No. 860,472. PATENTED JULY 16, 1907.

W. H. HILLS.

APPLE PARING MACHINE.

APPLICATION FILED AUG. 26, 1905.

5 SHEETS—SHEET 1.

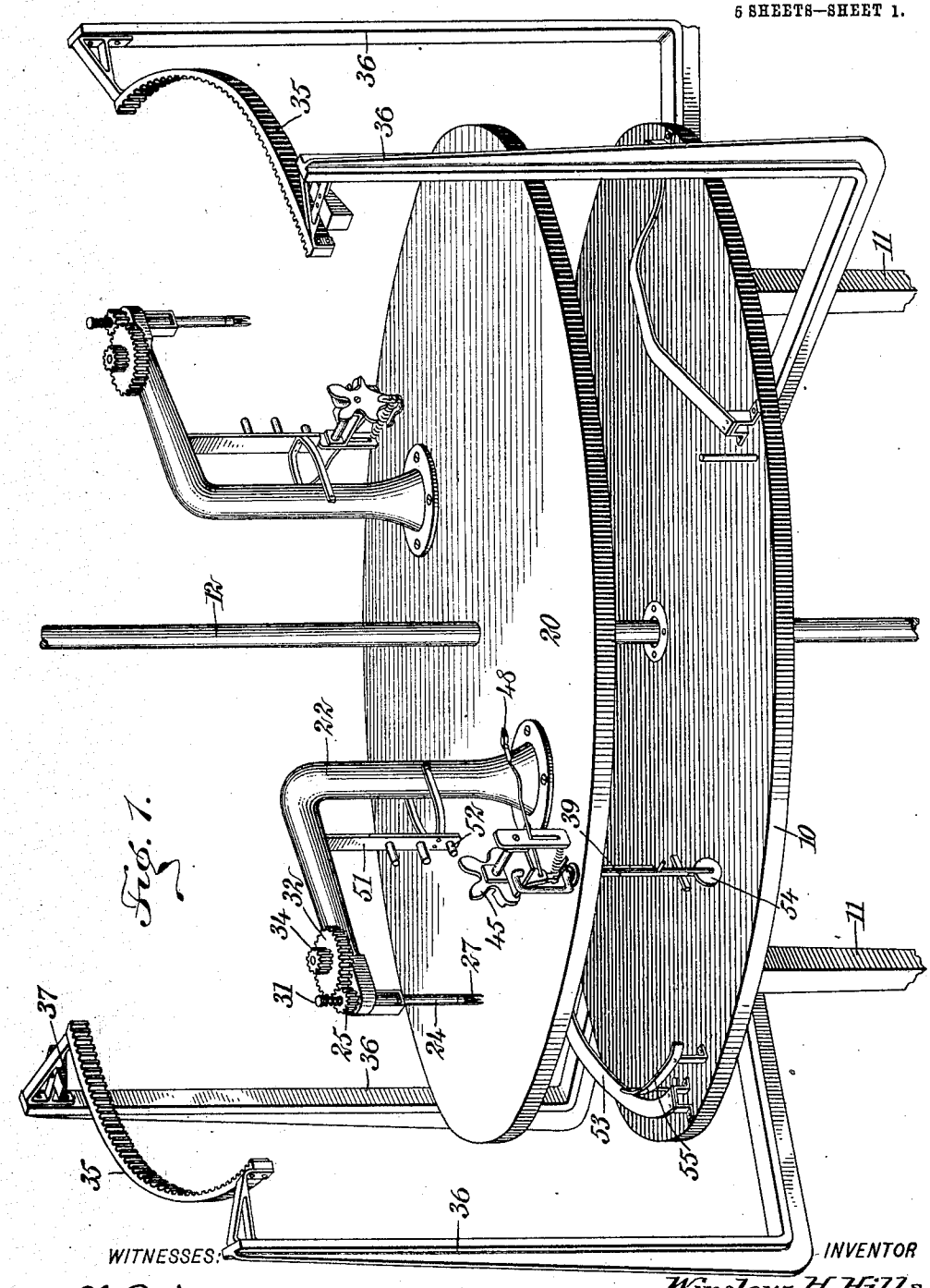


Fig. 1.

