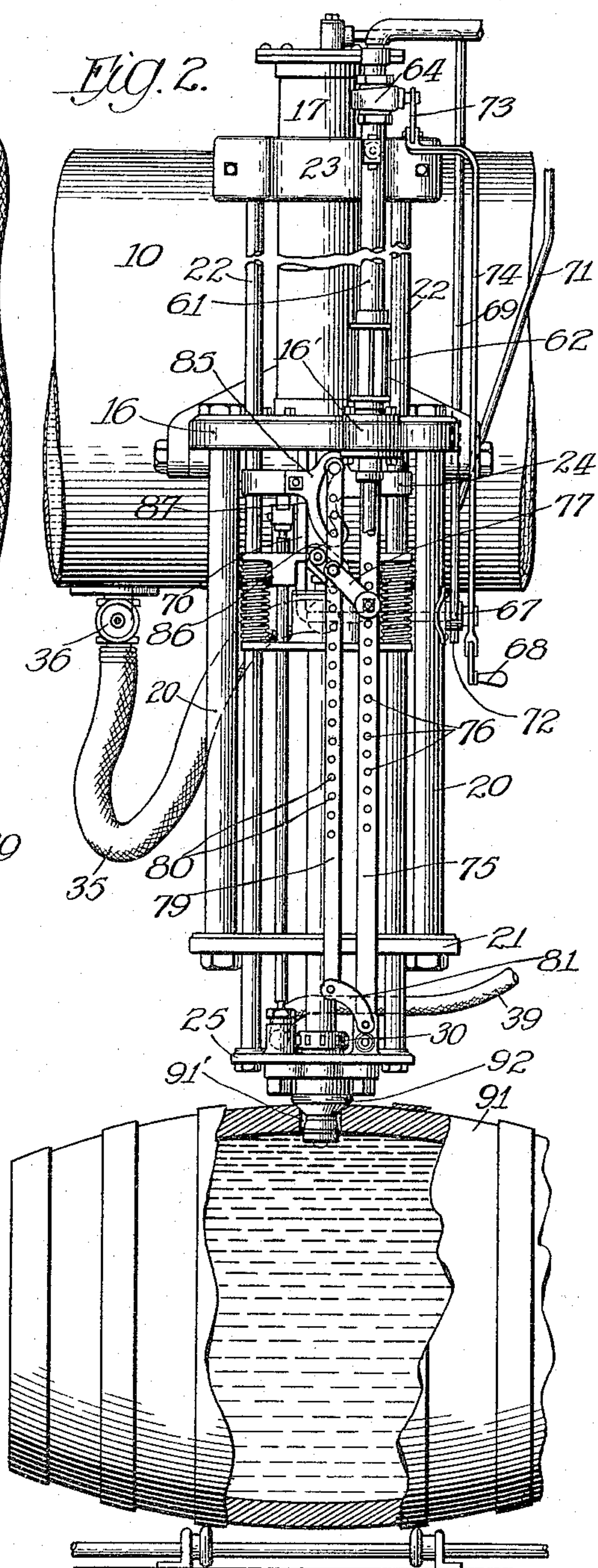
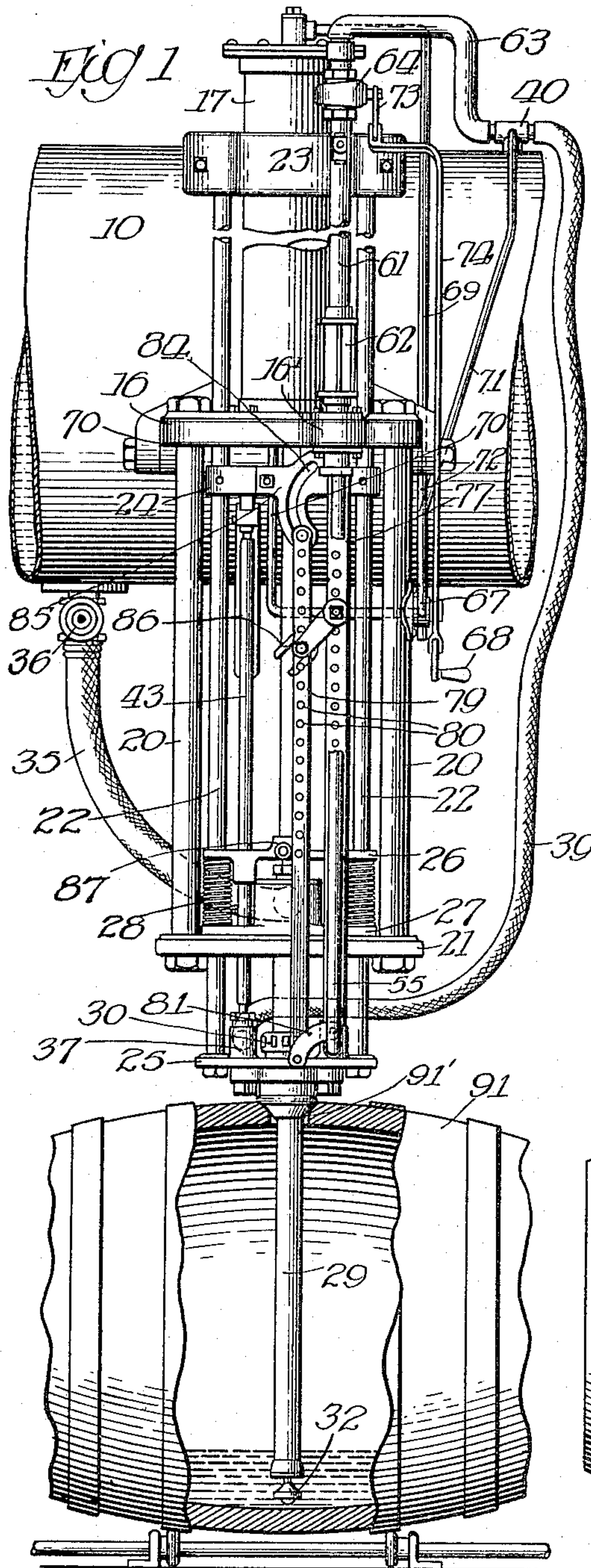


S. & N. SCHLANGEN.
BEER RACKING APPARATUS.
APPLICATION FILED MAY 18, 1914.

1,155,009.

Patented Sept. 28, 1915.

3 SHEETS—SHEET 1.



Witnesses
H. C. Barrett
C. H. Roessner.

