

No. 892,393.

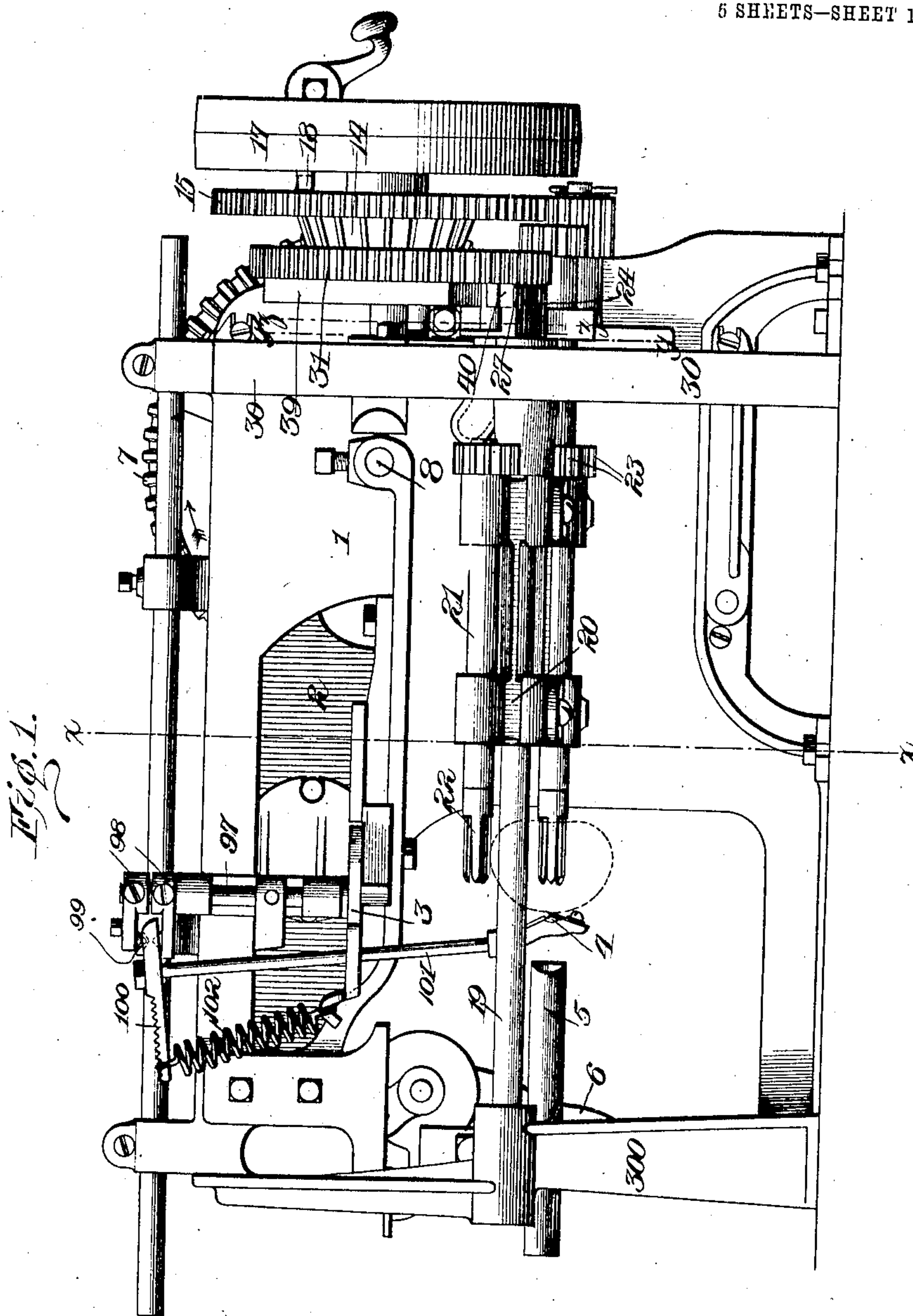
PATENTED JULY 7, 1908.

W. H. BOUTELL.

APPLE PARING MACHINE.

APPLICATION FILED JUNE 4, 1900. RENEWED MAY 27, 1905.

6 SHEETS—SHEET 1.



Witnesses:

