

No. 737,895.

PATENTED SEPT. 1, 1903.

D. BEEBE.  
RACKING APPARATUS.  
APPLICATION FILED FEB. 24, 1903.

NO MODEL.

7 SHEETS—SHEET 1.

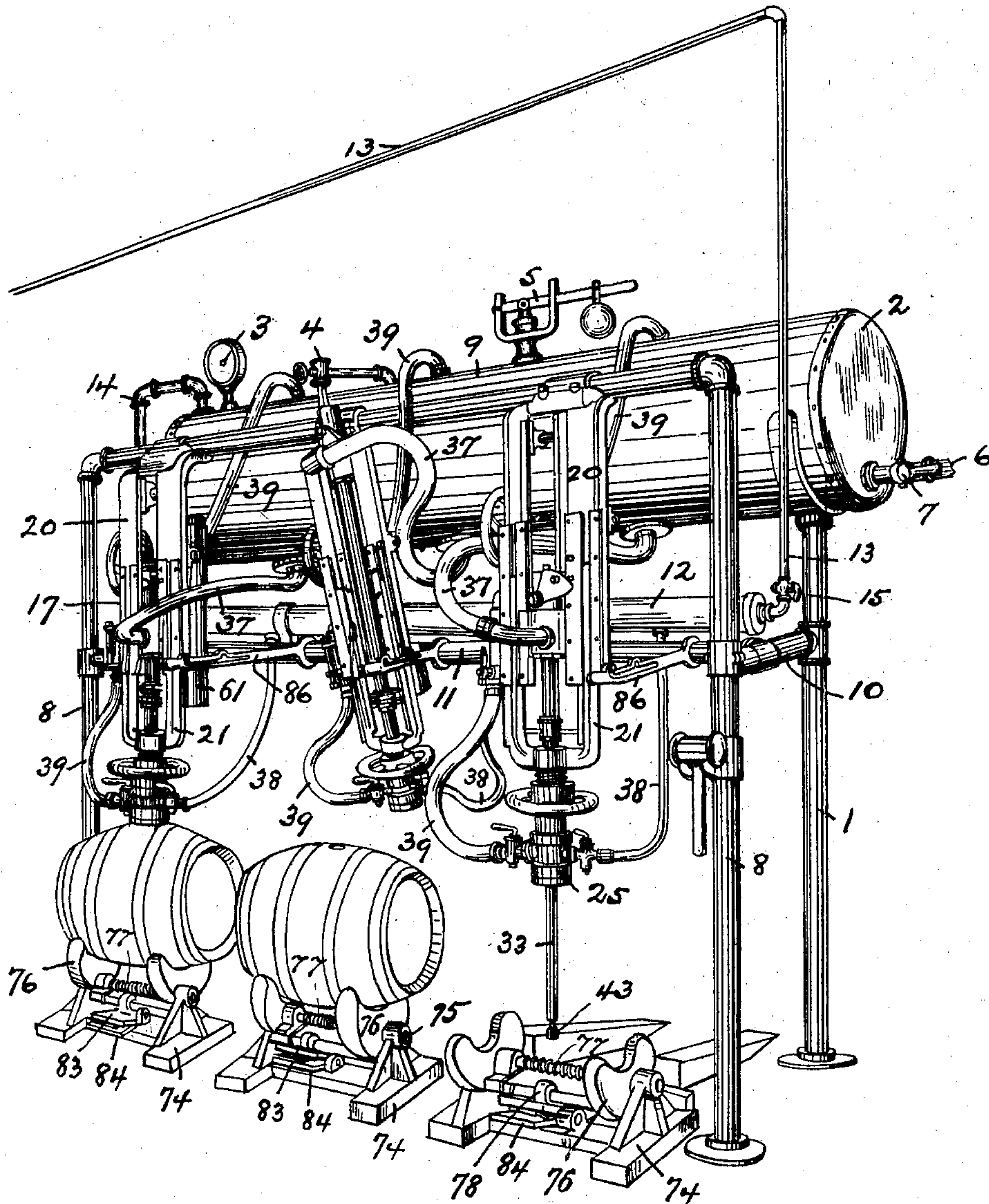


Fig. 1.

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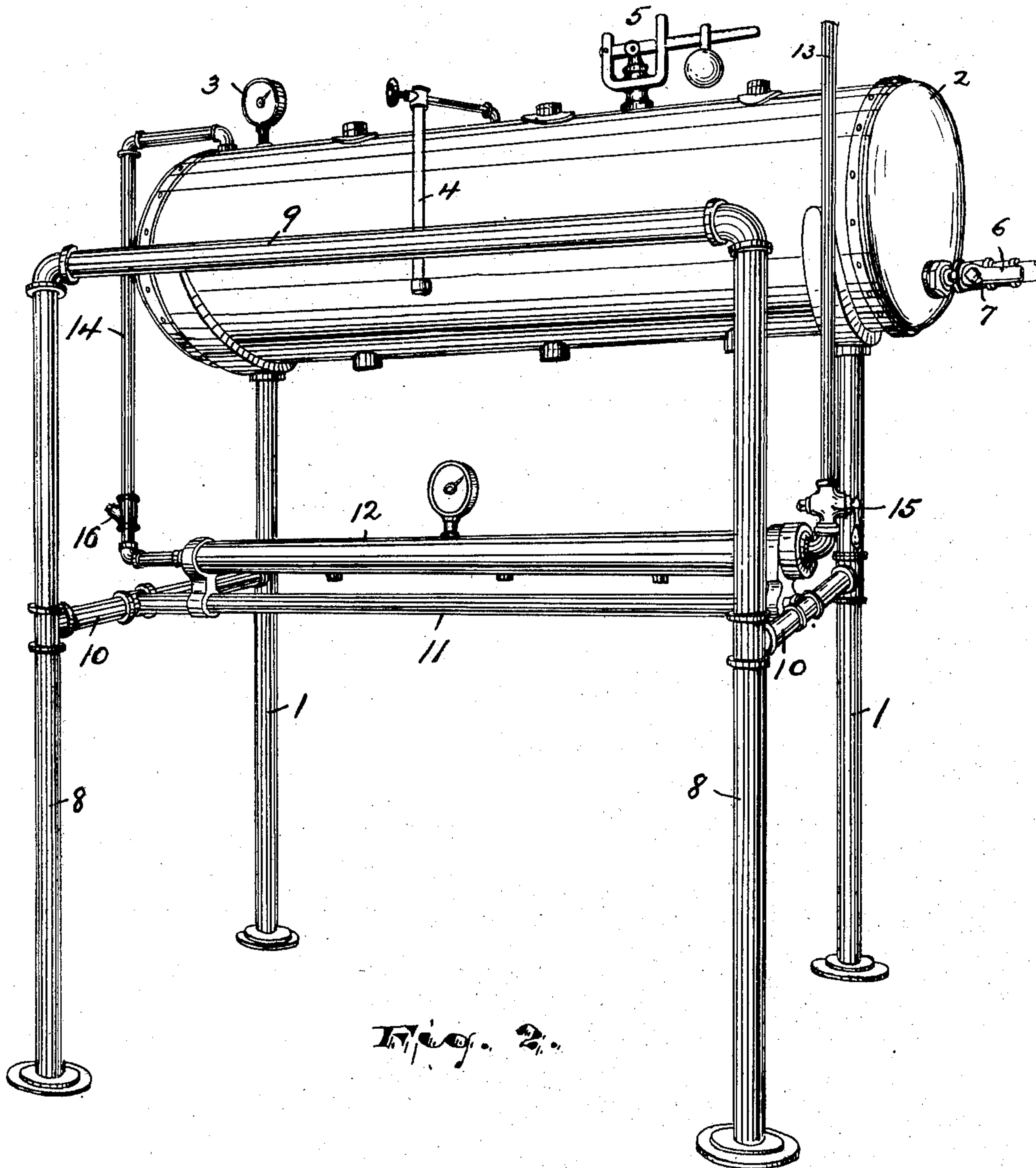
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7 SHEETS—SHEET 2.



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7 SHEETS—SHEET 3.