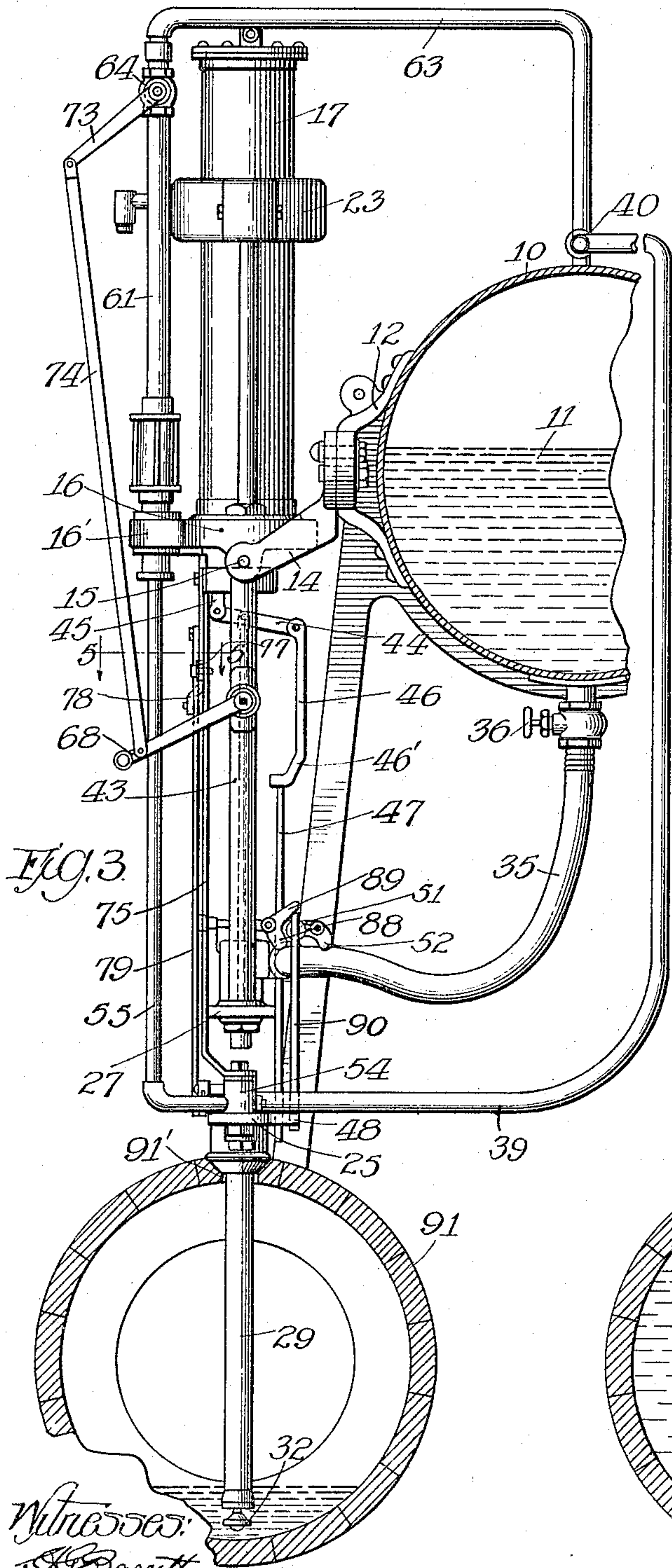
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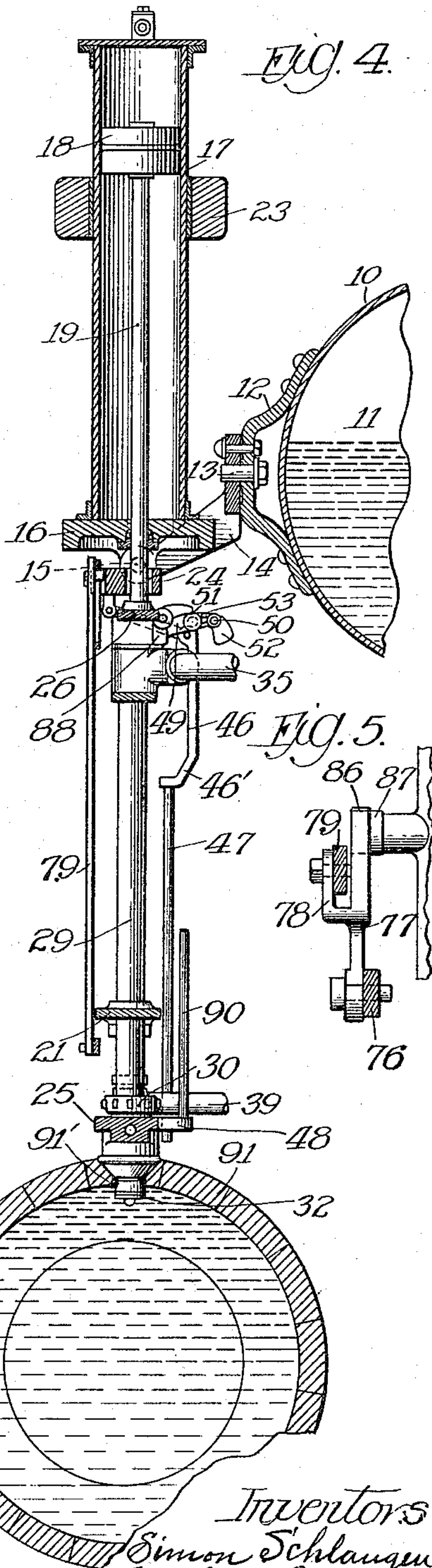
1,155,009.