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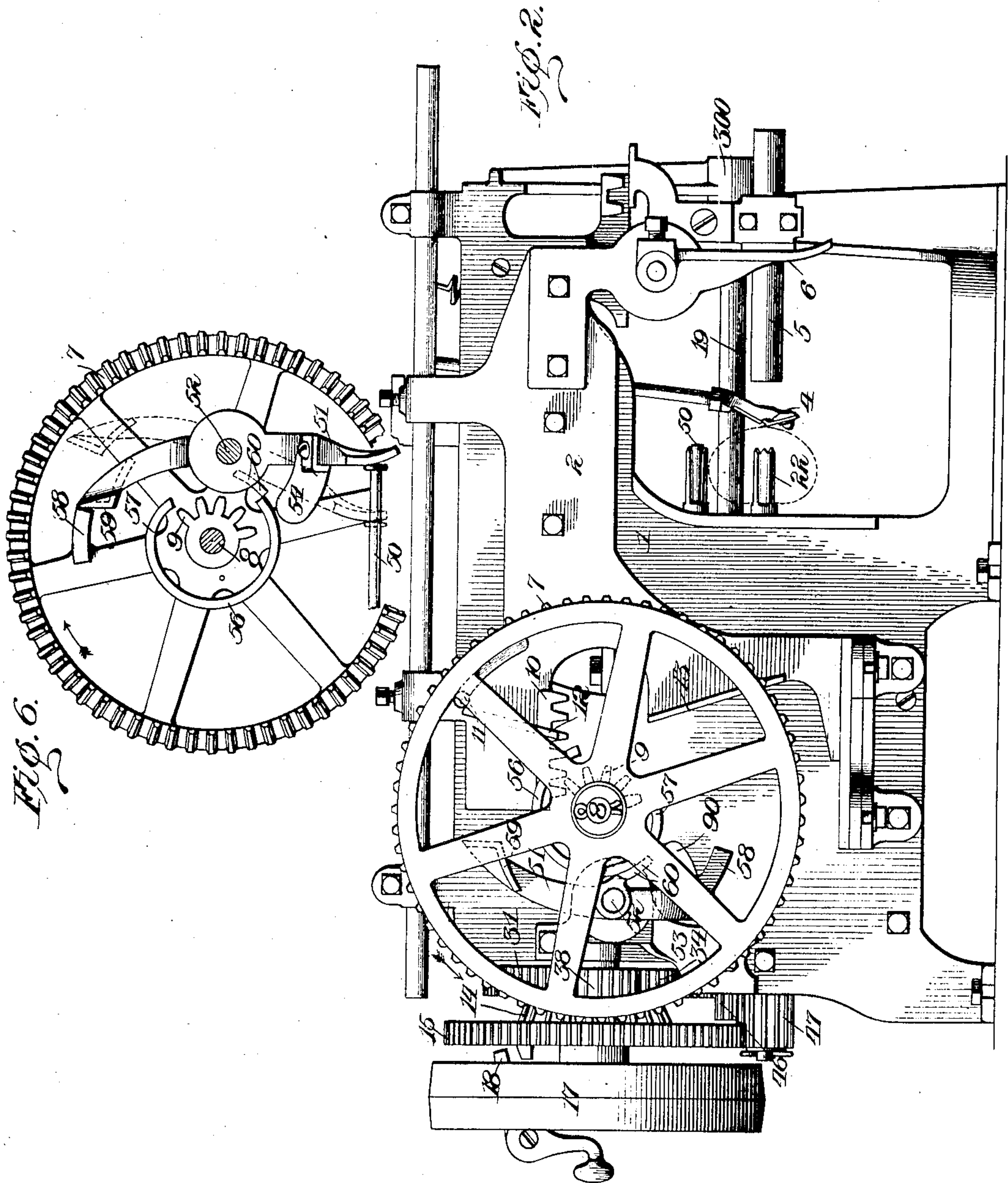
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5 SHEETS—SHEET 2.



