

No. 707,737.

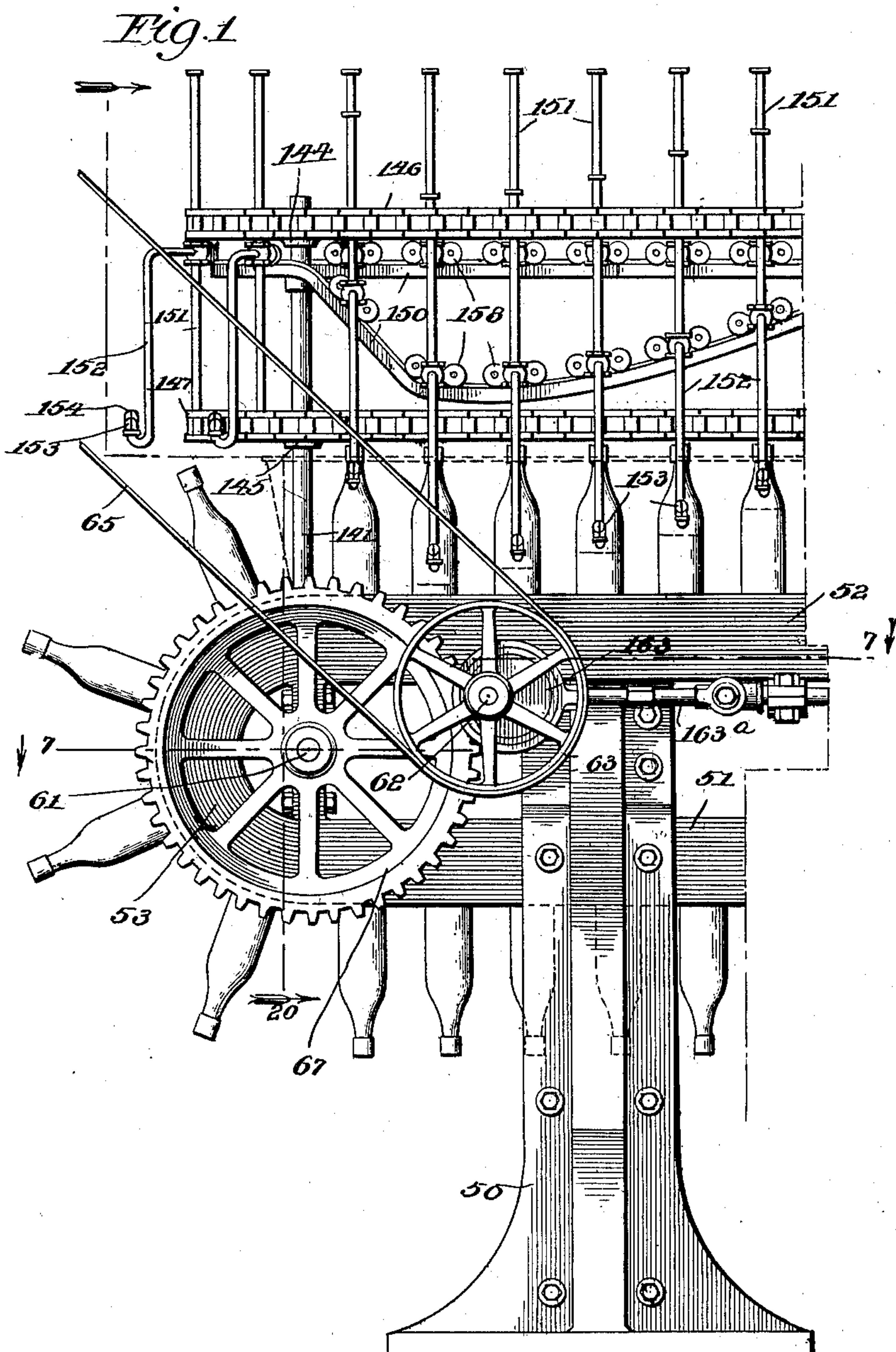
Patented Aug. 26, 1902.

C. J. WARREN.  
BOTTLING MACHINE.

(Application filed May 16, 1901.)

(No Model.)

24 Sheets—Sheet 1.



Witnesses

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No. 707,737.

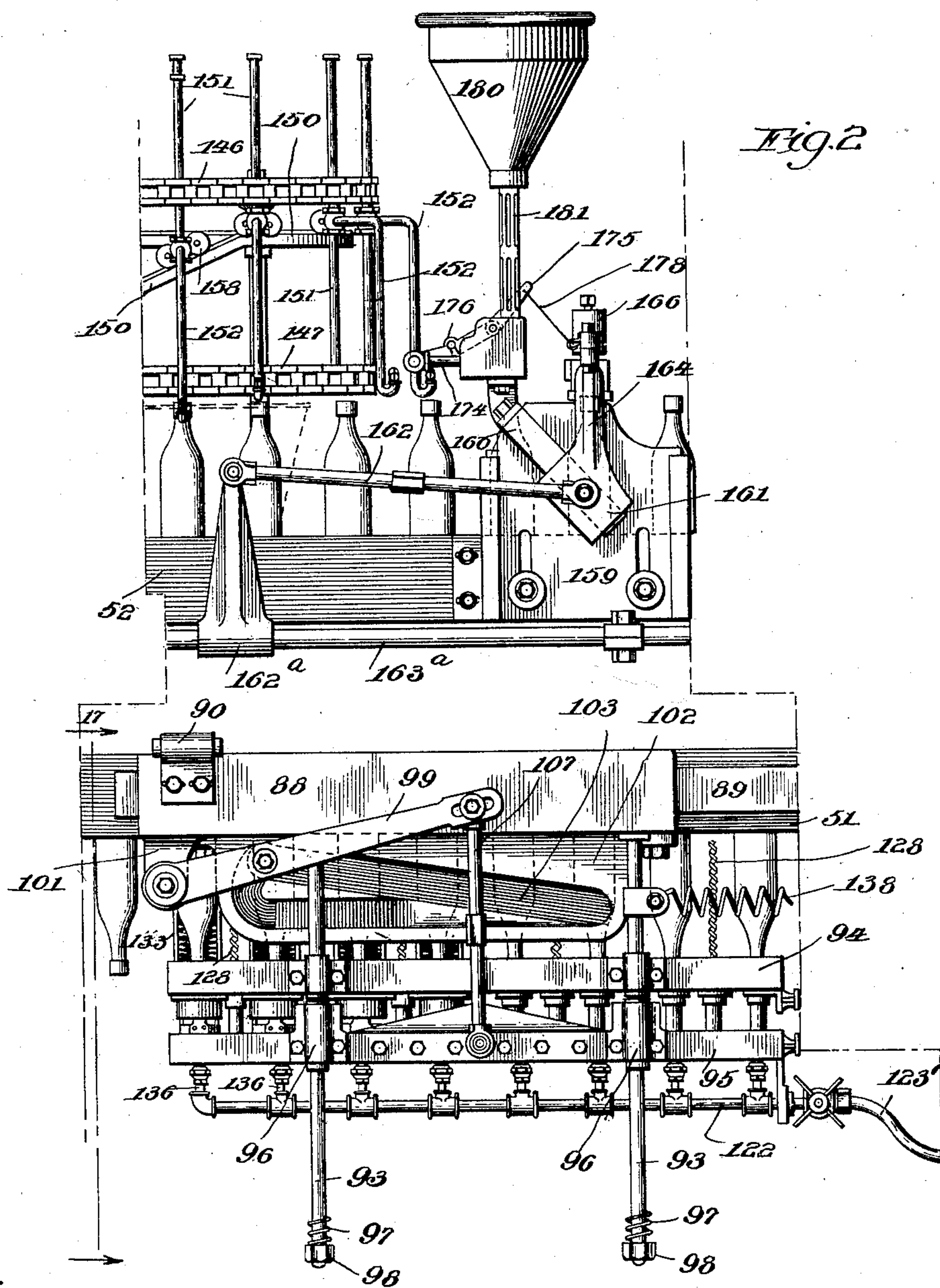
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(Application filed May 16, 1901.)

(No Model.)

24 Sheets—Sheet 2.



Witnesses

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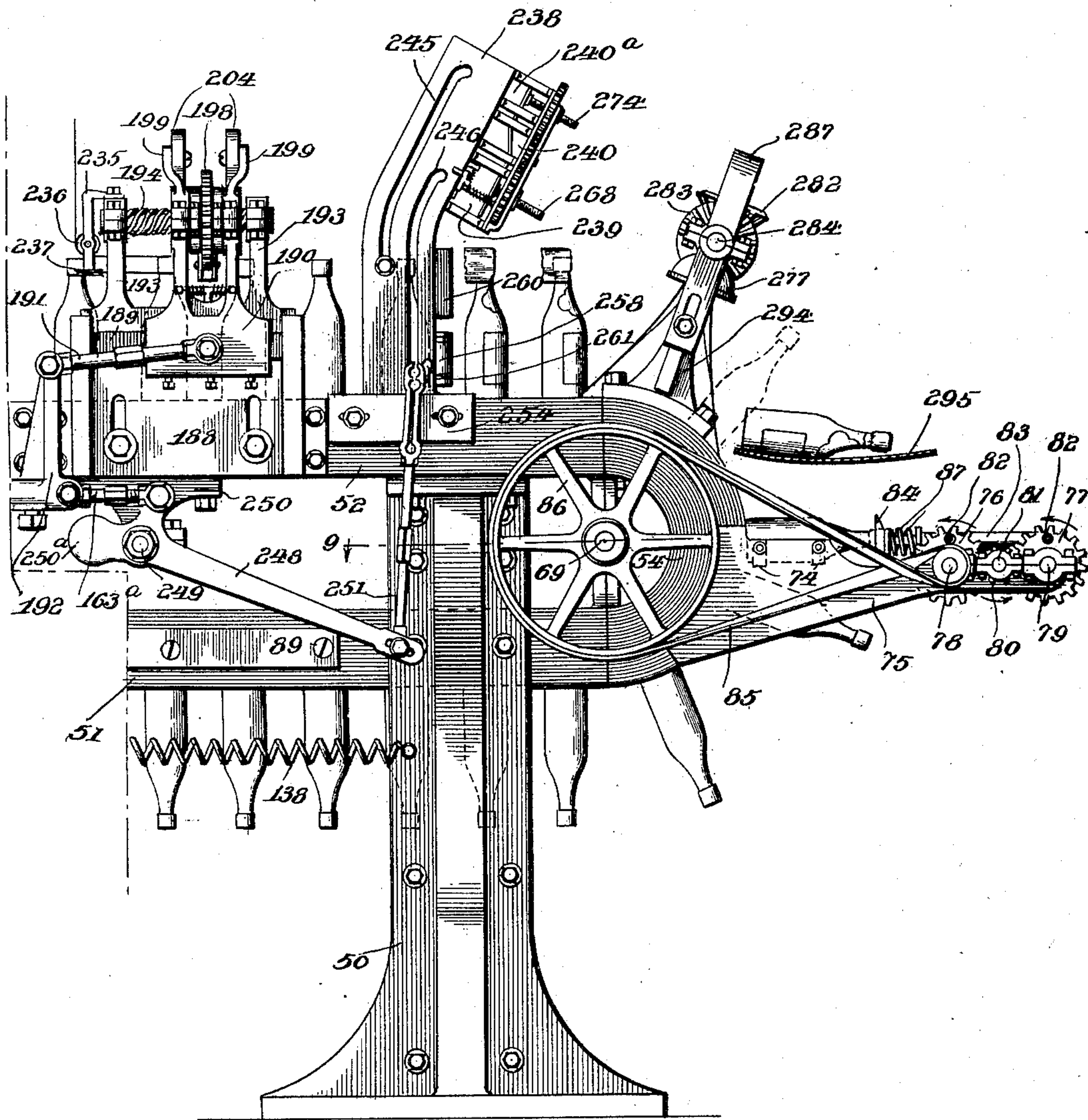
C. J. WARREN.  
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(No Model.)

24 Sheets—Sheet 3.

Fig. 3



Witnesses

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No. 707,737.

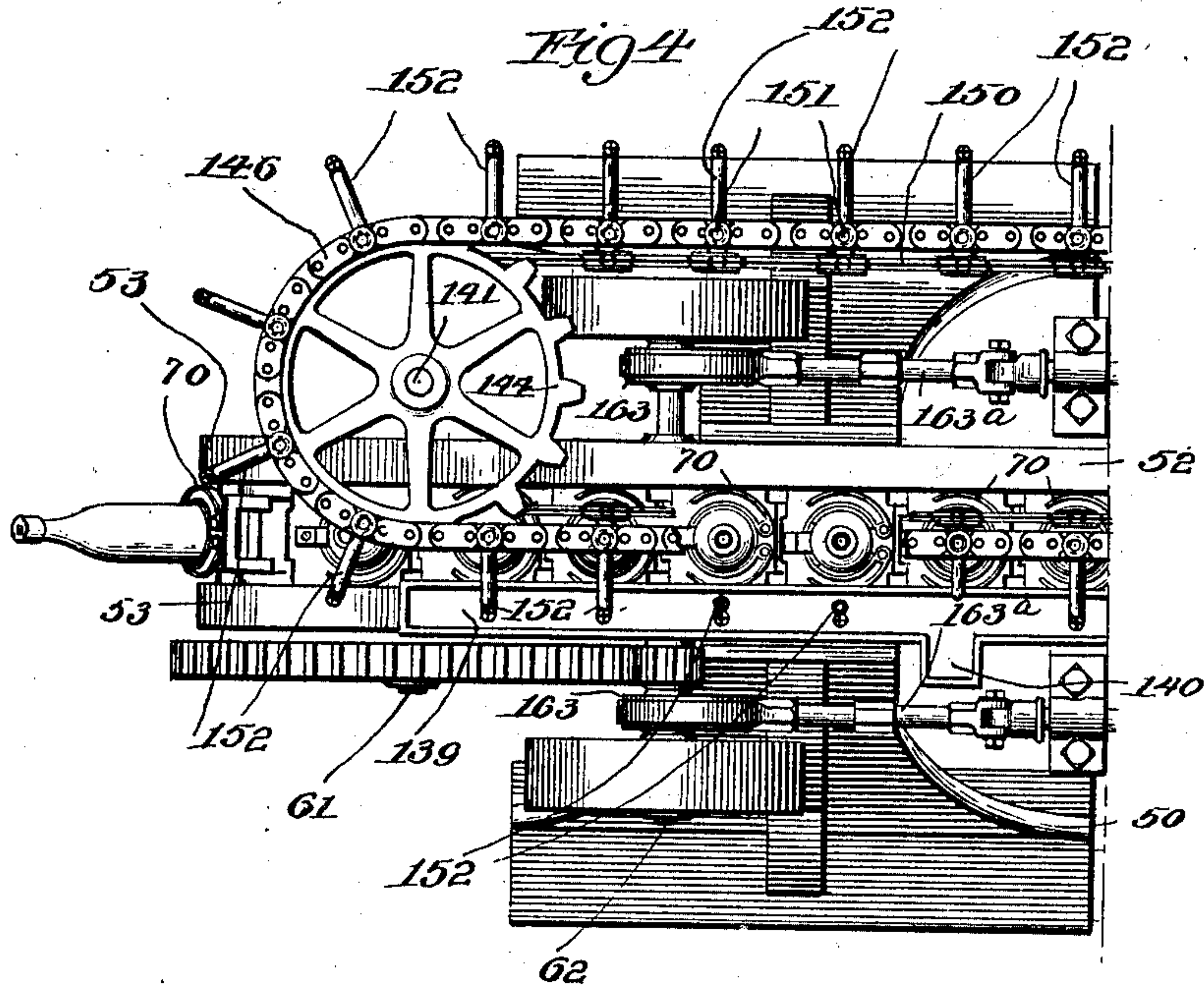
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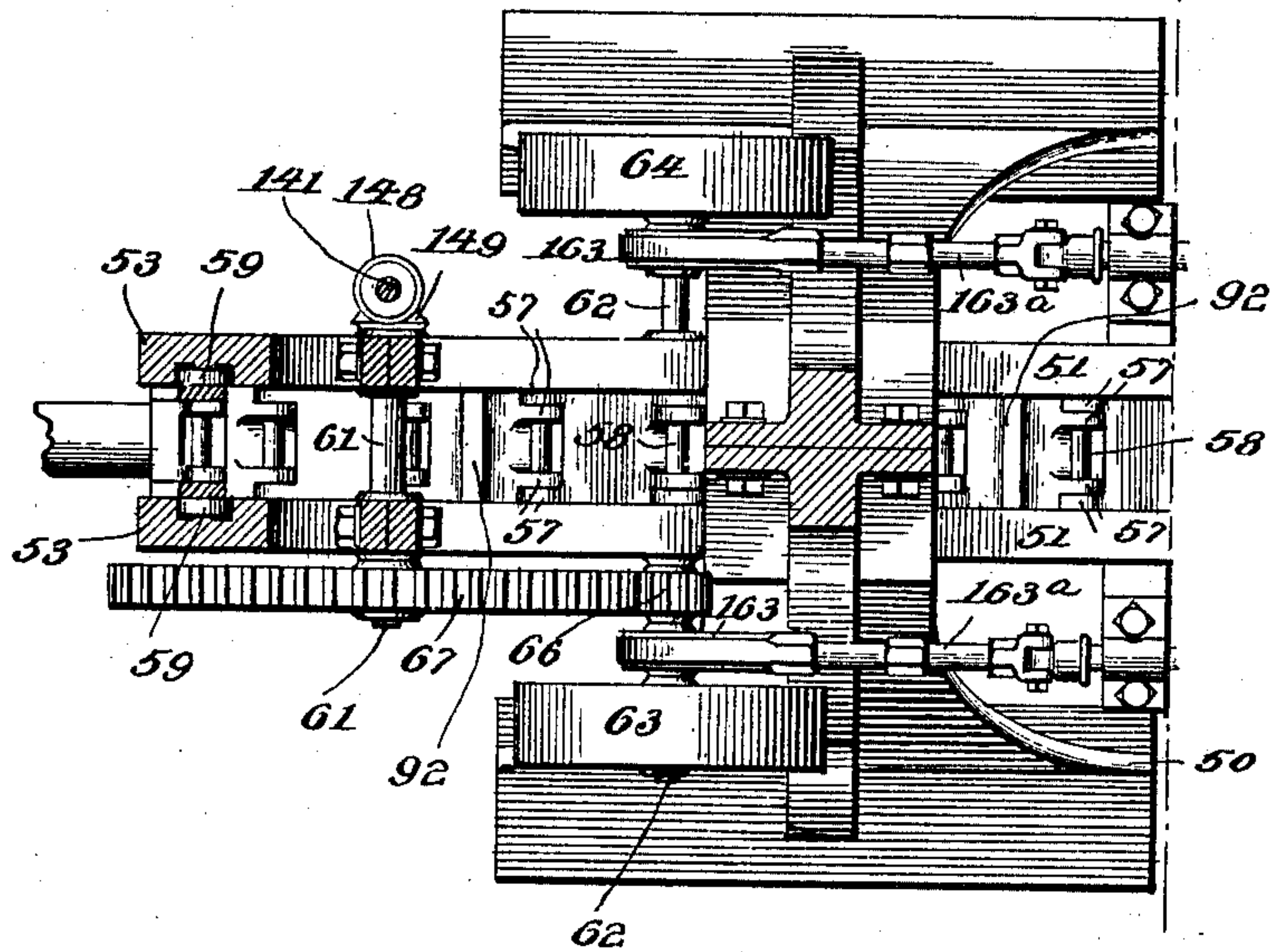
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24 Sheets—Sheet 4.



