

(No Model.)

H. C. STIFEL.
WATER FILTER.

No. 582,442.

Patented May 11, 1897.

Fig. I.

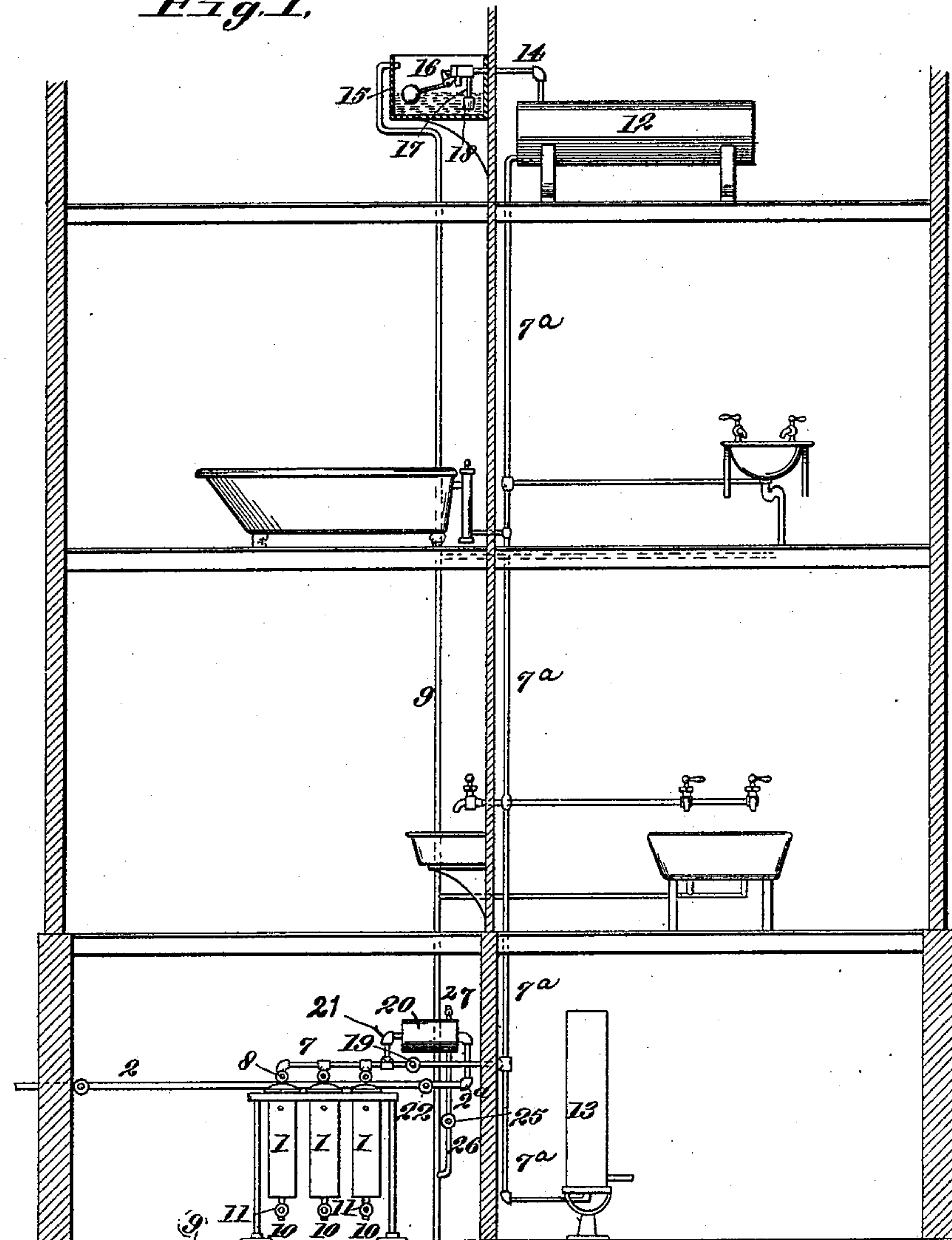


Fig. II.