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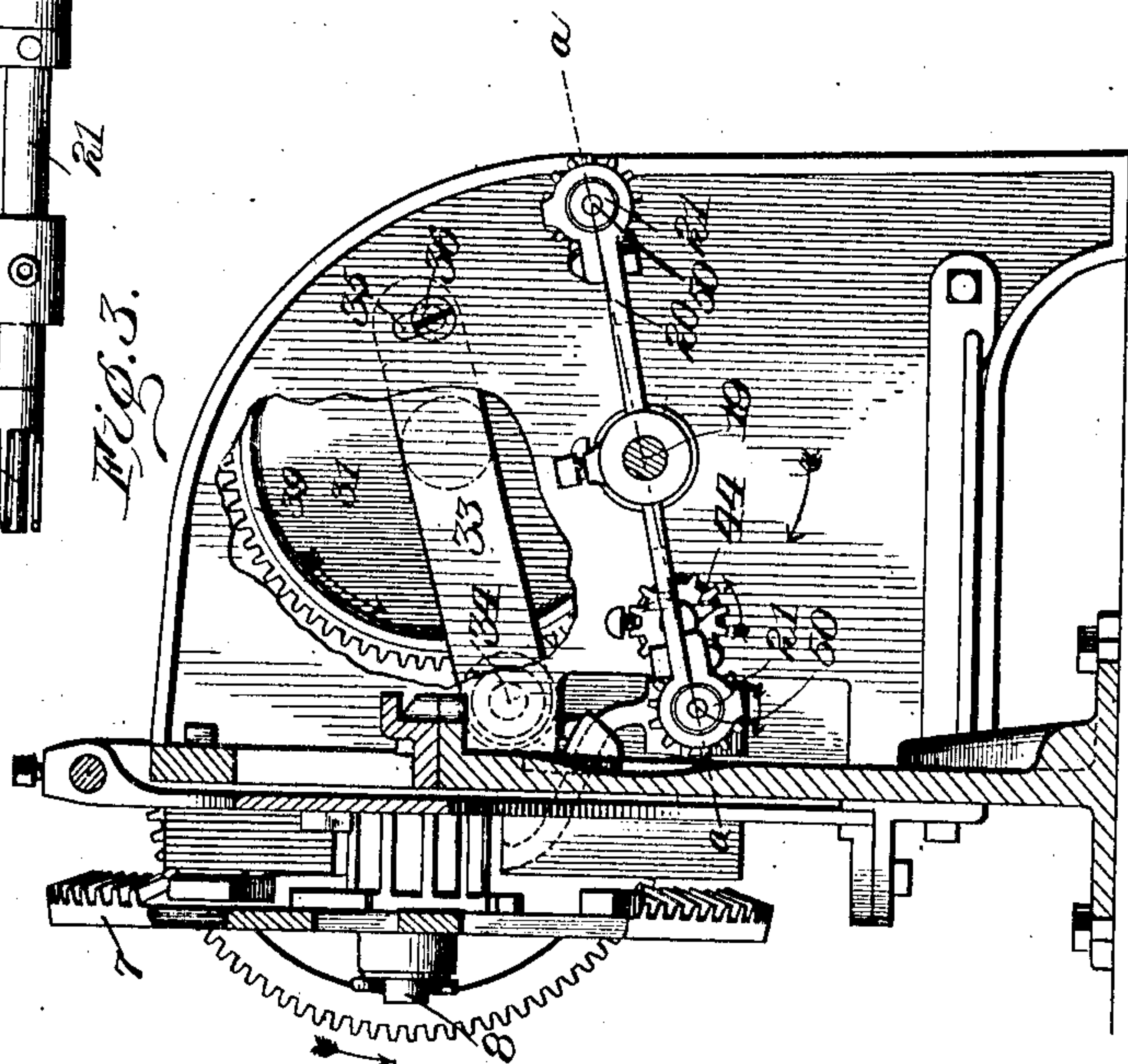
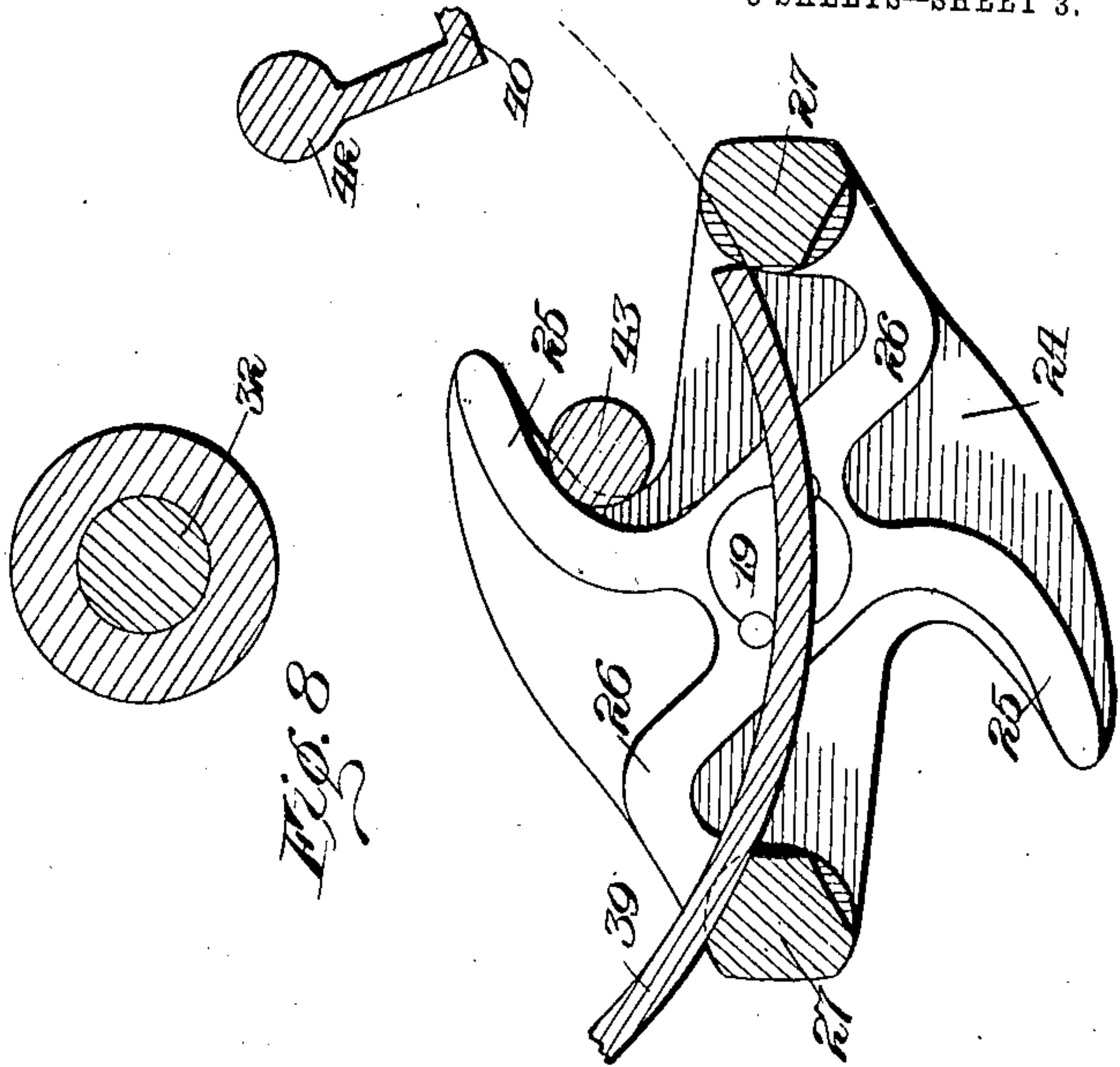
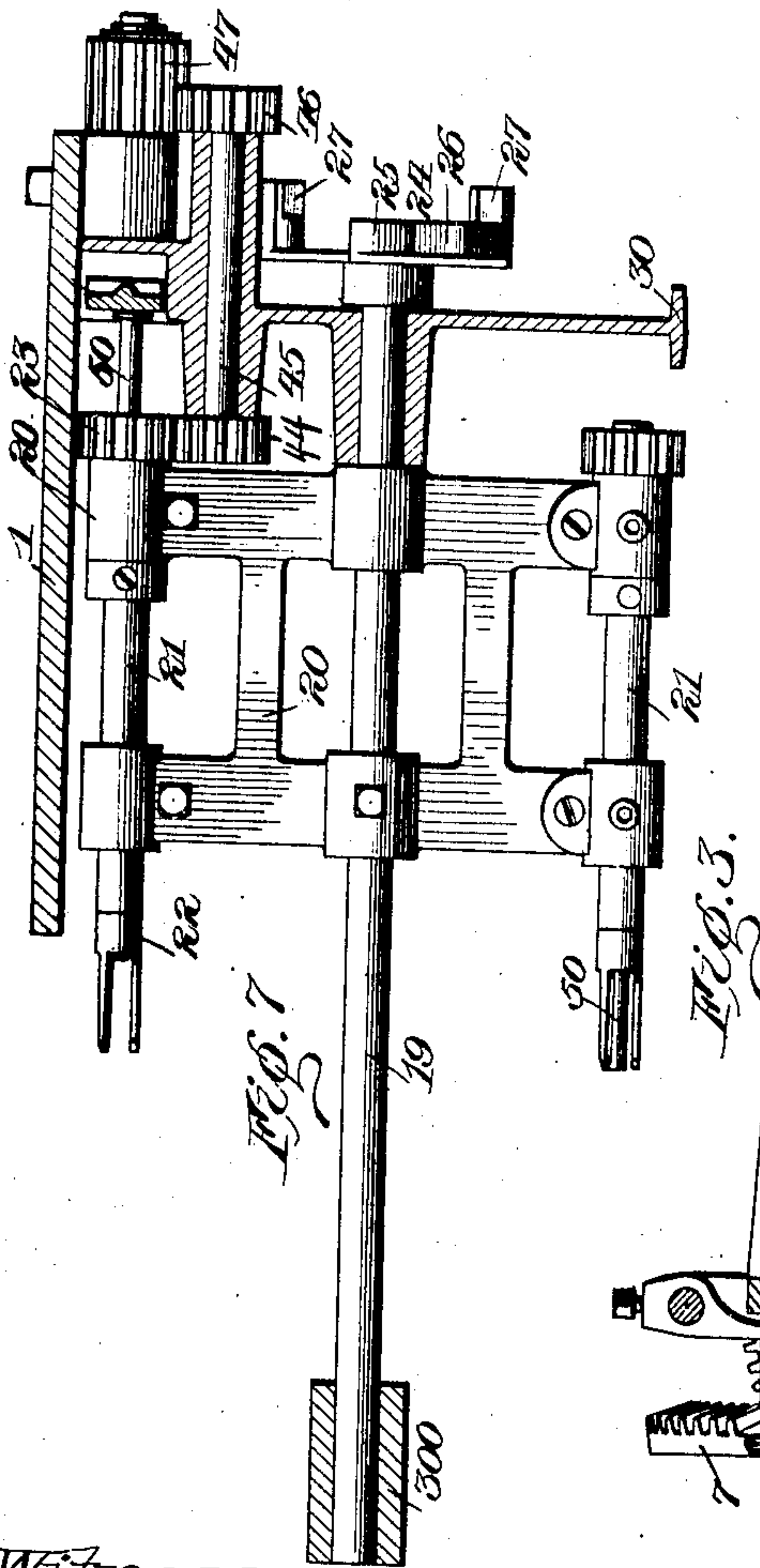
