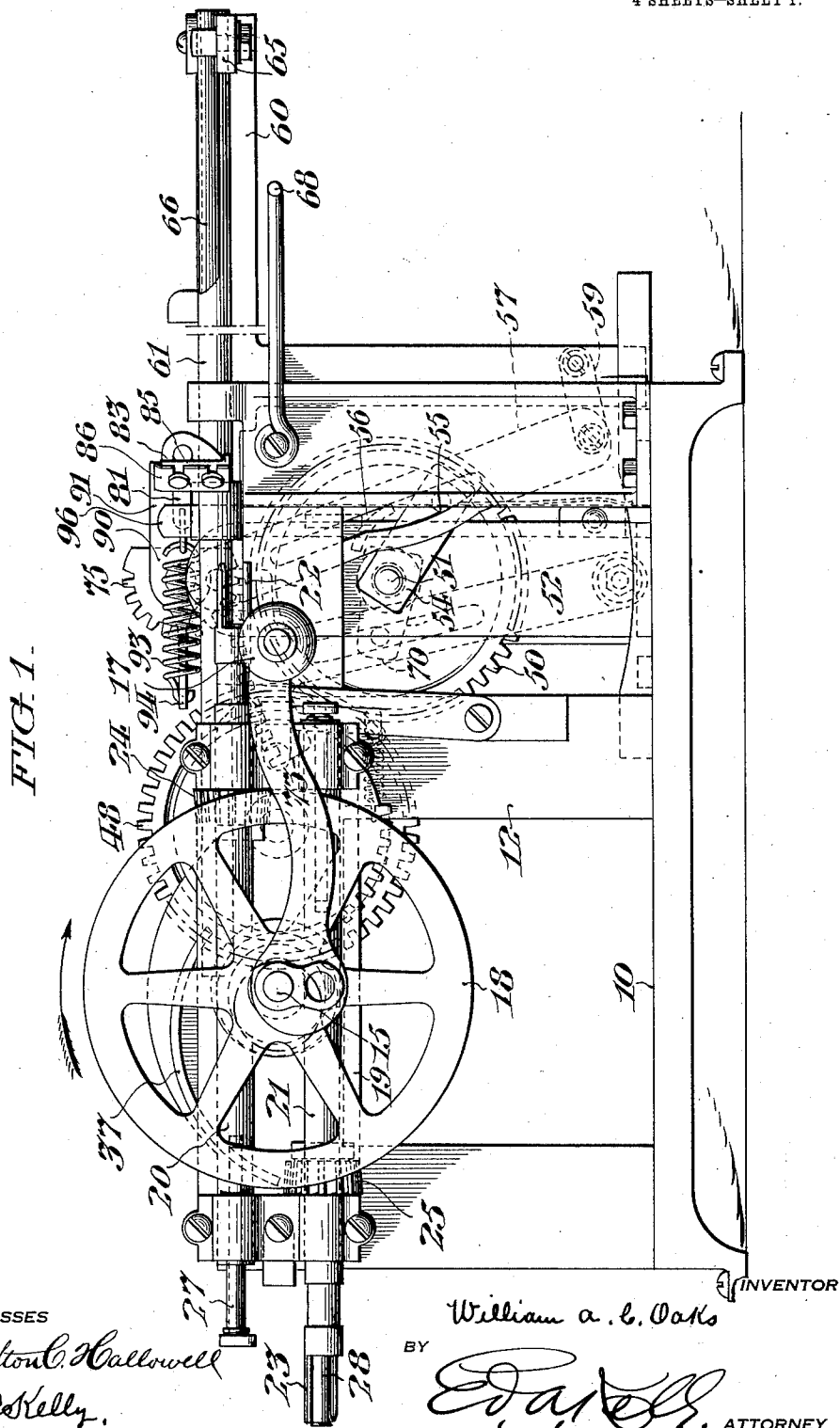


W. A. C. OAKS.
 APPLE PARING MACHINE.
 APPLICATION FILED MAY 16, 1912.

1,039,998.

Patented Oct. 1, 1912.

