

No. 762,626.

PATENTED JUNE 14, 1904.

F. FINK.
BEER RACKER.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.

4 SHEETS—SHEET 1.

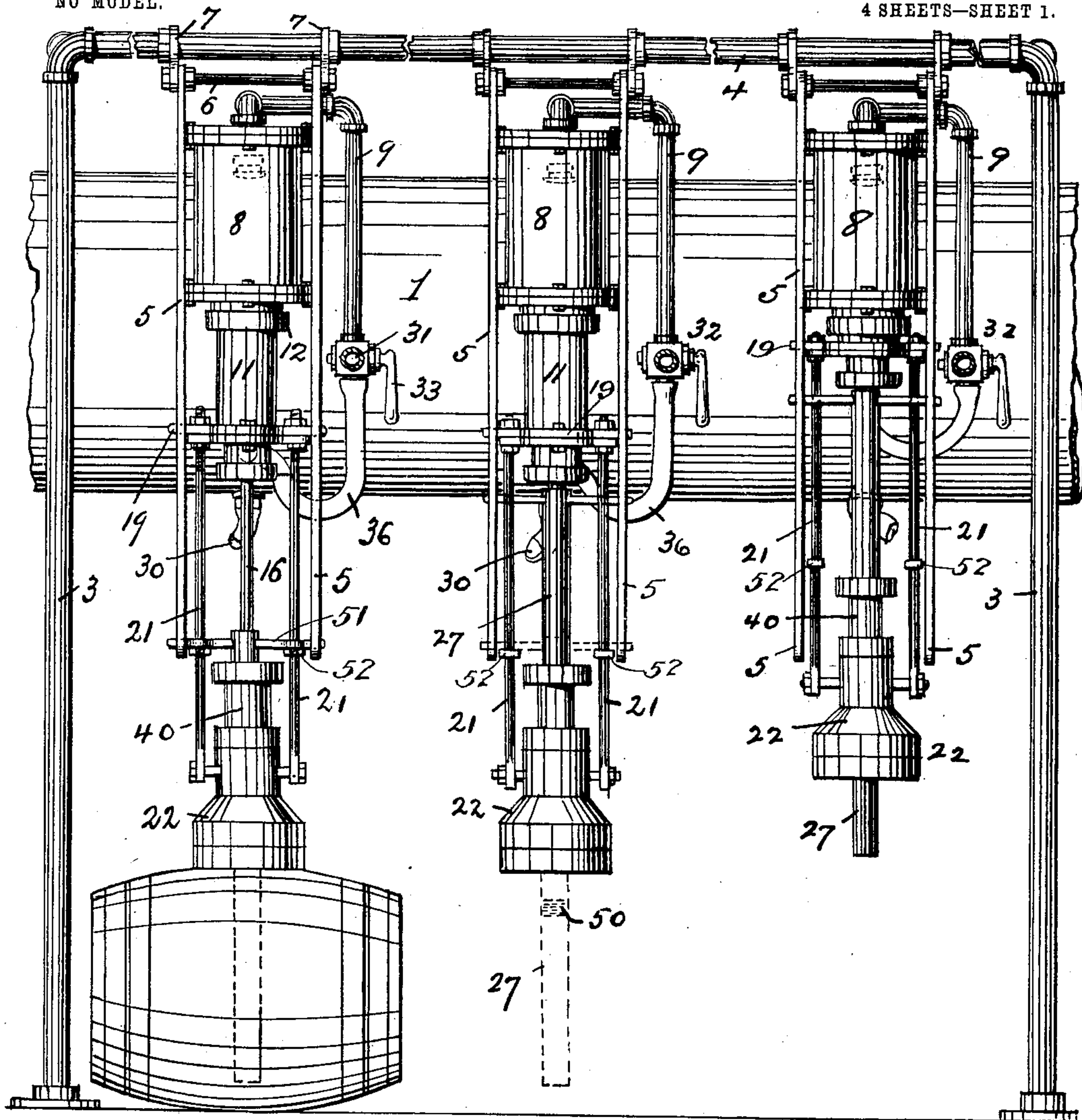


Fig. 1.

WITNESSES:

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Russell W. Everett

INVENTOR:

