

No. 786,285.

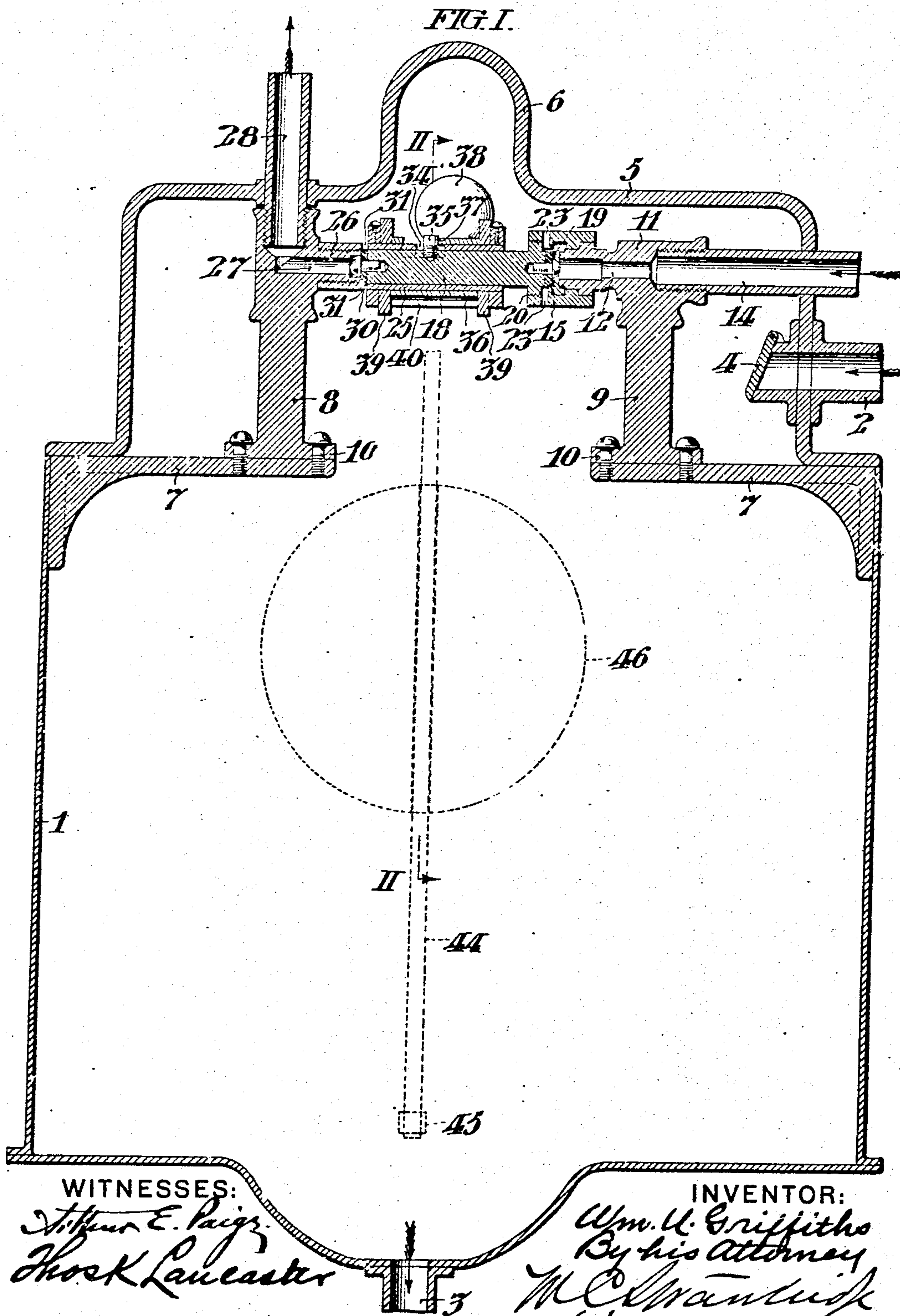
PATENTED APR. 4, 1905.

W. U. GRIFFITHS.

PUMP.

APPLICATION FILED JUNE 23, 1904.

