

(Model.)

7 Sheets—Sheet 1.

C. M. HEFFRON.
PARING MACHINE.

No. 423,318.

Patented Mar. 11, 1890.

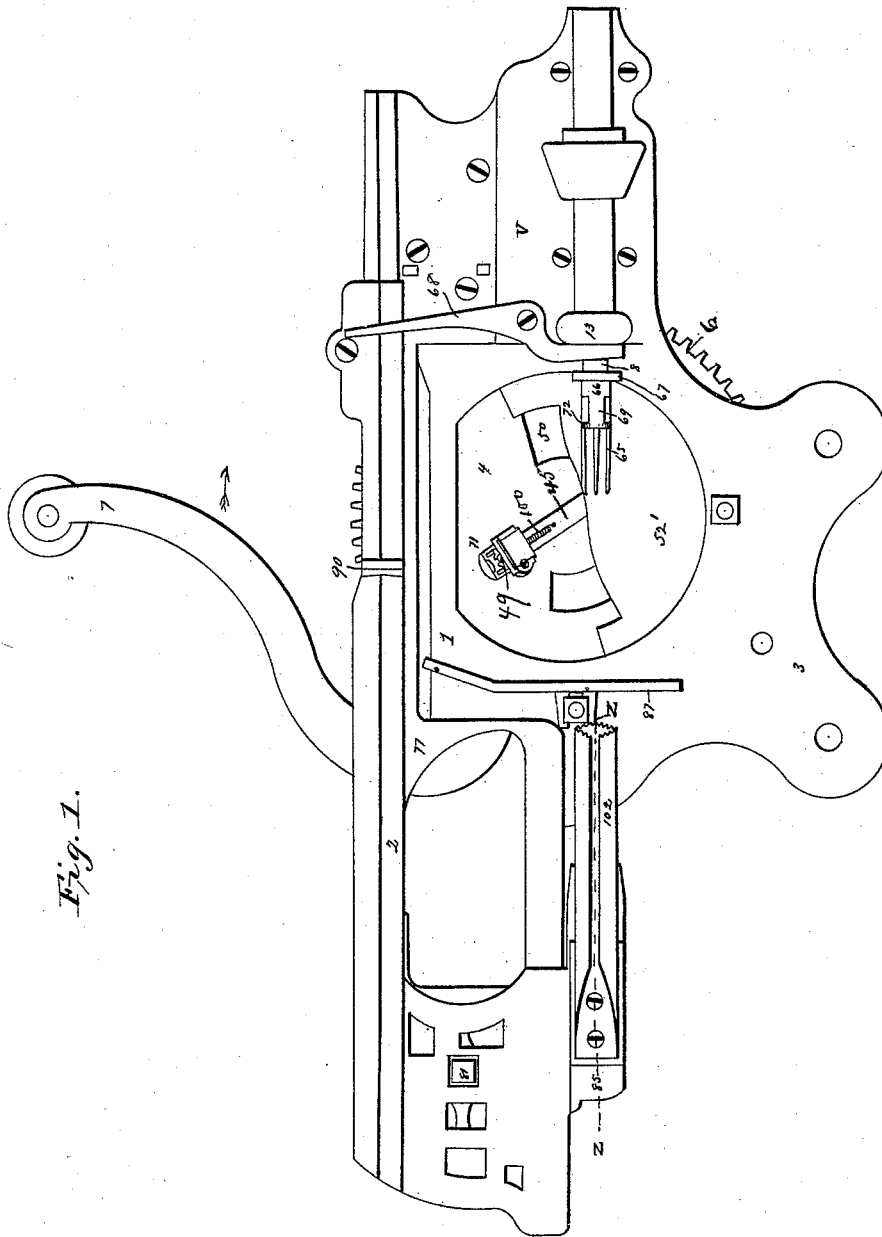


Fig. 1.

Witnesses.
Chas. R. Burr
Wm. A. Schomburgk.

Inventor.
Cassius M. Heffron
by Church & Church
his Attorneys.

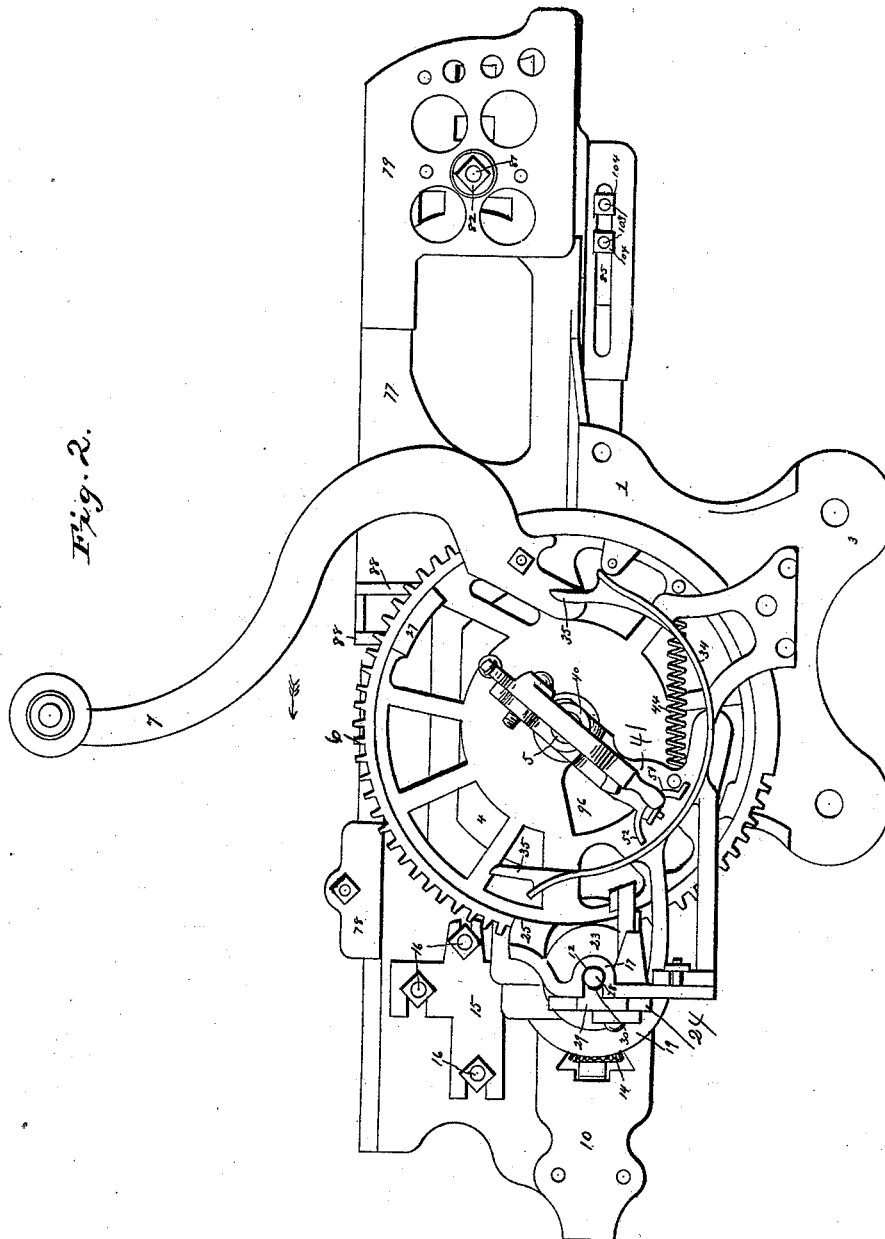
(Model.)