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

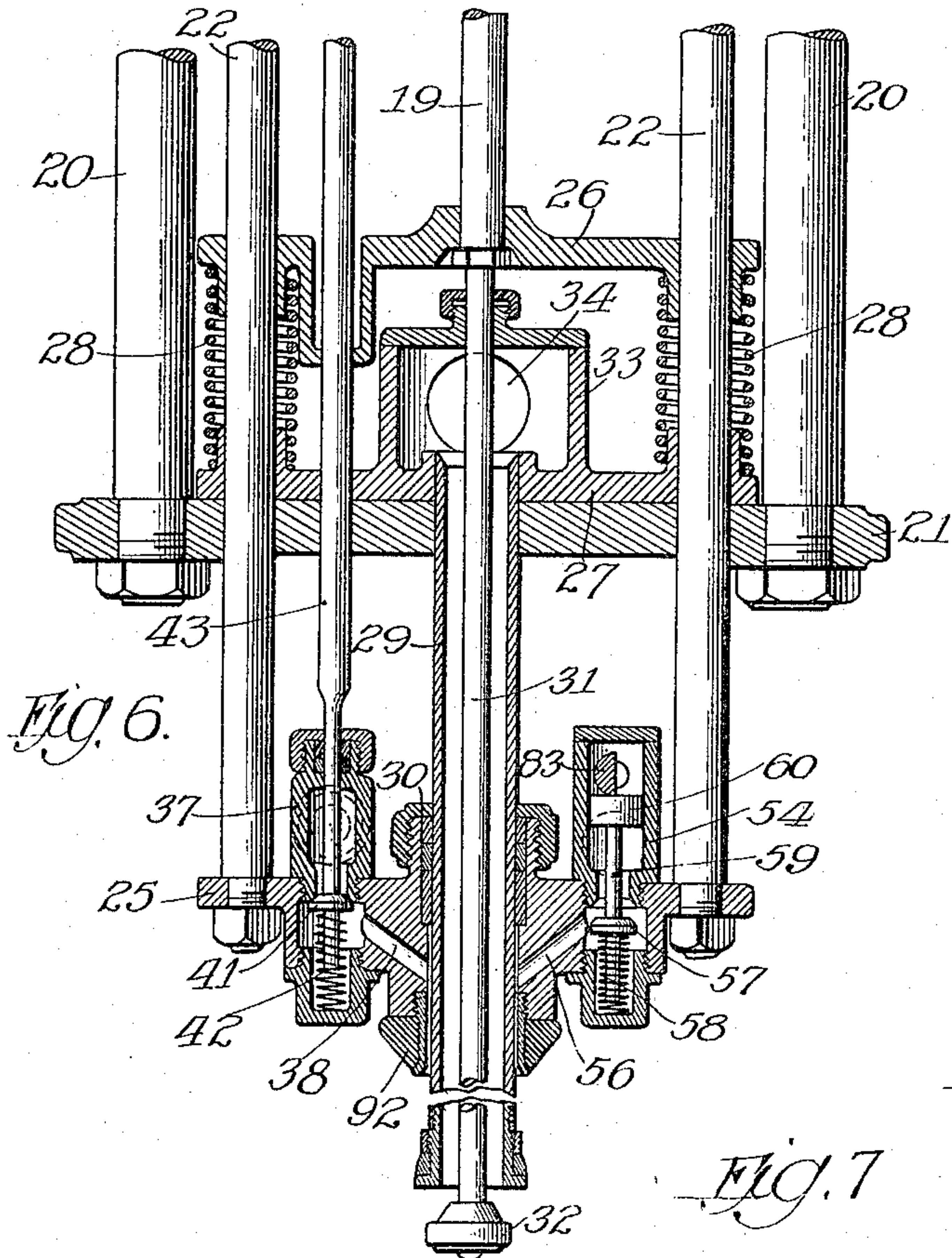


Fig. 6.

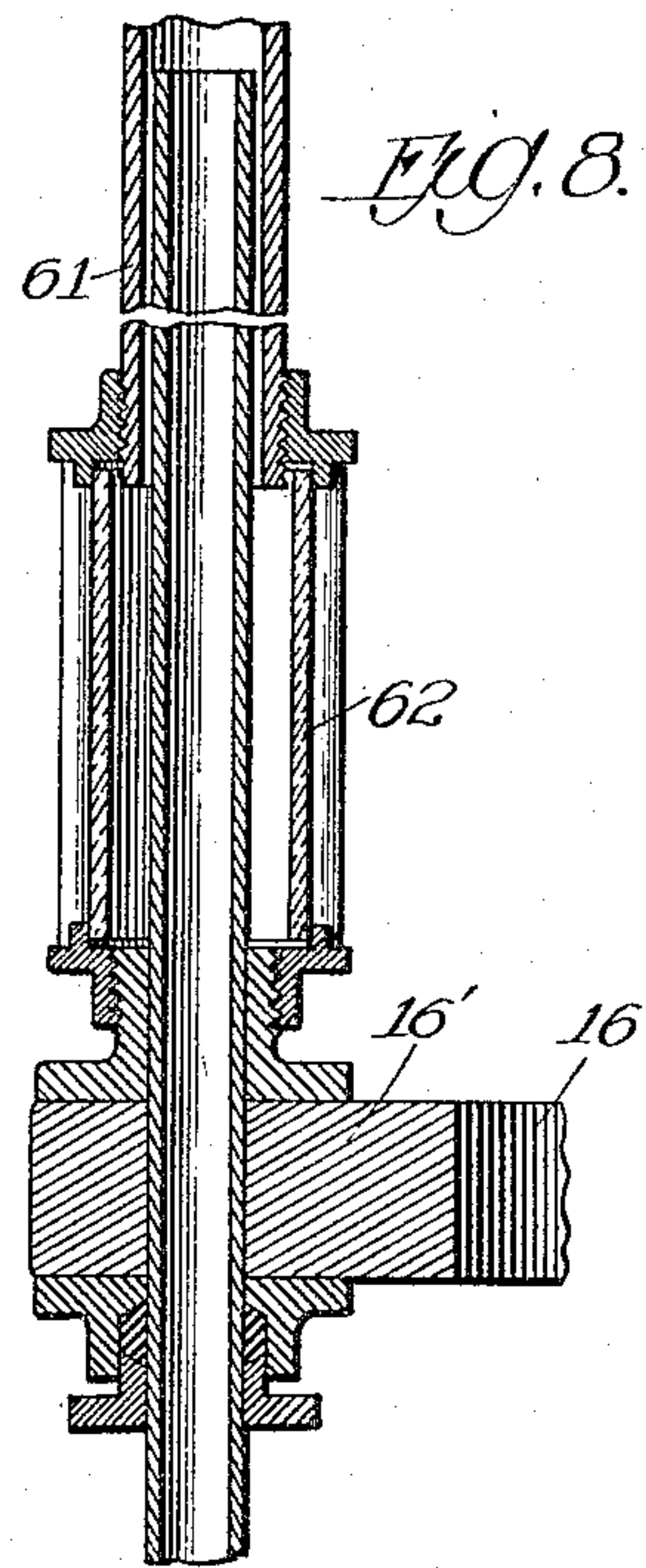


Fig. 8.