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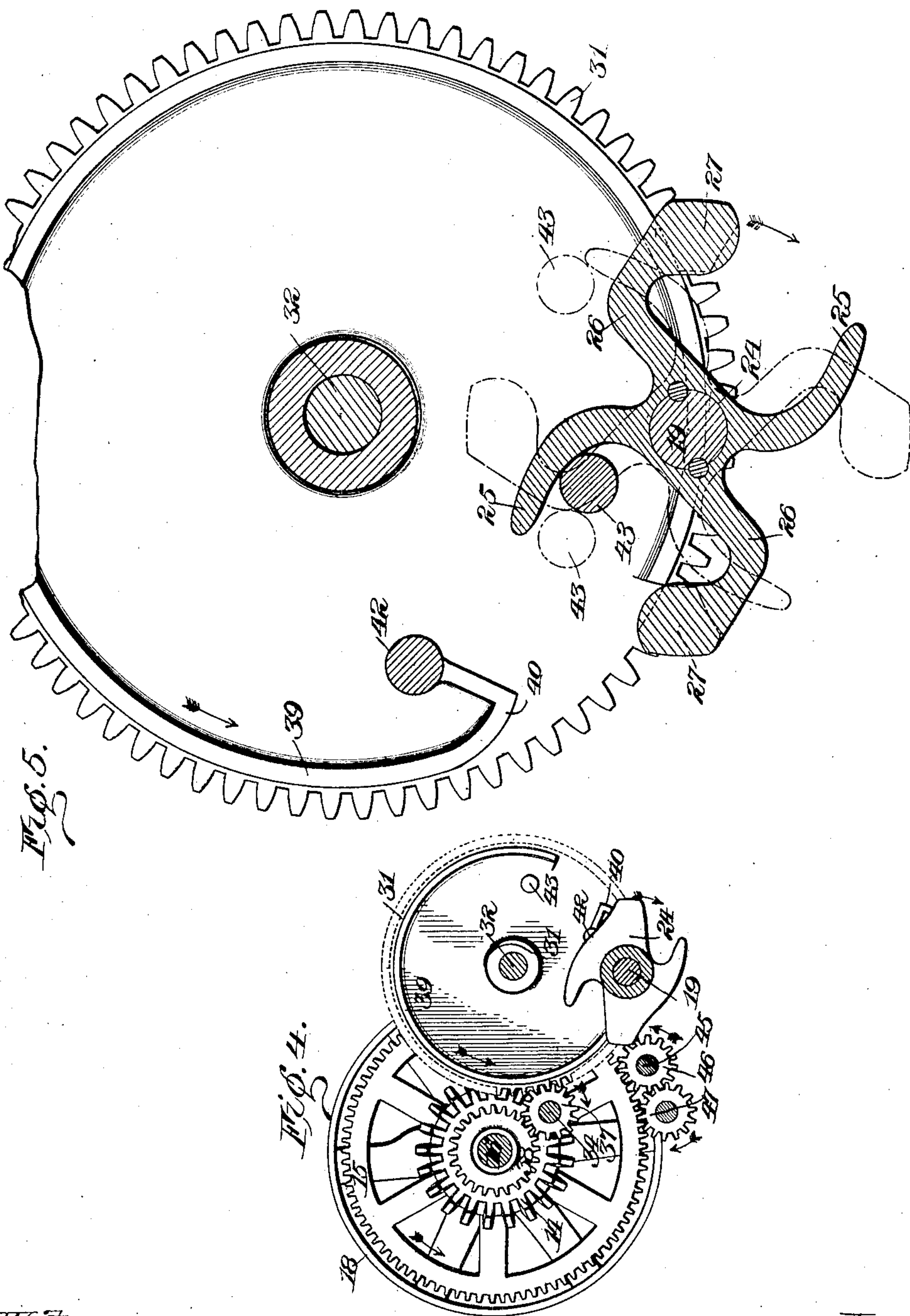
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5 SHEETS—SHEET 4.