4 SHEETS—SHEET 1.

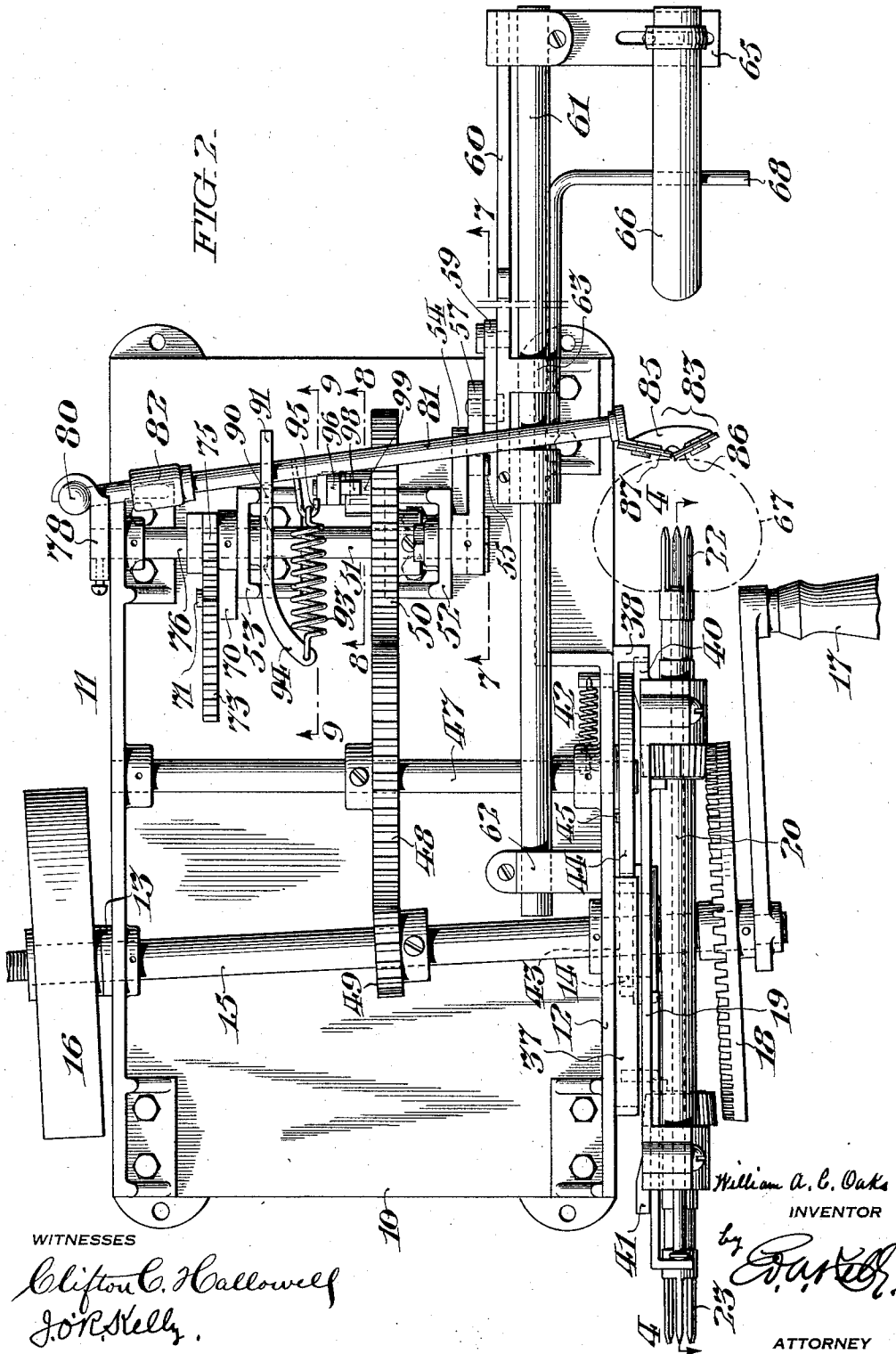


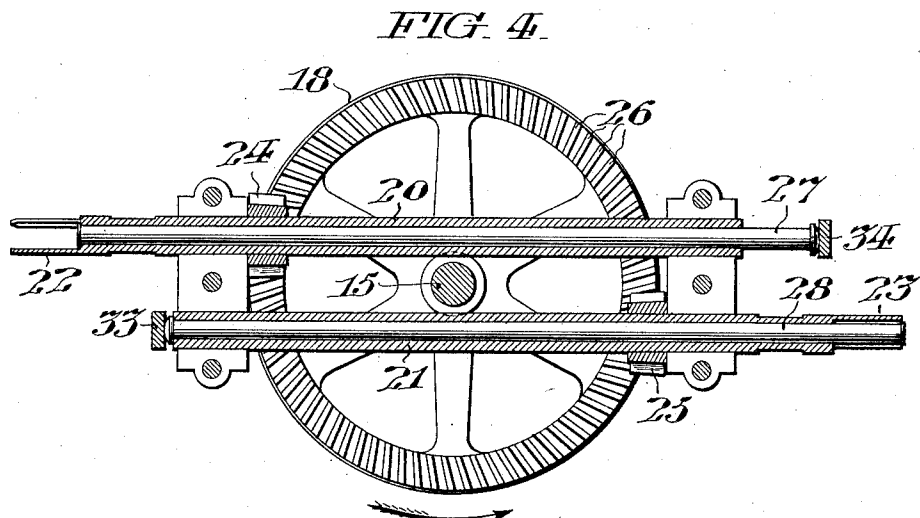
