S. & N. SCHLANGEN.

BEER RACKING APPARATUS.

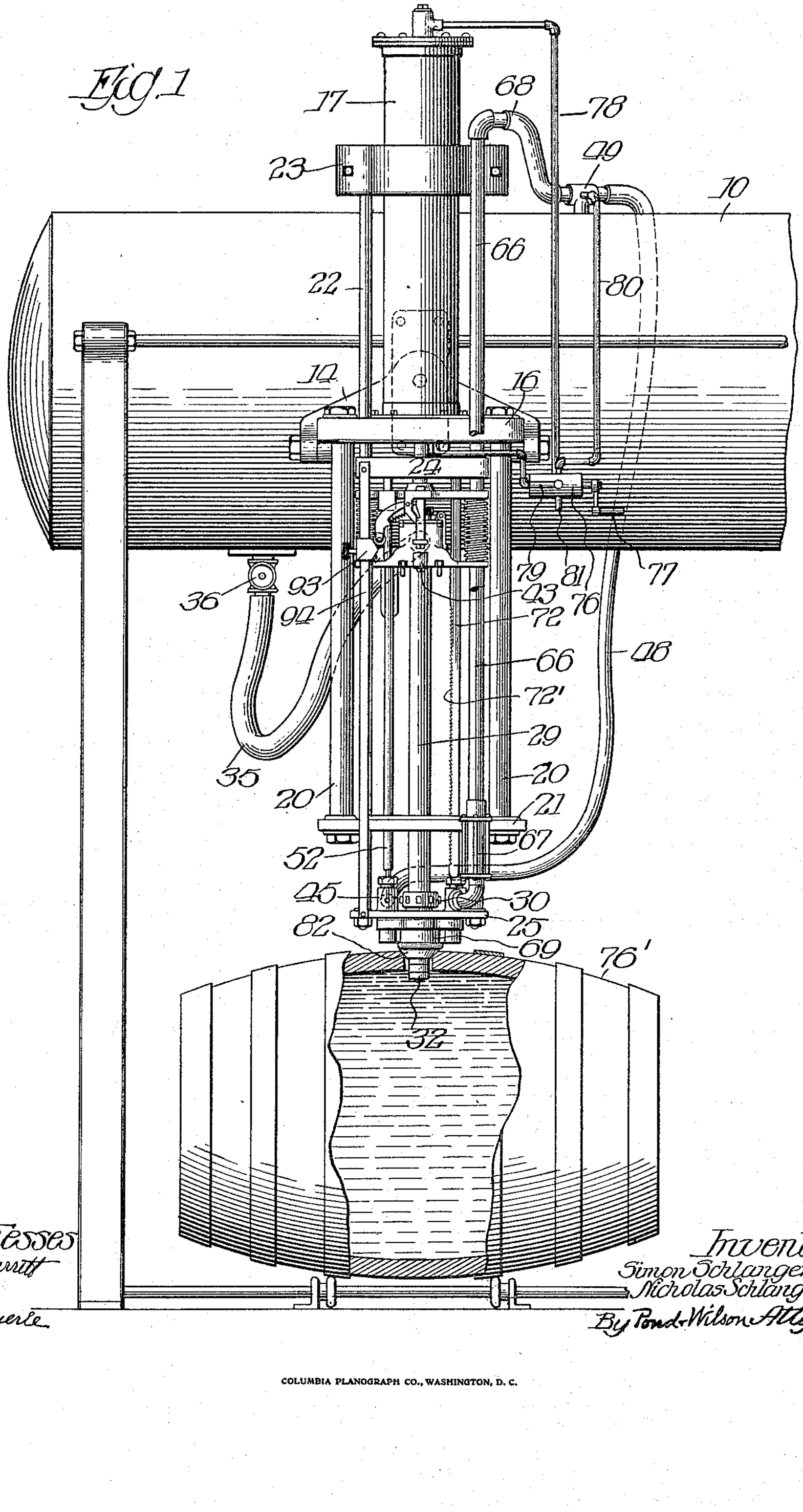
APPLICATION FILED MAY 7, 1914.

1,155,008.

Patented Sept. 28, 1915.

5 SHEETS—SHEET 1.

Fig. 1



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5 SHEETS—SHEET 2.

Fig. 2

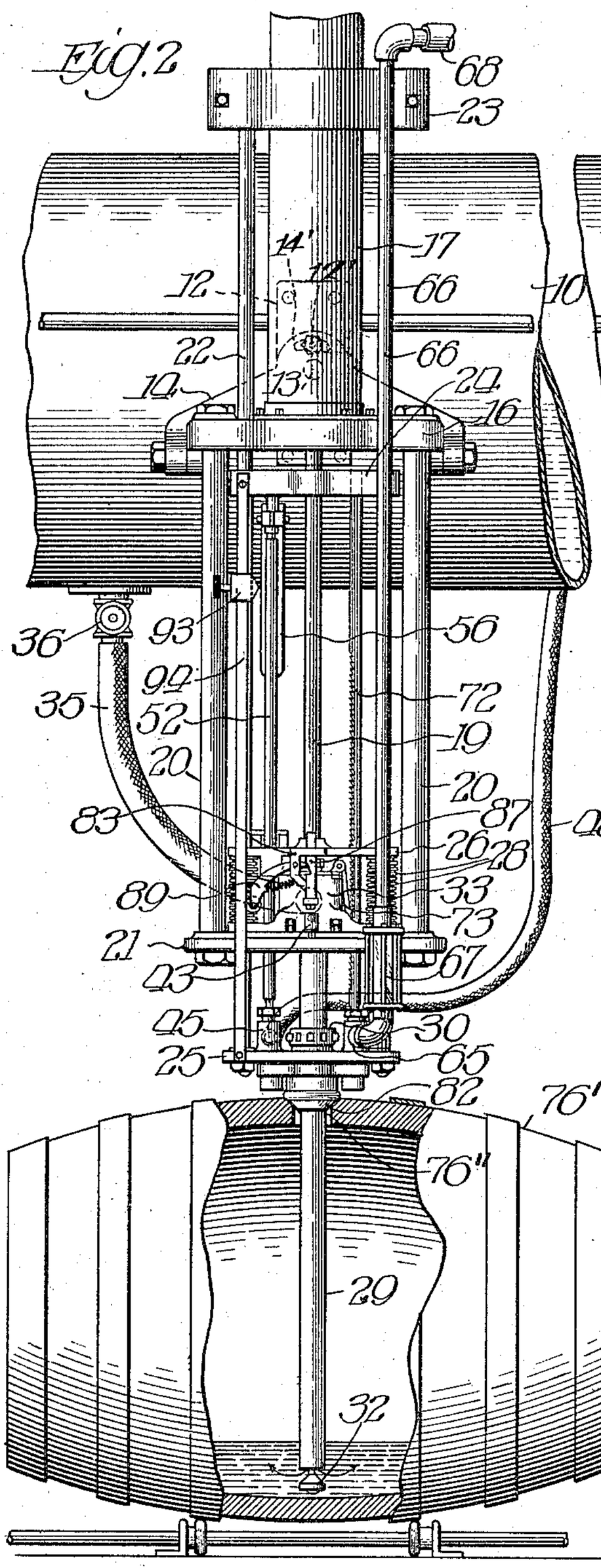
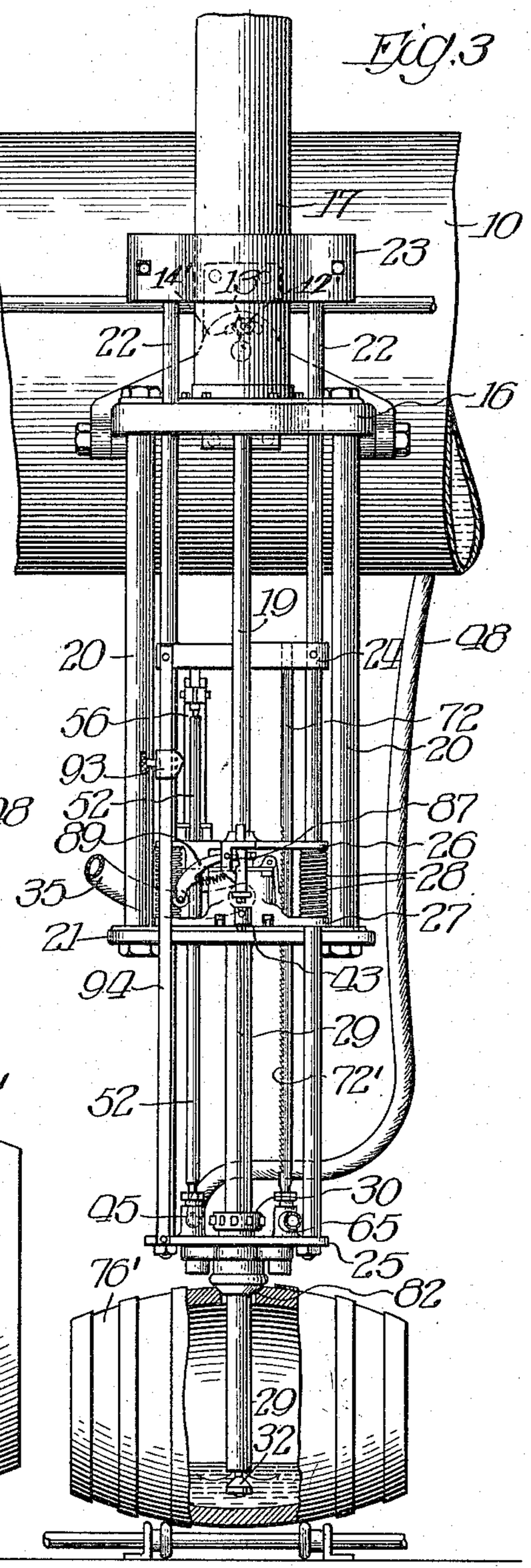