3 SHEETS—SHEET 1.



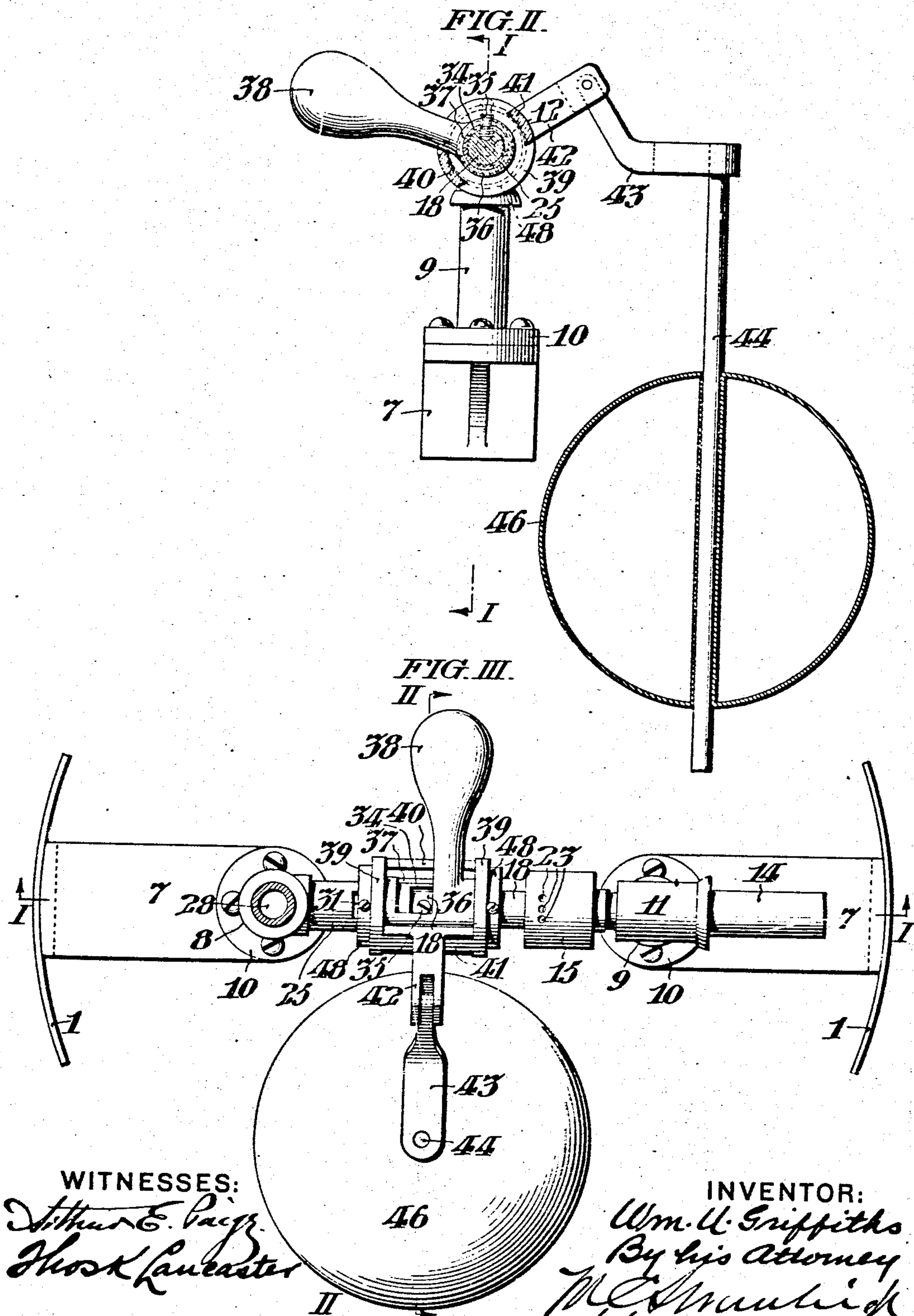
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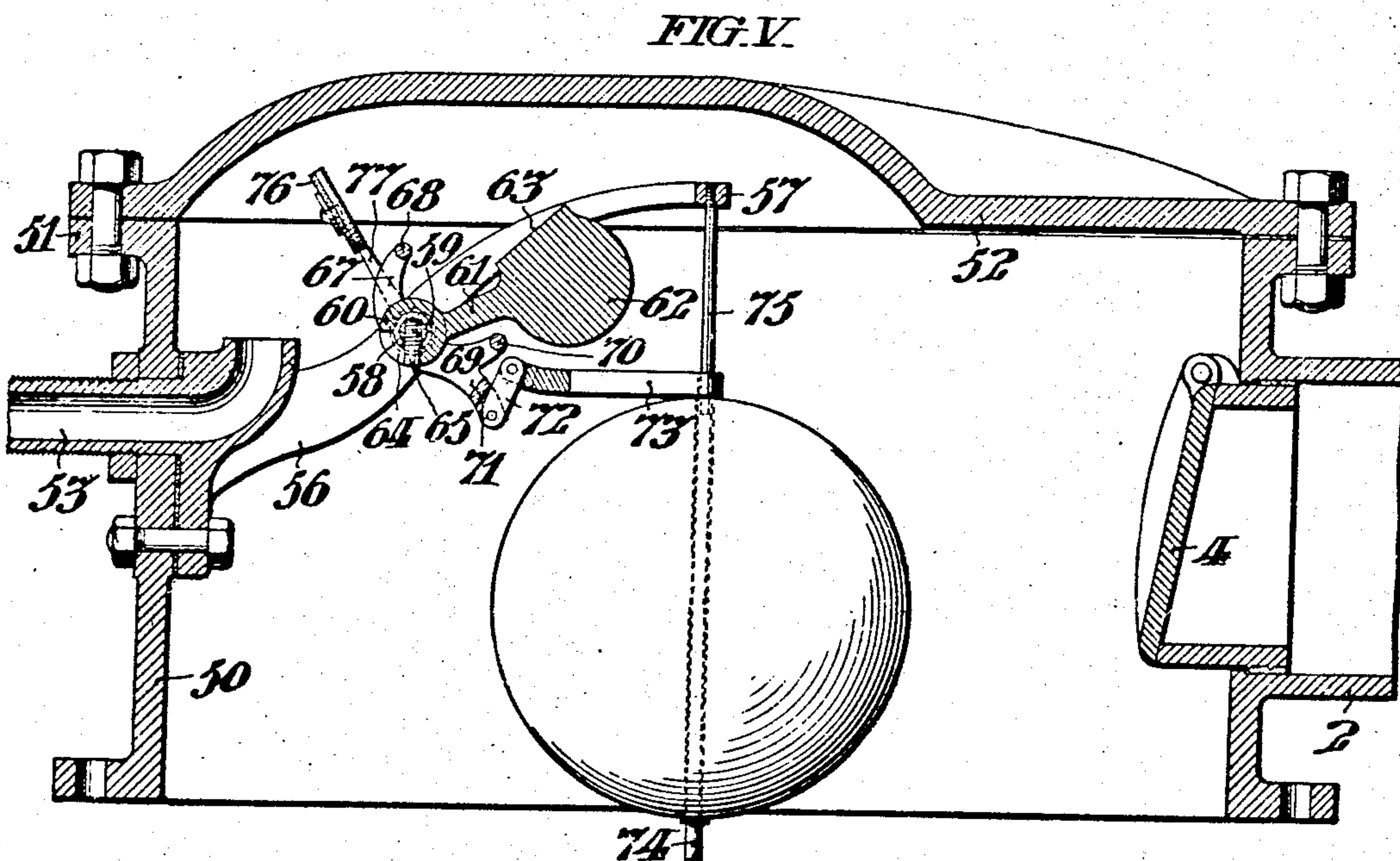
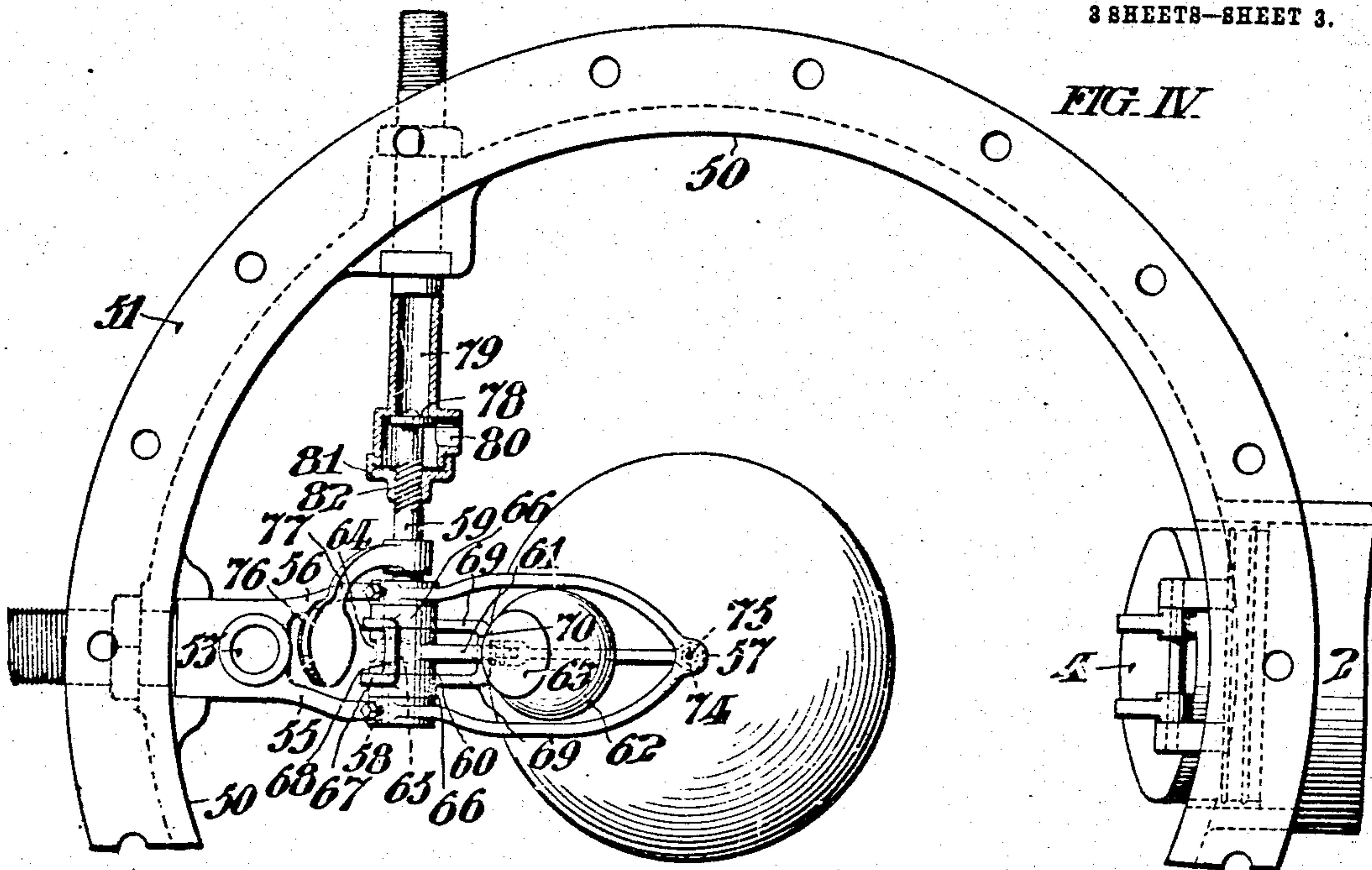
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3 SHEETS—SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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PUMP.

