No. 690,333. Patented Dec. 31, 1901.

L. WANNER, JR.

FILTER.

(Application filed May 8, 1901.)

(No Model.) 2 Sheets—Sheet 1.

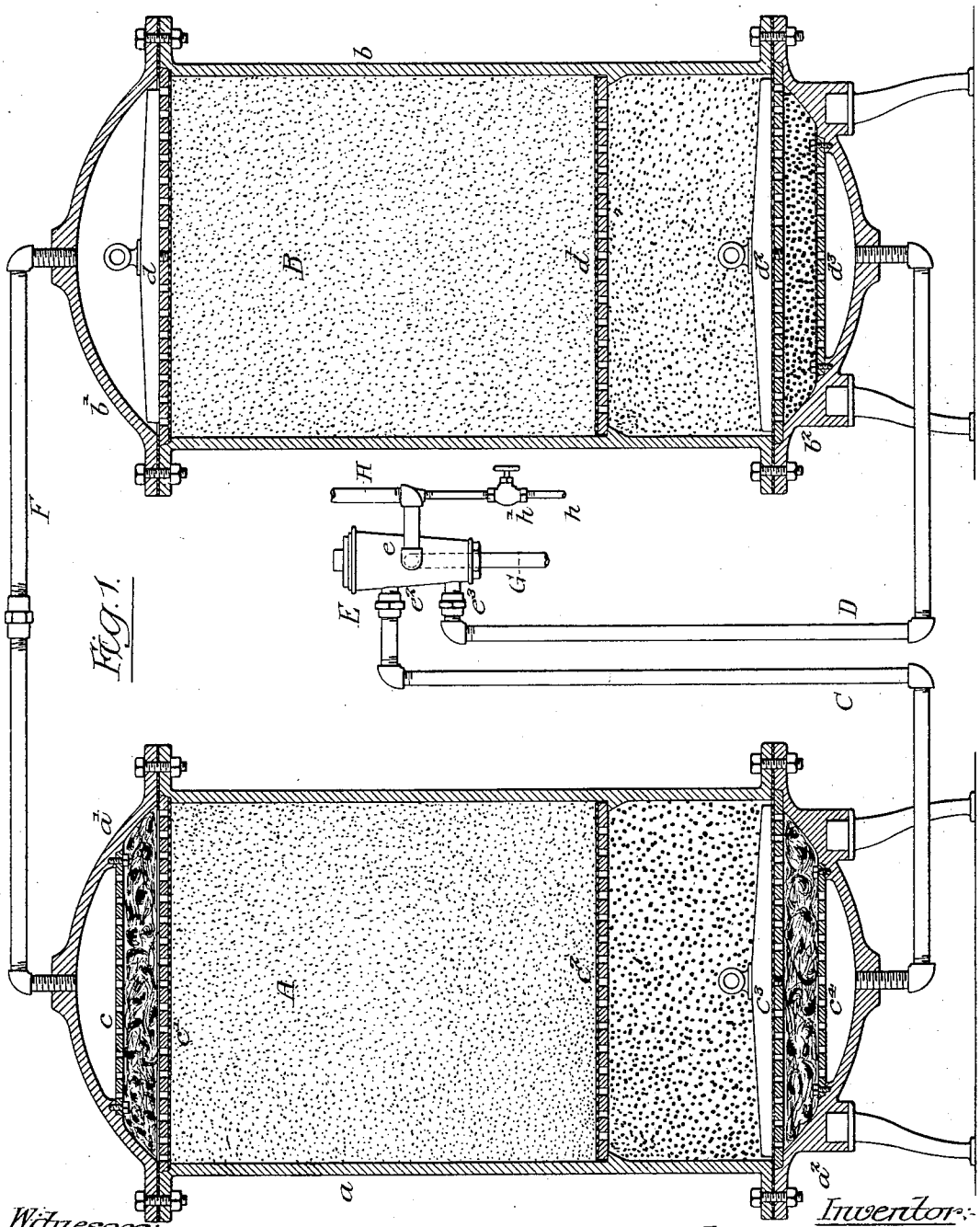


FIG. 1.

Witnesses:
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Louis W. Whitehead.

Inventor:
Louis Wanner Jr.
by his Attorneys:-
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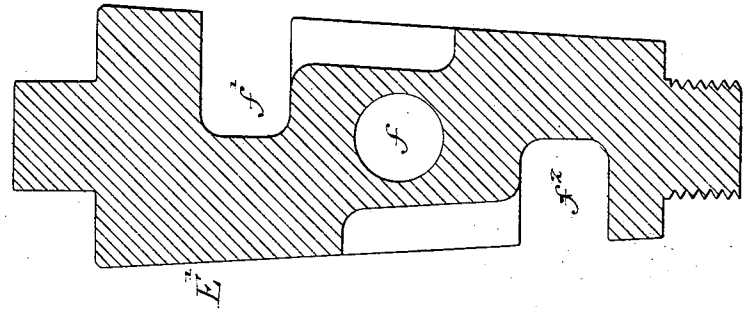


FIG. 3.

