No. 897,109. PATENTED AUG. 25, 1908.

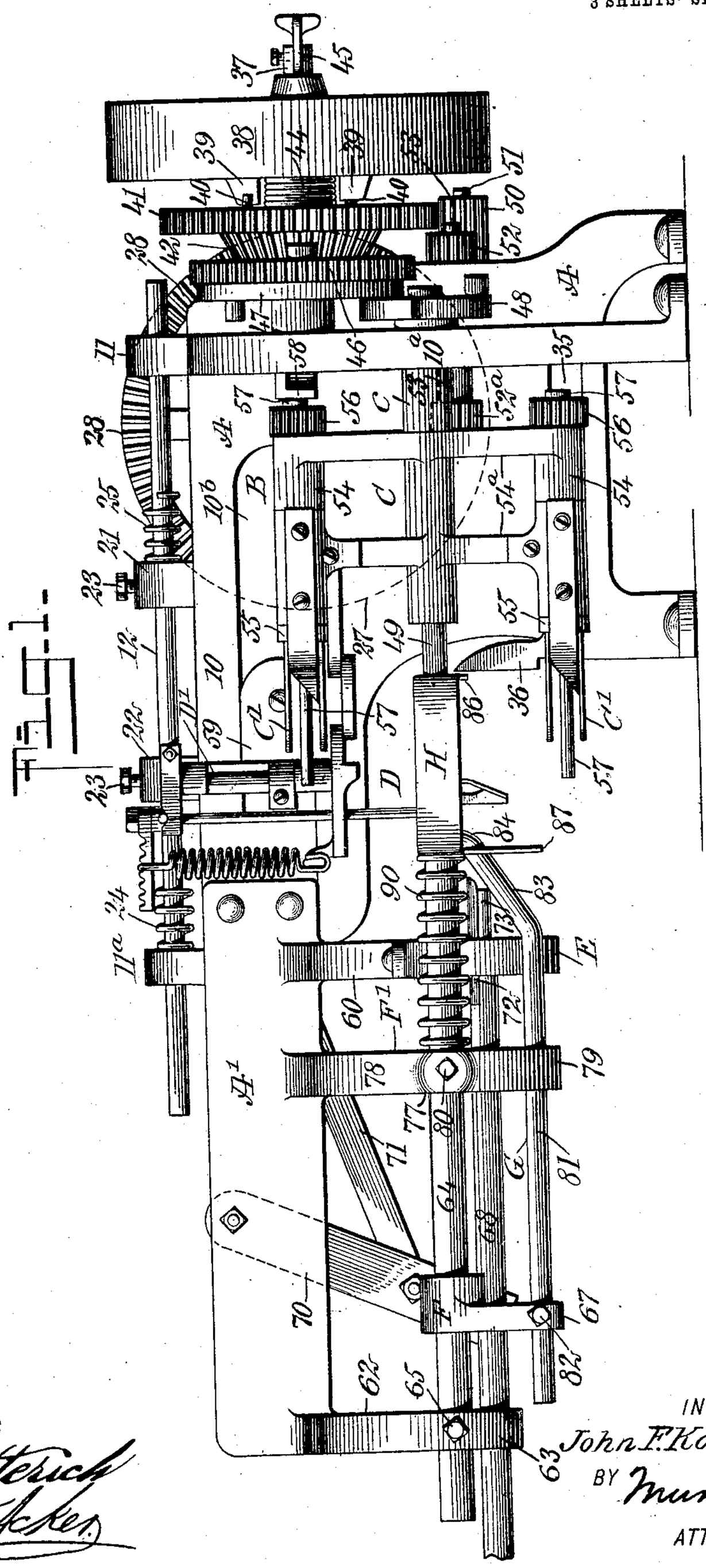
J. F. KOHLER.

SLICING AND CORING ATTACHMENT FOR PARING MACHINES.

APPLICATION FILED MAY 15, 1907.

3 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2.