C. M. HEFFRON.
PARING MACHINE.

7 Sheets—Sheet 2.

No. 423,318.

Patented Mar. 11, 1890.



Witnesses.
Chas. R. Burr.
A. J. Stewart.

Inventor.
Cassius M. Heffron
by Clark & Clark
his Attorneys

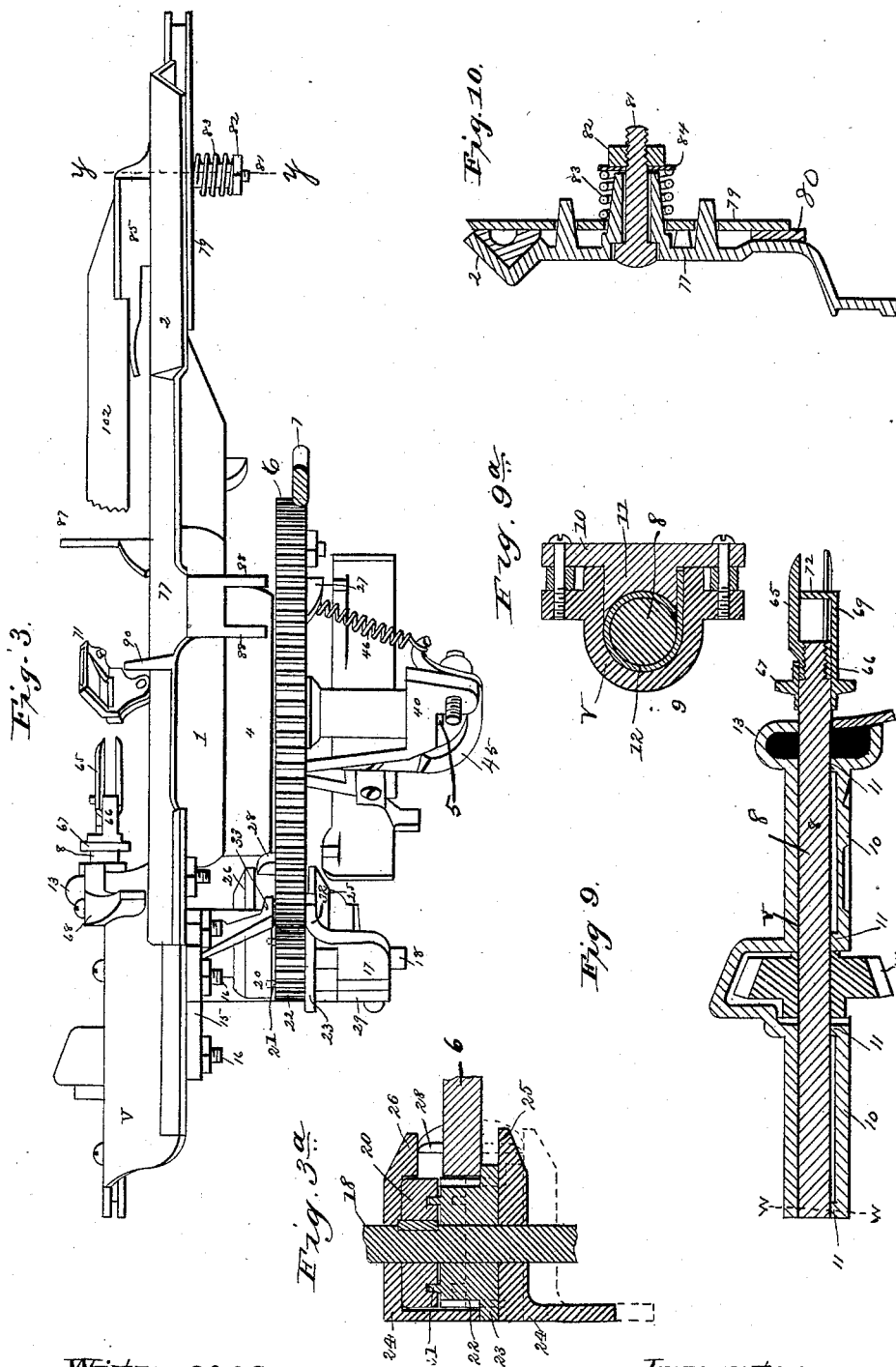
(Model.)

C. M. HEFFRON.
PARING MACHINE.

7 Sheets—Sheet 3.

No. 423,318.

Patented Mar. 11, 1890.



Witnesses.
Chas. R. Burr.
A. S. Stewart.

Inventor.
Cassius H. Heffron
by Church & Church
his Attorneys.

