft 8, which is driven through gear 9, and pinion 10 from drive shaft 11, which may be rotated by a belt on pulley 12 or in any suitable way as by a motor. The shaft 8 is supported rotatably in vertical position in frame 13 at bearings 8^a and 8^b. The frame also supports the cam 7. The table shaft 8 is extended above the table to carry the support for the cabbage cutters or knives 14 and the electric motors 15 for driving the cutters. Means for transmitting electricity to the motors which are revolving with the shaft 8, are designated generally by the numeral 16 and will be described hereinafter.

Four motors 15 are provided, and each one is in a driving connection with one of the core shredder knives or cutters 14. The motors 15 and the cutters and their connections are all mounted on a support 34 carried by the shaft 8 and rotatable therewith.

The driving connection between each motor 15 and its knife or cutter 14 is shown in Fig. 9 and comprises upper and lower bevel gears 17 and 17^a driven in common by pinion 18 of motor 15, and rotatably carried in housing 19 by bearing sleeves 20 and 20^a.

The bevel gear members 17 and 17ª have opposed dished portions 21 and 21ª with flaring walls 22 with an interposed space 23. In this space is disposed a chuck 24 keyed at 25 to the cutter shaft 26 which is rotatably disposed within bearing sleeves 20 and 20ª. By raising or lowering the chuck friction connection with either bevel gear is established. At the lower end of the cutter shaft 26, is carried the core shredder knife or cutter 14 (see Figs. 10 and 11), having screw point 14ª and blades 14ᵇ.

Circular trimmer knives 27 having cutting edges 28 are carried by circular guards 29 and are adapted to surround the core shredder knives. The guards 29 are provided with vertically disposed rods 30 having slidable connection through apertured lugs 31 on the outside of the gear and clutch housing 19 so that the guards and trimmer knives may raise or lower relative to the housing 19 and to the cutter 14 and its shaft. Springs 32 are provided surrounding the rods 30 and bearing against the lugs 31 and the guard 29 to urge the guard and trimmer to lowermost position as limited by nuts 33 on the upper end of the rods, and to yieldingly resist upward movement of the guard. The removable mounting 35 of the motors 15 in the bracket 34 is shown in Fig. 9 where the motor is shown mounted on a platform which is removably secured in bracket 34 by means of bolt 36 and plate 37.

The plan view of the rotary table 5 shown in Fig. 2 illustrates the disposition of the slidable cabbage holders, and shows a cabbage deflecting member 38 which engages the cabbages as they travel with the table 5 after they have been subjected to the cutting operation and throws them off to one side where they may be collected and conveyed to a slicing machine. The deflector 38 is supported by a standard 39 secured to the frame 13, so shown in Fig. 1 and is so disposed that the table 5 can rotate beneath it. The table and its shaft in this embodiment of the invention are rotated to the right. As shown in Fig. 1 springs 40 are provided between the table and the lower ends of the cabbage supports 2 to urge the slidable supports forwardly and upwardly so that the rollers will start up the incline of the stationary cam easily. The stationary cam 7 comprises part *a* upon which the rollers bear, and part *b* which confines the rollers to contact with part *a* on its descent from the apex *c* of part *a*. The part *b* is supported by brackets 41 secured to part *a*.

Referring to the electric transmission means, a stationary electric terminal plate 42 is supported by standard 39 at the upper end of shaft 8 and in the bore 43 of which the shaft 8 rotates. The electric terminal plate 42 comprises a metal portion 42ª carrying a wooden electric terminal and brush supporting portion 42ᵇ. Supports 44 for carrying the electric terminals and brushes are screwed into the wooden plate 42ᵇ. A revolving electric transmitter 45 is secured to shaft 8 and rotates therewith. This connection and the connection of the wood and iron portion of terminal plate 42 is clearly shown in Fig. 8 to be by means of screws 46 and 47. The transmitter 45 is made up of a wooden body provided with upper and lower contact rings 48 and 49 from which conductors 50 and 51 extend and carry the current to the motors 15. The brush 52 engages contact ring 48 and the brush 53 engages contact ring 49 as shown.

In the operation of the machine the table is rotated and the electricity is turned on. The cabbages are placed in the holders or slidable supports and as the table rotates, the rollers are carried up the incline of the cam thereby elevating the holders with the cabbages thereon.

