

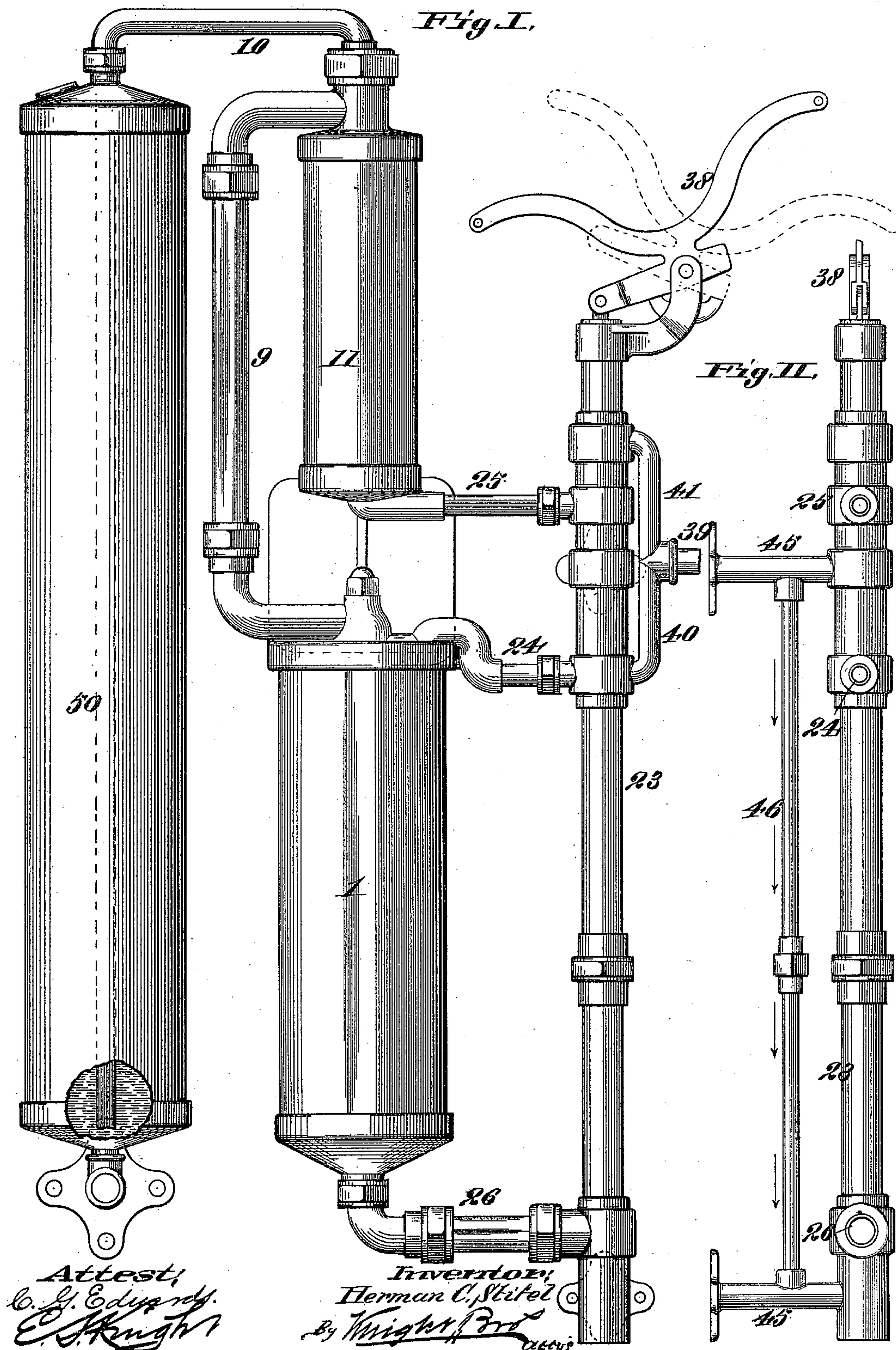
(No Model.)

H. C. STIFEL.  
WATER FILTER.

2 Sheets—Sheet 1.

No. 582,402.

Patented May 11, 1897.