Fig. 3



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5 SHEETS—SHEET 3.

Fig. 4

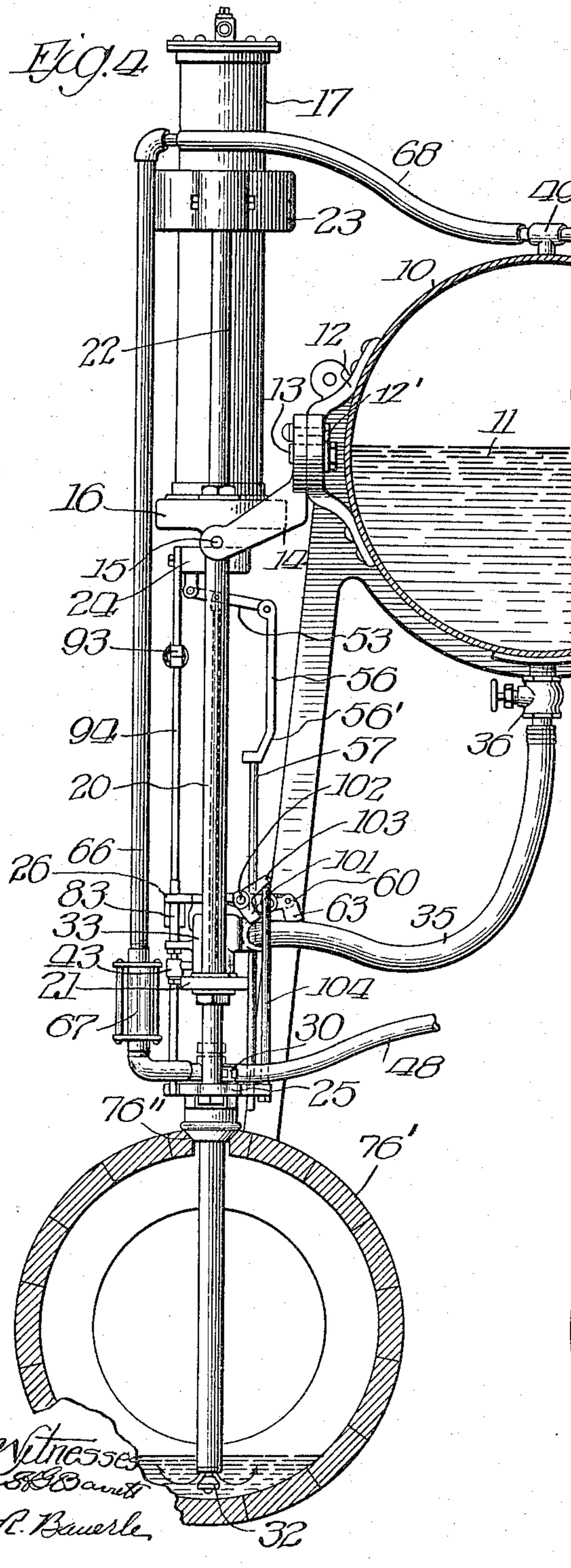
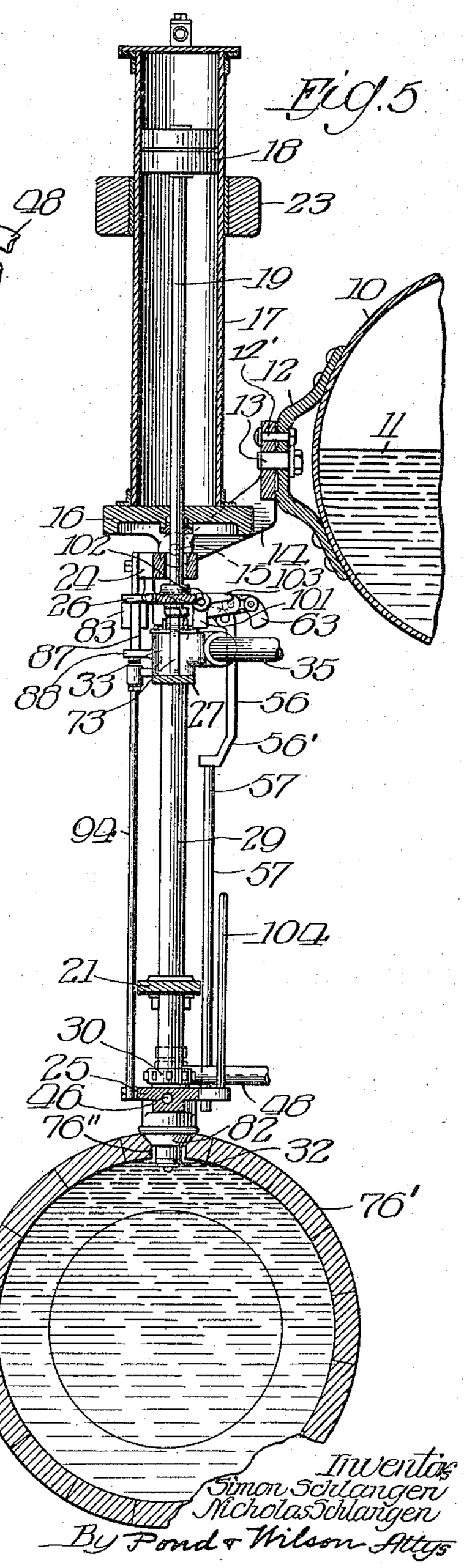