The cabbage contacts with the circular trimmer knife and with the screw point of the core shredder knife when the roller of the cabbage support is part way up the incline of the stationary cam. From this point upward in the movement of the cabbage support the trimmer knife assembly, by means of the slides and springs, yieldingly holds the cabbage against the support. The trimmer knife also on contacting with the cabbage severs the undesirable outer leaves at the core so that they fall off or may readily be removed. The guard in which the circular trimmer knife is mounted limits the entrance of the ring knife into the cabbage.

When the cabbage contacts in its upward movement with the screw point of the core shredder knife, the knife and its shaft are lifted, the shaft carrying the chuck upwardly into frictional contact with the upper gear. This causes the knife shaft to so rotate that the screw point of the knife shaft will screw down into the cabbage core as the cabbage continues to be lifted by the roller riding up the cam incline. When the screw has entered the cabbage the blades of the knife will make a spiral cut down through the cabbage. The stationary cam is so designed that the core shredder knife will have cut all the way through the core of the cabbage when the apex of the cam is reached by the roller.

When this point in the operation is reached, the core shredder knife and its shaft are no longer pressed upwardly by the cabbage, but will be forced down thereby by the holding action of the trimmer or assembly on the cabbage and by the action of the upper cam portion *b* on the roller, thus breaking the drive connection between the chuck and the upper gear and establishing a drive connection between the chuck and

the lower gear. This causes rotation of the core shredder knife shaft in the reverse direction causing the knife to work its way relatively upward through the spiral cut in the core, as the roller descends from the apex of the cam, and the cabbage and support descend with it until the cabbage is entirely clear of the core shredder knife and is ready to be removed from the machine. During the entire core cutting and knife withdrawing operation until the cabbage is clear of the core knife, the trimmer knife assembly holds the cabbage securely in place on its vertically reciprocating holder or support.

The incline of cam face is relative to the pitch of the core shredding knife.

I claim:

1. In combination in a cutting apparatus for leafy vegetables, a cutter to cut the core of the vegetable and a circular trimmer cutter extending about and concentric with the axis of the coring cutter to trim the leaves, substantially as described.

2. In combination in vegetable cutting apparatus, a traveling table, driving means for said table, vertically reciprocable vegetable supports mounted in said table, means for raising and lowering said supports at prescribed stages and superimposed cutting means mounted to travel with said table and adapted to cooperate with said supports to cut the vegetables, said cutting means comprising a circular trimmer knife and a rotary core cutting knife, means whereby said trimmer knife is adapted to bear yieldably upon the vegetable to hold it in its reciprocating support, while the rotary core cutter cuts the core of the vegetable.

3. In combination in vegetable cutting apparatus, a traveling table, driving means for said table, vertically reciprocable vegetable supports mounted in said table, stationary cam means for raising and lowering said supports at a prescribed stage, and superimposed cutting means mounted to travel with said table and adapted to cooperate with said supports to cut the vegetables on the supports, said cutting means including yielding means for holding the vegetable in place on its support and means for cutting the core of the vegetable while so held.

4. In combination, in vegetable cutting apparatus, a travelling table, driving means for said table, vertically reciprocable vegetable supports mounted in said table, means for raising and lowering said supports at prescribed stages, and cutting means adapted to cooperate with said supports to cut the vegetable, said means for raising and lowering the vegetable supports moving the vegetable in relation to the cutting means to effect the cutting.

5. In combination in vegetable cutting apparatus, a traveling table, means for driving said table, vertically movable individual vegetable supports mounted in said table, stationary cam means for raising and lowering said supports successively at a prescribed stage, superimposed individual vegetable cutting means adapted to cooperate with said supports to cut the vegetables on the supports, said cutting means including yielding means for holding the vegetable in place on its support and means for cutting the core of the vegetable while so held.

6. Apparatus according to claim 3 in which said traveling table is rotary.

7. Apparatus according to claim 3 in which said cutting means comprises a rotary shaft, a vegetable core cutting knife, carried by said shaft, a bearing housing for said shaft, means for driving said shaft, rods slidably carried by said bearing housing, a guard supported by said rods, a circular trimmer knife carried by said guard, springs between said guard and bearing housing urging them apart, stops on said rods limiting the movement of said guard away from said housing, said knives when the guard is in remote position being juxtaposed, the trimmer knife surrounding the core cutter knife, and its shaft, and adapted on contact with the vegetable to yieldably hold the vegetable in its support as the support moves vertically to effect the cutting of the core.