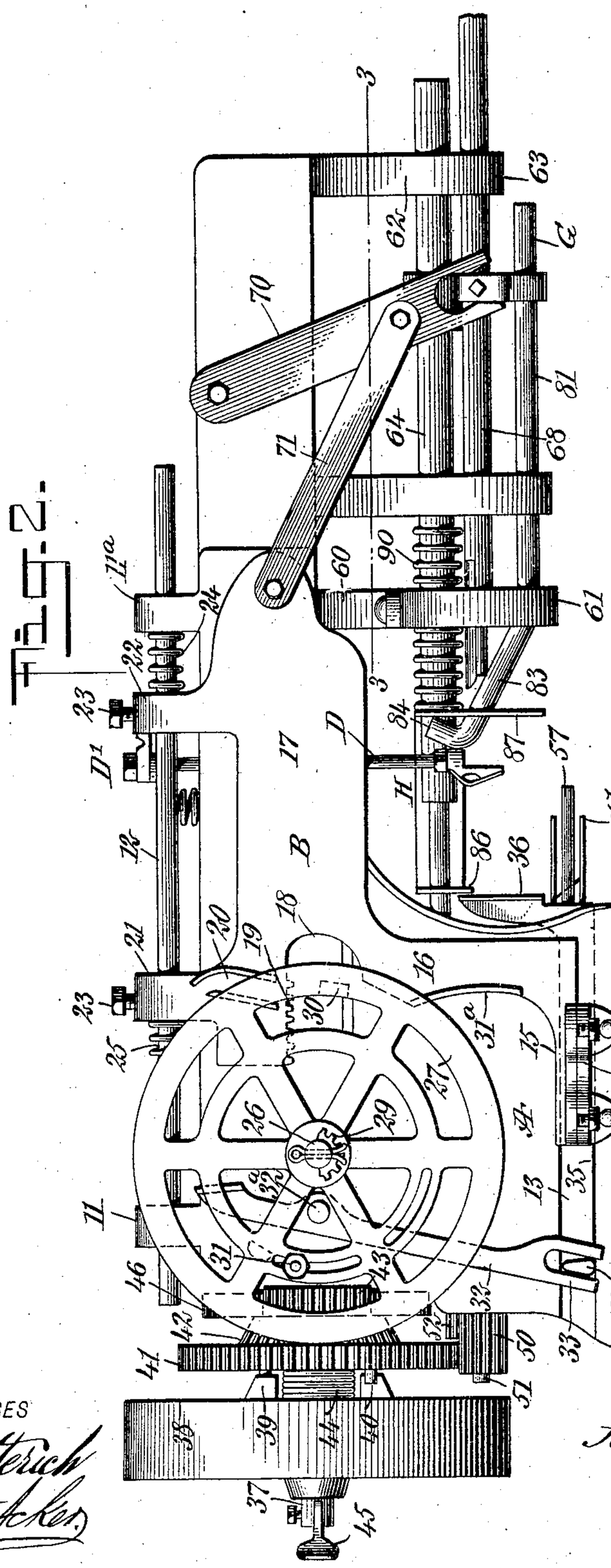

Fig. 3.

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3 SHEETS—SHEET 3.

FIG. 3.

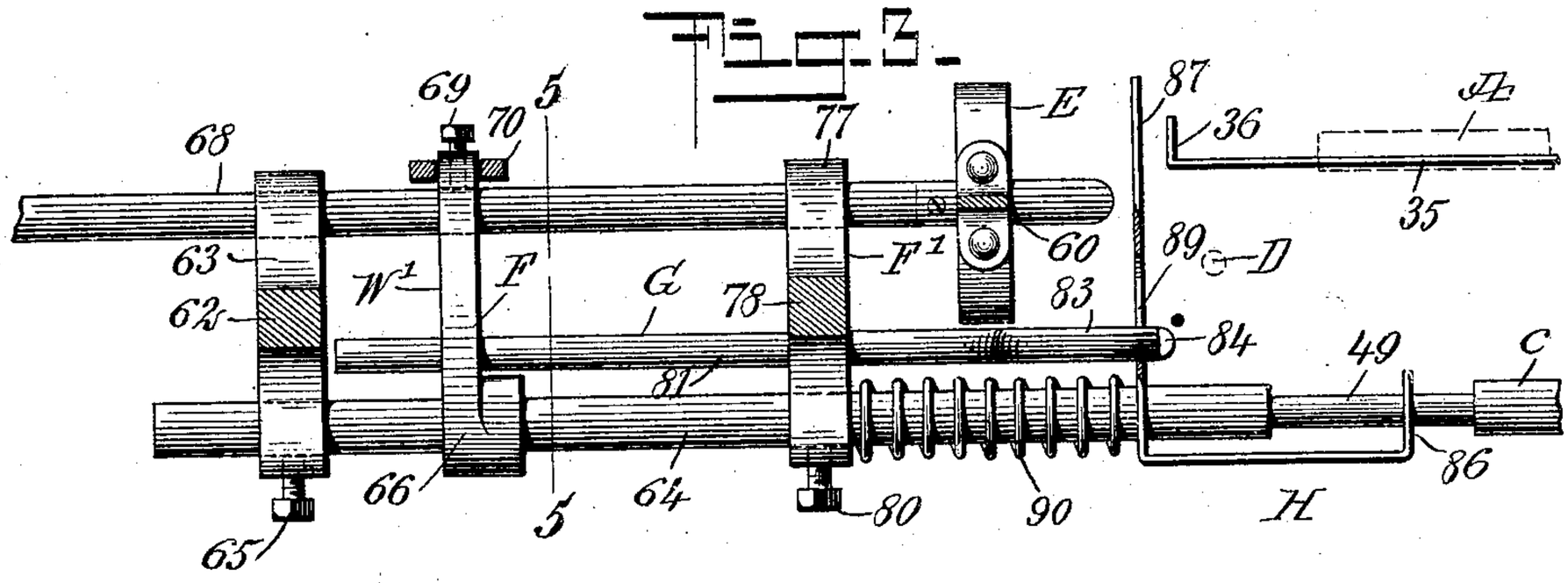


FIG. 4.

