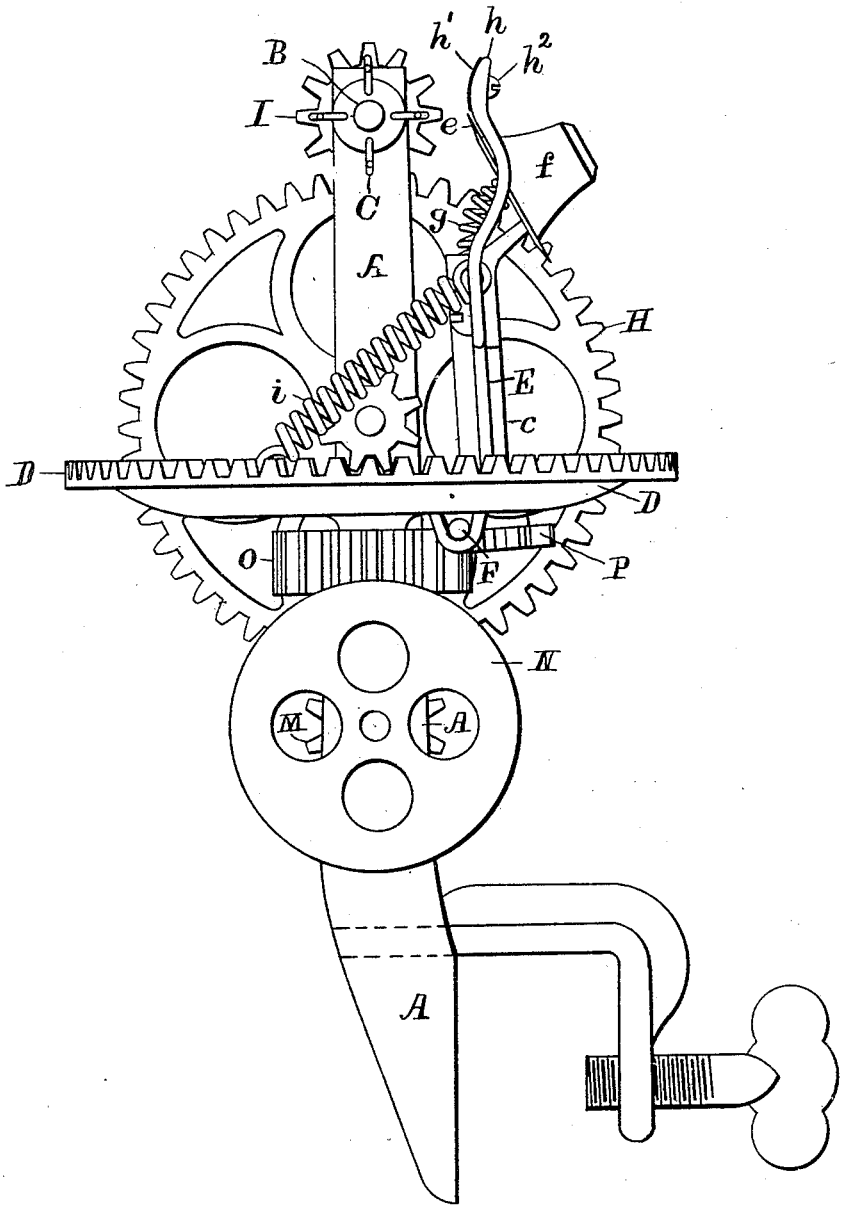
(No Model.) 2 Sheets—Sheet 1.

H. COTTRELL.

FRUIT PARING MACHINE.

No. 453,759. Patented June 9, 1891.

Fig. 1.



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Inventor.
H. Cottrell, per
Crane & Miller, attys.

(No Model.) 2 Sheets—Sheet 2.