Ferdinand Fink,

BY

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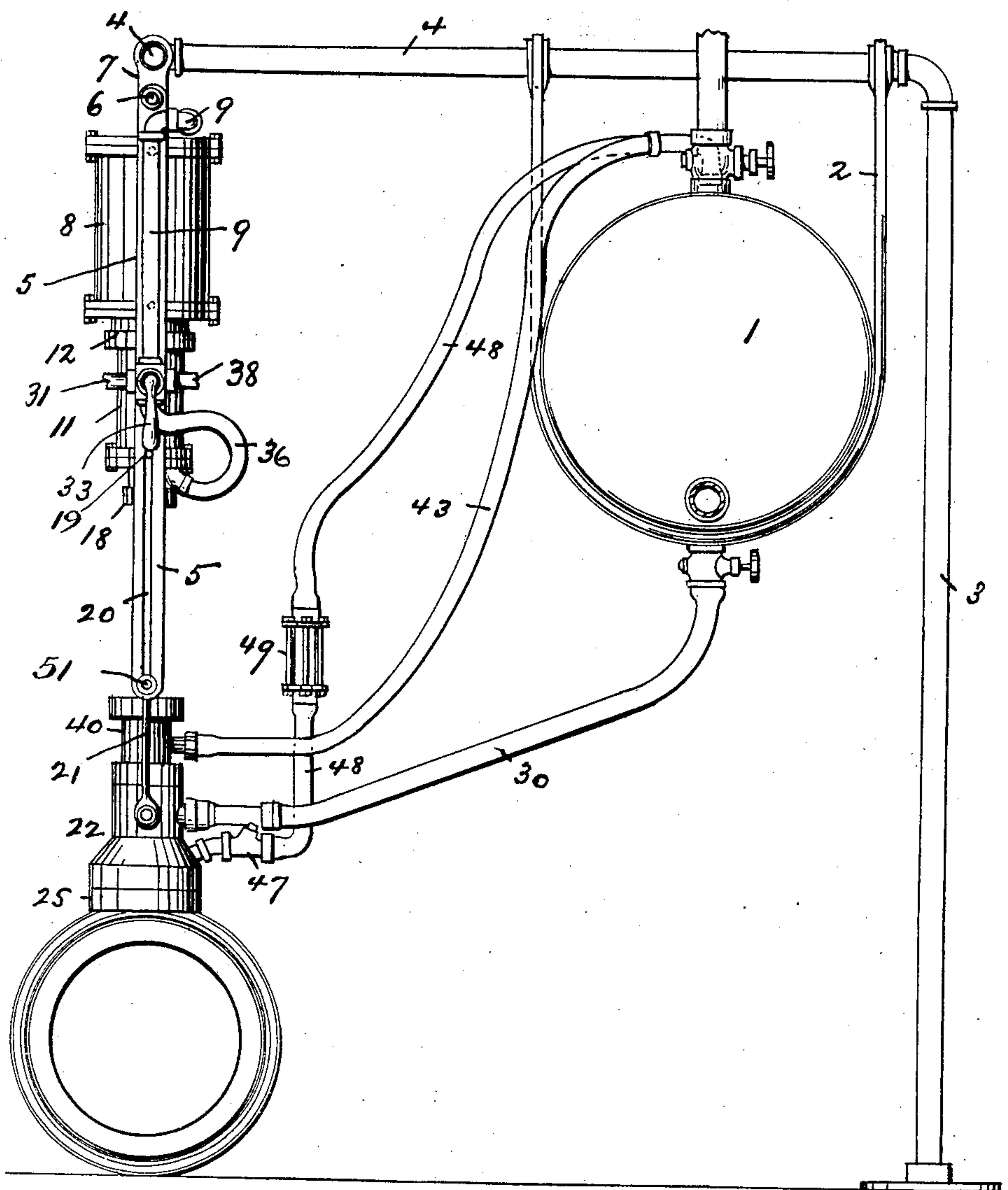


Fig. 2.

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4 SHEETS—SHEET 3.

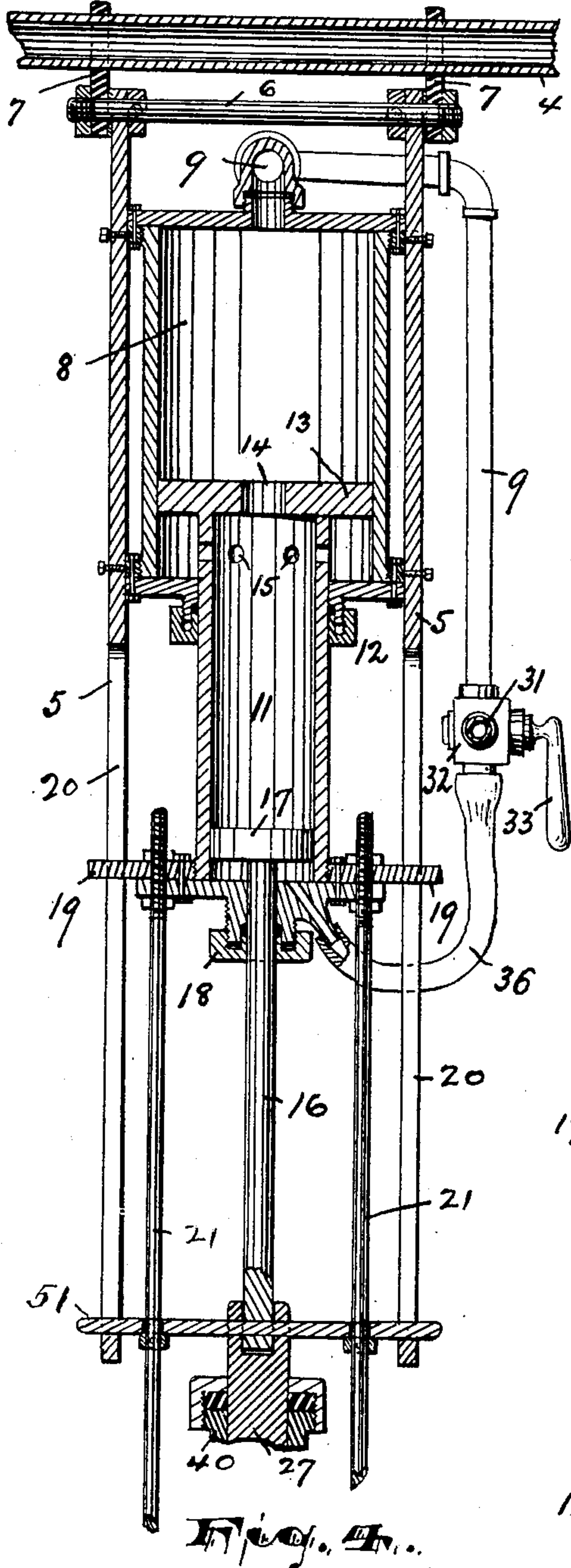


Fig. 4.