Fig. 5



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5 SHEETS—SHEET 4.

FIG. 6

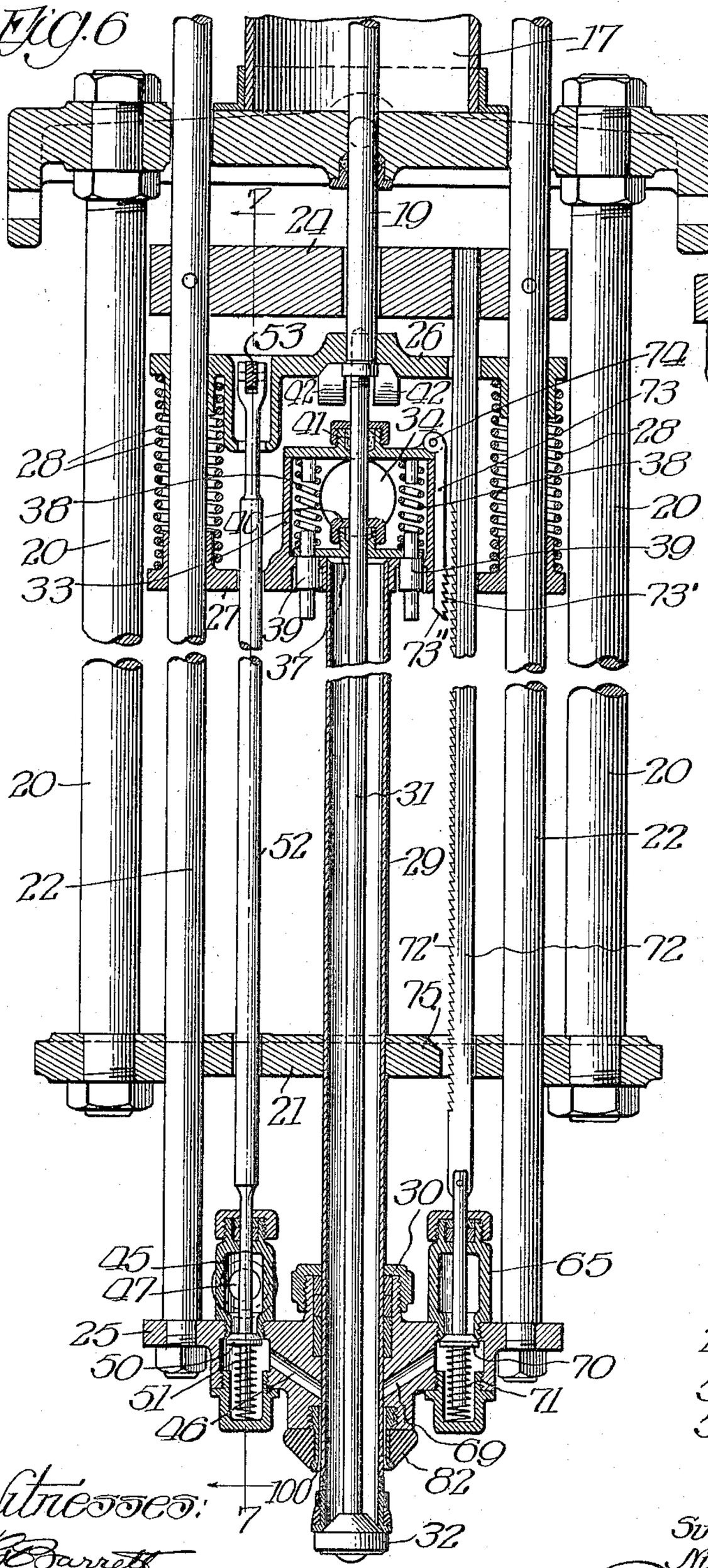
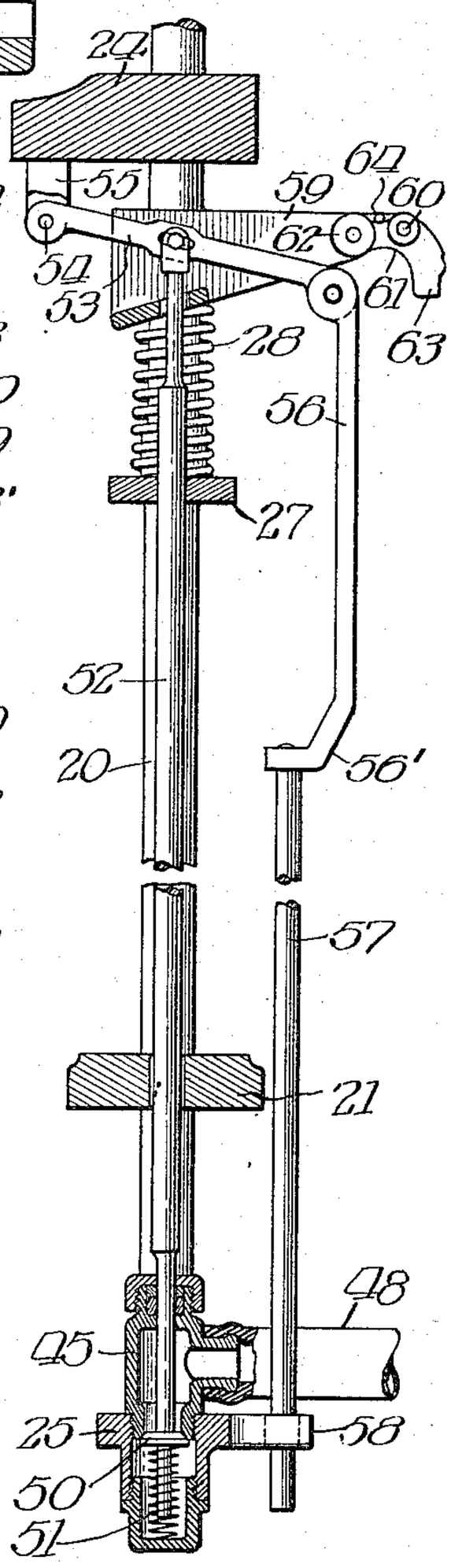


FIG. 7



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5 SHEETS—SHEET 5.

