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CISTERN.

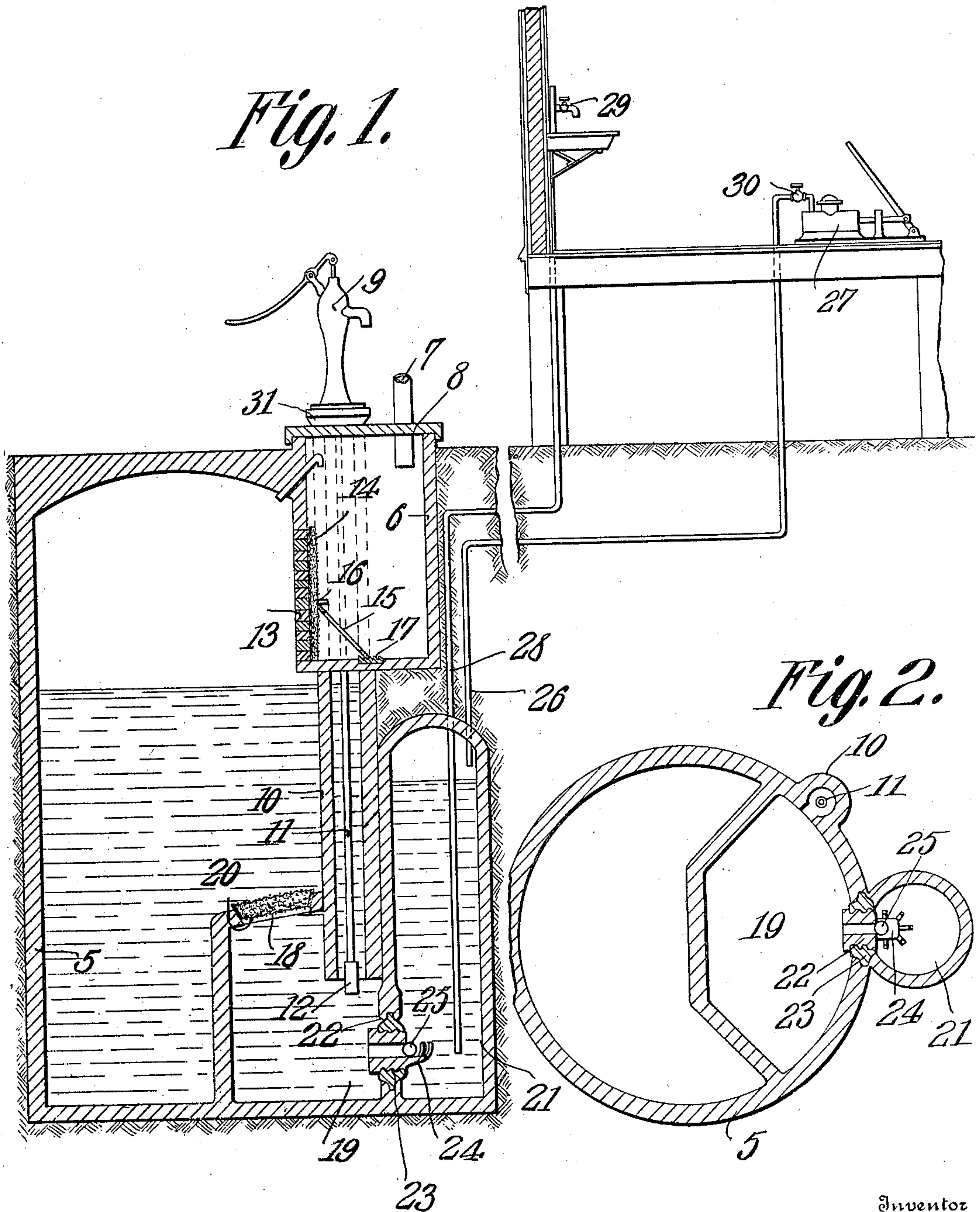
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934,647.

Patented Sept. 21, 1909.

