

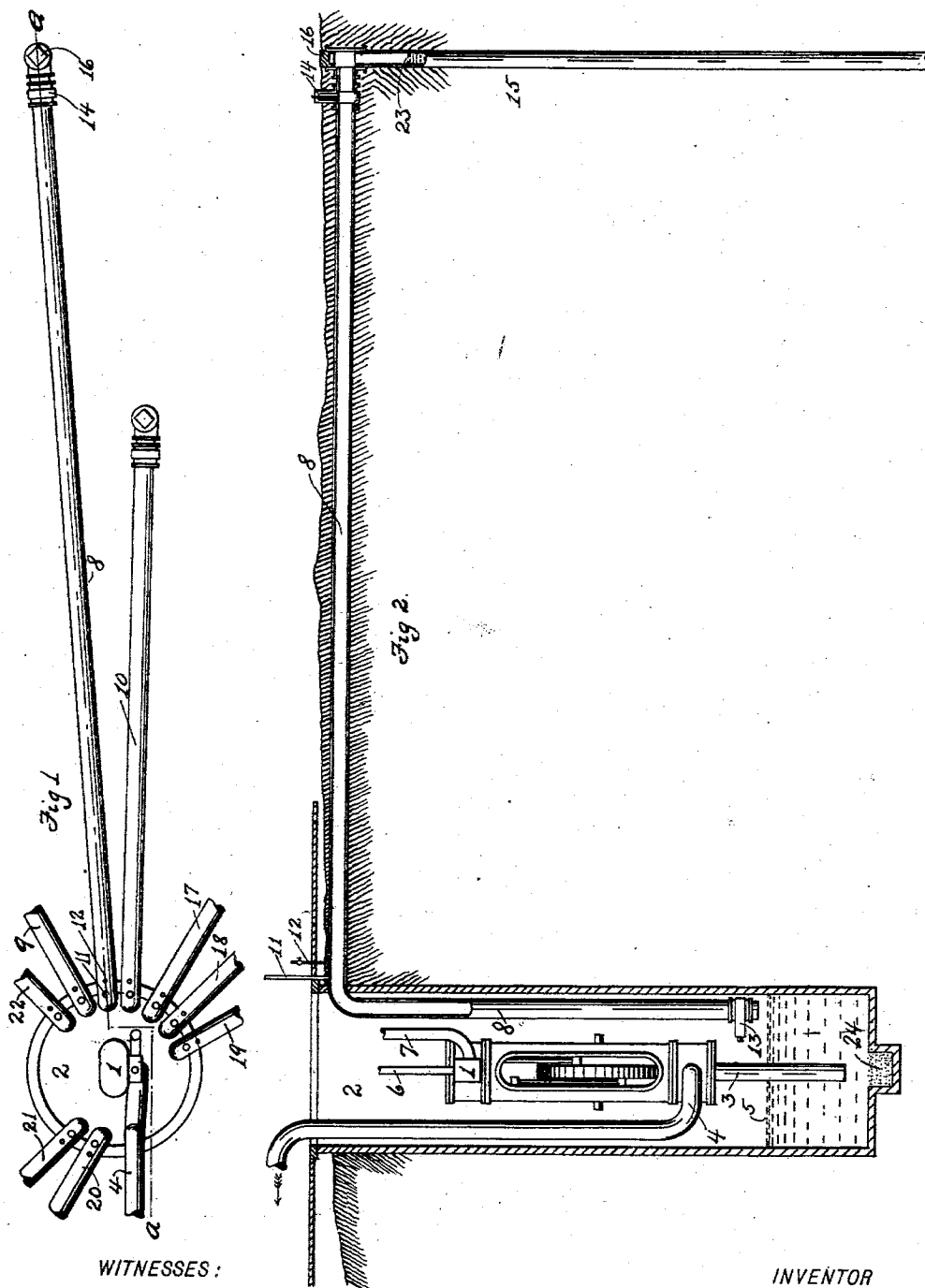
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Patented Oct. 3, 1899.

P. J. MORAN.
WATERWORKS SYSTEM.

(Application filed July 21, 1899.)

(No Model.)



WITNESSES:

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PATRICK J. MORAN, OF MEMPHIS, TENNESSEE.

WATERWORKS SYSTEM.

SPECIFICATION forming part of Letters Patent No. 634,015, dated October 3, 1899.

Application filed July 21, 1899. Serial No. 724,617. (No model.)

To all whom it may concern:

Be it known that I, PATRICK J. MORAN, a citizen of the United States, residing at Memphis, Shelby county, State of Tennessee, have
5 invented a certain new and useful Improvement in Waterworks Systems, of which the following is a specification.

My invention relates in general to an improved waterworks system, and more particularly to such a system where water from a
10 number of wells is piped to a central or pumping well, from which the pumping-engines deliver it to the city-reservoir mains, &c.

In Artesian waterworks systems it is necessary to collect the water from a number of
15 deep wells into one main or pumping well, comparatively shallow and of large diameter, the bottom of which extends some distance below the lowest water-level of the different
20 wells. In accomplishing this purpose it has heretofore been the custom to connect this pumping-well by means of underground tunnels with the several deep wells. These tunnels commonly lead into one main tunnel
25 connected with the pumping-well at or near the level of the bottom of the same. This system is unsatisfactory, because of the large first cost of the tunnels and the necessity of repairs, which, owing to the location of the tunnel, are made with extreme difficulty and at
30 excessive cost. The wells, too, often become fouled with sand and must then be disconnected from the tunnel for cleaning. To accomplish this, a ball of slightly less diameter
35 than the well is lowered until it comes even with the mouth of the tunnel, when the flow of water carries the ball against a seat in the said mouth of the tunnel and effectually stops the inflow of the water, allowing the necessary work on the well to be done without injury to the general water-supply. In removing
40 this ball to put the well again in use it is necessary to "fish" for the eye in the ball by which same was lowered into place. This becomes quite a difficult problem where the tunnel is seventy-five or one hundred feet below
45 the surface of the ground and is often the cause of much worry and delay.