8. Apparatus according to claim 3 in which said means for cutting the core of the vegetable comprises a rotary shaft, a vegetable core cutting knife carried by said shaft, a bearing support for said shaft, means for driving said shaft, said driving means comprising a motor, a bevel gear on the end of the motor shaft, said rotary cutter shaft being disposed at right angles to said motor shaft, a friction chuck on said rotary shaft, drive bevel gears having chuck receiving surfaces and disposed one above and one below said chuck and connected with said motor shaft bevel gear to be driven in opposite directions, said rotary cutter shaft being mounted for slight vertical movement for connection with one or the other of said drive bevel gears to drive the rotary cutter in cutting direction or in withdrawing direction.

9. Apparatus according to claim 3 in which said means for cutting the core of the vegetable comprises a rotary shaft, a vegetable core cutting knife carried by said shaft, a bearing support for said shaft, means for driving said shaft, said driving means comprising a motor, a bevel gear on the end of the motor shaft, said rotary cutter shaft being disposed at right angles to said motor shaft, a friction chuck on said rotary shaft, drive bevel gears having chuck receiving surfaces and disposed one above and one below said chuck and connected with said motor shaft bevel gear to be driven in opposite directions, said ro-

tary cutter shaft being mounted for slight vertical movement for connection with one or the other of said drive bevel gears to drive the rotary cutter in cutting direction or in withdrawing direction, the rotary cutter shaft being moved vertically into connection with the upper or lower drive bevel gear in accordance with the upward or downward movement of the vegetable support.

10. In combination in vegetable cutting apparatus, a traveling table, means for driving said table, vertically movable vegetable supports mounted in said table, rollers on the lower ends of said supports, stationary cam means for raising and lowering said supports, said rollers being adapted to ride on the stationary cam, and superimposed cutting means mounted to travel with said table and adapted to cooperate with said supports to cut the vegetables in the supports.

11. In apparatus according to claim 10, springs connecting the lower ends of said supports with said table to urge the rollers up the incline of the cam.

12. In combination in vegetable cutting apparatus, a rotary shaft carrying a rotary table and carrying superimposed vegetable cutting apparatus, means for driving said shaft, vertically movable vegetable supports mounted in said table, a stationary cam beneath said table, rollers carried at the lower ends of said supports and adapted to ride over said cam to raise and lower the supports successively upon rotation of the table relative to said cam, said superimposed cutting apparatus being adapted to cooperate with said vertically moving supports to cut the vegetables in the supports.

13. In combination in vegetable cutting apparatus, a traveling table, means for driving said table, vertically reciprocable vegetable supports mounted in said table, means for raising and lowering said supports at prescribed stages, and superimposed cutting means mounted to travel with said table and adapted to cooperate with said supports to cut the vegetables, said cutting means including a rotary vegetable core cutting knife.

14. In a vegetable cutting machine, a rotary coring cutter, a circular trimming cutter arranged substantially concentric with the coring cutter and a yielding mounting for the trimming cutter substantially as described.

15. In a vegetable cutting machine according to claim 14, a guard associated with the circular trimming cutter to limit the degree of entrance of said trimming cutter into the vegetable, substantially as described.

16. In a vegetable cutter the combination of a rotary coring knife, a circular trimmer cutter surrounding the coring knife axis to cut the leaves of the vegetable while it is being cored, a yielding mounting for said trimmer, driving means for rotating the coring knife, said coring knife having upward movement as a consequence of contacting with the vegetable, said driving means being set to rotate the coring knife in one direction as a consequence of the upward movement of the coring knife and to rotate the knife in the opposite direction as a consequence of the downward movement of the coring knife, substantially as described.

17. Apparatus according to claim 16 in which a vegetable holder is mounted to move vertically and means for raising said holder to present the vegetable to the knife and the trimmer which is engaged by the upwardly moving vegetable to raise said knife and trimmer, substantially as described.

18. In combination in a cutting apparatus for leafy vegetables, a cutter to cut the core of the vegetable and a cutter extending about the axis of the coring cutter to trim the leaves, said coring and trimming cutters acting simultaneously upon the vegetable, substantially as described.

19. In combination, a rotary table, with driving means therefor, vertically reciprocable vegetable supports mounted in said table, means for raising and lowering said supports at prescribed stages, a plurality of cutters, one above each support and travelling therewith, an electric motor for each knife travelling with the table, drive means between each motor and the corresponding cutter, and a distributor to distribute current to the several motors as they travel with the table, substantially as described.

In testimony whereof, I affix my signature.

WHITNEY WALLACE JONES.