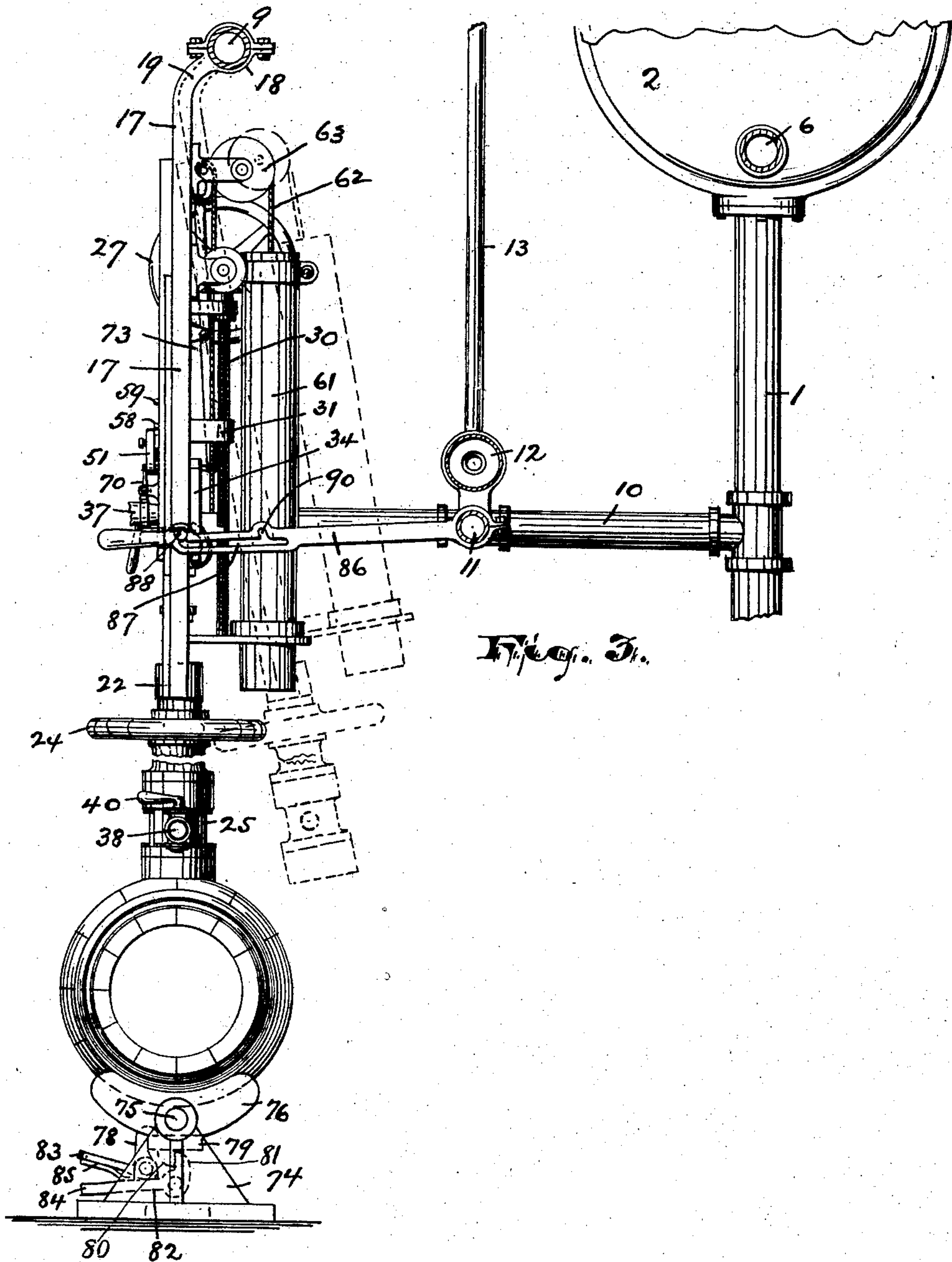


Fig. 3.

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7 SHEETS—SHEET 4.

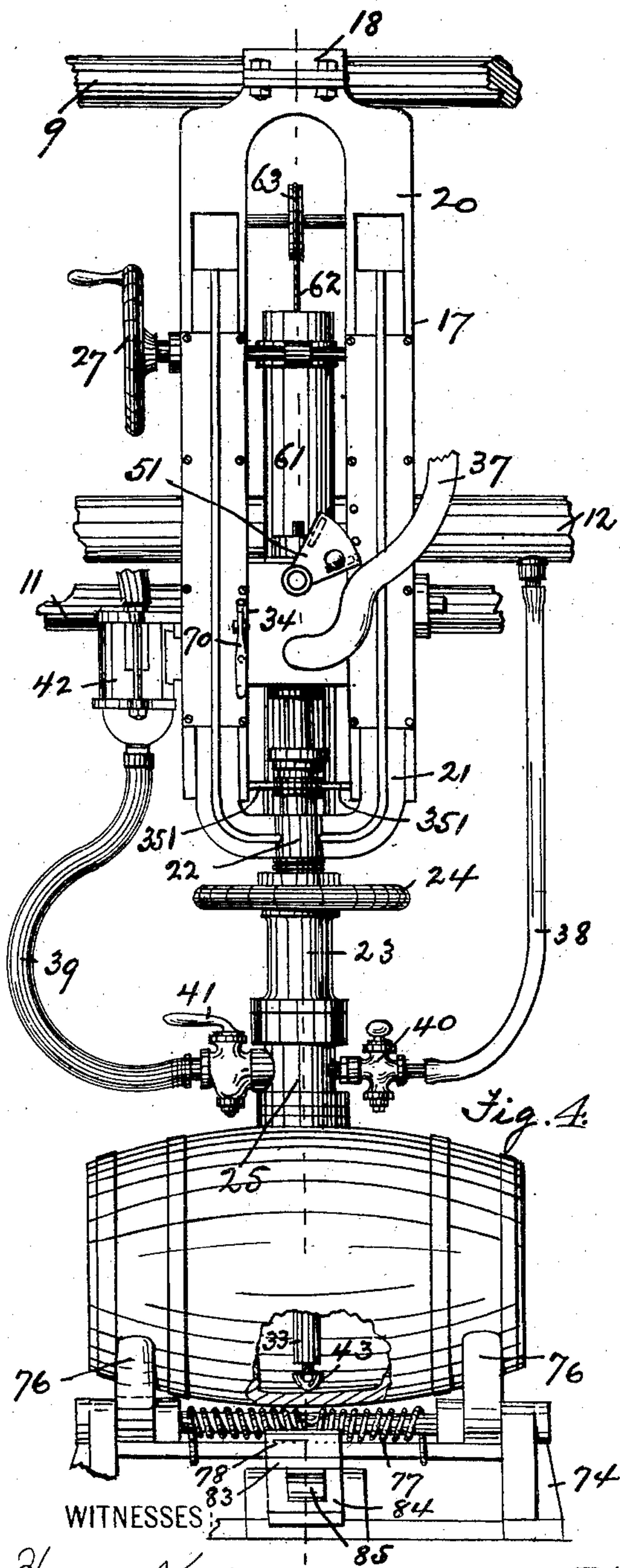


Fig. 4.

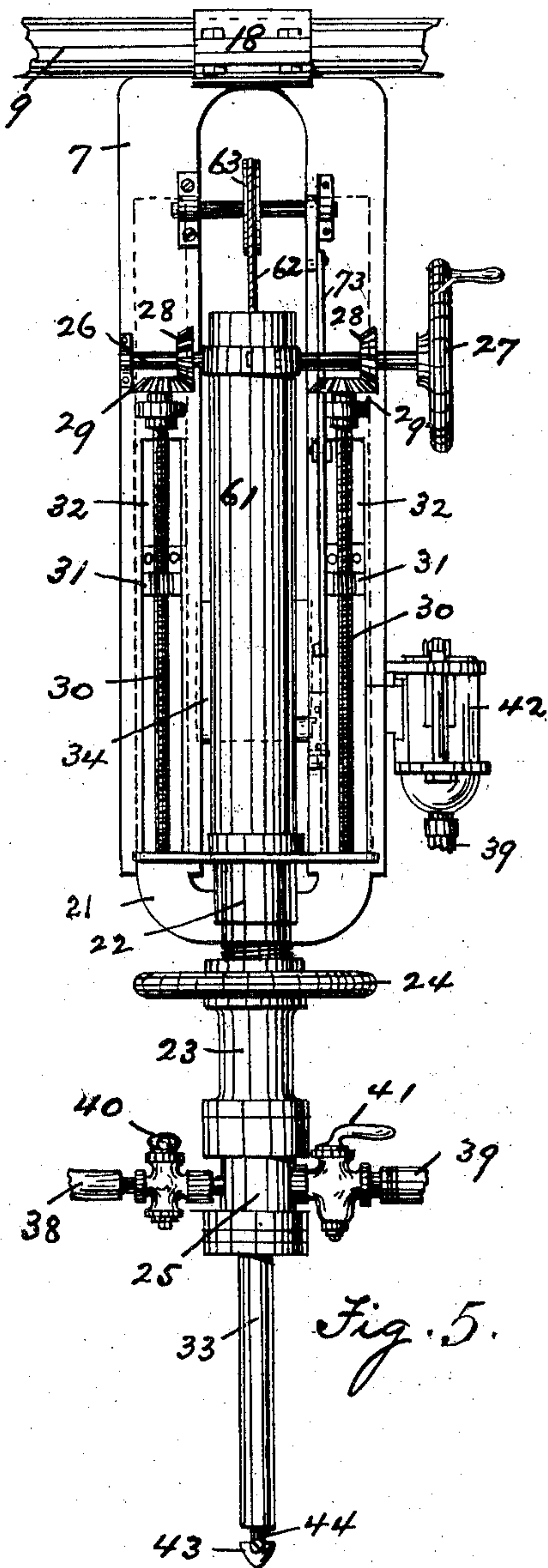


Fig. 5.