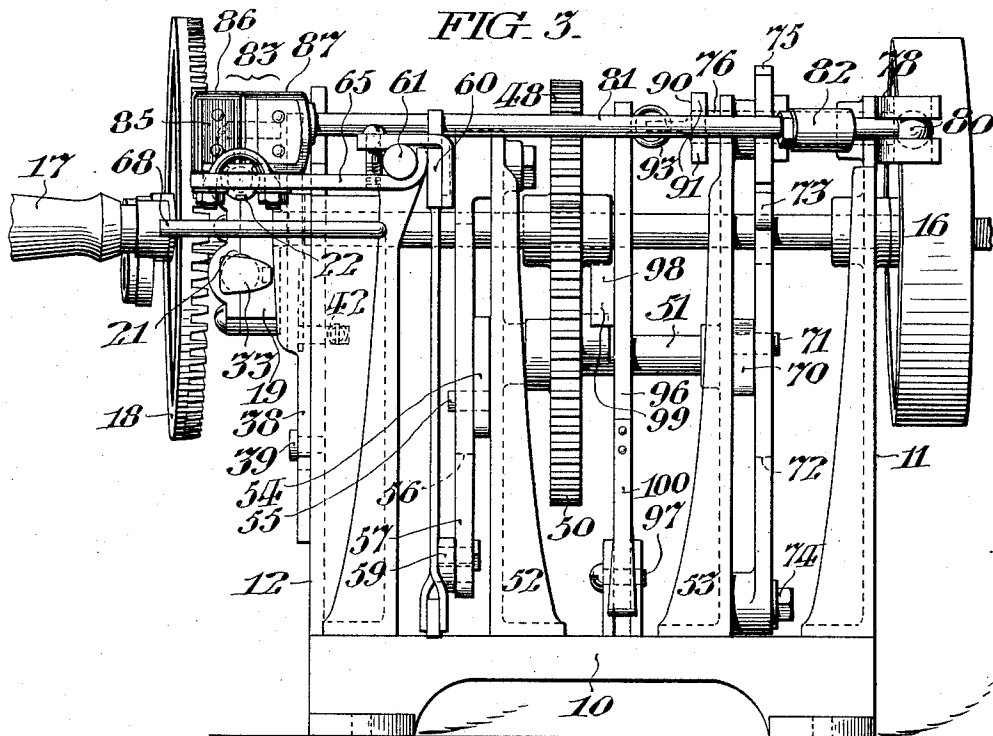
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