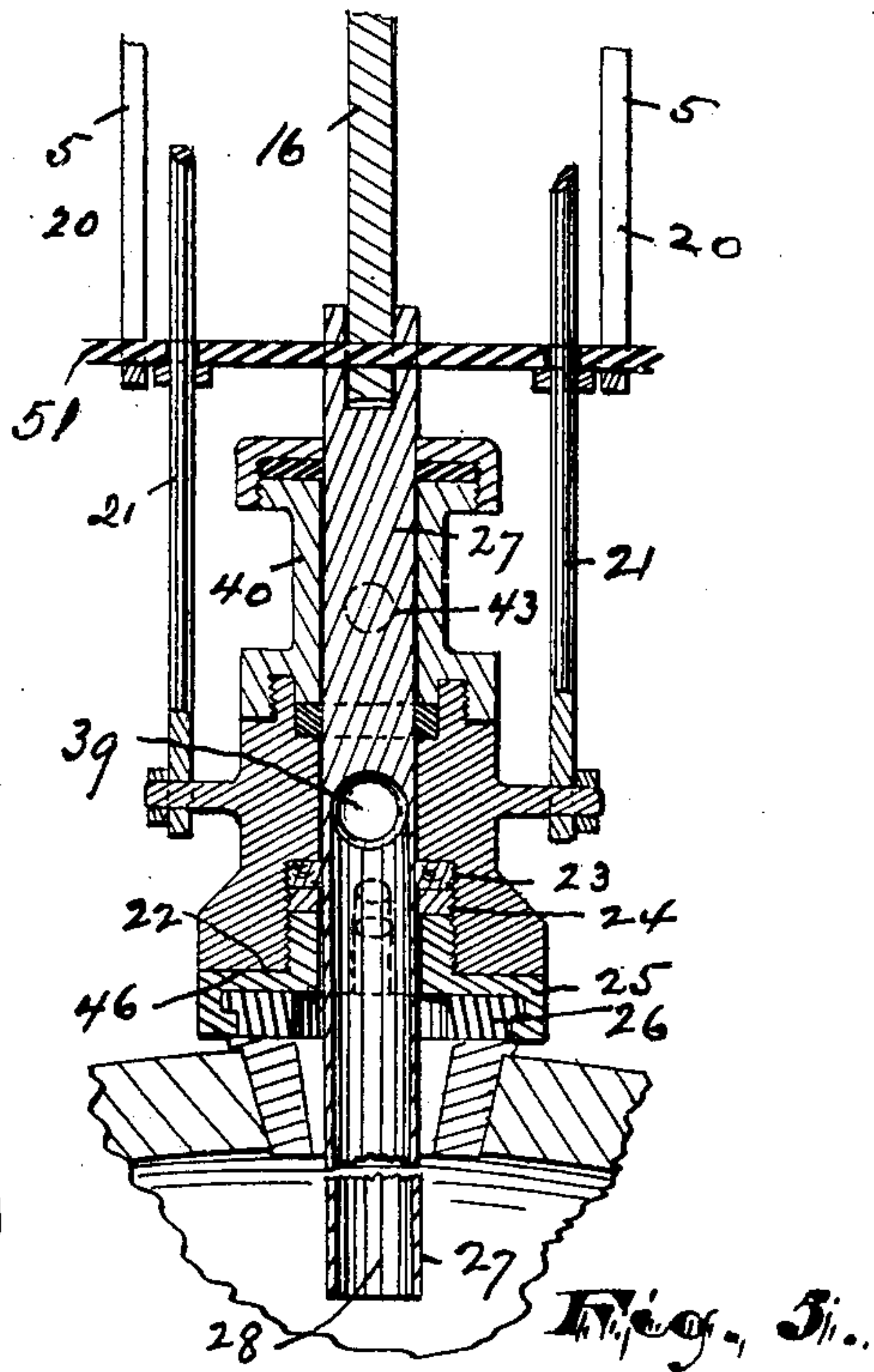


Fig. 3.