*Fig. 7*



Witnesses

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**No. 707,737.**

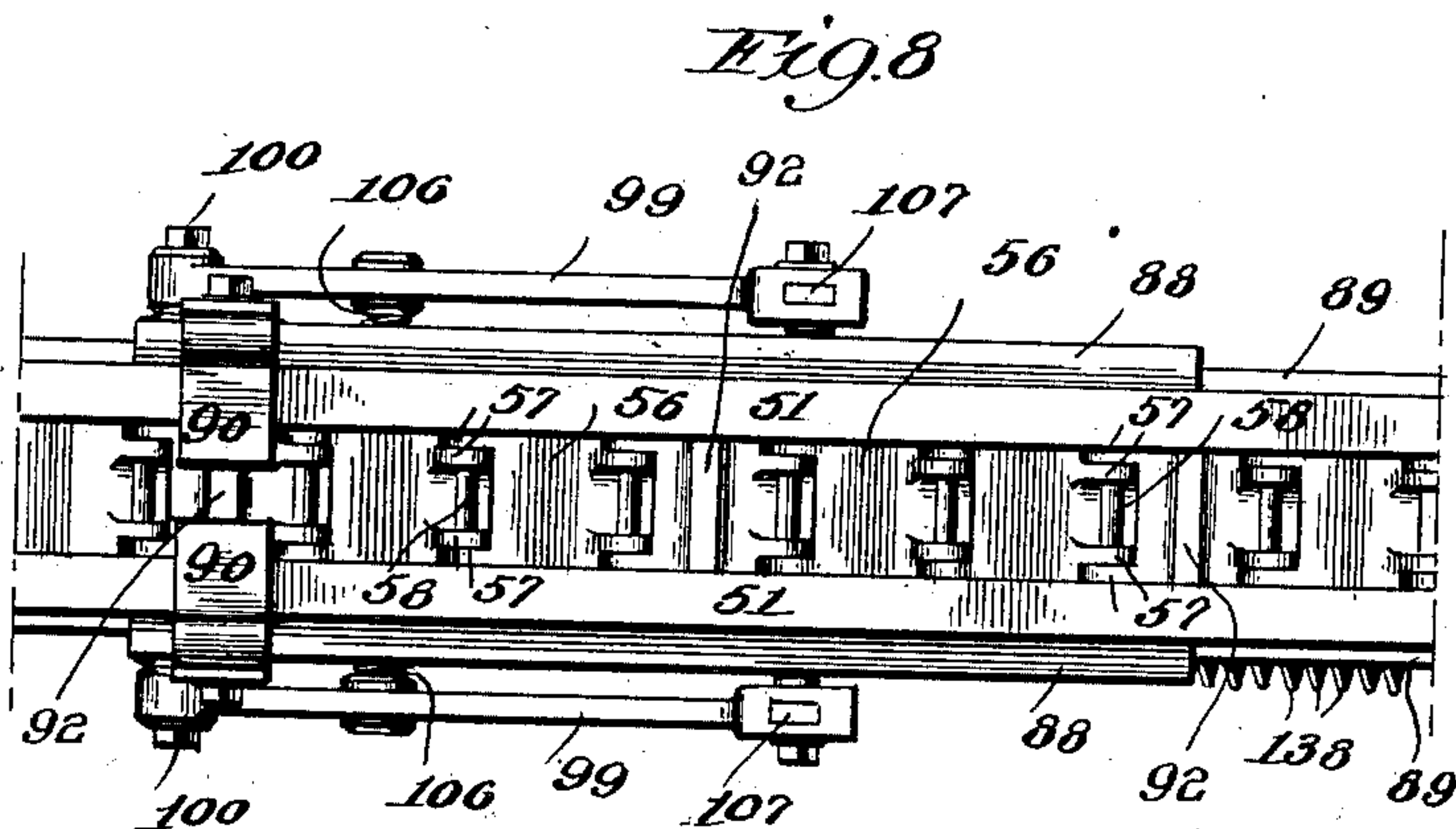
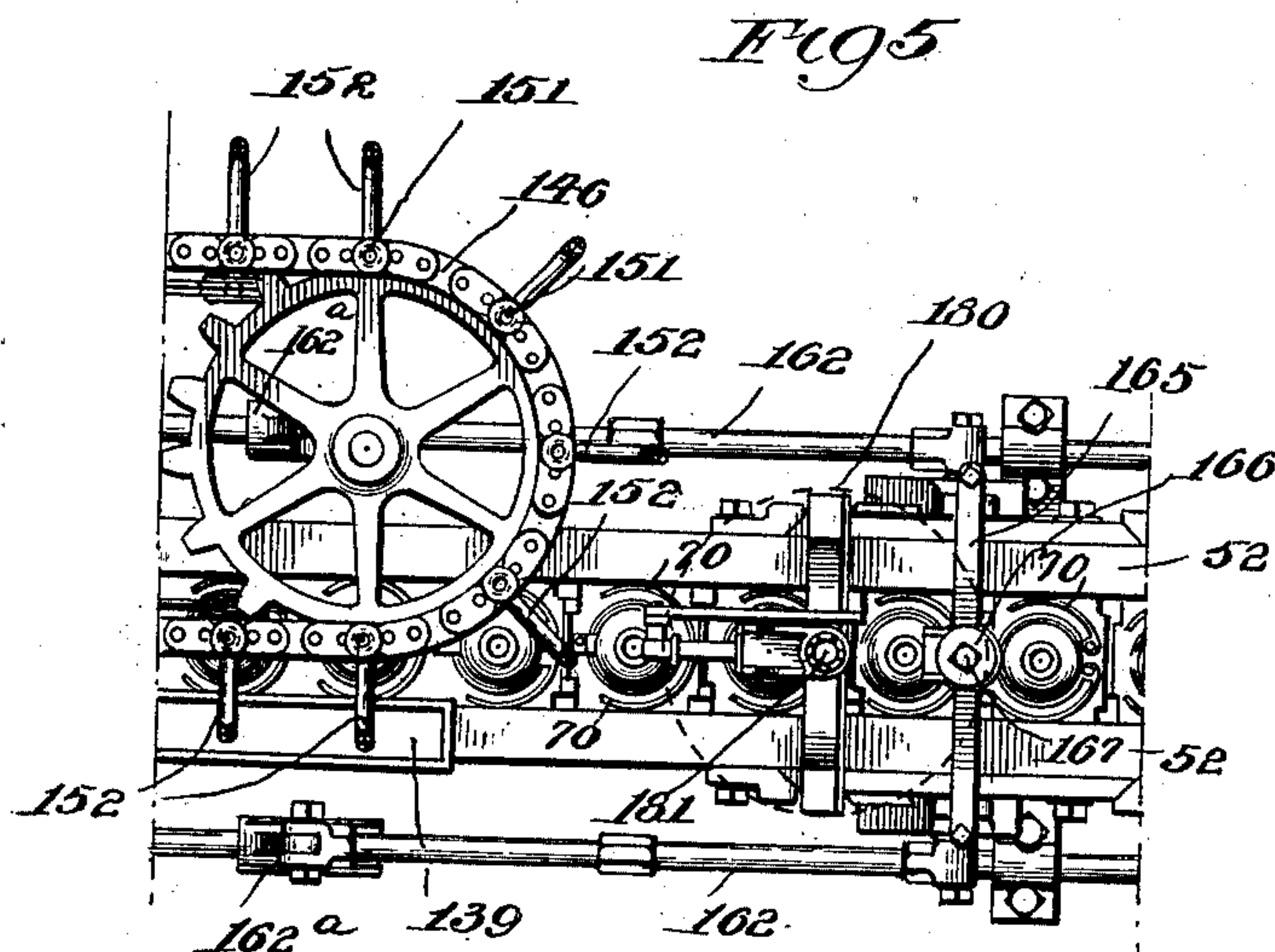
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**Patented Aug. 26, 1902.**

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(Application filed May 16, 1901.)

**24 Sheets—Sheet 5.**



*Witnesses*

J. H. Glendening

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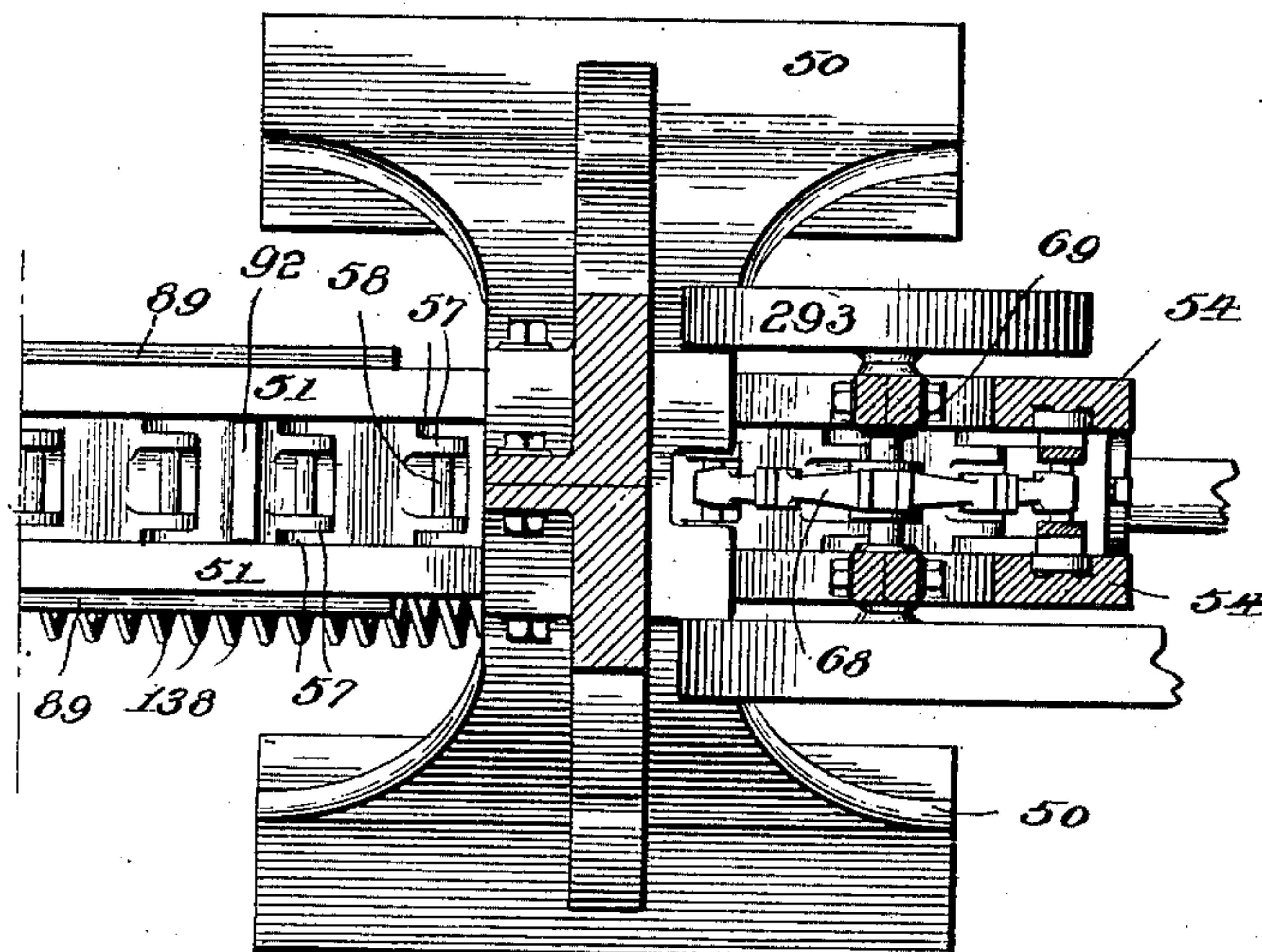
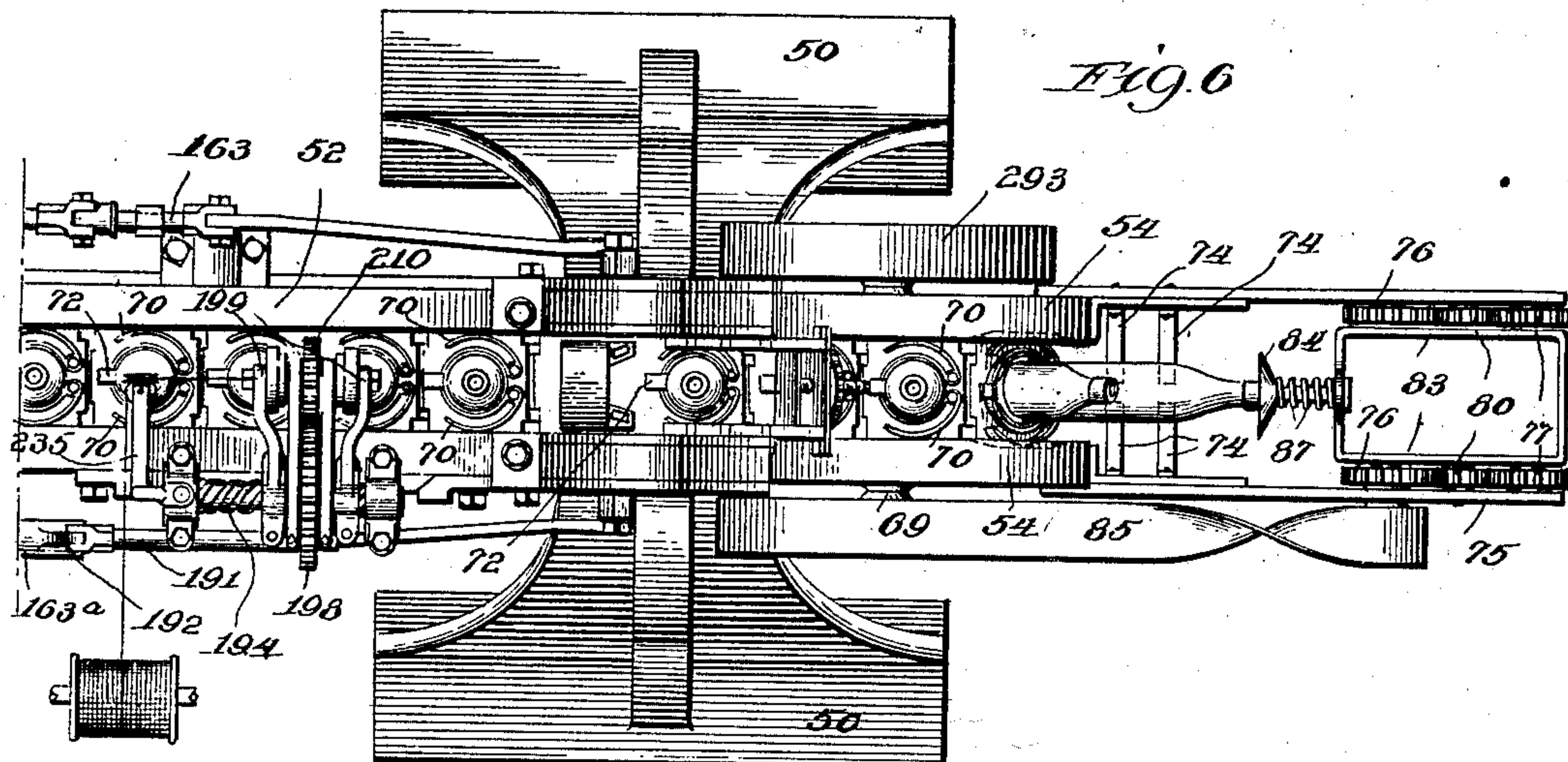
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**BOTTLING MACHINE.**

(Application filed May 16, 1901.)

(No Model.)

**24 Sheets—Sheet 6.**



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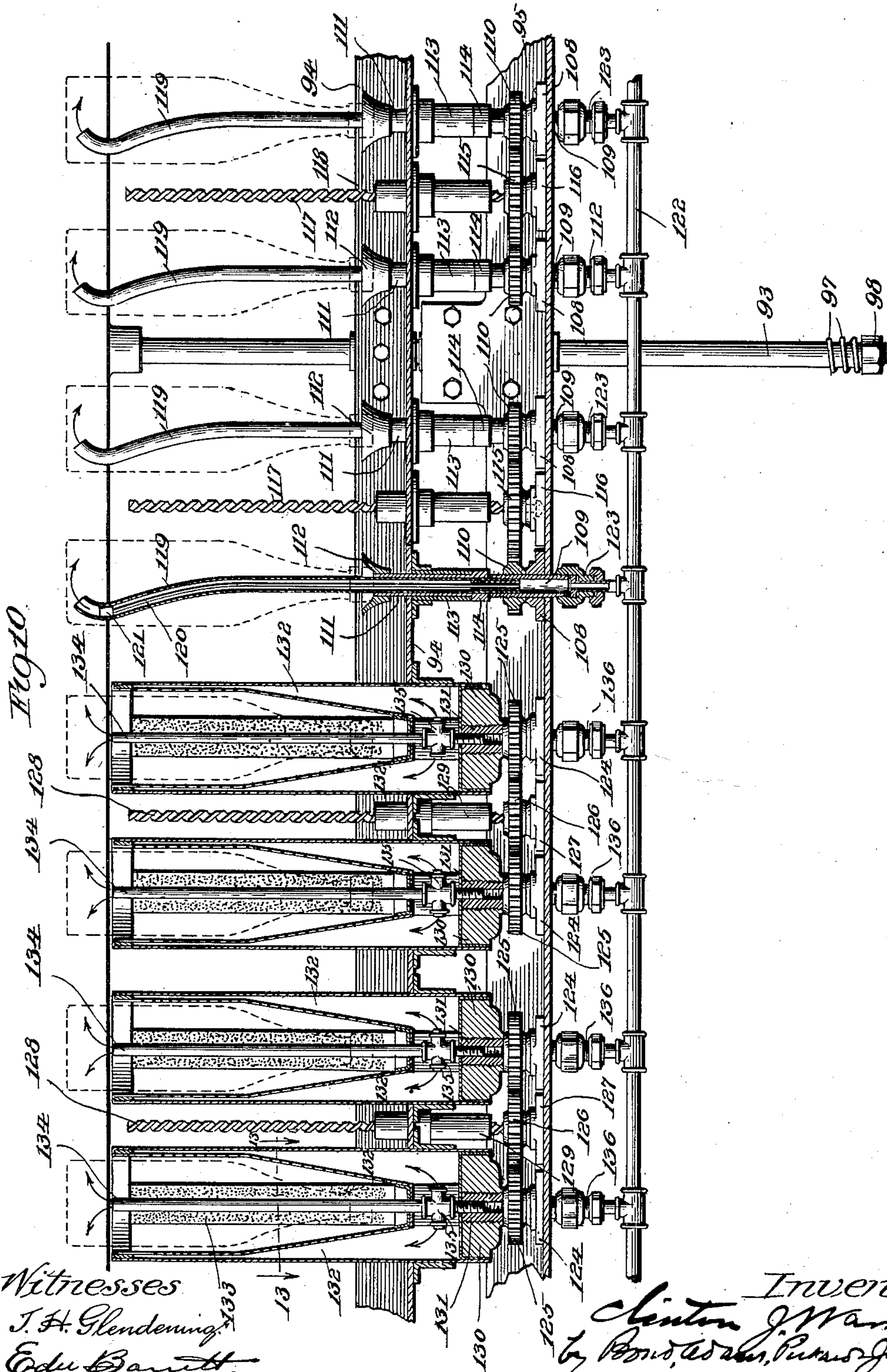


Fig. 10.

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BOTTLING MACHINE.

(Application filed May 18, 1901.)

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24 Sheets—Sheet 8.