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5 SHEETS—SHEET 2.

Fig. 2.

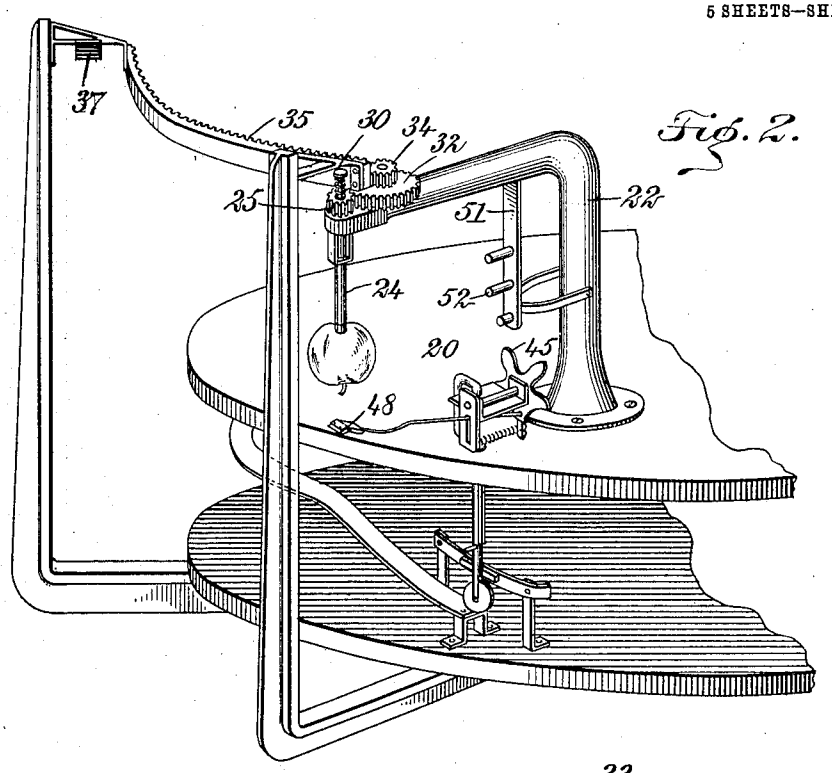
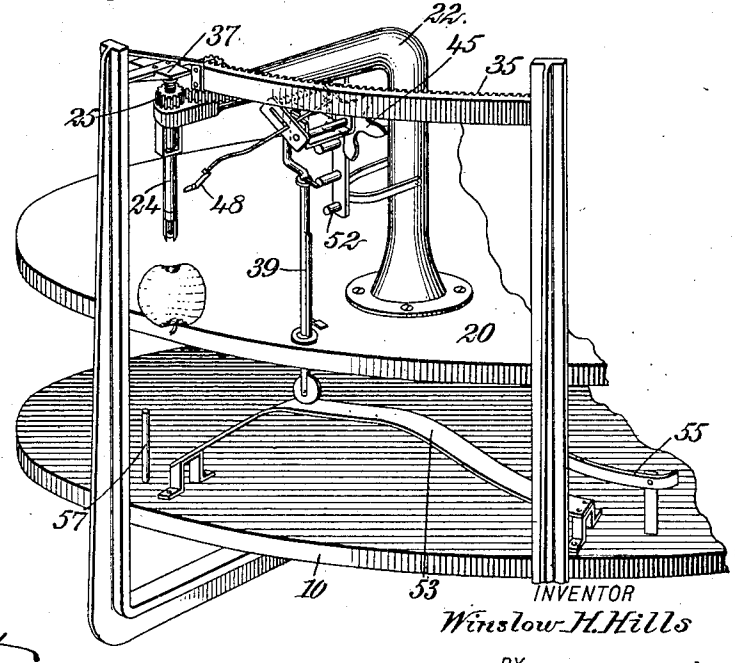


Fig. 3.