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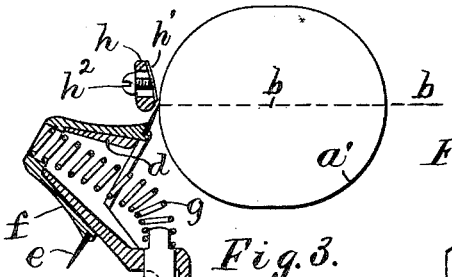


Fig. 3.

Fig. 4.

Fig. 5.

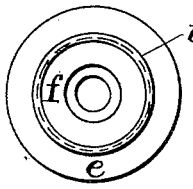
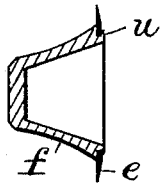


Fig. 6.



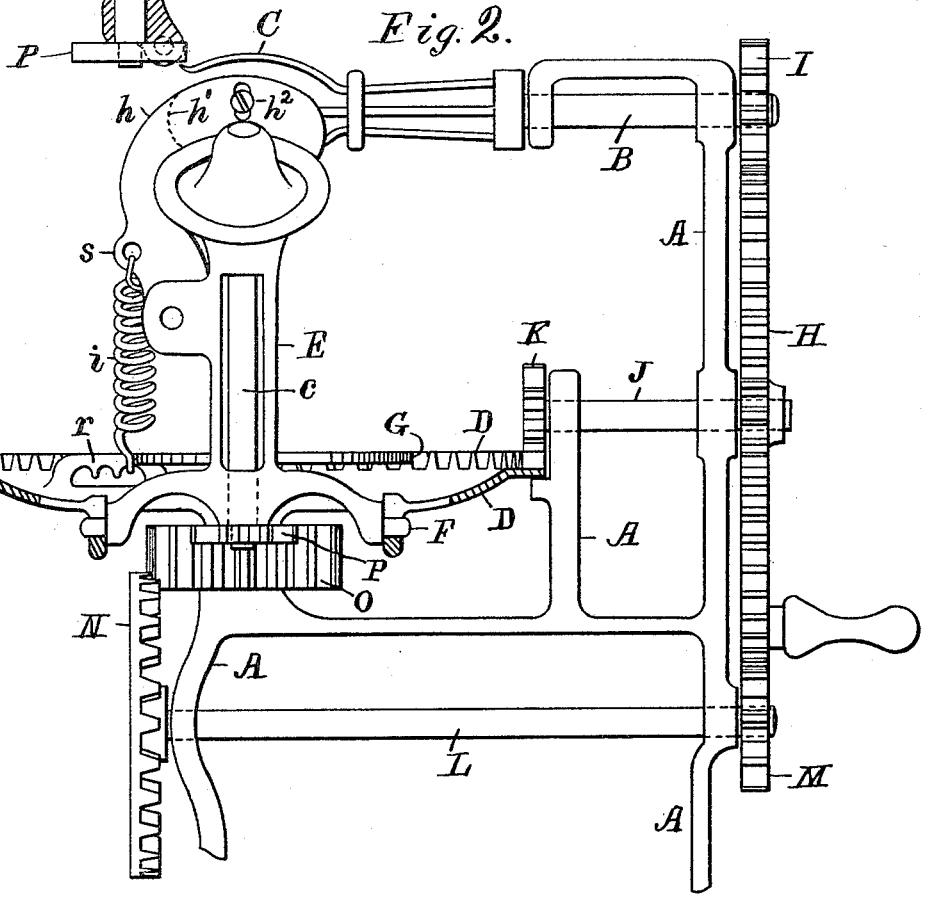


Fig. 2.

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UNITED STATES PATENT OFFICE.

HERBERT COTTRELL, OF NEWARK, NEW JERSEY, ASSIGNOR TO LOUIS A. SAYRE, OF SAME PLACE.

FRUIT-PARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 453,759, dated June 9, 1891.

Application filed March 2, 1891. Serial No. 383,387. (No model.)