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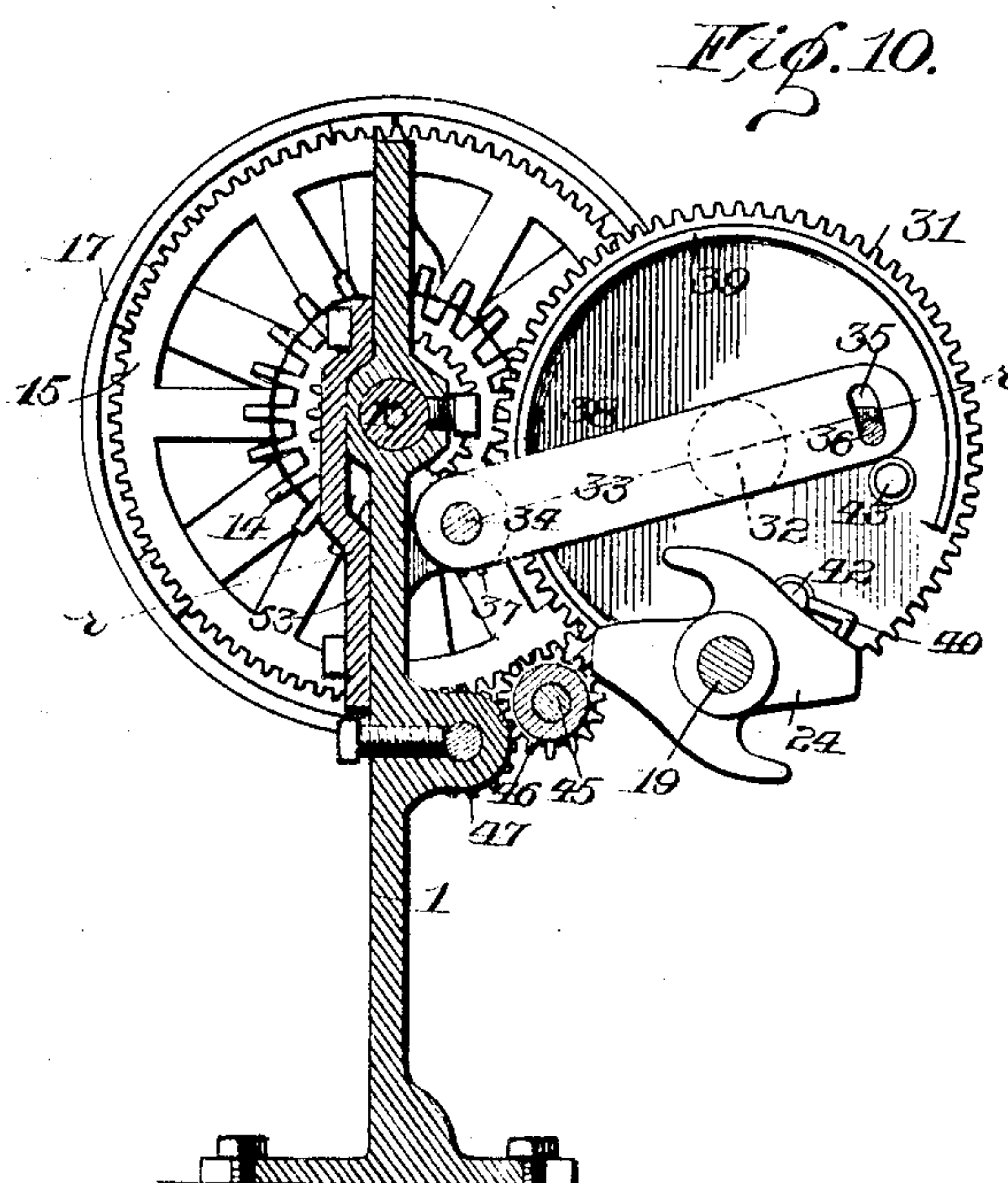
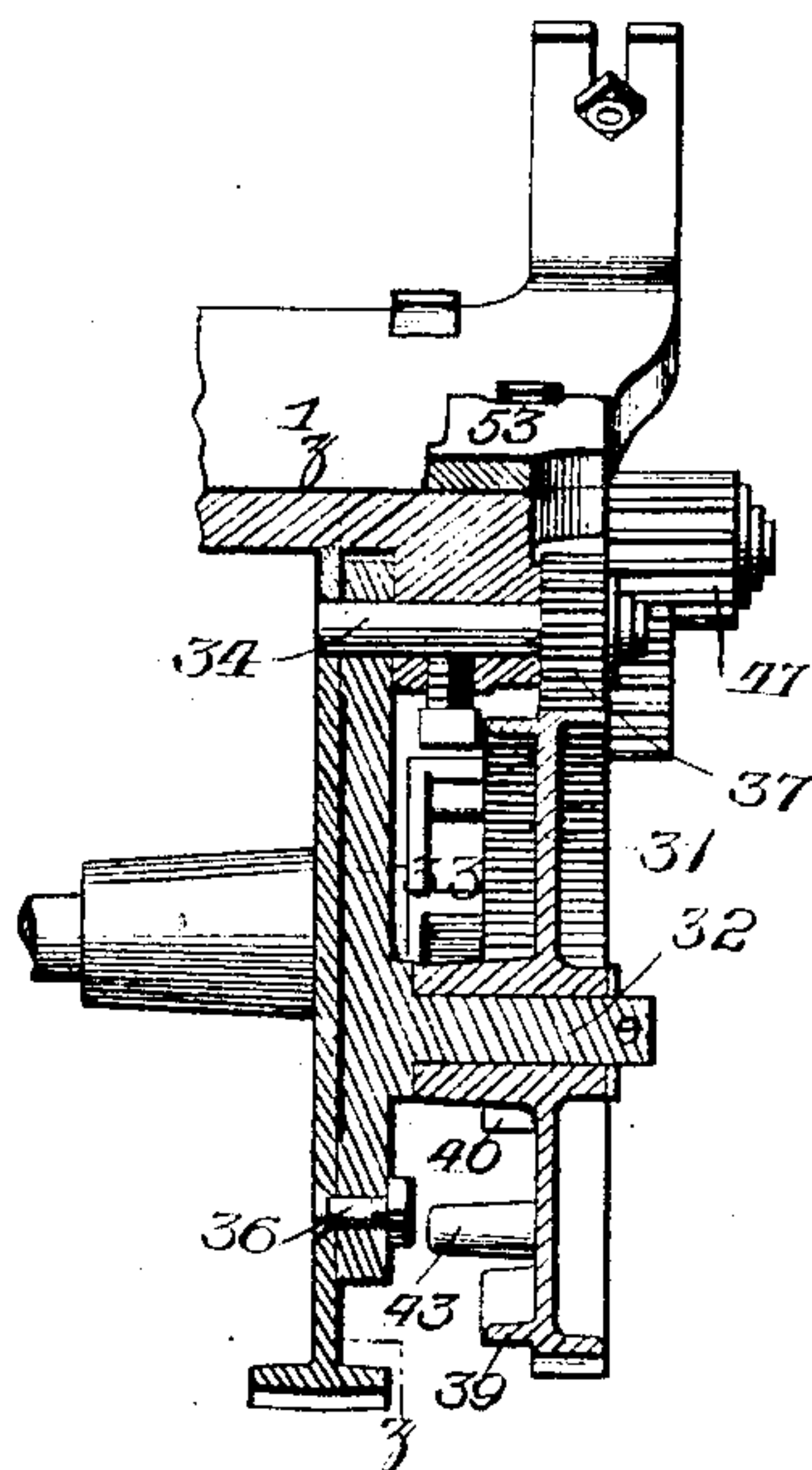
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. BOUTELL, OF ROCHESTER, NEW YORK, ASSIGNOR TO BOUTELL MANUFACTURING COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