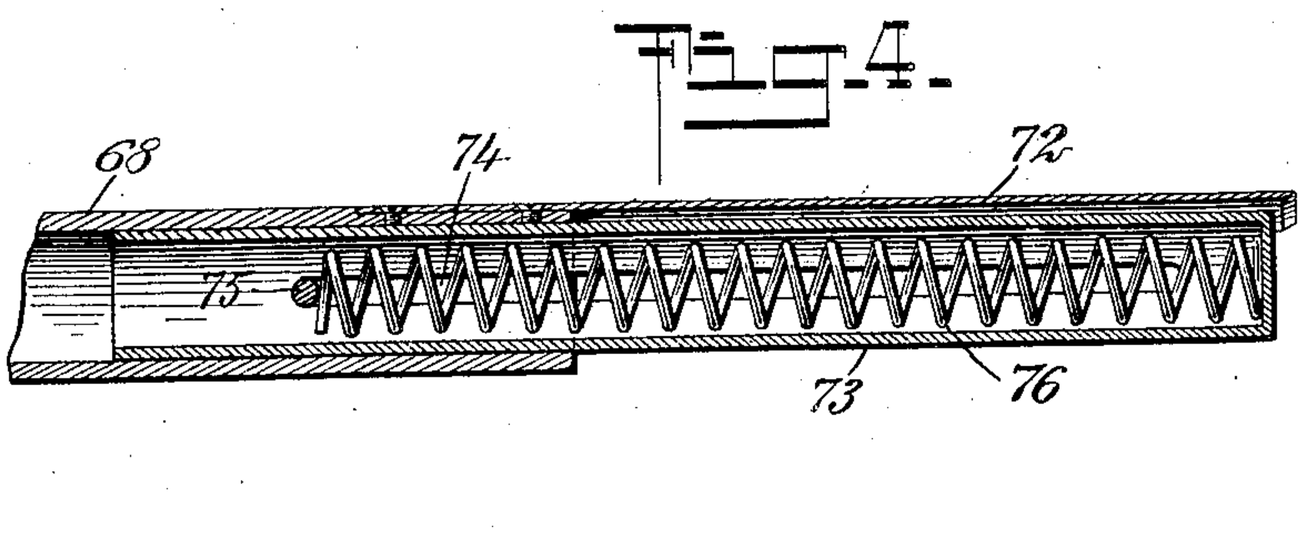


FIG. 5.

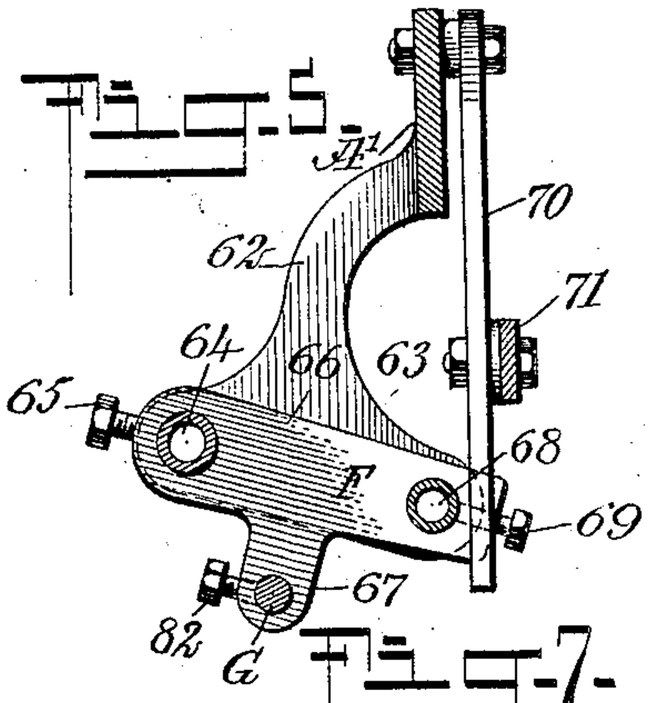


FIG. 6.

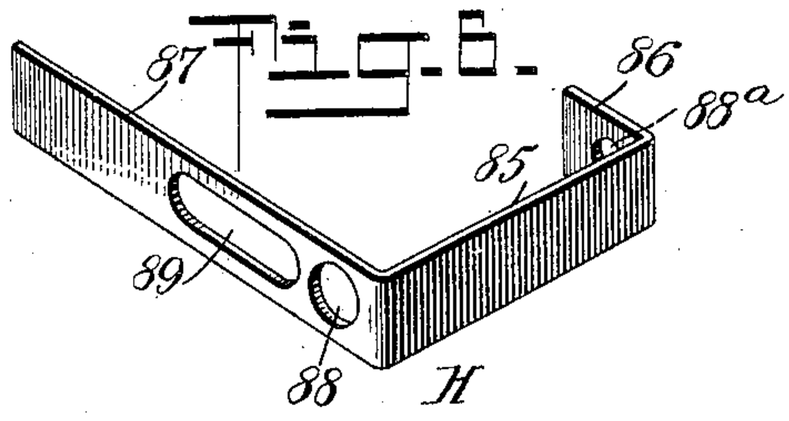
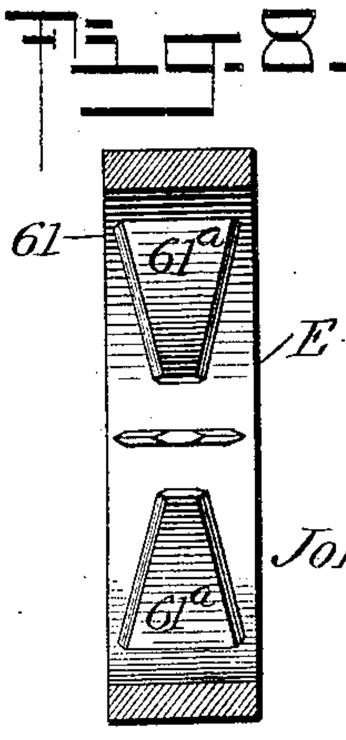


FIG. 7.