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7 SHEETS—SHEET 5.

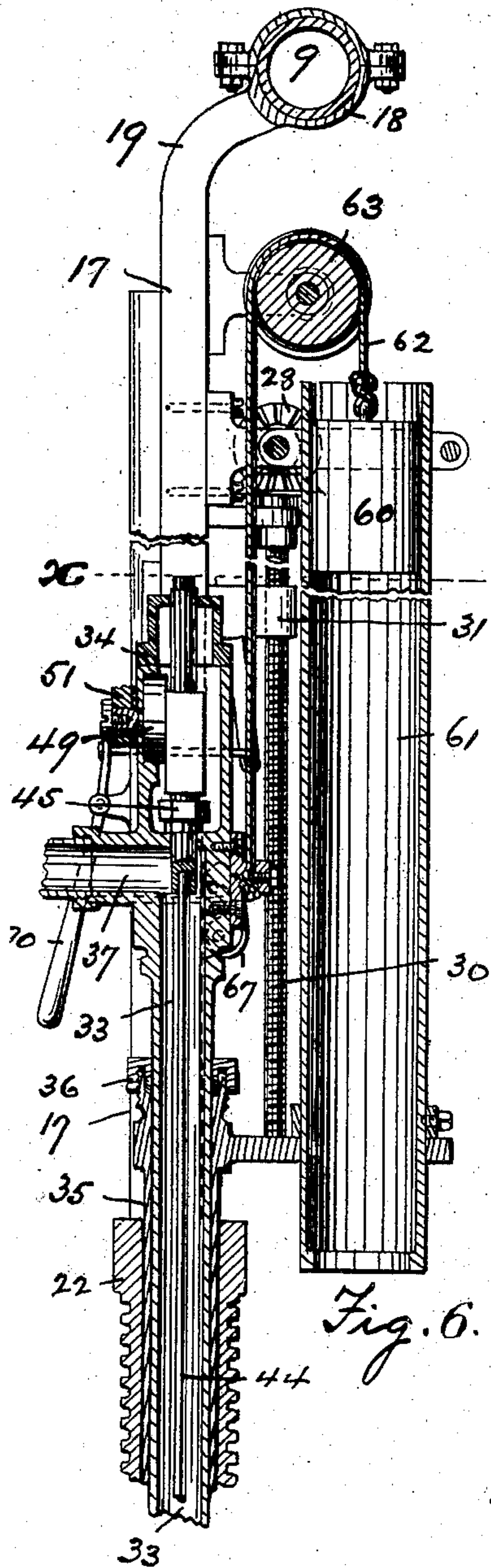


Fig. 6.

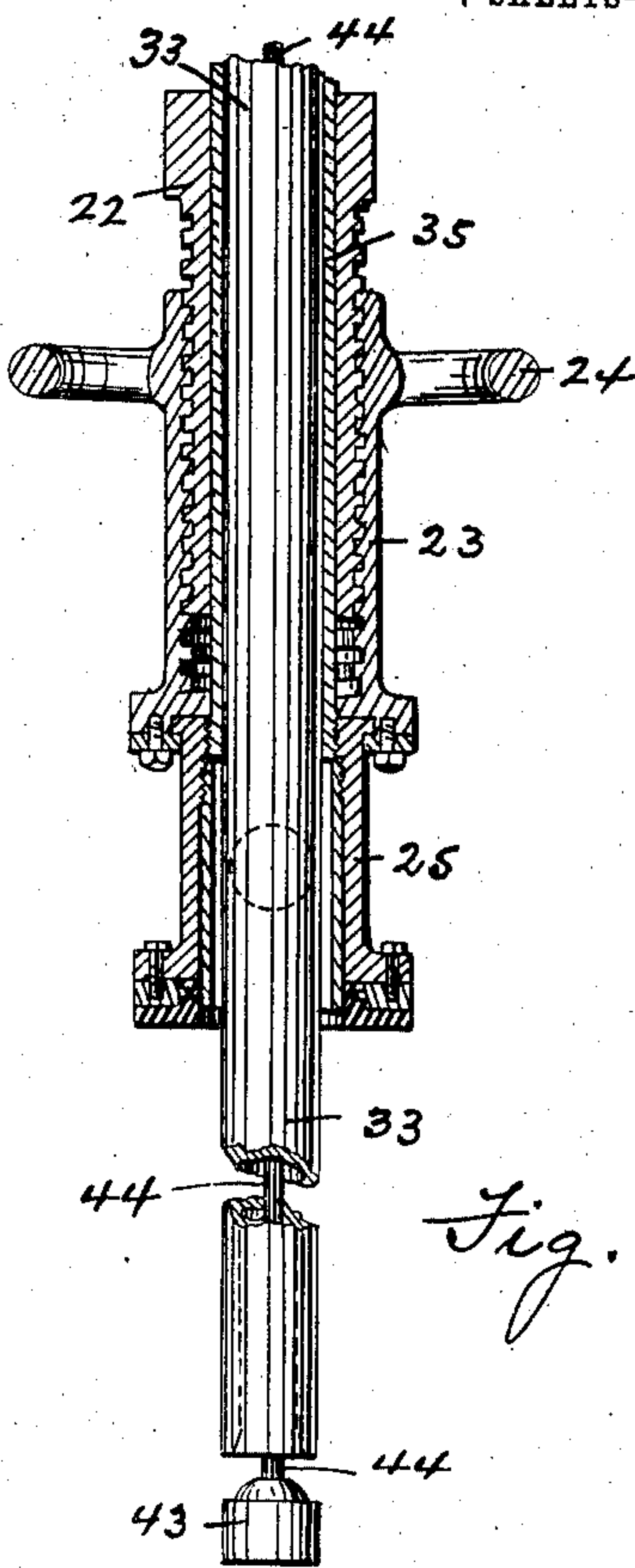


Fig. 7.

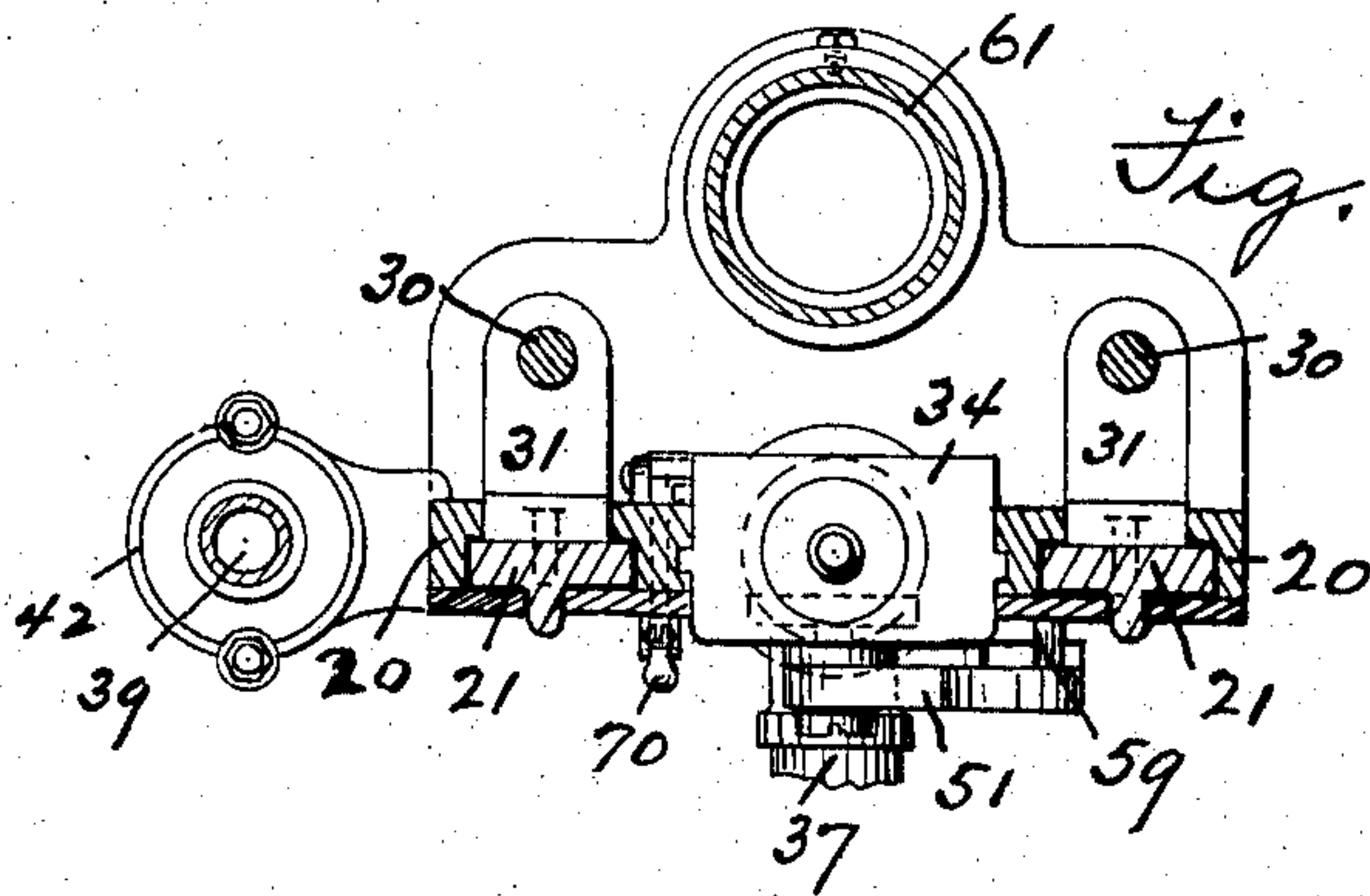


Fig. 8.