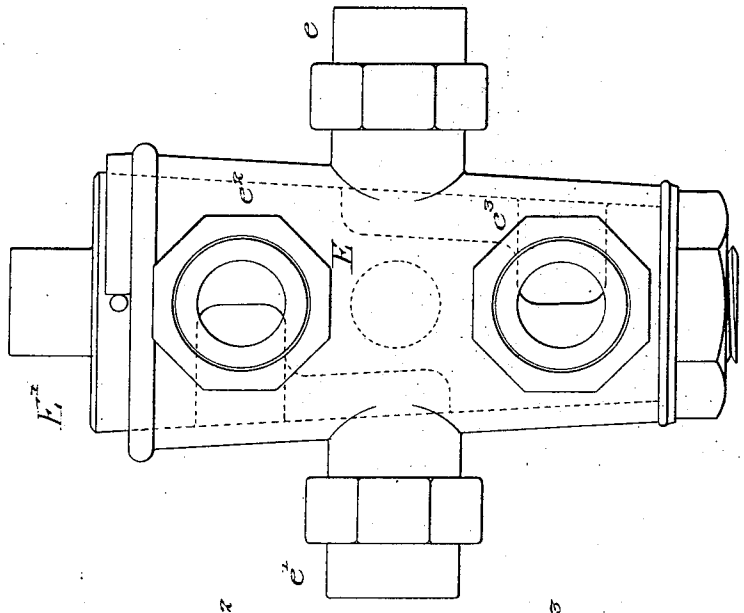
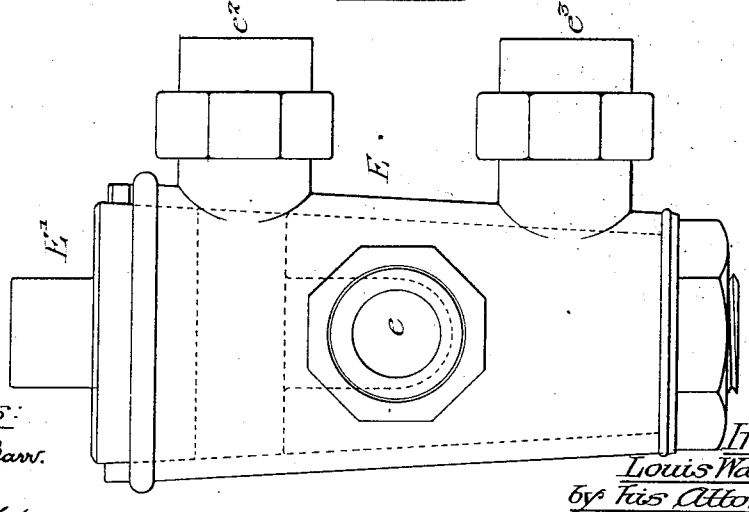


FIG. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

LOUIS WANNER, JR., OF PHILADELPHIA, PENNSYLVANIA.

FILTER.

SPECIFICATION forming part of Letters Patent No. 690,333, dated December 31, 1901.

Application filed May 8, 1901. Serial No. 59,279. (No model.)

To all whom it may concern:

Be it known that I, LOUIS WANNER, Jr., a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Filters, of which the following is a specification.

My invention relates to certain improvements in water-filters especially adapted for filtering the water for use in residences and other buildings.

The object of my invention is to simplify the apparatus and to make it compact, so that it can be readily cleansed when desired.

In the accompanying drawings, Figure 1 is a vertical sectional view of my improved filter with the pipes and valves shown in outside view. Figs. 2 and 3 are exterior views of the valve-casing, and Fig. 4 is a sectional view of the valve.

A is one filtering-chamber, and B is another filtering-chamber. These chambers are preferably placed side by side, as shown. The chamber A has a casing a, a top plate a', and a bottom plate a^2. The chamber is divided into six compartments by perforated partitions c c' c^2 c^3 c^4. Between the partitions c and c' I preferably place sponge or other suitable material, between the partitions c' and c^2 I pack bone-black, between the partitions c^2 and c^3 I place quartz of any degree of fineness, and between the partitions c^3 and c^4 I place another layer of sponge, so that the water has to pass first through sponge, then quartz, then bone-black, and finally through sponge, although in some instances the sponge in each end of the casing may be dispensed with and the filtering material may be quartz and bone-black. The other chamber B is made somewhat similar to the chamber A, having a casing b, top plate b', and bottom plate b^2. The casing is divided into five chambers by perforated partition-plates d d' d^2 d^3. Between the partition-plates d and d' I pack bone-black, between the plates d' and d^2 I place fine quartz, and between the plates d^2 and d^3 I place coarse quartz, so that the water shall pass through a large body of bone-black, then through fine quartz, and finally through coarse quartz.

E is the valve for controlling the flow of water to and from the filter. The valve is clearly shown in Figs. 2, 3, and 4 and consists of a casing having an inlet-port e, an outlet-port e', and two circulating-ports e^2 e^3, one leading to one filtering-chamber and the other to the other filtering-chamber.