2 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*

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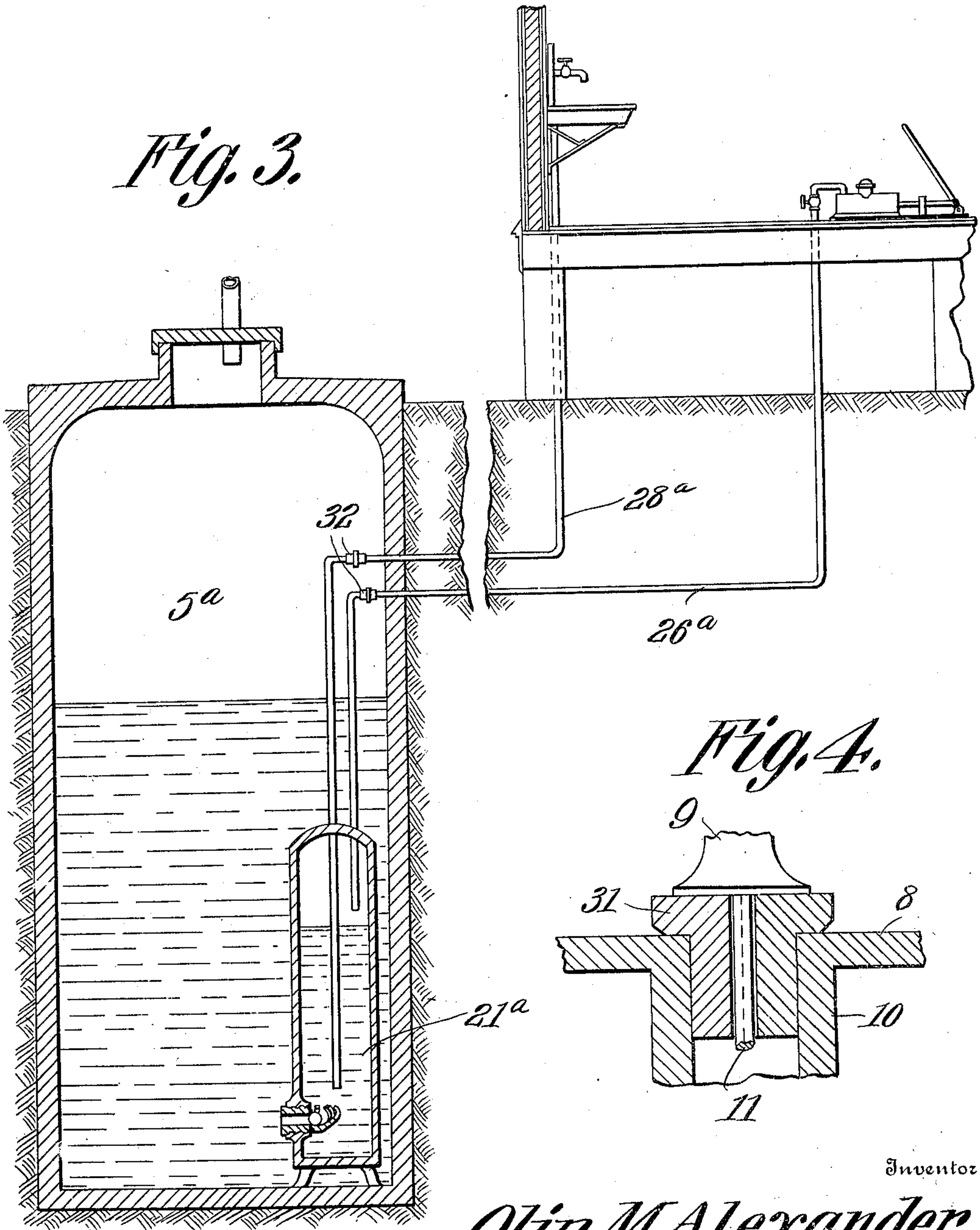
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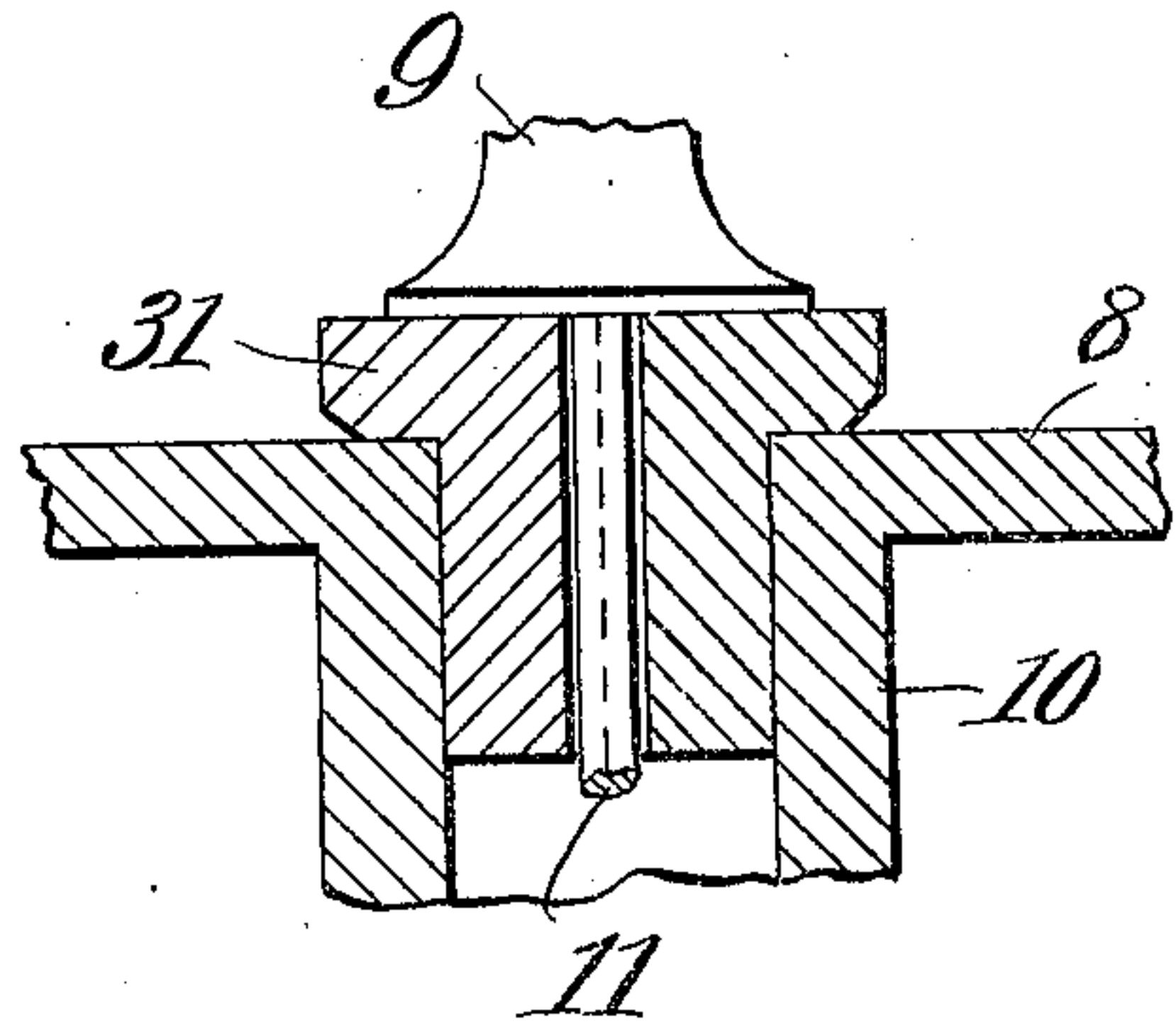
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2 SHEETS—SHEET 2.