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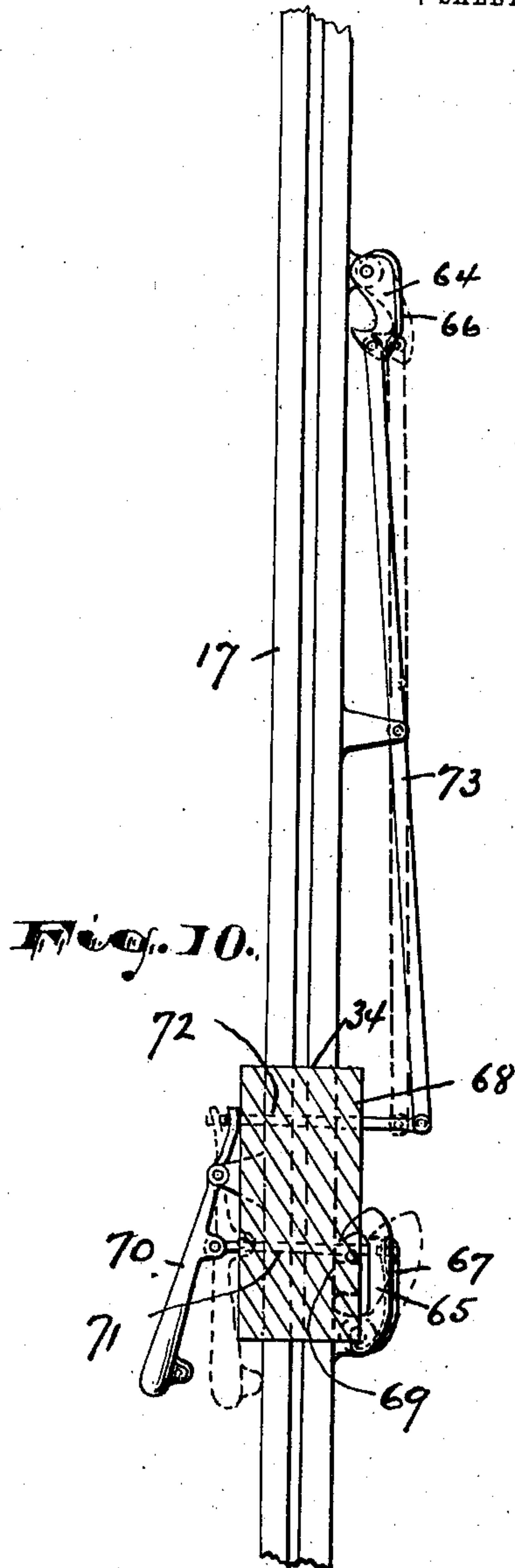
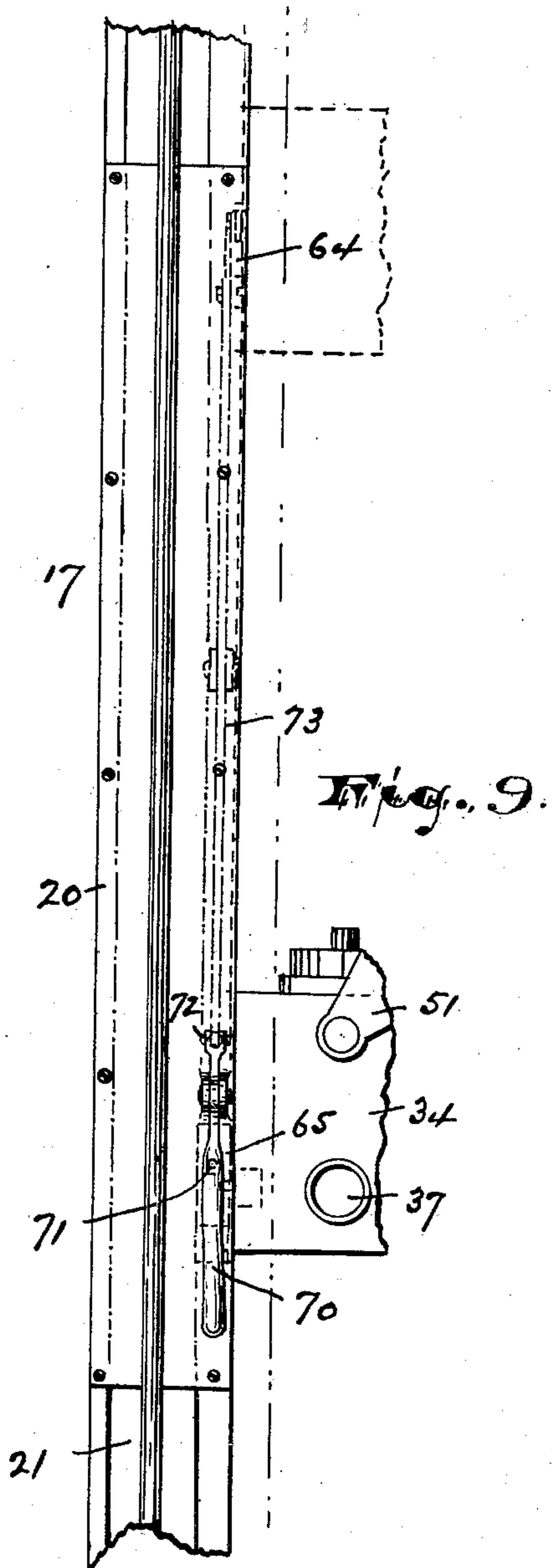
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NO MODEL.