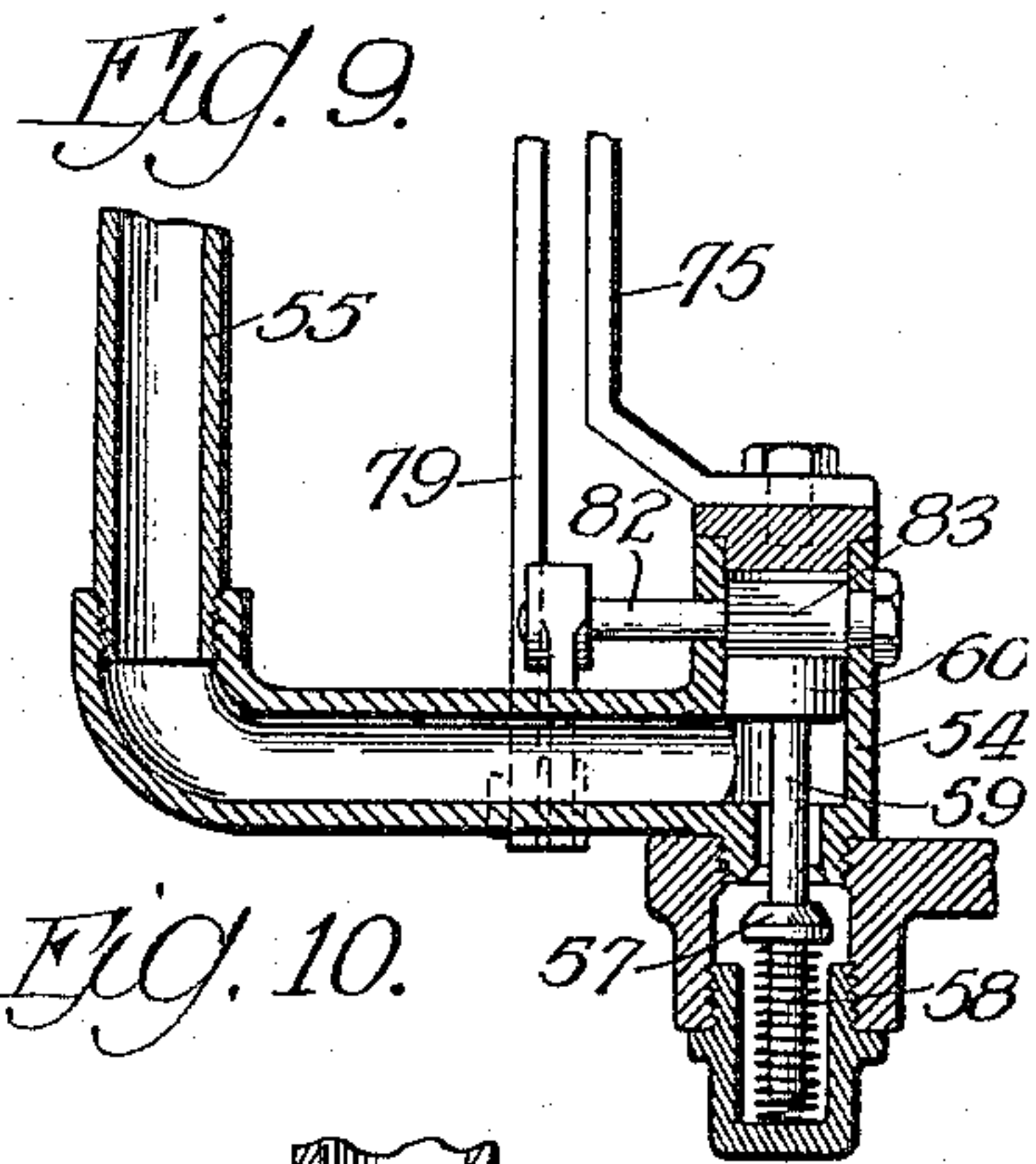


Fig. 9.

Fig. 10.

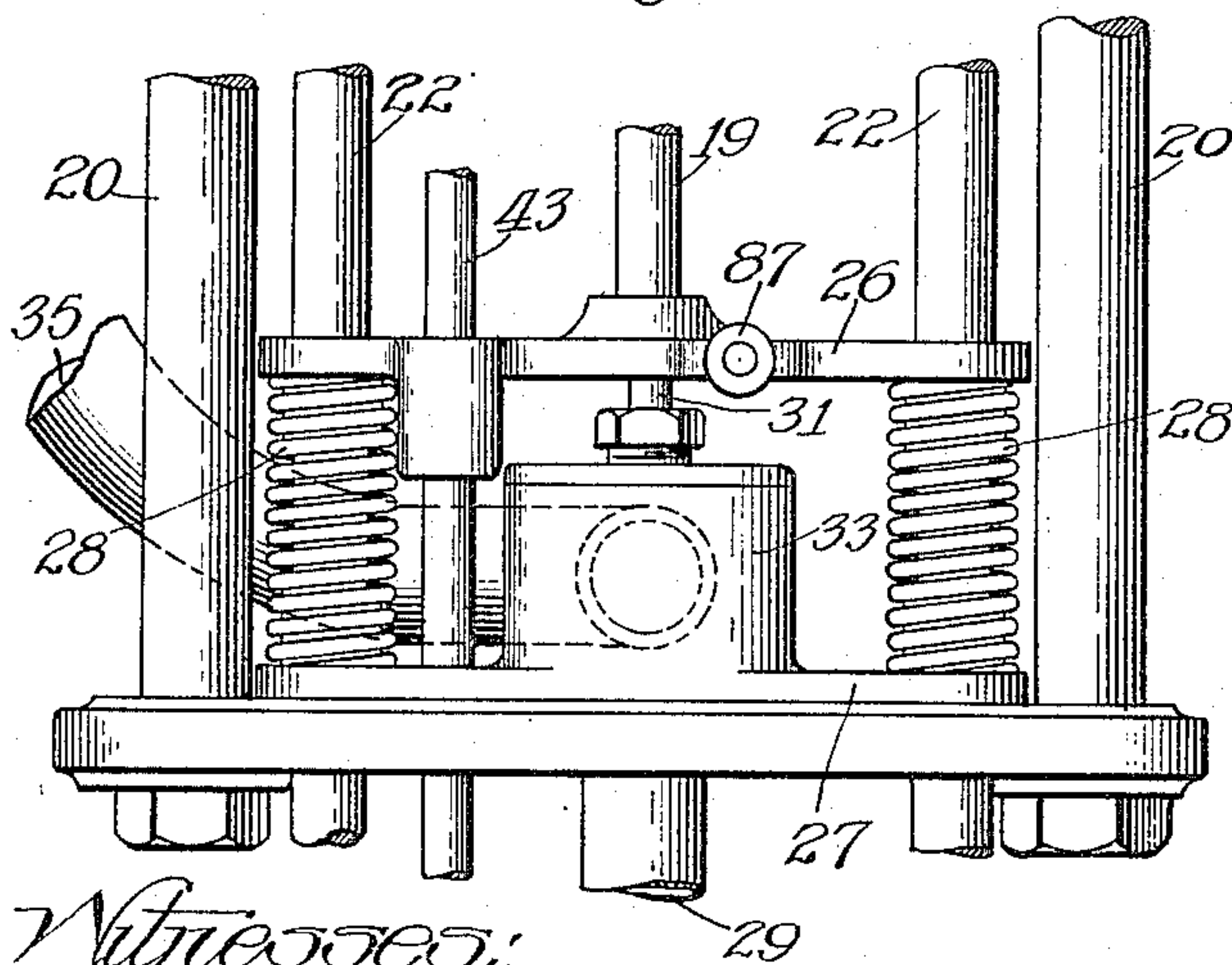
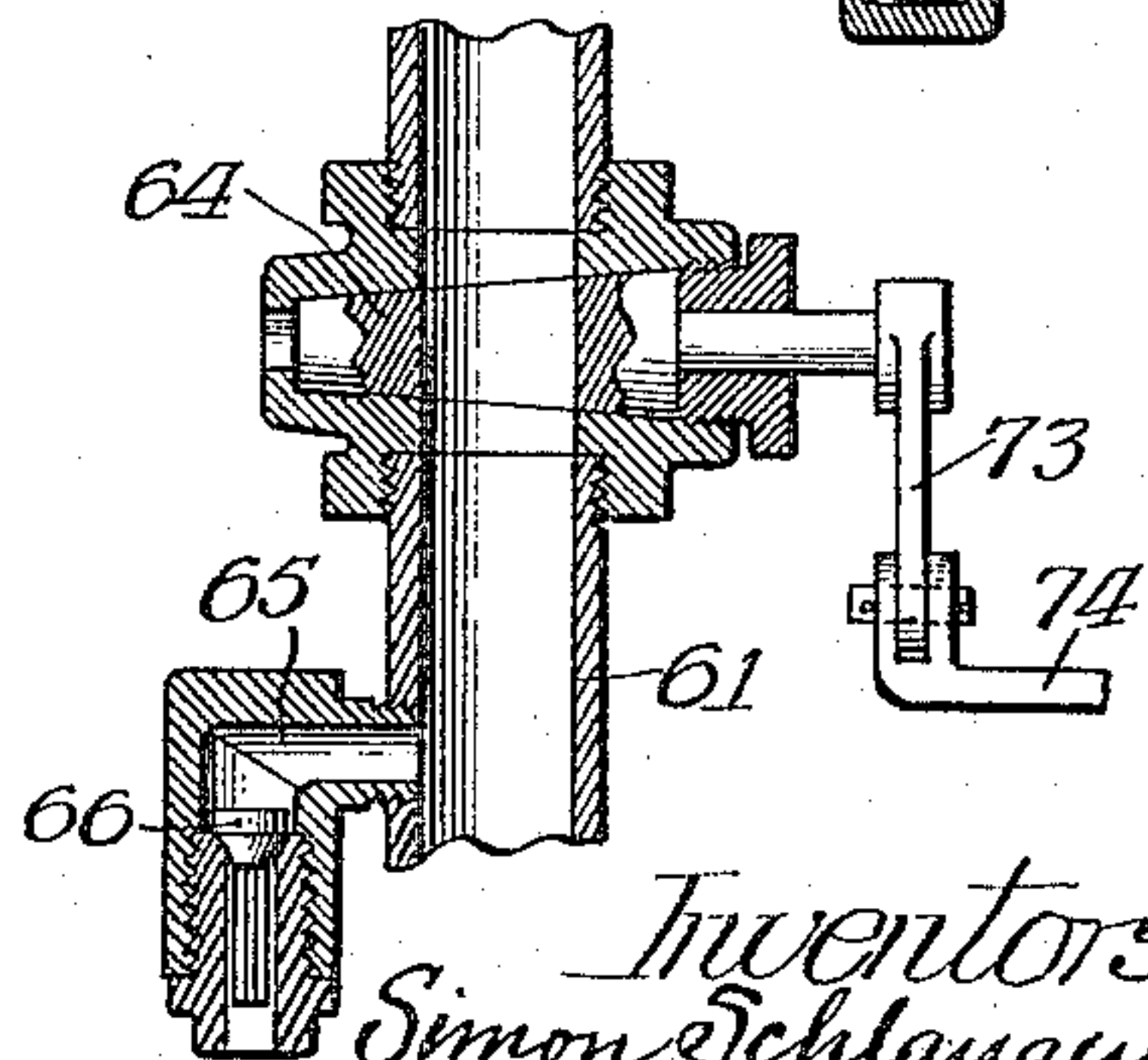


