(No Model.) 2 Sheets—Sheet 1.

G. W. JAMISON.

IRRIGATING AND DRAINING LAND.

No. 585,103. Patented June 22, 1897.

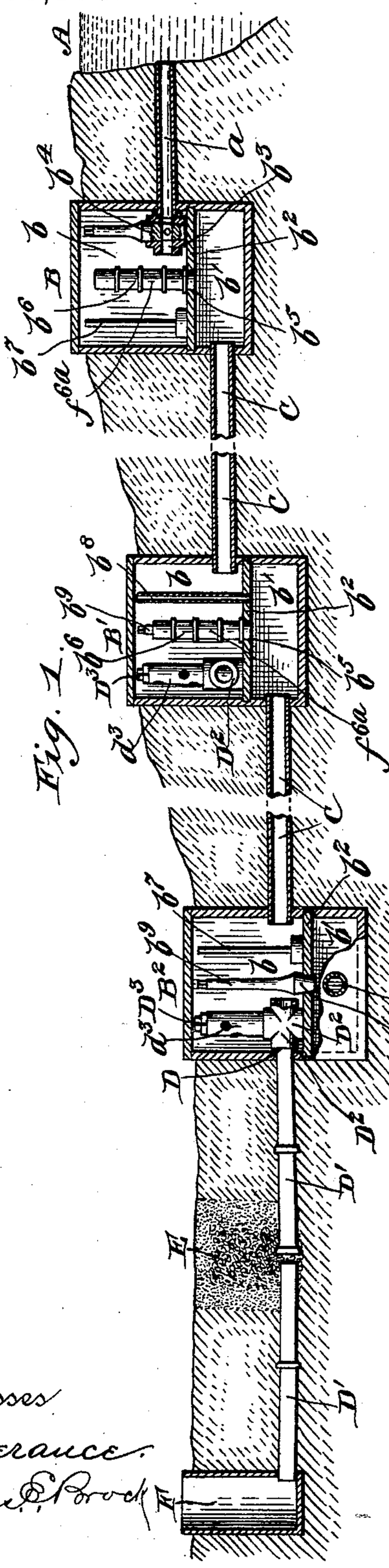

Fig. 1.

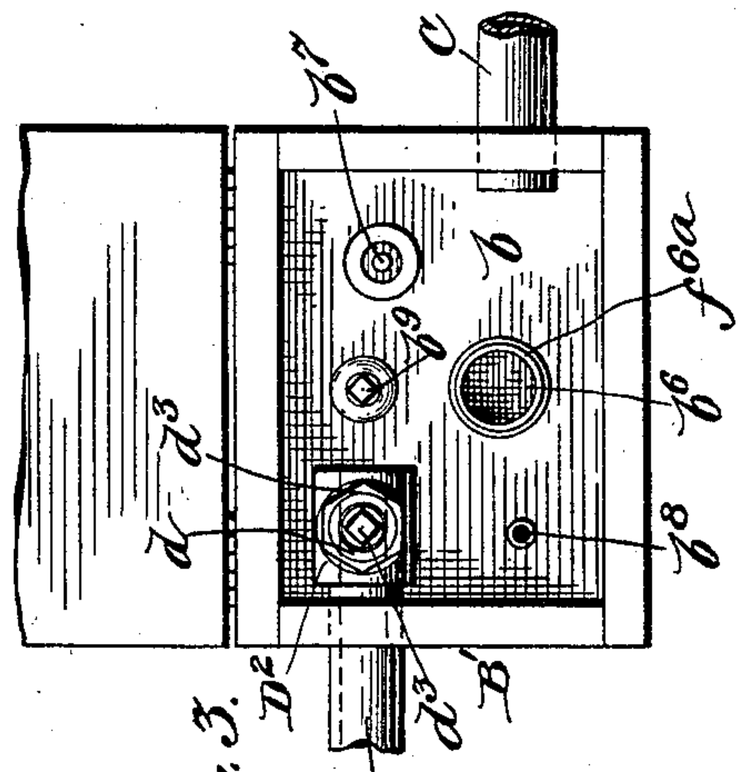

Fig. 3.