Fig. 11

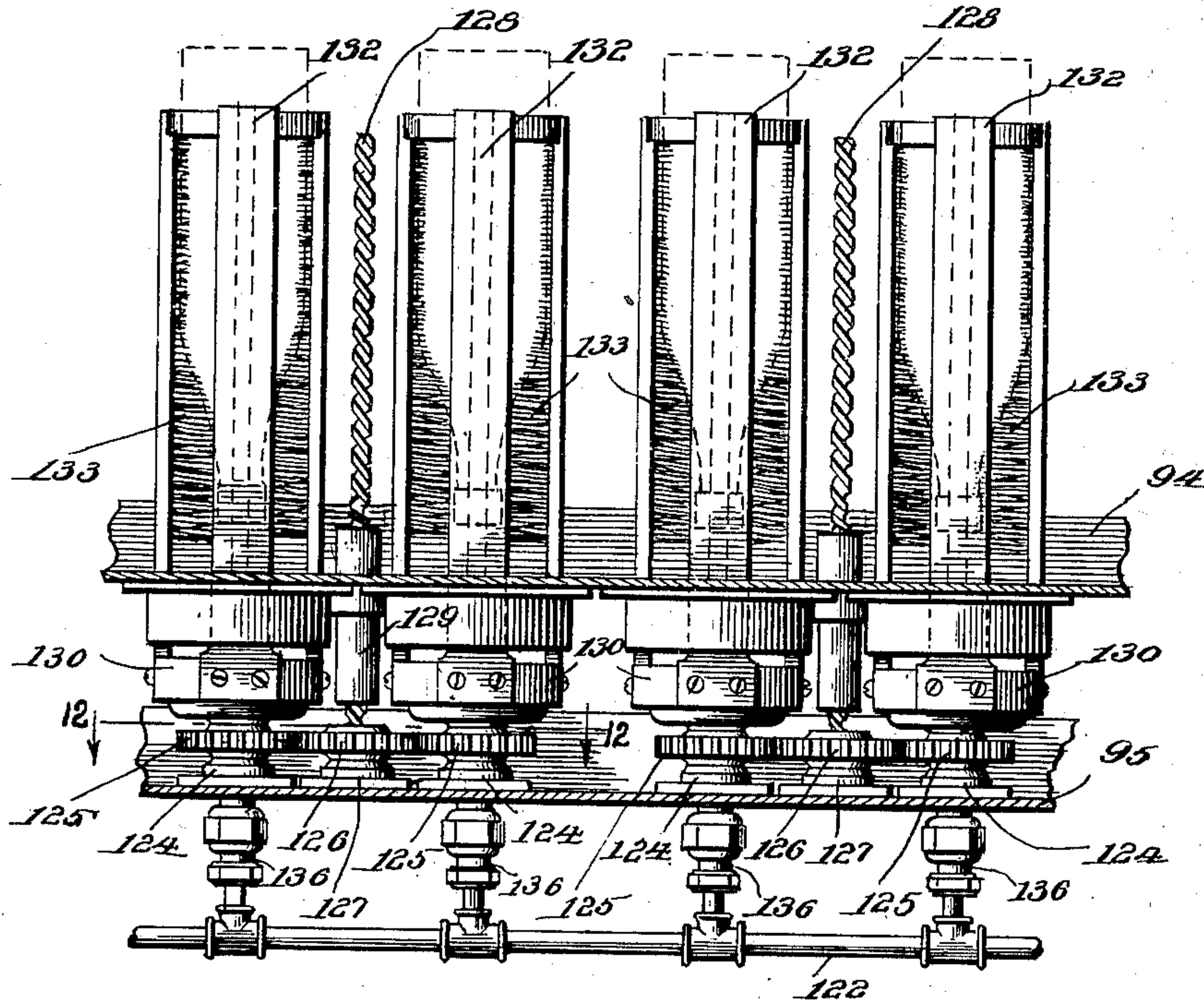


Fig. 12

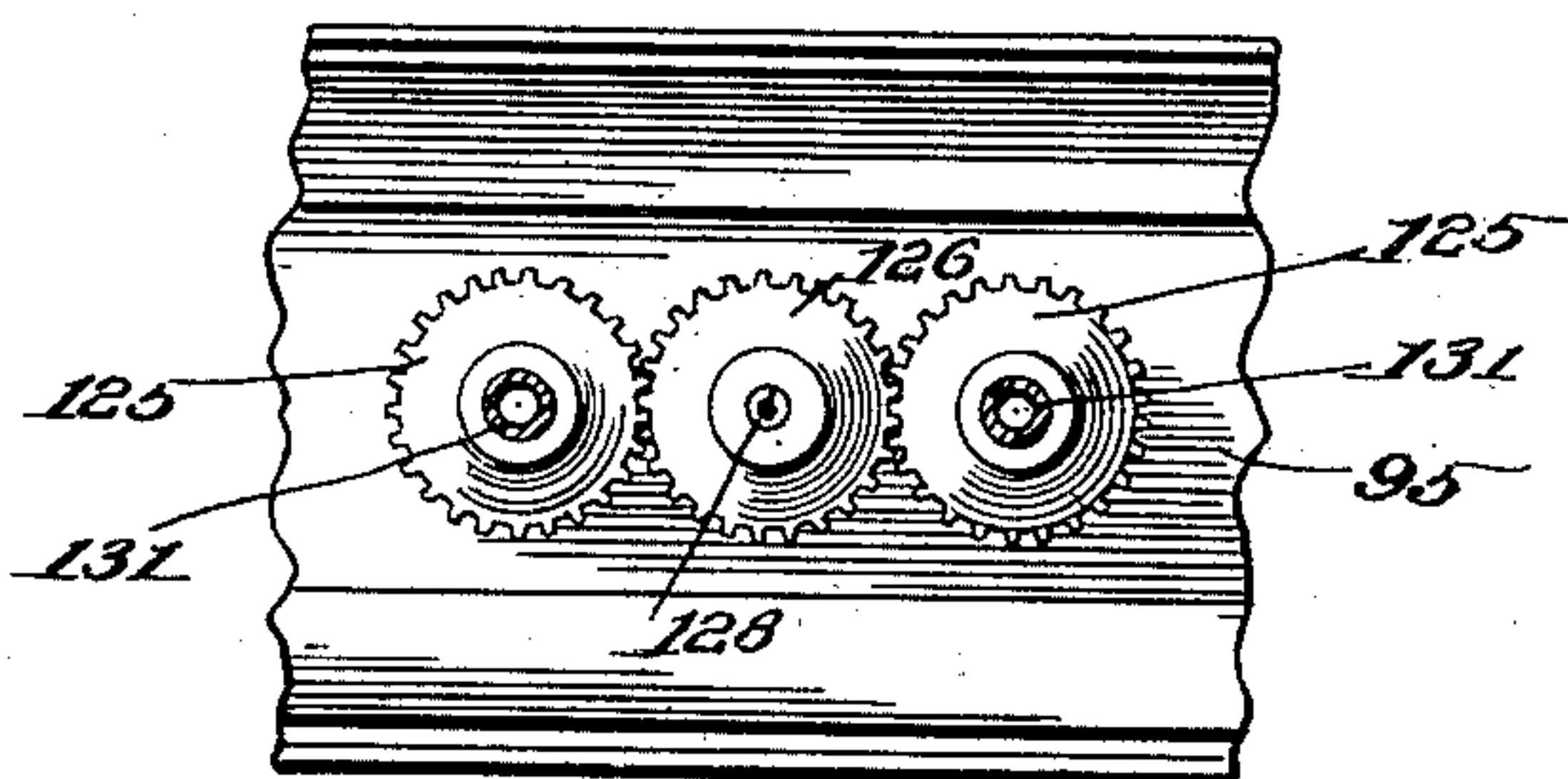
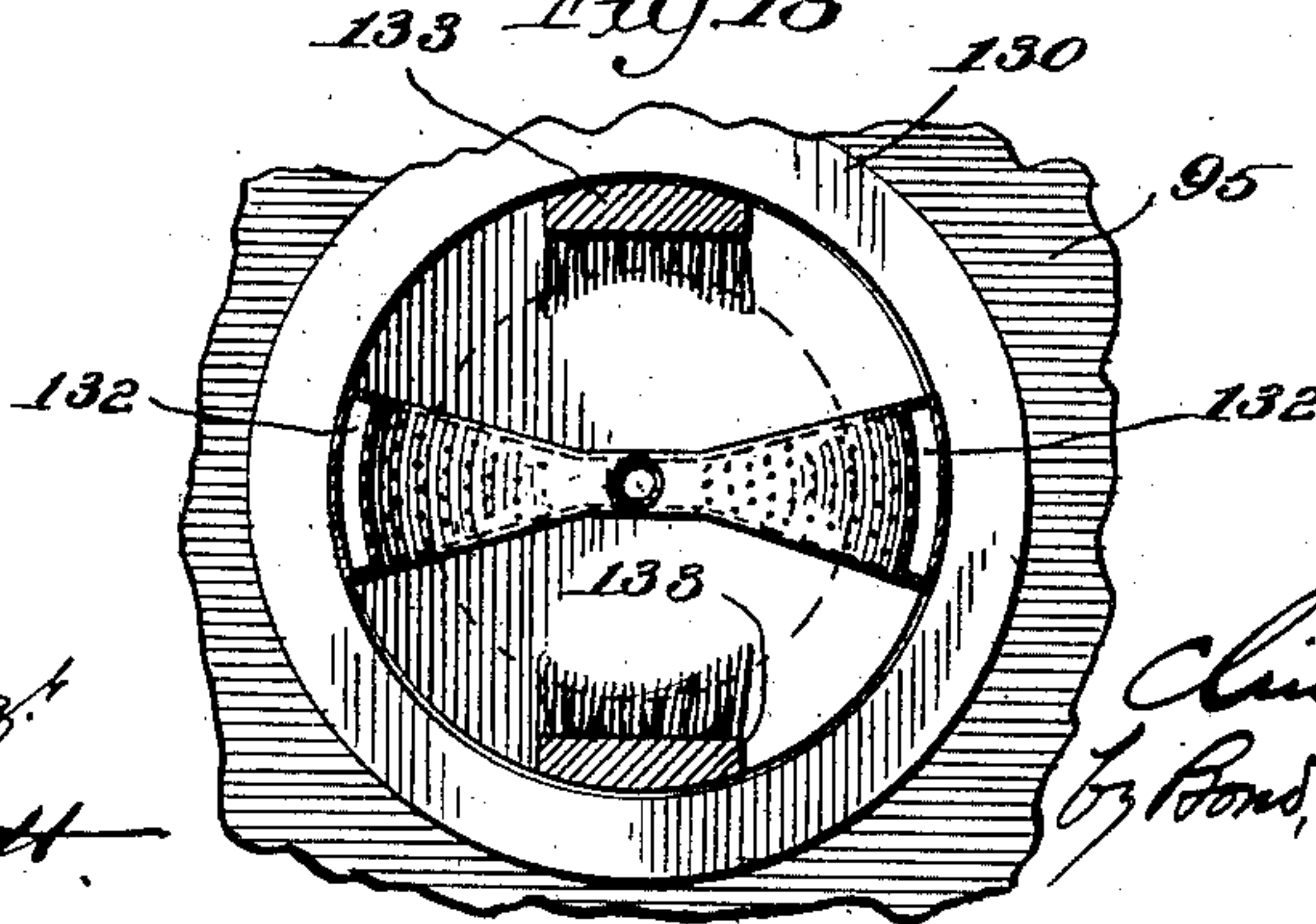


Fig. 13



Witnesses

J. H. Glendening,

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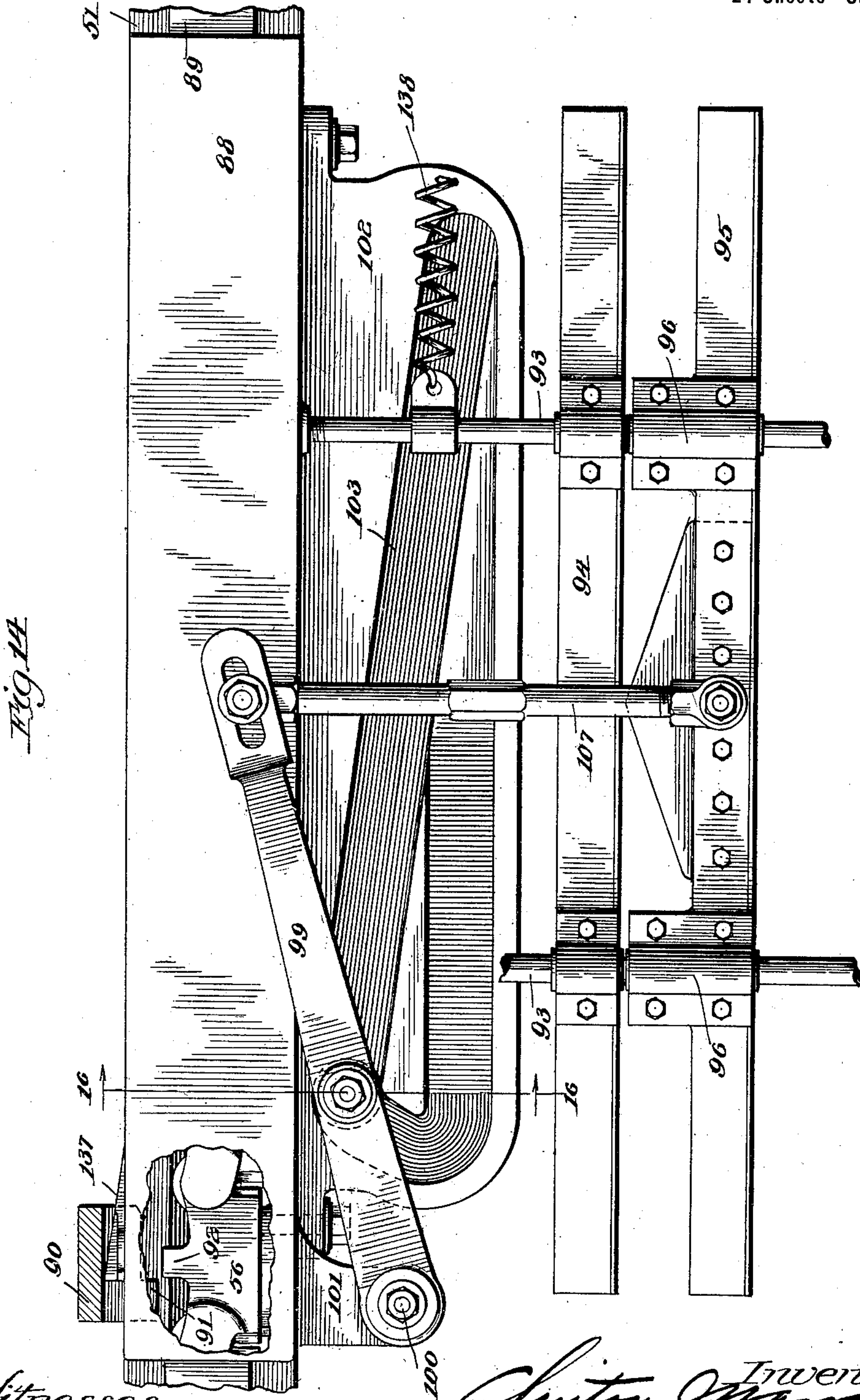
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(Application filed May 18, 1901.)

**24 Sheets—Sheet 9.**

(No Model.)



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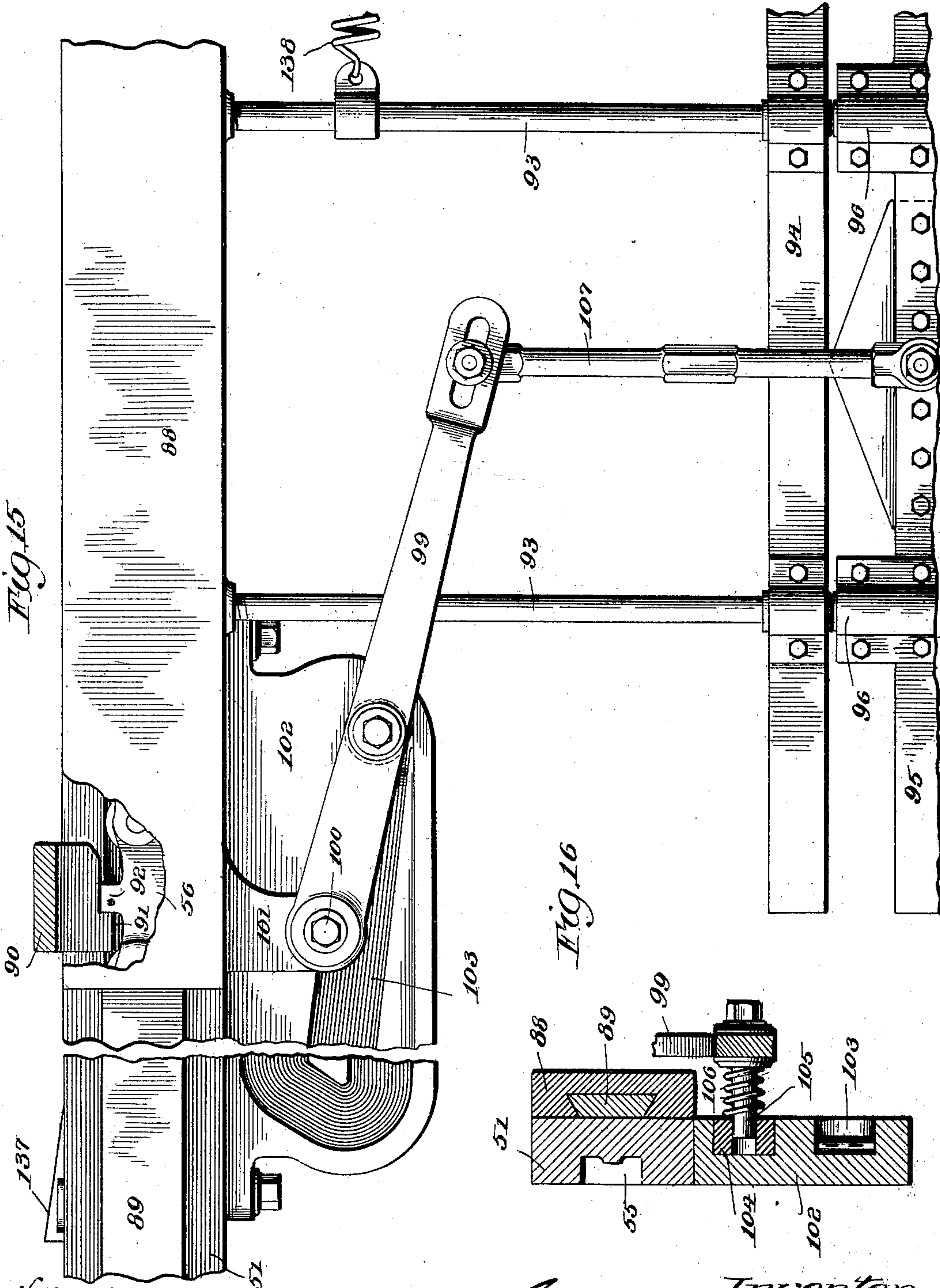
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(No Model.)

24 Sheets—Sheet 10,



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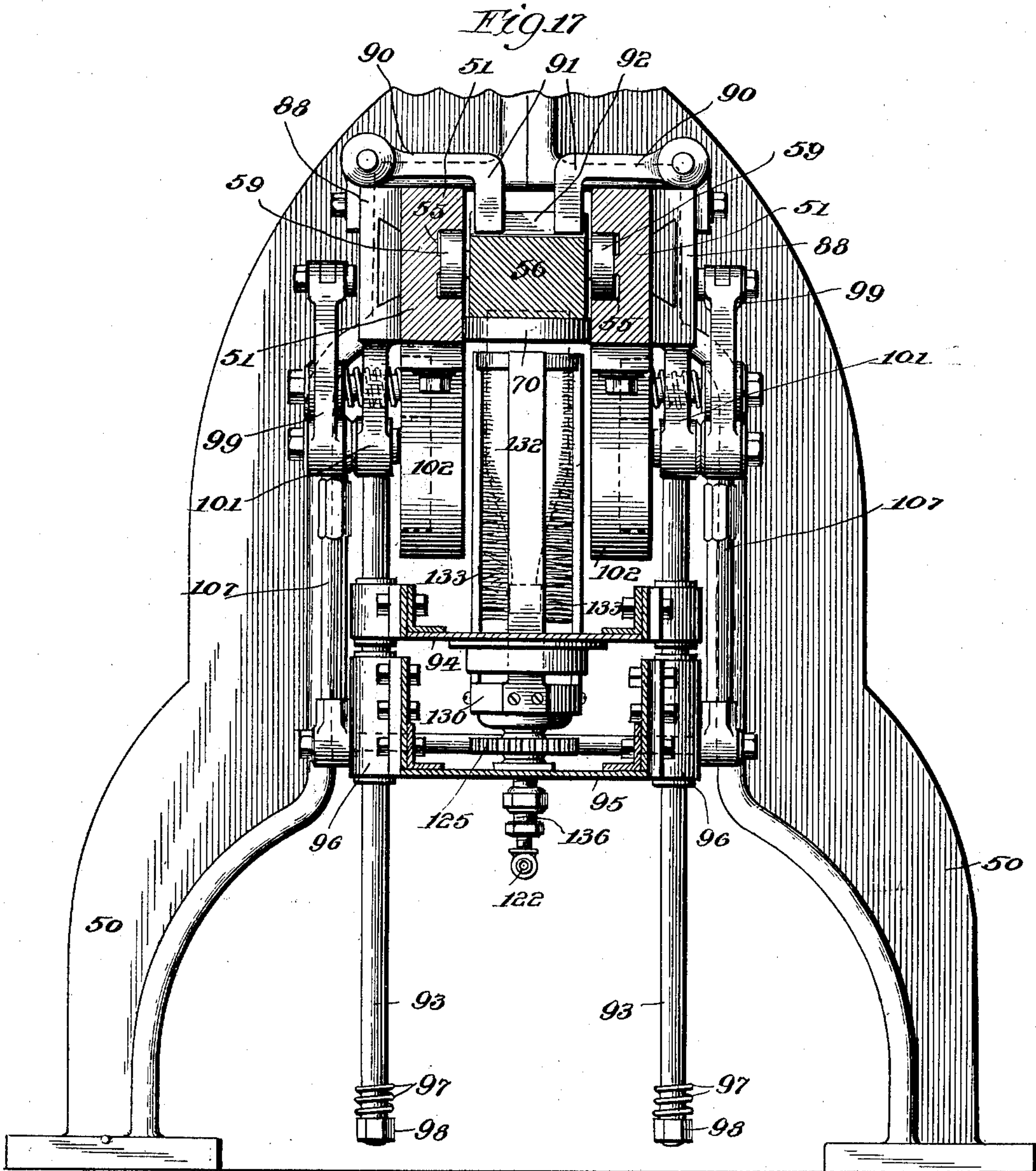
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(No Model.)

24 Sheets—Sheet II.



Witnesses

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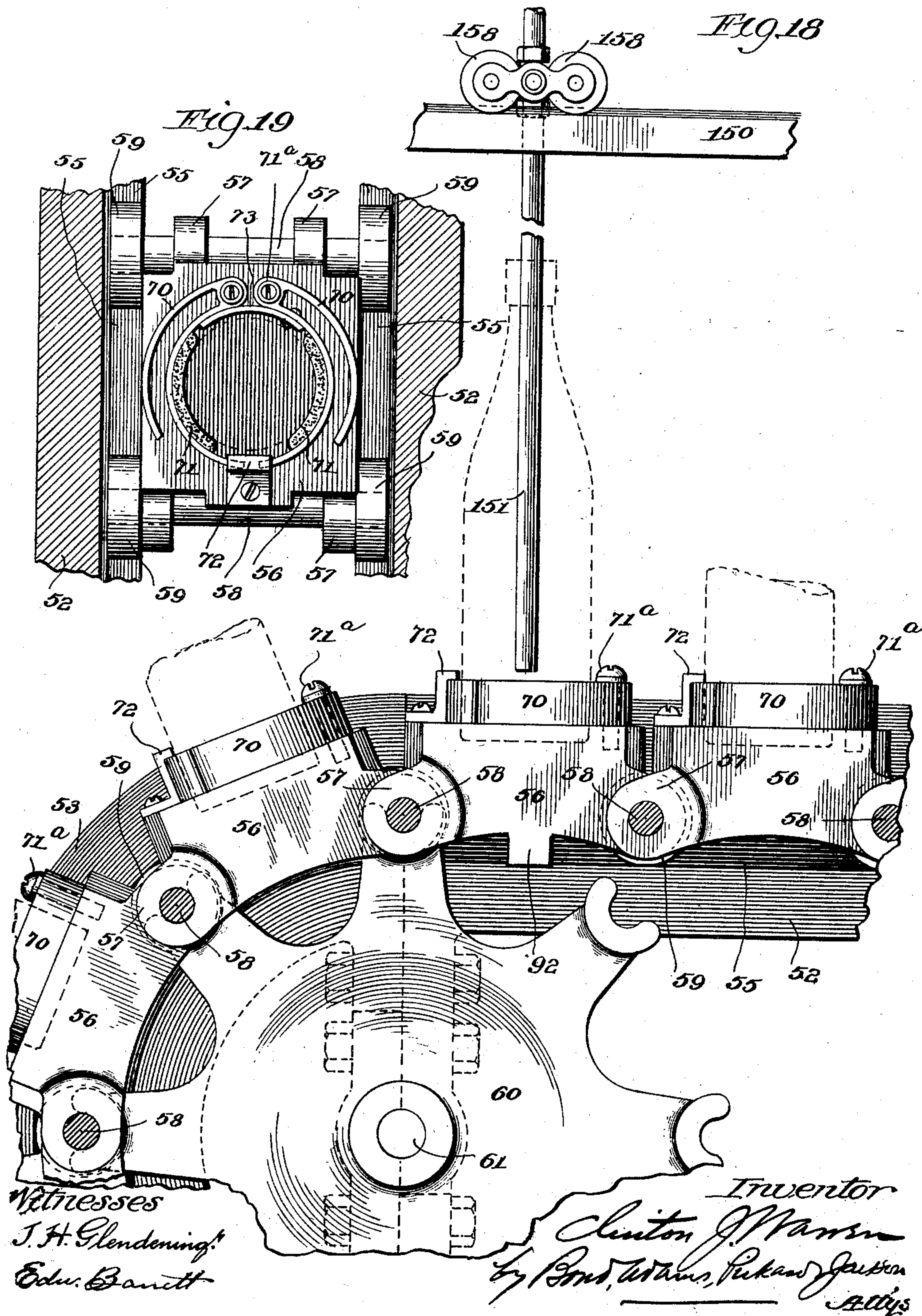
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:(No Model.)

**24 Sheets—Sheet 12.**





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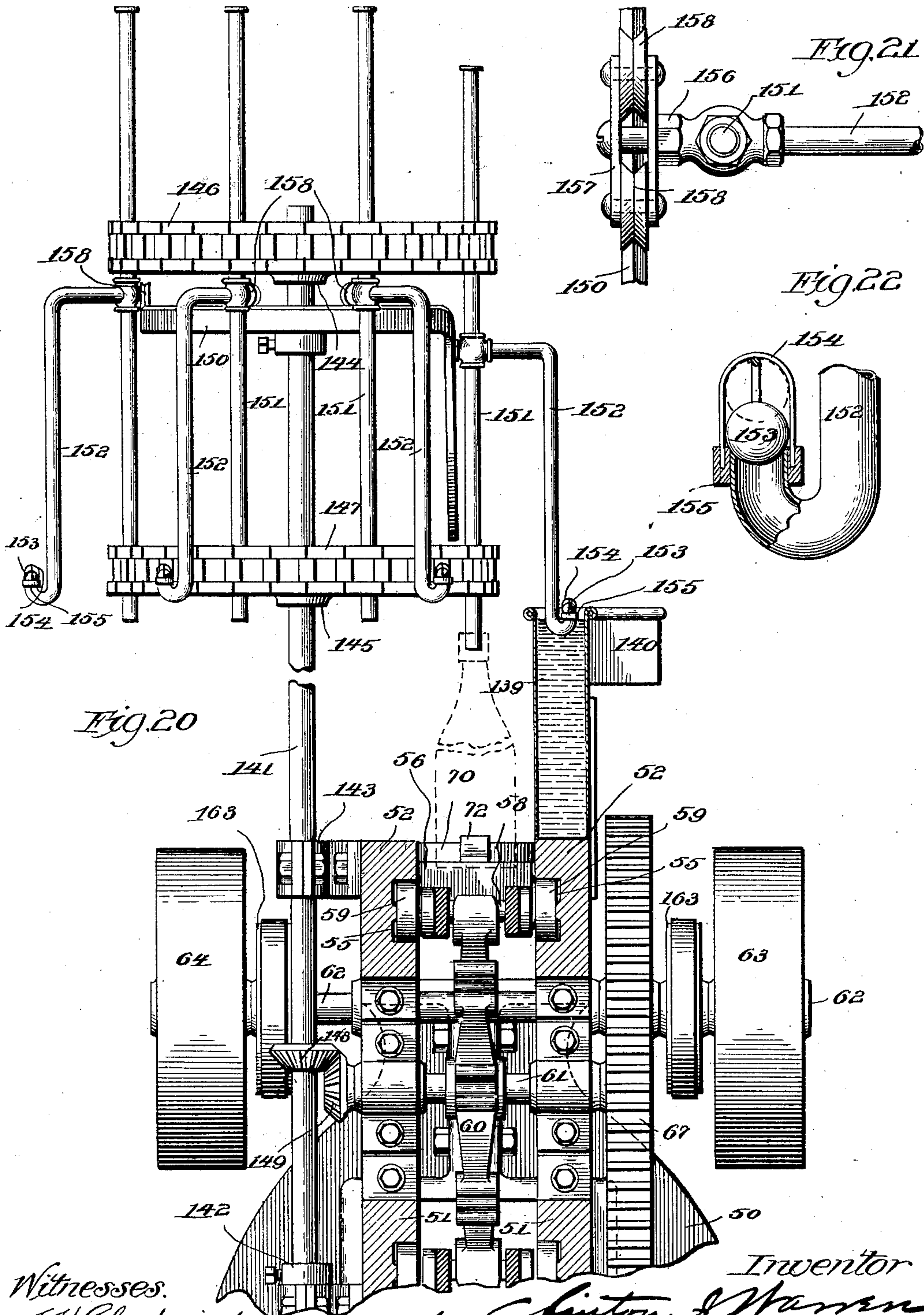
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(No Model.)