It is the object of my invention in all systems where the water-level approaches within
50 twenty-five feet or less to the surface to provide means of connecting these wells,

whereby the expensive underground tunnels and connections can be dispensed with and a surface system established with easy access
55 to all connections and to the wells themselves and in systems in which the distance below the surface is greater to furnish means whereby the extreme depth of tunnel is avoided and a system requiring much less depth of excavation substituted. I accomplish this object
60 by the combination, with a pumping-well and one or more deep-water wells, of suitable siphons, with means of starting, controlling, and stopping the flow of water in same and
65 with means of disconnecting the wells for cleaning and the like.

In the drawings, Figure 1 is a plan view showing siphons from a plurality of water-wells leading into the pumping-well. Fig. 2
70 is a sectional elevation on the line *aa* of Fig. 1.

Referring to the drawings, in which the same numerals relate to the same parts in both views, 1 represents a pumping-engine supported in the pumping-well 2.
75

3 is the inflow-pipe, and 4 the discharge-pipe.

6 and 7 are the steam and exhaust pipes, respectively.

15 is the surface end of an Artesian well
80 with its water-level 23 only a short distance below the surface of the ground. The top of this well is closed by a plug 16, which is capable of being removed when it is desired to clean the well. Extending from the well 15
85 at or near the surface of the ground, but preferably enough below the surface to give protection from frost, to a point in the well 2 just above the water-level 5 is a pipe 8, forming a siphon. This siphon is provided with
90 valves 14 near its connection with the well 15 and 13 near its lowest end in the pumping-well 2, as before stated, just above the water-level 5 of said pumping-well.

11 is a pipe leading from a pump or reservoir for filling the siphon 8 when it is desired
95 to put the same in use. 12 is a pipe and valve to permit the escapement of air while filling the siphon. In case it should be so desired the pipe 11 may be dispensed with altogether and air exhausted through the pipe
100 12 until the siphon is full of water.

9 10 17 18, &c., are siphons leading from wells similar to 15, and, like the siphon 8, lead

into the pumping-well 2 and are operated in similar manner.

To put a well, as 15, in operation, the valve 13 is closed, the valve 14 and air-escape 12 are opened, and the siphon filled through the pipe 11. This having been accomplished, the air-escape 12 and the pipe 11 are closed and the valve 13 opened, allowing the siphon to act and discharge water from the well 15 into the pumping-well 2. To disconnect the well for cleaning, the air-escape 12 is opened, the admission of air opening the siphon, allowing the pipes to drain themselves and the water in the well to sink to its level 23.

The valve 14 may be brought into use and the water in the siphon held in case it should be so desired. It is also evident that except for the use above mentioned this valve may be omitted, as it is not absolutely essential to the working of the system.

The positions of the pipe 11 and the air-escape pipe 12 may be varied as desired, and one or both may be put directly over the deep well, if so desired.

24 is a sand-pit at the bottom of the pumping-well.

Siphons and pumping-wells being old, I do not broadly claim them; but

What I do claim, and desire to secure by Letters Patent in the United States, is—

1. In an Artesian-well system, the combination with a pumping-well, suitable pumping-engines, and an Artesian well having its water-level near the surface of the ground, of a siphon substantially as and for the purposes set forth.

2. In an Artesian water system, the combination with a pumping-well, suitable pumping machinery, and a plurality of adjacent Artesian wells having their water-levels near the surface of the ground, of a plurality of siphons substantially as and for the purposes set forth.

3. In an Artesian-well system, the combination with a pumping-well, suitable pumping machinery, a plurality of Artesian wells having their water-levels near the surface of

the ground, and siphons for each, of means of filling the siphons to put same in use and of opening same to throw them out of use substantially as and for the purposes set forth.

4. In an Artesian-well system the combination with a pumping-well, suitable pumping machinery, adjacent Artesian wells having their water-levels near the surface of the ground, and siphons for each, of water-pipes leading from a source of supply to fill the siphons, air-escape valves to permit the filling, and valves to close the lower ends of the siphons substantially as and for the purposes set forth.

5. In an Artesian-well system, the combination with a pumping-well, suitable pumping machinery, adjacent Artesian wells, having their water-levels near the surface of the ground, siphons for each, and means of disconnecting the siphons, of means of opening and closing the top of the wells substantially as and for the purposes set forth.

6. In an Artesian-well system, the combination with a pumping-well, suitable pumping machinery, adjacent Artesian wells, having their water-levels near the surface of the ground, means of opening and closing the wells, and siphons for each, of means of exhausting the air from the siphons to fill and start the same, substantially as and for the purposes set forth.

7. In an Artesian-well system, the combination with a pumping-well, suitable pumping machinery, adjacent Artesian wells, caps to close the wells, siphons leading from each well to the pumping-well, of valves for closing the lower end of the siphons, and pipes leading to an exhaust-pump for exhausting the air and filling the siphon, substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PATRICK J. MORAN.

Witnesses:

WALTER STITH,

W. R. CHANDLER, Jr.