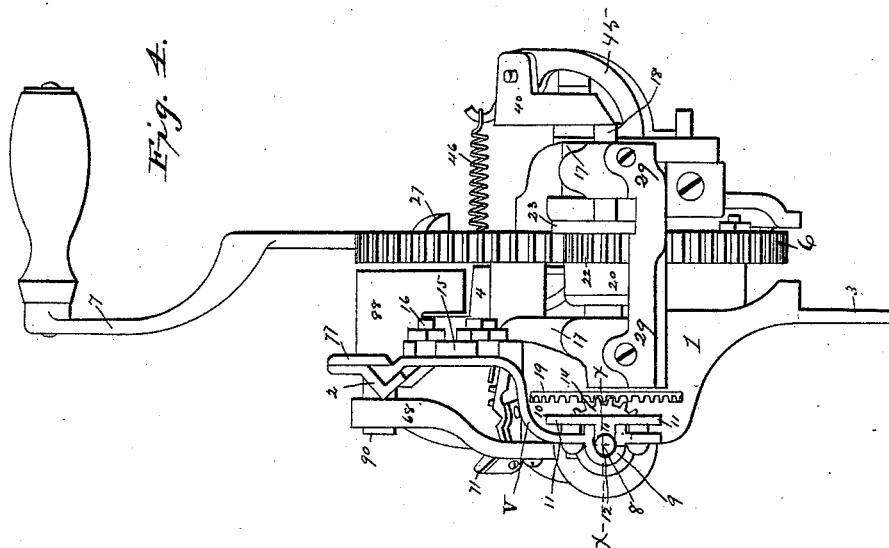
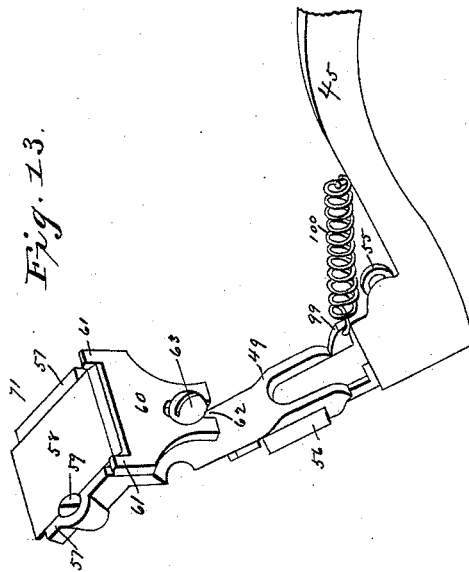
(Model.)

7 Sheets—Sheet 4.

C. M. HEFFRON.
PARING MACHINE.

No. 423,318.

Patented Mar. 11, 1890.



Witnesses.
Chas. R. Burr.
A. S. Stewart.

Inventor.
Cassius M. Heffron
by Church & Church
his Attorneys.

(Model.)

7 Sheets—Sheet 5.

C. M. HEFFRON.
PARING MACHINE.

No. 423,318.

Patented Mar. 11, 1890.

Fig. 5.

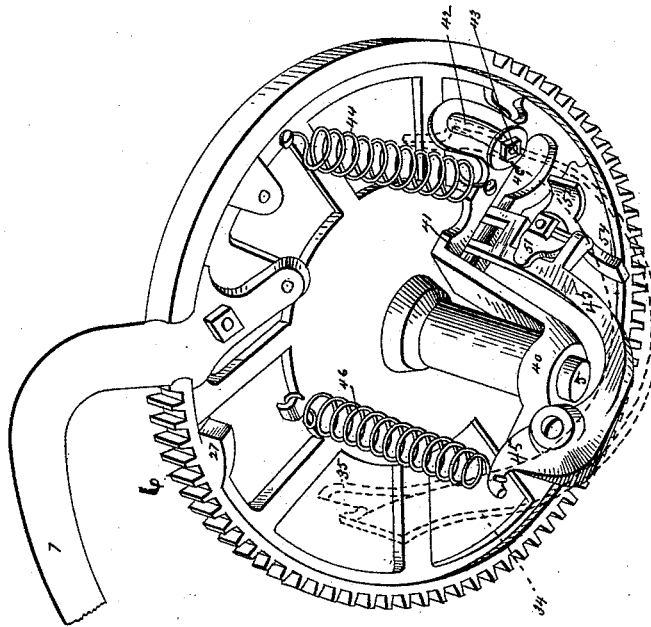
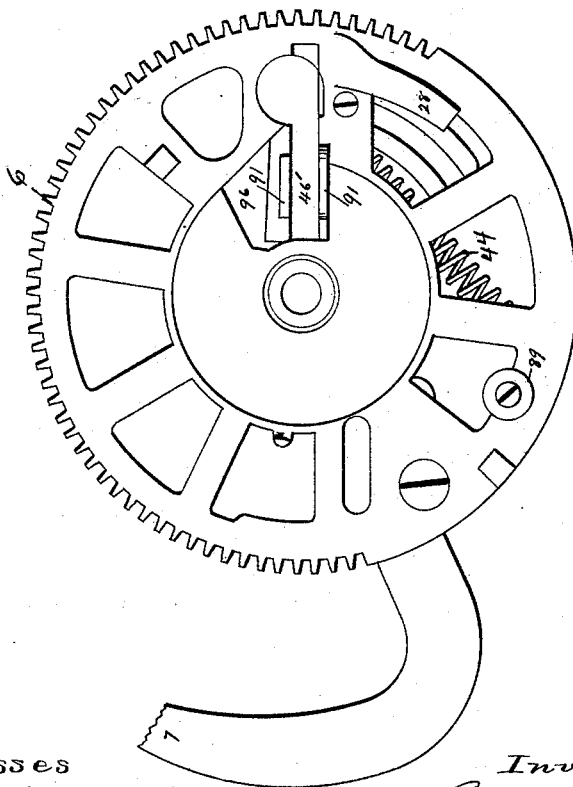


Fig. 6.



Witnesses
Chas. R. Burr.
A. J. Stewart.

Inventor.
Cassius M. Heffron
by *Chas. R. Burr & A. J. Stewart*
his Attorneys

(Model.)

7 Sheets—Sheet 6.

C. M. HEFFRON
PARING MACHINE.

No. 423,318.

Patented Mar. 11, 1890.

Fig. 8.