7 SHEETS—SHEET 6.



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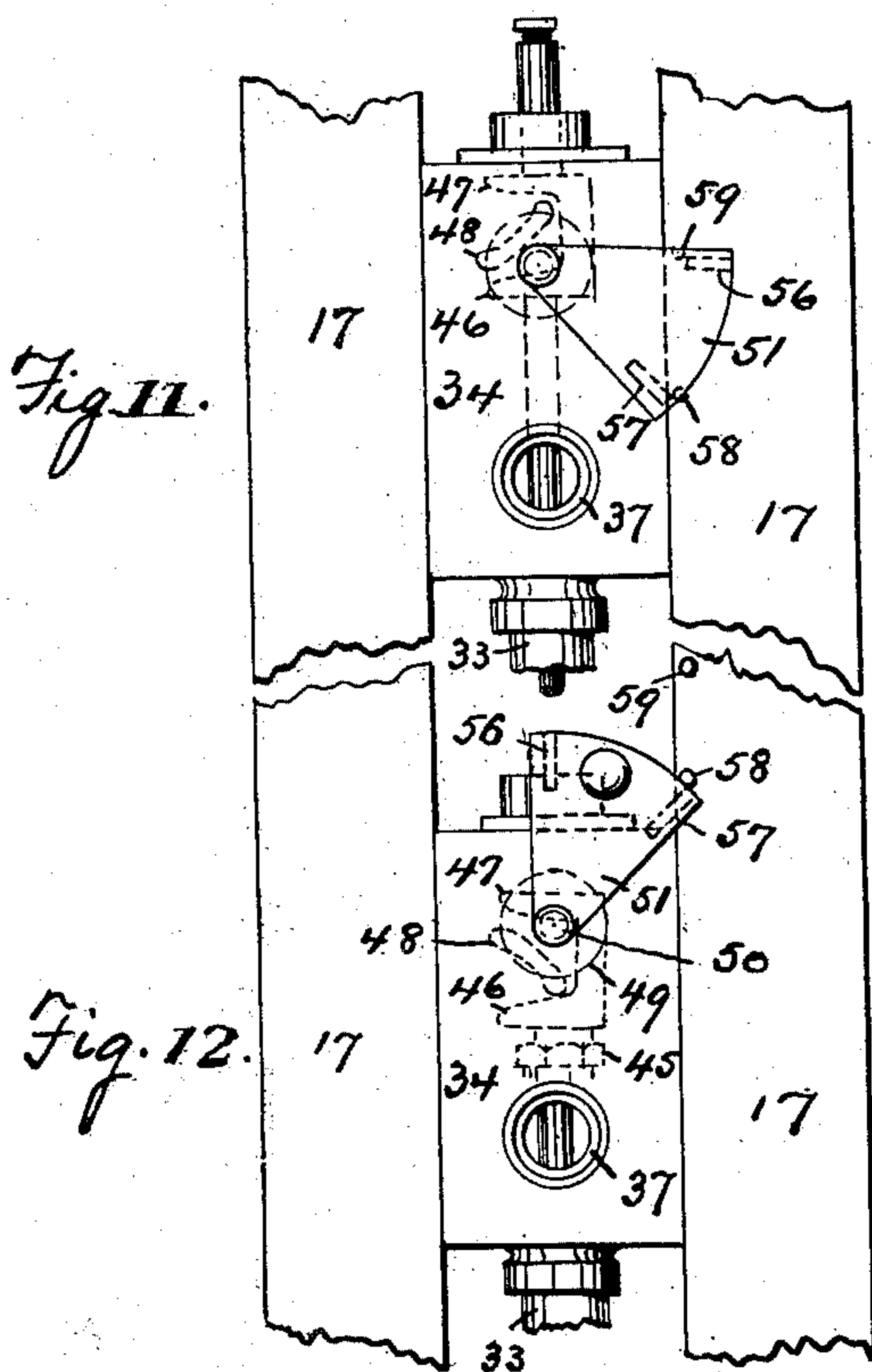
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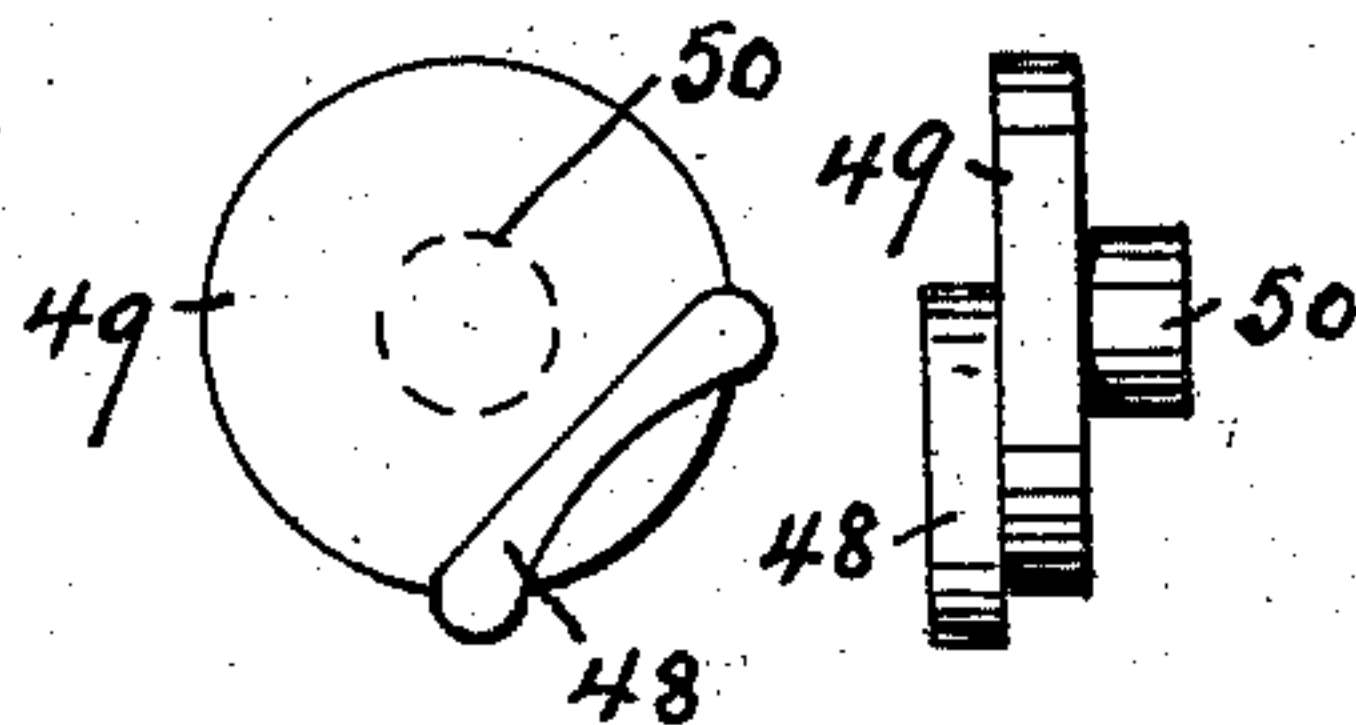
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7 SHEETS—SHEET 7.



*Fig. 12.*

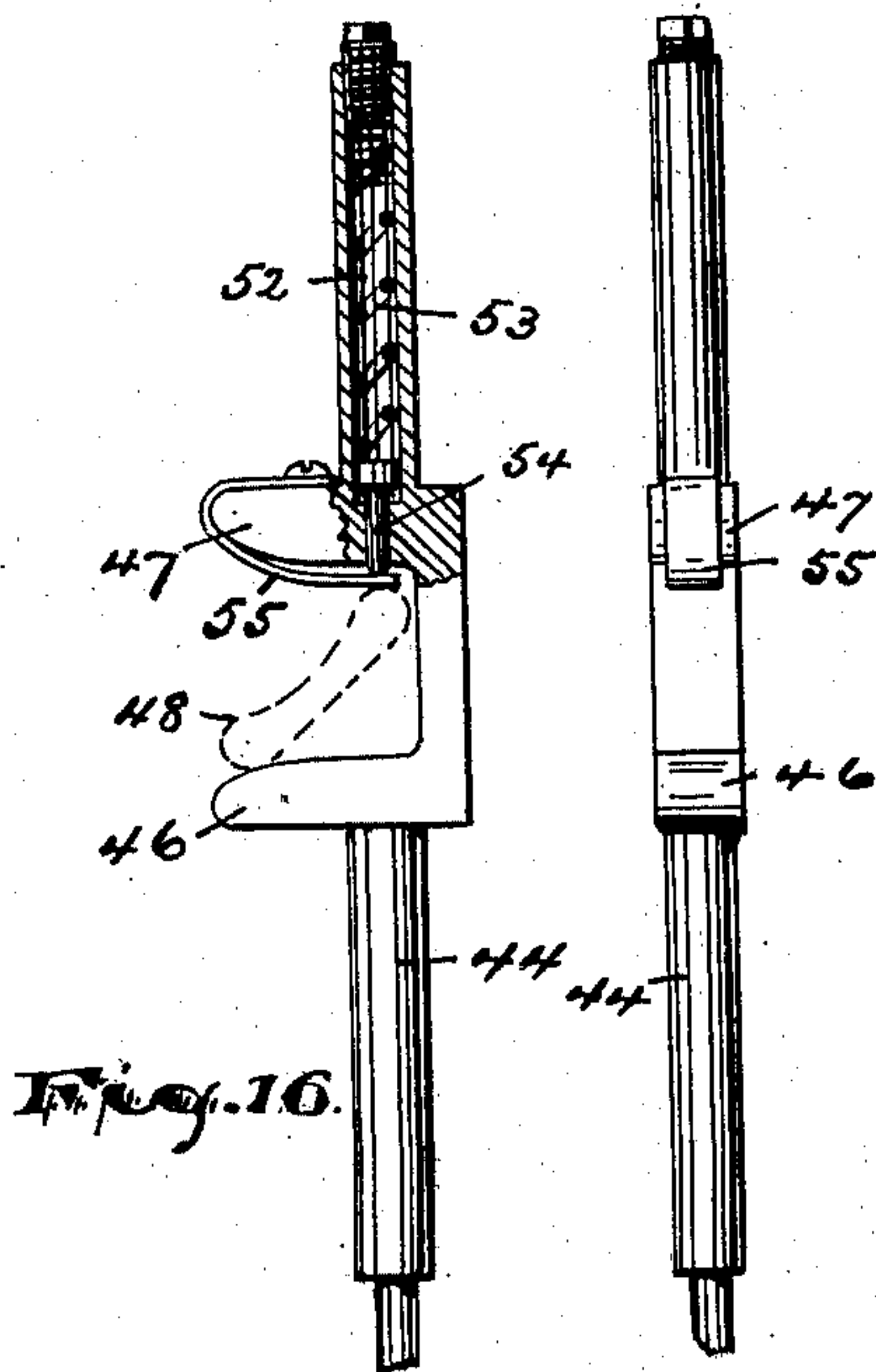
*Fig. 14.*



WITNESSES:

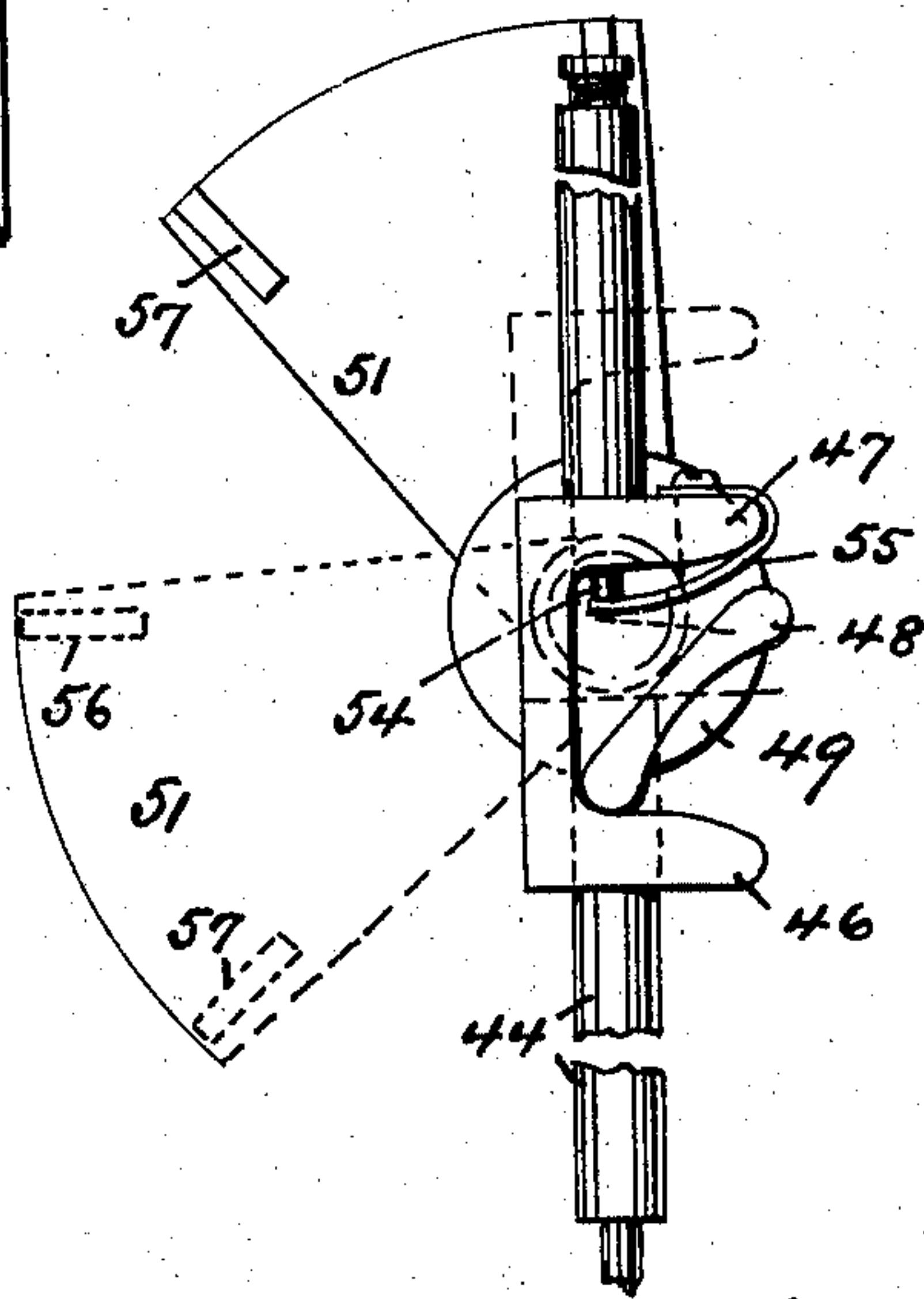
*Henry A. Krag*

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*Fig. 16.*

*Fig. 15.*



*Fig. 13.*

INVENTOR.

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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

DILLON BEEBE, OF NEWARK, NEW JERSEY.

## RACKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 737,895, dated September 1, 1903.

Application filed February 24, 1903. Serial No. 144,596. (No model.)

*To all whom it may concern:*

Be it known that I, DILLON BEEBE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented and produced new and original Improvements in Racking Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The objects of this invention are to provide an apparatus for racking beer and other carbonated beverages which shall be simple in construction and operation and yet durable and efficient, to maintain an equilibrium of pressure upon the liquid-supply and especially to prevent any decrease of such pressure upon connecting a new package to be filled, to secure ease of manipulation of the filling-head and filling-tube and that without the use of compressed air or hydraulic means, and to obtain other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved apparatus for racking beer and other gas-impregnated liquids under pressure and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a perspective view of my improved racker complete, showing a plurality of individual filling devices in different positions. Fig. 2 is a perspective view of the liquid-supply tank and gas-charging cylinder, together with their support. Fig. 3 is an end view of the apparatus, partly in section, and showing one of the filling devices in connection with a barrel. Fig. 4 is a front elevation of a single barrel-filling device in connection with a package. Fig. 5 is a rear elevation of the same, the package and supply-tubes being removed. Fig. 6 is a vertical section of one

of the filling devices, taken on a plane extending from front to rear, and Fig. 7 is a continuation of the same. Fig. 8 is a horizontal section upon line *x*, Fig. 6. Figs. 9 and 10 are detail views, in front elevation and edge view, respectively, of certain locking means for the filling-head. Fig. 11 is a front elevation of one of the filling devices, showing the position of certain valve-operating parts when the filling-head is raised and the valve closed, and Fig. 12 is a similar view showing the position of said parts when the filling-head is lowered and the valve opened. Fig. 13 is a rear elevation showing the connection of the valve-rod to its operating segment or lever. Fig. 14 shows in front elevation and edge view the shaft and cam of said valve-operating lever. Fig. 15 is an edge view of the valve-rod, and Fig. 16 a front view of the same.

In said drawings, 11 indicate suitable standards adapted to support a tank 2 containing the beer or other beverage to be racked into packages, said tank being provided with the usual pressure-gage 3, sight-glass 4, and safety-valve 5, and at one end being entered by a supply-tube 6, having a valve 7, and leading from the filter through which the liquid is supplied. To the front of said standards 1 and tank 2 are other standards 8, connected at their tops by a bar 9, from which the individual filling devices hereinafter described are suspended. Between each of the standards 8 and the standards 1, intermediate of their upper and lower ends, extend connecting-rods 10 10, and said connecting-rods are in turn connected by a longitudinally-disposed connecting-rod 11. Above said longitudinal rod 11 is supported a cylinder 12 for compressed air or gas, the said cylinder being connected at one end by a tube 13 with a suitable source of supply and at the other end by a tube 14 with the top of the liquid-tank 2. The said gas-supply pipe 13 is provided near the cylinder 12 with a stop-cock or valve 15, and in the pipe 14, which connects the gas-cylinder and liquid-tank, is preferably arranged a check-valve 16, adapted to prevent any flow from the tank 2 toward the cylinder 12.

The liquid-tank 2 and supporting-rod 9 in front of the same may be of any desired



length to accommodate any number of individual barrel-filling devices, but in my application I have shown for purposes of illustration three of said barrel-filling devices. These

5 each comprise a substantially rectangular frame 17, providing at its top a clasp 18 to receive the supporting-rod 9, so that the frame is hinged thereto to swing in a direction perpendicular to its own plane. Preferably the

10 said frame is at a point just below its hinging curved outwardly, as at 19, so that the filling device will normally hang with its lower end swung backward, as shown in Figs. 1 and 3, to facilitate the placing of a package in position to be filled. The said frame 17 is preferably formed of two U-shaped sections 20

15 21, having their arms overlapping at the sides of the frame and being slidable upon each other. The lower section 21 has a tubular extension 22 at its lower end, exteriorly threaded to receive a sleeve 23, having a hand-wheel 24 for turning and carrying at its lower end a packing-head 25, adapted to engage a package around its bung-hole.

20 25 Upon the upper section 20 is mounted a transverse shaft 26, adapted to be turned by a hand-wheel 27, and having bevel-gears 28 28, engaging other gears 29 29, each upon the upper end of a vertically-disposed screw-shaft

30 30, mounted upon said upper section 20. Said shafts 30, which therefore turn in unison, pass at a point intermediate of their ends through nuts 31, fixed upon the lower section 21 of the frame 17 and working in slots 32 of

35 the upper section. In commencing racking, therefore, in connection with any particular size of package the packing-head 25 is first approximately adjusted by sliding one section of the frame 17 upon the other, such adjustment being facilitated, if desired, by

40 means of a scale upon said sections. Impervious contact of the packing-head with each package as it is placed beneath is secured by rotating the hand-wheel 24. Through the

45 said packing-head 25 and tubular extension 22 of the lower frame-section 21 extends a filling-tube 33, which at its upper end is connected to a filling-head 34, adapted to slide up and down in the rectangular frame 17.

