(No Model.) 2 Sheets—Sheet 1.

C. E. EMIG.

SYSTEM OF WATER SUPPLY.

No. 492,351. Patented Feb. 21, 1893.

Fig. 1.

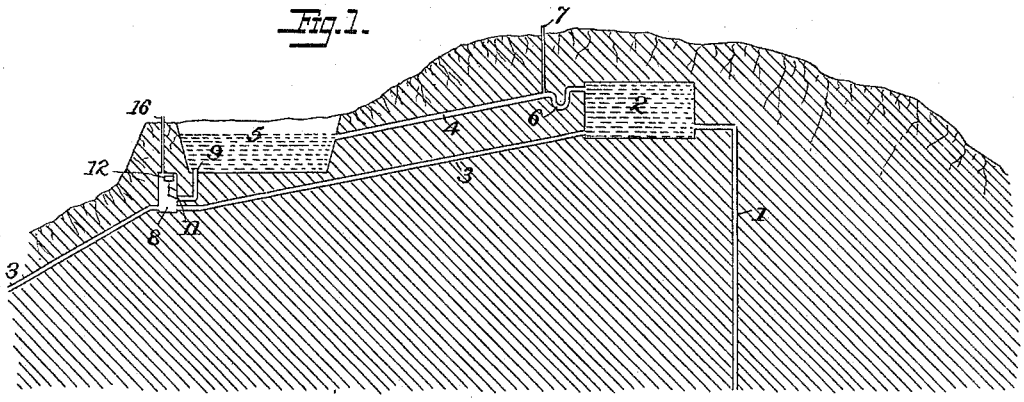
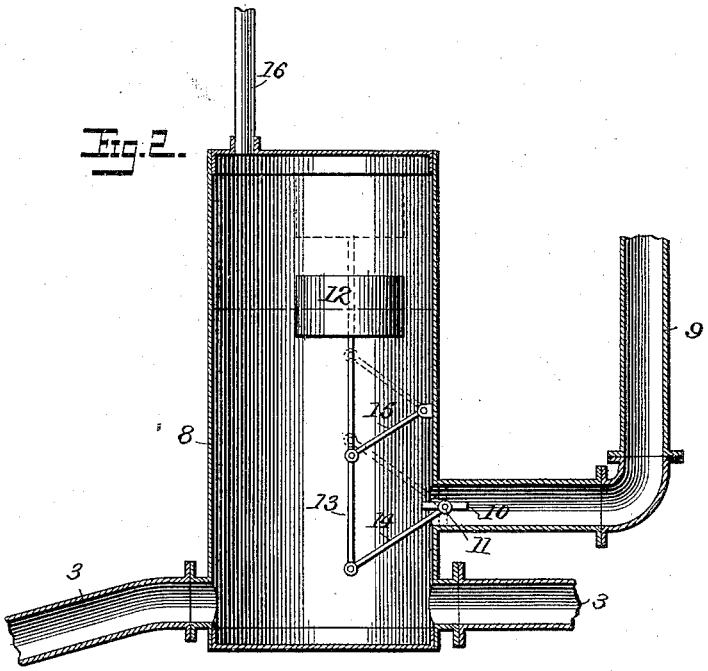


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

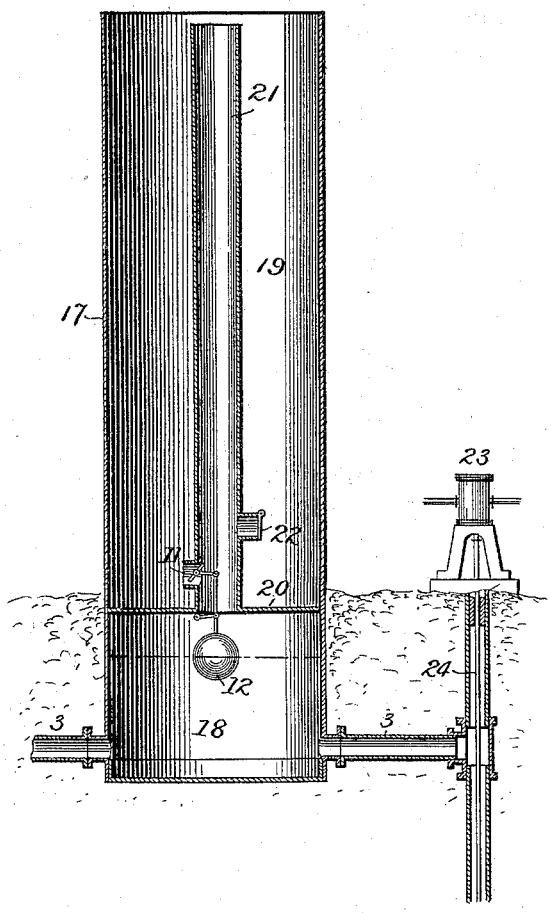


Fig. 5.