SPECIFICATION forming part of Letters Patent No. 786,285, dated April 4, 1905.

Application filed June 23, 1904. Serial No. 213,776.

To all whom it may concern:

Be it known that I, WILLIAM U. GRIFFITHS, a citizen of the United States, residing in the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to an improvement in pumps, and it has for its object to provide an apparatus of this character which is effective in operation, and which is of simple and durable construction.

The invention resides in the combination and arrangement of parts as hereinafter described in the specification, set forth specifically in the claims, and as illustrated in the accompanying drawings forming a part of this specification, and in which

Figure I is a vertical section on the line I-I of Figures II and III.

Figure II is a transverse section on the line II-II of Figures I and III, some of the parts being shown therein in elevation.

Figure III is a top plan view of the operating mechanism of the apparatus.

Figure IV is a top plan view, with some of the parts shown in section, of a modified construction of apparatus; and

Figure V is a transverse section of the same, some of the parts being shown in elevation.

In Figures I, II, and III, of the drawings, 1 designates the main or body portion of a tank, having an inlet pipe 2 and an outlet pipe 3, the inner end of said pipe 2 being closed by a check valve 4.

The top of the body portion 1 of the tank is closed by means of a cover 5, having an upwardly curved portion 6 for the accommodation of a part or element of the operating mechanism.

7 designates brackets secured in any suitable manner to the side walls of the tank 1, and to the said brackets the upright supports 8 and 9 are secured, by means of flanges and screws, as indicated in 10 in the drawings.