APPLE-PARING MACHINE.

No. 892,393.

Specification of Letters Patent.

Patented July 7, 1908.

Application filed June 4, 1900, Serial No. 19,032. Renewed May 27, 1905. Serial No. 262,682.

To all whom it may concern:

Be it known that I, WILLIAM H. BOUTELL, of Rochester, in the county of Monroe and State of New York, have invented certain
5 new and useful Improvements in Apple-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
10 part of this specification, and to the reference-numerals marked thereon.

My present invention relates to apple-paring machines and particularly to those operated by power, and has for its object to provide improved means for operating and securing the fruit fork support, whereby the
15 latter are at rest and within convenient reach of the operator without the necessity of arresting the motion of the machine, or without liability of his hands becoming caught in the operating parts, and to these and other ends the invention consists in certain improvements in construction and combinations of parts, all as will be hereinafter
20 fully described, the novel features being pointed out in the claims at the end of this specification.

In the drawings: Figure 1 is a front elevation of a paring machine containing my improvements. Fig. 2, a rear view of the same. Fig. 3, a sectional view on the line $x-x$ of Fig. 1. Fig. 4, a sectional view on the line $y-y$ of Fig. 1, and Fig. 5, an enlarged sectional
35 view taken on the line $z-z$ of Fig. 1. Fig. 6, a front view of the operating gear showing the core-doffer operating mechanism. Fig. 7 is a horizontal sectional view on the line $w-w$ of Fig. 1, and Fig. 8 is a vertical sectional view on the line $v-v$ of Fig. 1 looking in the direction indicated by the arrows. Fig. 9 is a sectional view on the line $r-r$ of Fig. 10. Fig. 10 is a similar view on the line $z-z$ of Fig. 9.

45 Similar reference numerals indicate similar parts.

The machine embodies the main frame, indicated by 1, provided with end plates 30 and 300, and on which operates a reciprocating carriage 2 having a suitable turn-table 3 carrying a paring knife 4 thereon, and at the
50 outer front end of the carriage is a pivoted coring knife 5 and a fruit doffer arm 6. The turn-table 3 is mounted upon a shaft 97 pivoted in vertical bearings on the carriage and

is adapted to be rotated as the carriage is reciprocated by suitable connections between it and the frame, such, for instance, as contained in my pending application, No. 674,918. At the upper end of the shaft 97
60 are arranged two brackets 98 having opposing pointed projections 99, which cooperate with slight depressions formed in the top and bottom of an arm 100 to which the rod or arm 101 carrying the paring knife 4 is attached. The outer end of the arm 100 is
65 serrated for the engagement of the spring 102 connected to the turn-table 3, as shown. The employment of the two bearing-points 99 for the knife arm permits the free movement of the latter and prevents it from becoming accidentally disengaged, as when
70 paring at high speed rough or irregular fruit.

The carriage may be reciprocated in any suitable manner, but I preferably operate it
75 by a main bevel gear-wheel 7 journaled upon a stud or projection 8 on the main frame and provided with a mutilated pinion or gear 9 adapted to engage a rack 10 on the carriage and also with a pin 11 adapted to engage
80 flanges or projections 12 and 13 arranged on the rear of the carriage, the relation of the parts just described being such that the carriage is reciprocated slowly to move the paring knife toward and around the fruit by the
85 engagement of the rack and pinion and is operated rapidly outwardly or in the opposite direction by the engagement of the pin and the flanges 12 and 13, and as this construction is claimed in a pending application
90 I make no claim herein to it.

