No. 647,017. Patented Apr. 10, 1900.

P. J. MORAN.

WATERWORKS SYSTEM.

(Application filed Sept. 25, 1899.)

(No Model.)

Fig. 1.

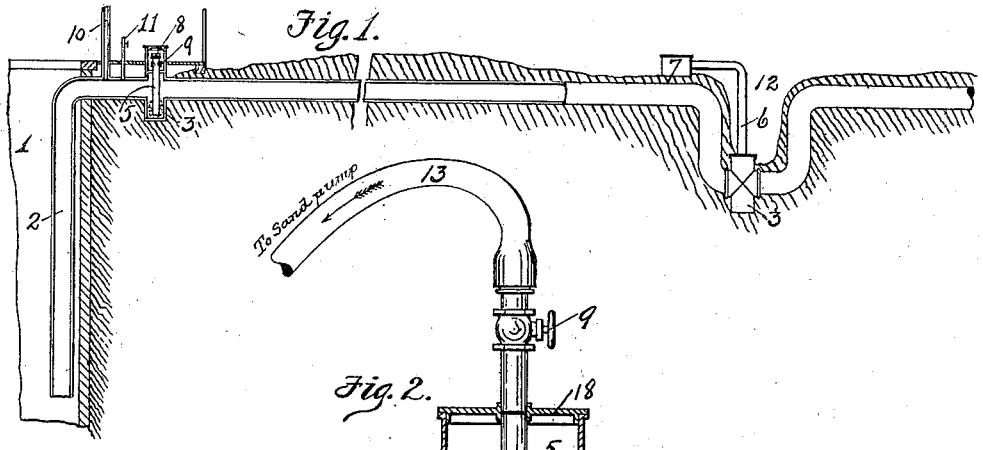


Fig. 2.

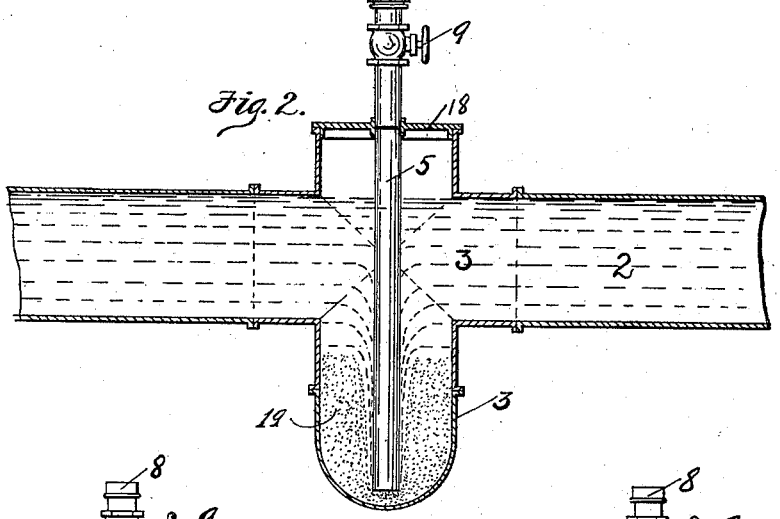


Fig. 3.