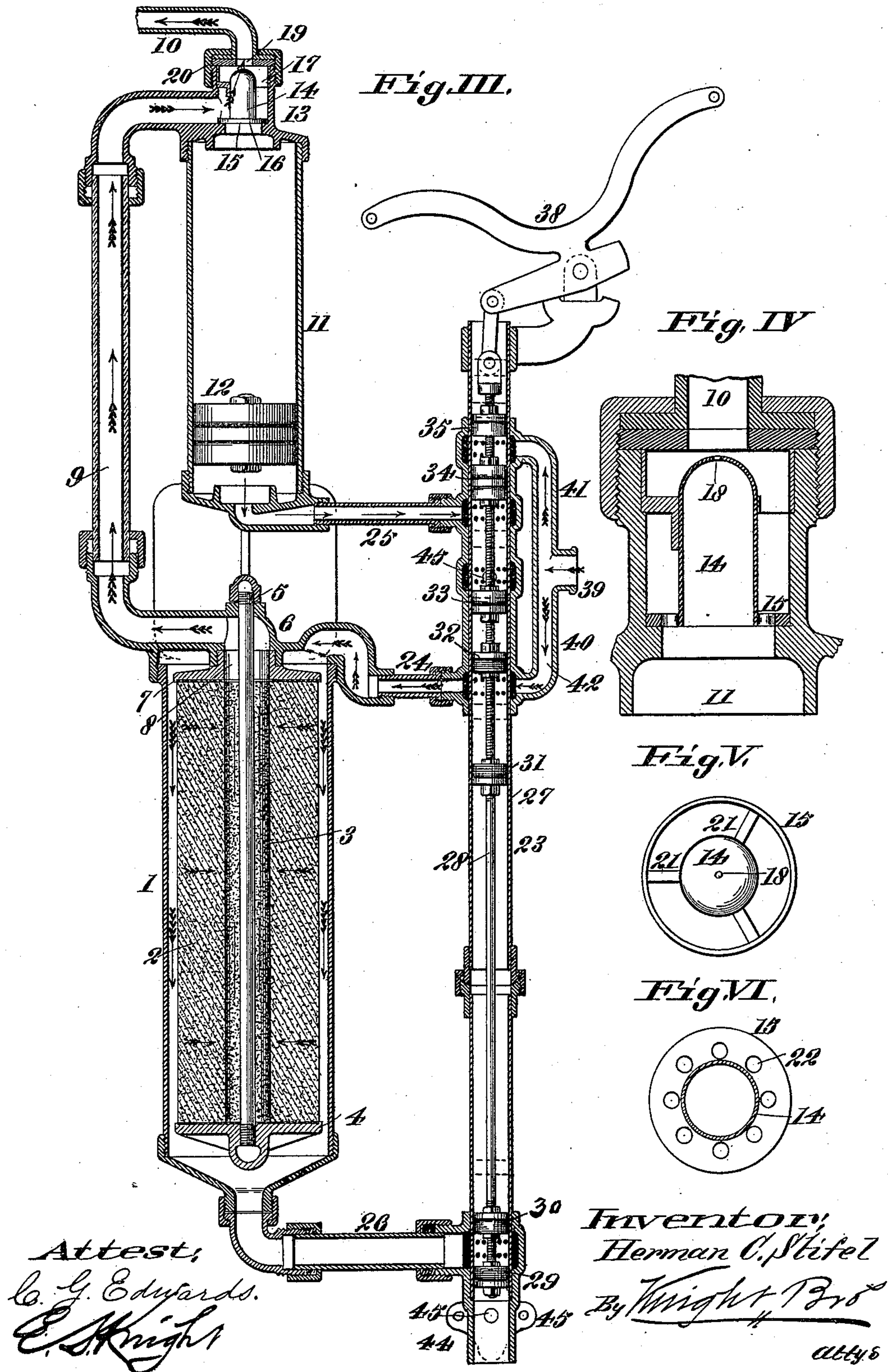
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# UNITED STATES PATENT OFFICE.

HERMAN C. STIFEL, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AMERICAN TRIPOLI COMPANY, OF CARTHAGE, MISSOURI.

## WATER-FILTER.

SPECIFICATION forming part of Letters Patent No. 582,402, dated May 11, 1897.

Application filed July 16, 1894. Serial No. 517,639. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN C. STIFEL, 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.

This invention relates to certain improvements in the general class of filters shown and described in my application, Serial No. 502,350, filed March 5, 1894.

This invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side elevation of my improved filter. Fig. II is an elevation of the valve device with waste-pipe and supporting-brackets. Fig. III is a vertical longitudinal section of the device. Fig. IV is a detail vertical section of the check-valve with the clear-water cylinder. Fig. V is a top view of the check-valve and its supporting-ring; and Fig. VI, a bottom view of same, showing a modification of the ring.

Referring to the drawings, 1 represents the filtering-tank, and 2 the filtering-stone. The stone is held in place within the tank by means of a rod 3, tapped into a disk 4 at the bottom of the stone and having a nut 5 at its upper end above a pipe or casting 6, located over a cap or disk 7 on the upper end of the stone. The cap or disk 7 is provided with an opening 8, through which water passes from the stone into the pipe or hollow casting 6, from where the water passes on to a pipe 9 (which may be in the form of a glass tube) and through a pipe 10 to a storage-tank or place of use.

11 represents a cylinder preferably, though not necessarily, located over the filtering-tank. This cylinder is provided with a loose piston 12, and on its upper end is a casting 13, through which water passes from the pipe 9 to the pipe 10 around a cup-shaped valve 14, having a ring or flange 15 seated over an opening 16 in the casting 13 above the cylinder 11. The valve 14 does not entirely fill the space 17 within the casting 13, so that the water can pass around it from pipe 9 to pipe 10. The valve 14 is hollow, as shown in Fig.