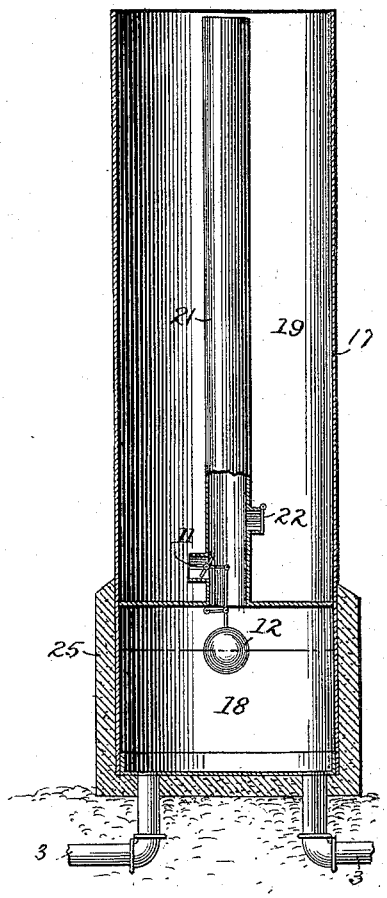
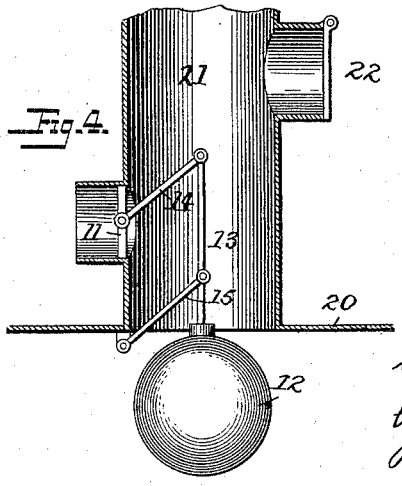


Fig. 4.



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UNITED STATES PATENT OFFICE.

CLAYTON E. EMIG, OF BALTIMORE, MARYLAND.

SYSTEM OF WATER-SUPPLY.

SPECIFICATION forming part of Letters Patent No. 492,351, dated February 21, 1893.

Application filed July 28, 1892. Serial No. 441,473. (No model.)

To all whom it may concern:

Be it known that I, CLAYTON E. EMIG, a citizen of the United States, residing at Baltimore, State of Maryland, have invented certain new and useful Improvements in Systems of Water-Supply, of which the following is a specification.

My invention relates to an improved system of water supply suitable for towns and cities and for supplying water to private dwellings or factories.

The objects of my invention are to provide a continuous supply of pure cold water direct from a spring or well and also to provide for fires and other emergencies by having a storage reservoir which may be placed in communication with the supply main, either automatically or otherwise, when the regular supply of cold water fails or is insufficient to meet the demands made upon the main.

The supply of water I prefer to obtain from an Artesian well for the reason that the water drawn from such a source is usually both pure and cold, not being affected by surface drainage and temperature. When the locality to be supplied by water is in a hilly or undulating country I select a hill several hundred feet in elevation upon which to locate the well and reservoirs. Experience has taught me that water may be reached usually at a less depth upon a hill than in the adjacent valley. This is for the reason that the water bearing stratum comes closer to the surface upon the hills, the original surface material being washed off the hills and deposited in the valleys.

In the drawings I have illustrated one form of my invention arranged upon a hill where there is a flowing Artesian well and another form in which the water works are necessarily located at or near the level of the point of consumption and where the water requires to be pumped, thus

Figure 1 is a sectional view of an elevated piece of ground in which is located one form of my improved water-works. Fig. 2 is a sectional view of a valve chamber showing an automatic valve for controlling the supply from the storage reservoir. Fig. 3 is a sectional view of water-works located upon a level piece of ground. Fig. 4 is a sectional view of the valves connected with the standpipe and reservoir, and Fig. 5 is a view of a modification.

Referring to Fig. 1 of the drawings, 1 indicates an Artesian well which in this instance we will suppose to flow naturally and continuously. The water from the well instead of coming to the surface, as usual, is turned into a subterranean reservoir 2 which is far enough below the surface to preserve the water cool and fresh. The water for immediate consumption is drawn from the reservoir 2 through a pipe 3 which is preferably laid deep enough to be below the influence of surface temperature. The surplus water from the reservoir 2 runs off through a pipe 4 to a large storage reservoir 5. The pipe 4 connects to the upper portion of the reservoir 2, so as not to affect its storage capacity, and said pipe is provided with a trap 6 to prevent the passage of air into the reservoir 2 and a vent pipe 7 to prevent the water from being siphoned out of the trap.

8 is a valve chamber in communication with the cool water main 3 and 9 is a branch pipe leading from the storage reservoir into said chamber.