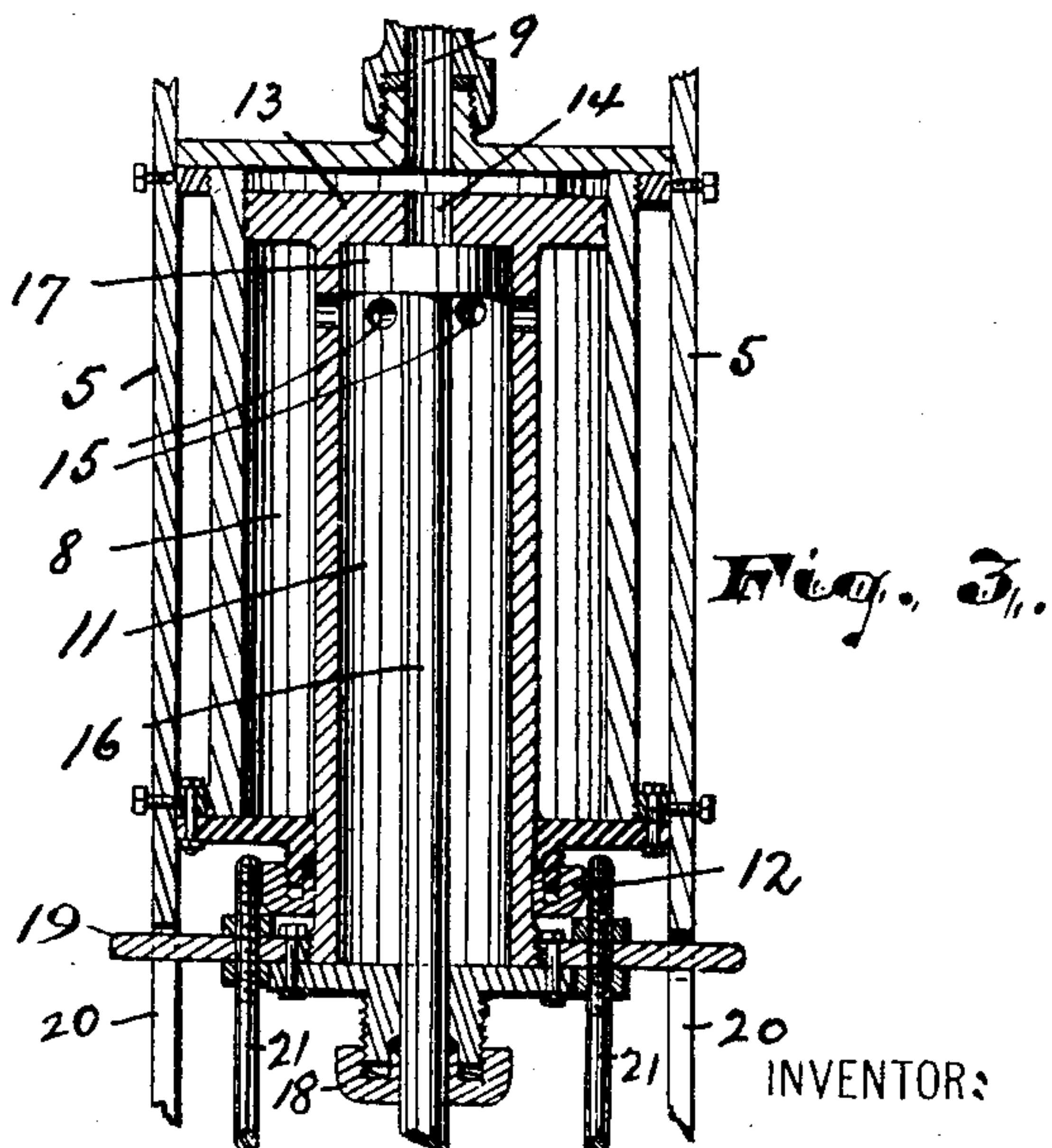


Fig. 3.

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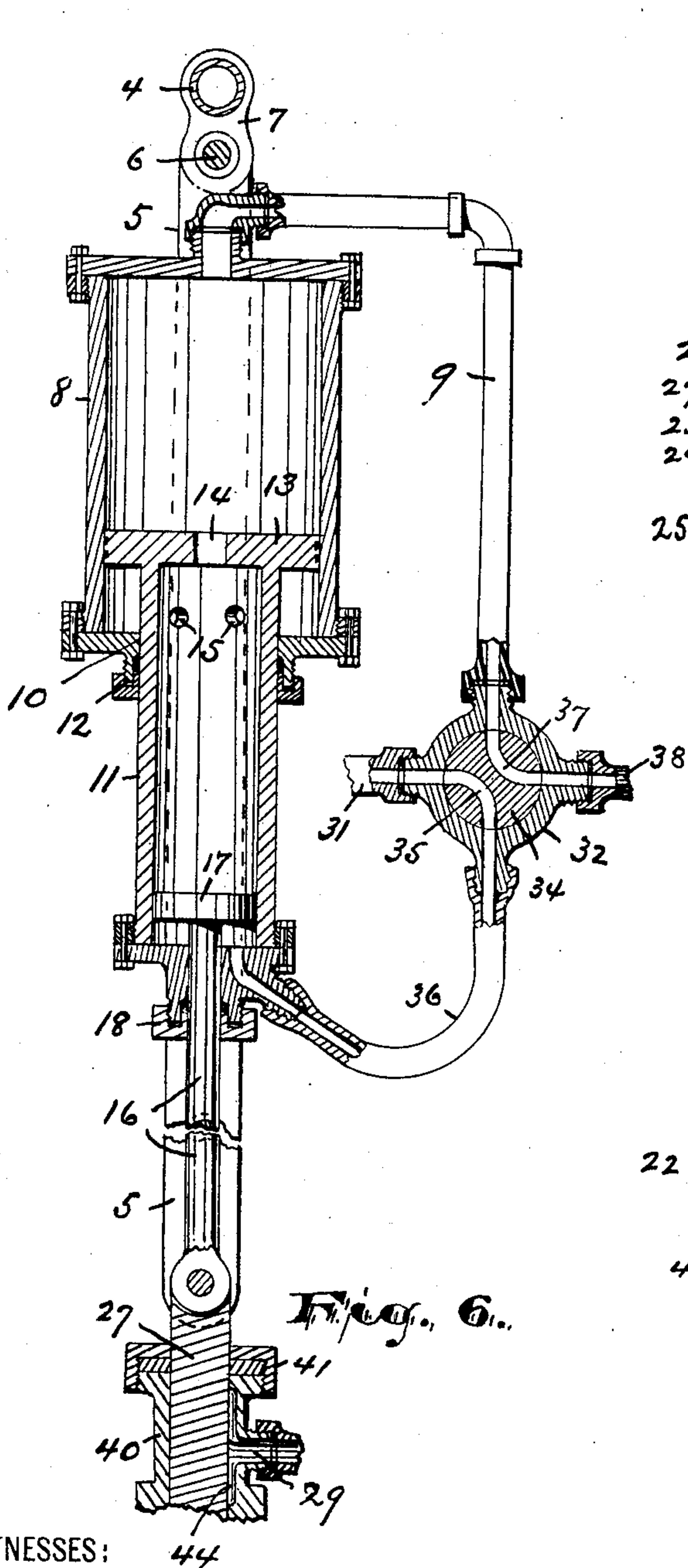


Fig. 6.