FIG. 8.



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UNITED STATES PATENT OFFICE.

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SLICING AND CORING ATTACHMENT FOR PARING-MACHINES.

No. 897,109. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed May 15, 1907. Serial No. 373,731.

To all whom it may concern:

Be it known that I, JOHN F. KOHLER, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and useful Improvement in Slicing and Coring Attachments for Paring-Machines, of which the following is a full, clear, and exact description.

My invention relates to machines especially adapted for use in paring and coring apples, and has for its object to so improve upon the machine for paring and coring apples for which Letters Patent were granted to W. H. Boutell, June 25, 1889, No. 405,825 and September 21, 1897, No. 590,205, that an attachment is made thereto whereby as the apple is pared it is cored and presented under pressure to a knife, through which the apple is passed and separated thereby into a desired number of sections or slices, which slices are cleanly cut without the possibility of their interfering one with another during the cutting operation, thus preventing crushing of the separated parts.

It is also a purpose of the invention to so construct the attachment that it can be readily applied to said machines in a manner to constitute a fixed part thereof, and further to so construct and apply the attachment that it will operate in perfect harmony with the operative parts of said machines, to produce in one continuous operation the paring, the coring and slicing of an apple and the discharge of the core from the fork of the machines upon which the apple is supported during the paring operation.

The invention consists in the novel construction and combination of the several parts as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the complete machine; Fig. 2 is a rear elevation of the complete machine; Fig. 3 is a horizontal section through the attachment taken practically on the line 3—3 of Fig. 2; Fig. 4 is an enlarged longitudinal section through the corer and tensioning device carried thereby; Fig. 5 is a vertical section taken practically on the line 5—5 of Fig. 3; Fig. 6 is a detail perspective view of the apple-retaining arm; Fig. 7 is a rear elevation of the knife; Fig. 8 is a section through the knife; and Fig. 9 is a detail end view of the inner terminal portion of the shifting shaft employed.

That portion of the machine illustrated and having bearing upon the mechanism for paring the apple and carrying the same while being pared, and the driving mechanism for such part, constitutes no portion of the invention, being the subject matter of the patent hereinbefore referred to; I will therefore but briefly refer to the same. This mechanism is shown best in Figs. 1 and 2 wherein an angular frame standard A is employed consisting of a longitudinal member 10 and an end 10^a extending forwardly at right angles to the longitudinal body member 10, and in the said longitudinal or body member 10 of the frame standard, a longitudinal opening 10^b is produced extending nearly from end to end of said member, as is shown in Fig. 1. At that end portion of the frame standard A where the member 10^a is located an apertured stud or post 11 is placed at the top, and adjacent the opposite end of the same member a corresponding stud or post 11^a is formed, and a rod 12 is mounted to slide freely in the apertures of said posts.

The body portion 10 of the frame standard A is provided with a horizontal slot 13 shown in Fig. 2, that extends from its outer edge nearly to its inner edge, and the sections of the body portion of the frame standard A are strengthened by bolt connected cleats 14, as is best shown in Fig. 2, and these cleats 14 constitute a bearing for the horizontal feed member 15 of a sliding frame section B located at the outside or back of the frame standard A. This section B of the frame further consists of an upright member 16 and a horizontal body member 17, and in the outer end of the body member 17 a horizontal recess 18 is produced, and at the upper wall of the said recess a series of rack teeth 19 is made, and above the said toothed portion of the sliding frame section B a cam race 20 is produced upon the outer face of its body member 17, the said cam race being defined by opposing ribs that are downwardly and outwardly inclined, the innermost rib being longer than the other, and at its projecting upper end is curved more or less over the shorter one, as is illustrated in Fig. 2.

The body portion 17 of the sliding frame section B is provided with upwardly extend-

ing ears 21 and 22 at the upper portion near each end, and these ears receive the aforesaid rod 12, the rod being secured to the ears by means of set screws 23 or their equivalent, whereby as the frame section B is moved the rod 12 moves with it and slides in the projections 11 and 11[a] from the main or standard frame A. A spring 24 is coiled around the rod 12 between the ear 22 and the lug 11[a], while a second spring 25 is coiled around the said rod 12, between the ear 21 and the lug 11 extending from the body standard. These springs are adapted to assist the return of the sliding frame B when it reaches the limits of its stroke.