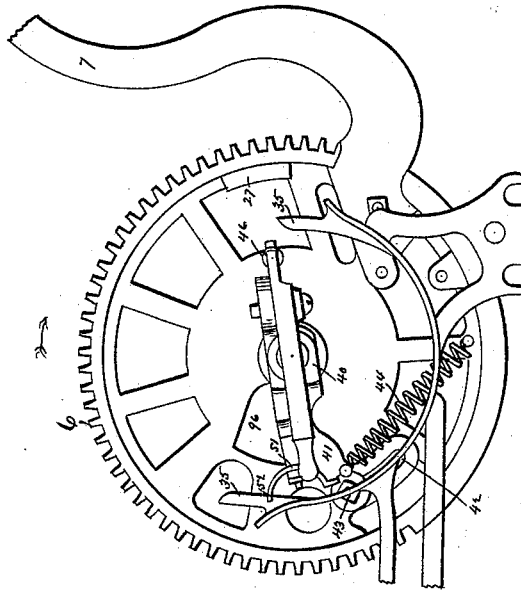
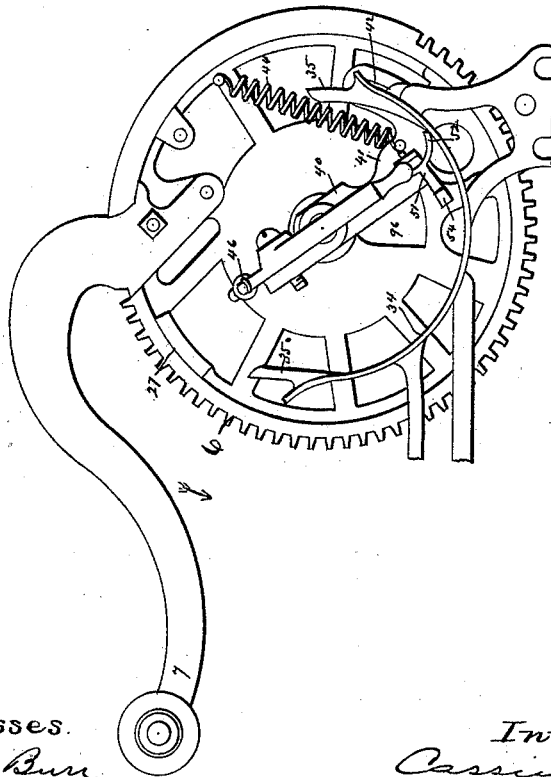


Fig. 7.



Witnesses.
Chas. R. Burr.
Wm. Absconborn

Inventor
Cassius M. Heffron
by Church & Church
his Attorneys.

(Model.)

7 Sheets—Sheet 7.

C. M. HEFFRON.
PARING MACHINE.

No. 423,318.

Patented Mar. 11, 1890.

Fig. 14.

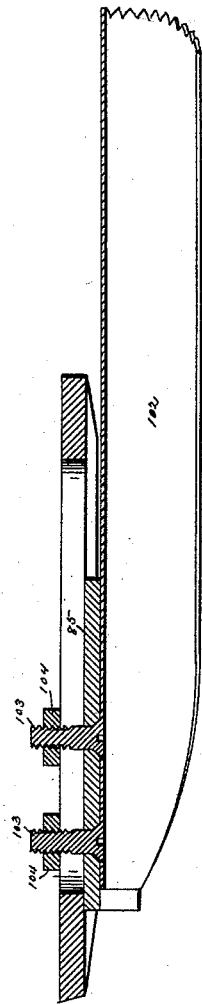


Fig. 12.

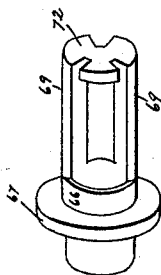
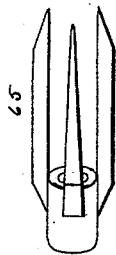
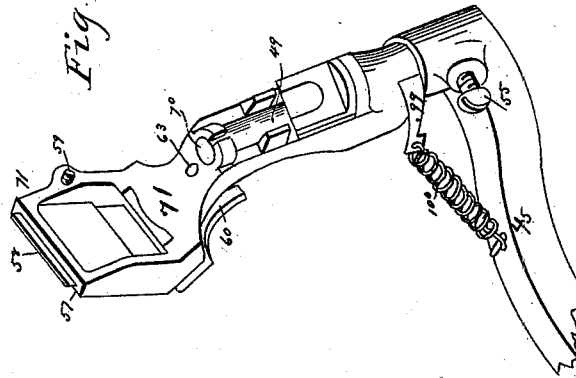


Fig. 11.

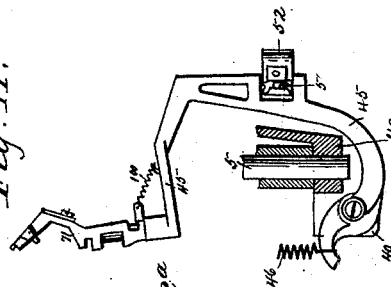


Fig. 12a

Witnesses
O. W. Seville
C. J. Stewart.

Inventor
Cassius M. Heffron
by Church & Church
His Attorneys

UNITED STATES PATENT OFFICE.

CASSIUS M. HEFFRON, OF ROCHESTER, NEW YORK.

PARING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 423,318, dated March 11, 1890.

Application filed August 8, 1888. Serial No. 282,246. (Model.)

To all whom it may concern:

Be it known that I, CASSIUS M. HEFFRON, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Paring-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 a part of this specification, and to the figures of reference marked thereon.

My present invention has for its object to provide an improved paring-machine simple in construction, not liable to get out of order, and one that will accomplish the operation of paring and coring fruit in an expeditious and thorough manner; and to these ends the invention consists in certain novelties of construction and combinations of parts, all as will be hereinafter described, and the novel features pointed out particularly in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a front view of a machine constructed in accordance with my invention; Fig. 2, a rear view; Fig. 3, a top plan. Fig. 3^a is a detail of the clutch; Fig. 4, an end view; Fig. 5, a perspective view of the main gear and connected parts from the rear, the stationary cam for operating the knife-carrying arm being shown in dotted lines; Fig. 6, a front view of the main gear detached; Fig. 7, a rear view of the main gear when moving in the direction indicated by the arrow, Figs. 1 and 7; Fig. 8, a similar view with the gear moving in the opposite direction; Fig. 9, a sectional view on the line *x x* of Fig. 4. Fig. 9^a is a section on line *w w*, Fig. 9; Fig. 10, a similar view on the line *y y* of Fig. 3; Fig. 11, a view of the fruit-holding fork and doffer; Fig. 12, a view of the knife-head, showing its connection with the carrying-arm. Fig. 12^a is a side elevation of the knife-arm with the supporting parts partly in section; Fig. 13, a similar view looking from the other side; Fig. 14, a sectional view on the line *z z* of Fig. 1, on a larger scale than said figure.

Similar figures of reference denote similar parts.

The main frame of the machine (represented in the drawings by 1) is preferably constructed of a single casting, as shown, provided on the

upper portion with a way 2, formed thereon, a depending portion 3, forming the means for attaching it to a support by suitable securing-bolts, and a central rearwardly-extending semicircular portion 4, extending forward at the end opposite the way, forming a housing or covering V for the fork-shaft and a portion of the bearings for the same, as shown in Figs. 1, 4, and 9.

From the rear of the portion 4 of the frame extends a stud-shaft 5, on which the main wheel or gear 6, constituting a turn-table, has its bearing, said wheel having gear-teeth on a portion of its periphery, and handle 7, secured to it, by means of which it can be oscillated on its center to cause the various operations necessary both of the paring-knife, which it carries, and of the fork-shaft, to which it is geared, in a manner to be described.