*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

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## CISTERN.

934,647.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed March 31, 1909. Serial No. 486,947.

*To all whom it may concern:*

Be it known that I, OLIN M. ALEXANDER, a citizen of the United States, residing at Anniston, in the county of Calhoun and State of Alabama, have invented a new and useful Cistern, of which the following is a specification.

It is the object of the present invention to provide a novel cistern construction arranged to receive water from the eaves troughs of a house, filter the water, and discharge it under pressure at any convenient and desired point.

It is a further object of the invention to so construct the cistern that it will not be required to operate the air compressing device employed in connection therewith, continuously while water is being drawn from the spigots in the house, the water reservoir of the cistern or as it may be termed, the pressure tank, having air forced thereinto under pressure and being so valved as to prevent escape of the water and air from the tank except by way of the said spigots.

With the above and other objects in view, the invention consists in the construction and arrangement of parts shown in the accompanying drawings in which drawings,

Figure 1 is a view partly in elevation and partly in section of a cistern constructed in accordance with the present invention showing the arrangement of the same with respect to an air compressing means, and a discharge or draw-off spigot. Fig. 2 is a horizontal sectional view through the cistern shown in Fig. 1 of the drawings on the line 2—2 of the said Fig. 1, and Fig. 3 is a view similar to Fig. 1 but showing a slight modification in the structure of the cistern. Fig. 4 is a detail view showing the manner of mounting the pump upon the cistern.