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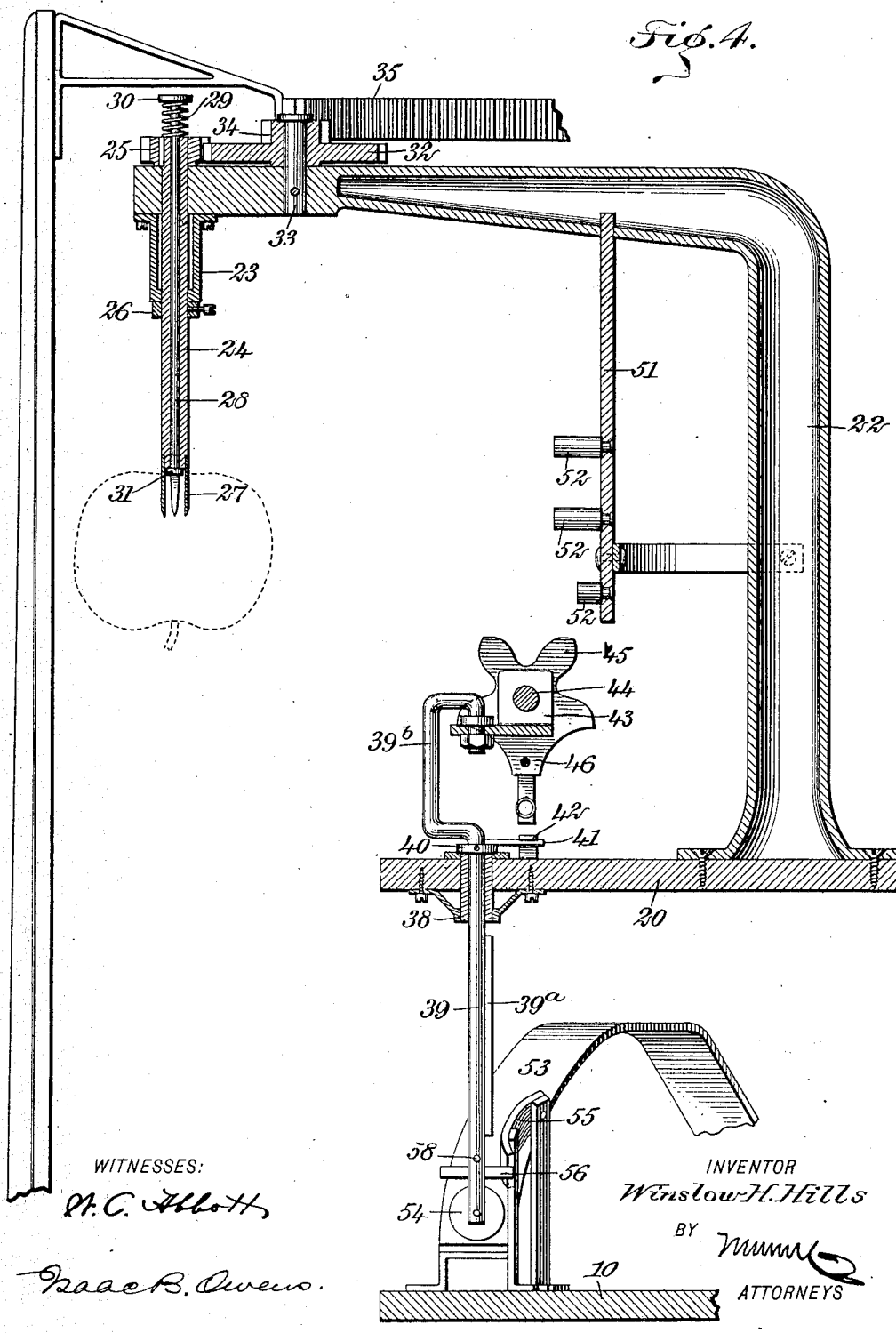
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5 SHEETS—SHEET 3.