Fig. 7.

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UNITED STATES PATENT OFFICE.

SIMON SCHLANGEN AND NICHOLAS SCHLANGEN, OF CHICAGO, ILLINOIS.

BEER-RACKING APPARATUS.

1,155,009.

Specification of Letters Patent.

Patented Sept. 28, 1915.

Application filed May 18, 1914. Serial No. 839,200.

To all whom it may concern:

Be it known that we, SIMON SCHLANGEN and NICHOLAS SCHLANGEN, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Beer-Racking Apparatus, of which the following is a specification.

This invention relates to beer racking apparatus of the general type and character shown in patents of Simon Schlangen, No. 940,336, dated Nov. 16, 1909, and No. 1,009,695, dated Nov. 21, 1911.

Among the objects aimed at by the invention are; to provide a construction whereby it shall be possible to secure an even and uniform filling of the packages regardless of the variations in the amounts of expansion and contraction which different packages exhibit under the application and release of the counter-pressure to which they are subjected in the filling operation, to provide a construction not requiring any adjustment of parts to adapt it to the filling of packages of different sizes; to provide a construction wherein the contents of the filled package shall be vented to the atmosphere through the counter-pressure return pipe during the withdrawal of the filling tube from the package, thereby insuring the complete filling of the package by back-flow of liquid from the counter-pressure return pipe to fill the space created by the withdrawal of the filling tube regardless of the amount of expansion and contraction of the package; to provide a construction which will more effectively prevent waste and loss of beer at the bung of the package when the seal is broken; and generally, to provide a simplified and improved racking mechanism of the type referred to.

Other objects and advantages of the invention will be apparent from the following description, taken in connection with the accompanying drawings forming a part of this specification, in which—

Figure 1 is a view in front elevation, partially broken out, of the apparatus shown in register with the bung hole of a barrel and in filling position relatively to the latter; Fig. 2 is a similar view showing the parts of the apparatus in the relative positions occupied thereto just prior to the breaking of the seal; Fig. 3 is a view of the apparatus in side elevation, in section through the tank and barrel, the parts being shown in filling

position, as in Fig. 1; Fig. 4 is a substantially central vertical section in a plane transverse to the tank and barrel, showing the latter filled and the parts in the relative positions which they occupy just prior to the breaking of the seal; Fig. 5 is a sectional detail on the line 5—5 of Fig. 3; Fig. 6 is an enlarged detail view in central vertical section through the sealing head, filling tube, and the guiding and actuating devices therefor, and showing the counter-pressure supply valve closed and the counter-pressure return valve open; Fig. 7 is an enlarged front elevational view of the parts shown in the upper portion of Fig. 6; Fig. 8 is a vertical section through the telescoping portions of the counter-pressure return pipe; Fig. 9 is a detail view in vertical section through the counter-pressure return pipe and lower valve, and Fig. 10 is a fragmentary detail view in section of the upper portion of the counter-pressure return pipe showing the cut-off valve and the atmospheric vent therein.