50 Said filling-tube for that portion of itself which extends through the lower frame-section is surrounded by a casing 35, screwed at its lower end to the filling-head 25 and secured at a higher point by arms 351 from the

55 sides of the frame 17 and having at its upper end a packing-box 36 to prevent leakage. The packing-head 25 provides as usual an annular space around the filling-tube, communicating with the bung-hole for the passage of

60 gas or air. Said filling-head 34 receives at its front a liquid-supply duct 37, communicating through the interior of the filling-head with the filling-tube 33, and extending at its other end to a lower point of the liquid-tank 2. A

65 primary charging-pipe 38 also leads from the gas-cylinder 12 to one side of the packing-head 25, and from the other side a vent-duct 39 extends to the top of the supply-tank 2. Said primary charging-duct 38 and vent-duct 39 are each provided adjacent to the packing-head with stop-cocks 40 41, respectively, and the said vent-duct 39 has above its stop-cock 41 a sight-glass 42.

70 The lower end of the filling-tube 33 is adapted to be closed by a valve 43, connected to a rod 44, extending up through the filling-tube 33 to the upper part of the filling-head 34 and having a suitable packing or stuffing box 45 where it leaves the top of the filling-duct to prevent leakage. In a chamber

75 80 formed in the upper part of the filling-head the valve-rod 44 has lateral arms 46 47, between which lies a cam 48, eccentrically disposed upon the head 49 of a shaft 50, projecting through the front wall of the filling-head. Upon the outer end of said shaft 50

85 is a lever or handle 51, and as said lever is turned into upward position, as shown in Fig. 13, the said cam 48 presses upon the lower arm 46 of the valve-rod 43 to slide the same

90 downward with respect to the filling-tube and release the valve 43 at the lower end thereof. Reverse movement of said lever 51 disengages the cam 48 from the said lower arm 46 and causes it to engage the upper arm 47

95 to slide the valve-rod 44 upward and close the valve 43 at the bottom of the filling-tube. To insure a perfect closing of the filling-tube valve 43 and to allow for wear, a resilient bearing for the cam 48, upon the upper arm 47 of the valve-rod 44, is secured by coring

100 out the upper end of the valve-rod 33 above the arm 47, as at 52, and placing therein a spiral spring 53, which presses at its lower end a bolt 54, projecting through said arm

105 57, against a tongue 55, adapted to be engaged by the cam 48. Preferably after engagement with a package has been secured the filling-tube valve is opened by turning the lever 51 into its downward position by hand,

110 but for closing the said valve upon upward movement of the filling-head I have provided automatic means. To this end the lever 51 is made of a segmental form and provided

115 near its outer corners with radially-disposed shoulders 56 57, which are adapted to engage in turn pins 58 59 upon the frame 17 as the filling-head is slid upward and cause the said lever 51 to turn from the position shown in

120 Fig. 13 to that shown in Fig. 12. The movements of the filling-head up and down are made more easy and friction overcome by means of a counterbalance-weight 60, sliding in cylindrical case 61, supported upon the

125 back of the filler-frame 17, where it is out of the way, and connected with the filling-tube by a cord or strap 62, passing over a pulley 63, also upon said frame 17.

To lock the filling-head in either its upper or lower position, the means shown more particularly in Figs. 10 and 11 are provided. Curved hooks 64 65, having beveled ends directed toward each other, are pivoted upon the frame 17 at the upper and lower limits of



movement of the filling-head and are normally held in position each to engage a pin or stud upon the filling-head by springs 66 67. For releasing either of said hooks 64 65 a single lever 70 is provided at the front of the frame 17, engaging at the side of its fulcrum next the handle a plunger-rod 71, extending through the frame and adapted to push the hook 65 out of engagement with the filling-head. The opposite end of the lever 70 transmits by means of a connecting-rod 72, also passing through the frame 17, draft to the end of a lever 73, fulcrumed upon the rear of the frame 17 and engaging at its upper end the hook 64 to swing it out of engaging position. Thus when the filling-head is to be raised or lowered the operator has only to press the lever 70 with one hand and slide the filling-head 34 with the other.

To support a package in position to be filled, I provide in a suitable frame 74 on the floor a shaft 75, having cradle-like arms 76 fixed near either end thereof to receive a barrel. Said shaft is held in normal position by a spring 77 and is locked there by a hooked catch 78, engaging an arm 79 upon the shaft. From said arm an extension 80 projects downward, presenting a shoulder against which the upper arm 81 of a tripping-lever 82, pivoted upon the lower part of the frame 74, is adapted to engage. Both said catch and tripping-lever 82 have pedals 83 84, respectively, projecting convenient to the operator's foot and lying the first slightly above the second and held normally away therefrom by a spring 85. As soon, therefore, as a package is filled the workman presses his foot on the pedal 83. This movement releases the catch 78, and continued movement presses upon the pedal 84 to swing the arm 81 against the extension 80 and oscillate the shaft 75 to tip the cradle 76 into discharging position. The workman's foot then slips off the pedal and the springs 77 85 restore to initial position all the parts described.

For holding each individual filling device in either its rearward or its forward position an arm 86 is pivoted upon the connecting-rod 11 of the supporting-frame of my apparatus and slotted near its forward end, as at 87, to receive a headed stud 88 upon the side of the filling device frame 17 said slot having lateral recesses 89 90 to receive said pin at the limits of the swinging movements of the filling device and holding it in place.

In operating my improved device for the filling of packages with a gas-impregnated beverage under pressure the stop-cock 15 is first opened to permit an inflow of compressed air or gas to the cylinder 12 and through the pipe 14 to the tank 2. Said flow comes through a pressure-reducing valve, (not shown,) preferably set at about thirteen pounds, and the safety-valve 3 of the liquid-tank is set at about twelve pounds, so that when the flow of gas has filled both the cylinder 12 and tank

2 it will blow off from the latter, it being understood that the supply-duct 13 is not closed. Liquid under a higher pressure is then admitted to the liquid-tank 2 by opening the cock 7 in the duct 6, and when sufficient amount has entered the tank 2 the filling of packages is commenced. As soon as a barrel is placed beneath a filling device and a packing-head brought into impervious contact, as has been described, the filling-head is slid downward to project the filling-tube into the barrel. The valve 40 is then opened until the package receives a primary charge of gas from the cylinder 12 substantially equal to the pressure in the top of the liquid-tank 2, when it is again closed and the valve 41 opened to permit venting to the top of the supply-tank 2. The filling-tube valve 43 is then opened by means of the lever 51 and flow of liquid into the barrel continues until it appears at the sight-glass 42 in the vent-duct. The operator then shuts off the vent-duct 39 by closing the valve 41, slides up the filling-head, which automatically closes the filling-tube valve 43, releases the packing-head, and swings the whole filling device out of the way. A bung is then driven, preferably by hand, after which a touch of the foot discharges the filled barrel from its cradle, as has been above described.

Although I prefer to use compressed air as a means of securing suitable pressure for the liquid being racked by my improved apparatus and have so described the invention, it is obvious that carbonic-acid gas or the like may be employed equally well without affecting the invention, and therefore the word "gas" as used in the following claims is to be understood in its broadest sense as indicating any aeriform fluid.

Having thus described the invention, what I claim as new is—

1. In a racking apparatus, the combination with a closed liquid-tank having a continuous liquid-supply at its lower part and a safety-valve at its upper part, of means for supplying compressed gas, a gas-cylinder in communication with said gas-supply, a packing-head adapted to engage a package to be filled, a filling-tube slidable in said packing-head, a gas-pipe leading from said cylinder to the upper part of the liquid-tank, a valved primary charging-duct leading from said cylinder to the packing-head, a valved vent-duct leading from said head to the top of the liquid-tank, and a liquid-flow pipe connecting the filling-tube with the lower part of the liquid-tank.

2. In a racking apparatus, the combination with a closed liquid-tank having a continuous liquid-supply at its lower part and a safety-valve at its upper part, of a packing-head adapted to engage a package to be filled, a compressed-gas cylinder located between said liquid-tank and packing-head, means for supplying compressed gas, said means being in



communication with the gas-cylinder, a connecting-pipe leading from one side of said gas-cylinder to the top of the liquid-tank, a valved primary charging-duct leading from the opposite side of said cylinder to the packing-head, a valved vent-duct leading from the said packing-head to the top of the liquid-tank, a filling-tube sliding in said packing-head, and a liquid-flow pipe connecting said filling-tube with the lower part of the liquid-tank.