Fig. 4.



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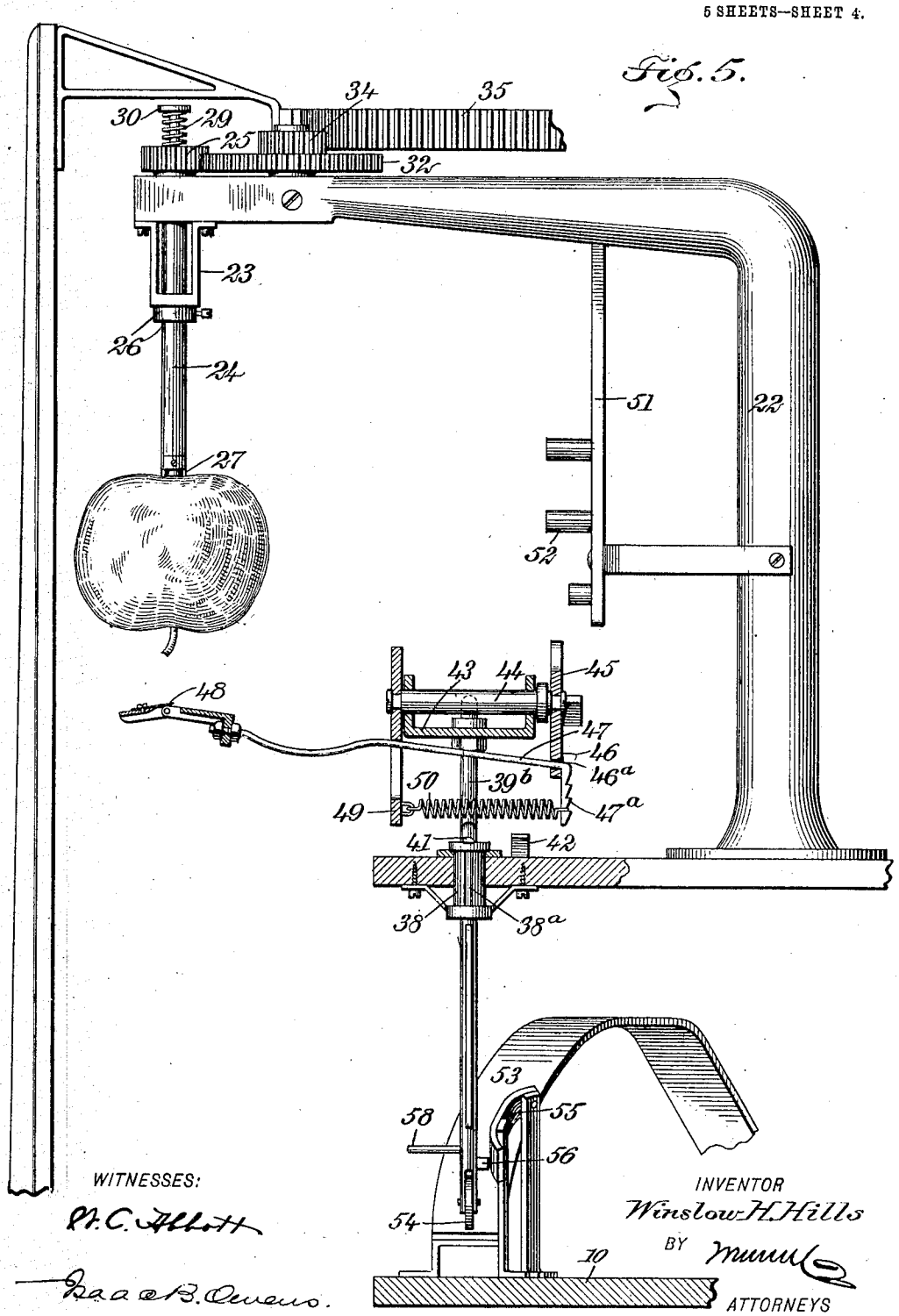
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5 SHEETS—SHEET 4.