Referring to the drawings for a more detailed description of the apparatus, 10 designates a tank containing a supply of beer or other liquor to be racked, as indicated in Figs. 3 and 4, this liquor being contained in the tank under a pressure of air in the upper portion of the tank, as known in this type of apparatus. Secured to one side of the tank is a bracket 12 (Figs. 3 and 4), on which bracket is swiveled on a horizontal pivot 13 a yoke 14, between the forwardly extending arms of which is swiveled on horizontal pivots 15 at right angles to the pivot 13 a plate 16. The said plate 16 forms in part the lower head of a superposed power cylinder 17 containing a piston 18 (Fig. 4), to which is connected a depending piston rod 19 extending through a stuffing box in the plate 16. From the plate 16 are hung a pair of vertical rods 20 which, with the plate 16 and a lower cross connection 21, form the main frame structure that is stationary, except as to the universal swivel capacity which it has by virtue of the pivots 13 and 15.

Slidably mounted in bearings in the upper and lower members 16 and 21 of the main frame are a pair of rods 22 that are connected at their upper ends by a heavy yoke or cross-head 23, between their ends by an intermediate cross-head 24, and at their lower ends by a sealing head 25; these parts

together forming a gravity-actuated frame that is slidable up and down on and relatively to the main frame.

Slidably mounted on the vertical rods 22 of the gravity-actuated frame are upper and lower cross-heads 26 and 27, respectively, (Fig. 6) that are spaced apart by a pair of compression springs 28 that conveniently surround and are guided by the frame rods 22. The cross-heads 26 and 27 with their interposed springs 28 together form what we term a power-actuated frame that is mounted upon and slidable relatively to the gravity-actuated frame already described. The upper cross-head 26 is rigidly connected to the lower end of the piston rod 19. Secured to and depending from the lower cross head 27 is a filling tube 29 that extends centrally through the sealing head 25, being suitably packed in the latter by a stuffing box 30. Secured to the upper cross-head 26 is a depending valve-stem 31 that extends centrally through the filling tube 29 and, at its lower end, carries a valve 32 that controls the lower end of the filling tube in a manner clearly evident from Figs. 1 and 2, Fig. 1 showing this valve in open position, and Fig. 2 showing it in closed position. On the lower cross-head 27 is a valve chamber or housing 33, in one side of which is an opening 34 that communicates with a beer supply hose 35 leading from the bottom of the tank 10, said hose having a manually operated cock or valve 36.

Referring next to the means for admitting the counter-pressure medium from the tank 10 to the barrel to be filled, 37 designates a valve casing mounted on the sealing head 25 to one side of the filling tube, the lower end of said valve casing communicating through a duct 38 with the central bore of the sealing head 25 through which the filling tube passes. The valve casing also communicates laterally with a hose 39 leading into one side of a T-coupling 40 tapped into the top of the tank 10. The lower end of the valve casing 37 is formed as a valve seat and is controlled by a vertically movable puppet valve 41 that is normally held in closed position by a spring 42. The valve 41 has an upwardly extending stem 43 guided in the cross-heads 21, 27 and 26. As best shown in Fig. 3, the upper end of the valve-stem 43 is pivotally connected to a lever 44 between the ends of the latter. This lever is pivoted to a depending lug 45 on the intermediate cross head 24 of the gravity-actuated frame, while its other end is pivotally connected to a depending cam member 46, the lower end of which latter is connected to a rod 47 guided in a lug 48 formed on the sealing head 25. Secured to or integral with the upper cross-head 26 of the power-actuated frame is a rearwardly extending bracket 49 on which is pivoted a

valve-tripping device 50 carrying a roller 51 adapted to engage the outer side of the cam piece 46 during the descent of the cross-head 26. The tripping device 50 has a counter-weight 52 in the rear of its pivot that normally swings the tripping device into contact with a stop-pin 53 in the bracket 49, thus limiting the upward swing of the roller 51, and making the downward movement of the tripping device effective to depress the lever 44 and thereby open the valve 41, the open position of said valve being maintained during the travel of the roller 51 over the cam piece 46. As the roller slides off the inclined lower end 46' of the cam piece, the valve spring 42 at once reacts to close the valve 41. On the return or rising movement of the tripping device the roller 51, as it engages the inclined lower end 46' of the cam piece swings downwardly and idly engages the cam piece, and, as it passes off the upper end of the latter, the counter-weight 52 returns it to normal operative position, as shown in Fig. 4.

The above-described counter-pressure supply valve mechanism is not claimed herein, but forms in part the subject matter of an application filed by us on the 7th day of May, 1914, Serial No. 836,908.

Referring next to the mechanism for controlling the return of the counter-pressure medium from the package during the filling of the latter, in association with which are embodied the main novel features of the present invention, by which the space left in the package by the retraction of the filling tube is compensated for by a return flow of liquid temporarily trapped in the counter-pressure return pipe, 54 designates a valve casing mounted on the sealing head on the opposite side of the filling tube 29, with one side of which is connected a vertically extending pipe section 55. The valve casing 54 communicates through its lower end with a duct 56 leading into the annular space of the sealing head surrounding the filling tube, and this communication is controlled by a vertically movable puppet valve 57 that coöperates with a valve seat on the lower end of the valve casing, the valve being normally held closed by a spring 58. The valve 57 has a short upwardly extending stem 59 (Fig. 6), at the upper end of which is a plunger head 60 guided in the valve casing 54 and located above the lateral communication of the pipe 55 with said valve casing. The upper end of the pipe section 55 extends through and is guided in a forwardly projecting lug or bracket 16' formed on the plate 16, as best shown in the detail view, Fig. 8, and, above said lug or bracket has a telescoping engagement with an upper stationary pipe section 61 mounted on the bracket 16'. The lower end of the pipe section 61 contains a sight glass 62, and its up-

per end is connected by a pipe or a hose 63 with the other side of the T-coupling 40. In the upper portion of the upper stationary pipe section 61 is located a cut-off valve or
 5 cock 64, shown in detail in Fig. 10, and just below the same is a short downwardly turned vent pipe 65 containing a check valve 66.

The motor, represented by the cylinder 17 and piston 18, is operated by any suitable
 10 motive fluid which may be the compressed air in the upper portion of the tank 10, by means of the apparatus commonly employed for this purpose and shown in the two patents hereinbefore referred to, such appa-
 15 ratus comprising a valve casing 67 secured to the main frame and containing an ordinary four-way cock, the stem of which has an operating crank arm 68. To opposite
 20 sides of the valve casing 67 are connected pipes 69 and 70 leading to the upper and lower ends of the cylinder 17 respectively. To the upper side of the valve casing 67 is
 25 connected a supply pipe 71 leading from the T-coupling 40, and on the lower side of the valve casing 67 is an exhaust or vent nozzle 72. When the crank arm 68 is swung
 30 in one direction pressure fluid is admitted to the top of the cylinder 17 and exhausted from the lower end of the latter, and when the handle is swung in the reverse direc-
 35 tion the pressure fluid is admitted to the bottom of the cylinder and exhausted from the top thereof. The cut-off valve 64 is de-
 40 signed to be operated from and simultaneously with the manually operated valve 67, for which purpose a crank arm 73 (Fig. 3) on the stem of the cut-off valve 64 is con-
 45 nected by a link 74 with the operating arm 68, the connection being such that when, with the parts in the relative positions
 50 shown in Figs. 1 and 3, and with the barrel filled and the liquid showing in the sight glass, the valve 67 is manipulated to admit motive fluid beneath the piston 18 so as to
 55 close the valve at the lower end of the filling tube and retract the latter from the barrel, the cut-off valve 64 is closed, whereupon the atmospheric vent 65 becomes operative to admit atmospheric pressure above the liquid
 60 retained in the counter-pressure return pipe so as to permit such liquid to flow back into the barrel to such an extent as may be necessary to compensate for the space of the filling tube in the barrel or so much thereof
 65 as is not compensated for by contraction or shrinkage of the barrel when the artificial pressure is cut off and the atmospheric pressure is admitted. When the manually operated valve 67 is manipulated to admit pres-
 66 sure to the upper end of the motor cylinder, the cut-off valve 64 is, of course, opened, and the check valve 66 automatically prevents escape of the artificial pressure through the vent 65.