24 Sheets—Sheet 13.



Witnesses.  
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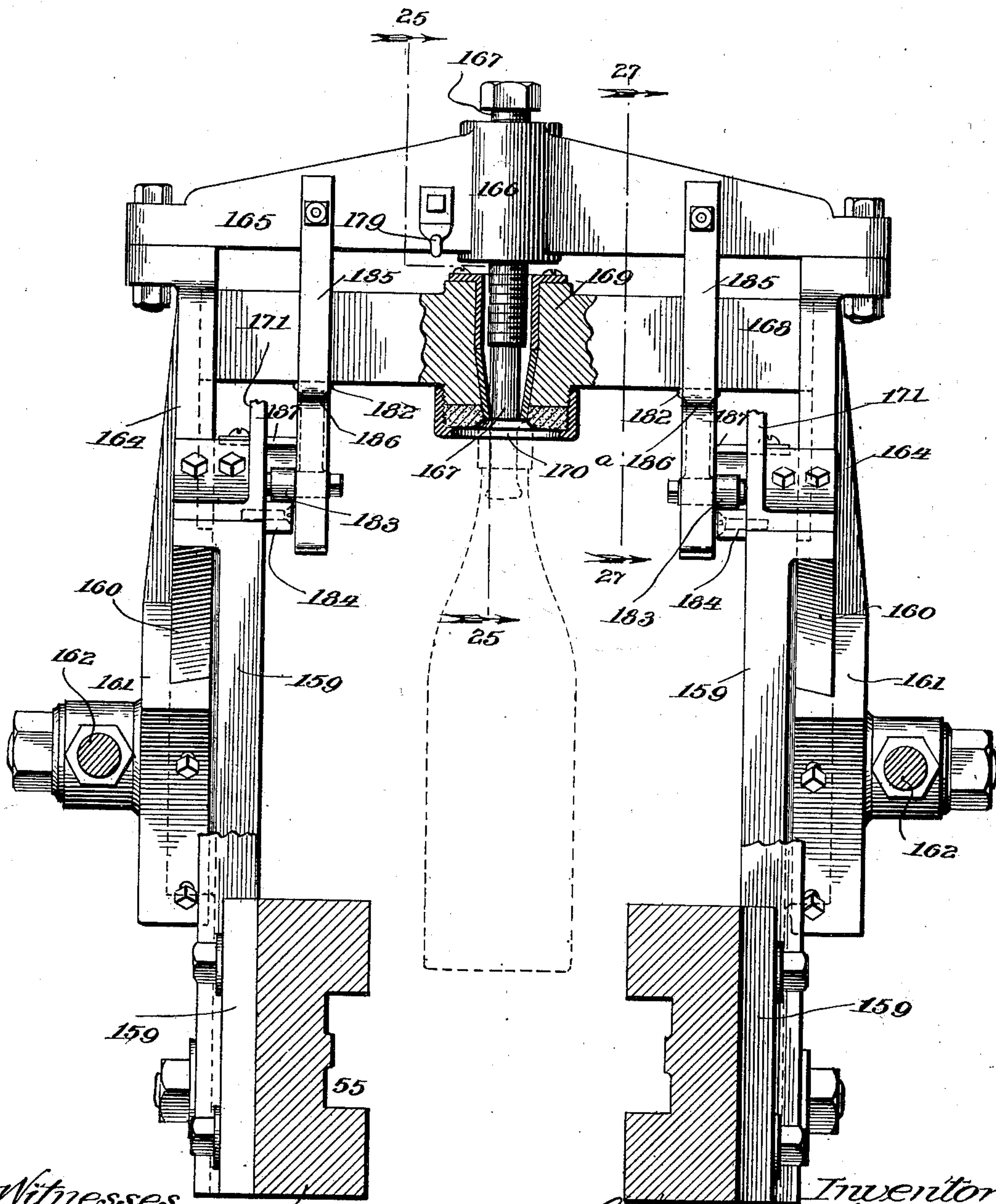
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(No Model.)

24 Sheets—Sheet 15.

Fig. 24



Witnesses

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(Application filed May 16, 1901.)

(No Model.)

24 Sheets—Sheet 16.

Fig. 25

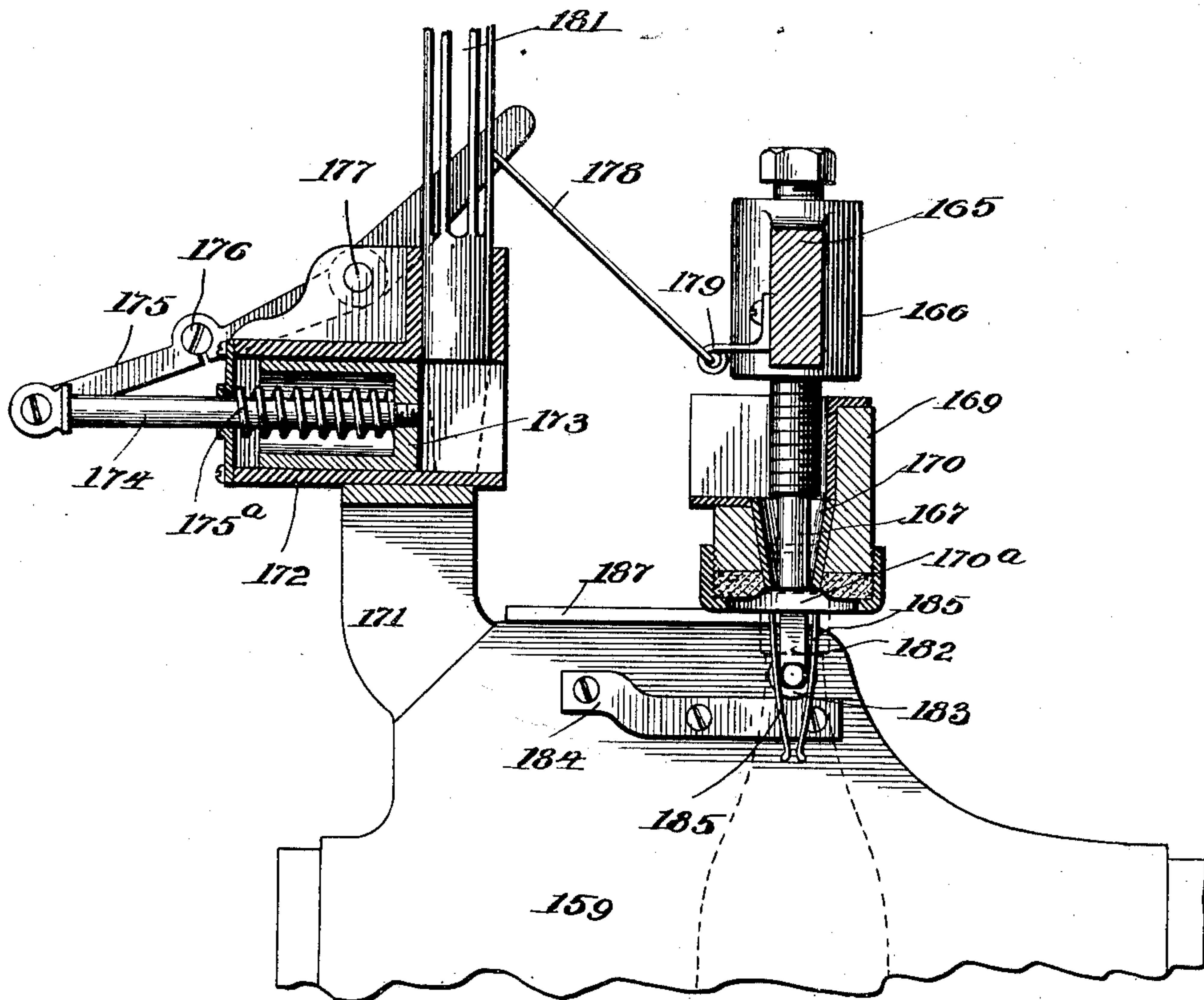
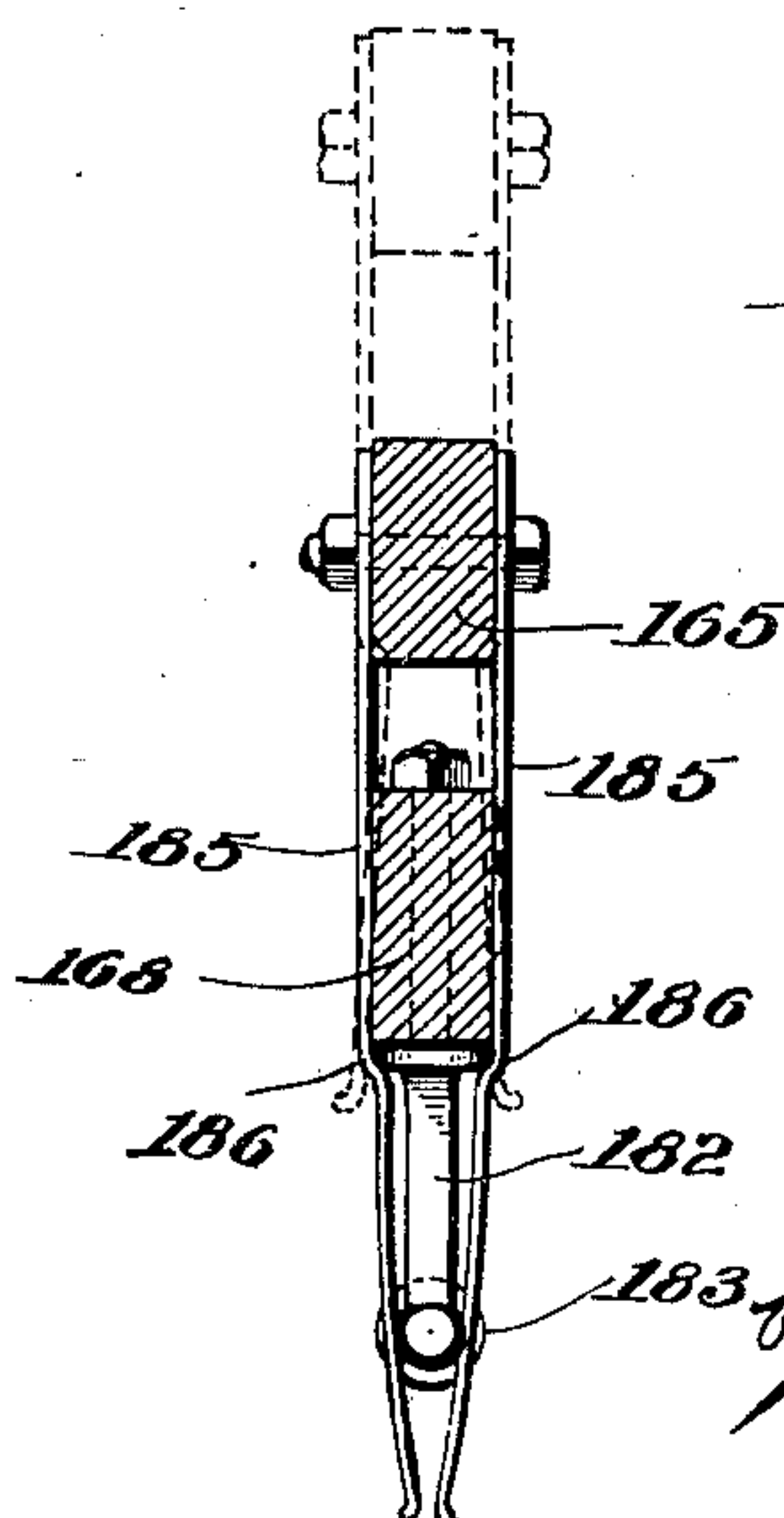


Fig. 27



Witnesses  
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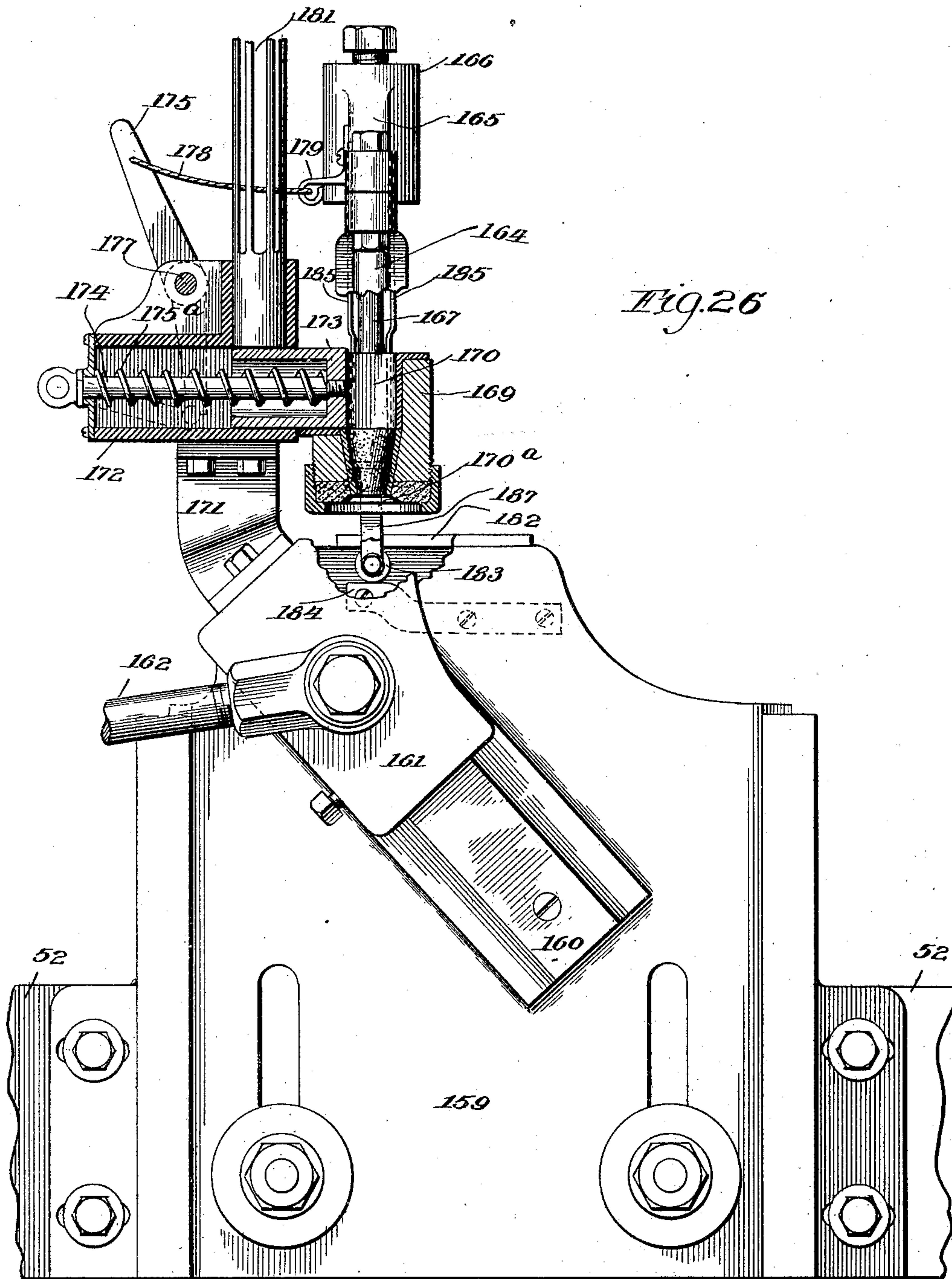
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(Application filed May 16, 1901.)

(No Model.)

**24 Sheets—Sheet 17.**



Witnesses  
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No. 707,737.

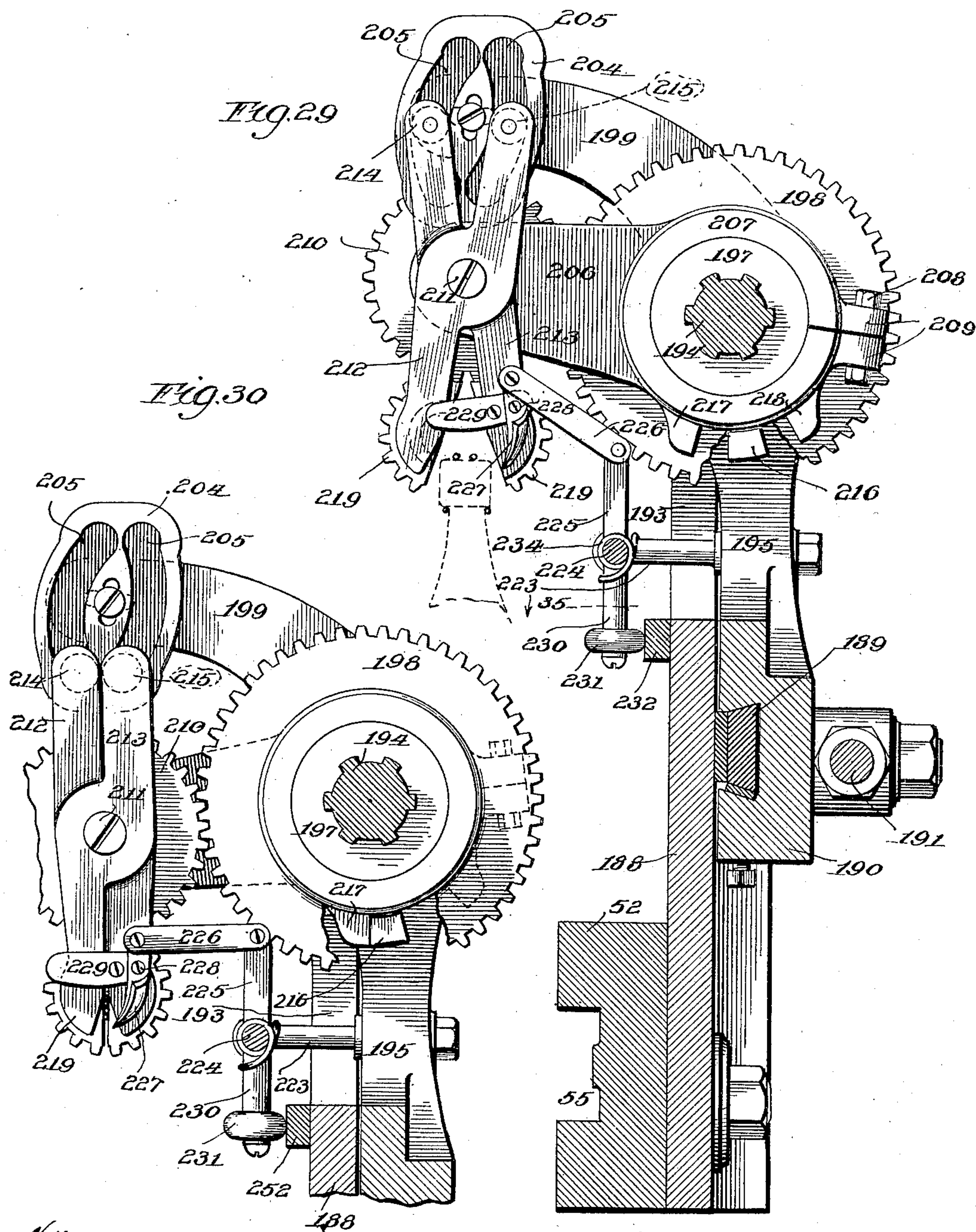
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(No Model.)

24 Sheets—Sheet 19.



Witnesses

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(No Model.)