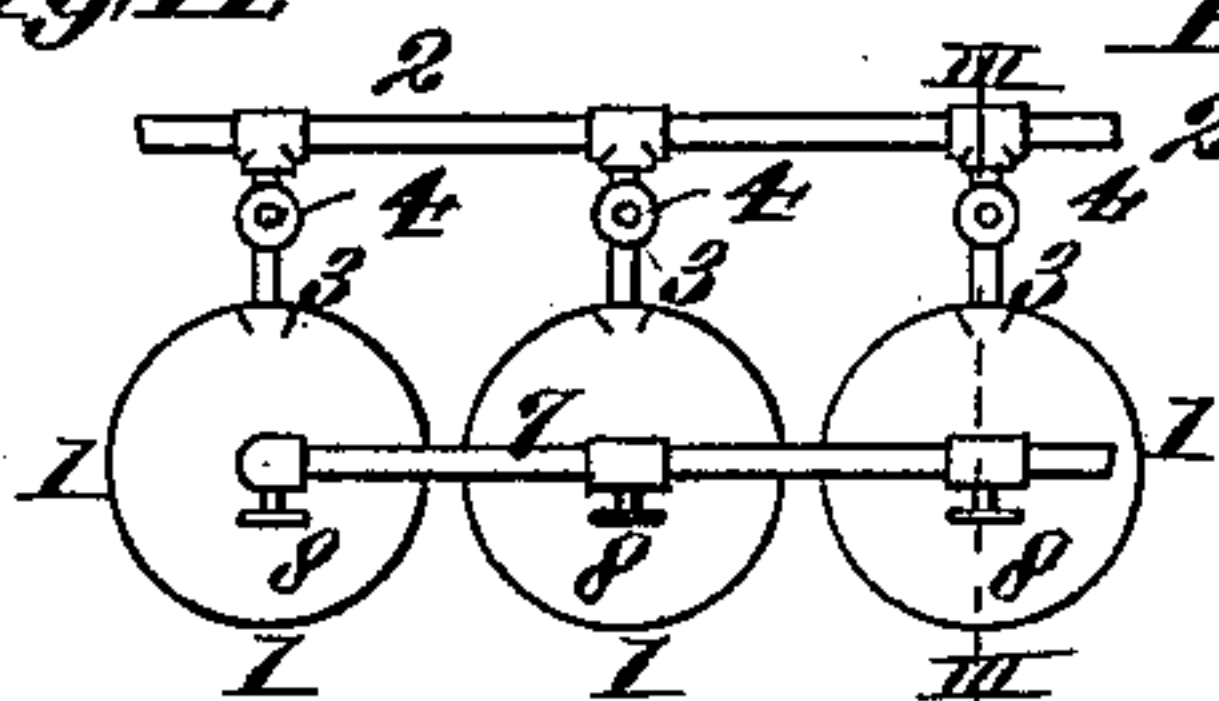


Fig. III.