65 The valve 57 which controls the lower end

of the counter-pressure return pipe is automatically opened and permitted to close by a mechanism controlled by the cross-head 26 in its up and down movements, which
 70 mechanism will next be described.

Secured to and between the intermediate and lower cross heads 24 and 25 of the gravity-actuated frame, is a bar 75 in which are
 75 formed a plurality of holes 76. In one of these holes is pivotally mounted an arm 77, having a laterally offset branch 78 that is pivotally connected to a link bar 79 in which
 80 are formed a corresponding series of holes 80. The lower end of the link bar 79 is pivotally connected to an arm 81 that is fast on a short shaft 82 journaled in the upper
 85 end of the valve casing 54. On the shaft 82, within the upper end of the valve casing, is a cam 83 (Figs. 6 and 9) that engages the plunger head 60 of the valve, opening the
 90 latter when the parts are in the relative positions shown in Figs. 1 and 3. It will thus appear that the bars 75 and 79 and the upper and lower arms 77 and 81 form a paral-
 95 lelogram frame, the upper end of the bar 79 being preferably guided in an arc shaped slot 84 formed in a casting 85 secured to the cross-head 24. The free end of the arm 77 is forked, as shown at 86, and this forked
 100 end is engaged by a roller 87 (Fig. 7) projecting forwardly from the cross-head 26, to actuate the link bar 79, arm 81, shaft 82, and cam 83.

We have also shown in this apparatus a safety device for preventing injury to the
 105 long stem 31 of the filling tube valve 32 through careless handling of the apparatus and failure to properly register the lower end of the sealing head with the bung hole
 110 of the package during the descent of the sealing head; this device comprising a short rod or bar 88 (Figs. 3 and 4) pivoted to the upper cross-head 26 and normally spanning
 115 the space between said cross-head and the top of the valve housing 33, so that it blocks inward relative movement of said cross-heads during their descent so long as
 120 it is between them. On this bar is formed a laterally extending arm 89 that, after the sealing head has been registered with the bung of the package, and during the further
 125 descending movement of the filling tube, strikes a fixed stop-rod 90 mounted upon the sealing head, and thereby rocks the lock bar 88 from between the cross-heads, permitting
 130 the further downward movement of the cross head 26 necessary to open the valve 32. From this it will be seen that in case the operator allows the valve 32 to strike the
 135 top of the barrel during the descent of the apparatus, the strain is not all taken by the relatively slender valve stem 31 but is effectively resisted by the filling tube itself, which is rigid with the lower cross-head 27, whereby bending or other possible injury to
 140

the valve stem 31 is obviated. This safety device forms in part the subject matter of our aforesaid application hereinabove identified.

5 In the operation of the apparatus, a barrel or keg 91 having been suitably positioned beneath the sealing head, the handle 68 is turned to admit pressure to the upper end of the motor cylinder 17 which causes
10 the filling tube to descend and at the same time permits the gravity-actuated frame to descend until a gasket-ring 92 on the lower end of the filling head engages the bung hole 91' of the barrel 91. The power-actuated frame carrying the filling tube and
15 its valve continues to descend until the lower cross-head 27 strikes the lower cross-head 21 of the main frame, as shown in Fig. 6. Thereupon the upper cross-head 26 descends
20 still farther, compressing the springs 28, until it strikes the top of the valve housing 33, thereby fully opening the valve 32 of the filling tube and permitting the liquid to flow into the barrel. During this descending operation, the counter-pressure supply valve 41
25 is opened by the engagement of the roller 51 with the cam 46, whereby the pressure in the tank 10 is admitted to the barrel before the liquid begins to flow. The manipulation
30 of the manually operated valve 67 to cause this descending movement of the parts simultaneously opens the cut-off valve 64; and during the descending movement the roller 87 engages the forked end 86 of the
35 arm 77 and, through the described connections, rocks the cam 83 and opens the counter-pressure return valve 57 to the position shown in Fig. 6. The valve actuating mechanism, during this movement, is shifted
40 from the position shown in Fig. 2 to that shown in Fig. 1. The liquid is permitted to flow until the barrel is filled and the liquid has risen in the counter-pressure return pipe to a point where it shows in the sight glass
45 62. The operator then reverses the valve 67, admitting pressure beneath the piston 18, which simultaneously closes the cut-off valve 64. On the ascending movement the valve 32 is first closed, and the filling tube rises
50 out of the barrel during which movement the roller 87 engages the forked end 86 of the arm 77, rocking the latter upwardly and thereby actuating the cam 83 to a position to permit the valve 57 to close by its
55 spring 58. In practice, the arm 77 is set at such a position on the bar 75 that the valve 57 is allowed to remain open until enough of the liquid trapped in the pipe 55 has run back to completely fill the space in the barrel occupied by the filling tube. This
60 amount is variable with different packages owing to variations in the expansion and contraction of the latter under the effect of the pressure; but the valve-actuating arm 77
65 is so set as to take care of packages having

little or no shrinkage, and this, of course, insures ample return flow of liquid in the case of packages having considerable expansion and shrinkage. The vent 65, after the cut-off valve 64 is closed, admits atmospheric
70 pressure to the top of the liquid in the counter-pressure return pipe so as to permit the back-flow of such liquid and at the same time bring the liquid in the pipe and in the package under atmospheric pressure, thus
75 avoiding an explosion at the bung hole when the seal is broken. The arm 77 is adjusted to positions which experiment shows yield the best results with a minimum of liquid retained in the counter-pressure pipe after
80 the valve 57 is permitted to close. This device, once adjusted, is constant for barrels or kegs of various diameters, since the distance between the roller 87 and the forked end of the arm 77 engaged thereby is always
85 proportional to the length of the filling tube within the barrel or keg.