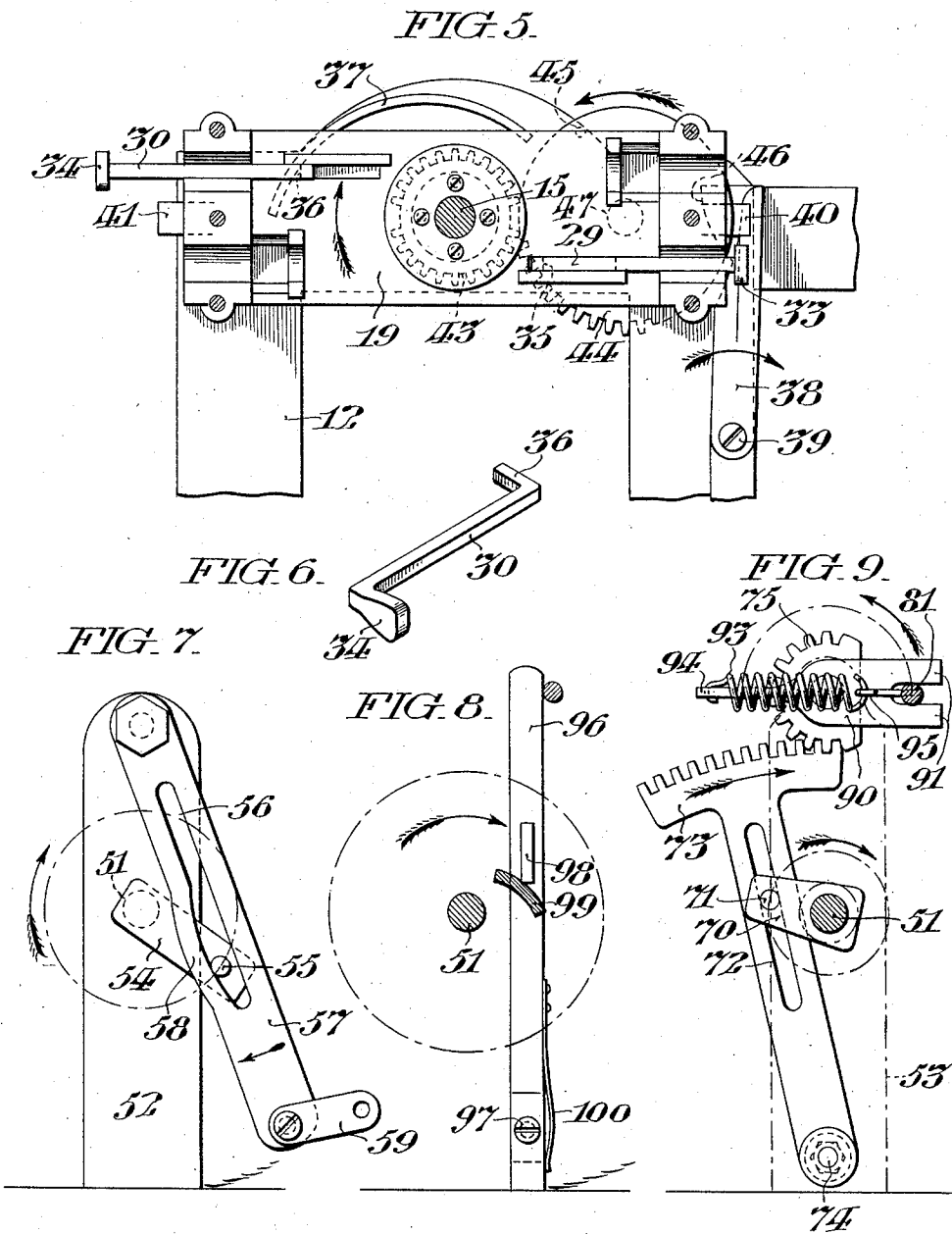
4 SHEETS—SHEET 2.