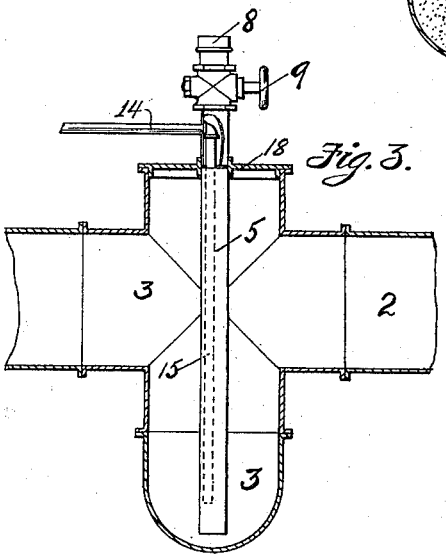
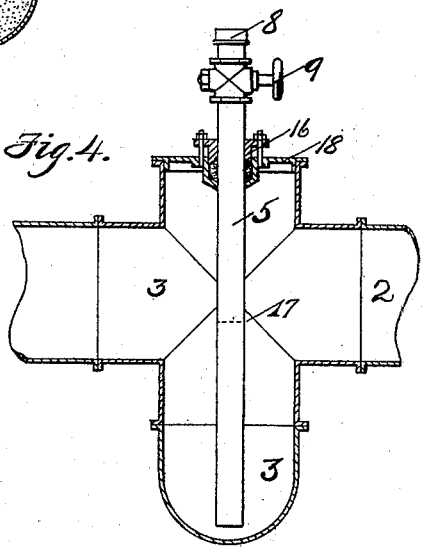


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

PATRICK J. MORAN, OF MEMPHIS, TENNESSEE.

WATERWORKS SYSTEM.

SPECIFICATION forming part of Letters Patent No. 647,017, dated April 10, 1900.

Application filed September 25, 1899. Serial No. 731,783. (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 invented certain new and useful Improvements in Waterworks Systems, of which the following is a specification.

My invention relates in general to improvements in waterworks systems, and more particularly to a system where water from a number of wells is piped to a central or pumping well, from which the pumping-engines deliver it to the city-reservoir mains, &c. It is particularly applicable, too, to the siphon system, as described in my Patent No. 634,015 for a waterworks system, issued October 3, 1899.

In all Artesian-water systems much trouble is experienced with sand partially or entirely filling and clogging the conduits connecting the pumping-wells with the supply-wells. As described in my application before mentioned, it becomes necessary periodically to shut off each well to do this cleaning. In the systems now existing this becomes a matter of considerable expense, which expense is, however, greatly decreased in my system before mentioned, yet in all cases where there are bends or projections in the pipes the flow of water is checked and sand deposited. It is the object of my invention to provide in such cases a ready means of collecting and removing this sand without stopping the flow of the wells and in pipes in which no bends occur to provide means of collecting and removing at least a part of the sand carried over and, if necessary or advisable, of checking the flow slightly, and thereby depositing the sand in suspension in suitable pockets, so that it may readily be removed. I accomplish these objects by placing wells or pockets at all bends or curves and at intervals along the straight conduits with pipes projecting into them to remove the sand so collected. These pipes serve, too, the purpose of checking the flow and causing a greater deposit at that particular point.

In the drawings, Figure 1 is a sectional elevation of a siphon-conduit showing two sand-pockets. Figs. 2, 3, and 4 show, on a larger scale, sections of sand-pockets which differ slightly in detail.

Referring now to the drawings, in which the same numerals relate to the same or like parts in all the views, 1 is a partial section of a central pumping-well, and 2 a siphon-conduit connecting this with a deep well. (Not shown in the drawings.)

3 3 are sand-pockets which are closed by air-tight covers 18. Through the center of these covers a pipe 5 is extended to remove the sand from the pockets. This pipe, as above stated, is centrally located in the cover 18 and pocket 3, crosses the center line of the conduit, and extends into the lower portion of the pocket 3. By this construction I form an eddy in the current and cause the sand to deposit in the pocket for removal through the pipe 5. In order that the sand-pump may be shut off for disuse or disconnection, I provide a valve 9, which is opened after the sand-pump is primed and ready for use. By this construction I provide in this pipe 5 not only a means of removing the sand, but also of checking the flow in the conduits and causing the sand to deposit. By making all joints air-tight the continuity also of this conduit is not broken, and by the use of the valve 9 the connection or disconnection of the sand-pump may be effected without disturbing the flow in the said conduit. 6 shows such a pipe, where for any reason the upper portion of such pocket is inaccessible, run up and into a box 7, which serves to protect the valves and caps. On the pipes 5 or 6 near their upper ends are placed valves 9 and caps 8.