A fixed shaft or axle 26 is secured to the frame standard A of the machine at its rear and the said fixed shaft 26 is adjacent the outer vertical edge of the said frame standard, as is particularly shown in Fig. 2. A wheel 27 is mounted to turn on the fixed shaft 26, being held thereon in any approved manner, and the said wheel is provided at its front face with beveled teeth 28, as is shown in Fig. 1. The hub portion of the wheel 27 at its forward or inner face is provided with a segmental pinion 29, the teeth whereof are adapted to engage with the rack teeth 19 on the sliding frame section B. The said wheel 27 is also provided adjacent its periphery with a cam rib 30 on its forward or inner face, as is shown in dotted lines in Fig. 2, and opposite this cam rib 30 an adjustable pin 31 is made to extend toward the front from the said wheel, as is also shown in Fig. 2, for a purpose to be hereinafter described, and at the outer edge of the vertical member 16 of the sliding frame section B, a more or less curved cam rib 31[a] is formed, adapted at one point in the rotation of the said wheel 27 to be engaged by the cam rib 30 on said wheel.

The adjustable pin 31 in the rotation of the wheel 27 is adapted to engage with the upper end of a lever 32 pivoted between its center and its upper portion, as is shown at 32[a] in Fig. 2, upon the outer or rear face of the frame standard A, and the lower end of this lever 32 is bifurcated, as is illustrated at 33 in Fig. 2, to receive a projection 34 from a slide 35 mounted for movement just forward of the slot 13 in the said frame standard A, as is also shown in Fig. 2, and at the inner end of this slide 35 a vertical push member 36 is located, being adapted to force the pared apple from the fork supporting it onto the device employed for coring the apple.

In the rotation of the wheel 27, when the sliding frame section B is at the limit of its outward stroke the cam rib 30 of the said wheel 27 will engage with the cam rib 31[a] on the said sliding frame section and will move the latter section forwardly or in direction of the opposite end of the machine. When the cam ribs 30 and 31[a] separate, the sliding frame section B remains stationary in the place to which it has been carried, and as the wheel 27 further revolves the cam rib 30 on the wheel enters the cam race 20 of the sliding frame section B and draws the said section backward, and just shortly after the cam rib 30 reaches the cam race 20 the pinion 29 forming a portion of the wheel 27, meshes with the teeth 19 on the said sliding frame section and continues to carry the latter section rearward or outward. Just prior to the frame section B reaching the limit of its rearward or outward movement, the pin 31 hereinbefore referred to and carried by the wheel 27, engages the upper or head end of the lever 32, and in so doing moves the head portion outward and the bifurcated portion forward, thus moving the slide 35 and accompanying push member 36 outward to a position to force the apple from its supporting fork onto the corer.

A shaft 37 extends out from the member 10[a] of the frame standard A, as is shown in Figs. 1 and 2, and on this shaft 37, which is a fixed shaft, a driving pulley 38 is mounted to loosely turn, and the said driving pulley is provided with a series of offsets 39, that engage offsets 40, from the outer face of a gear wheel 41, loosely mounted on the said shaft 37, and to the inner face of the gear wheel 41 a bevel gear 42 is secured that meshes with the beveled teeth 28 on the wheel 27, and a second and smaller plain gear 43 is secured to the bevel gear 42, so that the gears 41, 42 and 43 all move together. A spring 44 is made to intervene the outer face of the gear 41 and the opposing face of the driving pulley 38. This spring 44 tends to normally carry the projections from the driving pulley out of engagement with those of the gear 41, and at such time the driving pulley 38 may run idly. When the driving pulley is to be used to operate the parts of the machine, its lugs or projections 39 are forced in the path of the lugs or projections 40, by means of a cam 45, or the equivalent thereof, provided at the outer end of the shaft 37 and having engagement with the outer end of the head of the said driving pulley.

A gear 46 is mounted on the shaft that extends out from the outer face of the forwardly extending member 10[a] of the frame standard A, and this gear 46 is provided with a broken cam surface 47 adapted to be engaged by a clutch 48 of any suitable or approved description, which clutch is secured upon the hub section *c* of a carriage C mounted to revolve upon a fixed shaft 49 extending inward from the aforesaid forward member 10[a] of the frame standard A, as is particularly shown in Fig. 1. This clutch 48 has such relation to the gear 46, that an intermittent motion is imparted to the said clutch during the revolution of the said gear, and the gear 46 revolves continuously, being in mesh with the smaller gear 43 car-

ried by the shaft 37. Below and to the rear of the gear 46 a spud axle 51 is secured to the outer face of the frame member 10[a], and on this axle a pinion 50 is mounted to revolve, that meshes with the teeth of the larger gear 41, as is also shown in Fig. 1, and the pinion 50 engages with another pinion 52, likewise at the outer face of the member 10[a], and the pinion 52 is secured upon a shaft 53, which shaft extends beyond the inner face of the frame member 10[a] and is provided with a pinion 52[a] at its inner end.