To all whom it may concern:

Be it known that I, HERBERT COTTRELL, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Fruit-Paring Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates specially to such fruit-paring machines as have a table-wheel rotated upon an axis at right angles to the axis of a revolving fruit and carrying a hinged arm vibrated to and from the center of the fruit to apply a rotary cutter thereto. In such constructions the hinged arm has always been held more or less in a position tangential to the surface of the fruit; and to bring the edge of a revolving cutter into a tangential position to the fruit it has been considered necessary to dish the cutter and to present its upturned edge to the fruit. With such construction the convex edge of the cutter is unable to take a wide paring without penetrating the fruit needlessly, and the machine must therefore be adjusted to take a narrow paring.

My invention consist in a rotary cutter of substantially flat shape mounted upon an arm movable with a rotary carrier, the cutter being adjusted upon the vibrating arm at such an angle with the axis of the arm that it is presented tangentially to the fruit, and thus enabled to take a broader paring than a dished cutter. As the shaft for rotating the cutter is extended along the vibrating arm, the knife cannot be attached directly to such shaft, but is rotated upon an independent bearing at an angle therewith and coupled to the shaft by suitable means. Such coupling is shown herein formed of a spiral spring; but other universal couplings may be employed.

In the drawings, Figure 1 is a front view of the apparatus with the vibrating arm shown at the lower side of the fruit-paring fork, the clamping-foot of the apparatus being constructed at one side thereof to prevent the paring from falling on the table-wheel. Fig. 2 is a view of the side of the apparatus without the clamping-foot. Fig. 3 is a section of the vibrating arm with the cutter and its coupling. Fig. 4 is a side view of the cutter-hub and cutter detached from the arm. Fig. 5 is an inside view of the same, and Fig. 6 is a central section of the same on the axial line.

The frame of the machine A, the spindle B, carrying the fork C, the table-wheel D, having the vibrating arm E, hinged thereto by pivots F, the cam G for vibrating the arm, the hand-wheel H and gear I for rotating the fork, the main shaft J with pinion K for rotating the pinion-wheel, the shaft L, driven by gear M from the hand-wheel, and the crown-wheel N, driving the spur-wheel O to actuate the gear P upon the cutter-shaft, have all been used in analogous constructions, and are shown herein simply to illustrate the operation of my invention.

In Fig. 1 the cutter is shown at one side of the spindle B, and in Fig. 3 the cutter is shown applied to the end of the fruit, which is represented by the full line a' and dotted axial line b. The cutter-shaft c is shown extended lengthwise of the vibrating arm E and rotated by the gear P, as usual.

In Fig. 3 the shaft is shown supported in suitable bearings in the arm, and the upper end of the arm is formed with a hollow bearing d, shown at an angle of about sixty degrees with the shaft c, and the cutter e is shown as an annular plate attached to the lower end of a hollow hub f, which is fitted to revolve smoothly upon the exterior of the bearing. The bearing and hub are made hollow to permit the connection of the hub with the shaft c by means of a spiral spring g, which serves as a coupling, and may thus be applied through the interior of the bearing. The spiral spring g passes through the interior of the conical bearing d, and is attached at its outer and upper end to the hub f, while its lower end is attached to the top of the shaft c. The shaft c when rotated in the usual manner thus imparts a rotary motion to the cutter, although the latter stands at a very considerable angle with the shaft. A guard h, with a removable facing h', is affixed to the vibrating arm and extended over the upper edge of the cutter which is applied to the fruit. The facing is adjustable on the guard and also removable (when it becomes corroded.) The guard is secured to an ear

upon the arm by screw h^2, and is adjusted at a suitable distance from the edge of the cutter to regulate the thickness of the desired paring, as usual.

The spring i, which is commonly used to press the vibrating arm and cutter elastically toward the fruit, is shown attached, as usual, to a lug r upon the table-wheel, and an ear s formed upon the lower part of the guard.

As shown in Fig. 5, the annular plate forming the cutter is secured to the open mouth of the hub f by bending or burnishing a thin flange u over the inner edge of the plate. By placing the axis of the cutter at a very considerable angle with the axis of the vibrating arm the cutter may be made flat and its edge held substantially tangential to the surface of the fruit and a much wider paring may be thus taken and the fruit left in a smoother condition than when a dished cutter is used.