The teeth of the main gear 7 mesh with a corresponding bevel gear 14 formed with or secured to a larger driving gear 15 arranged upon the shaft 16 journaled in the frame and
95 upon the outer end of said shaft is a driving belt pulley 17 between which and the gear 15 is a suitable clutch or connection, such, for instance, as the pivoted arm 18, shown in Figs. 1 and 2. At the front of the machine
100 is arranged a shaft or arbor 19 journaled in plates 30 and 300 upon which is secured a rotatable fork-reel embodying a plate or frame 20 in the sides of which are journaled the hollow fork-shafts 21 having at one end
105 the fruit forks 22 and at the opposite end operating gears or pinions 23. By employing a long shaft for the reel with a bearing at the outer end, a firm support is secured and there is no liability of the parts becoming
110

broken when driven rapidly by power. Secured to the shaft 19 at the rear end of the fork-reel, and, preferably, outside the frame 30, is provided an irregular casting or head 24 provided with a pair of curved arms 25 projecting from opposite sides of the center of rotation and also the curved arms 26, as shown particularly in Fig. 5, arranged between the arms 25 and having upon their outer sides pins or projections 27. The head 24 is located outside of the plate 30 of the main frame and in proximity to a large gear-wheel 31 provided with gear-teeth and mounted upon a stud or arbor 32 on a pivoted plate 33, shown in dotted lines in Fig. 2, one end of said plate 33 being pivoted upon a stud 34 and the other end provided with a slot 35 through which passes an adjustable bolt 36, by means of which connection the plate and gear may be adjusted toward and from the arbor of the fork reel to take up any wear of the parts. The teeth on the gear 31 mesh with a small pinion 37 mounted on the stud 34 which is driven by a pinion 38 formed with or connected to the operating gear 15 and upon the face of the gear 31 is provided a segmental flange or concentric projection 39 having at one end a cam shoulder 40, said gear being also provided with pins 42 and 43 located near opposite ends of the concentric cam surface 39 and at or near opposite sides of the opening between the ends of the latter. The gears 23 on the fork shafts are adapted to mesh successively with a pinion 44 secured to an arbor or stud 45 inside the frame, while upon the outer end of said arbor 45 is a pinion 46 meshing with a pinion 47, which latter in turn meshes with the operating gear 15, as shown particularly in Figs. 2, 3 and 4.

50 indicates the core-doffers extending through the hollow fork-shafts 21 and adapted to doff the fruit cores from the forks, the rear end of the core-doffer of the fork containing the fruit to be pared being in line with the end of the core-doffer lever 51 pivoted upon a stud 52 on a casting or bracket 53 at the rear side of the main frame of the machine, so that when said doffer lever is moved to the position shown in dotted lines in Fig. 6, the doffer stem will be projected and the core removed. The doffer lever 51 is pivoted loosely upon the stud 52 and its lower end projects through a slot 90 in the main frame 1 and is provided with a detachable bracket or plate 54, which not only serves to hold the arm upon its pivotal stud, thus simplifying the construction, but covers to some extent the aperture in the main frame or plate 1.

The means for operating the doffer lever inwardly, in the present embodiment, consists of a flange 56 formed with or secured to the rear face of the gear 7, and concentric with the center thereof, excepting at the end 57, which extends somewhat toward the cen-

ter of rotation forming a cam, and the means for operating it outwardly to doff the core consists of a stud or projection 58 on the gear 7, which is preferably concentric with the center of motion. The doffer lever is provided near its outer end with the angular projection or rib 59 coöperating with the stud 58 and near its center with a curved stud or flange 60 coöperating with the rim or flange 56 on the gear 7, the construction of these parts being such that during the rotation of the gear in the direction indicated by the arrow in Fig. 6, when the projection 58 strikes the projection 59 on the end of the doffer lever, it will move it out to the position shown in dotted lines and maintain contact with the lower portion of the flange 59, which is then concentric with the lever pivot, thereby ejecting the core and holding the doffer pin or rod projected, until the cam-end 57 engages the stud 60 on the doffer lever, when the lever will be returned to normal position and will remain locked by the engagement of the concentric flange 56 with the stud until the projection 58 again engages the end of the lever. By means of this construction the doffer lever is positively operated and is held locked so as to prevent accidental movement and derangement of parts.

From the above description the operation of the parts will be readily understood. Assuming the machine to be in the position shown in Fig. 1 with the fruit upon the inner fork-shaft, the gear 7 is operated in the direction of the arrow drawing the knife inwardly and rotating the fork shaft causing the paring operation in the ordinary manner. During the paring operation, one of the paring forks on the reel or fork support is located at the front, as shown in Fig. 3, and the operator places the next fruit to be pared upon the outer fork and the reel is locked from movement at this time by the engagement of the projections or studs 27 on the head 24 with the outer periphery of the rim or flange 39 of the gear 31. While the carriage is in its outward position, the pin 43 on the gear 31 engages one of the arms 25 connected to the fork reel and turns it a quarter of a revolution to the position shown in dotted lines in Fig. 5, the pin or projection 27 being at this time between the ends of the flange 39 and then, during the continued movement of the gear, the pin 42 strikes the outer curved surface of the arm 26 turning the reel-head the remaining quarter of a revolution to the position shown in full lines, so as to bring the projection 27 against the outer surface of the flange 39 beyond the cam surface 40, thereby holding the reel rigidly in position with the fork carrying the unpared fruit in position to cause the proper paring operation and the gear 23 on the end thereof in mesh with the gear 44 so that the

fork carrying the fruit is rotated as before and the paring operation is practically continuous. As soon as the paring operation is completed and while the carriage and paring-head are moving outwardly, the projection or stud 58 on the gear 7 engages the core doffer lever and ejects the core from the fork, said doffer-lever then being locked by the flange 56, as previously described. The cam surface 40 on the wheel 31 is for the purpose of preventing the lug 27 from catching on the end of the segmental rim or flange 39 and to insure its proper positioning, if, by reason of a slight rebound, said lug should not be held outward far enough and in line with the flange after the pin 42 leaves the upper side of the arm 26. The upper or outer sides of the arms 26 are curved away from the lugs 27 so that the parts will not catch and be broken even if the machine should be operated backwardly.

It will be noted that the gears 23 on the fork and the gear 44 for operating them are so arranged relatively to the center of motion of the reel that as the reel is rotated in the direction of the arrow in Fig. 3, the operating faces of the fork-gears and operating gear 44 are always opposed, and the movement of the reel to bring them into engagement will turn the fork in the proper direction for paring, preventing lost motion and the breaking of the teeth, if their outer ends should happen to first contact when brought into engagement. By the term "opposing faces" of the gears in the present construction will be understood the lower faces of the gear 44, which are descending and the upper faces of the teeth on the fork-gears 23, which are rising to the position shown in Fig. 3.