IV, and is closed at its upper end, except for a small vent 18. The upper end of the valve seats against an opening 19 in a disk 20, between the casting 13 and the pipe 10. The ring 15 is connected to the valve by arms 21, as shown in Fig. V, or it may be in the form of a flat ring or disk supplied with openings 22, as shown in Fig. VI. As the clear water passes from the filter through the pipe 9 into the pipe 10 a portion of it passes through the ring 15 into the cylinder 11 above the piston 12, filling the cylinder and forcing the piston (if it has not fallen by gravity) to the lower end of the cylinder.

23 represents a valve device communicating with the tank 1 or with the casting 6 on top of the tank 1 through means of a pipe 24 and communicating with the cylinder 11 through means of a pipe 25, and also communicating with the lower end of the tank 1 by means of a pipe 26.

The valve device consists of the tube 27, within which is a rod 28, carrying valves or pistons 29, 30, 31, 32, 33, 34, and 35. The rod is operated by a lever 38. The supply-pipe communicates with an opening 39 in a casting or pipe 40. From the opening 39 the pipe 40 has an upwardly-extending branch 41, that leads to the space between the valves 35 and 40 when the parts are in normal position, and a lower branch 42, that leads to the space between the valves 32 and 31 when the parts are in normal position. Water entering through the branch 42 passes through the pipe 24 into the filtering-tank, and passing through the stone goes out through the pipes 9 and 10. This operation continues until it is desired to clean the filter, when the lever 38 is operated, pulling the rod 28 and its valves into the position shown by dotted lines, Fig. III. This opens the pipe 26 to the waste-pipe 44 and also opens the branch 41 to the pipe 25, when a portion of the water from the supply-pipe will pass through pipe 25 and into the cylinder 11, beneath the piston 12, and will force the piston to the upper end of the cylinder, causing the clear water in the cylinder to pass out through the pipe 9, back through the stone 2, and out through the pipe 26. As the piston 12 rises the check-valve 14 is forced to its seat 19, thus shutting off the backflow



of water through the pipe 10. During this  
cleansing operation water continues to pass  
through the branch 42 and through the pipe  
24, washing the sediment from the outside of  
5 the stone 2. When the lever 38 is released or  
forced back to its normal position, carrying  
the stem 28, with its valves, to their normal  
positions, the filtering process resumes and  
the water escapes from beneath the piston 12,  
10 through pipe 25, into the chamber between  
the valves 34 and 33, and passes out through  
the hollow arms or brackets 45 and through  
the pipe 46 to the waste-pipe 44.

It will be understood that when the piston  
15 12 reaches the end of its upward stroke the  
check-valve 14 will drop into its normal po-  
sition, as shown in Fig. III.

50 represents a storage or clear-water tank  
with which the pipe 10 may be connected,  
20 and I have shown the pipe 10 extending to  
near the bottom of the tank 50.

By this simple device an effective cleaning  
of the stone by clear water is obtained, the  
water being forced back through the stone  
25 under the city or supply pressure.

I claim as my invention—

1. In a water-filter, the combination of a fil-  
tering-tank, discharge-pipes leading from the  
filtering-tank, a cylinder communicating with  
30 the discharge-pipes, a check-valve located be-  
tween the discharge-pipes and said cylinder,  
a piston in the cylinder, a valve device, a pipe  
forming a communication between the cylin-  
der and the valve device, a supply-pipe, a

pipe forming a communication between the 35  
valve device and the filter, through which the  
supply of water passes, and a pipe forming a  
communication between the filter and the cut-  
off, through which the waste water passes;  
substantially as set forth. 40

2. In a filter, the combination of a filtering-  
tank, a discharge-pipe leading from the filter-  
ing-tank, a cylinder with which the discharge-  
pipe communicates, a check-valve between 45  
the discharge-pipe, and said cylinder, a pis-  
ton in said cylinder, a supply-pipe, a valve  
device, and communications between said  
valve device and said cylinder and tank,  
whereby when the valve device is operated  
50 filtered water will be forced back through the  
filtering-tank, under the supply-pipe pres-  
sure, by water from the supply-pipe; sub-  
stantially as set forth.

3. In a water-filter, the combination of a fil-  
tering-tank, a discharge-pipe, a cylinder com- 55  
municating with the discharge-pipe, a check-  
valve in said communication, a piston in the  
cylinder, a supply-pipe, a valve device, and  
pipes forming a communication between the  
valve device, and said cylinder and tank; said 60  
check-valve being formed with an open ring  
15, and being adapted to close the discharge-  
pipe, when the filter is being cleaned; sub-  
stantially as set forth.

HERMAN C. STIFEL.

In presence of—

E. S. KNIGHT,

C. G. EDWARDS.