Fig. 5.



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5 SHEETS—SHEET 5.

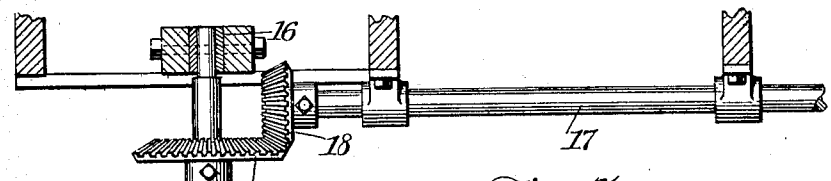
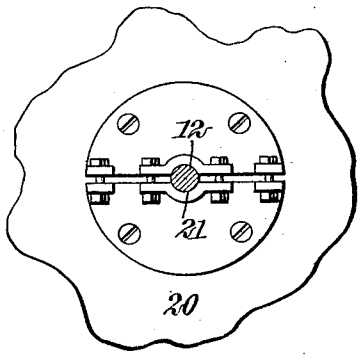
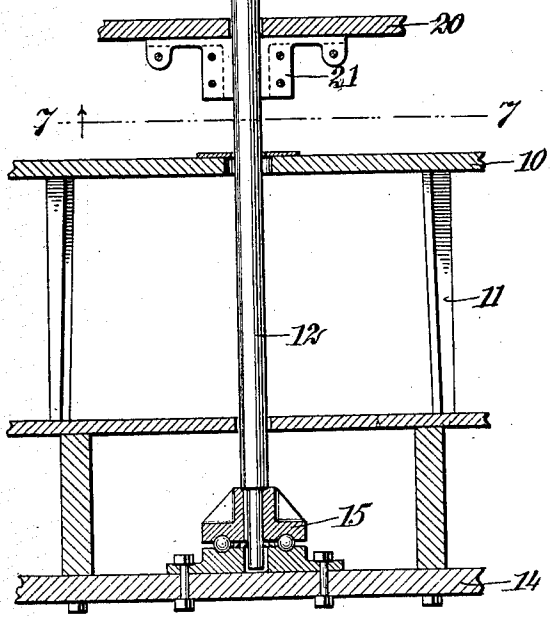


Fig. 7.

Fig. 6.





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UNITED STATES PATENT OFFICE.

WINSLOW H. HILLS, OF ROSE, NEW YORK.

APPLE-PARING MACHINE.

No. 860,472. Specification of Letters Patent. Patented July 16, 1907.

Application filed August 26, 1905. Serial No. 275,910.

To all whom it may concern:

Be it known that I, WINSLOW H. HILLS, a citizen of the United States, and a resident of Rose, in the county of Wayne and State of New York, have invented a new and Improved Apple-Paring Machine, of which the following is a full, clear, and exact description.

The essential object of this invention is to provide a machine by which apples may be effectively pared without unnecessary waste, and with increased speed of operation. I attain this end by providing a moving carrier, preferably in the form of a rotating table on which are mounted one or more devices for holding and automatically paring the apple, these devices being actuated by the rotating movement of the table, and by coöperation with relatively stationary actuating devices carried by the base or other adjustable part.

The invention resides in certain novel features of construction and relative arrangement of parts, which will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings which illustrate as an example the preferred embodiment of my invention, in which drawings

Figure 1 is a perspective view of the machine showing the table equipped with two paring devices and their complementary parts; Fig. 2 is a fragmentary perspective view showing one of the paring devices at the inception of its operation; Fig. 3 is a view of the same parts showing the paring device at the completion of its operation; Fig. 4 is an enlarged sectional view through one of the paring devices and the coacting elements; Fig. 5 is an enlarged side elevation, showing an apple in position and the paring blade about to operate; Fig. 6 is a sectional view showing the manner of driving the table; and Fig. 7 is a detail view looking upward from the line 7—7 of Fig. 6.