If a universal coupling of other character be employed, the bearing d and the hub of the cutter would be modified in a suitable manner to apply such coupling and the cutter could thus be operated tangential to the fruit, while its driving-shaft c is moved around by the table-wheel nearly at right angles with the axis of the fruit-carrying fork.

The operation of the cutter in such fruit-paring machines is already understood, the table-wheel being rotated simultaneously with the fruit, and thus carrying the cutter which is mounted upon the arm e around the surface of the fruit from the base of the fork toward its apex, the cutter being rotated during the cutting operation.

By means of my invention the work done by the cutter is improved, the surface of the fruit is not roughened, but pared as smoothly as it can be done by hand, and the cutter can be made as cheaply as the dished cutters heretofore used.

The guards ordinarily fitted to the edge of the cutter to regulate the thickness of the paring are often corroded by the acids in the fruit, and are thus roughened so as to prevent their proper operation. To diminish the degree of such corrosion, the guard is often made of gun-metal; but by the use of the removable facing h' I am enabled to make the body of the guard of iron, like the rest of the machine, and thus cheapen the construction, while the facing itself may be made of gun-metal and may be cheaply renewed whenever it is desired to furnish a new wearing-surface. The facing is attached to the guard upon the side nearest to the edge of the knife, and thus serves as a gage for the thickness of the paring. The facing is secured to the guard by screws h^2 fitted in slots, by which construction the facing forms an adjustable gage and is more readily set in the desired relation to the knife than the guard itself.

I am aware that a flat rotary cutter has been mounted upon a vibrating arm upon a fixed frame with the fork mounted in a bearing upon a rotary frame. In such construction the rotary frame, carrying the fruit upon the fork, has been oscillated through a certain arc by means of a handle fixed to the frame to present the side of the fruit to the cutter, but has never been rotated continuously, like the table-wheel in machines of more recent construction.

In my invention the vibrating arm is pivoted upon a table-wheel or rotary carrier, which may be propelled continuously in one direction by turning a crank, and the machine is thus rendered more convenient for use than one in which an oscillating frame is used and requires readjustment after paring each fruit.

Having thus set forth my invention, what I claim is—

1. In a fruit-paring machine having a rotary cutter with a vibrating arm pivoted thereon, the combination, with the vibrating arm and a revolving cutter-shaft extended lengthwise of such arm, of an annular flat cutter attached to a hub and mounted upon the arm at an angle with the shaft and connected therewith by means of a universal coupling, as and for the purpose set forth.

2. In a fruit-paring machine having a table-wheel with a vibrating arm pivoted thereon, the combination, with the vibrating arm and a revolving cutter-shaft extended lengthwise of such arm, of an annular flat cutter attached to a hub and mounted upon the arm at an angle with the shaft and coupled thereto by a spiral spring, as and for the purpose set forth.

3. In a fruit-paring machine having a table-wheel with a vibrating arm E pivoted thereon, the combination, with the vibrating arm and a revolving cutter-shaft extended lengthwise of such arm, of the hollow bearing d, formed upon the arm E at an angle with the shaft c, a hollow hub f, fitted to the exterior of such bearing and provided with the annular flat cutter e, and a universal coupling connecting the hollow hub with the shaft c, substantially as herein set forth.

4. In a fruit-paring machine, the combination, with a revolving circular cutter, of a guard sustained adjacent to the same, and a detachable facing secured to the guard between the cutter and guard to form a renewable wearing-surface, substantially as herein set forth.

5. In a fruit-paring machine, the combination, with a revolving circular cutter, of a guard sustained adjacent to the same, and a facing secured adjustably thereon between the cutter and guard and adapted to form an adjustable gage to regulate the thickness of the paring, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HERBERT COTTRELL.

Witnesses:
THOS. S. CRANE,
HENRY J. MILLER.