The plug-valve E′ (shown in Fig. 4) has a central passage f, which when the valve is turned in one direction forms a communication between the inlet-port e and the outlet-port e' and has passages f' f^2, the passage f' forming a communication between the inlet or outlet ports with the circulating-port e^2, and the passage f^2 forms a communication between the inlet-port or outlet-port and the circulating-port e^3.

C is a pipe leading from the valve-casing to the bottom plate of the chamber A, being coupled in line with the port e^2, while D is a pipe leading from the valve-casing to the bottom plate of the casing B. This pipe is in line with the port e^3.

G is a supply-pipe to the filter in line with the inlet-port e, and H is a service-pipe for filtered water leading from the filter in line with the port e'.

h is a waste-pipe coupled to the pipe H and provided with a suitable cut-off valve h'. This pipe can be coupled to a drain or may drip into a funnel or receiver leading to a drain.

F is a pipe coupling the upper end of the filtering-chamber A with the upper end of the filtering-chamber B.

The joint between each casing and the bottom and top plates is packed with any suitable material to prevent leakage, and suitable screens are used to hold the bone-black and quartz in place.

It will be understood that the several filtering ingredients are packed in their several compartments so that the passage of water through the filter will not disturb the filtering-bed.

The operation of the filter is as follows: Water is admitted through the supply-pipe to the valve, and when the valve is turned so that the supply-pipe will communicate with the pipe C and the outlet-pipe will communicate with the pipe D then the water will flow through the valve through the pipe C, up through the filtering material in the chamber A, out through the pipe F, down through the filtering material in the chamber B, through the pipe D to the valve, and to the supply-

pipe H, while if the valve is turned so that the supply-pipe will communicate with the pipe D then the direction of the water is reversed, passing first through the pipe D, up through the chamber B, through the pipe F, down through the chamber A, through the pipe C to the valve, and to the pipe H. The passage of the water in this reverse direction is for the purpose of cleaning the filter. Then the valve h' in the pipe h is opened, so as to allow the water to flow to waste, and when the water appears clear the direction of the flow of water through the filter can be reversed until it is again clear. Then the waste-valve h' is closed and the water can be used for the house. When it is wished to by-pass the filter, the valve is turned so that the central passage f in the valve will be in line with the inlet and outlet ports $e\,e'$. Then the water will pass directly from the inlet through the valve to the outlet and to the supply-pipe H.

I claim as my invention—

1. The combination in a filter of two chambers each containing filtering material, a single valve-casing, a single valve therein, four ports in the casing, an inlet-pipe communicating with one of the ports, and a supply-pipe communicating with a second port, a pipe coupled to a third one of said ports and communicating with the bottom of one of the filter-chambers, another pipe communicating with the fourth port and with the bottom of the other filter-chamber, a pipe forming communication with the tops of the two filter-chambers said valve being so formed that water may be directed either up through one chamber and down through the other or vice versa, substantially as described.

2. The combination of two filtering-chambers, each having layers of filtering material packed therein, a single valve-casing, a valve therein, pipes leading from the valve-casing to each of the filtering-chambers, and pipes independent of the valve-casing connecting the filtering-chambers, an inlet-pipe and an outlet-pipe communicating with the valve-chamber, the valve being so formed as to direct the water either up through one filtering-chamber and down through the other or vice versa, substantially as described.

3. The combination of two filtering-chambers, layers of filtering material therein, pipes leading from the bottom of the filtering-chambers, a valve-casing connected to said pipes a connection between the upper portions of the filtering-chambers independent of said valve-casing, an inlet-pipe and an exhaust-pipe communicating with the valve-casing, a valve in said casing, said valve having ports so constructed that on turning the valve the inlet-pipe will communicate with one of the filter-pipes and the exhaust-pipe will communicate with the other filter-pipe, substantially as described.

4. The combination of two filter-chambers, layers of filtering material therein, pipes leading from the bottom of the filtering-chambers, a valve-casing connected to said pipes, a pipe connecting the upper part of the chambers independently of the valve-casing, an inlet and an exhaust pipe communicating with the said casing, a valve in the casing having ports, said ports being so formed that on turning the valve the inlet-pipe will communicate with one of the filter-pipes and the exhaust-pipe will communicate with the other filter-pipe, said valve having a central passage by which the filters can be by-passed so that the water will flow directly from the inlet-pipe to the exhaust-pipe through the valve, substantially as described.

5. The combination in a filter, of two casings having perforated partitions therein, one casing having five partitions forming compartments for the filtering material, the upper compartments and the lower compartments having sponge therein, one of the central compartments containing bone-black, the other containing quartz, the second filtering-chamber having four compartments, the upper compartment having bone-black therein, the central compartment containing fine quartz and the lower compartment containing coarse quartz, a pipe forming communication between the two filtering-chambers, two pipes, one leading to one filtering-chamber and the other to the other filtering-chamber, a single valve-casing connected to said pipes, a valve therein and exhaust-pipes leading from said valve-casing, substantially as described.

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

LOUIS WANNER, JR.

Witnesses:
MURRAY C. BOYER,
JOS. H. KLEIN.