24 Sheets—Sheet 20.

Fig. 32

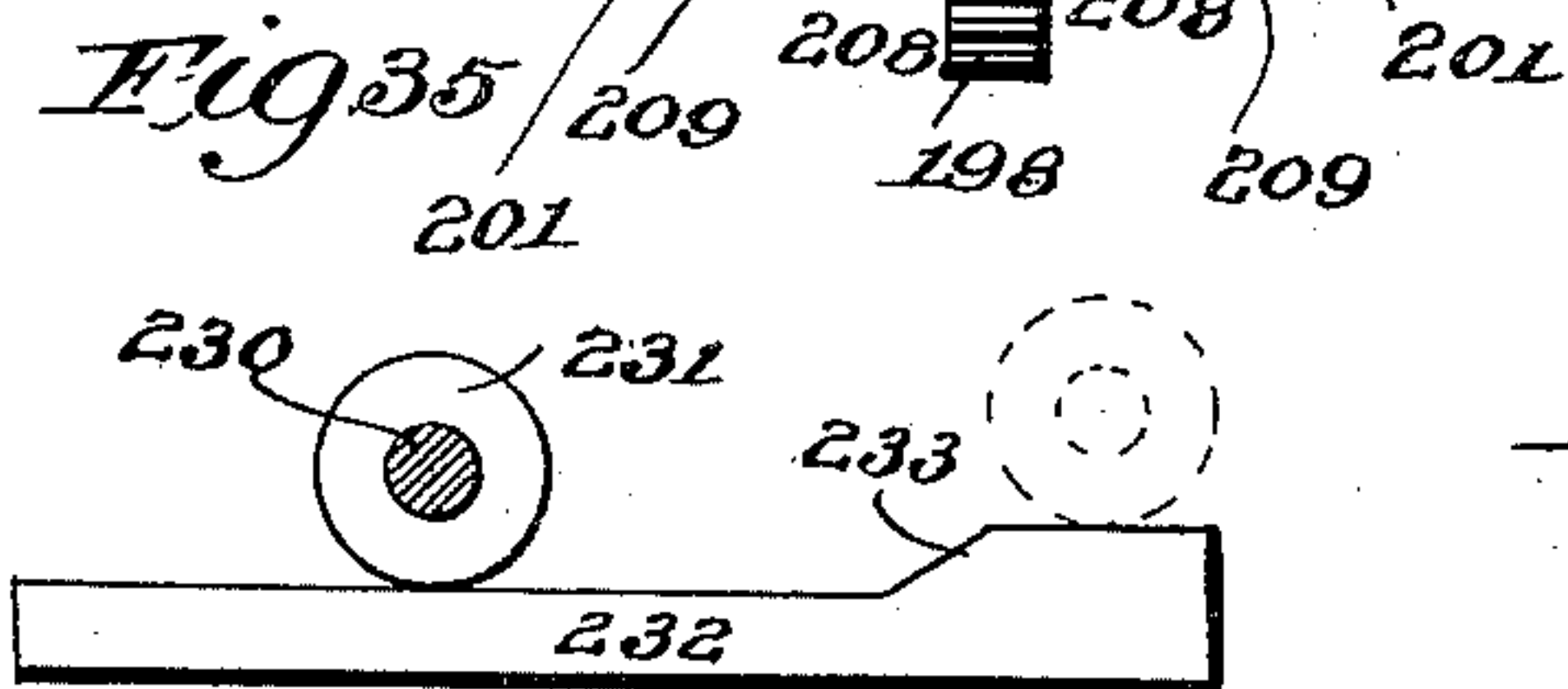
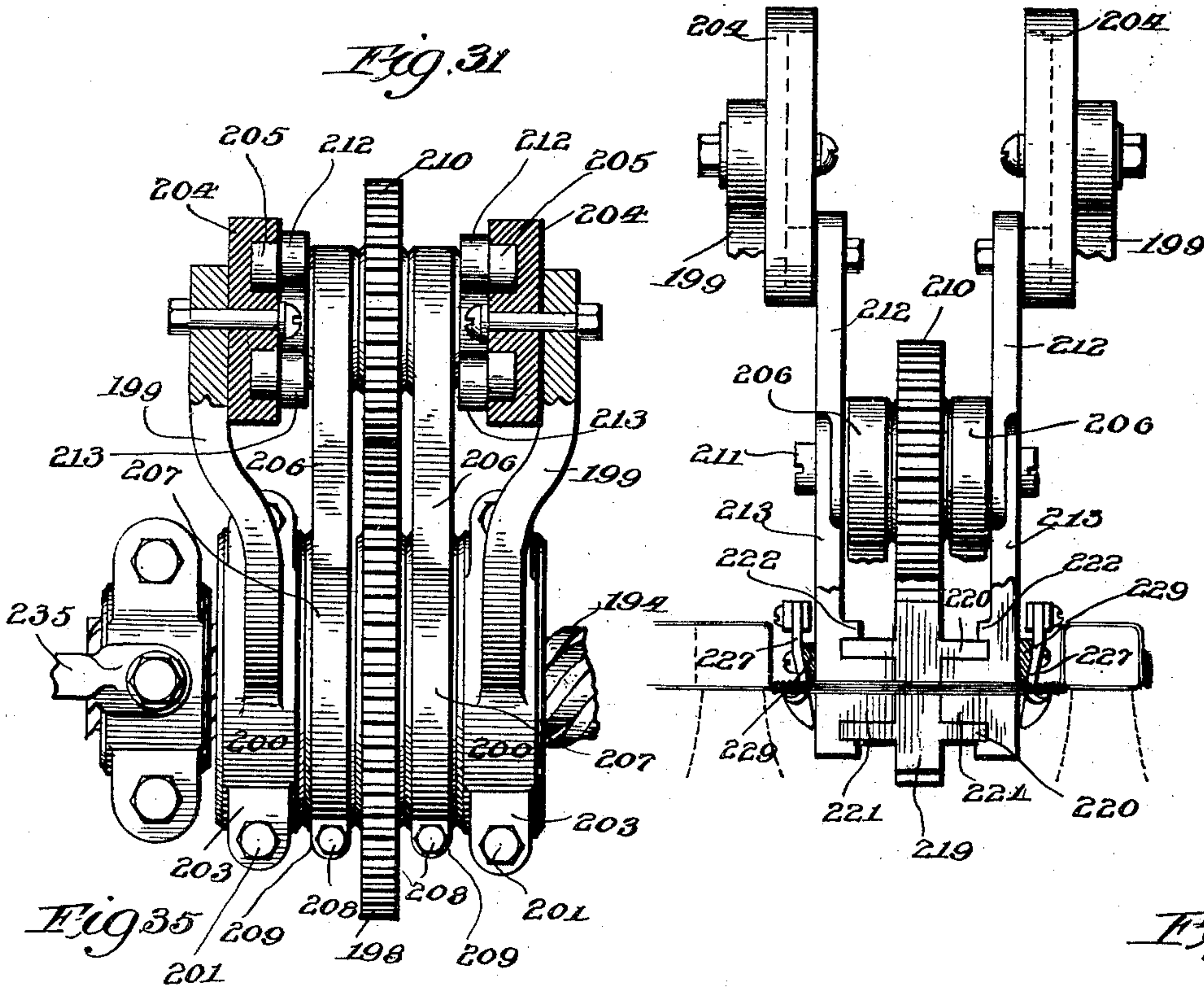


Fig. 33

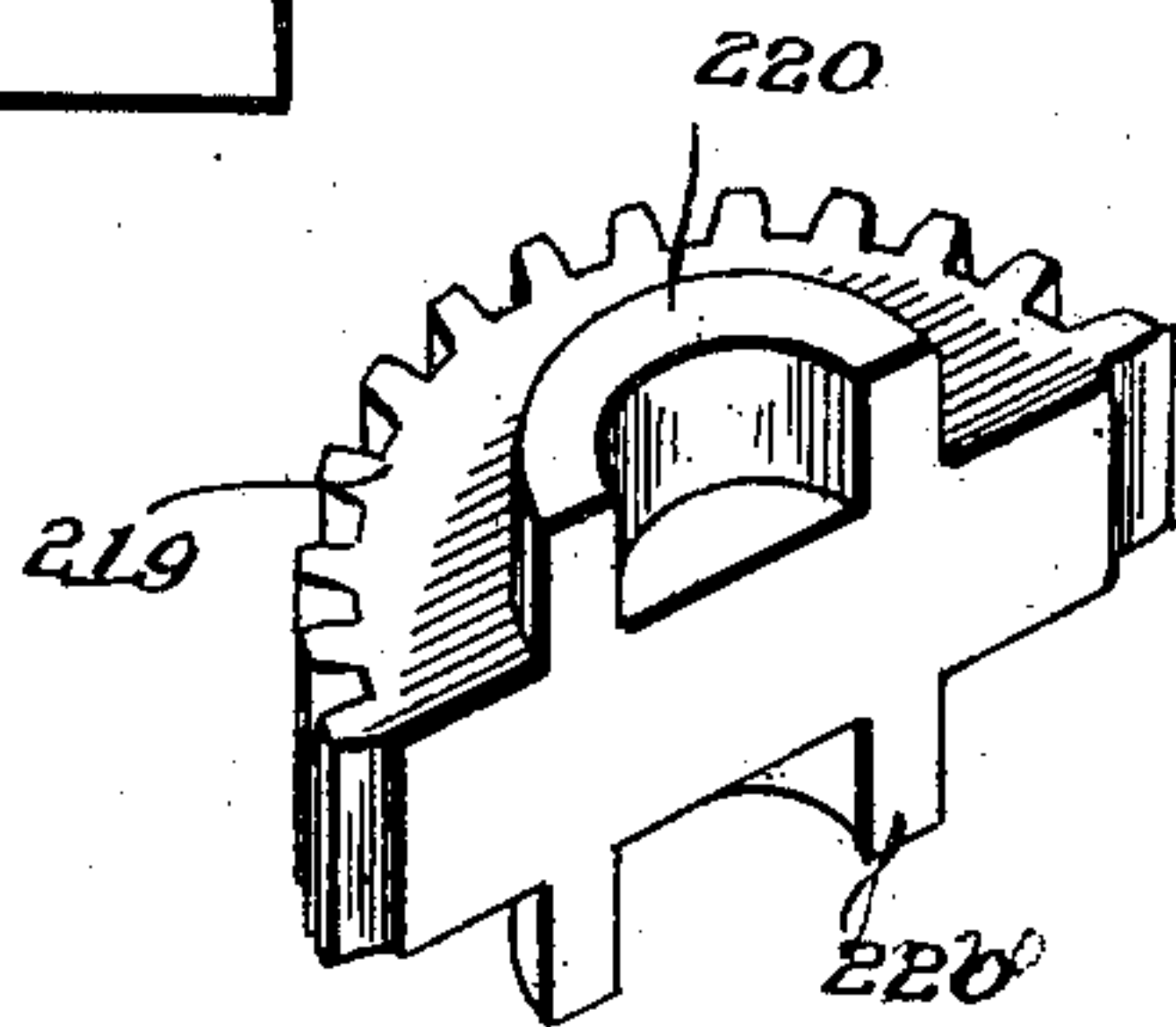
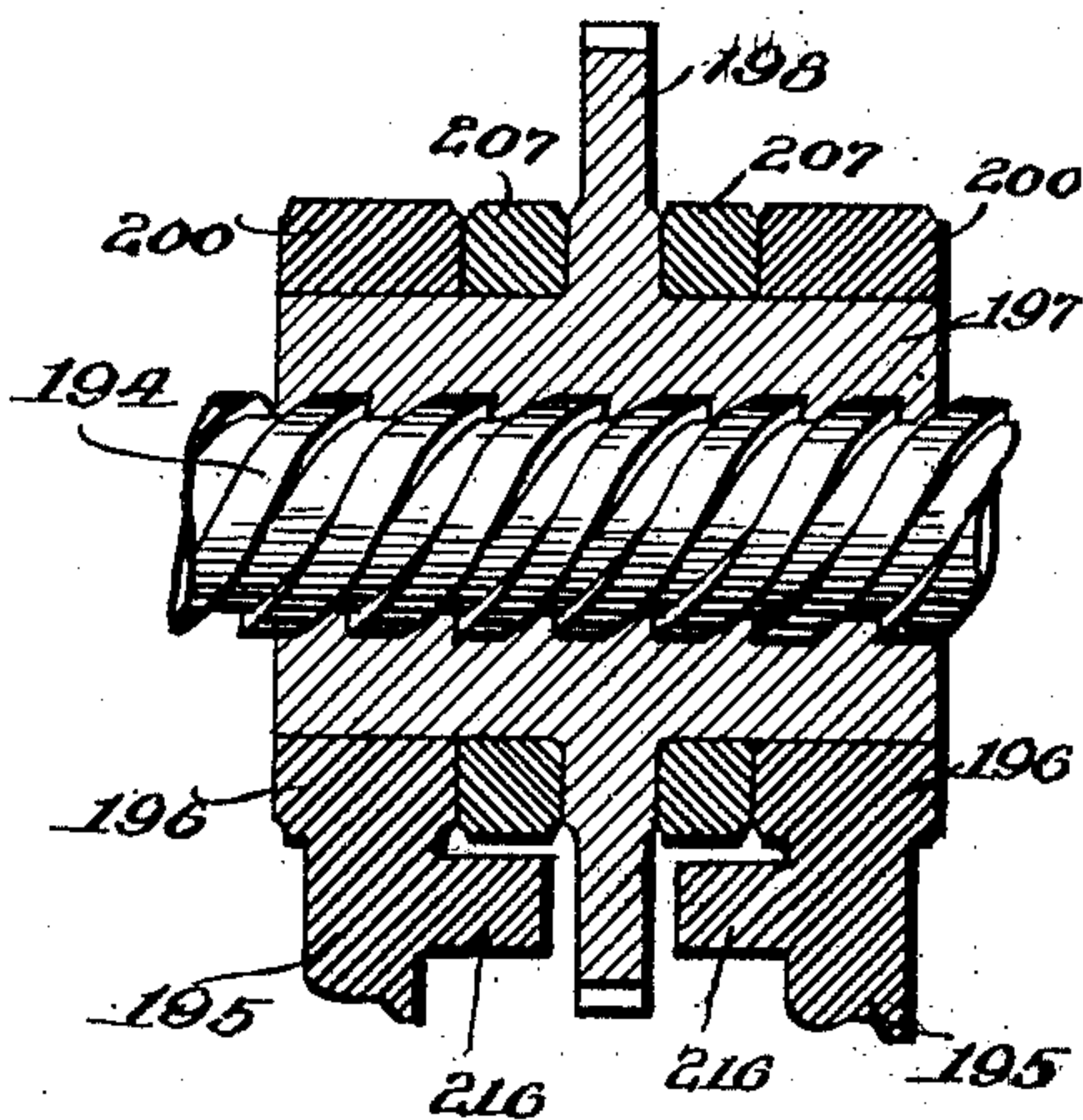


Fig. 34



Witnesses

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**No. 707,737.**

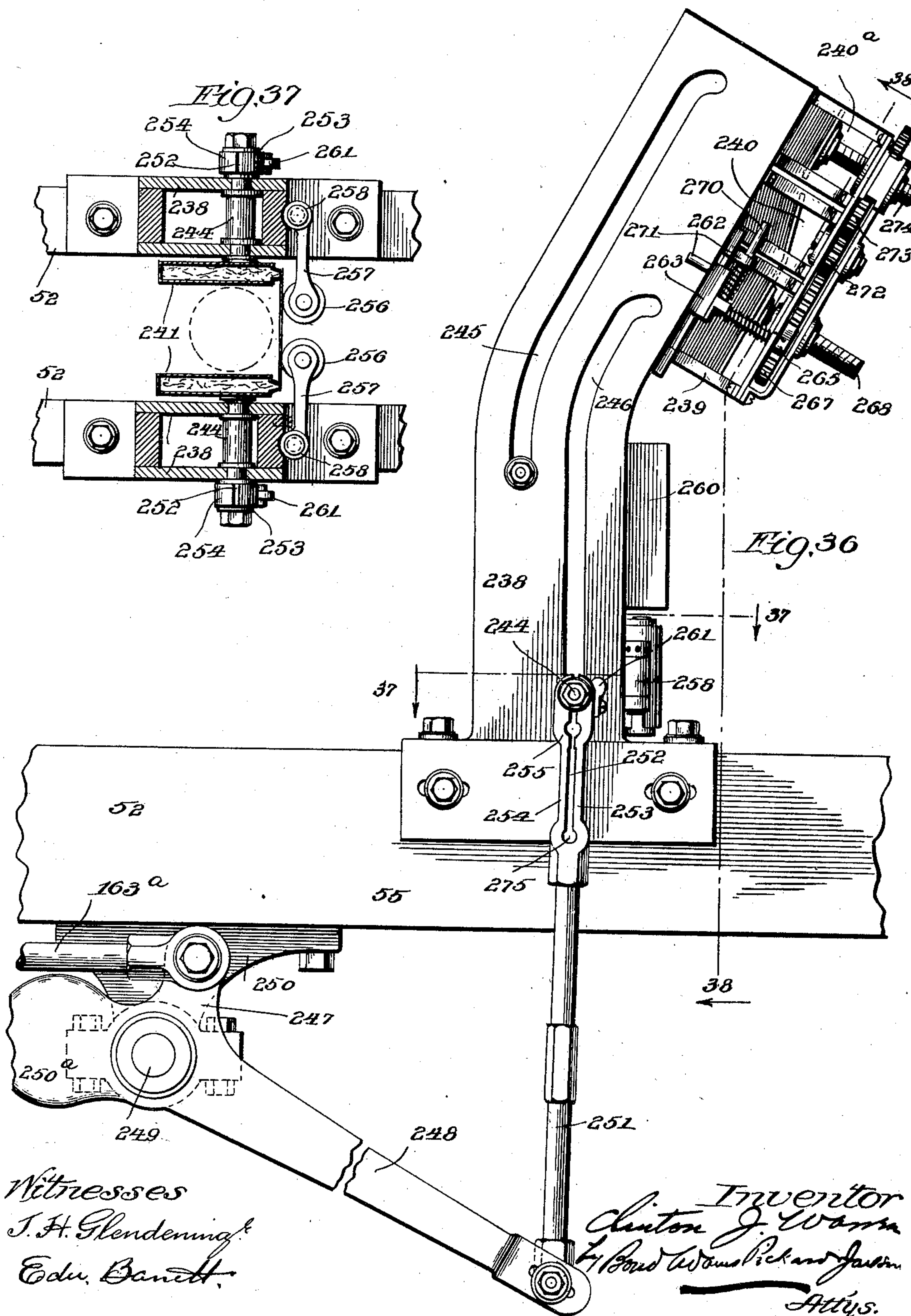
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(Application filed May 16, 1901.)

(No Model.)

**24 Sheets—Sheet 21.**



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C. J. WARREN.  
BOTTLING MACHINE.

(Application filed May 16, 1901.)

(No Model.)