Fig. 8

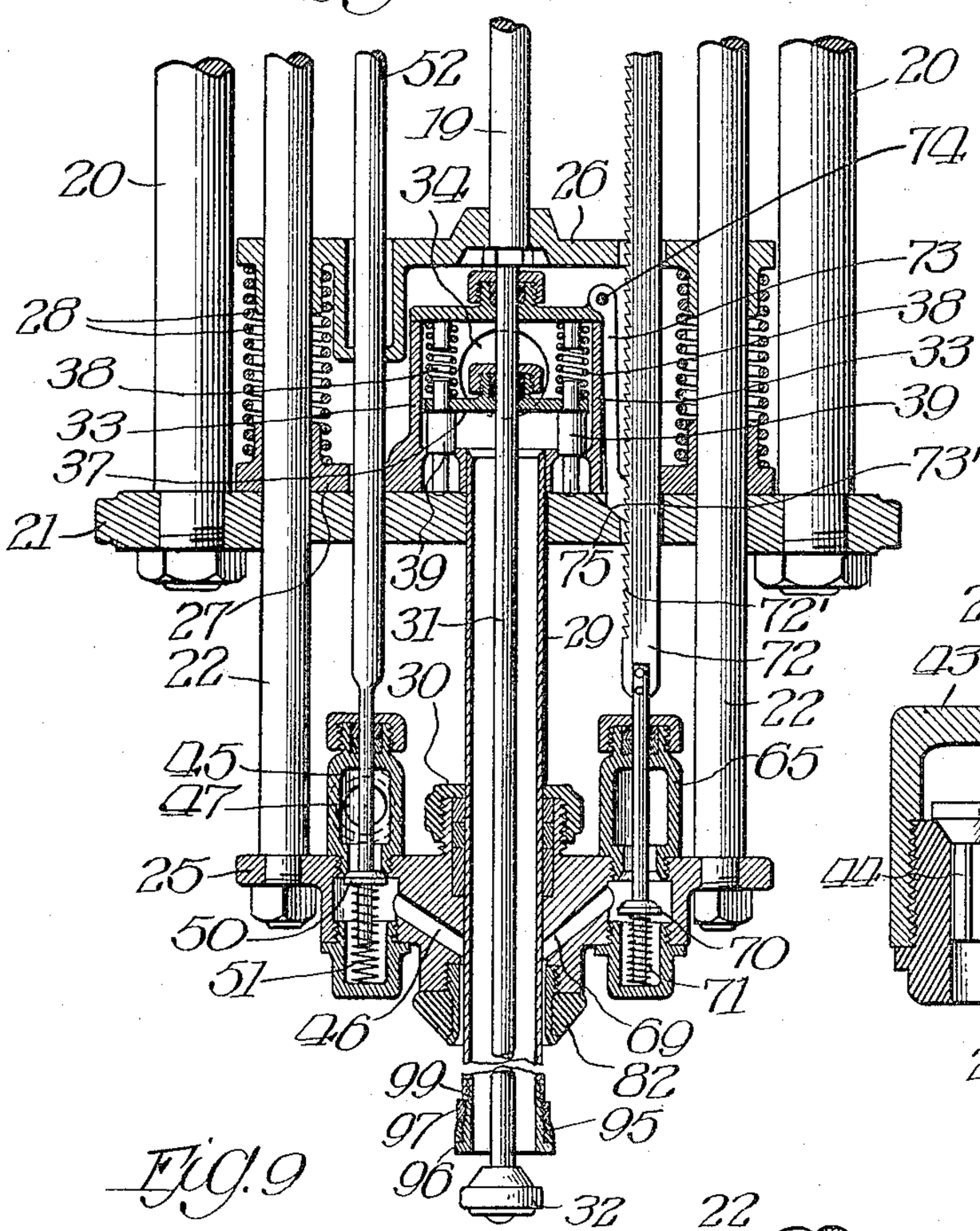


Fig. 10

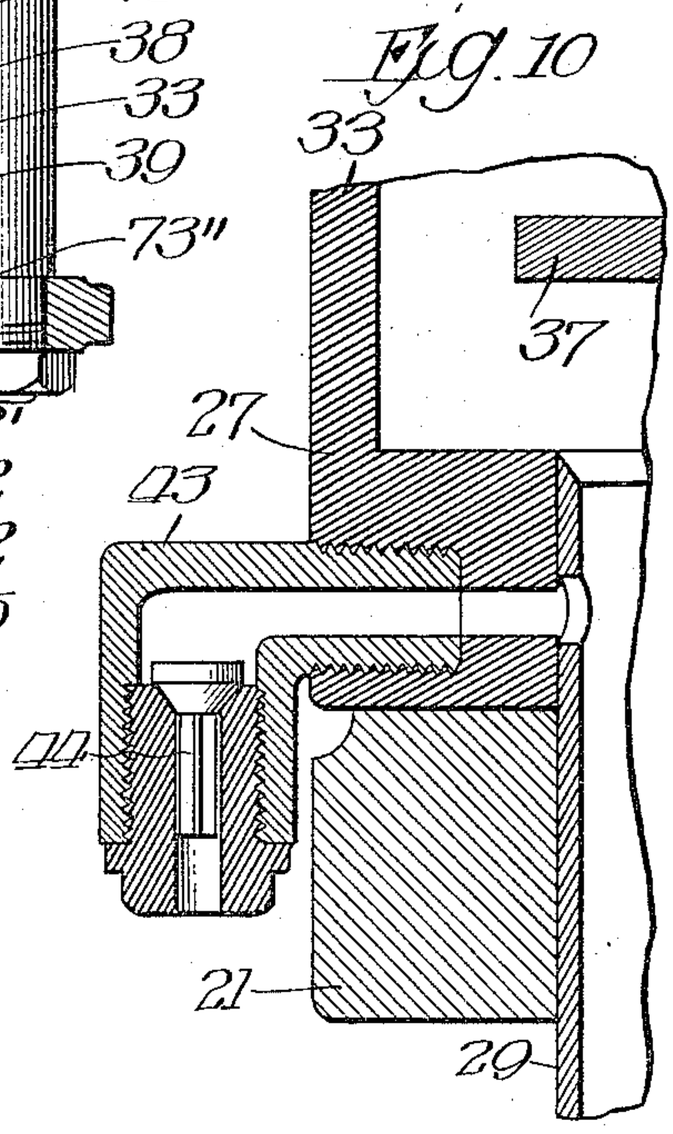


Fig. 9

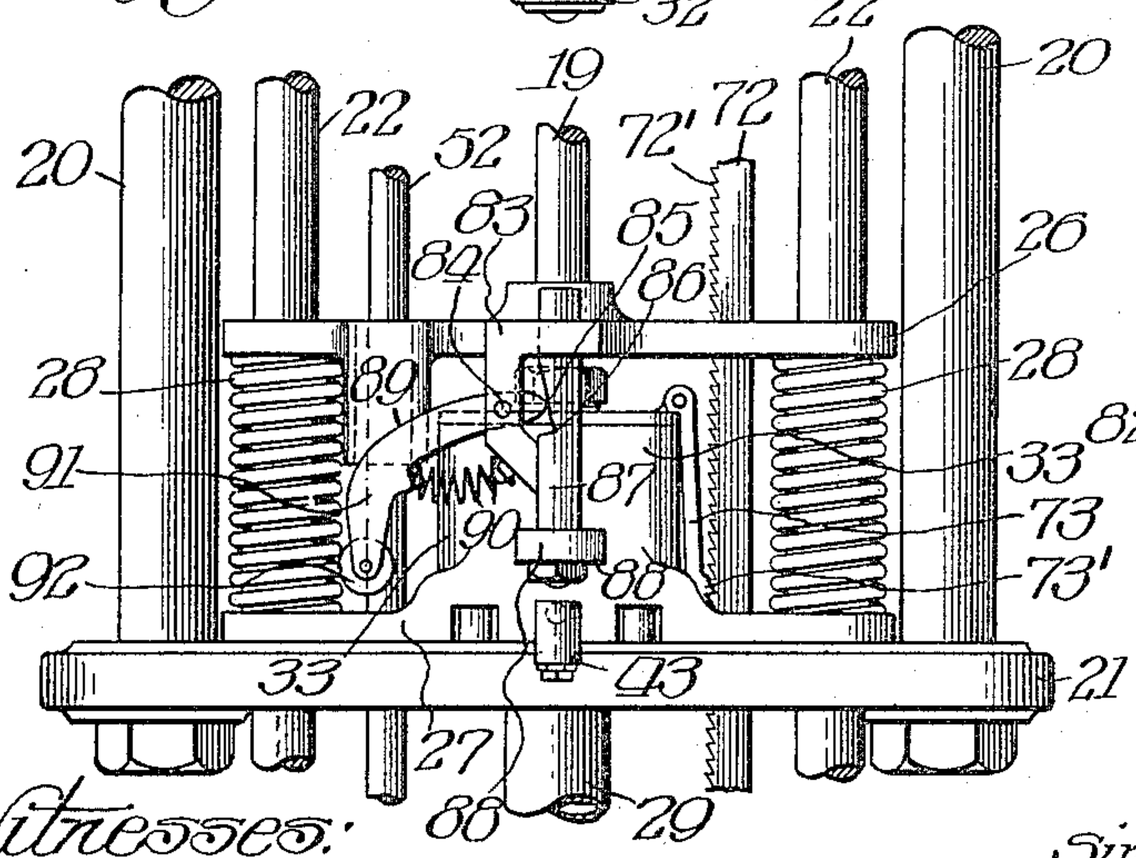
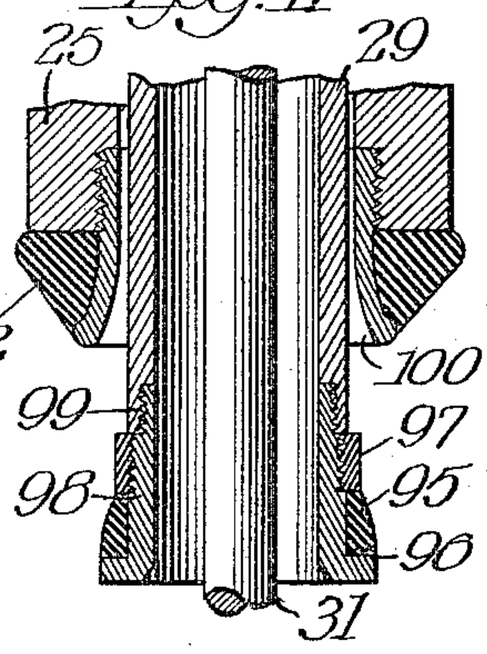


Fig. 11



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UNITED STATES PATENT OFFICE.

SIMON SCHLANGEN AND NICHOLAS SCHLANGEN, OF CHICAGO, ILLINOIS.

BEER-RACKING APPARATUS.

1,155,008. Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed May 7, 1914. Serial No. 836,908.

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. 940336, dated November 16, 1909, and No. 1009695, dated November 21, 1911.

Among the objects aimed at by the invention are:—to provide an improved construction of that type which aims at securing 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 pressures 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 different packages of different sizes; to provide an improved construction of that type wherein the contents of the filled package are vented to the atmosphere through the filling tube during withdrawal of the latter from the package, thereby insuring the complete filling of the package through 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 and at the lower end of the filling tube when the latter is withdrawn and the seal broken; to provide a new and improved valve mechanism for controlling the flow of the counter pressure medium from the tank to the package prior to the filling of the latter; to provide a new and improved valve mechanism for controlling the return flow of the counter pressure medium from the package to the tank during the filling of the former; and to provide a safety device which will automatically prevent the possibility of injury to the lower valve of the filling tube and its valve stem resulting from failure to effect perfect registration of the sealing head with the bunghole of the package when the sealing head is lowered on to the latter.

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 of the apparatus, shown in register with the bunghole of a filled barrel just prior to the breaking of the seal. Figs. 2 and 3 are comparative views, similar to Fig. 1, showing the apparatus in filling position, and illustrating the relative positions of the parts when filling a large and a small barrel, respectively. Fig. 4 is a view of the apparatus in side elevation, in section through the tank and barrel, the parts being shown in filling position. Fig. 5 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. 