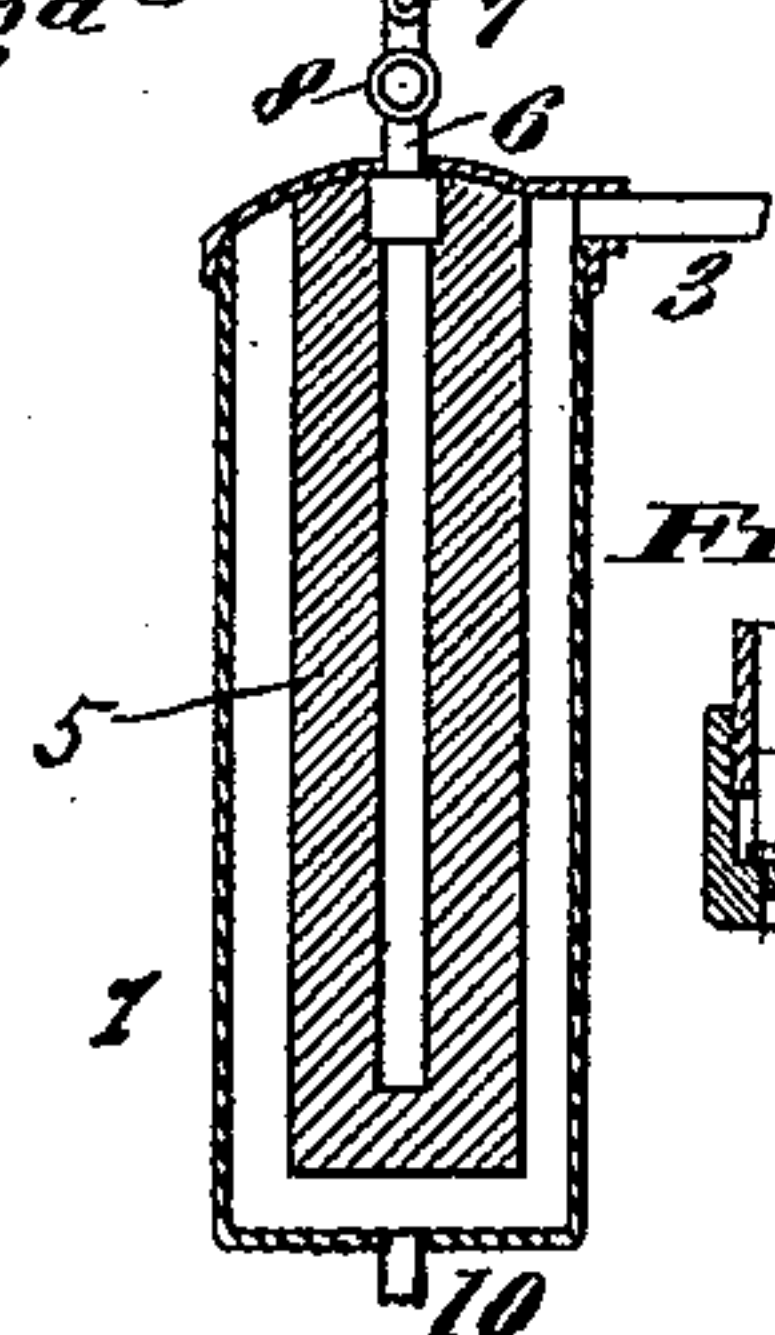


Fig. IV.