The apparatus comprises a base 10, preferably in the form of a circular table sustained by legs 11, as shown. As shown in Fig. 7 a vertical drive shaft 12 passes loosely through the table and is sustained on the floor 14 or other supporting structure by means of a step bearing 15. At its upper end the shaft 12 is carried in a bearing 16 sustained in a suitable overhead support. The shaft 12 is driven with a continuous rotary movement which may be imparted by any means desired. Fig. 6 shows a drive shaft 17 having a miter gear 18 meshed with a corresponding gear 19 fastened to the shaft 12.

20 indicates the rotating table which is fastened to the shaft 12 by means of a clamp 21. Said shaft 12 serves, therefore, to sustain the table 20 and to impart a continuous rotary movement thereto.

In the preferred form of my invention, as shown in the drawings, the table 20 is equipped with two paring devices. Any number, however, may be employed according to the size of the apparatus and the conditions of its use. Each paring device comprises a bracket 22 which is fastened to the table, and projects upwardly and thence horizontally over the same. Said bracket is provided with a downwardly projecting bearing 23 (see Fig. 4), in which a tube 24 is revolubly carried. To the upper end of the tube is attached a pinion 25 which rests on top of the bracket preventing downward displacement of the tube, and a collar 26 attached to the tube and engaging the under side of the bearing 23 prevents upward displacement of the tube. Said tube is provided with forked tines 27 the lower end of which is adapted to pierce the apple, and movable within the tube is an ejector rod 28. The rod is held yieldingly in raised or non-active position by means of a spring 29 which bears between the upper end of the tube 24 and a head 30 on the upper end of the ejector rod. Upon forcing said rod downward, however, the enlarged lower end 31 of the rod engages the apple and ejects the same from the tines 27, as indicated in Fig. 3.

Meshed with a gear 25 is a gear 32 which is loosely carried on a stud shaft 33 fastened vertically in the overhanging part of the bracket 22. Fastened to or formed integral with the gear 32 is a pinion gear 34, and this gear is adapted to mesh with one or more racks 35. Said racks 35 are curved in an arc or circle concentric to the center of rotation of the table 20, the arrangement being such that as the table swings the bracket 22 and its connecting parts the gear 34 will roll into mesh with the gear 35, and a rotating movement will be imparted to the tube 24 through the medium of the parts 32, 34 and 35, which rotating movement will continue during the time that the gears 34 and 35 are in mesh. Said arc-shaped racks 35 are sustained by brackets 36 rising from a suitable support preferably from the under side of the base 10, as shown. As illustrated best in Figs. 1 and 3, an inclined track 37 is arranged at one end of each rack 35, the location being such that the heads 30 of the ejector rods 28 will ride under these tracks 37 at the instant that the gears 34 are leaving the adjacent racks. Said ejector rods riding under the inclined tracks 37, as explained, will be pushed downward into the position shown in Fig. 3 ejecting the apple as previously explained. Consequently as the table 20 rotates, the gears 34 are successively run into mesh with the gears 35, and the apple holding tubes or devices 24 are given rotary movement which continues until the gears roll out of mesh with the racks whereupon the ejector rods are automatically moved down and the apples are ejected. During this turning movement of the apple holding device, the paring device is in operation, as will now be explained. Associated with each apple holding device or tube 24 is a paring blade and its appurtenances. Each of these comprises, as shown best in Figs. 4 and 5,