6 is an enlarged central vertical section, in a plane at right angles to that of Fig. 5, through the parts below the power cylinder, and illustrating the relative positions of the parts during the retracting movement of the filling tube. Fig. 7 is a vertical section on the line 7—7 of Fig. 6, more particularly illustrating the counter pressure supply valve and its operating mechanism. Fig. 8 is an enlarged detail view in central vertical section of the parts shown in Fig. 6, and illustrating said parts in fully lowered position, with the counter pressure exhaust valve open. Fig. 9 is an enlarged detail view in front elevation of the power actuated frame structure that carries the filling tube and filling tube valves, more particularly illustrating an automatic lock mechanism for holding the upper and lower cross heads of the frame against separation during the retracting movement of the filling tube, whereby the lower valve of the latter is held open during such retracting movement. Fig. 10 is an enlarged sectional detail of the atmospheric vent of the filling tube and the check valve controlling same. Fig. 11 is an enlarged vertical sectional view through the lower end of the filling tube and sealing head, illustrating the means for sealing the mouth of the sealing head by the lower end of the filling tube when the latter is retracted.

Referring to the drawings for a more detailed description of the apparatus, 10 designates a tank containing a supply 11 of beer or other liquor to be racked, as indicated in Fig. 5, 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. 4 and 5), on which bracket is swiveled on a horizontal pivot 13, a yoke 14, between the forwardly extending arms of which is journaled on horizontal pivots 15 at right angles to the pivot 13 a plate 16. Said plate 16 forms in part the lower head of a superposed power cylinder 17, said cylinder containing a piston 18 (Fig. 5), to which is connected a depending piston rod 19 extending through a suitable 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 a main frame structure that is stationary, except as to the universal swivel capacity which it has by virtue of the pivots 13 and 15.