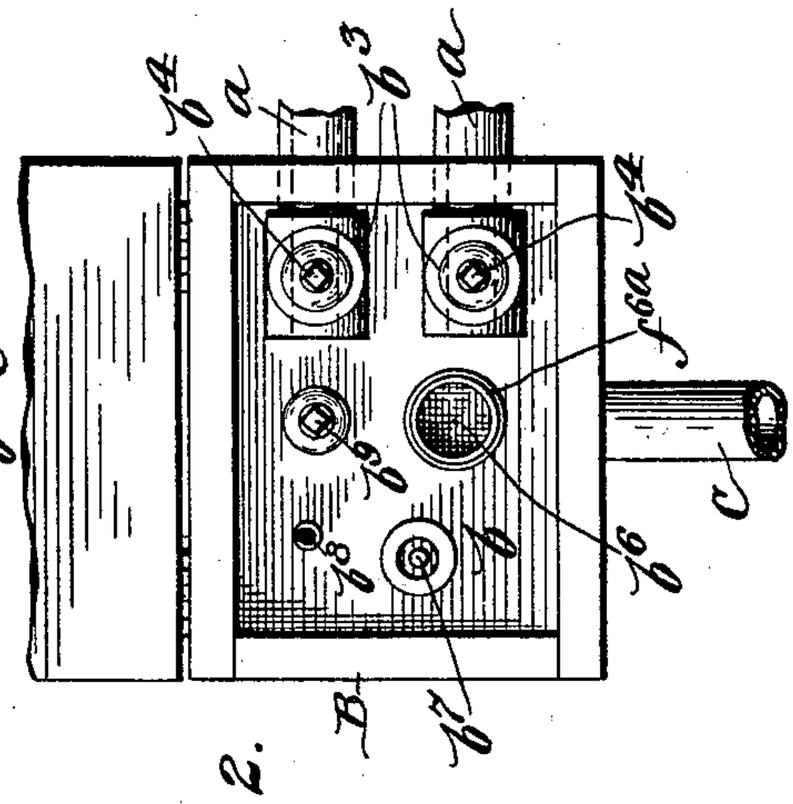

Fig. 2.

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Fig. 4.