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Fig. 38

Fig. 40

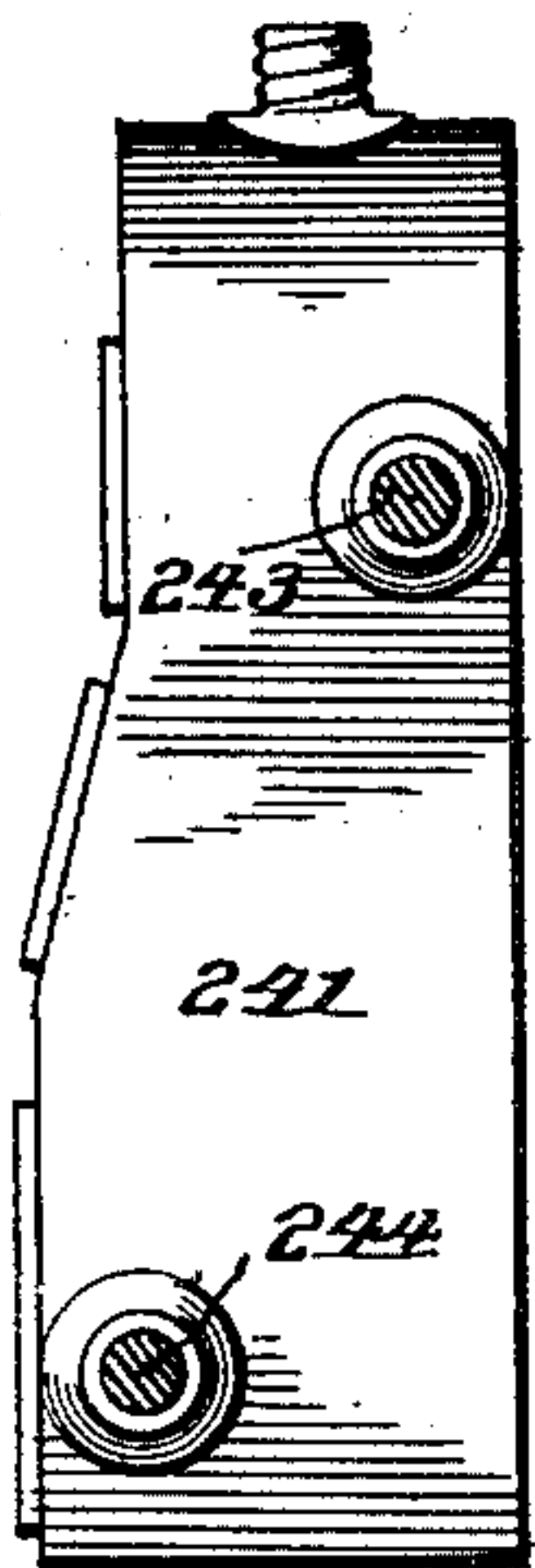


Fig. 39

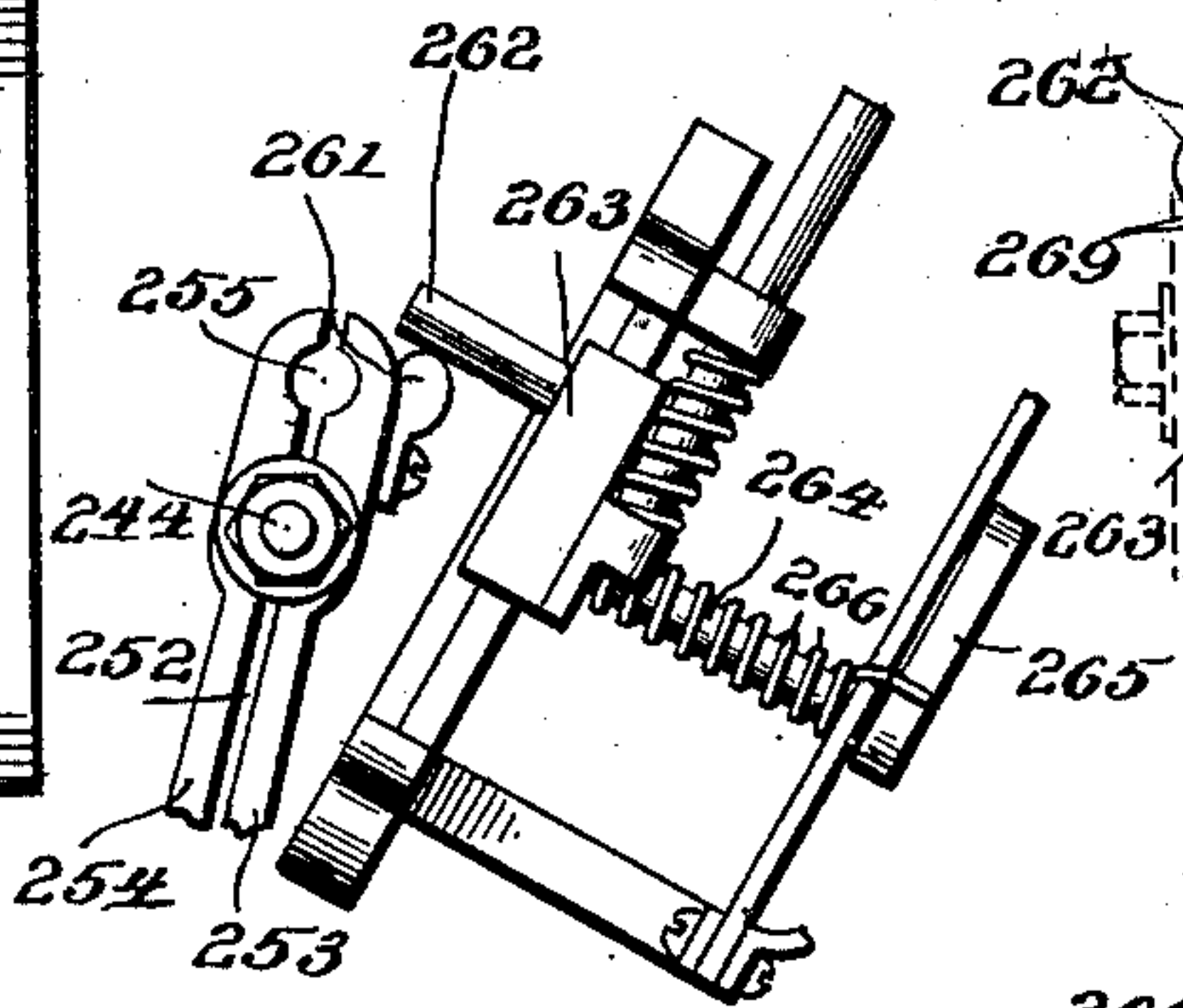
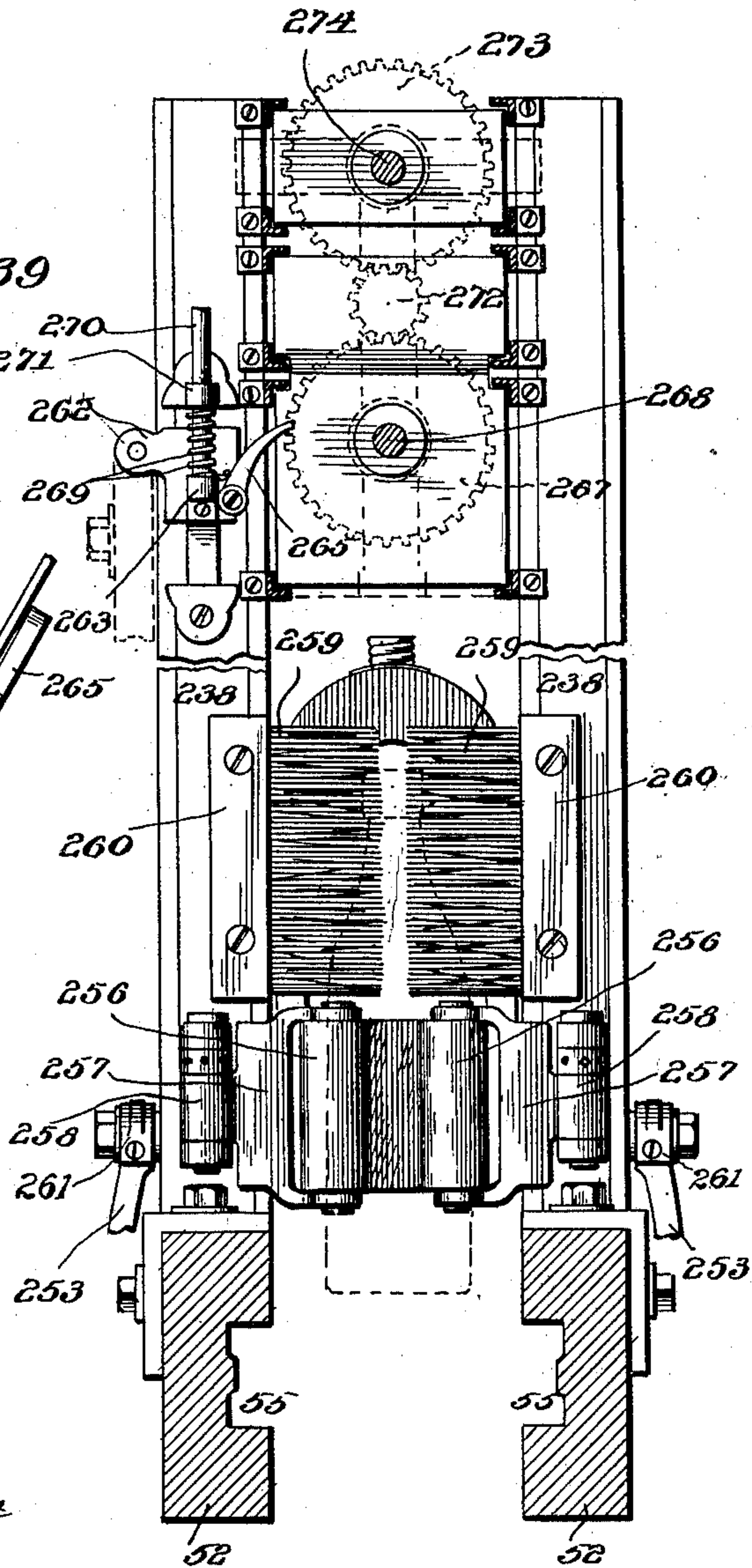
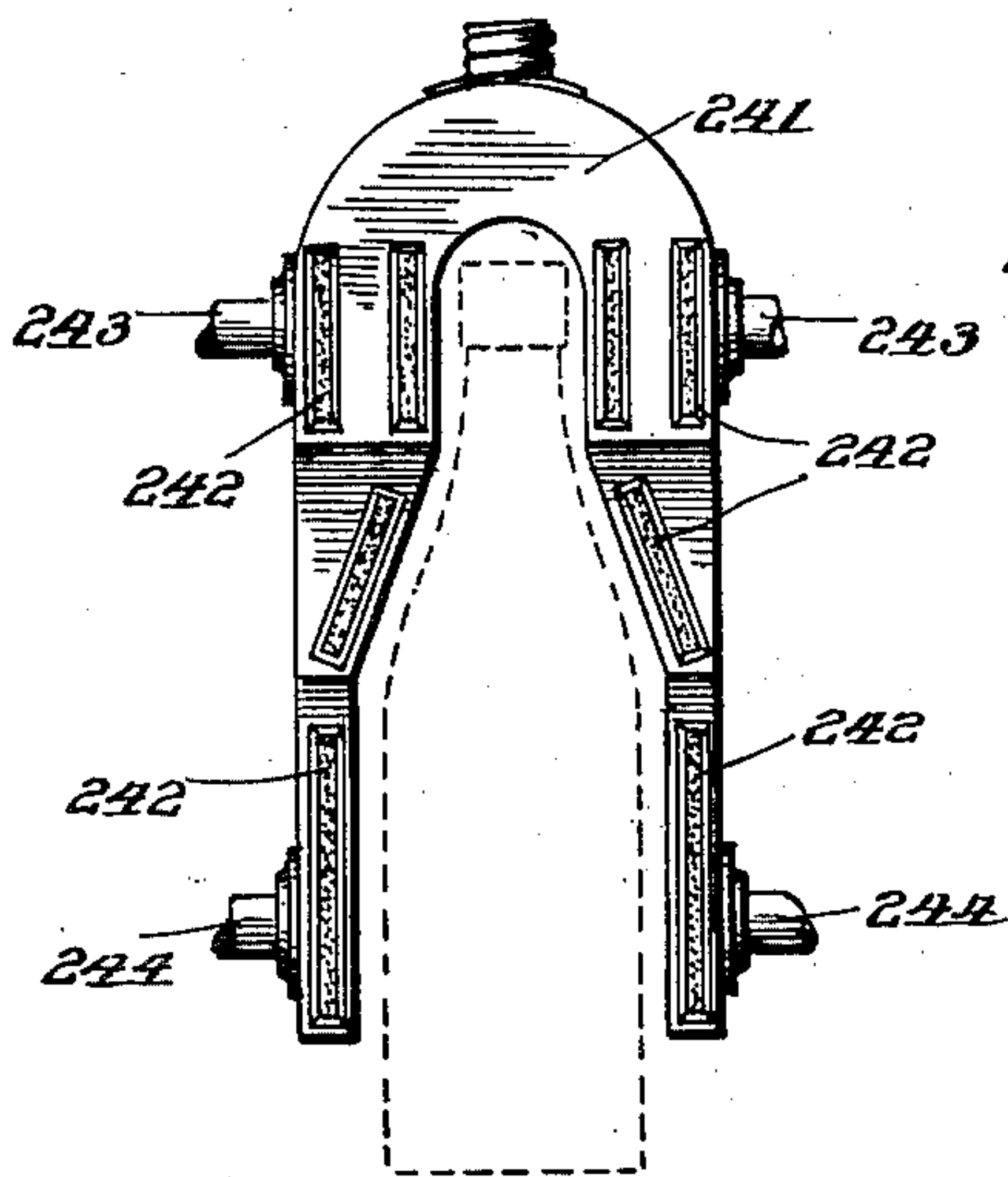


Fig. 41



Witnesses

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No. 707,737.

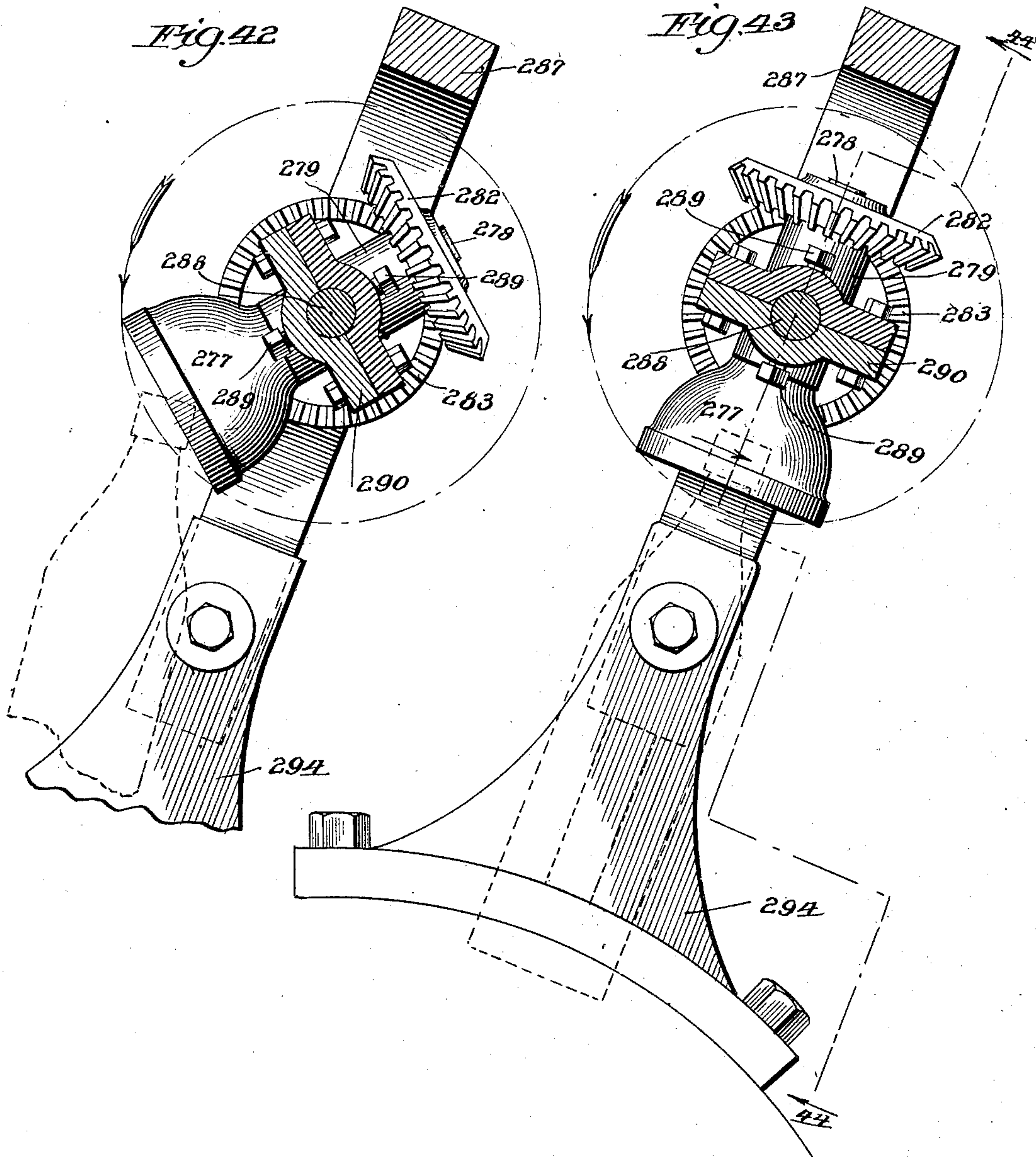
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(Application filed May 16, 1901.)

(No Model.)

24 Sheets—Sheet 23.



Witnesses:  
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No. 707,737.

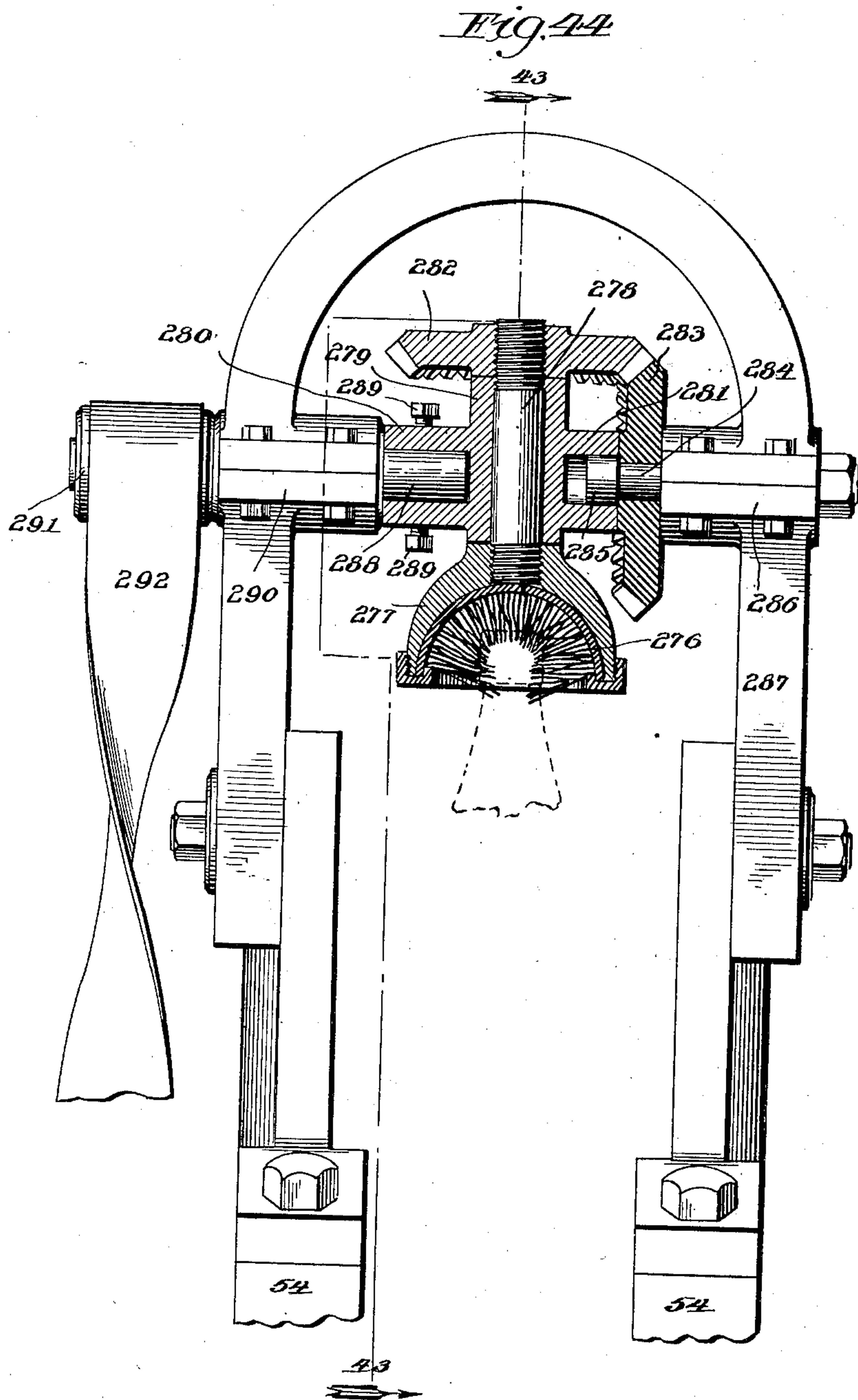
Patented Aug. 26, 1902.

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BOTTLING MACHINE.

(Application filed May 16, 1901.)

(No Model.)

24 Sheets—Sheet 24.



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# UNITED STATES PATENT OFFICE.

CLINTON J. WARREN, OF CHICAGO, ILLINOIS.

## BOTTLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 707,737, dated August 26, 1902.

Application filed May 16, 1901. Serial No. 60,524. (No model.)

*To all whom it may concern:*

Be it known that I, CLINTON J. WARREN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottling-Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to bottling-machines, and has for its object to provide means for continuously moving a number of bottles, said bottles being attached at their bases to a suitable carrier, and while such bottles are in motion to thoroughly wash them, both interiorly and exteriorly, fill them in a proper manner, cork them, wire the corks in place, attach the usual neck and body labels, and apply to the tops of the bottles a covering of tin-foil, all of these operations being, as stated, performed while the bottles are in motion, the operations being performed in the order stated. With the machine in operation and carrying a full supply of bottles, the various operations enumerated will be carried on at the same time, so that a bottle or series of bottles that have been subjected to one of the enumerated operations will upon the completion of that operation pass forward and be subjected to the next succeeding operation, while a fresh bottle or series of bottles will have been moved into position to be acted upon in the same way as those that have been moved forward and operated upon in each instance while in the act of being moved forward through the machine.

The mechanism employed for accomplishing the objects stated is shown in the drawings and hereinafter specifically described.

That which I regard as new will be set forth in the claims.

In the accompanying drawings, Figures 1, 2, and 3 taken together constitute a side elevation of the entire machine, the broken line at the right-hand side of Fig. 1, the broken lines at the sides of Fig. 2, and the broken line at the left-hand side of Fig. 3 indicating the places where the several parts shown would be joined if the three figures were consolidated into one. Fig. 4 is a plan view of the devices represented in Fig. 1, a portion being broken away at one end to

show some of the operating mechanism. Fig. 5 is a plan view of the devices shown in Fig. 2, the cork-hopper of Fig. 2 being indicated only in dotted lines. Fig. 6 is a plan view of the devices shown in Fig. 3. Fig. 7 is a section on line 7 7 of Fig. 1. Fig. 8 is a plan view of the devices shown in the lower part of Fig. 2. Fig. 9 is a section on line 9 9 of Fig. 3, the devices for forcing bottles into the carrier being omitted, as such devices are fully shown in Fig. 6. Fig. 10 is a longitudinal vertical section through the bottle-cleaning devices. Fig. 11 is a side elevation of that portion of the bottle-cleaning devices shown at the left hand of Fig. 10. Fig. 12 is a horizontal section taken at line 12 12 of Fig. 11, showing the devices for rotating the cleaning-brushes and water-distributers. Fig. 13 is a cross-section at line 13 13 of Fig. 10 through one of the bottle-cleaning devices shown in Fig. 11. Fig. 14 is a side elevation of the movable frame on which the bottle-cleaning devices are carried, a small portion of the slide of the frame and of one of the longitudinal beams being broken away to show the means by which the frame is engaged by the carrier. Fig. 15 is a view similar to that of Fig. 14, with the frame in its lowered position and partly broken away. Fig. 16 is a cross-section taken at line 16 16 of Fig. 14. Fig. 17 is a cross-section on line 17 17 of Fig. 2. Fig. 18 is a detail of a portion of the carrier and its frame and the sprocket-wheel that drives the carrier, showing also one of the bottle-filling siphon-tubes, the trolley attached thereto, and the trolley-track. Fig. 19 is a plan view of one section of the carrier and one of the bottle-clamps carried thereby, a portion of the carrier-frame being also shown in section. Fig. 20 is a view taken at line 20 20 of Fig. 1, such view showing the endless bottle-carrier and its frame in cross-section and showing the driving devices, showing also the series of continuously-moving siphon-filling tubes in elevation. Fig. 21 is a detail, being a plan view of one of the siphon-filling tubes, the trolley attached thereto, and the track the trolley runs on. Fig. 22 is a detail, being a side elevation, partly in section, of the lower curved end of one of the siphon-filling tubes, the end shown being that which enters the tank containing



the liquid which is to be transferred to the bottles. Fig. 23 is a cross-section through the upper portion of the carrier-frame, showing the cork-driving mechanism, the cork-  
 5 holding socket being represented in section and the cork-driving devices being represented in their raised position. Fig. 24 is a view similar to that of Fig. 23 with the parts in their lowered position. Fig. 25 is a longitudinal  
 10 vertical section on line 25 25 of Fig. 24. Fig. 26 is a longitudinal section taken on line 26 26 of Fig. 23. Fig. 27 is a cross-section on line 27 27 of Fig. 24. Fig. 28 is a side elevation of the devices for securing the wires  
 15 over the cork in the bottle and around the neck of the bottle. Fig. 29 is a cross-section taken at line 29 29 of Fig. 28. Fig. 30 is a cross-section taken at line 30 30 of Fig. 28. Fig. 31 is a plan view, partly in section, of the wiring devices shown in Fig. 28. Fig. 32  
 20 is an end view, partly in section, of the devices shown in Fig. 30. Fig. 33 is a perspective view of one-half of the divided gear-wheel shown in side elevation in Figs. 29 and  
 25 30. Fig. 34 is a section through the main gear-wheel of the wiring mechanism and its elongated hub, with the members that are carried thereon, the actuating-screw through such hub being shown in elevation. Fig. 35  
 30 is a sectional view taken at line 35 35 of Fig. 29. Fig. 36 is a detail, being a side elevation of the labeling devices and the means for actuating the same. Fig. 37 is a cross-section taken at line 37 37 of Fig. 36. Fig. 38 is a  
 35 section taken at line 38 38 of Fig. 36. Fig. 39 is a detail showing the label-compression devices. Fig. 40 is a side elevation of the movable paste-carrier, the supporting-pins attached to such carrier being shown in section.  
 40 Fig. 41 is a front elevation of the movable paste-carrier. Fig. 42 is a side elevation of the tin-foil-applying devices, the parts being shown in the position assumed when about to receive the head and neck of a bottle, the upper  
 45 cross-bar of the supporting-frame being shown in section. Fig. 43 is a view similar to that of Fig. 42, with the exception that the devices are shown in the position they occupy when they have moved forward to be directly  
 50 over a bottle; and Fig. 44 is a section taken at line 44 44 of Fig. 43.