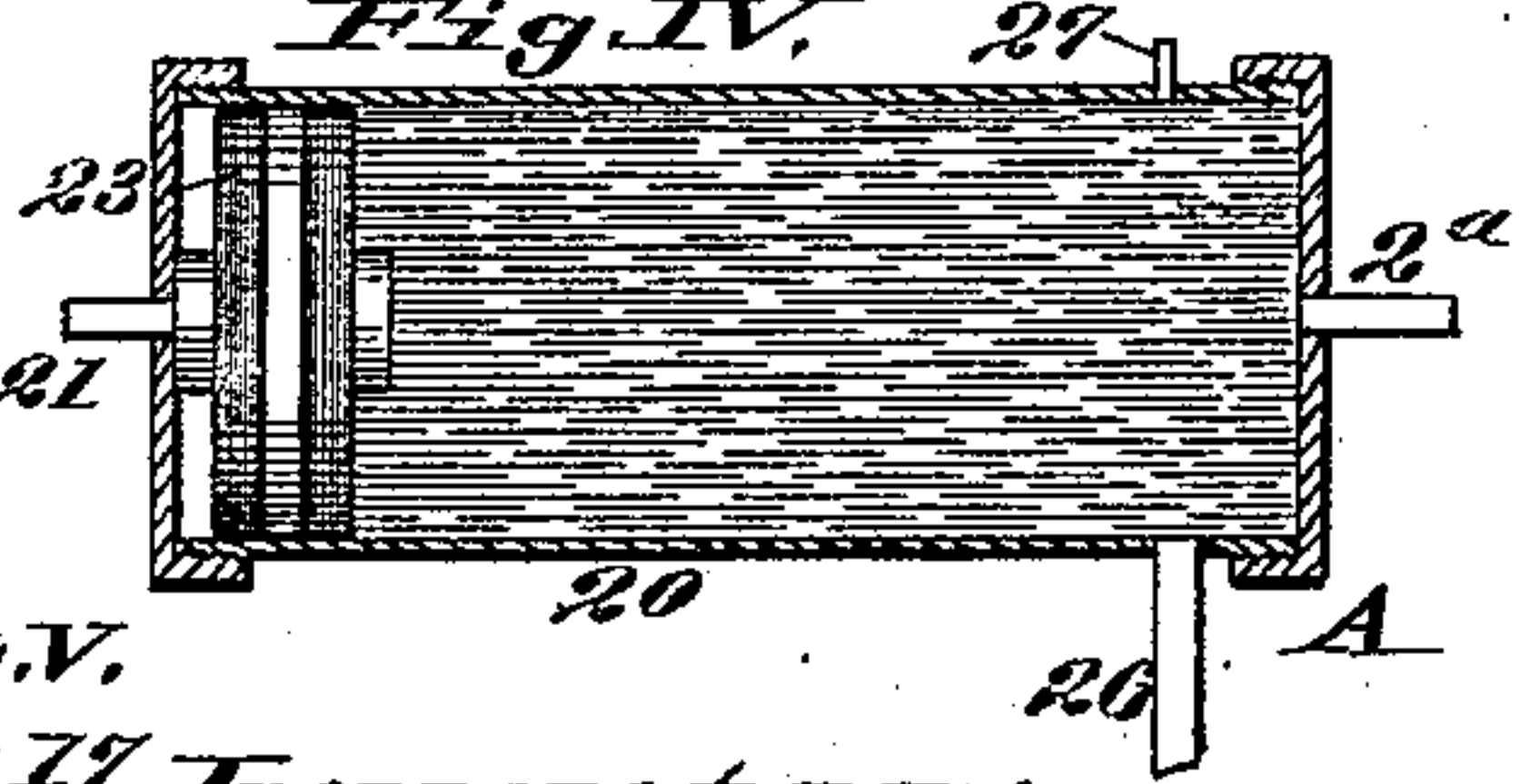


Fig. V.



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UNITED STATES PATENT OFFICE.

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WATER-FILTER.

SPECIFICATION forming part of Letters Patent No. 582,442, dated May 11, 1897.

Application filed February 26, 1894. Renewed April 10, 1897. Serial No. 631,651. (No model.)

To all whom it may concern:

Be it known that I, HERMAN C. STIFEL, a citizen of the United States, and a resident of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Water-Filters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in water-filter apparatuses, the object being to provide for the ready and thorough cleaning of the filtering blocks or stones, and the object being, further, to provide for the ready discharge of the filtered water from the supply-tank to the places of use.

My invention consists in features of novelty hereinafter fully described and claimed.

Figure I is an elevation illustrative of my invention. Fig. II is an enlarged detail top view of a series of the filtering tanks or chambers and their pipes. Fig. III is a vertical section taken on line III III, Fig. II. Fig. IV is an enlarged longitudinal section of the cylinder utilized for cleaning the filtering-stones. Fig. V is an enlarged section of the check-valve.

Referring to the drawings, 1 represents one or more vertical filtering-tanks connecting with the supply-main through means of a horizontal service-pipe 2, having lateral branches 3, provided with valves 4. The filtering-tanks may be of ordinary construction, and I have shown them in the form of plain cylinders with which the branches 3 connect and within which the filtering-blocks 5 are suspended. The filtering-blocks communicate through vertical branches 6 with a clear-water horizontal discharge-pipe 7, the branches 6 being provided with valves 8. The lower ends of the cylinders or tanks 1 may communicate with a waste-pipe 9 through means of pipes 10, provided with valves 11. The pipe 7 extends from the filters to a vertical pipe 7^a, connected with an elevated supply or storage tank 12, and may also extend to a tank or boiler 13. The storage-tank 12 is a closed receptacle, and extending from its highest part is a pipe 14, that extends into a small tank 15, located at a greater elevation than the storage-tank and within which, on the end of

the pipe 14, is located an ordinary float and float-valve 16, and extending from the pipe 14 toward the bottom of the tank 15 is a short pendent pipe 17, on the bottom of which is an ordinary check-valve 18, that closes downwardly, as shown in Fig. V. The pipe 7 is provided with a valve 19, which being opened allows the water to pass from the pipe 2 through the filters and through the pipe 7^a into the storage-tank 12. As the storage-tank fills with water the air escapes through the pipe 14 and through the float-valve 16, and when the tank is completely filled the water will begin to pass through the pipe 14 and float-valve 16 into the small tank 15 until the float of the valve 16 is raised by the water in the tank and closes off this flow of water, and then the water will cease to pass through the filters and parts connected therewith until part of the water in the storage-tank has been used.