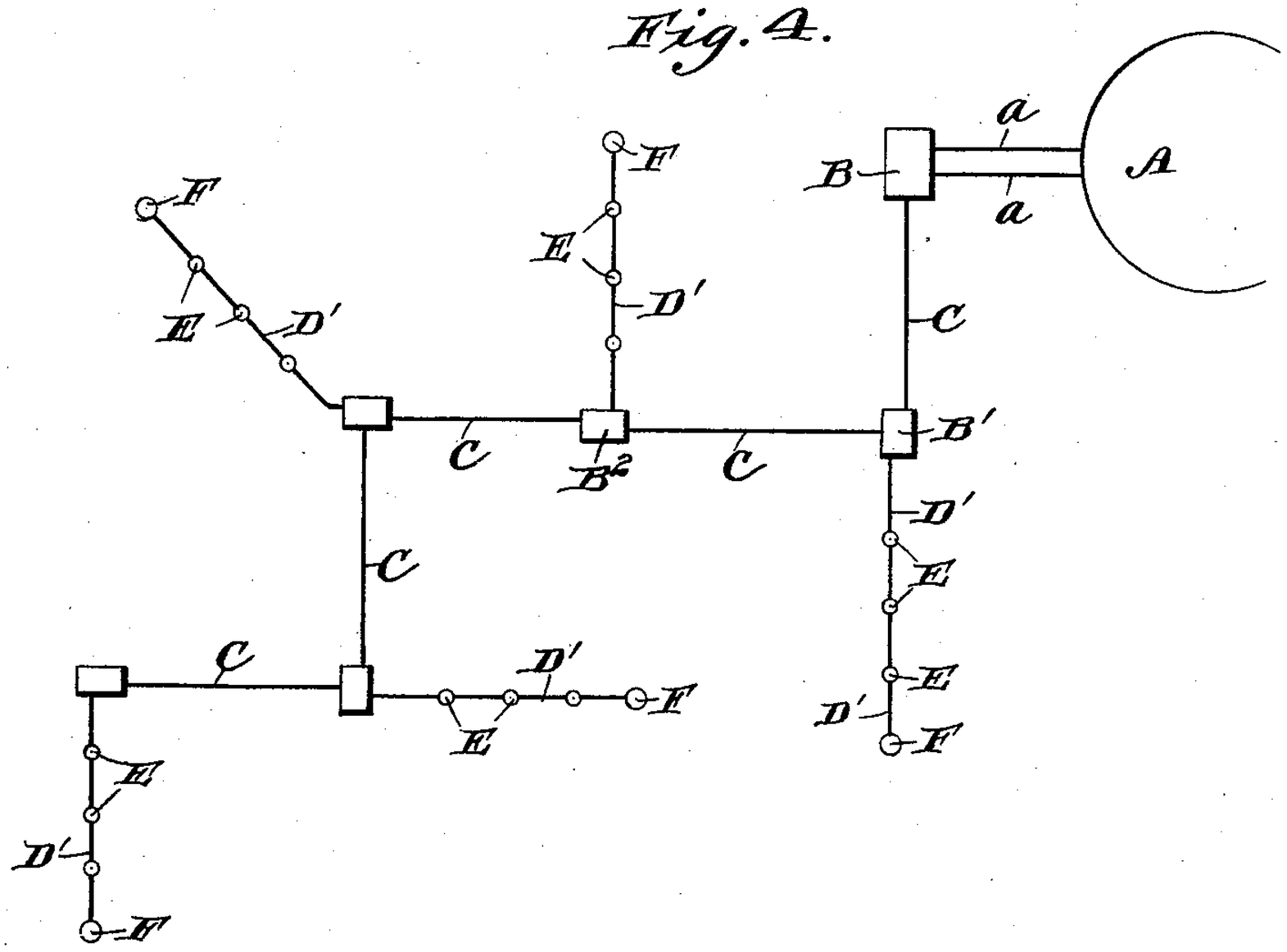


Fig. 5.

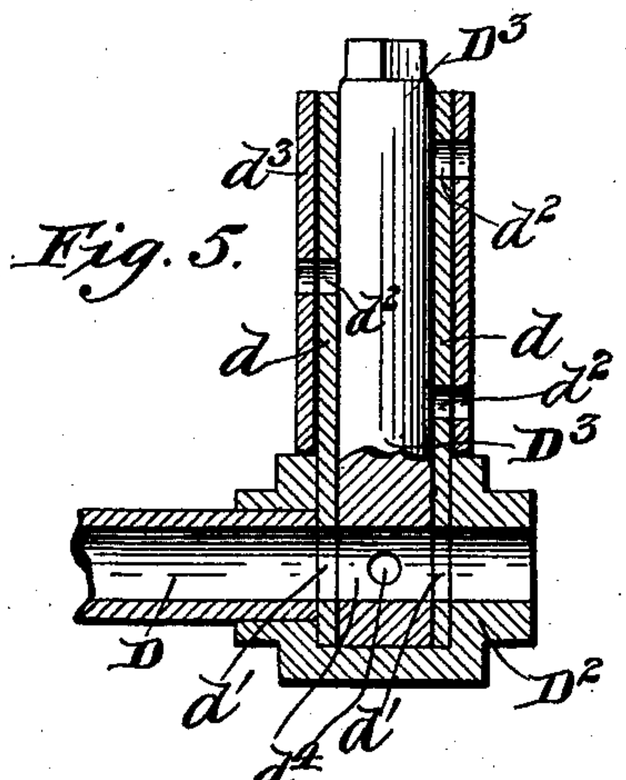
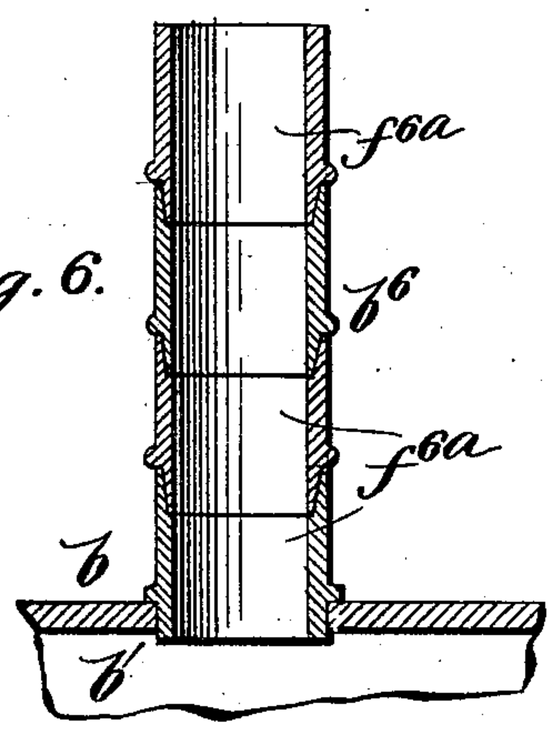