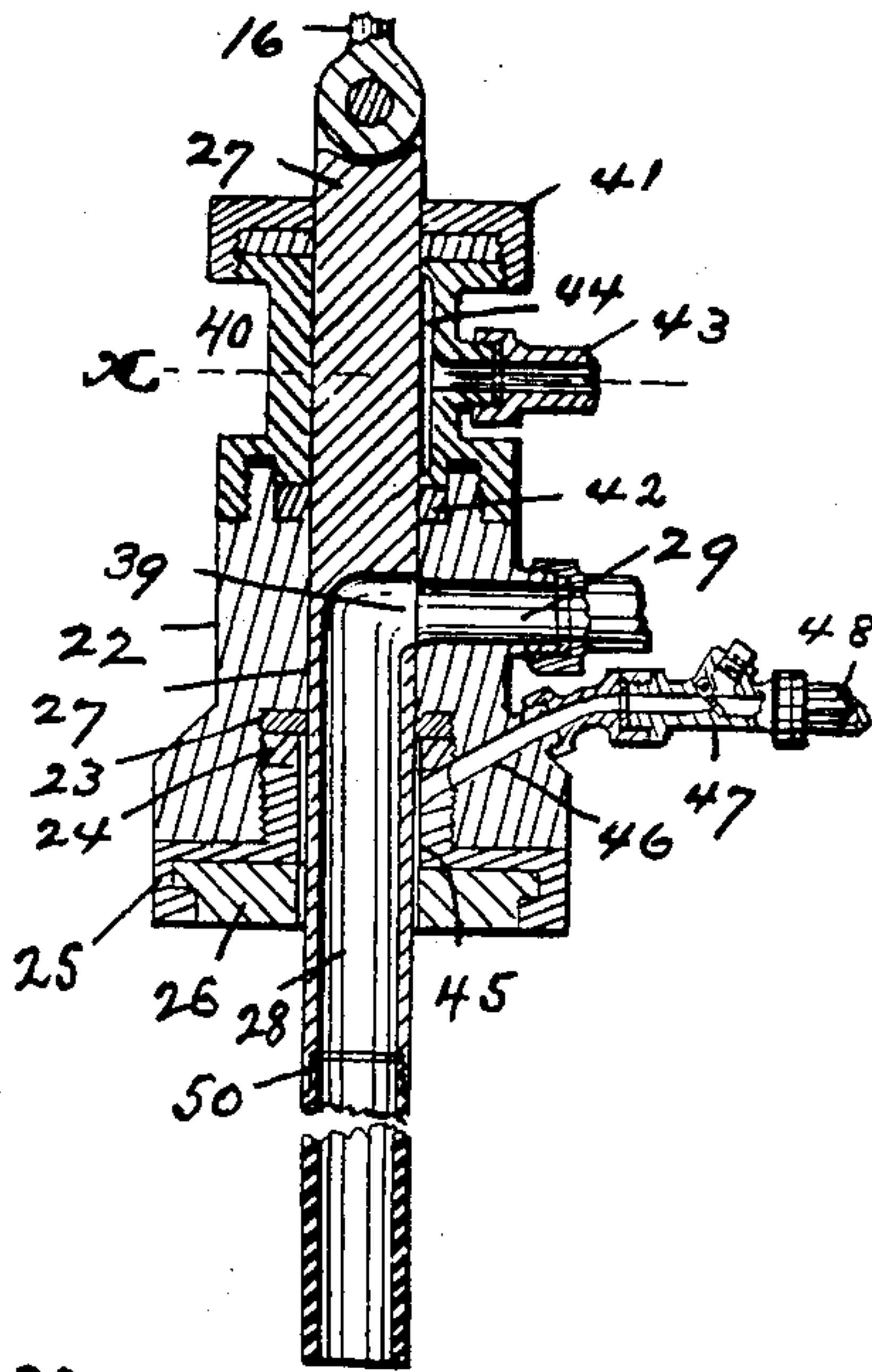


Fig. 7.