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APPLE-PARING MACHINE.

1,039,998.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed May 16, 1912. Serial No. 697,611.

To all whom it may concern:

Be it known that I, WILLIAM A. C. OAKS, citizen of the United States, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Apple-Paring Machines, of which the following is a specification.

My invention particularly relates to that class of apple paring machines in which a plurality of apple holding forks are successively presented into position to rotatably hold an apple in coöperative relation with paring and coring mechanism.

The principal object of this invention is to provide a continuously actuated fruit paring machine with a plurality of fruit holding forks mounted in such angular relation to the driving mechanism as to be gradually and positively engaged therewith without shock or jar usually incident to the engaging of a stationary gear with a rotating gear.

Other objects of this invention, specifically stated, are to provide a reel for supporting the forks; to provide means to automatically lock and release said reel; to provide means to effect the rotation of said reel with the fork driving means; and to provide means to gyrate said reel with respect to said fork driving means, to effect the intermittent, alternate engagement of said forks with said fork driving means.

A further object of this invention is to provide a mounting for said knife which is readily removable from the machine for cleansing purposes.

My invention further includes all of the various novel features of construction and arrangement hereinafter more definitely specified.

In the accompanying drawings Figure 1 is a side elevational view of an apple paring and coring machine constructed in accordance with my invention; Fig. 2 is a plan view of said machine; Fig. 3 is an end view as seen from the right of Figs. 1 and 2; Fig. 4 is a vertical longitudinal section of the fork reel taken in the direction of the arrows on the line 4—4 in Fig. 2; Fig. 5 is a sectional view taken on the same line 4—4 looking in opposition to the arrows, with the fork shafts removed for convenience of illustration; Fig. 6 is a perspective view of the cam bar for actuating the core ejector plunger; Fig. 7 is a sectional view taken

on the line 7—7 in Fig. 2 showing the mechanism for actuating the coring spoon; Fig. 8 is sectional view taken on the line 8—8 in Fig. 2, showing the mechanism for retracting the paring knife; and Fig. 9 is a sectional view taken on the line 9—9 in Fig. 2 showing the mechanism for oscillating said paring knife.

In said figures the bed plate 10 supports the side standards 11 and 12, which provide bearings 13 and 14 for the drive shaft 15, having the driving pulley 16 at one end and the operating handle 17 at the other end. Said driving shaft 15 as best shown in Fig. 2 is disposed in angular relation to the standards 11 and 12, and carries the bevel gear 18.

The fork reel 19 is mounted to intermittently rotate on the bearing 14 which projects from the standard 12, and provides a trunnion therefor. Said fork reel carries the fork shafts 20 and 21 which are parallel and comprise the fruit holding forks 22 and 23 respectively projecting oppositely from the ends of said reel. The fork end of the shafts 20 and 21 are provided with bevel pinions 24 and 25 respectively, which by virtue of the angular disposition of the bevel gear 18 are alternately thrown into toothed engagement with said gear when their respective forks are swung, by the rotation of the reel, into operative position to rotate the fruit in coöperative relation with the paring and coring mechanism.

As best shown in Fig. 4, the fork shafts 20 and 21 straddle the driving shaft 15 so that in order that the bevel pinions 24 and 25 may engage the teeth 26 of the gear 18, said teeth are directed tangentially with respect to a circle to which the axes of the shafts 20 and 21 are tangent.

It will be observed that by the construction above set forth the operative rotation of the respective forks will be effected only when they are in position to present the fruit in coöperative relation with the paring and coring mechanism to be hereinafter described.

Referring again to Fig. 4 it will be seen that the shafts 20 and 21 are preferably hollow and include the core ejector plungers 27 and 28 respectively, which are arranged to reciprocate therein, being thrust outwardly by the cam bars 29 and 30 respectively mounted to reciprocate in the slots 31 and 32 in the fork reel 19 as best shown in Fig.

5. Said cam bars 29 and 30 are counterpart, the cam bar 30 being shown in perspective in Fig. 6. The cam bars 29 and 30 comprise the heads 33 and 34 respectively arranged to engage the core ejector plungers 27 and 28, and to effect their outward movement between the tines of their respective forks, by the cooperation of the projections 35 and 36, extending from the respective cam bars, with the cam 37, which projects from the standard 12 in the path of said projections 35 and 36 to effect the actuation of said core ejector plungers 27 and 28.

The fork reel 19 is normally locked in its operative position by the spring latch 38 which is pivoted at 39, and is arranged to be yieldingly held in engagement with the bolt 40 on said reel when the fork 22 is in operative position, and with the bolt 41 when the fork 23 is in operative position, by the spring 42. Said fork reel 19 is arranged to be maintained in its locked position during the paring and coring operation, after which it is rotated on the bearing 14 to present its other fork into operative position. The rotation of said fork reel is intermittently effected by the cooperation of the gear 43 on the reel and provided with two substantially semi-circular sets of teeth, with the gear 44 having a toothed quadrant, and arranged to be continuously rotated to alternately engage its toothed quadrant with the respective sets of teeth of the gear 43. The gear 44 is provided with the lug or projection 45, into the path of which the cam 46 on the latch 38 projects, so that the latch is shifted by said lug out of engagement with the bolts 40 or 41 simultaneously with the beginning of the engagement of the toothed quadrant on the gear 44 with either of the sets of teeth on the gear 43. The gear 44 is mounted on the shaft 47 which is provided with the gear 48 in toothed engagement with the pinion 49 on the driving shaft 15, and is thereby continuously rotated. Said gear 48 is also in toothed engagement with the gear 50, on the shaft 51 which is journaled in suitable bearings in the standards 52 and 53, and which carries the crank arm 54 having the pin 55 arranged to traverse the path indicated by the dot and dash line in Fig. 7 in engagement with the walls of the slot 56 in the lever 57, which is bulged at 58 to broaden said slot at such region that the cooperation of said pin 55 effects a quick return of said lever to its normal position. The lever 57 is connected by the link 59 with the cross head frame 60, which is mounted to be reciprocated on the guide bar 61 which is supported in the brackets 62 and 63 on the side standard 12. The crosshead frame 60 provides a projecting arm 65 which carries the semi-cylindrical coring spoon 66, which is thrust axially through the rotating apple 67 on the fork 22, to sever the core, which remains on