Fig. 6.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE W. JAMISON, OF HARTSVILLE, PENNSYLVANIA.

IRRIGATING AND DRAINING LAND.

SPECIFICATION forming part of Letters Patent No. 585,103, dated June 22, 1897.

Application filed September 20, 1893. Serial No. 485,983. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. JAMISON, a citizen of the United States, residing at Hartsville, in the county of Buck and State of Pennsylvania, have invented certain new and useful Improvements in Irrigating and Draining Land; and I do declare the following to be a full, clear, and exact description of the same.

This invention relates to an improved means of irrigation.

The objects of my invention are, first, to provide a series of artificial springs at any desired points whereby the land adjacent thereto can be thoroughly moistened; secondly, to provide improved means for regulating the height to which the water shall rise at any particular point; thirdly, to provide for operating any particular series of springs while other sets remain inoperative, and, finally, to provide for the flushing of various parts whereby they are kept from clogging or becoming inoperative.

With these various objects in view my invention consists in the peculiar construction of the several parts and their novel combination or arrangement, all of which will be fully described hereinafter and pointed out in the claims.

In the drawings hereunto annexed and forming a part of this specification, Figure 1 is a longitudinal section illustrating my improved method and apparatus. Fig. 2 is a detail view of the main or receiving reservoir. Fig. 3 is a detail view of one of the distributing-reservoirs. Fig. 4 is a diagrammatic plan view illustrating my improved method. Fig. 5 is a detail view of the discharge-pipe of the distributing-reservoir. Fig. 6 is a detail view of the sectional pipe for regulating the height to which the water shall rise.

Referring to the drawings, A indicates a supply-basin, which may be either a natural lake, pond, or run, or it may be constructed artificially by providing a dam and causing the water to accumulate. Adjacent to this basin A is a receiving-reservoir B, said reservoir being connected with the basin by means of two supply-pipes a a.

The receiver B is divided into an upper and lower compartment b and b', respectively, by means of a horizontal partition b^2, and the pipes a a lead into the upper compartment just above the partition b^2.

At the head of each pipe a is arranged a valve-casing b^3, within which are arranged the valves b^4, having two sets of passages, one large, the other small, by means of which the flow of water into the compartment b is regulated.

An opening b^5 is made in the partition b^2, establishing communication between the upper and lower compartments, and in this opening is arranged the sectional discharge-tube b^6, through which the water is passed from the upper compartment into the lower one, the top of said tube b^6 being a short distance below the level of the water in the supply-basin A, so that the water will rise in the upper compartment b until it reaches the top of the discharge-tube b^6, when it will pass down into the lower compartment and out to the distributing-reservoir and springs. This tube b^6 is composed of a series of tight-fitting sections f^{6a}, so that a tube of any desired height can be formed and the level at which the upper compartment will empty regulated. This is done by simply removing or replacing the sections f^{6a}, and when said sections are removed they are usually slipped upon a rod b^7, which projects upwardly from the partition b^2. An air-exhaust pipe b^8 also leads from the lower into the upper compartment, so that as the water enters the lower compartment the air can escape and when the water leaves the lower compartment the air can reënter and thus prevent the production of a vacuum. A discharge-plug b^9 is also arranged in the partition b^2, by means of which the water can be discharged directly into the lower compartment without first rising in the upper one.