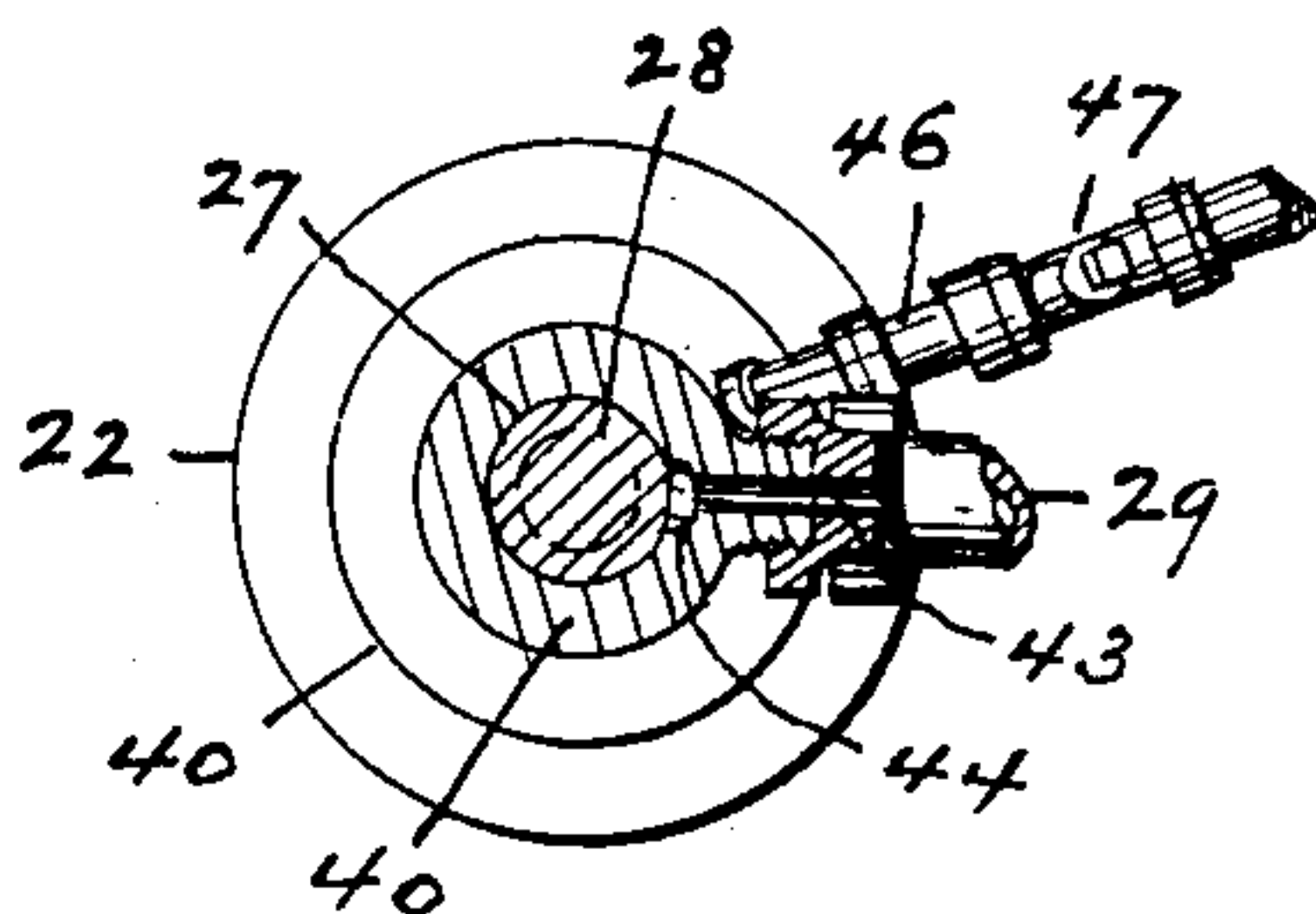


Fig. 8.

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UNITED STATES PATENT OFFICE.

FERDINAND FINK, OF NEWARK, NEW JERSEY.

BEER-RACKER.

SPECIFICATION forming part of Letters Patent No. 762,626, dated June 14, 1904.

Application filed February 24, 1903. Serial No. 144,586. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND FINK, a subject of the Emperor of Germany, residing at Newark, in the county of Essex and State of New Jersey, have invented and produced a new and original Improvement in Beer-Rackers; 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 numerals of reference marked thereon, which form a part of this specification.

The objects of this invention are to provide an apparatus for racking beer or other gas-impregnated liquids under pressure; to secure a simple construction and one which is easily operated; to obtain an automatic operation of the parts and to effect such operations in proper order; to enable the liquid-ducts to be easily cleansed, 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 racking apparatus 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 front elevation of an apparatus of my improved construction, showing a plurality of barrel-filling arms in different positions. Fig. 2 is an end elevation of the same. Fig. 3 is a central longitudinal section of one of the filling-arms, showing its cylinders in closed relation. Fig. 4 is a similar sectional view showing the cylinders extended; and Fig. 5 is a continuation of said view, showing the packing-head and filling-tube in their relation to the package. Fig. 6 is a central longitudinal section of a filling-arm, taken on a vertical plane at right angles to the supply-tank. Fig. 7 is a central sectional detail of the packing-head and its related parts, and Fig. 8 is a cross-section of the same on line *x*, Fig. 7.

In said drawings, 1 indicates a liquid-sup-

ply tank of any suitable construction and being preferably supported by straps 2 from a framework consisting of uprights 3 and horizontal top-connecting pieces 4. From the front one of these connecting-pieces, which extends parallel to the supply-tank 1, are suspended the filling-arms of my apparatus, each of which is adapted to enter into connection with the package, as hereinafter described; to fill the same. Said filling-arms may be of any desired number; but for purposes of illustration I have shown in the drawings three of such filling-arms.

Each filling-arm consists of parallel supporting-strips 5 5, hinged at their upper ends, as by a hinge-pin 6, to hangers 7 7 upon the connecting-piece 4 of the frame. Between said side pieces 5 5 at an upper point is mounted a cylinder 8, entered at its top by a duct 9 and having at its lower end an aperture 10, in which a smaller cylinder 11 is adapted to slide as a piston, a suitable stuffing-box 12 surrounding said aperture. The said smaller cylinder 11 has at its end within the large cylinder 8 a peripheral flange or head 13, fitting against the walls of said cylinder 8. At the center of this end of the smaller cylinder is an opening 14, and through the walls of this cylinder adjacent to the said flange 13 is a series of smaller perforations 15. The said smaller cylinder 11 is in turn apertured at its lower end to receive the rod 16 of a piston whose head 17 lies within the cylinder, a suitable stuffing-box 18 surrounding said rod 16. The lower end of the smaller cylinder 11 is also provided at its opposite sides with arms 19 19, adapted to project into longitudinal slots 20, formed in the supporting-strips 5 5, before described, the said arms serving to hold the parts in alinement as they slide. Rods 21 21 extend downward from the lower end of the smaller cylinder 11, preferably in the plane of the supporting-strips 5, and are at their lower ends connected to a packing-head 22. Said packing-head is tubular, as usual, and is recessed inward from its lower end to receive, first, a packing-ring 23, then a follower 24, and lastly a holder 25, adapted to carry a rubber ring 26, which forms an impervious contact around the bung-hole of a package when