Referring to the figures of the drawings, in which corresponding parts are indicated by the same reference characters, 50 indicates  
 55 supports at each end of the machine, upon which are secured two pairs of longitudinal beams 51 52, each pair having a suitable space between them to adapt the carrier, hereinafter described, to move freely in said space.  
 60 The two pairs of longitudinal beams are located one above the other, as clearly shown in Figs. 1, 2, and 3, and are connected at their ends by curved pieces 53 54. The inner faces of each pair of beams 51 52 and the inner  
 65 faces of the curved end pieces have formed therein a deep groove 55, in which the supporting-rollers of the carrier are adapted to

travel. The carrier referred to is an endless one and is composed of a number of comparatively heavy blocks 56, each block having ears  
 70 57 at its ends, through which pass axles 58, upon the ends of which are journaled rollers 59, these rollers traveling, as stated, in the grooves 55 in the opposite faces of the beams 51 52 and their curved end pieces.  
 75

60 indicates a sprocket-wheel keyed to a shaft 61, mounted in suitable bearings secured between the longitudinal beams 51 52, near one end thereof. 62 indicates another and longer shaft extending across the machine  
 80 between the two longitudinal beams referred to and suitably secured in bearings supported by the framework. Upon opposite ends of this shaft 62 are two large pulley-wheels 63 64, over either of which a drive-belt 65 is  
 85 adapted to pass. The shaft 62 carries a small gear-wheel 66, which is keyed thereto and which meshes with another and larger gear-wheel 67, which latter gear-wheel is secured upon a projecting end of the shaft 61, as best  
 90 shown in Fig. 20, whereby upon the rotation of such large gear-wheel the sprocket-wheel 60 is driven and by its engagement with the axles of the carrier-wheels 59 moves such carrier forward. At the opposite end of the ma-  
 95 chine from that at which the devices just referred to are located is arranged another and similar sprocket-wheel 68, over which the carrier travels, this sprocket-wheel 68 being located on a shaft 69.  
 100

The outer face of each block 56 of the endless carrier is provided with a clamp adapted to receive the base of a bottle and hold such bottle in position by clamping it firmly near its base. The clamp consists of two similar  
 105 curved metal bands 70, each portion being bent on itself and at the bent portion secured to the block 56 by a screw or other pivot 71<sup>a</sup>. The curvature of each portion of the clamp is such as to adapt it to conform to the cur-  
 110 vature of the bottle intended to be held, and it is provided on its inner face, as shown, with two oppositely-arranged cushions 71, one of such cushions being provided for each portion of the clamp. The acting portion of the  
 115 clamp, as shown, forms nearly a complete circle, the two ends approaching closely to each other and working back and forth when pressure is applied or released beneath a bracket  
 120 72. The outer ends of each portion of the clamp bear against the sides of the beams 51 and 52 and their connecting curved end pieces 53 and 54 with sufficient force to cause the cushions 71 to grasp the bottle firmly, so  
 125 as to hold it securely in whatever position the bottle may be. At the point where the bottle is released from the clamp, so as to be discharged from the machine, and also at the point where it is forced into the clamp, as hereinafter described, the space between the  
 130 opposite end portions 54 is slightly widened, as seen in Fig. 6, which of course releases the pressure on the curved clamps 70 sufficiently to permit the bottle to be inserted in



or released from the clamps. When this widened portion is reached, the two portions 70 of the clamp are forced apart to release the bottle by the action of a curved spring 73, secured at one end to one of the parts 70 and bearing at its other end against the other corresponding part 70. (See Fig. 19.)

To attach a series of bottles to the carrier, the bottles are placed successively upon two pairs of oppositely-located, easily-yielding curved springs 74 with the bases of the bottles toward the machine and opposite the space in which the endless carrier travels. These springs are each secured at one end only, their free ends projecting toward each other, as shown.

75 indicates a forwardly-projecting frame extending out from the curved end piece 54. At the outer end of this projecting frame 75 are two sets of oppositely-located gear-wheels 76 77, suitably keyed to shafts 78 79, respectively, that are journaled in the frame 75, and gearing with an interposed idler 80 on a shaft 81, so that as the gears are rotated the two sets of gears 76 77 will move in the same direction, as indicated by the arrows in Fig. 3. Secured to the gears 76 77 by a pivot-pin 82, carried by each gear, is a suitable pushing device provided at its forward end with a cup-shaped head 84, adapted to be brought against the head of a bottle lying on the curved springs 74. The pushing device referred to is represented in the drawings (see Fig. 6) as a rectangular frame 83. The gears are driven through a belt 85, driven from a large pulley-wheel 86 fast on the shaft 69, the belt being crossed, as shown, to drive the gears in the proper direction. The devices are timed, so that the cup-shaped head 84 is brought into contact with the head of a bottle just as one of the carrier-blocks 56 comes opposite such bottle, whereby the base of the bottle is pushed in between the clamping-arms 70, carried by the block, such clamping-arms being forced tightly against the side of the bottle near its base by the narrowing at about this point of the space in which the carrier travels. The bottle being thus gripped by the clamps on the block, it is carried downward and around with the carrier, the springs 74, while being strong enough to support an empty bottle in position, yet being weak enough to easily spread to allow the bottle to pass through as it is carried by the carrier. On the pushing device and immediately back of the cup-shaped head 84 is shown a coiled spring 87, which is provided for the purpose of avoiding shock as the bottle is pushed into place. As will be readily understood by reference to Fig. 3, this pushing action on the bottle continues until the pivot-points 82 pass below the centers of the shafts 78 79, and by the time the cup-shaped head is withdrawn from contact with the bottle the bottle is firmly secured within the clamp on the block of the carrier. Bottles are continuously fed to the machine, so that at all times each block

of the carrier supports a bottle, and the bottles are successively subjected to the various operations hereinbefore briefly enumerated by the devices now about to be described in detail. The bottles are first subjected to a washing operation, the washing being both on the outside and inside of the bottle.

88 indicates a slide adapted to move back and forth to a limited extent on a fixed guide 89, secured upon the outer face of the longitudinal beam 51. The slide 88 carries a pivoted dog 90, which extends over the upper face of the beam 51 and has a downwardly-projecting portion 91, which is adapted to be engaged by a squared tooth 92, carried by one of the blocks 56 of the carrier. Each block of the carrier is not provided with one of these squared teeth, but about every fourth or fifth block will be, accordingly as the machine is timed. These slides and attached parts for moving the bottle-washing devices are duplicated for each side of the machine, as will be seen by reference to the plan view in Fig. 8 and the sectional view in Fig. 17; but a description of one side only will suffice to explain the construction and operation.

93 indicates depending vertical rods secured at their upper ends to the lower face of the slide 88.

94 indicates a wide channel-plate securely affixed to the vertical rods 93, the location of such plate on the rods being, as shown by Figs. 10 and 17, a short distance below the heads of the depending bottles that are carried by the endless carrier. 95 indicates another wide channel-plate, to which are affixed at its sides sleeves 96, through which the rods 93 pass, this channel-plate 95 being adapted to be moved up and down, as hereinafter described, on the rods 93. The lower ends of the rods 93 are provided with coiled springs 97, held against removal by nuts 98, which springs serve to prevent shock when the plate 95 is moved to its lowest position.

99 indicates a lever pivoted at one end by a pivot 100 to a depending bracket 101, carried by the slide 88.

102 indicates a comparatively thick plate bolted to the under side of the longitudinal beam 51 and having in its outer face a wide groove 103, in which travels a roller 104, loosely mounted on a pin 105, projecting inwardly from the pivoted lever 99. This groove 103, in which the roller 104 travels, extends upward diagonally from the forward end of the plate 102 to nearly the opposite end and upper edge of said plate and then extends downwardly and diagonally, the diagonal being in the direction of the travel of the carrier, and then on a horizontal line until it runs into the diagonal portion referred to. The horizontal portion for about half of its length and commencing from about its juncture with the curved portion decreases in depth, as indicated by the vertical shade-lines and also as indicated in the lower portion of Fig. 16, until about the center of the length of the groove



is reached, and from there on the depth of the groove is uniform and parallel with the face of the plate 102. The effect of this construction is that the roller 104, that travels in the groove 103, is forced outward when it reaches the inclined portion of the lower part of the groove and remains partially outward while it is traveling the rest of the distance in its horizontal path. Upon reaching the end of the horizontal path it will be shot into the inclined path by a coiled spring 106, that is carried by the pin 105, the coiled spring bearing, as shown in Fig. 16, against the side of the lever 99 and the side of the roller 104.

107 indicates a rod pivoted at its lower end to the vertically-movable channel-plate 95 and adjustably pivoted at its upper end to the lever 99. Upon the vertically-movable channel-plate 95 are rigidly secured hollow supports 108, through which pass hollow nipples 109, upon which are mounted small gear-wheels 110, said nipples being secured to the gear-wheels, so that the turning of the gears will rotate the nipples. Directly over each one of these hollow nipples is a short section of pipe 111, that passes through a suitable opening in the channel-plate 94, such short pipe having affixed at its upper end a concave cap 112, adapted to fit over the end of an ordinary bottle. Surrounding each of the sections of pipe 111 is a short sleeve 113, affixed to and depending from the lower side of the channel-plate 94, and within the sleeve 113 the pipe 111 has a limited vertical play, its downward movement being stopped by its concave head 112 and its upward movement being controlled by a head 114 on its lower end that comes in contact with the lower end of the sleeve 113.

115 indicates gear-wheels, one being interposed between each set of gear-wheels 110 and meshing therewith, each of such gear-wheels 115 being rotatably mounted on a base 116. Fixedly secured to each gear-wheel 115 and rising vertically therefrom is a long screw 117, the thread thereof having a sharp pitch, and surrounding each of such screw-threads is a long sleeve 118, screw-threaded on its interior to correspond with the pitch of the screw 117, said sleeve being rigidly secured to the channel-plate 94 and extending, as shown, both above and below the base of such channel-plate.

119 indicates a piece of flexible tubing passing through the short section of pipe 111. Its lower end projects into and is attached to the hollow nipple 109, so that when the channel-plate 95 is moved downward, as hereinafter described, the flexible tubing will be drawn down therewith, its upper end remaining in the short section of pipe 111. Within each piece of flexible tubing is a piece of small spring-wire 120, carrying at its upper end a hollow head 121. This wire is for the purpose of supporting the tubing when it is forced out beyond the pipe 111, as shown, and the wire is slightly bent at its upper portion

and gives a corresponding bend to the tubing, so that as water emerges therefrom it is better thrown toward the side of the bottle.

Below the channel-plate 95 runs a water-supply pipe 122, from which through suitable connections 123 water is forced through the hollow nipple 109 and flexible tube 119 to the interior of a bottle when the parts are in the position shown. As this water-pipe moves with the channel-plate 95, it is necessary to have a flexible connection connecting it with the source of supply, and such a connection is shown in Fig. 2 and indicated by 123'.

Before describing the operation of the machine that effects the washing of the interior of the bottles by the means just described I will describe the other washing devices whereby the exterior of the bottles is washed and an additional washing or rinsing given to the interior. I do this because these second washing devices are carried by the same movable channel-plate 95, and therefore move with and operate at the same time, though of course on another set of bottles, as the first-described washing devices.

124 indicates two pairs of hollow supports, each having loosely mounted thereon a gear-wheel 125, an intermediate gear-wheel 126, mounted on a support 127, being provided between each pair of gears 125, being similar in this respect to the gears and supports previously described for the other washing devices. Each gear-wheel 126 carries an upwardly-projecting screw 128, which passes through properly-screw-threaded sleeves 129, projecting above and below the central portion of the channel-plate 94.

130 indicates a base-block screw-threaded, as shown, or otherwise secured to a hollow hub 131 on the upper face of each gear-wheel 125. From opposite sides of the base-block is extended upward a water-distributor 132, the inner surface of which is perforated to permit water to be discharged therefrom against a bottle lying between the two distributors. Between these two distributors are vertically-arranged brushes 133, adapted to contact with the bottle. The shape of the water-distributors and brushes is adapted to the shape of the bottle, being for that purpose, as shown, wider at the lower end, where they come opposite the neck of the bottle, than at the upper end, where they are opposite the body of the bottle.

134 indicates a pipe connected at its lower end to the hollow hub 131 and being provided just above its point of connection with the hollow hub with a connection 135, that admits water to each of the water-distributors 132. Water is admitted through the hollow hub 131 to the pipe 134 through suitable connections 136, extending down to the main supply-pipe 122.

In operation, with the blocks 56 each carrying clamped therein a bottle and with the carrier driven by means of the sprocket-



wheel 60, as heretofore described, when a block of the carrier that has thereon a projection 92 is advanced sufficiently far to engage the dog 90 on the slide 88 such slide will be pulled along on its guide 89, carrying with it, of course, the pivoted lever 99. As the lever moves, the roller 104, carried thereby, moves upward in the diagonal portion of the guide 103, the end of the lever attached to the connecting-rod 107 rising, of course, until it reaches the position indicated in Fig. 14, which movement carries up the channel-plate 95 and its attached parts, such channel-plate and the upper channel-plate 94 (which does not move vertically) being both carried along with the movement of the slide 88 at the same time that the upward movement of the channel-plate 95 takes place. As the channel-plate 95 moves upward the flexible tubings 119 are forced into one set of bottles and the water-distributors and brushes are brought up around another set of bottles, the pipes 134 pass up inside of the bottles that are surrounded by the water-distributors and brushes, and water passing from the main water-supply pipe 122, as heretofore described, is supplied to the interior of the first-named set of bottles and to the interior and exterior of the second-named set of bottles. The vertical screws 117 are attached, as stated, to the bases that are carried by the channel-plate 95, and as they are forced through the stationary sleeves that are carried by the channel-plate 94 the effect, of course, is to turn the respective gear-wheels that are attached to the screws, and as these gears mesh with the gears attached to the washing devices the washing devices—namely, the tubes, the water-distributors, and the brushes—are of course rotated, so as to effect a thorough washing both inside and outside of the bottles. As the channel-plate 95 rises the upper ends of the hollow nipples 109 contact with the enlarged lower portions of the pipes 111, forcing such pipes up slightly and bringing the cups at their ends against the heads of the bottles. When the carrier is moved far enough to bring the roller 104 on the lever 99 to the limit of the long diagonal portion of the groove 103, the dogs 90 are disengaged from the carrier by a cam 137 on top of the longitudinal beams 51, upon which cam the dog rises, freeing its portion 91 from the upward extension 92. At the time of the disengagement in the manner described the roller 104 is ready to pass down the short inclined portion of the groove, and as soon as that action commences the connecting-rod 107 of course commences to descend, and with it the channel-plate 95, and immediately the concave pieces 112, bearing against the bottle ends, are stopped against the horizontal portion of the channel-plate 94. The portion of the groove connecting the upper and lower portions thereof is inclined, as heretofore stated, in the direction of the line of travel of the carrier, which is for the purpose of allowing the withdrawal of the cleaning

devices that enter and surround the bottles while such bottles are moving. By the time the roller 104 gets to the horizontal portion of the groove the washing devices are clear of the bottles and the channel-plate 95 is in its lowermost position, and it is quickly retracted by a suitable spring 138, attached at one end to one of the vertical rods 93 and at the other end to one of the upright supports 50. Immediately after its retraction the dogs 90 are engaged by another projection 92 on one of the blocks of the carrier and the operation repeated, a fresh set of bottles being operated upon by the devices employing the flexible tubes 119, and the second set of washing devices operating upon the set of bottles that had just been previously cleaned by the devices employing said flexible tubes. The bottles having been washed while being carried forward by the carrier are next filled with the desired liquid while still moving forward, this operation being performed after the bottles have passed around the end of the machine and are moving between the upper longitudinal beams 52, as clearly shown in Fig. 1.

Supported on the upper surface of one of the longitudinal beams 52 is a tank 139, adapted to contain the liquid intended to be bottled. This tank, as shown, has a side extension 140 for more conveniently filling the same, and the amount of liquid kept in the tank may be regulated by any suitable mechanism.

141 indicates a vertical shaft at the side of the machine opposite to that at which the tank 139 is placed, said shaft being suitably stepped in a socket 142, supported by the framework of the machine, and passing through a bearing 143, extending out from the longitudinal beam 52. Near its upper end this shaft carries a sprocket-wheel 144, suitably secured thereto, and at some distance below said sprocket-wheel is another and similar sprocket-wheel 145, also secured to the shaft. Around these sprocket-wheels and around two other similar wheels located in the same horizontal plane pass endless chains 146 147, respectively. The shaft 141 is driven through a beveled gear 148, secured on such shaft, which beveled gear meshes with a corresponding beveled gear 149 on the shaft 61, that carries the sprocket-wheel 60, that drives the carrier.

150 indicates a fixed continuous track located between the two endless chains 146 147, the main portion of the track being but a short distance below the upper endless chain 146, but having on the side nearest to the tank 139 a portion which descends sharply and then gradually rises until it approaches about under the forward upper horizontal sprocket-wheel that the upper chain 146 passes over when it again becomes horizontal, as best shown in Figs. 1 and 2.

151 indicates long tubes closed at their upper ends, but open at their lower ends, and of



a size to permit them to enter the necks of the bottles being operated upon. These tubes 151 are connected to the chains 146 147 at regular intervals and are of course carried around by such chains. Their connection with the chains is such that each tube is free to have an independent longitudinal movement to adapt them to descend into and be withdrawn from bottles, such longitudinal movement taking place as the trolley-wheels 158, hereinafter referred to, pass down and up the inclined portions of the fixed track 150. Each tube has connected to it by a suitable connection another pipe 152, bent so that it is adapted to come over and when depressed enter the filling-tank 139. The lower end of the pipe 152 is bent around, as clearly shown in the enlarged detail, Fig. 22, the bend being such that the open lower end is for a short distance parallel with the main portion of the pipe 152. On this open lower end rests a ball float-valve 153, that is prevented from escaping by a cage 154, secured to a ring 155, attached around its open lower end. Opposite the point of junction of the pipes 151 152 is a short projection 156, carrying a suitable frame 157, in which is journaled a pair of trolley-wheels 158, which are adapted to move upon the track 150. As the endless bottle-carrier moves it will be seen that the series of pipes 151, with their connecting-pipes 152, are moved around on the endless track 150, and as such track at the side over the bottle-carrier and next to the tank is sharply depressed the pipes will be lowered, the straight pipes 151 passing down into successive bottles, while the branch pipes 152 will pass into the liquid in the tank 139. Each ball-valve 153 will rise to the limit permitted by its cage 154 as its pipe 152 enters the tank, and the pipes 151 152 having before the machine is first put into use been converted into siphons by filling them the liquid from the tank will immediately flow into the bottles and fill them, the filling operation being completed as the trolleys ride up the inclined track. When the trolley has been forced up the incline, the pipe 151 will have been withdrawn from the bottle and the bent end of the pipe 152 will have been withdrawn from the tank, the ball-valve 153 at this time settling down upon its seat, and thus preserving the siphon, so that the filling operation can immediately recommence as soon as the pipe has been carried around the track and entered a new bottle. It will be noted that the pipe 151, which enters the bottle, projects somewhat below the bent end of the pipe 152, as of course is necessary for siphoning purposes. As has been stated, the track 150, where it comes over the bottles held by the carrier-clamps, is sharply inclined downward, and this permits the pipe 151 very early in the filling operation to be inserted far down in the bottle, which is especially desirable when filling it with certain liquids having a tendency to froth or foam. As in all of the other operations, there is no

stoppage whatever of the bottles while being acted upon. After having been filled in the manner described the carrier moves the bottles to the corking mechanism, by which corks are successively applied to the moving bottles. Describing now this corking mechanism, 159 indicates two oppositely-located supports adjustably secured to the outside faces of the two upper longitudinal beams 52, upon each of which supports is secured a sharply-inclined guideway 160, upon which travels a slide 161, having pivotally attached thereto a rod 162, attached pivotally to an arm 162<sup>a</sup>, that is bolted or otherwise secured to an eccentric-rod 163<sup>a</sup>, that is attached in the usual way to an eccentric 163 on the shaft 62.

164 indicates upwardly - extending arms formed with or rigidly attached to the slides 161, to the tops of which arms is bolted a cross-head 165, having an enlarged central head 166, through which passes a plunger 167, that is preferably screw-threaded into said head 166 for the purpose of adjustment. This central head 166 and the plunger carried thereby are arranged directly over the longitudinal center of the bottle-carrier, so that when the device is operated the plunger will be in direct line with the necks of the bottles.

168 indicates a second cross-head that has its ends confined in guides in the upright pieces 164 and is free to move therein. This second cross-head 168 is also provided with a central enlargement or head 169, in which is formed a socket 170 of a size adapted to receive in its upper portion a cork of the character employed for the bottles being operated upon. As shown in Fig. 26, this socket is open at one side, through which opening the corks are entered.

171 indicates a bracket, one of such brackets extending out from each support 159 about at the upper end of the guide 160 and bent sufficiently to bring over the middle of the machine a longitudinally-extending tubular socket 172, which is supported on said brackets. 173 indicates a plunger movable within said socket, said plunger being provided with a rod 174, around which is a coiled spring 175<sup>a</sup>, that tends to force the plunger 173 outward. To the outer end of the plunger-rod 174 is pivoted a jointed or toggle lever 175, the joint being indicated by 176 and the pivotal point in the long member of the lever by 177.

178 indicates a cord or other flexible connection secured to the long member of the lever 175 near its upper and free end and secured at its other end to a short rigid arm 179, projecting from the cross-head 165.

180 indicates a hopper for containing a supply of corks for the bottles, from the lower end of which hopper extends a tube 181, the open lower end of which communicates with the interior of the cylindrical socket 172, as shown in Figs. 25 and 26. This tube is pref-



erably slotted in order that it may afford means for determining whether the corks are properly feeding downward or are becoming clogged and if clogged can be straightened out by means of a wire or rod poked through the slots.

182 indicates short arms attached to the lower face of the cross-head 168, near opposite ends thereof, each of said arms carrying at its lower end a roller 183, that bears upon a track 184, attached to the supports 159 on their inner faces. Each of these tracks at one end is slightly higher than at the other end, and the passage from one level of the tracks to the other is by a rather short sharp incline, as clearly shown in Fig. 25.

185 indicates two pairs of flat steel springs, each spring being firmly secured in place at its upper end to the cross-head 165, a pair being located about midway between the enlarged central head 166 and one end of the cross-head. Each pair of these springs has a tendency to bear against the lower cross-head 168, and each spring is given a bend 186, that forms a shoulder that projects under the lower face of the cross-head 168 when the other cross-head 165 is in its lowest position, as clearly shown in Fig. 27. By thus bending the springs the cross-head 168 is firmly held between them.