The receiving-reservoir B is usually constructed of wood and may be placed in the ground at any suitable distance from the main basin A.

Leading from the lower compartment b' is a pipe C, which connects with the upper compartment of a distributing-reservoir B′, said reservoir being constructed of wood and sunk a distance below the receiving-reservoir B to give the water sufficient headway. This distributing-reservoir is also provided with an upper and lower compartment. It also has

the sectional discharge-tube, the air-exhaust pipe, the rod for holding the tube-sections when not in use, and the water-discharge plug, all being constructed and arranged exactly as in the receiving-reservoir. Extending from the upper compartment of this distributing-reservoir is a pipe-coupling D, which connects with a conduit of drain-tiles D′, which carry the water to a series of artificial springs E, arranged at suitable points.

At the head of the pipe D is arranged a valve-case D^2, from which the coupling D projects and in which is arranged a tube d, having passages d' within the case and a series of perforations d^2 above the case, there being ten of such perforations, five of which are of large diameter and five of small diameter, and surrounding this tube d is a second tube d^3, having five perforations produced therein, which are adapted to register with either set of perforations in the tube d and thus regulate the flow of water in the valve-case.

A tubular valve D^3, having passages d^4, fits into the tube d and regulates the passage of water therethrough, and when it is desired to cut off the supply of water entering this tubular valve is reversed and reinserted, so as to bring its imperforate end opposite the discharge-passage. By having a series of perforations in the tube d the water is drawn from all directions and an even flow maintained.

When not in use, the tubular valve rests upon the air-exhaust pipe.

The height to which the water will rise in the distributing-reservoir is regulated by the height of the discharge-tubes of the receiving-reservoir, and the height that it rises in the distributing-reservoir determines the height it will rise in the springs E E, and these springs are usually so arranged that their surface is slightly below the level of the top of the regulating-tube, the water being thus received at the bottom and discharged at the top of the springs, so that it will flow up naturally over the surface of the adjacent earth, as well as percolate through the soil beneath. These springs are constructed by digging cavities or trenches at suitable points and filling the same with gravel or granular material, and where the conduits of drain-tiles pass beneath said gravel their joints are broken, so that the water may escape and rise to the surface, inasmuch as water will seek its own level, and as it stands at a certain level in the receiving and distributing reservoirs it will always seek that level. Any desired number of these springs can be arranged and all are governed by the distributing-reservoir B′, with which they are connected.

At the end of each line of springs is arranged a suitable vessel F, which receives the surplus water and serves as a flushing-tank to prevent the accumulation of sand and dust at the joints of the conduit, as will be explained more fully hereinafter.

Leading from the lower compartment of the distributing-reservoir B′ is a connecting-pipe C, which connects with a second distributing-reservoir B^2, which is somewhat lower than the first one and is the same in all details of construction, and also regulates its series of springs which are connected with its upper compartment. This second distributer may also be connected with a third one, and so on, each set being constructed and operated exactly alike.

In operation the valves b^4 are set to allow the desired quantity of water to enter the receiving-reservoir B, and the regulating-tube b^6 is built up to the desired height. The water enters the upper compartment and continues to rise until it reaches the top of the discharge-tube, when it will flow down said tube and enter the lower compartment. From here it passes out through the pipe C into the upper compartment of the distributing-reservoir. From here a part of the water will pass out to the springs and rise to the surface, flooding the same. A part of the water will also accumulate in this reservoir B′ and pass down through its discharge-tube into the lower compartment and out to the next distributing-reservoir, where it goes to its set of springs, and so on until the entire series are watered. The water as it passes along the conduit escapes at the joints and rises between the granular material, as clearly shown, and at the end of the conduit all surplus water is stored up.

In case it is desired to operate the second set of springs and not the first set the water-discharge plug of the reservoir B′ is pulled out, allowing the water to pass directly into the second reservoir B^2. In this manner any particular set of springs can be operated, while the others remain dry.