The fork-shaft 8 is journaled in half-bearings 9 9, formed in the rear side of the lower portion of the frame, its end projecting through a perforation formed where the frame curves in to form the central recessed portion, and it is held in said bearings by a plate 10, bolted to the rear of the frame and provided with projections 11 11 thereon, Fig. 9, arranged to enter the half-bearings and hold the shaft in position. As will be seen from Fig. 4, and also Figs. 2 and 9^a, instead of mounting the shaft directly in the bearings formed in the castings, I provide pieces of spring metal 12, preferably of copper or brass, curved around the shaft, with one end located between the projections 11 and the side of the recess and the other arranged in front of the projection and between it and the shaft, so that all wear will come upon this piece 12, and the bearings can readily be tightened when desired by forcing the plates in by the securing-bolts, causing the projections 11 to press the piece 12 upon the shaft, the end held by the side of the projection preventing it turning with the shaft. This forms a very economical bearing and one that can be readily replaced when worn and more readily tightened, and, while I will only describe this spring bearing-plate as applied to the fork-shaft, it will be understood that all the other various shaft-bearings are provided with it.

In order to prevent the fruit-juice from

running along the fork-shaft and entering the bearings, causing them to wear, I provide in the main frame and the shaft-securing plate 10 recesses 13, filled with waste or packing material of some kind surrounding the shaft near the fork and operating to prevent the juice following along the shaft, as ordinarily. This provision saves much annoyance and materially extends the life of the bearings, and, in connection with the tightening devices described, overcomes two of the greatest objections to the use of machines of this class.

Mounted upon the shaft 8 is a bevel-gear 14, extending out through a suitable opening in the plate 10, and by means of which motion is transmitted to the shaft from the main or oscillating gear.

A casting 15 is secured to the rear side of the main frame by bolts 16 16 16, and is provided with half-bearings 17 17, similar to those of the fork-shaft, in which is journaled a shaft 18, having on its inner end a bevel-wheel 19, meshing with the gear 14 on the fork-shaft, and when rotated imparting motion thereto. Also secured to this shaft is the stationary member 20 of a clutch, the movable member 21 being connected to or forming part of a gear 22, which is mounted loosely on the shaft 18 and meshes with the teeth on the main gear and is adapted to be rotated thereby. The teeth of this gear 22 are lengthened longitudinally, and the movement of the clutch member 21 is so proportioned that, while it can be moved out of engagement with section 20, the gear 22 will remain in engagement with the main or oscillating gear all the time and will be rotated by it. As a means for sliding this clutch-section and gear, I provide the latter with a flange 23 on the outer side and in a way formed in the supporting-casting locate a slide 24, with a recess engaging said flange, and provided with arms or lugs 25 26, projecting on opposite sides of the main gear, while the latter is provided with cams or lugs 27 28, arranged to operate on said lugs and move the movable clutch-section into or out of engagement with the stationary section, said lugs being so arranged relative to the movement of the main gear that when it completes its oscillation in the direction causing the paring or to the left the lug 27 will cause the movable clutch-section to be thrown out of engagement with the stationary section and the rotation of the fork-shaft to be arrested; but when moving in the opposite direction or to the right to cause the paring said clutch-section will be thrown into engagement with the stationary section and the fork-shaft rotated. This arrangement provides for the rotation of the fork while paring, but keeps it stationary while the knife is returning to first position, so that the operator can place the fruit upon the fork more readily, which is facilitated also by the knife

being caused to traverse a path away from the fork when returning, as will be described.

The plate 29 carries the two blocks 30, entering the half-bearings formed in the casting 15, and is recessed, as shown, and between this recessed portion and the rear side of said casting the slide 24 is confined and guided in its movements, so that by the removal of the plate 29 the bearings will be open and the shaft 18 and also the slide having the arms 25 26 supporting it could be removed. Arms 32 and 33 are also formed on casting 15 and operate against the opposite sides of the main gear to guide it in its movements.

Removably secured to the lower portion of casting 15 on one side and to a projecting portion on the lower part of the main frame is a cam-plate 34, substantially concentric to the main gear, but with slightly inwardly-projecting ends 35, as shown, the object of which is to cause the paring-knife to be held away from the fork during the return movement after the paring operation.

Upon the end of the shaft 5 on which the main gear is supported, and beyond the latter, is journaled a casting 40, having a plate 41 formed thereon, located against the rear surface of the main wheel, and is permitted movement thereon and provided with a slot 42, through which passes a bolt 43, secured to the main gear which holds said plate against the gear, the inner end of the slot co-operating with the bolt to form a stop for limiting the movement of the plate on the gear in one direction.

44 indicates a spring connecting the plate 41 and main gear and serves to hold the inner end of the slot 42 in engagement with the bolt 43, though permitting the plate to move independently of the main gear and against the tension of the spring when desired. The plate 41 is further provided with a forwardly-extending lug or flange 91, passing through an opening in the main gear and held against one of the side walls of said opening by the spring 44, its end being also adapted to co-operate with the end wall of the opening in the portion 4 of the main frame when moved in one direction, so as to stop the movement of the plate 41 and permit the gear to move farther on.

Pivoted on the casting 40 on the opposite side from the plate 41, is a knife-carrying arm 45, having its short end beyond the pivot connected by a spring 46 with the main gear and the portion opposite the spring bent over the shaft 5, passing down through the slot 46', formed in the plate 41, through a corresponding opening 96 in the main gear and projecting in front of the recessed portion 4 of the main frame, through a semicircular slot 50, formed therein, passing across the oscillating center of the main gear, and having secured on this end the knife-carrying stem 49.

The arm 45 is provided with outwardly-projecting lugs, between which on a suitable

pin is pivoted a latch 51, the outer end 52 of the latch being arranged to co-operate with cam-plate 34 when moving in one direction, with the end 52 engaged with said arm, but permitted to turn on its pivot when moving in the opposite direction, the lug 54 then limiting its movement by engaging the arm, and also constituting a weight for causing the engagement of the end 52 when moved beyond the end of the cam.