In the bracket 12 is a bolt 12′ located directly above the pivot 13 (Figs. 4 and 5), and the forward end of this bolt 12′ extends through an arc-shaped slot 14′ (Figs. 2 and 3) formed in the upper portion of yoke 14; said bolt and slot serving to limit the oscillating movements of the yoke 14.

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 end by a heavy yoke or cross head 23, between their ends by an intermediate cross head 24, and at their lower end 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, that are spaced apart by a pair of compression springs 28 that conveniently surround and are guided by the frame rods 22, as most clearly shown in Fig. 6. 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. 6 and 8, Fig. 6 showing this valve in closed position, and Fig. 8 showing it in open position. On the lower cross head 27 is a valve housing 33, in one side of which is an opening 34 that communicates with a beer supply hose 35 (Fig. 4) leading from the bottom of the tank 10, said hose having a manually operated cock or valve 36. Within the valve housing 33 is a flat valve disk 37 that controls the upper end of the filling tube 29, opening and closing the communication between said filling tube and the beer supply hose through the opening 34. The valve 37 is normally maintained in closed position by a pair of springs 38 confined between said valve disk and the top wall of the valve housing. Slidably mounted in the cross head 27 are a pair of shouldered pins 39 that engage the lower side of the valve disk and extend below the lower face of the cross head 27, for a purpose hereinafter described. It will be observed that the stem 31 of the lower valve 32 extends through the valve disk 37 and the top wall of the valve housing, being suitably guarded against leakage by stuffing boxes 40 and 41. On the upper cross head 26 are a pair of depending lugs 42 adapted in the operation of the device to contact with the top of the stuffing box 41 and thus limit the extent of downward movement of the upper cross head 26 relatively to the lower cross head 27. Tapping the upper end of the filling tube 29, just below the upper valve 37, is a short downwardly turned vent pipe 43 (Fig. 10) containing an upwardly opening check valve 44; this pipe serving to vent the upper end of the filling tube to the atmosphere during the retracting movement of the filling tube, and the check valve 44 operating to prevent escape of the fluid through said vent pipe during the filling operation.

Considering next the valve for admitting the counter pressure medium from the tank 10 to the barrel to be filled, 45 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 46 with the central bore of the sealing head 25 through which the filling tube passes. The valve casing also communicates laterally through a port 47 with a hose 48 (Figs. 1 and 4) leading into one side of a T coupling 49 tapped into the top of the tank 10. The lower end of the valve casing 45 is formed as a valve seat and is controlled by a vertically movable puppet valve 50 that is normally held in closed position by a spring 51. The valve 50 has an upwardly extending stem 52 guided in the cross heads 21, 27 and 26. As best shown in Figs. 6 and 7, the upper end of the valve

stem 52 is pivotally connected to a lever 53 between the ends of the latter. This lever is pivoted at 54 to a depending lug 55 on the intermediate cross head 24 of the gravity actuated frame, while its other end is pivotally connected to a depending cam member 56, the lower end of which latter is connected to a rod 57 guided in a lug 58 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 59 on which is pivoted at 60 a valve tripping device 61 carrying a roller 62 adapted to engage the outer side of the cam piece 56 during the descent of the cross head 26. The tripping device 61 has a counterweight 63 in the rear of its pivot that normally swings the tripping device into contact with a stop pin 64 in the bracket 59, thus limiting the upward swing of the roller 62, and making the downward movement of the tripping device effective to depress the lever 53 and thereby open the valve 50, the open position of the valve being maintained during the travel of the roller 62 over the cam piece 56. As the roller slides off the inclined lower end 56′ of the cam piece 56, the valve spring 51 at once reacts to close the valve 50. On the return or rising movement of the tripping device the roller 62, as it engages the inclined lower end 56′ of the cam piece, swings downwardly and idly engages the cam piece 56, and, as it passes off the upper end of the latter, the counterweight 63 returns it to normal operative position, as shown in Fig. 7.

Referring next to the mechanism for controlling the return of the counter pressure medium from the package during the filling of the latter, 65 designates a valve casing mounted on the sealing head 25 on the opposite side of the filling tube 29 and connected laterally by a tube 66 (Fig. 4) containing sight glass 67 and a hose 68 with the other side of the T coupling 49. The valve casing 65 communicates at its lower end with a duct 69 leading into the annular space of the sealing head surrounding the filling tube, and this communication is controlled by a vertically movable puppet valve 70 that coöperates with a valve seat on the lower end of the valve casing; the valve being normally held closed by a spring 71. This valve has an upwardly extending stem 72, formed as a ratchet bar and guided in the cross heads 21, 27, 26 and 24. The ratchet teeth 72′ formed on the inner edge of this ratchet bar are adapted to be engaged, when the lower cross head 27 of the power actuated frame has nearly reached the limit of its downward movement, by a depending pawl 73 that is pivoted at 74 on the valve housing 33. This pawl has one or more teeth 73′ formed on the edge thereof that is adjacent to the ratchet teeth of the bar 72, and it also has an inclined lower end 73″ that, at a certain point in the descent of the pawl, engages a cam surface 75 formed on the cross head 21 of the main frame, whereby the pawl is forced into engagement with the ratchet bar and during the remainder of its descending movement forces the latter downwardly, opening the valve 70, as shown in Fig. 8, thereby permitting the back flow of the counter pressure medium from the package to the tank during the filling of the package. As soon as the package has been filled, and the power actuated frame begins its upward or return movement, the pawl is released from the ratchet bar, and the valve is thereby allowed to close under the impulse of its spring 71.

The motor, represented mainly by the cylinder 17 and piston 18 is operated by any suitable 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 apparatus comprising a valve casing 76 secured to the main frame and containing an ordinary four-way cock, the stem of which has an operating handle 77. To opposite sides of the valve casing 76 are connected pipes 78 and 79 leading to the upper and lower ends of the cylinder 17, respectively. To the upper side of the valve casing 76 is connected a supply pipe 80 leading from the T coupling 49, and on the lower side of the valve casing 76 is an exhaust or vent nozzle 81. When the handle 77 is swung in one direction the 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 direction, the pressure fluid is admitted to the bottom of the cylinder and exhausted from the top thereof.

The operation of the apparatus as thus far described is as follows. A barrel, keg, or other package to be filled, such as is indicated at 76′ in Figs. 1, 2, 4 and 5, having been suitably positioned beneath the apparatus, the controlling valve 76 is operated to admit pressure to the upper end of the motor cylinder 17. This lowers the power actuated frame, comprising the cross heads 26 and 27 and their interposed springs 28, and, at the same time, the gravity actuated frame, which is supported on the power actuated frame through contact of its intermediate cross head 24 with the upper side of the cross head 26, descends, the whole assembly being suitably guided by the operator, until a gasket 82 on the lower end of the sealing head registers with the bunghole 76″ of the barrel. This, of course, ar-

rests the downward travel of the gravity actuated frame and the parts carried thereby, but the power actuated frame continues to slide downwardly on the rods 22 of the gravity actuated frame until the lower ends of the pins 39 strike the upper side of the cross head 21 of the main frame. This opens the upper valve 37 of the filling tube, as clearly shown in Fig. 8, admitting the liquid to said filling tube through the valve housing 33. During this downward travel of the power actuated frame and filling tube, the counter pressure supply valve 50 is opened in the manner described for a sufficient period to permit the pressure in the package to be raised to that existing in the supply tank, and is closed before the parts have reached the limit of their downward travel. As soon as the valve 37 is fully opened further downward travel of the lower cross head 27 is arrested by its contact with the stationary cross head 21, but the upper cross head 26 continues to descend, compressing the springs 28, until the lugs 42 strike the top of the valve housing 33. This opens the lower valve 32 of the filling tube, as clearly shown in Fig. 8, permitting the liquid to flow freely into the package. Simultaneously with the opening of the lower valve 32 in the manner described, the pawl 73 engages the ratchet bar valve stem 72 of the counter pressure return valve 70, opening the latter, as shown in Fig. 8.