a bushing or box 38 held securely in the table 20 and passing through the same. Said bushings are provided with key-ways 38^a (see Fig. 5), and sliding in the bushings are rods 39 which have feathers 39^a adapted to run through the key-ways 38^a. Said rods are provided above the table 20 with collars 40 which are adapted to prevent downward displacement of the rods, and projecting laterally from the rods just above the collars are arms 41 which when the parts are in the inactive position shown in Fig. 4, are adapted to engage under latches 42 fastened to the upper side of the table 20, as shown. The upper ends of the rods 39 are bent to form yokes, as indicated at 39^b, and the downwardly turned upper ends of the rods are fastened securely to a cross member 43 which is held in horizontal position, and has upwardly projecting ends into which a shaft 44 is revolubly carried. Said shaft 44 has fastened to one end a mutilated star wheel 45, from the mutilated part of which projects a tongue 46. This tongue 46 is provided with an opening 46^a through which passes the shank 47 of a paring blade 48. At the opposite end of the shaft 44 is fastened a slotted finger 49 through the slot of which the shank 47 also projects. The end of the shaft 47 is bent and formed with teeth, as indicated at 47^a, and a retractile spring 50 is engaged with said toothed portion and with the lower end of the finger 49, as shown in Fig. 5. Sustained by the brackets 22 are vertically arranged supporting bars 51, to which are fastened projecting pins 52 forming essentially a rack.

When the parts lie in the position shown in Figs. 1 and 4, in which the arm 41 is engaged under the latch 42, the shank 47 of the paring blade is thrown sidewise away from the apple holding device. When, however, a quarter revolution is imparted to the rod 39 by devices which will be hereinafter explained, the parts assume the position shown in Fig. 5, in which the knife 48 lies directly under the apple to be pared. Upon the vertical movement of the rod 39 upwardly the blade 48 will be engaged with the apple, and as this movement is continued the star wheel 45 will move into mesh with the pins 52, thus imparting a turning movement to the parts 44 and 45, this movement being around the axis of the shaft 44, causing the paring blade 48 and finger 49 to move around the side of the apple as the apple is revolved against the blade, thus cutting the skin from the apple in a continuous spiral length. The position of the parts at the end of this operation is shown in Fig. 3. At this time the gear 34 runs off from the rack 35, and the ejector 28 is operated to throw off the apple, as Fig. 3 illustrates.

Attached to the base 10 adjacent to each rack 35 is an inclined track 53. These tracks are concentric to the center of revolution of the table 20, and are intended to give the rod 39 and its attachments their vertical movement, the rod dropping again into the position shown in Fig. 4 as it runs off of the said track 53. The lower end of the rod 39 is provided with a roller 54 adapted to run on the track as shown. At the front end of the track 53 is arranged a detent plate 55, which is located at one side of the track and adapted to be engaged by a stud 56 projecting from the rod, thus imparting to the rod a quarter turn moving it from the position shown in Fig. 4 to that shown in Fig. 5, and causing the arm 41 to disengage the latch 42. As the rotation of the table 20 continues the rod 39 and its attachments are elevated, as before described, and as the roller 54 rides off the track 53 said parts drop again to their normal position. At this time a pin 57 arranged at the rear end of the track 53 strikes the projecting finger 58 carried by the rod 39, and again imparts a quarter turn to said rod returning the rod to the position shown in Fig. 4, and causing the arm 41 to reëngage with the latch 42, thus holding the parts in the position shown in said view until a second track 53 is reached.

The organized operation of the apparatus may be traced as follows: Assuming the parts to be constructed and assembled as described, upon rotating the table 20 the apple holding and paring devices will be turned with the same into successive engagement with the racks 35 and tracks 53. Immediately prior to the engagements of the holding and paring devices with said parts an apple should be impaled on the tines 27. The apple being held in this manner is rotated with the holding device 24 as soon as the pinion 34 engages the rack 35. Simultaneously, the paring blade is moved around into active position and runs into engagement with the apple, whereupon the cutting operation begins. At this time the paring blade is moved upward around the side of the apple so that the combined movements of the blade and apple result in the removal from the apple of a spiral length of peel, the operation terminating when the blade reaches the lower end of the holding device 24, whereupon the pinion 34 disengages the rack 35 and the ejector 28 is operated by contact of head 30 with track 37. It will be observed that any number of holding and paring devices may be applied to the table and the table rotated at various speeds dependent upon the conditions of the operation.