the packing-head is lowered into engagement therewith. The said packing-head centrally receives a filling-rod 27, attached at its upper end to the piston-rod 16, before described, and said filling-rod is for its lower part cored out or hollowed to form a passage 28, which opens at its upper end laterally out through the side of the tube. This lateral opening 39 is adapted when the filling-rod is at its lowest point to coincide with a liquid-flow passage or inlet 29, opening through the side of the packing-head and connecting by a duct or tube 30 with the bottom of the supply-tank 1. When the filling-rod is drawn up, however, the lateral orifice passes out of registration with said inlet, which latter is then closed by the solid wall of the rod.

Guiding-arms 51 51 are arranged to move with the filling-tube 27 and hold the same against rotary displacement with respect to the filling-head, so that the lateral opening 39 of the filling-tube cannot get out of alignment with the flow-inlet 29. Preferably these arms 51 project from the point of connection of the piston-rod 16 and filling-tube 27, and at their outer ends both embrace the filling-head rods 21 and also enter the slots 20 of the supporting-strips 5, although either the rods or the slots alone might be employed under some conditions. Stop-nuts 52 may be placed upon the rods 21 to limit downward movement of the filling-tube with respect to the filling-head, adjustment being secured by screwing said nuts up or down.

Action of the cylinder and piston described to effect a manipulation of the packing-head and filling-tube is secured by means of compressed air or other suitable fluid under pressure, which is led from its source of supply through a pipe 31 to a controlling-valve 32, adapted to be turned by a handle 33. Said controlling-valve has in its rotatable portion 34 one curved passage 35, adapted to connect the supply-pipe 31 with a pipe or duct 36, leading from said valve-body and opening through the floor or bottom of the smaller cylinder 11. A similar curved passage 37 in the valve 34 is adapted to connect the duct 9, leading from the top of the larger cylinder, with an exhaust-pipe 38, all as shown in Fig. 6 more particularly.

When the valve is in position to make the connection thus described, compressed air will enter the smaller cylinder 11 below the piston 17 and force the same upward, exhaust taking place through the opening 14 and duct 9. This raises the filling-rod 27 out of the package, and by sliding its lateral orifice 39 out of registration of the flow-inlet 29 cuts off said flow. When the piston-head 17 has passed the perforations 15 near the top of the smaller cylinder 11, the pressure fluid will pass through said perforations and act upon the head 13 of said small cylinder 11, to push the same upward into the larger cylinder, the large

exhaust-opening 14 being now closed by the piston-head 17. This action raises the filling-head away from the package and permits the latter to be bunged and removed.

When a new or empty package is brought into place beneath the filling-arm, the valve 34 is turned to connect the pressure-supply with the duct 9, the curved passage 37 at the same time opening communication between the pipe 36 and exhaust 38. A reversal of the movements above described then takes place, the smaller cylinder 11 being first driven down to apply the packing-head to the package and then the piston being projected from said smaller cylinder to insert the filling-rod into the package and open up the flow. It will be noticed that the exhaust of the larger cylinder now passes through the perforations 15 of the smaller cylinder, and this aids in holding up the piston 17 until the smaller cylinder 11 comes to a stop. Pressure then acts through the aperture 14 onto the said piston-head, as will be understood.

To the top of the packing-head described is applied an extension or hat 40, through which the filling-rod also passes and which has at its upper and lower ends packings 41 42 for said tube. Intermediate of said packings a gas-supply pipe 43 enters the side of the extension 40, said tube leading, preferably, from the top of the liquid-tank 1, although any other gas-supply could be employed. In the downward passage of the filling-rod as it enters the package the lateral orifice 39 thereof comes first into registration with the said gas-inlet, and thus the package is charged to a pressure corresponding to that in the top of the supply-tank before the liquid is admitted. To secure such communication of the filling-rod passage 28 with the gas-duct 43 for a suitably long period of time, the mouth of said duct is extended both upwardly and downwardly where it opens against the filling-rod, as at 44, and thus the charging of the package is done automatically.

To provide for venting as a package is filled, the wall of the lower portion of the packing-head is recessed next to the filling-rod, as at 45, and from said recess leads a vent-duct 46, which just outside the packing-head is provided with a check-valve 47. A tube 48 connects said vent-duct with the top of the said supply-tank, and in said tube is placed a sight-glass 49 at a convenient point.

In the use of my improved device, therefore, the operator has only to get a package in position beneath the filling-arm and then turn the valve 34, when said package is charged with gas, filled with liquid, and vented automatically. As soon as liquid appears at the sight-glass 49 the operator reverses the valve, which causes flow to be shut off and the filling-tube and packing-head to be removed in turn from the barrel, the check-valve 47 in the vent-tube preventing escape of liquid

therein. As soon as a new package is connected, however, and venting begins again this liquid in the vent-pipe flows downward by gravity into the package.