The support 9 is provided at its upper end with a T-head 11, which is arranged at right angles to the upright body portion thereof,

and through the said portion 11 an opening 12 is provided which is a continuation of the pipe 14, which is provided for the purpose of conveying air, steam, or other gaseous fluid under pressure into the tank to expel water or similar fluid therefrom through the exit pipe 3.

The inner end of the pipe 14 has screw threaded connection with the portion 11 of the said support 9, as clearly shown in Figure I.

The inner end of the portion 11 is provided with screw threads which are adapted to be engaged by the internally screw threaded cap member 15, which is secured to the adjacent end of a valve stem or shaft 18.

The inner end of the opening 12 is adapted to be opened and closed by means of a valve 19 constructed of any suitable material secured to the end of the valve stem or shaft 18 within the cap member 15. The said cap member 15 is secured to the valve stem by means of a screw thread connection, as indicated at 20.

The interior of the cap member 15 is in communication with the interior of the tank 1 through the openings 23, shown in Figures I and III.

The valve stem 18, in addition to being supported upon the inner end of the portion 11, through the medium of the cap member 15, is also supported in a bearing sleeve 25 secured in any suitable manner to and which is supported upon a lateral projection 26 formed upon the upper end portion of the support 8.

The lateral projection 26 is provided with an exhaust opening or port 27, which is in communication with the lower end of an exhaust pipe 28, the lower end of the said pipe projecting into and having screw-threaded connection with the upper end of the support 8. The purpose of the exhaust port 27 and pipe 28 is to permit the escape of the air, steam, or other gaseous fluid from the tank after the water or other similar fluid has been expelled therefrom.

The end of the said opening or exhaust port 27 is adapted to be opened and closed by means of a valve 30 connected to the end of

the valve stem or shaft 18, as clearly indicated in Figure I of the drawings. The exhaust port 27 is in communication with the interior of the tank 1 through the rectangular openings 31 in the top and bottom of the bearing sleeve 25.

The bearing sleeve 25 is provided with an opening 34, through which projects a controlling lug 35 secured in any suitable manner to the valve shaft or stem 18.

Surrounding the bearing sleeve 25 and movably secured thereto, is a sleeve 36 provided with a rectangular opening 37, the opposite lateral edges of which are adapted to contact with the lug 35 to occasion rotation of the valve shaft 18. Secured to the said sleeve 36 is a weight 38, the purpose of which is to occasion rotation of the said sleeve 36 and consequent rotation of the valve shaft or stem 18 in the operation of the apparatus.

Also mounted upon the said bearing sleeve 25, and outside of the ends of the sleeve 36 are two rings 39, which are connected to each other by means of the bars or strips 40 and 41. Projecting from the bar or strip 41 is a lever 42 to which is pivotally connected a second lever 43, and to the latter a vertically depending rod 44 is rigidly connected. The lower end of the said rod is provided with a nut 45, or other suitable enlargement, to prevent the float 46 which is adapted to travel up and down on said rod from escaping therefrom.

The sleeve 36 and the rings 39 are prevented from moving longitudinally upon the bearing sleeve 25 by means of the collars 48 which are fixedly secured to the said bearing sleeve 25.

In the modified construction shown in Figures IV and V, 50 designates a portion of a tank which is adapted to be secured to the main or body portion, which latter portion is not shown in said figures. The portion 50 of the tank is provided at its upper edge with flanges 51 to which the top cover plate 52 is secured by means of nuts and bolts, as is clearly illustrated in Figure V of the drawings.

In this construction, as in the construction shown in Figures I, II, and III, the water or other fluid enters the said tank through the pipe 2, which is closed by a clack valve 4.

53 designates an exhaust port or pipe through which air, steam, or other gaseous fluid escapes from the said tank, after the water or other fluid has been expelled therefrom.

55 and 56 designate arms projecting outwardly from the side of the tank and forming a bracket, the outer ends of the said arms being connected together as indicated at 57.

Supported upon the said arms and extending through the same is a short bearing sleeve 58 in which a valve shaft or stem 59 is rotatably supported. Mounted upon the said bearing sleeve 58 is a sleeve 60, to which is

secured an arm 61, which arm is provided at its outer end with a weight 62, having a flat face, as indicated at 63. The said sleeve 60 is also provided with a rectangular perforation 64 through which projects a lug 65 secured to the said valve stem 59.