By means of my invention the apples may be effectively and rapidly pared, the speed of operation of the device being only limited by the ability of the attendant to manually impale the apples on the tines of the holding device.

The invention is primarily intended, and has been here described, as a means for paring or peeling apples, but I desire it understood that it is not limited in its use to this particular fruit and may be employed in connection with various other fruits, as may suggest themselves to persons skilled in the art.

Having thus described the preferred form of my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination of an apple holding device, means for mounting and rotating the same, a paring blade, means for mounting said blade to move in an arc over the apple, a star wheel in connection with said means, and a stationary rack adapted to engage the star wheel whereby to impart said movement to the blades.

2. The combination of a carrier or support, means for rotating the carrier, an apple holding device on the carrier, means for rotating the apple holding device, a fixed rack, a paring blade, means for mounting the paring blade to move in an arc, said means being vertically movable, devices for automatically bringing the paring blade into proper position with respect to the apple holding device, and a star wheel in connection with said means and adapted to engage the rack.

3. The combination with a carrier or support, of an apple holding device revolubly mounted thereon, a fixed rack, a rod vertically movable on the support, means for so mov-

ing the rod, a rotatable shaft sustained by the rod, a star wheel in connection with the shaft, and adapted to engage the rack, and a paring blade connected with the shaft and adapted to be moved by the rotation thereof.

4. The combination of a base, a carrier revoluble over the same, an apple holding device revolubly mounted upon the carrier and having a gear, a stationary rack adapted to be engaged by the gear, a paring blade, means for moving said blade in and out of active position, and a track mounted on the base and adapted to engage said means to actuate the same.

5. The combination of a base, a carrier revolubly mounted above said base, an apple holding device revolubly mounted on the carrier and having a gear, a stationary rack adapted to be engaged by the gear, a paring blade, a reciprocating member on the table in which the paring blade is mounted, means on the base for reciprocating said member, a latch for holding said member in inactive position, and devices on the base for automatically moving the member in and out of engagement with said latch.

6. The combination of a stationary base, a rotatable table mounted over the same, a bracket carried on the table, an apple holding device revolubly mounted in the bracket, a gear in connection with the apple holding device, an arc-shaped rack adapted to be engaged by said gear, a rack sustained by the bracket, a rod vertically movable on the table, a paring blade, means for mounting said blade on the rod to move in an arc over the apple, a star wheel in connection with said means and adapted to engage said rack whereby to so move the blade, and a track mounted on the base and adapted to be engaged by the rod to move the rod vertically.

7. The combination of a stationary base, a rotatable table mounted over the same, a bracket carried on the table, an apple holding device revolubly mounted in the bracket, a gear in connection with the apple holding device, an arc-shaped rack adapted to be engaged by said gear, a rack sustained by the bracket, a rod vertically movable on the table, a paring blade, means for mounting said blade on the rod to move in an arc over the apple, a star wheel in connection with said means and adapted to engage said rack whereby to so move the blade, a track mounted on the base and adapted to be engaged by the rod to move the rod vertically, a latch adapted to hold the rod in lowered or inactive position, and devices on the base for automatically turning the rod in and out of engagement with said latch.

8. In an apple paring machine, the combination of a base, a rotatable table mounted thereon, an apple holding device, means for revolubly mounting it on the table, a gear connected with the apple holding device, a curved rack mounted independently of the table and adapted to be engaged by the gear, a member mounted to move vertically on the table, means on the base for raising said member, a knife mounted on said member, and means in connection with said member for automatically controlling the action of the knife.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WINSLOW H. HILLS.

Witnesses:
F. E. REYNOLDS,
RAY S. ELLINWOOD.