It is to be understood of course that the cistern and its related chambers and parts may be made of any suitable material such as concrete, cement, or built up of brick or stone and that any style of faucet or spigot, air compressor, and pump may be employed in connection with the cistern, in the relation to be hereinafter stated, without departing from the invention, all of these several devices being of the ordinary form and of any desired make.

In the drawings, the cistern body is indicated by the numeral 5, referring of course to Figs. 1 and 2 of the drawings specifically,

and this body is formed or has built at its upper portion a receiving chamber 6 into which the rain water is to be discharged through the medium of a pipe 7 leading into the said receiving chamber through the top thereof, this top being indicated by the numeral 8, and being removable whereby access may be had to the interior of the said receiving chamber. The top 8 carries or supports an ordinary pump 9 the pipe of which is indicated by the numeral 10 and is built into the cistern body 5 at one side thereof and extends downwardly thereinto, it being open at its lower end and serving to inclose the usual water-conducting pipe 11 which leads directly to the pump, this water-conducting pipe being provided at its lower end with the usual valve chamber 12 it being understood that by operating the pump 9, water may be pumped from the body of the cistern.

The cistern body 5 and the receiving chamber 6 are separated by a filter wall 13 which is preferably built up of bricks or other porous blocks or sections through which the water, discharged into the said receiving chamber, filters and preferably there is disposed against the inner face of this filter wall or namely that face which is presented inwardly of the receiving chamber 6, a layer of cotton lint or asbestos or the like, indicated by the numeral 14, which layer is held in place against the said filter wall by means of a wire net or screen frame 15 disposed obliquely with respect to the wall and bearing at its upper edge against the layer 14 and beneath a flange or ledge 16 formed or provided thereon, the lower edge of the said screen frame 15 seating in one of a plurality of grooves 17 formed transversely across the floor of the said receiving chamber, it being understood that this manner of supporting the lower edge of the screen frame 15 provides for adjustment of the several devices to suit varying thicknesses of layers 14. It will be understood of course that all of the water which is discharged into the receiving chamber 6 passes through this filter medium consisting of the filter wall 13 and the layer 14 of cotton lint or asbestos and that collection of leaves, sediment of all nature, and sticks and the like at the bottom of the receiving chamber and against the layer 14 of the filtering medium, will be obviated by reason of the provision of the screen frame



15, this frame being inclined downwardly as heretofore stated so that leaves and other similar foreign matter will not be permitted to collect directly against the filtering medium but will fall or slide down to the bottom of the receiving chamber at the opposite side thereof thereby leaving the filtering medium clear. It will further be understood that by removing the screen frame 15, the layer 14 of the filtering medium may be readily removed and replaced and also that the wall 13 may be removed when it is desired to gain admittance to the interior of the cistern body 5.

As clearly shown in Fig. 1 of the drawings, the water in the body 5 must necessarily pass through a filtering medium 18 before it can be drawn from the cistern body through the medium of the pump 9 or a faucet which is to be presently described and that in reality the lower end of the pump pipe 10 projects or extends into a filter chamber 19 which is formed within the cistern body 5 at the bottom thereof and in the upper wall of which the filtering medium 18 just mentioned is seated. This filtering medium is in the nature of a completely closed wire frame member filled with cotton, asbestos, or other suitable filtering material and is seated in an opening 20 formed in the said upper wall of the said filter chamber.

There is also built or formed onto the cistern body 5 at one side thereof and here shown as that side in which the filter chamber 19 is located, a reservoir or pressure tank 21 which has communication with the filter chamber through an opening 22 formed in the wall lying between the said filter chamber and the said pressure tank, there being fitted in this opening a valve seat 23 having a ledge 24 projecting into the pressure tank and a ball valve 25 seated upon the ledge and adapted normally to close the opening formed through the seat. The function of this valve will presently be fully described.

Leading into the pressure tank through the upper end thereof is a compressed air conducting pipe 26, this pipe leading from a suitable air pump or compressor 27 which, as heretofore stated, may be of any conventional design, it being employed in compressing air and forcing the same under pressure into the said pressure tank 21. A pipe 28 leads from the pressure tank 21, at a point adjacent the lower end thereof, through the top of the said tank and to a faucet or spigot 29 which may be located at any desired point and may be duplicated at several points in the length of the pipe if desired.