The beer or other liquid flows into the package until it shows in the sight glass 67, indicating to the operator the complete filling of the package. In machines of this type it has heretofore been the universal practice, so far as we are aware, to close the lower valve of the filling tube simultaneously with the beginning of the upward or retracting movement of the latter, allowing the space occupied in the package by the filling tube to be refilled by the back flow of liquid from the counter pressure supply and exhaust ducts and chambers of the sealing head. It is well known that different packages exhibit a wide range of variations in the amounts of expansion and subsequent contraction which they undergo during the filling operation. Where the expansion is very considerable, the subsequent contraction of the package, together with the back flow referred to, may suffice to fill the space occupied by the filling tube in the package. Where the expansion is but slight, these factors do not suffice to close up the space occupied by the filling tube, so that the package is incompletely filled, and on the breaking of the seal, the beer foams and wastes to a greater or less extent at the bunghole before the bung can be driven. An important feature of our present invention resides in the instrumentalities next to be described, and including the vent device of the filling tube already described, whereby we effect a radical change and improvement in the method of compensating for the space in the package occupied by the filling tube upon the withdrawal of the latter, which renders the variations in expansion and contraction of different packages entirely immaterial to the perfect and complete filling of each package with clear liquid. In accordance with our present invention we maintain the lower valve 32 of the filling tube open during the retracting movement of the latter from the package, and we simultaneously vent the liquid in the package and filling tube to the atmosphere through the upper end of the filling tube, thereby effecting not only the last mentioned result but also the preventing of explosion and foaming of the liquid at the bunghole when the seal is broken. These results we accomplish through the atmospheric vent 43 to the upper end of the filling tube, below the upper valve of the latter, in coöperation with a locking mechanism by which the upper and lower cross heads 26 and 27 of the power actuated frame are automatically locked in their compressed position or relation upon the opening of the lower valve 32, and maintained in such locked position to hold the valve 32 open until the lower end of the filling tube and the lower valve have practically reached the bunghole of the package on their rising movement. This locking mechanism is best shown in the detail view Fig. 9, and consists, in the embodiment here shown, of the following parts. On the upper cross head 26 is a bracket 83 on which is pivoted at 84 a dog having a nose 85 that coöperates with the inclined wall of a notch 86 formed in one side of a short rod or post 87 that is secured to and carried by a lug 88 formed on one side of the valve housing 33 which, it will be recalled, is integral or rigid with the lower cross head 27. The dog has an upwardly and downwardly inclined body portion 89 that is engaged by a spring 90 tending to throw the nose 85 of the dog into gripping engagement with the post 87. The dog further has a depending arm 91 carrying at its free end a roller 92. From this it will be readily apparent that when the upper cross head 26 is depressed toward the lower cross head 27, thereby compressing the interposed springs 28, the spring 90 will force the nose of the dog 85 into biting engagement with the notch 86 of the post, and thus lock the two cross heads together against the separating tendency of the springs 28. This relation is preserved during the rising movement of the power actuated frame and filling tube, until, during such rising movement, the roller 92 engages an adjustable trip or stop 93 keyed on a vertical rod or bar 94 that

connects the sealing head 25 and the intermediate cross head 24 of the gravity actuated frame. The engagement of the roller 92 with this stop or trip device obviously rocks the nose 85 of the dog upwardly, releasing the lock and permitting the upper cross head 26 to rise and the valve 32 to close. It will thus be seen that, as the filling tube is withdrawn, the space occupied thereby is filled mainly by the down flow of the liquid within the filling tube, this being effected by venting the upper end of the filling tube to the atmosphere. Of course, the extent of this down flow in each case is governed by the extent of contraction or shrinkage of the package upon the release of the artificial pressure and the admission of the atmospheric pressure; but, in all cases there is ample liquid in the filling tube at the time of the closing of its upper valve 37, to insure the complete filling of each package, regardless of the amount or extent of shrinkage of the latter. The trip or stop device 93 will be adjusted so as to secure the most perfect results; and, by reference to the comparative views, Figs. 2 and 3, it will be observed that this trip, when once adjusted, makes the apparatus uniform for all sizes of packages, without requiring any adjustment to accommodate different sizes of packages, since the distance between the trip and the roller of the dog bears a uniform ratio to the extent of that portion of the filling tube that is within the package, when the sealing head is engaged with the package and the filling tube is in its lowest or filling position.

In Fig. 11 we have illustrated in detail one further improvement, which consists in means for sealing the lower end of the sealing head upon the complete retraction of the filling tube relative to the latter; this means comprising, as herein shown, a rubber or similar gasket 95 that surrounds the lower shouldered end 96 of the filling tube, and is confined by a ring 97 screwed on to the tube above the gasket. To facilitate this construction the lower end of the filling tube is preferably formed as a separate section 98, forming an offset threaded joint 99 with the main portion of the filling tube. The gasket 95 operates in an obvious manner with a downwardly flaring mouth piece 100 on the lower end of the sealing head, which mouth piece is screwed into the lower end of the sealing head and serves as a nut to confine the packing or gasket ring 82 of the sealing head in place.

One further feature of our invention resides in a safety device for preventing injury to the long valve stem 31 of the lower filling tube valve through careless handling of the apparatus and failure to properly register the lower end of the sealing head with the bunghole of the package during the descent of the sealing head. Referring to Figs. 4 and 5, 101 designates a short rod or bar pivoted at 102 to the upper cross head 26, and normally spanning the space between said cross head and the top of valve housing 33 when the cross heads 26 and 27 are in extended position, so that it blocks relative inward movement of said cross heads during their descent so long as it is between them. On this bar is formed a laterally extending arm 103, that after the sealing head has been registered with the bung of the package, and during the further descending movement of the filling tube strikes a fixed stop rod 104 mounted upon the sealing head, and thereby rocks the lock bar 101 from between the cross heads, permitting the further downward movement of the cross head 26 necessary to open the valve 32. From this construction it is evident that in case the operator allows the valve 32 to strike the top of the barrel or keg 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 the valve stem 31 is obviated.

While we have shown and described what we consider the best mechanical embodiment of the invention which we have as yet worked out, it will nevertheless be manifest to those skilled in the art that the apparatus is capable of modification and variation to a considerable extent in detail without involving any departure from the basic principles of the apparatus or sacrificing any of the merits and advantages thereof. Hence, we do not limit the invention to the particular embodiment illustrated except to the extent clearly indicated in specific claims.