The outer side in the opening 96 in the main gear, through which the arm 45 passes, turns in toward the center, constituting a cam-surface adapted to operate on the arm 45 and cause it to move toward the center of the gear when the latter is moved independently of the plate 41, through which it passes. When the main gear is moving in a direction to cause the paring, the outer side of the knife-carrying arm 45 is in engagement with the cam-plate 34, if there is no apple on the fork with which the knife would engage, thus limiting the movement of the knife toward the fork and preventing the knife striking the fork and being damaged thereby; but it will of course be understood that when there is an apple on the fork the spring operating the arm will hold the knife and its arm away from plate 34 and the knife in engagement with the apple, allowing it to adjust itself to varying sizes of fruit.

A plate 52' is secured to the main frame in front of the portion 4 and a slight distance in front of it, so that a space is left in which the knife-carrying arm 45 can move, said plate serving also as a guard for preventing juice from the fruit from passing behind and covering operating parts attached to the gear.

In the outer end of the knife-carrying arm 40 is provided a perforation or socket for the reception of the stem on which the knife-head is mounted, said stem being secured in position by a set-screw 55.

The knife-head 71 (clearly shown in Figs. 12 and 13) is sleeved upon the stem 49, suitable lugs being provided at different parts encircling said stem to secure the proper movement, and secured to the stem is a small block 56 for limiting the rotating movements of the head. The lower end of the head is provided on the side toward which the operating portion of the knife projects with the perforated lug 99, and a small spring 100 connects this lug with the knife-carrying arm 45, so arranged that the knife will be permitted to accommodate itself to the inequalities in the fruit being operated upon, moving against the tension of the spring; but when the knife is released from the fruit the spring 100 will return it to normal position. The outer portion of the head is constituted, as ordinarily, with an opening for permitting passage of the paring and a seat for the knife provided with flanges 57 57 at the sides, against one of which the knife 58 is adapted to be held by a screw 59, having a

tapering head inserted in one of the flanges, or, if desired, the flange into which the screw passes might be dispensed with and the screw, in connection with the guard, about to be described, relied upon to hold in position the knife. This guard 60 consists of a plate having ears 61 61, arranged a distance apart equal to the width of the knife employed, and the slot 62 at its lower end, through which passes a securing-screw 63 for holding it in position and permitting its adjustment toward the cutting portion of the blade.

In operation the ends of the knife sometimes operate to sever the paring, which will cause the edge of the latter to draw against the end of the slot in the knife-head, and this paring, containing more or less silicious matter, soon wears a surface against which it operates; but by constructing the guard as shown the ears not only serve to properly position the knife, but receive this cutting action of the paring and protect the ends of the head. As this is the portion most liable to wear and is the part soonest worn out, the arrangement whereby the wear will come upon the guard is desirable, as when one of the ears is considerably worn the guard can be turned over and the other presented, or when both become worn can be thrown away and a new one inserted at slight cost. These guards, being of cast material, can be manufactured cheaply and a supply kept on hand by extensive users of machines of this class, so that the cost of repairs will be slight. There is also an advantage in making the carrying-head and its supporting-stem readily removable from the knife-carrying arm, so that this latter part when worn or broken can be replaced at slight cost to the user.

The fruit-carrying fork 65 is preferably screwed upon the shaft by a left-handed thread, so that the movement of the shaft toward the left will not cause its disengagement, and the doffer 66 is preferably composed of a similar casting sleeved upon the shaft in rear of the fork, having a collar 67, upon which the doffer-lever 68, pivoted to the main frame, operates, and the forwardly-extending arms 69 extend forward and are connected at their ends by a portion or plate 72, provided with slots for the accommodation of the tines of the fork. The rear portions of the tines of the fork are slightly larger than the sleeve, thereby constituting stops for preventing the doffer moving too far outward, while the plate 72 prevents it moving too far inward. When desired to remove the doffer and fork for any purpose, it is only necessary to unscrew the fork from its shaft, then slide both outward, the removal of the fork from the doffer-casting being accomplished by sliding the former outward until its rear portion is free of the doffer-sleeve, then turning it out between arms 69 69 and slipping the tines of the fork out of the slots formed in the plate connecting the arms, as will be readily understood from

an inspection of Fig. 11. This construction materially simplifies and cheapens the device, as is obvious.

Moving in ways formed upon the main frame is a slide or carriage 77, formed with guides corresponding to the way and provided with pressure-plates 78 79, the former at the right-hand end and the latter at the left, as shown. At the left of the machine and below the main way is provided a short way 80, and the carriage is provided with portions co-operating with both, as is also the securing-plate 79. As a means for attaching this plate to the carriage tightly, and at the same time taking up lost motion or compensating for wear, the bolt 81 is passed through from the front side, its rear threaded portions being extended and provided with a securing and adjusting nut 82, between which and the plate 79 is provided a spring 83, encircling said bolt and operating to hold the carriage and plate on the way with a yielding pressure, a suitable washer 84 being interposed, as shown. By the adjusting of the nut the pressure with which the carriage and way are held in engagement can be regulated, the spring serving to keep the parts tight at all times, preventing lost motion, and compensating for wear.

The lower portion of the carriage 77 is provided with a longitudinal slot in which is mounted a block 85, carrying the coring-tube 102, said block being adapted to be adjusted longitudinally in said slot and secured in adjusted position by means of bolts 103, passing through the tube, block, and slot, and provided on the rear side with nuts 104, engaging the carriage, as shown. In this construction the tube is not soldered directly to the block, as heretofore; but the latter is provided with a groove or saddle portion, in which the tube is held by the securing-bolts 103, which pass through with their heads engaging said tube. This permits a new tube to be inserted when desired, without the necessity of employing a new block, by simply removing the bolts and securing the new tube in position by replacing them, when the block can readily be adjusted in the slot if the tube is of a different length from the one removed.

The coring-tube is substantially in line with the fork-shaft and is adapted upon the movement of the carriage to the right to enter the fruit on the fork, cutting out the core, and when moving in the other direction a plate 87, secured to the main frame and through which the tube passes, will remove the fruit from the tube, acting as a doffer, and allow it to fall to the table.

As a means for causing the reciprocation of the carriage, I provide it on its rear side with two lugs 88 88 and locate on the main gear a stud carrying a friction-roller 89, adapted to act on said lugs and reciprocate the carriage in opposite directions when the gear is oscillated. On the forward side of the carriage is provided a lug 90, arranged so

that when the carriage nears its extreme movement to the right it will strike the end of the doffer-lever 68, turning it on its pivot and causing the doffer to eject the core into the tube, the doffer being returned to normal position when another apple is placed on the fork.