10 and 11 are supply and air pipes for filling the siphons.

13 is a flexible pipe leading to a sand-pump. (Not shown.)

14 and 15 represent an auxiliary pipe for furnishing a supply of water in pipe 5 in cases where the sand packs so tightly in the bottom of the pocket that water from the conduit cannot work into the pipe 5. Fig. 4 shows another method of accomplishing this, in which a stuffing-box 16 is made in the top 18 of the pocket 3. The pipe 5', which in this case is preferably of brass, is polished or turned smooth on the outside, so that it may be raised, as desired, until its bottom comes, for example, to the dotted line 17. This will allow the water and sand mixed together in the upper portion of the pocket to be pumped

out, and as the level of the sand lowers the pipe 5 can be made to follow it till all of it is removed.

When from decreased flow or other reason it is supposed that a conduit has become fouled with sand, a portable sand-pump is moved to one of the sand-pockets on the line, and the cap 8 being first removed the connecting-pipe 13 is fastened on the pipe 5. The pump is then primed and the valve 9 opened. The water and sand in the pocket 3 are drawn together through the pipe 5 until the pocket is empty. The valve 9 being closed, the connecting-pipe 13 is removed, the cap 8 replaced, and the pump moved to another pocket. In cases where, however, the sand packs so solidly about the pipe 5 that the suction of the pump will not start it, it is necessary to provide some means of starting the flow. In such cases I provide the means shown in Figs. 3 and 4. In Fig. 3 water is introduced through the jet-pipe 14 15 and the sand around the lower end of pipe 5 removed until such time as the water in the conduit breaks through and is carried into the pipe 5, the jet then being cut off, if desired. The pipe 14 15 may, if so desired, be carried down outside of the pipe 5 and the jet played on the sand outside of but near its bottom with the same result as before. If it is not desired to use this method, the one shown in Fig. 4 may be employed. As before described, this consists of a stuffing-box 16, through which the pipe 5 (which is turned smooth on the outside) is inserted. In case the sand is hard this pipe is withdrawn until the water and sand mixed are drawn in. It is then lowered as the sand lowers until the pocket is empty. In this, too, the pipe may at all times be raised above the surface of the water in the conduit except when the pocket is being cleaned, and the flow of the water in the conduit is not retarded in the slightest except during cleaning.

By this system I am enabled to clean out the conduits connecting different wells without stopping the wells or even checking their flow, while in all other systems an entire stoppage is absolutely necessary.

While I have chosen to describe my system as applied to my siphon-well system, it is of course evident that it may be applied to the underground tunnels in use now fully as well as to my system and effect in them an even larger percentage of saving than in mine. I have, too, confined my description to a portable pump. I do not wish or intend by this to bind myself to the use of portable pumps as stationary, and permanently-attached stationary pumps would, except for the excessive cost, do equally as well, if not better, than the portable ones. Therefore

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

1. In an Artesian-well system, the combination, with a conduit, one or more pockets having air-tight covers, depending below the line of the conduit, a pipe passing through the center of said cover, and making an air-tight joint therewith, and extending across the center line of the conduit and into the lower portion of said pocket to check the flow therein and cause the sand to deposit in the pocket, and to remove the sand from the pocket, and means of removing the sand through the pipe, of a valve on the sand-pipe to permit the connection of the sand-pump while the conduit is in use substantially as shown and described.

2. In an Artesian-well system the combination with a conduit connecting a deep well with the pumping-well, and a plurality of sand-pockets therein, of pipes extending into said pockets means of emptying said pockets through the pipes and means permitting the adjustment of the depth of the pipe in the pockets, substantially as and for the purposes set forth.

3. In an Artesian-well system, the combination with a conduit, a plurality of pockets therein, pipes extending into said pockets and means of emptying said pockets through the pipes, of jets extending into the pockets near the bottom of said pipes 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:
CARRICK W. HEISKELL,
F. HUGH HEISKELL.