66 designates rings which are mounted upon the bearing sleeve 58 upon opposite sides of the sleeve 60. The said rings are connected together by means of the curved arms 67 connected to each other by the cross-piece 68, and the curved arms 69 connected to each other by the cross piece 70.

Connected to the arms 69 is a downwardly projecting arm 71, to which a link 72 is pivotally connected at one end, and to the other end of said link an arm or lever 73 is connected. The outer end of the said lever 73 is rigidly connected to the upper end of a tube 74, the upper end of the said tube being in engagement with and adapted to receive a rod 75, which projects downwardly from the outer ends of the arms 55 and 56, as clearly indicated in Figures IV and V of the drawings.

In order to close the exhaust port 53, I have provided a valve 76 which is mounted upon the outer end of an arm 77, which is rigidly secured to the valve stem 59.

The valve stem 59 is provided upon one of its ends with a valve 78, which is adapted to open and close the inner end of the pipe 79, provided for the purpose of supplying air, steam, or other gaseous fluid under pressure to said tank. Such air or other gaseous fluid passes into the said tank from the pipe through the opening 80 in the side of the pipe 79. Supported on one end of said pipe 79, is a cap-like member 81 with which the valve stem has screw-threaded connection, as clearly indicated at 82, whereby rotary movement of the said valve stem occasions longitudinal movement thereof to open and close the said valve 78.

In the operation and use of the apparatus, it will be understood that the water or other fluid enters the tank 1 through the pipe 2, and that it escapes from said tank through the pipe 3.

Referring first to Figures I to III, it is to be observed that when the tank 1 is emptied the float 46 occupies a position at the lower end of the rod 44. As illustrated, the float 46 is in a position it will occupy when the tank is practically full with the valve 19 open permitting steam, air, or other gaseous fluid, under pressure to enter the tank from any suitable source, not shown, the said gaseous fluid escaping from the pipe 14 through the openings 23 in the cap member 15.

It is to be noted that at this time the exhaust opening or port 27 is closed by the valve 30. The entry of the gaseous fluid into the tank 1 forces the water or other

fluid therefrom through the pipe to whatever point may be desired, and as the level of the water in the tank is lowered the float 46 travels downward upon the rod 44 until it comes into contact with the nut or enlargement 45, whereupon the weight of the said float causes the rod to move downward, which downward movement occasions a movement of rotation of the rings 39 and bars 40 and 41, connecting them about the rod 25, upon which they are supported, and the bar 40 being in contact with the supporting arm of the weight 38, occasions movement of the said weight about its support, when the weight has been moved to such position that its center of gravity passes to the right of its axis of rotation, reference being had to Figure II, the said weight will fall to the right under the influence of gravity, and the side of the rectangular opening 34 opposite to that shown in Figures II and III as being in contact with the lug 35 will strike against the said lug and will occasion the rotation of the said valve shaft or stem 18 to move the valve 19 up against the inner end of the part 11 to close the inner end of the opening 12 which is, in effect, the inner end of the pipe 14.

Simultaneously the exhaust port 27 which permits the escape of the air, steam, or other gaseous fluid, from the tank is opened.

It will be understood that the pressure of air, steam, or other gaseous fluid, within the tank 1 tightly closes the valve 4 and prevents the escape of the air, steam, or other gaseous fluid therefrom.

The several parts remain in the position last referred to in which the opening 12 is closed by the valve 19 during the time that the water is pouring into the tank through the pipe 2, and as the water pours into the said tank the float travels upwardly on the rod 44 until it comes into contact with the lever 43, after which the further upward movement of the said float occasions a movement of rotation of the rings 39 and the bars 40 and 41 about their support in a direction opposite to that described above, and the bar 41 being in contact with the supporting arm of the weight 38 occasions movement of the said weight to a point at which the line of the center of gravity of the said weight passes to the left of the axis of rotation of the said weight, after which the said weight falls to the left to the position indicated in Figures I, II, and III, of the drawings, and in moving to that position the right hand edge of the rectangular opening 34, reference being had to Figure II, strikes against the projecting lug 35 and occasions the rotation of the valve shaft or stem 18, and of the valves connected thereto, whereby the pipe 14 is opened, which permits the entry of the gaseous fluid into the said tank 1, and the exhaust port or opening 27 is closed.