Should it be desired to draw off the water of the first set of springs, it can be accomplished by withdrawing the water-discharge plug, when the water will flow back from the springs to the lower compartment and into the next reservoir B^2. The water in the flushing-tank also flows back and, having considerable headway, will clear away all sand and dirt that may accumulate about the joints of the drain-tile conduits. This flushing may be accomplished by simply withdrawing the water-discharge plug from the reservoir next preceding the flush-tank, thus permitting the water which has accumulated in the flush-tank and the spring through which the tank is supplied to flow backward, the water-discharge plugs of the several reservoirs in succession being withdrawn with like effect, so that the water accumulated in the chambers b above the inlet end of the pipes C will flow through said pipes into the chambers b'.

Should any part of the ground become flooded by rains, it can be drained into the reservoirs below in a similar manner to that described for draining the springs.

It will thus be seen that I provide a simple method and means for carrying it out, and it

will also be seen that I can supply water to or withdraw it from any part of the land comprised in my system.

Having thus described my invention, what I claim is—

1. The combination with a water-supply accumulated at a definite height, of one or more artificial springs formed in the ground, and opening directly at the surface of the ground slightly below the water-supply, and conduits connecting the bottom of said springs with the water-supply, whereby the water will rise in said springs to the height of the water-supply, and flow out over the ground, substantially as described.

2. The combination with a reservoir forming a water-supply at a predetermined level, of a gradually-falling series of artificial springs, opening directly at the surface of the ground, means for discharging a portion of the water to the springs on the level next below the water-supply and means for running the undistributed portion of water to the level of the springs next below the preceding sets in succession, and discharging the same at the bottoms thereof, whereby the water will rise in said springs to the height of the water-supply and flow out over the ground substantially as described.

3. The combination with a water-supply, of a series of cavities in the ground filled with granular material and having their openings slightly below the water-supply, and an underground conduit provided with outlets, said outlets being arranged at the bottom of the cavities thereby discharging water upwardly through the springs, substantially as set forth.

4. The combination with a water-supply, of an underground conduit laid in sections, each succeeding section lying in a lower plane than the preceding one, said conduit being provided at intervals with water-outlets, cavities filled with granular material and arranged above said outlets, and means for supplying and cutting off any one or more of the sections at will, substantially as described.

5. The combination with the water-supply, of the underground conduits provided at intervals with water-outlets, cavities filled with granular material and arranged above said outlet, and a reservoir connected to the inlet end of each conduit and to the water-supply and provided with means for controlling the supply of water to the conduits, substantially as described.

6. In combination, a receiving-reservoir, a pipe leading therefrom, a distributing-reservoir, a conduit leading therefrom, and communicating at the bottom with a series of artificial springs, a pipe also leading from said reservoir and connecting with a second distributing-reservoir, substantially as shown and described.

7. In combination, a reservoir, having an upper and lower compartment and a sectional discharge-tube in the upper compartment, and leading into the lower one, substantially as shown and described.

8. In combination, a reservoir having an upper and lower compartment, a sectional discharge-tube, and an air-exhaust pipe all arranged substantially as shown and described.

9. In a receiving-reservoir having an upper and lower compartment, the supply-pipes, the valve-cases connected therewith, each carrying a valve, the sectional discharge-pipe, the air-exhaust pipe and the water-discharge plug, all arranged substantially as shown and described.

10. In combination, a reservoir made in two compartments, the sectional discharge-tube, the air-exhaust pipe and the water-discharge plug, all arranged substantially as shown and described.

11. In combination, a reservoir divided into an upper and lower compartment, the conduit and pipes leading from said reservoir, the sectional discharge-tube and the water-discharge plug, all arranged as set forth.

12. In combination, a reservoir divided into an upper and lower compartment, the conduit leading from the upper one, the pipe leading from the lower one, the sectional tube, the water-plug and the flushing vessel, arranged at the end of the conduit, substantially as shown and described.

13. In combination, a reservoir having an upper and lower compartment, a supply-pipe leading into the upper compartment, a discharge-pipe leading from the lower one, a conduit leading from the upper one, a valve-casing arranged at the head of said conduit, a tube arranged therein and having two sets of perforations, a tube surrounding the first-named tube, and a tubular valve arranged within the tube and casing, substantially as shown and described.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE W. JAMISON.

Witnesses:

WM. STUCKERT,

EMILIE C. JAMISON.