In addition to the hub *c*, the carriage for the apples consists of opposing sleeves 54, that are connected with the hub by means of suitable arms 54[a], and in each of the said sleeves 54 a hollow shaft 55 is mounted to turn, and at the forward end of each of said shafts a fork C′ is secured, upon which forks the apples to be pared and cored are placed, and at the opposite or rear end of each shaft 55, a pinion 56 is secured, which pinions are adapted to engage with the pinion 52[a] when a fork is brought to a rearward horizontal position, or the position that it is to occupy when an apple is to be pared, the pinion 52[a] then rotating the fork carrying shaft 55 by meshing with the pinion 56 of such shaft.

A push bar 57 is held to slide in each of the hollow shafts 55, and these push bars 57 extend out beyond the opposite end of the said shafts and project normally beyond the outer ends of the forks C′. When an apple is placed upon a fork, the push bar 57 belonging to the shaft of that fork is pressed rearwardly, but after an apple has been pared and cored and has been removed from the fork by means of the push bar 57, and as the carriage C is shifted to bring another fork into operative position, the push rod or bar 57 of the ascending fork having a corer attached, is made to engage with a cam 58 on the inner face of the forward member 10[a] of the frame standard and is thereby forced outward, dislodging the core from the fork.

The knife D employed for paring is of the customary type and is given the necessary elliptical and rotary movement by a mechanism D′ of any suitable description, and the said mechanism together with the support for the fork C′ is shown attached to the sliding frame through the medium of a bracket 59, which is mounted to slide in the slot or opening 10[b] in the upper member 10 of the frame standard A, as is shown in Fig. 1.

When the sliding frame B is on its rearward or return stroke and while the cam rib is yet in the cam race 20, the carriage C is practically in horizontal position with the inner fork opposite the paring knife D, the knife being then in position to commence operation on the apple, and the pinion 52[a] will be in mesh with the pinion 56 of the rearmost fork shaft 55, the clutch 48 being then not in action, and therefore the carriage C remains stationary and continues to so remain until the knife D has completely pared the apple. As the frame B continues the rearward or return movement, the rear fork shaft 55 is revolved and continues to so revolve while the knife is moving to the rear and around the apple to pare the same. When the cam rib 30 has left the race 20, the pinion 29 of the wheel 27 engaging the rack teeth 19 continues the rearward movement of the said sliding frame B. As soon as the paring operation is completed, which is at the completion of the rearward or return stroke of the sliding frame B, the pin 31 engages the upper face of the lever 32 and forces the push member 36 outward to carry the apple upon a corer to be hereinafter described. As the pin 31 passes the lever 32, the clutch 48 again takes hold of the gear 46, and the cam rib 30 on the wheel 27 again engages the cam rib 31 of the sliding frame B, and commences again the forward or return movement of the frame B and the carriage C carrying the apple receiving forks is revolved to shift the position of the forks. As the fork having the core attached is raised, the push rod 57 of that fork is operated in an outward direction by the cam 58 as has been stated to dislodge the core, as is shown in Fig. 1. The push member 36 is returned at the commencement of the forward stroke, or a movement of the sliding frame B, by the engagement with said lever of a projection from the wheel 27, or by equivalent means.

The slicing attachment is as follows: A beam A′ is secured to the outer end of the body member 10 of the frame standard A, and from the inner end portion of the beam A′ a hanger 60 is downwardly carried, and said hanger 60 is secured in any approved manner to the upper portion of a slicing knife E. This slicing knife E is shown in detail in Figs. 7 and 8, and consists of a ring-like body 61, and a series of substantially wedge-shaped or tapering knives 61[a], that radiate from the inner face of the ring body 61, and at the inner end portions of said knives a circular opening 61[b] is formed. A second hanger 62 extends down from the forward or outer end of the beam A′. This latter hanger 62 is provided at its lower end with a preferably integral head 63 which inclines from the front downward in direction of the rear, as is indicated in Fig. 5. A shaft 64, preferably tubular, is passed through the forward end of the lower portion 63 of the hanger 62, and is secured to said hanger by a set screw 65, or the like. The inner end of the shaft 64 is supported by being telescoped over the shaft 49 that supports the fork carrier C, as is shown in Fig. 3.

At the rear of the outer hanger 62 a sliding cross head F is located. This cross head consists of a body 66 having the same inclination as the lower portion 63 of the hanger 62,

and a downwardly extending substantially central member 67. A coring shaft 68, also preferaby hollow, is passed loosely through an opening at the rear end of the lower section of the outer hanger 62 and through the rear end portion of the body 66 of the cross head F, being secured to said body portion of the cross head by a suitable set screw 69, while the opposite or forward end portion of the body 66 of the cross head F is made to slide freely on the fixed shaft 64.