In Figs. 1 and 2 the parts are shown in the position they will assume after an apple has been placed on the fork and the handle has been moved a short distance in the direction indicated by the arrow, Fig. 2, the knife having passed a very short distance around the fruit from the blow end, and the subsequent operation will be as follows: The operator now grasps the handle and turns it in the direction indicated by the arrow in Fig. 2; and the teeth of the gear, operating through the short shaft and connected gears, rotate the fruit-shaft 8 rapidly, the spring 44, forming the connection between the main gear and the casting 40 through its plate 41, pulls the said casting with it, the spring 46, pressing the knife-head toward the fruit, holds the knife in contact with it, and spring 100 permitting the necessary slight movement of the knife, as above described, and the same relative position of the parts is maintained, the knife, of course, moving around the fruit and removing the skin therefrom in the ordinary manner. Then the roller on the main gear enters between the lugs on the carriage, moving the latter toward the right in said figure and causing the coring-tube to enter the fruit. Then the knife-head continues to move around until it is substantially parallel with the end of the fruit, when the lug 91 on the plate 41 engages the end of the wall of the recess in the main frame, which arrests the rotation of said plate. The main gear, however, continuing its movement, causes the cam formed at the side of the opening 96 in the main gear to act on the knife-carrying arm, moving it toward the center, which causes the knife to move away from the fruit in a line parallel with the fork-shaft. While the gear is moving in this direction the latch 51 is turned on its pivot without affecting the movement of the knife-carrying arm. At this time the lug 28 on the main gear strikes the lug 25 on the slide, operating the movable clutch-section, throwing it out of engagement with the stationary section, and arresting the movement of the fork-shaft. The motion of the main gear is now arrested by any suitable stop, (in the present instance the carriage being arrested and the stud on the main gear operating it being the means.) The operator then moves the handle over in the opposite direction. The main gear moves the carriage alone backward during the first part of its movement until the plate 41 is again engaged by the gear. Now the end of the latch 51 engages the cam-plate 34 and turns backward on its pivot until the stop 52 engages the arm, when the continued movement will cause the knife-carrying arm to be turned inward to

ward the center, throwing the knife-head away from the fruit and maintaining it in this position until the other end of the cam 34 is reached, when the latch will pass off the cam-plate and the spring 46 will be permitted to throw it inward again, thus returning the parts to normal position. All this time the carriage has been moving backward and the fruit supported upon the coring-tube carried with it. As soon as it is cleared of the fork, however, the plate will remove it from the tube, permitting it to drop, the core remaining in the tube and being pushed out at the rear end when succeeding cores are inserted. As soon as the gear reaches first position, or just before it does so, the lug 27 on the gear, striking projection 26 on the clutch-operating slide, re-engages said clutch-sections, so that when the gear is moved in the direction, as described, for paring the fruit the fork-shaft will be rotated, as before.

The feature of holding the knife-head away from the shaft while it is being returned to first position and of holding the fork-shaft stationary during this movement is advantageous, as it enables the operator to place the apple on the fork without liability of having it twisted out of his hand or of being injured by the knife itself; also the feature of moving the knife backward parallel with the fork-shaft after the paring operation is completed.

The construction whereby I am enabled to locate all of the operating parts back of the main frame or to a plate connected to it and operating the knife-carrying arm through a slot in said plate or at least a narrow opening is particularly advantageous, as it prevents the juice of the fruit from flying upon and causing unnecessary wear of the operating parts.

While I have described and prefer to employ the form of clutch shown between the main gear and fork-shaft, it is obvious that any other desired form could be employed without departing from the spirit of my invention.

Other advantages will at once present themselves to those skilled in the art, and I do not deem it necessary to mention them specifically herein.

I claim as my invention—

1. In a paring-machine, the combination, with an oscillating wheel and a paring-knife arm and knife connected thereto, so as to be oscillated thereby, of a slide or carriage operated upon directly by said wheel as the latter is oscillated and a coring device mounted thereon, substantially as described.

2. In a paring-machine, the combination, with an oscillating wheel, a paring-knife arm and knife connected thereto, so as to be oscillated thereby, and a projection or roller on said wheel, of a slide or carriage having a recess with which said projection on the wheel co-operates to cause the reciprocation of the carriage as the wheel is oscillated and

the coring devices mounted on the carriage, substantially as described.

3. In a paring-machine, the combination, with an oscillating wheel or gear and means for oscillating it, and a paring-knife arm and knife connected therewith, so as to be oscillated thereby, of the fork-shaft and gearing between said shaft and the oscillating wheel, a clutch forming part of said gearing embodying a movable section, and lugs on the oscillating wheel for moving said section in opposite directions at the ends of its oscillations, substantially as described.

4. In a paring-machine, the combination, with an oscillating wheel or gear and means for oscillating it, and a paring-knife arm and knife connected therewith, so as to be oscillated thereby, of the fork-shaft and gearing connecting the oscillating gear and fork-shaft, a clutch embodying a movable section forming part of said gearing, the lugs on the main gear co-operating with the clutch-section and moving it in opposite directions, and a reciprocating slide or carriage operated directly by said gear and carrying a coring device, substantially as described.

5. In a paring-machine, the combination, with an oscillating wheel having the operating-handle thereon and a paring-knife arm and knife connected to the wheel, so as to be operated thereby, of a slide or carriage operated upon directly by said wheel as the latter is oscillated and a coring device mounted thereon, substantially as described.

6. In a paring-machine, the combination, with an oscillating gear-wheel, of the fork-shaft, gearing between the gear and fork-shaft for rotating the latter, a clutch embodying a movable section forming part of said gearing, and a lug on the gear for co-operating with and throwing the movable section in one direction upon the completion of the oscillation of the gear, substantially as described.

7. In a paring-machine, the combination, with an oscillating gear and means for oscillating it, of the fork-shaft, gearing between the gear and fork-shaft for rotating the latter, a clutch embodying a movable section forming part of said gearing, the lugs on the gear co-operating with the section and throwing it into and out of operation at the end of the oscillations, causing the intermittent rotation of the fork-shaft, a reciprocating slide or carriage, a coring device thereon, and co-operating projections on said gear and carriage for causing the reciprocation of the latter, substantially as described.

8. The combination, with the oscillating gear, of a fork-shaft, gearing between the fork-shaft and gear, a clutch forming part of said gearing embodying a movable section, and the lugs on the gear for positively engaging and disengaging the movable section at the ends of the gear's oscillations, causing the intermittent rotation of the fork-shaft, substantially as described.