In the operation of the apparatus shown in the modified construction, Figures IV and V, the movement of the weight 62 is controlled in substantially the same manner as described with respect to the form of apparatus shown in Figures I to III inclusive, and it is deemed unnecessary to give a detailed description of the operation of the modified construction.

In the modified construction, after the weight 62 has been lifted up by means of the arms 69 and cross piece 70 to a position in which the line of the center of gravity passes to the left of the axis of rotation of the said weight, it falls under the influence of gravity toward the left, and the left hand edge of the rectangular opening 64 comes into contact with the lug 65 at the same time that the flat face 63 on the weight 62 comes into contact with the valve 76, and further movement of the said weight occasions rotation of the valve stem 59 to open the inner end of the pipe 79 and simultaneously close the exhaust port 53.

I do not desire to be limited to the details of construction illustrated, as it will be understood that various changes in construction may be made without departing from the spirit and scope of my invention.

Having thus described my invention, I claim—

1. In combination, a tank, a pipe for supplying air, steam or other gaseous fluid to the said tank, a bracket secured to the inside of the said tank, a bearing sleeve supported upon the said bracket and having an opening through one side, a valve stem mounted within said sleeve, and being provided with a lug which projects through the said opening, a movable sleeve surrounding the bearing sleeve and having an opening therein into which the said lug projects and the said movable sleeve being also provided with a weight, rings located upon the said bearing sleeve at the opposite ends of the said movable sleeve, the said rings being connected to each other by bars or strips which are adapted to contact with the said weight.

2. In combination, a tank, a pipe for supplying air, steam, or other gaseous fluid to the said tank, a bracket secured to the inside of the said tank, a bearing sleeve supported upon the said bracket and having an opening through one side, a valve stem mounted within said sleeve, and being provided with a lug which projects through the said opening, a movable sleeve surrounding the bearing sleeve and having an opening therein into which the said lug projects and the said movable sleeve being also provided with a weight, rings located upon the said bearing sleeve at the opposite ends of the said movable sleeve, the said rings being connected to each other by bars or strips which are adapted to contact with the said weight, a lever arm pro-

jecting from one of said strips or bars, a lever connected to the said lever arm and having a rod depending therefrom, and a float mounted upon the said depending rod and adapted to travel thereon.

3. In combination, a tank, a pipe for supplying air, steam, or other gaseous fluid to the said tank, an exhaust pipe for permitting the escape of air, steam, or other gaseous fluid from the said tank, brackets located within the said tank and upon opposite sides thereof, a bearing sleeve supported upon the said brackets, a valve stem movably mounted in the said sleeve and being provided upon its opposite ends with valves which are adapted to alternately open and close the ends of the said pipes, a lug projecting from the said valve stem through an opening in said bearing sleeve, a sleeve movably mounted upon the said bearing sleeve and having an opening therein to receive the said lug, and being also provided with a weight rigidly secured thereto, a device also movably supported upon the said bearing sleeve and adapted to occasion movement of said weight, and a float having connection with the said device to occasion movement thereof.

4. In combination, a tank, a pipe for supplying air, steam, or other gaseous fluid to the said tank, a movable valve stem provided with a valve for closing said pipe, the said valve stem being also provided with a lug projecting therefrom, a bracket secured to the walls of the said tank, a bearing sleeve secured to and supported upon the said bracket

and within which the said valve stem is movably mounted, and the said bearing sleeve being provided with an opening through the side thereof through which the said lug projects, movable means supported upon the said bearing sleeve, the said means being adapted to contact with the said lug to occasion movement of the said valve stem.

5. In combination, a tank, a pipe for supplying air, steam, or other gaseous fluid to the said tank, a valve stem provided with a valve for closing the said pipe, the said valve stem being provided with a lug projecting therefrom, a bearing sleeve within which the said valve stem is movably mounted, the said sleeve being provided with an opening through the side thereof through which the said lug projects, a support for the said bearing sleeve, a movable weight supported upon the said bearing sleeve, the means connecting the said weight and the said bearing sleeve being adapted to contact with the said lug to occasion movement of the said valve stem, a movable device also supported upon the said bearing sleeve for occasioning movement of the said weight, and a float having connection with the said movable device.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 17th day of June, A. D. 1904.

WILLIAM U. GRIFFITHS.

In presence of—

CYRUS N. ANDERSON,
THOS. K. LANCASTER.