said fork, from the surrounding body of the apple, which latter remains on said spoon and is withdrawn from the core thereby until engaged by the doffer 68 and stripped therefrom.

It may be here noted that while the spoon 66, which is adjustably secured to the arm 65, is withdrawing the pared and cored apple, the fork reel is rotated a half turn to present a new unpared and uncored apple into position to be cored and pared, and by such rotation of said reel the core is forced from the fork by the core ejector plunger as above described.

The shaft 51 also actuates the paring mechanism by means of the crank arm 70 having the pin 71 engaged to traverse the slot 72 in the arm of the toothed sector 73, which is pivoted at 74, and is in toothed engagement with the substantially semi-circular gear 75, mounted on, and arranged to oscillate the shaft 76 substantially a half revolution. The shaft 76 is journaled in suitable bearings in the standards 11 and 53, and carries the crank arm 78 having its free end bifurcated as best shown in Fig. 3, and recurved as shown in Fig. 2 to removably engage the ball end 80 of the knife bar 81, whose length is adjustable by means of the adjusting sleeve 82. Said knife bar 81 carries the paring knife 83 at its free end, comprising the blade support 85, upon which opposed blades 86 and 87 are adjustably mounted, and disposed in relatively angular position. It may be observed that by the angular disposition of the blades 86 and 87 they may be adjusted to vary the thickness of the paring which they are adapted to remove from the fruit, and by reason of the spaced relation, any parings which may accidentally clog said blades may be readily removed by passing a knife or like implement between said blades. In order to insure the desired cooperation of the blades with the surface of the fruit, the shaft 76 also carries the bifurcated guide 90 whose fingers 91 embrace the knife bar 81 and restrict its radial oscillation to a plane coincident with the axis of said shaft 76, and by its engagement with said bar the paring knife is caused to be progressed in a semi-circular path over the surface of the fruit 67.

The knife 83 is yieldingly maintained in operative contact with the fruit by the spring 93 which is connected at one end with the laterally curved rearwardly extending tail piece 94, on the guide 90, and at the other end to the hook 95 on the knife bar 81. By this construction it will be obvious that while said spring normally tends to yieldingly draw the knife bar 81 toward the axis of the shaft 76 and consequently toward and into contact with the surface of the fruit 67, it may be released from the hook 95 so as

to permit the knife bar 81 to be swung outwardly and removed from the machine by withdrawing the ball 80 from its socket formed by the bifurcated end of the crank arm 78, for the convenient cleansing of the paring knife.

As the fork reel is rotated to present the fruit into position to be engaged by the paring knife it is necessary to retract said knife to permit said fruit to freely swing into position, which retracting action is effected by the lever 96, pivoted at 97, and having the lug 98 extending into the path of the cam 99, which projects from the side of the gear 50, and at the proper time effects the oscillation of the lever 96 in the direction of the arrow in Fig. 8, thereby pressing the bar 81 and the knife 83 out of the way of the fruit 67 until it has been presented in operative position, whereupon the further rotation of the gear 50 effects the release of the lug 98 from the cam 99 and permits the spring 93 to shift the bar 81 and consequently the knife 83 into position to effect the paring of said fruit. As best shown in Fig. 8 the lever 96 is provided with the leaf spring 100, which normally maintains said lever in contact with the knife bar 81.