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 valve controlling said filling tube at its lower end, and automatic means for closing said valve as the lower end of the tube emerges from the package.

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 valve controlling said filling tube at its lower end, automatic means for closing said valve as the lower end of the tube emerges from the package, and a vent passage communicating with said filling tube above said valve.

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 valve controlling the upper end of said tube, a valve controlling the lower end of said tube, an atmospheric vent in said tube between said valves, automatic

means for closing said upper valve prior to the withdrawal of said tube from the package, and automatic means for closing said lower valve as the lower end of the tube emerges from the package.

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 valve controlling the upper end of said tube, a valve controlling the lower end of said tube, a vent passage communicating with the upper end of said tube just below said upper valve, a check valve in said passage, automatic means for closing said upper valve at the beginning of the withdrawal movement of said tube, and automatic means for closing said lower valve as the lower end of said tube emerges from the package.

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 valve controlling the upper end of said tube, a valve controlling the lower end of said tube, automatic means for opening said upper valve at the completion of the entering movement of said tube, automatic means for closing said upper valve at the beginning of the withdrawal movement of said tube, automatic means for opening said lower valve at the completion of the entering movement of said tube, automatic means for closing said lower valve at the completion of the withdrawal movement of said tube, a vent passage communicating with said tube between said valves, and a check valve in said passage.

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 at its lower end, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame, a valve on said sealing head for admitting a counter-pressure medium to the package to be filled and having an upwardly extending stem, a spring normally holding said valve closed, and a valve-opening device carried by said power-actuated frame and operating on its downward movement to depress said valve-stem and open said valve.

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 at its lower end, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame, a valve on said sealing head for admitting a counter-pressure medium to the package to be filled and having a stem guided in said main frame, a spring normally holding said valve closed, a lever pivoted at one end to said gravity-actuated frame and pivoted between its ends to said valve-stem, and a valve-tripping device carried by said power-actuated frame and actuating said lever on its downward movement whereby to open said valve.

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 at its lower end, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame, a valve on said sealing head for admitting a counter-pressure medium to the package to be filled and having a stem guided in said main frame, a spring normally holding said valve closed, a lever pivoted at one end to said gravity-actuated frame and pivoted between its ends to said valve-stem, a pivoted valve-tripping device carried by said power-actuated frame adapted on its downward movement to engage and depress the other end of said lever, and a cam device connected to and depending from said lever slidably engaged by said tripping device on its downward movement and serving to hold said valve open through a predetermined portion of the downward movement of said power-actuated frame, said cam device being idly engaged by said tripping device on the return upward travel of the latter.

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 at its lower end, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame, a valve on said sealing head for discharging a counter-pressure medium from the package to be filled during the filling of the latter and having an upwardly extending stem, a spring normally holding said valve closed, and a valve-opening device carried by said power-actuated frame and operating on its downward movement to depress said valve-stem and open said valve.

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 at its lower end, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame, a valve on said sealing head for discharging a counter-pressure medium from the package to be filled during the filling of the latter and having an upwardly extending stem formed as a ratchet-bar, a spring normally holding said valve closed, a pawl carried by said power-actuated frame, and means for

directing said pawl into engagement with said ratchet-bar during the descending movement of said power-actuated frame.

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 at its lower end, a power-actuated frame slidably mounted on said gravity-actuated frame, a filling tube depending from said power-actuated frame, a valve on said sealing head for discharging a counter-pressure medium from the package to be filled during the filling of the latter and having an upwardly extending stem formed as a ratchet-bar, a spring normally holding said valve closed, a pawl pivoted on said power-actuated frame, and a guide on said main frame adapted to engage and direct said pawl into engagement with said ratchet-bar during the descending movement of said power-actuated frame.

12. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head at its lower end, a cross-head slidably engaging said gravity-actuated frame, a valve-housing on said cross-head communicating with a source of liquid to be racked, a filling tube connected to said cross-head and extending through said sealing head, a valve in said valve-housing, spring means normally holding said valve in closed relation to the upper end of said filling tube, and valve-opening means extending below said cross-head and adapted to open said valve by contact with said main frame.

13. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head at its lower end, a power-actuated frame comprising upper and lower cross-heads spring-connected for relative yielding movement slidably mounted on said gravity-actuated frame, a filling tube depending from said lower cross-head and extending through said sealing head, a valve-stem connected to said upper cross-head and extending through said filling tube, a valve on the lower end of said valve-stem for closing the lower end of said filling tube, and automatic means for locking said valve in open position at the extreme of its opening movement.

14. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head at its lower end, a power-actuated frame comprising upper and lower cross-heads spring-connected for relative yielding movement slidably mounted on said gravity-actuated frame, a filling tube depending from said lower cross-head and extending through said sealing head, a valve-stem connected to said upper cross-head and extending through said filling tube, a valve on the lower end of said valve-stem for closing the lower end of said filling tube, automatic means for locking said valve in open position at the extreme of its opening movement, and automatic means for releasing said locking means during the rising movement of said filling tube to permit said valve to close.

15. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head at its lower end, a power-actuated frame comprising upper and lower cross-heads slidably mounted on said gravity-actuated frame and compression springs between said cross-heads, a filling tube depending from said lower cross-head, a valve stem depending from said upper cross-head and extending through said filling tube, a valve on the lower end of said valve-stem controlling the lower end of said filling tube, and a valve on said lower cross-head controlling the upper end of said filling tube.

16. In a rocking apparatus, in combination, a lower cross-head, a filling tube depending from said lower cross-head, an upper cross-head, a valve-stem depending from said upper cross-head and extending through said filling tube, compression springs between said cross-heads, a valve on the lower end of said valve-stem controlling the lower end of said filling tube, an automatic lock operating to hold said cross-heads against separating movement when said springs are compressed and said valve is open, and an automatic lock-releasing device operative on the rising movement of said cross-heads to permit separation of said cross-heads by said springs and the closing of said valve.

17. In a racking apparatus, in combination, a lower cross-head, a filling tube depending therefrom, an upper cross-head, a valve stem depending therefrom, a valve on the lower end of said valve-stem controlling the lower end of said filling tube, compression springs between said cross-heads, means rigidly spacing said cross-heads apart, and means for automatically retracting said spacing means after the lower end of said filling tube and said valve have entered the bung of the package to be filled.

18. In a racking apparatus, in combination, a main frame, a gravity-actuated frame slidably mounted on said main frame and carrying a sealing head at its lower end, upper and lower cross-heads slidably mounted on said gravity-actuated frame, compression springs between said cross-heads, a filling tube depending from said lower cross-head and passing through said sealing head, a valve-stem depending from said upper

cross-head and extending through said filling tube, a valve on the lower end of said valve-stem controlling the lower end of said filling tube, a motor connected to said upper cross-head, a spacing bar pivoted on one of said cross-heads and at its free end engaging the other cross-head, a laterally extending arm on said bar, and a contact member on said sealing head adapted to be engaged by said arm to withdraw said spacing bar from operative position between said cross-heads during the descending movements of the latter and after said valve and filling tube have registered with the bung of the package to be filled.

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