9. In a paring-machine, the combination, with a gear and means for operating it, of a fork-shaft, gearing connecting said fork-shaft and the gear, a clutch embodying a movable section forming a part of said gearing, arms on said movable section projecting on opposite sides of the gear, and cams or projections on the gear for operating said section in opposite directions, thereby causing the intermittent rotation of the fork-shaft, substantially as described.
10. In a paring-machine, the combination, with an oscillating wheel, of a fork-shaft, gearing between said wheel and shaft, a clutch forming part of said gearing, and means for throwing it into operation when the wheel is moved in one direction and out of engagement when moved in the other direction, whereby the shaft will remain stationary when the wheel is moving one way and will rotate when moving in the other, substantially as described.
11. In a paring-machine, the combination, with the main frame and a way thereon, of a reciprocating carriage sliding on the way, a securing-plate sliding on the opposite side of the way, connections between said plate and carriage, a spring interposed in said connection for holding the plate and carriage in contact with the way, and a carrying device on the carriage, substantially as described.
12. In a paring-machine, the combination, with the main frame and the way thereon, of a reciprocating carriage sliding on the way, a securing-plate sliding on the opposite side of the way, a bolt connecting the plate and carriage, having the nut thereon, and a spring forming the connection between said bolt and nut and the parts connected, substantially as described.
13. In a paring-machine, the combination, with the fork, the turn-table, the pivoted knife-carrying arm carried thereby, and the latch, of a cam or surface with which said latch co-operates to move the knife away from the fork when the turn-table is moving in one direction, but permitting it to move close to it when moved in the other, substantially as described.
14. The combination, with the turn-table, the pivoted knife-arm carried thereby, and the latch, of the fork and fork-shaft, connections for rotating it, and a clutch in said connections operated upon the completion of the movements of the turn-table, and a cam or surface with which the latch co-operates, whereby upon the movement of the knife-carrying arm in one direction the fork-shaft will be arrested and the knife caused to move away from the fork, substantially as described.
15. The combination, with the fork, the turn-table, the casting rotated thereby and movable independently thereof, the spring connecting them, and the pivoted knife-arm on the casting, of a stop for limiting the rotary movement of the casting and a cam-surface operating the knife-carrying arm to move it on its pivot and carry the knife backward from the fork and parallel with the shaft, substantially as described.
16. The combination, with the fork-shaft, the turn-table, the casting connected thereto by a spring, the knife-arm pivoted on the casting, and the spring for operating it, of a stop for limiting the rotary movement of the casting and a cam-surface on the turn-table for moving the knife-arm on its pivot in a direction to cause the knife to move away from the fruit parallel with the fork, substantially as described.
17. The combination, with the main frame stationary shaft, the turn-table mounted thereon having the recess, the casting journaled on said shaft, having the slotted plate, and connected to the turn-table by a spring, of the knife-arm pivoted on the casting opposite the plate, passing through the latter and the recess in the turn-table and in front of the plate across the pivotal center, the spring connected to said arm, and the knife mounted upon the arm with its cutting portion toward the center of the turn-table, substantially as described.
18. The combination, with the fork-shaft, the turn-table having the recess and the cam formed at the side thereof, the casting connected to the turn-table by a spring, the knife-arm pivoted thereon, passing through the recess in the turn-table, a stop for the arm, and a spring for holding it in engagement with the stop, of a stationary stop for arresting the movement of the casting, substantially as described.
19. The combination, with the fork-shaft, the turn-table having the recess and the cam formed at the side thereof, the casting connected to the turn-table by a spring, and the knife-arm pivoted thereon, passing through the recess in the turn-table, and having the latch, of the stationary stop for limiting the movement of the casting, the stationary cam for limiting the movement of the knife-arm on its pivot, and the surface with which the latch engages, substantially as described.
20. The combination, with the fruit-fork and a turn-table or wheel, of a pivoted knife-arm mounted on the turn-table, a spring for pressing said arm toward the fork, and a stem carrying a paring-knife removably connected to said arm, substantially as described.
21. The combination, with the knife-arm, of the stem removably connected thereto, having the swiveled head carrying the paring-knife, substantially as described.
22. The combination, with the main frame having the slot therein, the turn-table pivoted on the rear side of the frame, and a knife-arm mounted on the turn-table, passing through said slot, and extending substantially parallel with the frame, as shown, of the guard-plate in front of said slot, between which and the frame the knife-arm passes, and the fork-shaft, substantially as described.
23. The combination, with the main frame,

the oscillating wheel, the fork-shaft, the doffer, and the pivoted doffer-lever, of the carriage carrying the coring devices, a projection on the wheel for reciprocating said carriage, and a lug on the latter arranged to strike the doffer-lever and operate the doffer when moved in one direction, substantially as described.

24. The combination, with the knife-arm and the stem secured thereto, of the knife-head loosely pivoted thereon and movable in both directions on the stem, and the spring connected to said arm and head for holding the latter to a central position and free to move in either direction against the tension of the spring, substantially as described.

25. The combination, with the stem, of the knife-head encircling it, the slot therein, and the immovable projection secured to the stem and located in the slot for limiting the motion of the head on the stem, substantially as described.

26. The combination, with the knife-arm and the stem secured thereto, of the knife-head encircling the stem, the projection on the latter for limiting its oscillating movements, and the spring connecting said arm and head for holding the latter to a central position out of contact with the limiting projection, substantially as described.

27. The herein-described guard for paring-knives, having one or more projecting lugs at the side or sides for engaging the sides of the knife, as set forth.

28. The combination, with the knife-head and the knife, of the guard secured thereto, having one or more lugs projecting at the side or sides of the knife, as set forth.

29. The combination, with the knife-head and the knife, of the reversible guard having the lugs passing on opposite sides of the knife end, substantially as described.

30. The combination, with the knife-head and the knife, of a reversible guard having the projecting lug or lugs, the slotted portion, and the securing-screw passing through the slot, substantially as described.

31. The combination, with the fruit-shaft and the three-tined fork having the shoulders at the rear ends of the tines, of the doffer consisting of the sleeve having only two arms 69 69, arranged between the tines and the plate at their forward ends, said arms being separated on one side to permit the passage of the fork end between them, substantially as described.

32. The combination, with the sliding carriage, of the coring-tube, the block supporting it, and the securing bolt or bolts passing through the tube, block, and carriage, substantially as described.

33. The combination, with the sliding carriage having the slot, the coring-tube, and supporting-block, of the bolt or bolts passing through the tube, block, and slot and having the nuts thereon for securing the parts in position and permitting adjustment, substantially as described.

CASSIUS M. HEFFRON.

Witnesses:

FRED F. CHURCH,
GEO. B. SELDEN.