The operation of the corking mechanism is as follows: As the eccentric-rod 163<sup>a</sup> is drawn back the slide 161 on the guide 160 will, through the pull exerted thereon through the rod 162 and arm 162<sup>a</sup>, move upward on its guide and will, of course, in view of the guide 160 being inclined, move backward or in the reverse direction to the travel of the bottles on the upper part of the machine. The uprights and attached cross-heads being connected to the slide will, of course, move with it, and at the completion of the upward movement they are in the position shown in Fig. 26. At just about the completion of their upward movement the projection 179 on the cross-head 165 will strike the free end of the lever 175 with sufficient force to turn it on its pivot 177, causing it to bend at its joint 176, allowing the coiled spring 175<sup>a</sup> to shoot the plunger 173 forward, forcing out from in front of it a cork which had dropped into that position from the tube 181, causing such cork to enter the upper end of the socket 170, where it will immediately settle into the tapered lowered portion of such socket. The action of the eccentric 163 then forces the slide 161 downward on its guide 160, and after it has traveled but a very short distance the rollers 183, carried by the arms 182, that support the lower cross-head 168, descend the inclined portion of the oppositely-located tracks 184, which gives a quick downward motion to the lower cross-head. This action settles the central portion 169 of the cross-head 168 firmly down upon the head of a filled bottle, upon which it bears with considerable weight. The

central portion 170<sup>a</sup> of the under face of this cross-head 168 is concave around the cork-holding socket, as shown, and this secures the alinement of the cork-holding socket with the neck of the bottle. Further downward movement of the cross-head 168 is prevented; but the upper cross-head 165 continues to descend, with the ends of the cross-head 168 sliding in the grooves in the side faces of the uprights 164. The continued downward movement of the cross-head 165 of course carries the plunger 167 with great force against the cork in the socket 170, forcing it through such socket into the neck of the bottle, the plunger moving along with the movement of the bottle, owing to the inclined arrangement of the slide 161 and its guide 160. As the cross-head 165 moves downward and farther from the cork-delivering tube 181 the cord 178 is tightened and pulls back the lever 175 sufficiently to withdraw the plunger 173, thus allowing another cork to drop in front of it. When drawn back, the joint 176 will lock it in position until the lever is again tripped by the rigid arm 179. As the slide 161 starts again on its upward movement on the guide 160 it is necessary that the cross-head 168 be instantly released from contact with the bottle just corked, and this is effected through the broad flat springs 185, previously referred to. These springs are made quite strong and spring toward each other with considerable force. As the slide starts upward it of course carries the uprights 164 and the attached cross-head 165, to which latter cross-head the springs are attached at their upper ends, their lower ends being free and moving toward each other. The springs 185 having the decided bends 186 in them, which bends at this time are immediately under the lower edges of the cross-head 168, enable said cross-head 168 to be lifted by these springs out of the way, so as not to interfere with the forward movement of the now-corked bottle, and such springs will so support the cross-head until the rollers 183 strike the incline of the track 184. The rollers will then come in contact with the projecting strips 187, thus preventing the cross-head 168 from rising farther and causing the springs to be forced outward, so that the bent portions 186 of the springs can pass said cross-head 168, as shown in Fig. 23 and in dotted lines in Fig. 27. After having been corked by the mechanism described the bottles in their continued forward movement through the machine are next brought into position to be acted upon while still moving by the mechanism for passing and securing the ordinary binding-wires over the closed mouth of the bottle and around the neck for insuring the retention of the cork in place. This mechanism for so applying the wires will now be described.

188 indicates a heavy supporting-plate secured against the outside face of one of the longitudinal beams 52, said plate being ad-



justably secured thereon, preferably by slots and bolts passing therethrough and into the beam 52, as shown.

189 indicates a guide secured horizontally to the outer face of the plate 188 and near the upper end thereof.

190 indicates a slide adapted to be moved back and forth upon the guide 189.

191 indicates a rod pivotally secured at one end to the slide 190 and similarly secured at its other end to an upright arm 192, that is securely fastened to the eccentric rod 163<sup>a</sup> upon that side of the machine.

193 indicates vertical supports extending up from the plate 188, in the upper ends of which supports is firmly secured against rotation a heavy screw 194.

195 indicates vertical supports rising from the slide 190, each having a semicylindrical head 196, which form bearings in which rests the elongated hub 197 of a large gear-wheel 198.

199 indicates arms having at their inner ends semicylindrical heads 200, adapted to fit over the ends of the elongated hub 197, the heads 196 and the heads 200 being bolted firmly together by bolts 201, passing through projecting ears 202 203 on the semicylindrical heads 196 and 200, respectively. These arms 199 are in this manner held rigidly and against any movement except their movement longitudinally of the machine as the slide 190, to which they are connected, is moved. As shown, these arms 199 are curved inward toward the longitudinal center of the machine, so that their outer ends are brought directly over the bottle-carrier. Upon the inner face of each arm is securely fastened, preferably in an adjustable manner, a block 204, upon the inner face of which are formed two similarly-shaped cam-grooves 205.

206 indicates two correspondingly-shaped arms each secured to a friction-band 207, which bands encircle the hub 197 and are adapted to be tight ened thereon by a bolt 208, passing through projecting ears 209 and secured by a nut on the end thereof. (See Fig. 29.) Each of these friction-bands 207, carrying an arm 206, is located on the elongated hub 197 between the large gear-wheel 198 and the half boxes or heads 200 and 196, as clearly shown in Fig. 34. Between these two arms 206, at their outer ends, is mounted a gear-wheel 210, adapted to turn on a pin 211, and upon each of the extended ends of each pin is pivoted a pair of bent levers 212 213, which levers carry at their upper ends small rollers 214 215, respectively, (best seen in dotted lines in Figs. 29 and 30,) said rollers moving in the cam-shaped grooves 205 in the block 204. The lower ends of the levers are cut away slightly, so as to leave, when such lower ends are together, a notch of an inverted-V shape, as clearly shown in Fig. 30. Projecting from the opposite inner faces of the supports 195 and lying directly beneath the friction-bands 207 are two lugs 216, and carried by each friction-band 207 are two other

lugs 217 218, each adapted to be brought in contact with one of the lugs 216.

219 indicates another gear-wheel, which is made in two halves, one of the halves being carried, as shown, by one of the pairs of bent levers 212 and the other half by the other pair of bent levers 213. This gear-wheel is of considerable width, and it has an extended hollow hub portion 220 projecting from each face. It is held in place by inwardly-extending projections 221 222 from the levers 212 213, as best seen in Fig. 32.

223 indicates rods each projecting inward from one of the supports 195 and each having an eye at its outer end, through which eyes passes a horizontal bar 224, to the ends of which are rigidly secured upwardly-extending arms 225.

226 indicates short levers each pivoted at one end to one of the arms 225 and pivoted at its other end to one end of a blade 227, which in turn is pivoted at 228 to a bolt or screw that passes through a fixed cutting-blade 229, that is carried near the lower end of one of the levers 213, on its outer face.

230 indicates a short rod formed with or rigidly secured to the bar 224 and carrying on its lower end a roller 231, which bears against a track 232, affixed to the inner face of the plate 188 at its upper end, said track having near one end an incline 233, up which the roller 231 is adapted to travel. (See Fig. 35.) This construction is also indicated in dotted lines in Fig. 28.

234 indicates coiled springs around the bar 224 and each bearing at one end against an arm 225.

235 indicates a frame carried by one of the supports 193, in which are journaled pulleys 236 237, over which wire passes to be used upon the bottles. The wires are led from reels located in any suitable position upon the framework or other support.

In operation the motion of the eccentric-rod 163<sup>a</sup> is transmitted through the arm 192 and connecting-rod 191 to the slide 190, causing it to move back and forth upon the horizontal guide 189. As the screw 194 is secured against rotation, it is evident that the elongated hub 197 upon that screw will have to turn. The friction of the bands 207 around the hub is sufficient to cause them to turn with the hub until the lugs 217, carried by these friction-bands, contact with the fixed lugs 216, projecting out from the supports 195. This contacting of the lugs mentioned occurs at about the time that the pivoted bent levers 212 213 are in their lowermost position, and by reason of the travel of the rollers 214 215 at their upper ends in the cam-grooves their lower ends are brought together, as represented in Fig. 30, which action of the levers brings the two halves of the divided gear 219 together. Although the gears 198, 210, and 219 are in mesh, the gears 210 and 219 have not been driven by the rotation of the gear 219, owing to their downward move-



ment; but now as the limit of their downward movement is reached and as the elongated hub 197 is still being forced along on the fixed screw 194, and consequently rotating, the rotation of the gear 198 drives the gear 210 and through that the now closed gear 219. This closing of the two halves of the gear 219 and the commencement of its rotation takes place just as a bottle, with the two sets of wires leading over it and at its sides, approaches the first set of bent levers 212 213, the result being that the wires are grasped between the two parts of the gear 219 and twisted together as the bottle moves along. At about the completion of this twisting operation the horizontal roller 231 rides up the incline 233 of the track 232, turning the blade 227 on its pivot 228 through the arms and lever interposed between the roller and the said blade, causing said blade to cut off the twisted wires between it and the fixed cutting-blade 229. Upon the completion of this operation the action of the eccentric 163 through its eccentric-rod 163<sup>a</sup> and intermediate connections commences to draw back the slide 190, whereupon the rotation of the gear 198 is reversed and the arms 206, through the frictional engagement of their bands 207 with the elongated hub, are raised, drawing up the levers 212 213, which open at their lower ends, leaving the bottle free to pass on. The contacting of the lugs 218 on the frictional bands with their respective fixed lugs 216 just before the rollers 214 215 approach the upper ends of their respective cam-grooves causes the gear 210 to rotate, but without any effect, of course, as the gear 219 is well above the bottles. Upon the slide 190 again being moved back the levers 212 213, with the gears 210 and 219, are again brought down, and at this time the bottle previously operated upon to the extent of having the wires twisted at one of its sides is again operated upon by having the wires twisted at its opposite side, and at the same time a succeeding bottle has the wires twisted and cut upon one side, the two pairs of levers 212 213 of course moving and acting together and the two simultaneous operations of twisting and cutting the wire occurring on opposite sides of the divided gear 219, the positions of the bottles being operated upon being indicated in Fig. 32. That portion of the wires extending between a bottle that has been completely wired and a bottle only partially wired is when the wires are separated by the blades 227 and 229 not utilized, the wastage amounting practically to four pieces of wire equal in length to about the width of the divided gear 219. The partial wiring of a bottle which is obtained at the first operation secures the wires upon that side of it which is toward the forward end of the machine, so that as the bottle moves along it serves as a means to pull after it the strands of wire, so that such wires will be properly in position over and at the sides of the succeeding bottle. The movable cutting-

blade 227 is thickened considerably, as shown, on its outer side, so as to enable it to engage the twisted ends after the same have been severed from the length of wire and bend such twisted ends up closely against the neck of the bottle, as clearly shown in Fig. 32.

After passing from the wiring mechanism the next operation to which the bottles are subjected is that of affixing to them the usual neck and body labels. The mechanism for accomplishing this is shown in detail in Figs. 36 to 41, inclusive. Referring to such mechanism, 238 indicates two standards secured opposite each other to the two upper longitudinal beams 52, said standards at their upper ends being bent toward the forward end of the machine. The upper ends of the standards, at their forward and inclined portions, are provided with an open framework extending across the machine, which is adapted to support within it a large number of labels designed to be attached to the bodies of the bottles and also adapted to contain pieces of tin-foil, which are ordinarily used to cover the heads of the bottles. This framework is divided into three compartments—239, which contains the body-labels; 240, which contains the neck-labels, and 240<sup>a</sup>, adapted to contain the pieces of tin-foil referred to. These labels, owing to the inclined position of the supports, and consequently of the label-framework, are inclined forwardly, so that they will not be liable to fall out at the rear open ends of the compartments and down between the standards.

241 indicates a movable paste-holder, which, as shown, is divided into two branches or legs the inner faces of which are approximately bottle-shaped, so as to permit bottles to pass freely between such legs or extensions. It is provided on its forward face with a number of openings in which is compressed some suitable absorbent material 242, through which the paste in the holder can ooze out. At opposite sides of the holder project pins 243 near the upper end thereof, and near the lower end it is provided with similar pins 244. These pins project through slots 245 246, respectively, in the standards 238, these slots being curved or inclined, so as to bring the paste-holder when pushed to its upper position opposite two sets of labels and the bunch of tin-foil, the absorbent material 242 coming against said labels and tin-foil and causing the rear one of each pile to adhere thereto. This paste-holder is actuated through the eccentric-rod 163<sup>a</sup>, heretofore referred to, the end of such eccentric-rod being pivotally connected to the short arm 247 of a lever 248, said lever 248 being pivoted at 249 to a depending bracket 250, connected to the under side of the longitudinal beam 52. In rear of the pivotal point 249 the lever 248 is increased in bulk to form a counterweight 250<sup>a</sup>. The forward end of the lever 248 is pivotally connected to the lower end of a connecting-rod 251, which at its upper end is provided



with a long slot 252, thus constituting two spring-arms 253 254 at the upper end of the rod 251. In the opposite faces of these spring-arms are formed notches 255, the object of which will be explained hereinafter.

256 indicates rollers preferably covered with some yielding substance, said rollers being each carried in a frame 257, which is connected by a spring-hinge 258 to one of the standards 238, such rollers being vertically arranged and adapted to lie in the path of the moving series of bottles.

259 indicates brushes projecting in from the standards 238 toward the moving series of bottles and each held in position by strips 260, secured to said standards 238.

261 indicates a lug attached to one face of the spring-arm 253 at its upper end and adapted when the rod 251 is pushed upward to the limit of its movement to contact with a projection 262, carried by a slide 263, located against the front edge of one of the standards 238. This slide carries a forwardly-projecting rod 264, upon the forward end of which is secured a pawl 265, that is held by a spring 266 normally in engagement with a gear 267, fast on a screw-threaded rod 268, mounted in the front portion of the label-carrying framework. The slide 263 is normally held down by a coiled spring 269, surrounding a short stem 270, attached at its lower end to said slide and passing at its upper end through an ear 271, against which the upper end of the spring 269 bears. The gear-wheel 267 meshes with a small pinion 272, which in turn meshes with another gear-wheel 273, which is fast on a screw-threaded shaft 274. Each time that the lug 261 abuts against the piece 262 the slide 263 is raised, and through the pawl 265 the gears 267, 272, and 273 are turned, turning also the shafts 268 and 274, moving them toward the paper labels and forcing the labels slightly inward, so as to provide at all times a label to be brought in contact with the absorbent sections 242 on the paste-holder. The ends of the shafts 268 and 274 are provided with enlarged heads for bearing against a follower in front of the labels, a single follower, as shown, sufficing for both the body and neck labels. After the paste-holder has been raised and labels from the rear of the piles have become attached to the absorbent surfaces 242, which are sticky with paste, the holder, with such label attached, is by the action of the devices already described carried down, the parts being so timed that said holder is brought into its lowermost position as a bottle is moved forward between the standards 238. At this time the paste-holder pin 244 will be in the position indicated in Fig. 36 by 275, which is the bottom of the slot 252, which, as shown, is at that point enlarged. As it is necessary that the paste-holder remain stationary in its lower position for a brief space of time in order to allow the bottle to press forward sufficiently to get the label properly shaped to it, this provision of the slot at

the upper end of the rod 251 is made, as by this construction a further downward movement of the rod is being had while the bottle is pushing its way between the legs or extensions of the then stationary paste-holder. The arms 253 254 will spring sufficiently to allow them to be pulled down on the pin 244 until such pin reaches one of the series of notches 255 near the upper ends of the said spring-arms. By the time the pin has settled in one set of these notches the bottle has progressed far enough to detach the label from the paste-holder, and by the action of the eccentric-rod 163<sup>a</sup> and the connecting devices the paste-holder is again pushed up and against another set of labels, the pin 244 during the upward movement again springing the arms 253 254, so as to permit said pin to settle down to the lower part of the slot 252. As the bottle steadily moves forward the labels that have been applied are smoothed and brushed into position by the rollers 256 and brushes 259, said rollers and brushes easily giving way to permit the passage of the bottle between them.

To insure steadiness of operation and accuracy of movement, the same operating devices for applying the labels are applied at each side of the machine. But one side has been described, the operation of the other side being exactly the same.

After the bottle passes through the label-applying devices just described it is subjected to the action of the devices which properly smooth down all around the head and upper part of the neck of the bottle the piece of tin-foil which has been loosely placed thereon and which as the bottle leaves the labeling devices is loosely attached, as shown in Fig. 3, where two bottles are represented as having passed from the labeling devices with the labels properly attached thereon and each bearing also at its upper end a loosely-applied piece of tin-foil. The smoothing down into proper position of the piece of tin-foil is accomplished by a brush the bristles of which are set in a semispherical back 276, secured in a bell-shaped casing, that is secured to the lower end of a short rod 278, passing through a sleeve 279, from which sleeve project short hollow side extensions 280 281. 282 indicates a beveled gear secured to the upper end of the vertical shaft 278 and meshing with another gear 283, that is mounted on a short shaft 284, said shaft 284 having an enlarged head 285, that projects into and turns within the hollow side extension 281, the outer end of this shaft 284 being supported in a bearing 286, formed with or secured to the supporting-frame 287. 288 indicates another short shaft, which projects into the opposite hollow side extension 280, and is secured in such hollow extension by bolts or in any other suitable manner. This shaft is supported in a suitable bearing 290, similar to the bearing 286, and also formed with or suitably secured to the frame 287. The



outer end of this shaft 288 projects beyond the frame 287 and has secured thereto a pulley 291 of suitable size, around which passes a crossed driving-belt 292, which also passes around a suitable pulley 293 on one end of the shaft 69. The frame 287, that carries the rotating brush and actuating-gears, is adjustably secured in any suitable manner to two brackets or arms (see Fig. 3) 294, mounted on the curved upper portions of the end pieces 54, and consequently inclined to correspond to the inclination of the bottles as the carrier-blocks carrying such bottles start downward in their travel between said end pieces 54. The operation of this tin-foil-brushing mechanism is as follows: As the belt 292 is moved it of course turns the shaft 288, carrying the pulley 291, and as that shaft is firmly secured to the hollow side extension 280 the sleeve 279 is turned, carrying with it the semispherical head 277, in which is located the brush 276, the head 277 and the brush carried thereby being also given an independent rotation by reason of the turning of the fixed gear 282 on account of its meshing with the loose gear 283. The parts are so timed that the head 277 will come over the upper end of a moving bottle, as indicated in Fig. 42, and move with the bottle, and during the time the bottle is so covered by the head 277 the independent rotation of the brush 276 will smooth down into position the tin-foil theretofore only loosely attached at one side to said bottle.

Immediately after leaving the tin-foil-brushing mechanism the carrier-block 56, upon which the bottle has been supported through its entire passage through the machine, comes opposite the widened portion of the space between the curved end pieces 54, allowing the spring 73 to force the clamping-arms 70 sufficiently away from the bottle to release it, when it will fall by gravity upon a suitable device 295, which may be either a stationary table from which an attendant will remove the bottles as fast as dropped or which may be any form of endless carrier that will remove the bottles to any desired point.

By means of the devices shown a large number of bottles are enabled to be successively and continuously operated upon from the time they are placed in the machine until they leave it, and, as explained, all of the operations are performed automatically and without the movement of the bottles being at any time interrupted or checked.

Separate applications have been filed by me for the bottle-cleaning mechanism, the bottle-filling mechanism, the bottle-corking mechanism, the mechanism for wiring the corks in place, and the mechanism for applying labels to the filled bottles, all of said applications having been filed on the 7th day of December, 1901, and being serially numbered, respectively, 85,004, 85,003, 85,002, 85,001, and 85,000.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with an endless carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for moving said carrier, devices for successively operating to clean said bottles, fill the same, insert corks in the bottle-necks, and wire said corks in place, means for causing said devices to engage said bottles and while so engaged to be moved a limited distance with the bottles, devices for applying labels to said bottles, and means for operating said various devices, substantially as specified.

2. The combination with an endless carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for moving said carrier, devices for successively operating to clean said bottles, fill the same, insert corks in the bottle-necks, and wire said corks in place, means for causing said devices to engage said bottles and while so engaged to be moved for a limited distance with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to said bottles, and means for operating said various devices, substantially as specified.

3. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices adapted to operate simultaneously upon different bottles on the carrier and acting to clean, fill and cork the bottles, and wire the corks in place, means for causing said devices to travel for a limited distance in engagement with the bottles, devices for applying labels to said bottles, and means for operating said various devices simultaneously, substantially as specified.

4. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices adapted to operate simultaneously upon different bottles on the carrier and acting to clean, fill and cork the bottles, and wire the corks in place, means for causing said devices to travel for a limited distance in engagement with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to said bottles, and means for operating said label-applying devices simultaneously with the operation of the said other devices, substantially as specified.

5. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, a series of devices each adapted to perform a different function and to operate simultaneously on different bottles on the carrier, means for causing said devices to travel a limited distance in



engagement with the bottles, means for operating such devices while they are traveling in engagement with said bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as specified.

6. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, means for causing said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with said bottles, other devices for operating on said bottles after being washed, means for causing said second-named operating devices to also travel for a limited distance in engagement with the bottles, and means for operating them while so engaged, substantially as specified.

7. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, means for causing said washing and filling devices to travel for a limited distance in engagement with the bottles, and means for operating such devices while they are traveling in engagement with the bottles, substantially as specified.

8. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, means for causing said washing and filling devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as specified.

9. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking the said bottles after they have been filled, means for causing said washing, filling and corking devices to travel for a limited distance in engagement with the bottles, and means for operating such devices while they are traveling in engagement with the bottles, substantially as described.

10. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices

for corking the said bottles after they have been filled, means for causing said washing, filling and corking devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, and means for withdrawing such devices in a direction opposite to the movement of the carrier, substantially as described.

11. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, means for causing said filling and corking devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as described.

12. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing said filling, corking and wiring devices to travel for a limited distance in engagement with the bottles, and means for operating said devices while they are traveling in engagement with the bottles, substantially as described.

13. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing said filling, corking and wiring devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as described.

14. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, devices for wiring the bottles after they have been corked, means for causing the said devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, devices for applying labels to the bottles after they have been wired, and means for operating said labeling devices, substantially as specified.



15. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, devices for wiring the bottles after they have been corked, means for causing the said devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to the bottles after they have been wired, and means for operating said labeling devices, substantially as specified.

16. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing said washing, filling, corking and wiring devices to travel for a limited distance in engagement with the bottles, and means for operating said devices while they are traveling in engagement with the bottles, substantially as described.

17. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing said washing, filling, corking and wiring devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as described.

18. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing the said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, devices for applying labels to said bottles after they have

been wired, and means for operating the said labeling devices, substantially as specified. 65

19. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing the said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to said bottles after they have been wired, and means for operating the said labeling devices, substantially as described. 70 75 80

20. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing the bottles, devices for filling said bottles after they have been washed, devices for corking the bottles after they have been filled, devices for wiring the bottles after they have been corked, means for causing said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, devices for applying labels to the bottles after they have been wired, devices for capping the tops of the bottles after they have been labeled, and means for operating the said labeling and capping devices, substantially as described. 85 90 95 100

21. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing the bottles, devices for filling said bottles after they have been washed, devices for corking the bottles after they have been filled, devices for wiring the bottles after they have been corked, means for causing said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to the bottles after they have been wired, devices for capping the tops of the bottles after they have been labeled, and means for operating the said labeling and capping devices, substantially as specified. 105 110 115 120

CLINTON J. WARREN.

Witnesses:

HELEN M. COLLIN,  
ALVY L. ROMME.