5 If desired, the filling-rod 27 may be jointed near its lower end, as at 50, so as to permit end portions of different lengths to be attached, according to the size of package to be filled, thus avoiding such a wide range of move-
10 ment of the piston carrying said rod.

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

1. In a racking apparatus, the combination with a large cylinder having an opening at its
15 end, a small cylinder sliding in said opening of the large cylinder and having a head lying in said large cylinder, said head being apertured to provide communication between the small cylinder and opposite side of the head
20 and the walls of the small cylinder being perforated adjacent to the head to afford communication to the other side of said head, a piston in said small cylinder having its rod projecting therefrom, a packing-head connected
25 to said small cylinder, a filling-tube sliding in said packing-head and being connected to said piston-rod, and ducts opening into the opposite ends of the said cylinders and each being adapted to alternately serve as an inlet
30 and as an exhaust.

2. The combination with strips hinged at their upper ends to a suitable support and being slotted at their lower portions, of a large cylinder mounted in fixed position between
35 said strips, a small cylinder adapted to slide telescopically in said large cylinder, arms adapted to enter said slots in the supporting-strips and guide said small cylinder, rods extending from said small cylinder, a packing-head at the end of said rods, and ducts opening into the top of the large cylinder and the bottom of the lower cylinder, respectively and being adapted to alternately admit and discharge fluid.

3. The combination with the packing-head and a filling-tube slidable in said packing-head and having a lateral flow-inlet, said packing-head providing at its lower end means for venting and having at its side an inlet for liquid, of an extension above said packing-head
50 having a gas-inlet in vertical alinement with the liquid-inlet of the packing-head, whereby as the said filling-tube is slid downward it first admits gas to the package to charge the same
55 and then opens up the flow of liquid.

4. The combination with the packing-head providing a central slideway having at its side a flow-inlet for liquid and a gas-inlet in alinement with each other, both said inlets having
60 above and below themselves packing-rings, and said gas-inlet being extended at its mouth longitudinally of the packing-head, of a filling-tube slidable in said packing-head and having a lateral orifice adapted to be brought in

turn into registration with the said gas-sup- 65
ply and liquid-supply, and means for sliding said filling-tube.

5. The combination of a packing-head having a central passage, flow-ducts for liquid and gas opening into said passage, a filling-tube
70 slidable in said passage of the packing-head and having a lateral orifice adapted to successively register with said ducts to effect a filling of a package, means for longitudinally sliding said filling-tube with respect to the
75 packing-head, and means for preventing rotary displacement.

6. The combination of a packing-head having a central passage with laterally-recessed walls at its lower end portion a filling-tube slid-
80 able in said passage and having a lateral orifice, means for sliding said filling-tube in the packing-head, means for holding the filling-tube in alinement, inlet-ducts opening into the passage of the packing-head in longitudinal alinement,
85 and a vent-duct leading from the lower portion of the packing-head.

7. The combination of a packing-head providing a central passage and having inlet-ducts for gas and liquid entering said passage later-
90 ally and in alinement longitudinally of the passage, a filling-tube slidable in said passage and having for its lower portion a longitudinal duct opening at the bottom out through the end of the filling-tube and at the top out through the
95 side of the filling-tube, means for holding the filling-tube with its said lateral orifice in alinement with the inlet-ducts of the packing-head, and means for sliding the filling-tube with respect to the packing-head. 100

8. The combination with opposite guideways, of a large cylinder between the same, a small cylinder adapted to slide telescopically in
105 said large cylinder, arms carried by said small cylinder and engaging at their outer ends the said guideways, a piston in said small cylinder, a filling-tube connected to said piston, arms moving with said filling-tube and slidably engaging said guideways, and ducts opening into the top of the large cylinder and bottom of the
110 lower cylinder, respectively, and being adapted to alternately admit and discharge pressure fluid.

9. The combination of a large cylinder, a small cylinder adapted to slide telescopically in
115 said large cylinder, rods extending longitudinally from said small cylinder, a packing-head on said rods, a piston in the small cylinder, a filling-tube connected to said piston, guides adapted to move with the filling-tube and slid-
120 ably engage said rods, and means for admitting and exhausting a pressure fluid to or from said cylinders.

10. The combination with strips connected at their upper ends to a suitable support and
125 being slotted at their lower portions, of a large cylinder mounted upon the upper portions of said strips, a small cylinder adapted to slide

telescopically in said large cylinder, arms carried by said small cylinder and adapted to enter said slots in the strips, rods projecting longitudinally from the small cylinder, a packing-head at the end of said rods, a piston in said
5 small cylinder having a projecting rod, a filling-tube connected to the end of said piston-rod, arms carried by said piston-rod adapted at their ends to enter the said slots of the support-
10 ing-strips and back or in from said ends to slide upon the packing-head rods, and means for admitting and exhausting a pressure fluid to or from said cylinders.

11. The combination of telescopic cylinders
15 and a piston in the inner cylinder, of a filling-tube connected to said piston, guide-rods at the sides of said filling-tube, arms adapted to move with the filling-tube and slidably engaging said rods, adjustable stops on said rods, and means

for conducting a pressure fluid to said cylinders and piston. 20

12. In a racking apparatus, the combination with a packing-head providing a passage for a filling-tube and having separate inlets for gas and liquid opening laterally into said passage 25 and being in alinement longitudinally of said passage, of a filling-tube slidably seated in said filling-head passage and having a lateral orifice adapted to be brought into coincidence with either of said inlets by longitudinal sliding of 30 said filling-tube in the filling-head.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of February, 1903.

FERDINAND FINK.

Witnesses:

CHARLES H. PELL,
RUSSELL M. EVERETT.