During the filling of the storage-tank and the flow of water into the small tank 15 the check-valve 18 is seated, but when the water is drawn from the tank 12 this valve will open under the atmospheric pressure on the water in the tank 15, and water will pass from the tank 15 through the valve 18 and the pipes 17 and 14 into the storage-tank as long as the water is being drawn from the storage-tank, or until the surface of the water in the tank 15 reaches the valve 18, and then air will pass through the valve 18 into the tank 12, still permitting a free flow of water from the tank 12, or if the float-valve opens before the air reaches the check-valve then the air will pass through the float-valve. The water from the filters continuing to pass into the storage-tank refills it after use, and should the use be to the extent of allowing the float-valve 16 to open this valve will close again after the use of the water ceases, and as already described.

By the use of the small tank 15 and the pipe 14, with their accessories, the storage-tank 12 may be always kept filled with filtered water, and a portion of the tank 12 is not occupied by compressed air, as is usually the case in this general class of filters. Moreover, when the closed tank 12 becomes filled and the small body of water enters the auxiliary tank 15 there is an effective stoppage of the filter-

ing action and the main body of pure water is kept intact from contamination by the air. The air is automatically admitted just sufficient to allow escape of the water as it is used and recedes on the main tank being again filled. Furthermore, all the apparatus is outside within easy reach for adjustment or repair without disturbing the main tank.

The waste-pipe 9 extends, preferably, to the tank 15, to serve as an overflow, as a safeguard, and with this pipe 9 the various bath-tubs, washstands, sinks, &c., in the building may be connected, as shown in Fig. I.

I will now describe the manner of cleaning the filtering blocks or stones 5. This is accomplished through means of a horizontal cylinder 20, located above the horizontal discharge-pipe 7, connected at one end to the pipe 7^a through means of an elbow-pipe 21. With the other end of the cylinder there connects the pipe 2 through means of a U-shaped extension 2^a, in which is placed a valve 22. Within the cylinder is a loose piston 23. Normally the valve 22 is closed and the pressure of the water from the filters keeps the piston 23 pressed over to the end A of the cylinder 20. When it is desired to clean the filtering blocks or stones, the valves 11 are opened, the valves 4 and 19 are closed, and the valve 22 is opened. This admits water direct from the pipe 2 from the supply-main into the end A of the cylinder 20 and drives the piston 23 to the other end of the cylinder and to the position shown in Fig. IV. This causes the clear filtered water which was in the cylinder 20 to be forced through the pipe 21 and the pipe 7 into and through the filtering-blocks into the tanks 1, from where it passes through the pipes 10 and escapes, and I am thus enabled to clean the filtering stones or blocks through means of filtered water and through

means of the water-pressure from the supply-main, and this always existing to an unlimited supply affords ample provision for cleaning the stones or blocks. After the stones or blocks are cleaned the valves 11 and 22 would be closed, the valves 4 and 19 would be opened, and a valve 25 in a pipe 26, extending from the cylinder to the pipe 9, would be opened, allowing the water to escape from the cylinder behind the piston 23 and permitting the clear water to force the piston to the end A of the cylinder, as will be readily understood. The end A of the cylinder may be provided with an air-cock 27.

I claim as my invention—

A water-filtering service comprising a vertical tank 1, a horizontal main supply-pipe 2, a lateral branch pipe 3 having a valve 4 and connecting the supply-pipe with the vertical tank, a filtering-block 5 suspended within the vertical tank, a horizontal discharge-pipe 7 having a valve 19 and located above the vertical tank, a vertical branch pipe 6 having a valve 8 and connecting the filter-block through the top of the vertical tank with the discharge-pipe, the elevated storage-tank 12, the vertical pipe 7^a, connecting the discharge-pipe with the storage-tank, the small tank 15 located at a higher elevation than the storage-tank, the tank-pipe 14 connecting the storage-tank with the small tank, the float and float-valve 16, connected with the tank-pipe within the small tank, and the short pendent pipe 17 connected with the tank-pipe and having a check-valve 18 closing down at the bottom thereof; substantially as described.

HERMAN C. STIFEL.

In presence of—

A. M. EBERSOLE,
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