3. In a racking apparatus, the combination with a closed liquid-tank having a continuous liquid-supply at its lower part and a safety-valve at its upper part, of a series of packing-heads adapted to engage packages to be filled, filling-tubes sliding in said packing-heads and being connected at their upper ends to the lower part of the liquid-tank, means for supplying compressed gas, a cylinder stationed beneath the liquid-tank and in open communication with the said gas-supply means, a plurality of primary charging-ducts leading from said cylinder one to each of said packing-heads, a connecting-pipe leading from the gas-cylinder to the top of the liquid-tank, and vent-ducts leading from said packing-heads.

4. In a racking apparatus, the combination with a closed liquid-tank having a continuous liquid-supply at its lower part and a safety-valve at its upper part, of means for supplying compressed gas, a gas-cylinder in open communication at one end with said gas-supply, a connecting-pipe leading from the other end of said cylinder to the top of the liquid-tank, a series of packing-heads each having a filling-tube connected at its upper end with the lower part of the liquid-tank, a series of valved primary charging-ducts leading from the gas-cylinder intermediate of its ends and connecting one to each of said packing-heads, and valved vent-ducts leading one from each packing-head.

5. In a racking apparatus, the combination of a liquid-supply tank adapted to contain liquid under pressure, of means for supplying compressed gas, a gas-cylinder in communication with said means, a connecting-pipe between said gas-cylinder and the upper part of the liquid-tank, a check-valve in said connecting-pipe permitting flow from the gas-cylinder to the liquid-tank and preventing flow in opposite direction, a packing-head adapted to engage a package to be filled, a filling-tube in said packing-head connected at its upper end to the lower part of the liquid-tank, a valved primary charging-duct leading from the gas-cylinder to said packing-head, and means for venting.

6. In a racking apparatus, a filling device comprising in its construction a frame composed of two U-shaped sections lying in substantially the same plane with their closed ends farthest apart and their arms slidably connected, a packing-head at the lower end of said frame, a filling-head slidably mounted

on said frame and lying in the open space between the arms of its sections, means for sliding said parts, and suitable flow connections.

7. In a racking apparatus, the filling device comprising in its construction a frame composed of two U-shaped sections lying in substantially the same plane with their closed ends apart and their arms slidably connected, an adjustable packing-head upon the closed end of the lower section, a filling-head slidably mounted on said frame and lying within its central opening and being adjustable independent of the packing-head, and flow connections.

8. In a racking apparatus, a filling device comprising in its construction a frame composed of two U-shaped sections lying in substantially the same plane with their closed ends apart and the arms of one sliding in slideways of the other, a packing-head at the outer closed end of one section, a filling-head arranged within the central opening of the frame and being mounted in independent slideways upon that section which provides slideways for the other section, means for moving said parts, and suitable flow connections.

9. In a racking apparatus, a filling device comprising a frame composed of two U-shaped sections the lower of which is slidable upon the upper, means for sliding said sections, a packing-head at the lower end of the lower section, a filling-tube extending through said packing-head, a filling-head at the upper end of said filling-tube adapted to slide in the central open space of said frame, a counter-balance-weight attached to said filling-head, and flow-pipes.

10. A filling device comprising a frame composed of two U-shaped sections lying in substantially the same plane and having their closed ends apart, and their arms slidably connected, a filling-head arranged in the central opening of said frame and being slidable on said frame, a packing-head at the lower end of the frame adapted to engage a barrel, a filling-tube extending from said filling-head slidably through the packing-head, an upright cylinder mounted upon said frame at the rear of its central opening, a counter-balance-weight in said cylinder and attached to the filling-head, and flow pipes or ducts.

11. A filling device comprising a frame composed of two U-shaped sections having their closed ends oppositely apart and their arms slidably connected, a packing-head upon the lower section, screw-shafts upon the arms of the frame adapted to move one section with respect to the other, a filling-tube extending through said packing-head and lying in the open space of the frame and being slidably mounted on said frame, and suitable flow-pipes.

12. A filling device comprising an upper frame-section of inverted-U shape, a packing-



head carrier having arms slidably connected to the arms of said section, a filling-head mounted in the central open space of said frame-section upon independent slideways, means for moving the packing-head and filling-head each independent of the other, and suitable flow-ducts.

13. A filling device comprising a frame having upper and lower sections slidable on each other, means for adjusting said sections to desired relative position, a filling-head slidable on the said frame, a tubular exteriorly-threaded extension upon the lower end of the lower frame-section, a packing-head below said extension, a coupling loosely engaging at its lower end said packing-head and being threaded at its upper end to screw upon the said extension, a filling-tube extending from said filling-head down through the tubular extension, coupling and packing-head, and flexible flow connections.

14. In a racking apparatus, the combination with a support providing a horizontal bar 9, of a frame hinged at its upper end to said supporting-bar to swing in a direction perpendicular to its plane, said frame being adjacent to its point of hinging offset or bent so that it will normally hang out of the perpendicular, and barrel-filling means mounted upon said frame.

15. In a racking apparatus, the combination with a support providing a horizontal bar 9, of a frame hinged at its upper end to said supporting-bar to swing in a direction perpendicular to its plane, said frame being adjacent to its point of hinging offset or bent so that it will normally hang out of the perpendicular, a locking-lever hinged to said support and having at its forward end notches or recesses, a pin on said hinged frame to receive said lever and hold the frame at either end of its range of swing, and barrel-filling means mounted upon said frame.

16. The combination with the frame 17, of a filling-head adapted to slide therein, catches or hooks mounted upon said frame at the upper and lower limits of movement of said filling-head, a hand-lever fulcrumed on the front of said frame, and means for transmitting motion from said lever to said hooks to simultaneously release the same.

17. The combination with the frame 17, and filling-head 34, slidable thereon, of hooks 64, 65, pivoted upon said frame at the limits of movement of said head and adapted to engage the same, a hand-lever at the front of said frame, plunger-rods extending from opposite sides of the fulcrum of said lever through the said frame, one of said plungers engaging the lower hook, and a connecting-lever fulcrumed upon the back of said frame to transmit motion from the other plunger to the other hook.

18. The combination of the frame 17, providing at its lower end a tubular and exteriorly-threaded extension, of a packing-head

25, a tubular coupling connecting said packing-head and tubular extension and being rotatably loose upon the first and interiorly-threaded to screw upon the second, a hand-wheel upon said coupling-sleeve, a tubular slideway extending from said packing-head up through the said extension, and a filling-tube slidable in said packing-head and tubular slideway.

19. The combination with the filling-head having a filling-tube extending downward therefrom, of a valve at the lower end of said filling-tube, a rod extending from said valve upwardly through the filling-tube and into a chamber at the top of the filling-head, upper and lower lateral arms upon said rod in said chamber, an eccentric adapted to engage said arms, and means for operating said eccentric.

20. The combination with the filling-head 34, and filling-tube 33, extending downward therefrom, of a valve at the lower end of said tube, a rod or stem extending from said valve upwardly through the tube into said filling-head, upper and lower lateral arms upon said upper portion of the rod, a shaft mounted in the front wall of the filling-head and having an eccentric inner end adapted to engage one or the other of said arms, and a handle or lever upon the outer end of said shaft for turning the same.

21. The combination with a filling-head and slidable valve-rod extending therethrough, of upper and lower lateral arms upon said rod, an eccentric to be turned to engage one or the other of said arms, the upper of said arms having a bolt 54, projecting from its face, and a spring 53, mounted in the hollow upper end of the valve-rod and normally holding said bolt projected, whereby the valve may be closed with a yielding pressure.

22. The combination with a frame 17, and filling-head 34, slidable therein, of a valve-rod slidable in said filling-head, stationary pins upon said frame, a shaft mounted on said filling-head, a cam on said shaft adapted to slide said valve-rod, and a lever fixed on said shaft and adapted to engage said fixed pins as the filling-head slides to effect a turning of said cam-shaft.

23. In a barrel-filling device, the combination of a frame, an adjustable packing-head at the lower end of said frame, a filling-head sliding in said frame, a filling-tube extending from said filling-head down through the packing-head, a valve in said filling-tube, a lever on said filling-head for operating said valve, and means upon said frame adapted to engage said lever and turn the same automatically as the filling-head slides.

24. In a barrel-filling device, the combination of a hinged frame, a packing-head at the bottom of said frame, means for adjusting said packing-head with respect to the frame, a filling-head slidable in said frame and hav-



ing a filling-tube extending through said packing-head, a valve in said filling-tube, a lever on the filling-head adapted to be turned by hand to open said valve, and means on the  
5 said frame for engaging said lever in its open position, as the filling-head slides upward, to close said valve automatically.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of February, 1903.

DILLON BEEBE.

Witnesses:

CHARLES H. PELL,  
RUSSELL M. EVERETT.