By the arrangement of the mechanism of the machine above described it will be seen that the fork reel provides an idle fork for the purpose of receiving the fruit to be pared, while the other fork is operating, and that the engagement of the pinions of the respective fork shafts are made to travel with and be gradually engaged with the teeth of the bevel gear 18, so that the rotation of said forks is effected until their respective pinions 24 or 25 are properly engaged with the bevel gear 18.

The driving shaft, as best shown in Fig. 2, is provided at the end adjacent to the pulley 16 with a left hand threaded extension for the convenient engagement of the handle 17 which, as best shown in Fig. 1, is provided with a left hand threaded aperture for its engagement with the opposite end of the shaft when it is desired to rotate the shaft 15 with the left hand, while feeding with the right hand.

It is not desired to limit this invention to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. In a machine for paring fruit, the combination with a plurality of fruit holding forks, rotatable means rotatably supporting said forks directed in opposite directions, continuously rotating means arranged

to effect the rotation of said forks as they are presented in operative relation therewith, and means to effect the intermittent rotation of said fork supporting means at predetermined intervals, the means for rotating said forks being disposed in a slightly oblique plane to the fork supporting means, to effect the positive engagement of a fork with its rotating means before being rotated thereby.

2. In a machine for paring fruit, the combination with a continuously rotated gear, of a pair of oppositely extending fruit holding forks, having parallel shafts, pinions on said shafts arranged to be alternately engaged with said gear, a fork reel rotatably supporting said shafts, and arranged to be intermittently rotated in a plane slightly oblique to the plane of rotation of said gear, and means to rotate said reel with said gear, to effect the engagement of one pinion with said gear contemporaneously with the disengagement of the other pinion therefrom, while moving in the same general direction.

3. In a machine for paring fruit, the combination with a rotatable fork carrying reel, a pair of forks extended oppositely therefrom and having their shafts rotatably mounted therein in parallel relation, pinions on said shafts local to said forks, a gear mounted to rotate in a plane slightly oblique to the plane of said reel, on an axis disposed between said shafts, and having teeth disposed tangential to a circle whose diameter is equal to the distance between the axes of said shafts, and means arranged to intermittently rotate said reel with said gear, the rotation of which effects the engagement of one pinion simultaneously with the disengagement of the other pinion while traveling together in the same general direction.

4. In a machine for paring fruit, the combination with a rotatable fork carrying reel, a pair of forks extended oppositely therefrom and having their shafts rotatably mounted therein in parallel relation, pinions on said shafts local to said forks, a gear mounted to rotate in a plane slightly oblique to the plane of said reel, on an axis disposed between said shafts, and having teeth disposed tangential to a circle whose diameter is equal to the distance between the axes of said shaft, means arranged to intermittently rotate said reel with said gear, the rotation of which effects the engagement of one pinion simultaneously with the disengagement of the other pinion while traveling together in the same general direction, and means to stop said reel to effect the rotation of the fork whose pinion is thus engaged with said gear.

5. A machine for paring fruit, comprising fruit rotating means, a rock shaft, means carried thereby and provided with a socket,

and a knife bar having a ball loosely engaged in removable relation in said socket and carrying a knife in operative relation to the fruit rotating means.

- 5 6. A machine for paring fruit, comprising fruit rotating means, a rock shaft, a bifurcated arm carried thereby and having its bifurcated end turned back to form a socket, a knife bar having a ball removably engaged
10 in said socket, a bifurcated guide also carried by said rock shaft and having its bifurcation embracing said bar and restricting its radial movement to a plane of the axis of
15 said rock shaft, and a knife carried by said bar in coöperative relation with said fruit rotating means.

7. A machine for paring fruit, comprising fruit rotating means, a rock shaft, a bifur-

cated arm carried thereby and having its bifurcated end turned back to form a socket, 20 a knife bar having a ball removably engaged in said socket, a bifurcated guide also carried by said rock shaft and having its bifurcation embracing said bar and restricting its radial movement to a plane of the axis of 25 said rock shaft, a knife carried by said bar in coöperative relation with said fruit rotating means, and a spring tending to shift said bar toward the axis of said rock shaft.

In testimony whereof I affix my signature 30 in presence of two witnesses.

WILLIAM A. C. OAKS.

Witnesses:

MARY E. STAUFFER,
ED. A. KELLY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."