We claim:

1. In a racking apparatus, the combination with a filling tube, and means for moving the same into and out of the package to be filled, of a pipe serving to permit flow of a counter-pressure medium from the package and also to trap sufficient liquid to fill, by back-flow therefrom, the space in the
90 package caused by the withdrawal of the filling tube, a cut-off valve in said pipe located at a point above the liquid trapped therein, and an atmospheric vent in said pipe also located at a point above the liquid
95 trapped therein and operative when said cut-off valve is closed.

2. In a racking apparatus, the combination with a filling tube, and means for moving the same into and out of the package to be filled, of a pipe serving to permit flow of a counter-pressure medium from the package and also to trap sufficient liquid to fill, by back-flow therefrom, the space in the
100 package caused by the withdrawal of the filling tube, a cut-off valve in said pipe located at a point above the liquid trapped therein, an atmospheric vent in said pipe also located at a point above the liquid trapped therein and operative when said
105 cut-off valve is closed, a valve at the lower end of said pipe, and automatic means for opening said last named valve during the package-entering movement of said filling tube and for closing the same during the
110 withdrawal movement of said filling tube.

3. In a racking apparatus, the combination with a filling tube, and means for moving the same into and out of the package to be filled, of a pipe serving to permit flow of a counter-pressure medium from the package and also to trap sufficient liquid to fill, by back-flow therefrom, the space in the package caused by the withdrawal of the filling
115 tube, a cut-off valve in said pipe located at
120
125
130

a point above the liquid trapped therein, an atmospheric vent in said pipe operative when said cut-off valve is closed, a valve at the lower end of said pipe, and automatic means for opening and closing said last named valve at any predetermined point in the package-entering and withdrawal movements of said filling tube, respectively.

4. In a racking apparatus, the combination with a filling tube, and means for moving the same into and out of the package to be filled, of a pipe serving to permit flow of a counter-pressure medium from the package and also to trap sufficient liquid to fill, by back-flow therefrom, the space in the package caused by the withdrawal of the filling tube, a cut-off valve in said pipe located at a point above the liquid trapped therein, an atmospheric vent in said pipe operative when said cut-off valve is closed, a valve at the lower end of said pipe, and automatic means controlled by said filling tube actuating means for opening and closing said last named valve at any predetermined point in the package-entering and withdrawal movements of said filling tube, respectively.

5. In a racking apparatus, the combination with a filling tube, and means for moving the same into and out of the package to be filled, of a pipe serving to permit flow of a counter-pressure medium from the package and also to trap sufficient liquid to fill, by back-flow therefrom, the space in the package caused by the withdrawal of the filling tube, a cut-off valve in said pipe located at a point above the liquid trapped therein, an atmospheric vent in said pipe operative when said cut-off valve is closed, a valve at the lower end of said pipe, a spring normally holding said last named valve closed, and means actuated by said filling tube actuating means serving to open said last named valve and to permit its closure by said spring at any predetermined point in the package-entering and withdrawal movements of said filling tube, respectively.

6. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame and extending through said sealing head, a valve controlling the lower end of said filling tube, a counter-pressure return pipe mounted on said sealing head and communicating through the latter with the package to be filled, a cut-off valve located in the upper portion of said pipe, an atmospheric vent in said pipe operative when said cut-off valve is closed, a valve at the lower end of said pipe, and automatic means controlled by said power-actuated frame for opening and closing said last

named valve at any predetermined point in the to-and-fro travel, respectively, of said power-actuated frame relatively to the package.

7. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame and extending through said sealing head, a valve controlling the lower end of said filling tube, a counter-pressure return pipe comprising upper and lower telescoping pipe sections mounted on said main frame and sealing head, respectively, a cut-off valve in said upper pipe section, an atmospheric vent in said upper pipe section operative when said cut-off valve is closed, a sight-glass in said upper pipe section below said cut-off valve, a valve at the lower end of said lower pipe section, and automatic means controlled by said power-actuated frame for opening and closing said last named valve at any predetermined point in the to-and-fro travel, respectively, of said power-actuated frame relatively to the package.

8. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame and extending through said sealing head, a valve controlling the lower end of said filling tube, a counter-pressure return pipe mounted on said sealing head and communicating through the latter with the package to be filled, a cut-off valve located in the upper portion of said pipe, an atmospheric vent in said pipe operative when said cut-off valve is closed, a valve at the lower end of said pipe, an actuating mechanism for said last named valve mounted on said gravity-actuated frame, and a member carried by said power-actuated frame serving to operate said valve-actuating mechanism on both the to-and-fro movements of said power-actuated frame.

9. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame and extending through said sealing head, a valve controlling the lower end of said filling tube, a counter-pressure return pipe mounted on said sealing head and communicating through the latter with the package to be filled, a cut-off valve located in the upper portion of said pipe, an atmospheric vent in said pipe operative when said cut-off

valve is closed, a valve at the lower end of said pipe, an actuating mechanism for said last named valve mounted on said gravity-actuated frame and adjustable vertically of the latter, and a member carried by said power-actuated frame serving to operate said valve-actuating mechanism on both the to-and-fro movements of said power-actuated frame.

10 10. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head, a cross-head slidably mounted on said gravity-actuated frame and having a depending filling tube extending through said sealing head, another cross-head slidably mounted on said gravity-actuated frame and having a depending valve-stem extending through said filling tube, a valve on the lower end of said valve-stem, a counter-pressure return pipe communicating through said sealing head with the package to be filled, a cut-off valve in said pipe, an atmospheric vent in said pipe operative when said cut-off valve is closed, a motor cylinder mounted on said main frame, a piston in said cylinder connected to said last named cross-head, a manually operated valve controlling the admission and exhaust of motive fluid to opposite ends of said cylinder, and connections between said manually operated valve and said cut-off valve whereby when said manually operated valve is manipulated to admit motive fluid to the lower end of said cylinder said cut-off valve is closed.

11. In a racking apparatus, in combination, a main frame, a gravity-actuated frame

slidably mounted on said main frame and carrying a sealing head, a cross-head slidably mounted on said gravity-actuated frame and having a depending filling tube extending through said sealing head, another cross-head slidably mounted on said gravity-actuated frame and having a depending valve-stem extending through said filling tube, a valve on the lower end of said valve-stem, a counter-pressure return pipe communicating through said sealing head with the package to be filled, a cut-off valve in the upper portion of said pipe, an atmospheric vent in said pipe operative when said cut-off valve is closed, a valve at the lower end of said pipe, an actuating mechanism for said last named valve mounted on said gravity-actuated frame and adjustable vertically of the latter, a member carried by one of said cross-heads serving to operate said valve-actuating mechanism on both the in and out movements of said filling tube relatively to the package, a motor cylinder mounted on said main frame, a piston in said cylinder connected to said valve-stem-carrying cross-head, a manually operated valve controlling the admission and exhaust of motive fluid to opposite ends of said cylinder, and connections between said manually operated valve and said cut-off valve whereby when said manually operated valve is manipulated to admit motive fluid to the lower end of said cylinder said cut-off valve is closed.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."