The discharge pipe 9 of the storage reservoir is controlled by a valve which may, if desired, be operated by hand to put the main 3 in communication with the storage reservoir when the water from the underground reservoir 2 is insufficient to supply the demands upon the main. But I prefer to use automatic means for operating a valve in the pipe 9, one form of which I will now proceed to describe.

10 is a balanced valve in the form of a disk turning on an axis 11. This valve is controlled by a float 12 in the chamber 8. The float may be connected to the valve in any suitable manner. As shown the stem 13 of the float is pivotally connected to an arm 14 which is rigidly connected to the valve. The stem 13 may also be connected to a pivoted arm 15 parallel with the arm 14 so as to keep the float in position and the stem 13 vertical. The dotted lines in Fig. 2 show the position of the float and connections when the valve is closed and the full lines show the same when the valve is wide open.

To prevent air from accumulating in the chamber 8 a small vent pipe 16 is run up to the surface of the ground.

The operation is as follows: Under ordinary conditions the cold water reservoir 2 remains full of water, as do also the main 3 and the valve chamber 8, and the float 12 keeps the valve 11 tightly closed. The surplus water at night and at other times when the demand is light flows into and fills the storage reservoir 5. The cold water reservoir 2 is made large enough to meet any demand for household purposes, but should a fire break out, as soon as the cold water reservoir is drained the water in the valve chamber will be lowered and the descending float will open the valve 11 and admit the water from the storage reservoir into the main. Thus for emergencies the main is automatically put in communication with a large supply of water, while for ordinary purposes the water is supplied to the consumer fresh, pure and cold directly from the well.

In a level country where the water must be obtained at about the same elevation as the point of consumption I use the construction illustrated in Figs. 3 and 4. In these figures 17 is a large tank, preferably of iron extending to a considerable distance above the ground and sufficiently beneath the surface to form a cold water reservoir 18. The upper portion 19 of the tank constitutes a storage reservoir for surplus water which is separated from the cold water tank by a transverse partition 20. From the partition 20 rises a stand pipe 21 to about the elevation of the tank 17, the said stand-pipe being open at the bottom and in communication with the cold water chamber. Near the bottom of the stand-pipe is a check valve 22 which permits water to pass freely from the stand-pipe to the reservoir 19 but prevents it from returning. Communication between the storage reservoir 19 and the cold water reservoir and main 3 is controlled by a balanced valve 11 similar to that shown in Figs. 1 and 2 and similarly operated by a float 12. The valve 11 is located at or close to the bottom of the storage reservoir. In Fig. 3 the valve is shown as half open while in Fig. 4 it is shown as closed. If the well 1 does not flow naturally the water may be pumped by a steam cylinder 23 or other suitable power.

24 indicates the pump rod.

The operation of the construction shown in Fig. 3 is as follows: Under ordinary circumstances pure cold water is supplied to the main 3 direct from the well and surplus water is forced through the check valve 22 into the reservoir 19. The water is supplied at such a rate that the stand pipe and tank will be usually full thus giving sufficient pressure to the water in the main to raise it to the point of discharge. By the use of the check valve 22 at the bottom of the stand pipe the water passes into the storage reservoir 19 without having to pass over the top of the stand-pipe and thus much power is saved in filling the reservoir. While any water remains in the stand-pipe however, none can return from the reservoir into it because the check valve and the valve 11 are closed under such circumstances. Should the supply of cold water run short on account of stoppage of the pumps or increased demand then as soon as the water reaches the level of the float the latter would begin to descend and the valve 11 would be automatically opened, thus putting the main 3 in communication with the storage reservoir.

In Fig. 5 I have shown a modification which differs from Fig. 3 in that the tank 17 is wholly above the surface of the ground and the cold water chamber 18 is protected from heat by a covering of non-conducting material 25.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a source of water supply, of a protected cold water storage reservoir, a surplus storage reservoir receiving the overflow from the cold water reservoir, a main connected to the cold water reservoir, a passage between the surplus storage reservoir and the main, and a valve controlled by a float in the cold water supply arranged to open said passage when the direct supply from the cold water reservoir is insufficient, substantially as described.

2. The combination with a source of water supply, of a tank 17 having a transverse partition 20 and a stand pipe extending upward from said partition, the portion below the partition being protected from heat and constituting a cold water storage reservoir and the other portion constituting a surplus storage reservoir, a supply main connected to the cold water reservoir and a valve controlled by a float in the cold water reservoir for putting the supply main in communication with the surplus storage reservoir when the cold water supply runs low, substantially as described.

3. The combination with a source of water supply, of a tank 17 located partly under ground and having a transverse partition 20, a stand pipe extending upward from said partition, a check valve 22 and an automatically operated valve 11 at the bottom of the stand pipe and a main 3 communicating with the space below the partition, said space constituting a cold water reservoir while the space above the partition constitutes a storage reservoir, substantially as described.

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

CLAYTON E. EMIG.

Witnesses:
BEVERLY W. SMITH,
JNO. T. MADDOX.