From the foregoing description of the invention it will be understood that when the air compressor or pump 27 is operated to force air under pressure into the pressure

tank 21, the said tank being empty, the valve 25 will remain closed as long as there is pressure in the tank and after a certain degree of pressure has been reached, a valve 30 interposed in the pipe 26 at a point adjacent the point of connection of the pipe with the compressor 27, is opened whereby to permit of escape of air from the tank 21 to the atmosphere and such escape of the air will cause a sudden inrush of water from the filter chamber 19, the valve 25 being forced from its seat by this inrush of water into the pressure tank 21. After the tank 21 has become nearly filled with water, the valve 30 is closed and the compressor 27 is again operated to force air under pressure into the pressure tank and this operation is continued until quite a pressure is secured after which the valve 30, which is preferably a 3-way valve, is moved to position to not only prevent escape of the air from the pressure tank to the atmosphere but also its escape to atmosphere through the air compressor 27. After the valve has been closed in this manner, the faucet 29 or any one of the several faucets which may be provided in the length of the pipe 28, may be opened to permit of outflow of the water therethrough, such outflow continuing until the pressure in the pressure tank 21 becomes normal whereupon the flow will stop and the air compressor 27 will again be operated in the manner above stated. It will be understood however that continuous operation of the air compressor while the faucets 29 are open is by no means necessary inasmuch as a high degree of pressure may be secured within the tank 21 and will serve to practically empty the tank if the faucet 29 is left open for a sufficient length of time.

From Fig. 4 of the drawings, it will be observed that there is provided in the upper end of the pump pipe 10 a two-part bushing 31 through which and between the sections thereof the water conducting pipe 11 of the pump passes, this bushing serving to prevent leaves, etc., from falling down through the pump pipe and contaminating the water in the filter chamber 19.

In the form of cistern shown in Fig. 3 of the drawings, the filter chamber 19, receiving chamber 6, and pump 9 are omitted and the pressure tank, in this figure indicated by the reference numeral 21<sup>a</sup> is arranged within the cistern body 5 on the bottom thereof but separate from the said body so that it may be removed from the cistern when repairs are needed, it having connection with the water and air conducting pipes 28<sup>a</sup> and 26<sup>a</sup> respectively by means of suitable connecting unions 32 which permit of disconnection of the said pressure tank from these pipes, the unions being interposed in the pipes at points within the cistern body 5<sup>a</sup>. Except for the feature above



described, the structure of cistern shown in Fig. 3 of the drawings is not different from that shown in Figs. 1 and 2.

What is claimed is:—

5 1. In a cistern, a body, a pressure tank in the body, a valve establishing communication between said tank and body and arranged to close upon the establishment of pressure in the tank, a water-conducting  
10 pipe leading from the tank, a local air-compressor, a non-venting pipe independent of and at all times out of communication with the water-conducting pipe and establishing direct communication between said local air  
15 compressor and the tank, and a draw-off faucet interposed in the water-conducting pipe, said faucet affording means for venting said pressure tank.

20 2. In a cistern, a body, a pressure tank in the body, a filter chamber, the said pressure tank having communication with the body through the filter chamber, a water discharge pipe leading from the pressure tank, a valve establishing communication between  
25 the tank and cistern body and arranged to close upon the establishment of pressure in the tank, and means for admitting air under pressure into the tank.

30 3. In a cistern, a body, a pressure tank in the body, a filter chamber in the body, the said tank being in communication with the body through the filter chamber, a receiving chamber within the body and arranged to

discharge thereinto, a water discharge pipe leading from the tank, a valve establishing  
35 communication between the tank and filter chamber, the said valve being arranged to close upon the establishment of pressure in the tank, and means for admitting air under pressure into the tank.

40 4. In a cistern, a cistern body, a receiving chamber within the body, a filter wall between the receiving chamber and the interior of the cistern body, a layer of filter material disposed against the said wall, and  
45 an inclined screen supporting the said layer in position against the said wall and resting at its lower edge upon the bottom of the receiving chamber.

50 5. In a cistern, a cistern body, a receiving chamber within the body, a filter wall between the receiving chamber and the interior of the cistern body, and an inclined screen disposed at its upper edge against the wall and at its lower edge against the bot-  
55 tom of the receiving chamber whereby to prevent collection of matter against the filter wall at the bottom thereof.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature 60 in the presence of two witnesses.

OLIN M. ALEXANDER.

Witnesses:

A. B. SAWYER,  
B. F. PRESLEY.