A lever 70 is pivotally attached to the rear face of the extension beam A′, and the lower portion of this lever 70 is bifurcated to receive between its members the rear end portion of the body 66 of the cross head F, as is shown in Fig. 5. The lever 70 is pivotally attached to one end of a link 71, the other end of which link is pivotally secured to the forward end of the sliding frame B, as is shown in Fig. 2. At the rear end of the coring shaft 68 which passes through the opening 61[b] in the slicing device E, a coring knife 72 is secured, extending well beyond the said rear end of the coring shaft, as is shown in Fig. 4. This coring knife 72 is segmental in cross section and beneath this knife 72 a plunger 73 is located, being adapted for sliding movement in the said shaft 68, as is also shown in Fig. 4. The plunger 73 is in the form of a tube or a cylinder and is closed at its outer end, being usually open at its inner end, and in the said plunger 73 at each of its sides a longitudinal slot 74 is produced, the two slots being parallel, and a pin 75 is passed through the said slots 74 at what is normally their inner ends, and the said pin is secured in the said coring shaft, while a spring 76 is made to engage with the pin 75 and with the closed outer end of the said plunger, whereby the said spring normally keeps the plunger in an outer position, and during the coring operation the plunger exerts end pressure upon the core and serves to maintain the core upon the fork supporting the apple being cored.

Between the sliding cross head F and the slicing device E, a guide hanger 78 is carried down from the said extension beam A′. This guide hanger 78 is secured to a body portion 77 that has the same inclination as the body portion 63 of the outer hanger 62, and from the central portion of the body 77 of the hanger 78 a member 79 extends downward. The fixed shaft 64 passes through the forward end portion of the body 77 of the guide hanger 68, and is secured thereto by means of a set screw 80, or the like, as is illustrated in Fig. 1, while the coring shaft 68 has free sliding movement at the rear end of the said body 77 of the said hanger 78.

In connection with the fixed shaft 64 and the coring shaft 68, I employ a shifting shaft G, which shaft is provided with a straight body section 81 that passes through the pendent member 67 of the sliding cross head F, and the said straight body portion 81 of the shifting shaft has sliding movement in the corresponding pendent member 79 of the guide hanger F′, since said hanger in its entirety is so designated on the drawings. At the rear end of the straight body section 81 of the shifting shaft G an upwardly inclined section or member 83 is formed and at the rear end of the said inclined section or member 83 an upwardly extending member or section 84 is provided, and this terminal member 84 is provided with a flat outer face, as is shown in Fig. 9.

In connection with the shifting shaft G, I employ a retaining device H which is clearly shown in detail in Fig. 6. It consists of a body member 85 and a short rear end member 86 together with an opposing longer end member 87, and this longer member 87 may be termed a retaining arm, and the said end members 86 and 87 are provided respectively with openings 88 and 88[a] through which the fixed shaft 64 loosely passes, since the retaining device H is adapted to have a sliding movement on said fixed shaft, and when the retaining device H is in position the retaining arm 87 thereof faces the cutting device E, as is shown Figs. 1 and 2. The retaining arm 87 is provided with a longitudinal diagonally located slot 89, and through this slot the members or sections 83 and 84 of the shifting shaft G extend. A spring 90 is coiled around the fixed shaft 64, having bearing against the retaining arm 87 of the retaining device and against the body portion 77 of the guide hanger F′, and this spring serves to hold the retaining device in its normal position on the said shaft 64. In the operation of this portion of the machine, while the apple is being pared, which is at the rearward movement of the sliding frame B, as has been stated, the link 71 draws the coring shaft 68 backward through the opening 61[b] in the slicing device E, and the coring knife 72 then passes over the fork C′ carrying the apple being pared, coring said apple during the paring operation, while the plunger 73 holds the core upon the fork. The retaining arm 87 of the retaining device H is at this time in the substantially vertical position shown in Figs. 1 and 2, since the members 83 and 84 of the shifting shaft G will be some distance to the rear of the said retaining arm 87, and it may be here remarked that in Figs. 1 and 2 the retaining arm 87 is not shown in a full vertical position but in a position intermediate of the vertical and horizontal. When the coring knife 72 has passed entirely through the apple, the push member 36 will have been forced out in engagement with the apple and will in turn force the cored and pared apple well forward upon the coring knife 72, the pusher 36 following the coring knife in its return move-

ment for a short time, the sliding frame B meanwhile moving forward. As the frame B moves further forward, the inclined portion 83 of the shifting shaft G is carried forward through the diagonal slot 89 in the retaining arm 87 of the retaining device and the said arm is thereby drawn upward to a horizontal position immediately in front of the coring knife 72, and the flat face of the upper or terminal member 84 of the shifting shaft G will engage with the rear face of the retaining arm 87. Consequently the retaining device is carried forward with the forward movement of the shifting shaft, the coring shaft and the sliding frame, and the cored and pared apple is forced to pass the blades 61ª of the slicing device, causing a clean and a clear cut of the apple into as many parts as may be determined by the knives employed. As the retaining device H moves forward, the spring 90 is placed in tension. Upon the return movement of the coring and the shifting shafts, the inclined section 83 of the shifting shaft passes through the slot 89 of the retaining arm 87 well to the rear thereof, thus bringing the said arm down to a horizontal position entirely out of the way of the movement of the coring knife in its coring operation and the movement of the paring knife in its operation.

Having thus described my invention, I claim as new and desire to secure by Letters Patent,—

1. In an apple paring machine, the combination with a revolving carriage, forks revolubly mounted upon the carriage, driving mechanisms for the forks and the carriage, a paring mechanism operating at the forks of the carriage, a stationary slicing device, a corer having movement to and from the forks through the slicing device, a retaining device mounted to slide and having rocking movement to and from the corer, a shifting mechanism, a connection between the shifting mechanism and the retaining device for moving the latter, and means for simultaneously moving the corer and shifting mechanism to carry the corer and the retaining device to cutting relation with the slicing device.