The arms 25 and 26 on the fork-reel, which are operated upon by the pins 42 and 43, are, it will be noted, separate from the locking studs 27, which hold the reel stationary, excepting that they are in one casting, so that I am not only able to bring the centers of the reel and gear closer together and economize space, but the wear of the locking parts, if there should be any will not injuriously affect the reel-operating devices or vice versa.

An economy of space in addition to the feature of the fork rotation in the proper direction is effected by locating gear 44 between the centers of rotation of the reel and of the fork, because I am enabled to employ an upwardly cutting paring-knife, which also moves between the fork and reel center, and the parings will, therefore, fall at the front of the machine.

I claim as my invention:

1. In a paring machine, the combination with a fork-shaft, a core-doffer cooperating therewith, and a pivoted operating lever, of a rotary wheel operating on a center parallel with that of the lever and having doffer-operating projections thereon adapted to alter-

nately engage the lever upon opposite sides of its pivot.

2. In a paring machine, the combination with the main frame, a reciprocatory carriage, paring devices operated by the latter and a wheel for reciprocating the carriage by the continued rotation in one direction, of a fork-shaft, a core-doffer, a lever for operating the doffer pivoted on a center parallel with the axis of the wheel, and projections operated by the wheel and engaging the lever upon opposite sides of its pivot.

3. In a paring machine, the combination with a reciprocating carriage, paring devices carried by the carriage, and a wheel for reciprocating the carriage by a continued movement in one direction, of a fork-shaft, a core-doffer, a lever for operating the latter pivoted on a center parallel with the axis of the wheel, and projections operated by the wheel and engaging the lever upon opposite sides of its pivot, whereby the lever is positively operated in opposite directions and locked in both positions during part of the time the wheel is rotating.

4. In a paring machine, the combination with paring devices, a revoluble fork-reel, and a plurality of fruit forks thereon adapted to cooperate with the paring devices successively, of a core-doffer for each fork, a pivoted doffer-operating lever, a rotary wheel arranged substantially parallel with the lever having projections thereon and cooperating surfaces adapted to engage the lever successively upon opposite sides of its center to hold the lever alternately in and out of operative position during a portion of the rotation of the wheel.

5. In a paring machine, the combination with the reciprocatory carriage, paring devices operated thereby, a revoluble fork-reel, and a plurality of forks thereon, and core doffers for the forks, of a wheel reciprocating the carriage by the movement in one direction; gearing between the wheel and the reel, a doffer lever, separated projections on the wheel for operating the doffer lever in opposite directions, and a locking flange on the wheel for holding the doffer lever retracted during the operation of the reel.

6. In a paring machine, the combination with the pivoted doffer lever having the projections 59 and 60, of a rotary wheel having the projections 57 and 58 and the concentric flange 56.

7. In a paring machine, the combination with the main frame having the slot 90, the stud 52 on the rear of the frame, paring devices, and the fruit-fork having a core-doffer, of the doffer lever extending through the slot and pivoted on the stud 52, the plate 54 on the lever engaging the frame at the sides of the slot and holding the lever on the stud, and means for operating the lever on its pivot.

8. In a paring machine, the combination with the main frame, the reciprocatory carriage thereon, the wheels for positively reciprocating the carriage having the flange 56 and projections 58, of the pivoted doffer lever having the projection 59 provided with the curved surface engaged by the projection 58 and the projection 60 engaging the flange 56.
9. In a paring machine, the combination with the paring knife and operating devices therefor, of the revoluble fork-reel, a pair of oppositely arranged forks thereon, two pairs of oppositely arranged arms connected to the reel, locking studs on one pair of said arms, and the rotary wheel having the segmental concentric locking flange engaging the locking studs and two pins engaging the arms successively for turning the reel as the wheel is rotated.
10. In a paring machine the combination with a paring knife, operating devices therefor and a rotating driving gear, of a revoluble fork support, means for revolving it in one direction only, a plurality of revoluble fruit forks thereon each having an operating pinion adapted to engage with the driving gear, the direction of rotation of the driving gear teeth at the point of engagement with the fork pinions being opposite to the direction of the movement of the pinion as a whole.
11. In a paring machine, the combination with a fork reel carrying a plurality of fruit forks and a head thereon having arms, of a constantly rotating wheel, projections on the wheel cooperating with the arms to rotate the reel and other projections on the head cooperating with the wheel to hold the reel stationary.
12. In a paring machine, the combination with the fork reel carrying a plurality of fruit forks and a head on the reel having arms, of a constantly rotating wheel having two projections cooperating with the arms to rotate the reel, a locking flange on the wheel and two projections connected to the reel and engaging the flange on opposite sides of a line between the centers of rotation of the wheel and reel.
13. In a paring machine, the combination with a rotatable head, a paring knife thereon and a rotary fork support or reel having a plurality of fruit forks provided with pinions and a gear for operating the fork pinions successively located between the center of rotation of the reel and a fork shaft when the latter is in operative position, said paring knife also moving between the fork shaft and reel center during the paring operation.
14. In a paring machine, the combination with the rotary turn-table provided with the opposing pointed projections 99 rigid therewith, the knife arm 101 having the end plate provided with recesses loosely engaged by the projections and capable of tilting in the plane of the projections, the paring knife and the spring for operating the knife arm.
15. In a paring machine, the combination of the operating wheel having the flange 39, the reel shaft having the arms 25 and 26 the projections 42 and 43 on the wheel engaging the said arms successively and the projections 27 engaging the flange.
16. In a paring machine, the combination with a rotary fork support or reel and a plurality of rotatable fruit forks thereon, of a paring head, a knife thereon and means for rotating the head to bring the knife between the axes of rotation of the fork and reel during the paring operation.

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Witnesses:

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