2. In an apple paring machine, the combination with an apple paring mechanism including a fixed frame, a sliding frame, a revoluble fork adapted to receive the apples to be pared, which fork is carried by a fixed frame, and a driving mechanism for the fork and the sliding frame, of an extension from the fixed frame, a shaft supported by said extension, a coring shaft having movement to and from the fork and supported by said frame extension, a shifting shaft having concerted movement with the coring shaft, a slicing mechanism through which the coring shaft passes, a device for retaining an apple on the coring shaft until it has passed the slicing device, and a connection between the shifting shaft and retaining device, whereby to carry the latter to and from the coring end of the coring shaft and to move said retaining mechanism with the coring shaft in its return passage through the slicing device.

3. In an apple paring machine, the combination with an apple carrying revoluble fork, a paring knife mounted to operate around the fork and a pushing member for forcing the apple from the fork, of a guide shaft, a shifting shaft and a coring shaft mounted to conjointly slide upon the guide shaft, the coring shaft being adapted in one of its movements to pass over the fork, a slicing mechanism through which the coring shaft passes, a retaining arm mounted to revolve upon the guide shaft, and means for rocking the said arm at the front of the coring shaft and carrying said arm with the coring shaft upon the return movement of the latter, and means for imparting movement to the coring and the shifting shafts.

4. In an apple paring machine, the combination with an apple carrying revoluble fork, a paring knife mounted to operate around the fork and a pushing member for forcing the apple from the fork, of a fixed guide shaft, a hollow coring shaft provided with a coring knife at its inner end, and a spring-controlled plunger beneath said knife, the cutting end of the coring shaft being opposite the said fork, a shifting shaft connected with the coring shaft, and adapted to move therewith, a fixed knife consisting of an annular body, interiorly-located, radial blades, between the inner ends of which blades the said coring shaft passes, a retaining arm pivotally mounted upon the guide shaft, means for moving the said retaining arm to a horizontal or a vertical position in front of the knife, and means for carrying the retaining mechanism back with the coring shaft at the return movement of the latter.

5. In an apple paring machine, the combination with an apple carrying revoluble fork, a paring knife mounted to operate around the fork, and a pushing member for forcing the apple from the said fork, of a support, a guide shaft secured to the said support, a coring shaft provided with a knife at its inner end, facing the fork, and a spring-controlled plunger beneath the knife, a shifting shaft having an upwardly and rearwardly inclined section at its inner end portion, and a vertical terminal extending from the said inclined section, a connection between the coring shaft and the shifting shaft slidably mounted upon the fixed shaft, a tension controlled retaining arm mounted on the guide shaft for vertical movement to a position in front of the knife of the cutter shaft, the said arm being provided with a diagonal slot therein through which the inclined section of the

shifting shaft passes, a fixed knife secured to said support and comprising an annular body and interiorly located blades, the coring shaft passing between the inner ends of the blades, and means for imparting end movement to the said coring shaft and the shifting shaft.

6. In an apple paring machine, a coring and a slicing attachment, the machine consisting of a supporting beam, a guide shaft fixedly supported by said beam, a tubular coring shaft, a shifting shaft provided with an inclined section at its inner end, and a vertical terminal at the same end, a cross head connecting the coring and the shifting shafts, the cross head being adapted to slide upon the guide shaft, a knife supported from the said beam, comprising an annular body and interiorly located blades extending radially from the said body, the coring shaft passing between the inner ends of the said blades, a coring knife at the inner end of the coring shaft, a plunger located beneath the said knife, and a tension controlled retaining arm mounted to slide and rock upon the guide shaft, the said retaining arm being provided with a longitudinal diagonal slot through which the inclined end portion of the shifting shaft passes, and a lever connection between the said beam and the said sliding cross head.

7. In an apple paring machine, a stationary slicing knife comprising an annular body, blades radially disposed within the said body, the said blades being substantially wedge shaped, a circular space intervening the inner end portions of the blades, and a coring shaft mounted to slide and provided with a coring knife, the said coring shaft having movement in the space between the inner ends of said blades.

8. In an apple paring machine, a coring device comprising a shaft provided with a coring knife, a stationary slicing knife having an annular body, and blades radially disposed within the said body, a circular space intervening the inner ends of the blades, the said coring device having free sliding movement in the space between the inner ends of the said blades and adapted when moved in one direction to core an apple, and means for retaining the cored apple upon the coring device until the apple has passed the slicing knife, during the movement of the coring device in the other direction.

9. In an apple paring machine, a slicing knife consisting of a ring-like body and substantially triangular blades radiating from the inner face of the said body, a space intervening the inner ends of the said blades, a coring shaft having movement in the space between the inner ends of the blades of the knife, a retaining arm adapted to travel with the coring shaft in one of its movements opposite the coring knife, and means for carrying the retaining arm into and out of action.

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

JOHN F. KOHLER.

Witnesses:

J. FRED ACKER,

JOHN P. DAVIS.